USDA-FOREST SERVICE FS-2500-8

Date of Report: 09/22/14

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[X] 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: Johnson Bar

B. Fire Number: ID-NCF-000390

C. State: ID

D. County: Idaho

E. Region: 01

F. Forest: Nez Perce-Clearwater

G. District: Moose Creek Ranger District

H. Fire Incident Job Code: P1JA8G

I. Date Fire Started: 08/03/2014

J. Date Fire Contained: estimated 10/30/2014

K. Suppression Cost: $10,300,000 as of 09/02/2014

L. Fire Suppression Damages Repaired with Suppression Funds
1. Dozer Fireline repaired (miles): 21.0 as of 09/09/2014
2. Excavator Fireline repaired (miles): 1.2 as of 09/09/2014
3. Feller Buncher Fireline repaired (miles): 3.1 as of 09/09/2014
2. Hand Fireline repaired (miles): 10.5 as of 09/09/2014

M. Watershed Numbers (as of 8/24/2014):

6th HUC	HUC Name	Acres Burned
170603020405	Goddard Creek - Selway River	7209
170603040201	Big Smith Creek - Middle Fork Clearwater River	1297
170603020404	O'Hara Creek	290
170603030708	Glade Creek-Lochsa River	7

N. Total Acres Burned (as of 08/24/2014): 8498 acres
NFS: 8326 State: 320 Private: 158

O. Vegetation Types: The habitat groups found within the fire consist of groups 5 and 6 from the Nez Perce-Clearwater National Forest Target Stand Groups. The habitat types in Group 5 (moderately cool and moist western red cedar) are characterized by mixed species stands of western red cedar, grand fir, and Douglas fir, with diverse shrub and forb understories. Western white pine, larch, and ponderosa pine are less frequent components. Cedar/Clintonia is the habitat type in this group most frequently found. These habitat types are common in the western portion of the subbasin on lower slopes and northerly aspects, but become increasingly rare toward the headwaters. The habitat types in Group 6 (moderately cool and wet western red cedar) are characterized by stands of grand fir and western red cedar. Douglas-fir and western white pine are less common. They often have fern and herb understories. Cedar/lady fern is the habitat type most frequently found. These habitat types are generally limited to riparian areas along streams and moist lower slopes in the western part of the subbasin.

P. Dominant Soils: Soils on the Johnson Bar Fire can be characterized by three primary Landtypes. Landtypes 31C41, 31D48 and 61E48 are commonly found throughout the burned area. These landtypes are dominated by silt loam to loamy textures, with a strong volcanic ash influence, that have moderately deep to deep soil depths depending on slope and dominantly non-skeletal surface layers.

Q. Geologic Types: Geology across the Johnson Bar Fire is volcanic ash influenced loess over residuum weathered from granite, with frequent outcrops of gneiss and metasedimentary parent material, resulting in landslide prone deposits. Landforms are dissected, steep mountain ridges and stream breaklands with slopes averaging 65%.

R. Miles of Stream Channels by Order or Class:

National Forest
1st order 15.4 miles, 2nd order 4.0 miles, 3rd order 4.6 miles

S. Transportation System

Trails: National Forest	2.3	miles	Other	0 miles
Roads: National Forest	16.0	miles	Other	0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3,229 (low) 3,956 (moderate) 534 (high)

B. Water-Repellent Soil (acres): (sum of moderate + high) 4490

C. Soil Erosion Hazard Rating (acres): none (low) 108 (moderate) 8,329 (high and very high)

D. Erosion Potential: 2.0 tons/acre (average of first two years)

E. Sediment Potential: 945 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	2-4 grass/shrubs 20-50 conifers
B. Design Chance of Success, (percent):	70
C. Equivalent Design Recurrence Interval, (years):	10
D. Design Storm Duration, (hours):	6 and 1 hr
E. Design Storm Magnitude, (inches):	0.9 (6hr), 0.7 (1hr)

F. Design Flow, (cubic feet / second/ square mile): 30-100

G. Estimated Reduction in Infiltration, (percent): 60

H. Adjusted Design Flow, (cfs per square mile): 60-400

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The primary values at risk resulting from the Johnson Bar Fire are transportation infrastructure (roads, trails and culverts), water quality, native fisheries for ESA-listed species, native vegetation communities, and heritage sites.

