USDA-FOREST SERVICE FS-2500-8 (7/00)

Date of Report: **02/22/2005**

BURNED-AREA REPORT Myrtle Creek Fire v2.50
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[**X**] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[ ] 2. Interim Report
[**X**] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: **Myrtle Creek**

B. Fire Number: **ID-IPF-7027**

C. State: **Idaho**

D. County: **Boundary**

E. Region: **1**

F. Forest: **Idaho Panhandle NF**

G. District: **Bonners Ferry RD**

H. Date Fire Started: **09/02/03**

I. Date Fire Contained: **9/17/03**

J. Suppression Cost: **$4,700,000**

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): **17**
2. Fireline seeded (miles): **0**
3. Other (identify):

L. Watershed Number: **170101040502**

M. Total Acres Burned: **3,600**
NFS Acres (**3145**) Other Federal (**210 BLM + 35 FWS**) State (**0**) Private (**210 Forest Cap.**)

N. Vegetation Types:

Habitat Types (***Potential*** Natural Vegetation):

- 52% dry forest habitat types (primarily Douglas-fir series, with some ponderosa pine and some dry grand fir series);

- 42% moist forest habitat types (cedar, hemlock, and moist grand fir series)
- 4% subalpine fir habitat type series;
- 2% rocky / shallow-soil non-forest habitat types (primarily dry shrub sites).

Pre-Fire ***Existing*** Vegetation:

- 51% Douglas-fir/ponderosa pine, Douglas-fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*) forest types
  - ~8% of this (or 4% of the fire area) was very open-canopied forest on shallow soil, low productivity sites);
- 17% western larch (*Larix occidentalis*) forest type (mostly on north aspects);
- 17% moist western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*) forest types;
- 12% subalpine fir (*Abies lasiocarpa*) / Engelmann spruce (*Picea engelmannii*), and lodgepole (*Pinus contorta*) pine forests;
- 3% non-forest dry site shrub fields.

O. Dominant Soils: **Andic Dystrudepts, Typic Udivitrands, and Vitrandic Dystroxerepts.**

P. Geologic Types: **Granitic till over granitic rock of the Kaniksu batholith.**

Q. Miles of Stream Channels by Order or Class: 1st order: **60 miles** 3rd order: **4 miles**

R. Transportation System

Trails: **0.5** miles Roads: **8.3** miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): **1227** (low) **1318** (moderate) **1055** (high)

B. Water-Repellent Soil (acres): **250 acres**

C. Soil Erosion Hazard Rating (acres):
1260 (low) **1600** (moderate) **740** (high)

D. Erosion Potential: **2.3** tons/acre (within the burn area)

E. Sediment Potential: **580** cubic yards / square mile (within the burn area)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): **20**

B. Design Chance of Success, (percent): 75

C. Equivalent Design Recurrence Interval, (years): **2**

D. Design Storm Duration, (hours): **24**

E. Design Storm Magnitude, (inches): 12.2[1]

F. Design Flow, (cubic feet / second/ square mile): 136

G. Estimated Reduction in Infiltration, (percent): 35

H. Adjusted Design Flow, (cfs per square mile): n/a[2]

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Myrtle Creek fire burned approximately 15 percent of the Myrtle Creek watershed, a designated municipal watershed for the City of Bonners Ferry, Idaho. The fire burned in the lower portion of the watershed immediately above the mouth and where the city maintains its domestic water intake diversion. The affected area previously burned in 1926. A small portion of the Cascade Creek drainage also burned; however, there is no emergency identified in Cascade Creek.

