

Date of Report: 11/03/2011

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 1. Funding request for estimated emergency stabilization funds
- ☐ 2. Accomplishment Report
- ☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☐ 2. Interim Report #_____.
 - ☐ 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: Big Hump | B. Fire Number: WA-OLF-000124 |
| C. State: WA | D. County: Jefferson |
| E. Region: 06 | F. Forest: Olympic |
| G. District: Hood Canal | H. Fire Incident Job Code: P6GD87 |
| I. Date Fire Started: 09/01/2011 | J. Date Fire Contained: 10/25/2011 |
| K. Suppression Cost: \$ 930,000 | |
| L. Fire Suppression Damages Repaired with Suppression Funds | |
| 1. Fireline waterbarred (miles): XXXX | |
| 2. Fireline seeded (miles): XXXX | |
| 3. Other (identify): XXXX | |
| M. Watershed Number: 1711001804 (Duckabush River) | |
| N. Total Acres Burned: | |
| <input checked="" type="checkbox"/> 1,243 NFS Acres | <input type="checkbox"/> Other Federal <input type="checkbox"/> State <input type="checkbox"/> Private |

O. Vegetation Types:

- Western Hemlock – wet (86 ac, 0.7% of fire); low elevations along Duckabush River:
- Western Hemlock – dry (613 ac, 47.7% of fire); mid elevations, major tributary drainages, area along trail. NOTE: areas of low site index/productivity adjacent to trail and above trail in “non-forested” areas will result in longer period of vegetative recovery.
- Non-forested areas (319 ac, 24.8% of fire); mid to upper elevations. NOTE: much of this vegetation type has low site productivity and will result in longer period of vegetative recovery.
- Douglas fir (179 acres, 13.9% of fire); scattered higher elevations
- Silver Fir –dry (41 ac, 3% of fire); scattered higher elevation drainageways

P. Dominant Soils: Predominant parent material is colluvium and residuum from marine basalt (60%), marine basalt (30%), and cemented alpine glacial till and marine basalt (10%). Marine basalt and colluvium from marine basalt spans 2/3 of the mid to upper portion of the fire, while glacial till covers the lower 1/3 of the fire perimeter.

Soils are generally very shallow to moderately deep, with significant areas of rock outcroppings. Surface and subsurface soils have textures of sandy loams with 35 to greater than 60 percent rock fragments (gravels, cobbles). Soils are well drained, with moderately rapid permeability.

Q. Geologic Types: Parent materials are predominantly marine basalts of the Crescent Formation. These extrusive volcanic rocks are mainly basalt, massive flows, pillows, and breccia, with minor diabase, gabbro, and hydrothermally altered volcanic rocks. Landforms are mostly glacial troughwalls formed from alpine glaciation (upper ½ of fire perimeter), mountain slopes and inner gorges, and moderately dissected mountain slopes and glacial valleys.

Slopes are very steep on the upper ¾ of the fire perimeter, ranging from 60 to greater than 80 percent. The lower ¼ of the perimeter have slopes ranging from 30 to 60 percent.

Geologic hazard and mass wasting potential (prior to fire) is mapped as “high” spanning 40 percent of the fire perimeter, and mostly located in the glacial troughwall and inner gorge landforms. Very steep concave dissected headwalls in these landforms in proximity to “0” and “1st” order stream channels are most susceptible to shallow rapid debris landsliding. No deep seated mass wasting features were mapped within the fire perimeter. Sediment delivery efficiency of these landforms is high.

Landforms

Glacial troughwalls	399 ac
Mountain slopes	388 ac
Inner gorges	329 ac
Glacial valleys	115 ac
Glacial outwash plain	12 ac
Floodplains/low terrace	0.8 ac

Parent Material

Colluvium from marine basalt	787 ac
Marine basalt	329 ac
Cemented till and marine basalt	115 ac
ablation till over outwash	12 ac

Slope Steepness

0-30%	186 ac
31-60%	275 ac
61-80%	166 ac
>81%	615 ac

Geohazard Terrain

Low	201 ac
Moderate	562 ac
High	545 ac

R. Miles of Stream Channels by Order or Class:

Predominantly 2nd and 3rd order streamcourses. Channel gradients mostly greater than 20 percent with high sediment delivery efficiency.