Infrastructure: Due to fire effects, modest snowmelt and rain events are likely to cause extensive erosion and mass movement on steep hillslopes throughout the burned area. Additionally, reduced canopy interception, combined with lack of groundcover and hydrophobicity will cause increased runoff response compared to pre-fire conditions. Thus, streams in and downstream of the burned area are likely to generate higher stormflows in the first few years following the fire. Larger flow events in part are a function of increased surface runoff from bare hillslopes. Furthermore, burned and exposed soils are more susceptible to entrainment and transport to stream channels. This combination of increased runoff and greater susceptibility to erosion threatens transportation infrastructure. Transportation infrastructure is a widespread value at risk of damage from post-fire erosion and elevated peak flows below the Johnson Bar Fire, including roads, trails and culverts. A total of eight culverts on forest road 652 were found to be undersized for relatively high-probability post-fire runoff events and vulnerable to clogging from sediment and debris, given the position of the road at the foot of a steep face below drainages that generally burned at moderate to high severity. Elk City Creek is the only large stream among these drainages.

In addition to stream culverts, numerous ditch-relief culverts were judged to be at risk of plugging at the inlets due to existing oversteepened cut-slopes with burned hillslopes above. There is also a point on road 470 where the ditch is inadequately drained, and is at risk of failure due to elevated runoff from the burned hillslopes above. Aside from roads and culverts, no Forest Service structures were judged to be at risk from post-fire floods or debris flows.

Risk Assessment – Threats to Forest Service roads and associated structures
Probablity of Damage or Loss: Very Likely – High potential of failure of road drainage due to post-fire flows.
Magnitude of Consequence: Major – Loss of FS infastructure
Risk Level: Very High

There is one system Trail (Trail #706) that was impacted by the Johnson Bar Fire. This non-motorized trail accesses the “Hot Point” area travelling along a ridge line. The trail receives moderate use during the summer and fall hunting season. Trail maintenance is sporadic and Trail #706 is typically opened by the public due to its shorter length and in and out access with no loop opportunities. This trail was in fair to good shape prior to the fire. Considering the existing conditions found on the trails surveyed, trail damage and some off-trail erosion/sediment delivery to channels is likely to occur along identified sections of the trails with vulnerable conditions. Trail incision and complete loss of trail tread could occur, therefore resulting in loss of infrastructure possibly leading to significant repairs and costs to restore sections of trail. Loss of water control may lead to off-trail slope erosion and gully formation. Once active gullies develop, they can continue to erode during each storm event and contribute to downstream sedimentation and trail instability.

Risk Assessment – Threats to Forest Service trails and associated structures
Probablity of Damage or Loss: Very Likely – High potential for erosion of surface tread and sediment delivery to streams. Soil deposition on trail surfaces from adjacent hillslopes may also occur.

Magnitude of Consequence: Major – Portions of Trail 706 are located on a very steep hillslope that has burned and has a high likely hood of trail tread damage occruing with future erosion and sedimentation.
Risk Level: Very High

Water quality: The streams in the burned area generally maintain good water quality. Erosion from steep burned hillslopes would compromise water quality through transport and depostion of fine sediment in important fishery streams. The elevated erosion and potential failures from roads and trails also compromise water quality. Treatments to improve road and trail drainage to withstand post-fire events will provide protection for water quality as well.

Fisheries: The lower Selway River and the Middle Fork of the Clearwater currently support runs of Snake River summer steelhead, spring and fall Chinook salmon, Columbia River bull trout, Pacific lamprey, westslope cutthroat trout, rainbow trout, mountain whitefish, as well as dace, sculpin and suckers. Steelhead and bull trout designated Critical Habitat and salmon Essential Fish Habitat are located within or near the Johnson Bar fire. Increased sediment inputs over the next few years due to post fire effects could eliminate viable spawning habitat until many of these fine sediments are transported downstream. Although these effects to spawning habitat are short term they could have lasting impacts to steelhead productivity in Goddard Creek. Juvenile steelhead and Chinook use many of these lower tributaries in the spring and summer to avoid high spring flows and warm stream temperatures on the mainstem MF Clearwater and Selway rivers so, there may also be negative direct impacts as well as loss of some rearing habitat for these juvenile fish. The predicted pulses of sediment or debris torrents within the headwater of these tributaries could be detrimental to these populations, altering rearing and spawning habitat and even impeding passage/movement in some areas. Road treatments could greatly lessen post fire effects to these fish.

Risk Assessment – Threats to fisheries communities due post-fire erosion events.
Probability of Damage or Loss: Very Likely - The probability of increased fine sediment or post fire debris flows reaching fish bearing streams and adversely affecting habitat or directly impacting native fish is likely
Magnitude of Consequence: Major – Damage to critical fisheries resources resulting in considerable or long term effects.
Risk Level: High

Native vegetation/Soil Productivity: Native vegetation communities and soil productivity are at risk from rapid expansion of noxious weeds from existing populations in the burned area. Recent weed inventories conducted within the Moose Creek Ranger District have identified a number of Idaho noxious and invasive weeds occurring within the perimeter of the Johnson Bar Fire. Inventories have found Spotted knapweed (Centaurea maculosa), and Canada thistle (Cirsium arvense) within the fire perimeter. During the BAER team evaluation of the Johnson Bar Fire, scattered populations of Spotted knapweed and Canada thistle were found along forest roads 470, 470A, 470B, 470C, 470D, 1121, 9701, 651, 289, 1119, 1119A, and 9723.