Threats to Public Health and Safety:

- **Municipal Watershed, water supply, and water quality** - The City of Bonners Ferry has used Myrtle Creek as a municipal water supply since 1928. Daily usage ranges from 700,000 gallons per day during low season use to 2.3 million gallons in the summer. The City only has 800,000 gallons of storage capacity so a continuous supply of high quality water is especially critical. The utility serves roughly 3,500 people. The fire has already noticeably affected the taste and odor of the water.
  - Threats to the municipal water supply from increased sediment delivery include:
    - Damage to the functional integrity of the intake system
    - Reduction in the capacity of the intake system and the pipeline
  - Threats to water quality from the fire include:
    - Increases in turbidity
    - Burn ash (nitrate-nitrogen)

Threats to T&E Habitat:

- **Bull trout** – The biggest concern for fisheries resources is the delivery of large amounts of sediment (bedload) to the low gradient response reach of Myrtle Creek below the falls on the Kootenai Wildlife Refuge. This is the reach inhabited by bull trout. Much of this reach has sand/silt substrate from channelization and other past disturbances. Large amounts of bedload delivered by potential debris torrents and other erosional processes in the burned portion of the watershed will add to the degradation of bull trout habitat by covering any available spawning gravels that are left; filling pools, interstitial spaces, and other rearing habitat; and decreasing food availability by suppressing aquatic macroinvertebrates.

- **Grizzly bear, lynx, caribou** – The fire burned within the boundaries of the Myrtle Bear Management Unit (BMU), the Myrtle-Cascade Lynx Analysis Unit (LAU), and the Caribou Recovery Zone (CMU 6). In the long term, the fire opened habitat that will increase forage for grizzly bears and lynx. There was some loss of early winter forage and hiding cover for caribou. Based on these effects, no treatments will be proposed to mitigate effects of the fire to wildlife T&E habitat.

[1] The emergency is related primarily to tributary events…peak runoff and massive delivery of sediments to and through Myrtle Creek. Flooding in Myrtle Creek is not a primary concern. The design events are 1) long-duration, monderate intensity late-fall rain (with a shallow snowpack; and 2) a mid-winter "rain-on-snow" event. The latter is characterized by the area holding an essentially ripe mid-winter snowpack and driven by several days of a warm moist maritime airmass intrustion where the high water vapor content (not necessarily rain itself) provides energy through sublimation to convert large melt inputs. Any rainfall passes direct to the system compounding the runoff. Note, high-intensity thunderstorm events are not the primary disturbance factor.

[2] Mainstram flooding is not the issue.

Threats to Ecological Integrity/Site Productivity:

- **Noxious weeds** - Dispersed populations of several noxious weed species are scattered along the road systems through the fire. These weeds include:
  - spotted knapweed (*Centaurea maculosa*);
  - common tansy (*Tanacetum vulgare*);
  - yellow hawkweed (*Hieracium pratense*);
  - orange hawkweed (*Hieracium aurantiacum*).

  In forest environments, weed species serve primarily as early invaders after a disturbance, or to persist in chronically disturbed areas such as roadsides. After a disturbance – particularly a severe disturbance –weeds can rapidly invade new sites and expand their coverage dramatically.

  Particularly on dry habitat types, once noxious weeds are established, they can permanently displace native plant communities, resulting in a loss of ecosystem function. Spotted knapweed is a particular concern in is regards. 54% of the burn area is either dry forest habitat types or non-forest shrub habitat types particularly prone to weed invasion. Almost all of that is on the south and east aspects. Over 2/3 of the dry habitat types were subject to a severe burn, and most of the rest was a moderate severity burn.

  Most weed species are not as much of a long term threat on moist habitat types, because the denser natural vegetation will eventually out-competes those weed species that do invade in the immediate post-disturbance open environment. However, the two hawkweed species (above) can tolerate moderate shade, and have shown evidence of persistence and alteration of natural plant communities.

  The large amount of bare ground caused by the severe burn on south aspects also creates an opportunity for new invasion by weed species not previously found in Myrtle Creek. The Myrtle Creek road comes up immediately out of an agricultural valley with a wide variety of weed species, and freshly burned roadsides create an ideal highway for weed expansion.

  If untreated, the high severity of large parts of the burn, and the large percentage of dry habitat types in the burn area result in a high probability that existing noxious weed populations will expand dramatically, and displace native plant communities. This risk is primarily on the south and east aspects of the fire, which is where the dry habitat types are concentrated and the fire was most severe.

- **Soils:**
  - **Surface Erosion** – Post-fire soil erosion rates are expected to be less than five tons per acre per year in high burn severity areas, and approximately 1½ tons per acre per year in the moderate burn severity areas. These rates are within the natural range of variability and are not a threat to soil productivity. However, these erosion rates can have a negative effect on water quality.