2.3 miles intermittent
2.7 miles perennial

Channel Gradients

>20%	4.94mi
4 to 8%	0.03mi
2 to 4%	0.002 mi
<1%	0.06 mi

Stream Order

1 st	0.09 mi
2 nd	3.28 mi
3 rd	1.66 mi

S. Transportation System

Trails: 3.7 miles Roads: 0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 167 (low) 591 (moderate) 485 (high)

B. Water-Repellent Soil (acres): Based on field observations in burn severity areas, no water-repellents indicators were observed. Soil burn severity appears to be moderate to low. This is based on soil textures, percentage of surface soil rock fragments, and burn intensity observed.

C. Soil Erosion Hazard Rating (acres): 150 (low) 179 (moderate) 914 (high)

D. Erosion Potential: XXX tons/acre

E. Sediment Potential: XXX cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

In the Duckabush watershed in the vicinity of the fire, precipitation ranges from 70 to 80 inches annually with most of the precipitation occurring between October and May. Precipitation occurs primarily in the form of rain-on-snow in the higher elevations (above 1,500ft) and rain in the lower elevations (below 1,500ft). Although precipitation peaks from November to January, runoff peaks from March to June in response to snowmelt from higher elevations. Maximum peak flows are a result of rain-on-snow events within the transient snow zone and are flashy and relatively unpredictable. The transient snow zone occurs above 3,000 feet. Runoff response shows a moderate to rapid response in precipitation events. The seasonal variation in runoff follows the precipitation pattern, and is characterized by high winter flows and moderately low summer flows. Delivery of water from steep first and second order channels is generally rapid. The southerly aspect within the fire perimeter results in loss of snowpack sooner than northerly aspects.

Precipitation Zones

Rain-dominated 215 ac
Rain-on-snow 855 ac
Snow-dominated 172ac

A. Estimated Vegetative Recovery Period, (years): 5 to 8 years

The majority of the burned area will recover within 5 years. The areas with low to moderate burn severity should have sufficient understory grasses and shrubs to restore ground cover and infiltration rates. Infiltration is likely to improve the preburn condition, where overstory limited understory growth. Estimate 6 to 8 years in moderate and high burn severity areas, except in low productivity non-forested rock outcrop areas.

B. Design Chance of Success, (percent):

C. Equivalent Design Recurrence Interval, (years):

D. Design Storm Duration, (hours):

E. Design Storm Magnitude, (inches): XXX

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

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

H. Adjusted Design Flow, (cfs per square mile): XXX

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats (narrative):

1. Critical Natural and Cultural Resources –

The following summary describes the conditions that warrant both emergency rehabilitation actions while also addressing other resource/cultural values that do not warrant treatments at this time.

Invasive Plants – Values at risk include the potential spread of existing and potential noxious weeds into the Brothers Wilderness and Olympic National Park. Threats exist of known sites spreading into the fire perimeter and wilderness, and possible introduction of noxious weeds being introduced into the area associated with fire suppression activities. Therefore, **the BAER Team is recommending BAER emergency treatments and monitoring.**

The fire is entirely located within wilderness-managed lands of Olympic National Forest. The western perimeter is located approximately 2,000 feet from the Olympic National Park boundary. Maintaining native ecosystems is important in wilderness areas and in national parks. On the Olympic National Forest, the primary focus for wilderness area management is to “preserve and protect the primeval character” of such places, and to “implement a non-degradation policy aimed at maintaining each Wilderness in at least as wild a condition as it was at the time of Wilderness classification” (USDA, 1990). Invasive species have been identified by the Chief of the USDA Forest Service as one of the four most significant threats to our Nation’s forest ecosystems because they disrupt ecosystem function, reduce biodiversity and degrade ecosystem health. In light of these consequences, control and prevention of invasive plant introductions into Wilderness are very important in reaching the Agencies stated goals regarding Wilderness areas.

There are no known invasive or noxious weed infestations within the perimeter of the Big Hump fire, and only two documented infestations of non-native plants – a small patch of creeping buttercup (*Ranunculus repens* var *repens*) and two holly (*Ilex aquifolium*) shrubs - in the Brothers Wilderness. Prior to the Big Hump fire, preliminary weed surveys took place in the summer of 2011 on the Duckabush trail corridor, and campsites associated with this trail. No invasive plant infestations were documented inside the Big Hump fire perimeter during these surveys. Land disturbed by wildfire is especially susceptible to noxious weed invasion due to less vegetative competition, abundant nutrients released, and abundant sunlight.

Although located outside the fire perimeter, the Duckabush trailhead (approximately 2.0 miles from the eastern perimeter) has many different species of weeds, including Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*), cutleaf blackberry (*Rubus laciniatus*), common tansy (*Tanacetum vulgare*), bull thistle (*Cirsium vulgare*), St. Johns wort (*Hypericum perforatum*), tansy ragwort (*Senecio jacobaea*), and herb Robert (*Geranium robertianum*). The Duckabush trail receives high use from both hikers and stock, with a total of 3370 people using the trail in 2011, even with the shortened season (late spring snowmelt to early Sept closure due to fire). In addition to propagules being transported from the weeds growing at the trailhead, stock can also carry seed in their coat or from weeds consumed prior to arriving at the trail. Although a weed free hay standard has been adopted by the Forest Service, compliance is thought to be low due to a lack of enforcement, problems with finding suppliers, and limited outreach to the public regarding this relatively new standard. Because of the rich weed flora at the trailhead, and the high use of the trail by both stock and hikers, it is very likely that propagules will be transported from this location into the fire perimeter.

Several other weed species not found at the trailhead (knapweed, reed canary grass, Canada thistle, English holly, and everlasting peavine) also occur along the 2510 road within one mile the trailhead, but these are less likely to spread into the fire perimeter than those located at the trailhead itself. However, some of these species have dispersal methods that do make them capable of dispersing long distances, including Canada thistle (wind dispersed) and English holly (bird dispersed), both of which have been found associated with the Duckabush trail either within the Brothers Wilderness or the Olympic National Park.

Several small populations of weeds have been documented in Olympic National Park along the Duckabush trail. These small populations were all under 150 m², and were discovered during surveys conducted after the 2009 Ten-Mile fire (as a response to that fire) which burned over 750 acres about two miles west of the Forest/Park boundary in the Duckabush River watershed. These species include one patch of herb Robert (*Geranium robertianum*) near the Ten-Mile camp, and four patches of Canada thistle (*Cirsium arvense*) growing near the Dosewallips River. Park Service staff has been working on eradicating these weeds, but even after more than two years of treatment, these infestations still persist.

Wilderness Resource Values – Values at risk that were identified include scenic, aesthetic and wilderness experience. Threats to the Brothers Wilderness are impacts associated with the fire, suppression activities (helispot and access trail constructed) and potential BAER treatments on these wilderness values. As previously mentioned, the entire Big Hump Fire burned within the Brothers Wilderness. This wilderness area provides access to Brothers Peak, one of the more popular climbs in the Olympic Mountains. Mount Jupiter and Jupiter Lakes also provides wilderness experience with access to popular day hiking and camping. **No burned-area emergency situations related to the wilderness resource itself have resulted from the Big Hump Fire.** No large scale erosion-control (for example, terracing, seeding, spreading of hay) have been recommended by BAER team members for implementation within Brothers Wilderness, and none are appropriate. Issues related to the maintenance of wilderness values were evaluated during the BAER treatment development process. A thorough analysis using the Minimum Requirements Decision Guide (MRDG) tool for all alternatives of potential BAER treatments and suppression activities was conducted and will be approved by the Deciding Official prior to implementation.

Cultural Resources – There are no known cultural values at risk within the fire perimeter. No artifacts or other cultural resources have been located within the burned area. The area has not been previously surveyed. One historic trail, the Duckabush Trail, is located within the burned area. The trail has not been previously recorded but was built in the 1930s by the Civilian Conservation Corps. **Based on the BAER Team's field survey and analysis, no emergency BAER treatments are needed to protect cultural resource values as a result of the fire.**

Site Productivity – Values at risk include loss of soil productivity due to fire intensity, surface erosion, potential mass wasting and other detrimental conditions. Based upon the soil resource information gathered and field investigations, it is not anticipated that there is an imminent threat to values at risk that would warrant emergency stabilization actions directed towards the soil resource within the Brothers Wilderness. **No emergency BAER treatments are being proposed to address this resource value due to potential threats associated with the fire.**