  - **Mass Movement** – There are localized areas within the burned area that have the potential for mass movement, which would lead to loss of soil productivity. The north-facing slopes in the breaklands where there was high burn severity is an example of this. The 1935 aerial photos show evidence of slides following the 1926 fire, but they were not as widespread as would be expected from the slope. Depending on storm events and other climatic factors, the potential for mass movement could be more or less than seen after 1926. Another example of mass movement potential is the draw east of Yellow Pine creek, where the fire burned and killed trees in the upper portion of the drainage. The 1935 photos show evidence of mass movement throughout this drainage.

Very little can be done to effectively mitigate this type of mass movement; therefore, no treatments are planned to mitigate mass movement in these areas.

- **Vegetation: Ponderosa pine populations and dry forest habitat types**

  This fire burned 97% of the dry forest habitat types in all of 23,550 ac. Myrtle Creek – precisely the sites that were historically dominated by ponderosa pine. Over 2/3 of this dry site burn was in the severe category, killing in excess of 75% of all trees. The timber sale harvest units were focused on the large ponderosa pine, and the heat of the fire in these sale units caused especially high pine mortality.

  The fire burned 99% of the ponderosa pine forest type in all of Myrtle Creek. However, this was only 171 acres. The majority of the pine was growing in mixed species Douglas-fir stands. The fire burned 77% of all the Douglas-fir forest type in Myrtle Creek, and was especially concentrated, and especially hot in the south aspect stands with the most pine. Most of the pine in Myrtle Creek was within the fire area. It was a poor year for ponderosa pine seed production, and little to no natural regeneration is expected next year.

  This fire has caused a major significant reduction in the ponderosa pine seed source in the Myrtle Creek watershed. There is probably not enough ponderosa pine seed source left in Myrtle creek to ensure natural regeneration of pine to historic levels. Left to natural regeneration, ponderosa pine will be significantly reduced for one to several future forest generations. This will have impacts on forest dynamics and ecological resiliency on south aspect dry forest habitat types in the lower end of the Myrtle Creek watershed.

  As part of the long term restoration of this area, we recommend prompt replanting of ponderosa pine to restore the resiliency of these forests and to protect site productivity. **(Note that this is a post-BAER recommendation for continuity with management of the area. It is not included in the funding request.)** It is important to use seed from the appropriate seed zones that are adapted to these sites.

Threats to Transportation Infrastructure:

Myrtle Creek Road (FSR 633): Road 633 has a sustained grade of about 8%, is insloped with a ditch and few cross drains, and many of the culverts at crossings are old and undersized. Of the 50 culverts on Road 633 within the burn area, 21 are new pipes that were added or replaced in the last two years (16 crossings that were sized for a 100-year event, and 5 cross drains). All of the draws associated with the crossings sustained high or moderate burn severity for all or part of the drainage areas.

- **Stream Crossings** – The stream crossings with substantial high and moderate burn severity above them are not adequately sized for expected water, sediment, and organic debris loading. If a crossing does not have adequate capacity it may fail by:
  - Saturating the pipe, causing catastrophic failure;
  - Overtopping, leading to gullying and failure or partial collapse; or
  - Capturing the downslope ditch, causing catastrophic fill failure where ditch capacity is lost by volume or deposition.

- **Ditches** – The ditches on this road do not have adequate relief from expected loading from surface erosion of slopes above and backslopes, and from backslope sloughing. This may lead to ditch failure, directing water over the road, saturating or gullying fills, and leading to downslope gullying or debris avalanching.

- **Yellow Pine Retaining Walls (aka cribbing, bin walls)** - The retaining structure at Yellow Pine Creek consists of two walls constructed of driven wooden piles and wooden backing planks. The lower (eastern) wall has 5 fire-damaged piles and the planking adjacent to those piles are partially burned. The upper wall has 10 fire-damaged piles and burned planks. In several places, the backing planking burned from the top of the wall to the bottom. There is a high risk that the soil banks retained by these walls will fail during the coming winter if the damage is not repaired. A failure at these walls is not likely to spill over the road into Myrtle Creek, but it could block the road or block the ditch and cause concentrated water to be directed onto slopes that would create sediment delivery problems.