The inherent soil productivity is low to moderate in the Big Hump Fire perimeter. Soils are derived from marine basalt, colluvium from marine basalt, and alpine glacial till. Risk of soil

erosion (sheet, rill, gully) is high within landforms on slopes greater than 60 percent that have moderate/high burn intensities, including glacial troughwalls, inner gorge and glacial valleys. Landslide risk is moderate, and primarily focused on moderate/high burn intensity areas within headwalls and stream-adjacent areas of glacial troughwall and inner gorge landforms. Shallow rapid landsliding and potential debris flows may occur in the future, resulting from winter high intensity rainstorms and rain-on-snow events. This landsliding would likely be confined within the 5 major stream channels that intersect the trail within the perimeter, due to the confinement and incised nature of debris chute features. Soil erosion potentials are moderate to high, and sediment yield potential is high based on landform interpretations. However, the acreage is in high burn intensity within landforms with high erosion potential is low (387ac or 30% of fire). Soils throughout the fire area have high infiltration rates. Expected sediment sizes would be coarse sandy loams and sands.

Potential slope instability areas are primarily associated with very steep, glacial troughwall landforms located in the upper 2/3 of the slopes within the fire perimeter. Soils are shallow to moderately deep and comprise significant rock outcroppings. These slopes have moderately high soil erosion potential and moderate to high sediment yield potential. Mass movement is typically ravel, occasional debris slides and avalanches, and rock fall. One north-facing slope in Red Blanket Canyon has naturally very severe soil erosion potential and high sediment yield potential, with mass movement involving sloughing, slumping, channel scouring, raveling and debris avalanches (landtype unit 5).

Overall, the fire produced a light and moderate burn severity scattered over the landscape in a mosaic pattern, with patches of high severity burn surrounded by low, moderate, and unburned vegetation. The majority of high severity burn areas tended to be on slightly convex hillsides and on high elevation ridgetops and glacial troughwall areas.

Water Quality – Values at risk include high water quality for aquatic habitat in the Duckabush River and Jupiter Lakes area. Based upon BAER Team's investigations, no significant threats to these values were determined. **No emergency BAER treatments are being recommended to protect these resource values since threats associated with the fire do not appear to be significant.**

Water quality in the fire perimeter and downstream is high, and is critical for many uses including aquatic habitat, recreation and aesthetics. Sediment and ash are potential water quality concerns.

Aquatic Habitat (Streams) -Potential values-at-risk are negative effects to ESA-listed Steelhead and Puget Sound Chinook salmon habitat. Extent of this habitat is approximately 0.8 miles downstream from the southeast corner of the fire perimeter. The potential exists for increased sedimentation resulting from the Big Hump Fire. Areas with moderate/high burn intensities on steep slopes within potentially unstable landforms pose a risk of delivering sediment through shallow rapid landsliding and surface erosion into the Duckabush River. Resident fish habitat (cutthroat trout) exists directly below these tributaries that may deliver increased sediment. Fish habitat in these streams based on Level II Hankin and Reeves surveys is very good. Increases in turbidity and suspended solids can have negative effects on the physiology and behavior of salmonids as well as on their habitats. Examples of physiological effects include gill trauma, increased blood sugars, and osmotic imbalances. Behavioral effects can include avoidance, changes in foraging ability, responses to predation risk, and territoriality. Habitat effects include changes to spawning and rearing habitats.

Water quality at Jupiter Lakes in the Brothers Wilderness –the largest lake (Jupiter) was used as a dipping source for helicopter buckets during fire suppression efforts. Algae blooms were a possible water quality concern, but not considered as a BAER treatment.

Wildlife Resources - The wildlife values at risk from the fire, as well as the suppression and rehabilitation efforts include: 1) standing, dead trees that are important foraging and nesting habitat for many bird and mammal species, including Northern spotted owls; 2) standing green trees that may be nest trees for marbled murrelets and bald eagles and broken-topped, standing green snags that may be nests for owls, both of which may have been burned sufficiently so as to compromise their stability and long-term utility; 3) coarse, woody debris that may have been consumed by the fire, and which provide nesting habitat for some amphibians and sources of food for other species; 4) understory vegetation such as vine maple, bigleaf maple, and huckleberry bushes that provide important food sources for many birds and mammals, including flying squirrels, the main prey of Northern spotted owls; and 5) individual species of wildlife that may have suffered direct mortality or disturbance from the fire or suppression efforts. For the first three values, it should be noted that larger size classes of snags, trees, and downed wood (> 20" for example) are of greater value to wildlife due to longevity, providing a greater amount of protective cover, and having the potential for a wider range of species use (Laudenslayer et al. 2002). **No emergency BAER treatments are being recommended to protect these resource values since threats associated with the fire do not appear to be significant.**

2. Threats to Human Life, Safety and Property –

The following summary describes the conditions that warrant both emergency rehabilitation actions, while also addressing other resource/cultural values that do not warrant treatments at this time.

Trails – There are approximately 3.7 miles of trail within the fire perimeter. The values at risk include hiker and stock safety, and potential/anticipated trail erosion, rockfall and blowdown over the winter months. These impacted trail segments have already experienced serious trail damage resulting from the fire prior to onset of winter rainstorms. The most hazardous areas are located along about 2.5 miles of trail within the perimeter, and are adjacent to steeper trail segments within moderate and high burn severity areas. These segments have high potential for further erosion, additional sloughing of trail cuts and fills, further damage to trail drainage structures, and additional loss of trees and other vegetation. Numerous underlying root systems have burned, creating holes and total collapse of tread surface. Extensive numbers of downed trees are located in these areas. Rockfall areas also pose a threat to safety on approximately 1.2 miles of trail, where the trail is located directly downslope of moderate/high burn severity on rock outcrop/shallow soils with a history of debris fall. Based on the BAER Risk Assessment Matrix, there are Very High risks to both property and visitor use/safety. Furthermore, the current trail and property damage will also pose a major safety risk into the future.

The presence of hazard trees (and the well-documented increased likelihood of fire-killed trees for wind-throw) near high-use sites present a safety hazard to wilderness visitors and their stock. The risk would be highest at stopping points along the trail and at traditional camping/stock-tethering areas such as Five Mile Camp. The Duckabush trail along this segment (first 5 miles from trailhead) is extremely popular with day hikers and stock use, and has become fairly entrenched by heavy use. Earthen drainage structures are expected to be

ineffective due to slope ravel filling drainage structures. Hence, trails are expected to intercept surface runoff and result in trail erosion. Emergency drainage construction in the trail will reduce the risk of gully development and reduce the potential of erosion of the trail.

Additionally, the potential for additional threats to hiker and stock safety exist over time, especially with approaching winter in an area subject to high intensity rain-on-snow weather events. These include increased sheet, rill and gully erosion on these trail segments due to slope steepness, burn severity, landforms, soil types and topographic location of the trail. Further erosion over the winter threatens to inflict further damage to trail drainage structures, including switchbacks, retaining walls, and shallow stream fords. Immediate action is needed to prevent further damage to the trail and the wilderness resource. **Because of the potential for future damage to trail infrastructure, increased erosion and sedimentation in the wilderness, and safety concerns for BAER implementation workers, BAER treatments are being proposed on approximately 2.5 miles of trail.**

The trail is currently closed with a CFR area closure, along with the road to the trailhead blocked by a jersey barrier and signage. The Forest will maintain the trail closure with the expectation that it will be re-opened in the spring/early summer 2012, after the BAER treatments that address trail drainage structures and safety have been evaluated and treatments completed.

B. Emergency Treatment Objectives:

The non-structural land treatments proposed for weed control and monitoring helps to maintain site productivity and ecosystem function by inhibiting weed establishment and spread. This is done by Integrated Weed Management that will be treated by hand removal methods. An invasive plant monitoring treatment will be applied to survey for any new populations on FS and NPS lands. Monitoring will also be used to assess the effectiveness of weed treatments on lands where weeds are controlled. Threats to public safety will be identified through hazard tree assessment, warning signs and trail drainage work designed to improve safety.

The primary objective of the proposed treatments is to provide for public safety for recreationists and their stock, and the BAER implementation teams, along the 3.7 miles of trail within the Big Hump Fire perimeter. Unless high risk hazard trees are felled along the entire stretch of these trails, emergency erosion control work would be very dangerous. To reduce the risk to BAER implementation personnel and crews, hazard trees must be felled prior to any erosion control treatment. Threats to public safety will be identified through hazard tree assessment, communicated by warning signage placed at the trailhead, and work on trail drainage structures to improve public safety and prevent further damage to the trail. Objectives are also to assist with the natural recovery and minimize on-site damage to values at risk within the wilderness. The non-structural land treatments proposed for invasive weed control helps to maintain site productivity and ecosystem function by inhibiting weed establishment and spread within the wilderness. This is done by Integrated Weed Management that includes manual and chemical control methods in the burned areas in the infested portions along the Duckabush trail and trailhead.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land 0% Channel NA% Roads/Trails 60% Protection/Safety 40%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	75	70	70
Channel	NA	NA	NA
Roads/Trails	90	90	90
Protection/Safety	75	90	90