B. Emergency Treatment Objectives:

- **Reduce effects to the Bonners Ferry water supply, water quality, and intake structure (dam);**
- **Reduce effects to bull trout habitat in the lower reach of Myrtle Creek (below falls, on Kootenai Wildlife Refuge);**
- **Protect roads and crossings from flood flows, debris torrents, and other potential events;**
- **Reduce the threat of significant expansion of existing noxious weeds or invasion of new noxious weeds;**
- **Immediately increase soil cover and infiltration to reduce soil erosion, sediment delivery, and to limit loss of site productivity.**

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land **95** % Channel ___ % Roads **95** % Other ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Aerial Hydromulch	80	90	90
Aerial Mulch	90	90	90
Brush planting & Mulch	40	50	60
Ground Hydro Mulch, Seeding, Weed spot tx	90	90	90
Channel			
Roads			
Crossings, cross drains, retaining wall repair	90	90	90
Other			

E. Cost of No-Action (Including Loss):

The costs of no-action are indeterminent since they are not primarily resource-based; but rather are associated with the integrity and public health of the municipal water collection, delivery, treatment, and distribution systems.

Untreated, it is estimated that sediment loading from the fire has the potential of increasing the delivery of sediment to Myrtle Creek on the order of 3½ to 4 times the mean annual loading that occurred prior to the fire. In addition, this loading is expected to delivered as "pulses" rather than distributed over time; and that perhaps 60 percent of the storm derived sediments may be delivered to the vicinity of the domestic water intake system. The potential damages are loss of integrity and operation of the intake and the delivery system, overwhelming of the treatment facilities, and introduction of turbidity and pollutants beyond the capabilities of the system. The risks are expected to be at very high levels for the first five years following the fire in the untreated condition, with progressive reductions in risk over the next decade.

Given that the potential for large rapid inputs of sediment to Myrtle Creek are estimated in this assessment Assuming the damages to include loss of productivity of the land, loss of the access for commerce and other activities of the watershed, the partial loss of bull trout habitats below Myrtle Creek, the loss or reconstruciton of the Bonners Ferry water intake and delivery system; modification or new construction of treatment facilities; and the threat to public health; the no-action costs have the potential in the magnitude of tens of millions of dollars. The risks remain to be significant, but the responses are

F. Cost of Selected Alternative (Including Loss):

The effective and timely application of the proposed action is estimated to reduce the sediment loading to 1½ to 2 times the mean annual pre-fire loading with further significant progressive reduciton of risks after the first year.

G. Skills Represented on Burned-Area Survey Team:

[**x**] Hydrology	[**x**] Soils	[ ] Geology	[ ] Range	[ ]
[ ] Forestry	[ ] Wildlife	[ ] Fire Mgmt.	[**x**] Engineering	[ ]
[ ] Contracting	[**x**] Ecology	[ ] Botany	[ ] Archaeology	[ ]
[**x**] Fisheries	[ ] Research	[ ] Landscape Arch	[**x**] GIS	

Team Leader: **Rick Patten**

Email: **rpatten@fs.fed.us** Phone: **(208) 765-7403** FAX: **(208) 765-7307**

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Aerial Straw Mulching: Straw mulch is applied where ground cover was consumed by the fire and the expected soil erosion and runoff is expected to degrade soil productivity, stream channels, and water quality, specifically: draws and areas contributing to draws (416 acres), and other areas that sustained

high burn severity (approximately 80 acres). Aerial straw mulching will be completed with contract helicopter and pilots. Application rate of 2 tons/acre with certified weed-free straw.

Aerial Hydromulching: Hydromulch with tackifier and seed will be applied on aproximately 50 acres where erosion potential is high and the ground is too steep to apply and hold straw only.