E. Cost of No-Action (Including Loss):**F. Cost of Selected Alternative (Including Loss):** \$231,727**G. Skills Represented on Burned-Area Survey Team:**

<input type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

Team Leader: Scott Hagerty**Email:** shagerty@fs.fed.us **Phone:** 360-765-2249**FAX:** 360-765-2202**H. Treatment Narrative:**

Overall Goal of Proposed BAER Treatments: To provide for safe travel and use by the public and for BAER implementation treatments, and to control and reduce the spread of noxious weed populations, thereby enhancing native plant recovery.

Land Treatments:**Noxious Weed Surveys and Treatments:**

Purpose - To discourage the introduction and rapid spread of noxious weeds and encourage natural vegetation recovery within the fire perimeter in the Brothers Wilderness.

Treatment #L1: Treatment of new infestations and potential sources of future infestations

Treatment Objective – Implement treatments at the Duckabush trailhead to eliminate current noxious weed infestations and to prevent potential sources of future infestations.

Treatment Description - The Duckabush trailhead is heavily infested with a wide variety of weeds and is the most likely source of weed propagules in the future for the area directly affected by the Big Hump fire. This area should be treated with herbicide on two separate occasions in 2012 – the first treatment in mid-summer and a second follow-up treatment near the end of the growing season. Since this is an area of an established weed infestation, the follow-up treatment is extremely important because 1) weed seeds will be stimulated to germinate after the first treatment and these need to be eradicated to maximize the effectiveness of the first treatment, 2) some weeds may not be completely killed with only a single treatment, and 3) even the very best applicators will miss a few weeds – it's extremely difficult to get everything in a single pass in even lightly infested areas. Funding for one full 10 hour day for a three person crew will cover the costs for these two separate treatments.

Treating the two existing infestations of creeping buttercup and English holly along the Duckabush trail will also eliminate propagules sources. This is particularly important for English holly, whose berries can be distributed long distances by birds. These infestations can be treated on the way to conducting weed treatments within the fire perimeter, so funding requests are lumped in with those treatments.

Eradicating new infestations while they are small and manageable is extremely important, especially in light of the remoteness of the area directly affected by the fire, which makes larger populations extremely difficult and expensive to treat. Any new infestations discovered within the fire perimeter along the Duckabush trail corridor, at the helicopter landing site, and along the associated trail leading to the landing site will be very important to treat. These areas should be targeted because they are the most likely to receive weed propagules and are vulnerable to infestation because of the disturbance created by the fire. Funding for three 10 hour days for a three person crew will cover the cost of surveying for new infestations and completing these treatments. These costs will also cover treating the known populations along the trail outside the fire perimeter (see above), and pre-trip preparation, since an overnight stay within the fire perimeter will be necessary to efficiently complete the work.

Funding for two 8 hour days of office work for the Forest Service Botanist supervising and coordinating the above activities is also being requested. This will cover data management, logistical support, etc.

Roads and Trail Treatments:

Purpose: Implement actions to minimize fire-related surface erosion on the Duckabush trail, and provide for the safe implementation of the BAER erosion control treatments by removing hazard trees.

Treatment #T1 – Reconstruct/Construct Trail Drainage Structures

Treatment Objective –Implement erosion control work (water bars, etc.) on approximately 2.5 miles of trail to reduce the potential for the concentration of water flow and accelerated surface erosion resulting from the increased runoff caused by intense fire effects (this includes portions of trails that are in the high and moderate burn severity areas). The amount of erosion control work will be the minimum needed to prevent further fire-related runoff damage to the existing trails.

Treatment Description – Two two-person Forest Service crews will work to remove hazard trees and install drainage structures before the onset of winter. Work to preserve the trail will begin immediately and continue until winter weather renders the BAER implementation unsafe. Trail work will follow established National Forest trail standards. Drainage structures (waterbars, switchbacks, retaining log/walls, and shallow stream fords) will be repaired or installed where needed to prevent significant erosion and negative impacts to infrastructure and resources within the wilderness. Initial erosion control and drainage work will begin in the winter. Further work on trail drainage structures will commence again in the spring. The intent of this work will be to prevent further erosion and negative impacts to the wilderness resource, as well as ensure safe use of the trail by visitors and Forest Service employees.