Ground Hydromulching: Hydromulch with seed (using a truck) 200 feet above and below road 633 in areas that sustained high burn severity and in all cutting units within the fire boundary, except Unit 11, Treat Road 633E (the "jump up" road), road 2411 from the junction with 633 to the FS-BLM boundary in Section 14, and 633 from the West Side Road to the junction with road 2411. The hydromulching is for erosion control; the added seed mix is for noxious weed treatment (see Herbicide Spot Treatment below). Total acres to be treated include approximately 266 acres.

Brush Planting and Mulching: Native brush species to be planted and mulched on less than seven acres on lacustrine (highly erodible and excessively prone to slumping) soils within the moderate burn severity area with open canopies on USFWS land in Section 24. Also recommend broadcast seeding of red-stemmed ceonothus on these acres. The purpose for the brush planting is to establish deeper soil-holding root mass much more rapidly that is expected then by relying on native regeneration.

Noxious Weed Treatments: Treatments to reduce the spread of existing noxious weed populations will be focused on exiting roads and a 200' wide strip on either side of those roads. This is because the bulk of the existing weeds populations are along these roads, and the primary sites for weed expansion would be out from those existing populations. Weed treatments will focus on spotted knapweed, common tansy, yellow hawkweed, and orange hawkweed. If new noxious weed species with a potential for rapid post-fire expansion are discovered, they will be treated.

The Bonners Ferry Noxious Weed Management Environmental Impact Statement (EIS) was signed in September 1995. The chosen alternative provides for a mixture of manual, cultural, biological, and chemical weed control on 41 different sites, and also allows treatment on an additional 20% of acreage with new infestations. Four chemicals are allowed to be used, including 2,4-D. Risks in the municipal watershed were directly addressed in the EIS. Within Myrtle Creek, 5.8 miles of Roads 633 and 2411 are specifically designated for treatment. Part of Road 633 not specifically mentioned would be allowed under the anticipated 20% increase.

This Weeds EIS provides for 25 ft. stream buffers for chemical treatment. The recommended BAER treatment will utilize 50 ft. stream buffers, and the only chemical used will be 2,4-D, which is the least persistent, and least likely to migrate into the water.

Three treatments are planned:

1) Direct hand spot spraying of weeds both along the road right-of-way and 200' on either side of the road. Boom sprayers and broadcast spraying will not be used, to protect the native species already present on these sites. All spray will be hand spot spraying of 2,4-D either from backpack sprayers or from hand hoses running off power spray equipment. No spraying will take place within 50' of live, intermittent, or ephemeral stream courses.

2) Hand treatments of weeds within 50' of all live, intermittent, and ephemeral stream courses. Hand treatment includes pulling of knapweed, and cutting to ground line of tansy and hawkweeds.

3) Seeding of road shoulders and within 200' either side of the road (through all except those few sites where the fire was primarily an underburn that did not kill the overstory trees --cumulatively about 0.4 mile of road length), and reduce opportunities for weed expansion into unoccupied growing sites. (Weed expansion is most explosive when there is no competing vegetation occupying the growing sites). Seed will be mixed with the hydro-mulch that is being applied in the same locations for erosion control purposes, and applied as part of the hydro-mulch application.

Supplemental Noxious Weed Treatments: The original programmed weed monitoring in 2004 demonstrated the need for additional treatments in 2005 within the originally treated area of the fire. The additional treatments will require some backpack applications as well as manual pulling of individual plants.

The project will require an additional monitoring step in 2005 to assess the effectivenss of the weed treatments in response to the fire incident.

Early Warning Signs: Two signs, one for placement near lacustrine area on USFWS land and one for placement near Yellow Pine creek, warning of flash flood, debris, and falling trees.

Channel Treatments:

Straw check dams: Install straw check dams in selected headwaters of draws on the east side of the fire to capture sediment.

Roads and Trail Treatments:

Stream Crossings: Construct competent surface cross drains for 49 culverts on the 633 road and 4 crossing on the 633e "Jump Up Road) with adequate capacity and hardening to carry storm runoff, sediment, and debris in the event that the installed culverts fail to operate. The design criteriea is to safely transport all water flow, sediment, and debris across the roadway and past the road fill without causing the loss of the fill, excessive erosion below the outfall, or capture of the adjacent ditchl ine. Additional surface cross drains will be constructed in areas with rock substrate on the fill slope. Some old, shallow culverts may be removed. Approximately six crossings may need additional riprap at the outlets. Erosion control mats (ECRM) may be used at the bottom of some outlets to keep water from eroding the draws.