Treatment #T2 – Trail Hazard Tree Abatement

Treatment Objective – Remove the minimum number of high hazard trees along trails (including ingress and egress to sites for treatment #S1) prior to commencing Treatment #T1, to provide for the safety of BAER implementation personnel and crews.

Treatment Description – Unless high risk hazard trees are felled along the entire stretch of these trails, emergency erosion control work would be very dangerous. Trees will primarily be cleared with cross-cut saws, with chainsaw on only the most technical and unsafe trees for the BAER implementation team and long term benefit for public safety. Crews will primarily be self-supported.

Protection/Safety Treatments:

Purpose – Implement actions to allow for BAER Implementation treatments along the Duckabush Trail and to provide for safety of our publics and BAER implementation teams. These treatments are intended to provide access to complete various BAER treatments and monitoring along the trail and to reduce the risk to personnel during winter 2011 and spring 2012 and visitors once the trail is reopened in summer 2012.

Treatment #S1 – Hazard Tree Assessment

Treatment Objective – Evaluate safety along the trail by identifying hazard trees in areas of dispersed recreational use (campsites, lunch areas, overlooks) along the Duckabush Trail where visitors spend extended periods of time.

Treatment Description – One Forest employee will conduct a hazard tree analysis of dispersed recreational sites along the trail (including Five-Mile Camp). This analysis will identify potential snags along the trail that pose a threat to visitor safety.

Treatment #S2 – Hazard Warning Signage

Treatment Objective – Promote user safety on the Duckabush Trail through education of visitors on fire safety and hazard tree identification.

Treatment Description – The current kiosk at the Duckabush Trailhead does not display sufficient trailhead, hazard tree, and fire safety information to ensure public safety. Treatment work will cover the cost of staff time to develop and install new signage on the kiosk.

I. Monitoring Narrative:

Implementation monitoring will be completed for all BAER treatments. Specifics of these activities will be outlined in the final BAER report. Cost estimates in Part VI for monitoring is preliminary. Implementation monitoring of other treatments will be done as treatments occur and the costs have been included as part of the treatment costs.

Geotech/Slope Stability Assessment -Monitoring/assessment plan is to complete a stability and hazard assessment for the high risk areas with potential for rockfall that is in close proximity to the Duckabush Trail. Approximately 1.5 miles of the trail are located directly below very steep rock outcrop complexes where moderate burn severity exists as a result of the fire. Historic rockfall (including large boulders) exist along these areas. Rockfall and trees deposited onto the roadway will be monitored winter 2011-12 by evaluating accumulation through the winter weather cycle with an observable reduction in rock and debris fall in the spring. The goal is to observe a decline to background or historic level of activity, remove debris and remaining hazard trees, and re-open the trail in the spring or early summer. The final conclusion and timing will be dependent on the results of our monitoring and assessment.

Part VI – Emergency Stabilization Treatments and Source of Funds**Interim #**

<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
T1 - Reconstruct/Construct Trail Drainage Structures	Mi	16800	2.5	\$42,000	\$0		\$0		\$0	\$42,000
T2-Trail Hazard Tree Abatement	Mi	4000	2.5	\$10,000	\$0		\$0		\$0	\$10,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$52,000	\$0		\$0		\$0	\$52,000
D. Protection/Safety										
S1-Hazard Warning Signage	Ea	1133.4	1	\$1,133						\$1,133
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$1,133	\$0		\$0		\$0	\$1,133
E. BAER Evaluation										
Admin/Overhead costs	Ea	16200	1	\$16,200			\$0		\$0	\$16,200
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$16,200	\$0		\$0		\$0	\$16,200
F. Monitoring										
Rockfall/Stability monitoring	Ea	1,500	3	\$4,500						\$4,500
Trail Treatments	Ea	5,000	1	\$5,000						\$5,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$9,500			\$0		\$0	\$9,500
G. Totals										
Previously approved										
Total for this request				\$83,263			\$0		\$0	\$83,263

PART VII - APPROVALS

1. /s/ Dale Kom 11/30/2011
Forest Supervisor (signature) Date

2. /s/ Nora B. Rascoe (for) 11/30/2011
Regional Forester (signature) Date

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