Yellow Pine Retaining Wall Repair: Planking and pilings will be replaced on burned sections of the wall. Rock buttresses will be added to sections on the upper wall. This temporary fix will hold the substrate in place for one to five years, until a permanent solution can be planned and constructed.

Facilities:

Clear catch basins and inlets of all obstrucitons, accumulated sediment and debris prior in the fall prior to significant snow pack development.

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Comment [SFD1]: Rick---add more narrative to this section.

Weather:

- "Early Warning." Establish with National Weather Service and Boundary County a weather forecast and observation system that will provide adequate information to produce timely forecasts of upcoming severe storm producing events (such as mid-winter rain-on-snow, rapid spring melt off, and late fall long-duraiton precipitation events). The purpose would be to alert the City in time to shut down or modify their collection and treatment operations to avoid damage or loss. The initial request if limited to establishment of the site and the first year operation. Cooperative funding and operation strategies are being developed for out-years.
- Alternatives may include adding sensors to the Hidden Lake SNOTEL facility and increasing it reporting frequency; or installation of RAWS facility in Myrtle Creek for five years.

Water Quality:

- Record and document the magnitude of peak flows in Myrtle Creek and selected tributaries with crest gages. (3 years under the emergency funding. The Forest will continue for 5-10 years.)
- Collect inforation to estimate annual sediment loads in Myrtle Creek. (3 years under the emergency funding. The Forest will continue for 5-10 years.)
- Investigate installation of a turbidity reporting system above the water supply intake with telemetry capability. (1-3 years)
- Record concentration of NO_3 – N in Myrtle Creek from delivery and incorporation of burn ash into Myrtle Creek. (2 years)

Land Treatment Monitoring:

- Monitor aerial mulched treatment areas for weeds. If weeds are found, an interim report will be submitted for funding to treat weeds.
- Measure the effectiveness of aerial mulching within the affected draws and steep areas with respect to longevity of the straw and regeneration of root mass. (RMRS may be an effective partner.)

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			NFS Lands				Other Lands			All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land Treatments										
Aerial hydromulch w/seed	acre	3000	50	$150,000	$0		$0		$0	$150,000
Aerial mulch draws & contr areas	acre	800	380	$304,000	$0	40	$32,000		$0	$336,000
Aerial mulch outside draws	acre	800	80	$64,000			$0		$0	$64,000
Ground hydromulch w/ seed	acre	2000	215	$430,000		40	$80,000	60	$120,000	$630,000
Weed spot treatment	mile	6980	4.5	$31,410		0.75	$5,235	1.25	$8,725	$45,370
Brush plant w/ mulch	acre	700		$0	$0	7	$4,900		$0	$4,900
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$979,410	$0		$122,135		$128,725	$1,230,270
B. Channel Treatments										
Straw check dams in headwaters of East-side draws	site	300	50	$15,000	$0		$0		$0	$15,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$15,000	$0		$0		$0	$15,000
C. Road and Trails										
Repair bin walls	each	9000	1	$9,000	$0		$0		$0	$9,000
Rolling dips, water bars, riprap, catch basin improvement, ECRM, rocks for drivable dips.	each	80000	1	$80,000	$0		$0		$0	$80,000
Dig out catchbasins after fall rains	each	93	54	$5,022	$0		$0		$0	$5,022
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$94,022	$0		$0		$0	$94,022
D. Structures										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
		34000	1	$34,000	$0		$0		$0	$34,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$34,000	$0		$0		$0	$34,000
F. Monitoring										
Effectiveness of specific treatment		2500	2.5	$6,250	$0		$0		$0	$6,250
instream trubidity w/telemetry		4000	1	$4,000	$0		$0		$0	$4,000
Early warning weather		15000	1	$15,000	$0		$0		$0	$15,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$25,250	$0		$0		$0	$25,250
G. Totals				**$1,147,682**	**$0**		**$122,135**		**$128,725**	**$1,398,542**

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date