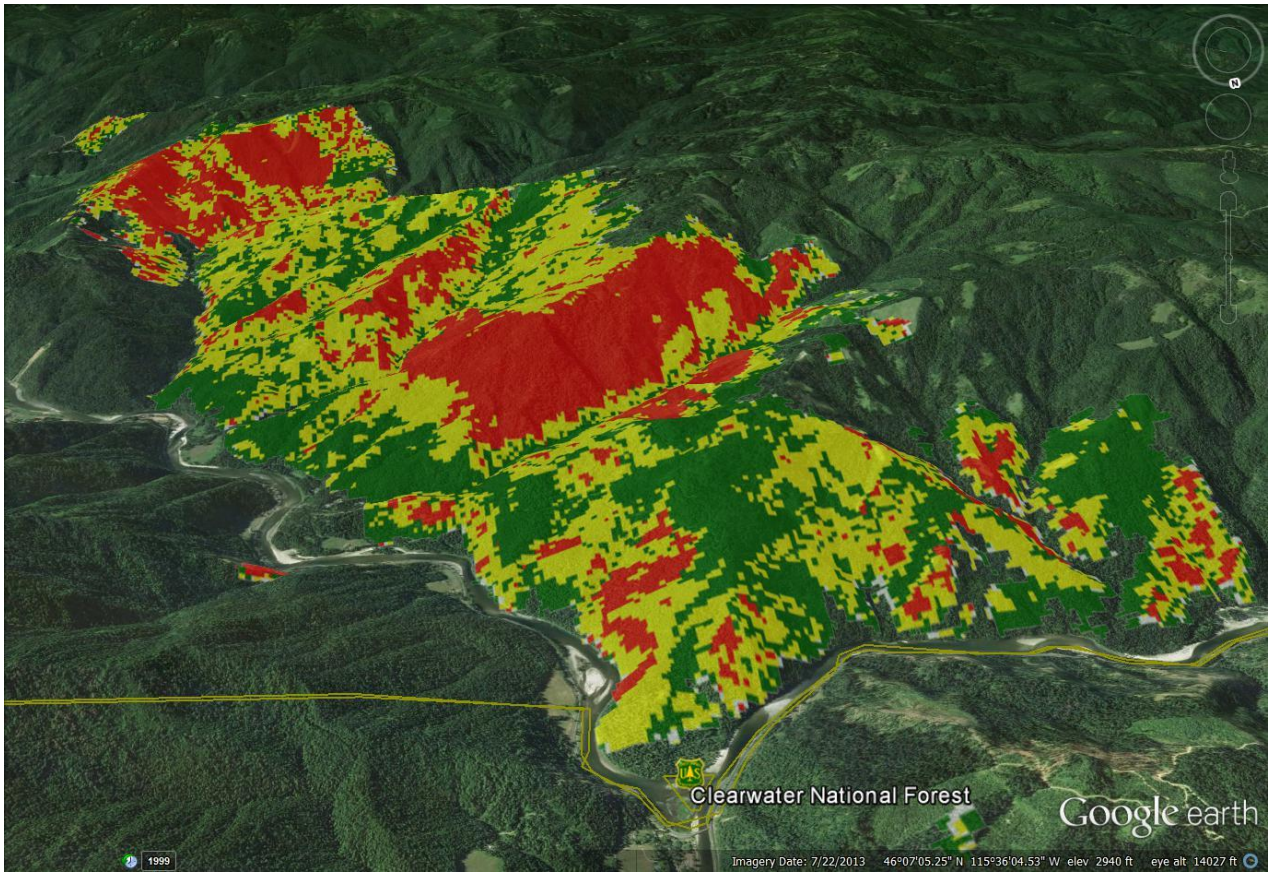
Fire intensities were generally Low to Moderate, with High intensity burns occurring on the face below Hot Point. Most grasses and shrubs in or near infested sites should regenerate because roots and crowns remained intact. However, highly susceptible habitat, existing infestations and exposed mineral soils along roads, trails, fire lines and camps greatly increase the risk of invasive weed spread as a result of fire disturbance. The risk of weed spread has increased within the roaded portion of the Johnson Bar Fire due to the interaction of the weed expansion factors.

Most of the previously identified weed infested sites within the fire were either burned or occur adjacent to burned areas. The susceptible habitats within the Johnson Bar Fire contain known infestations of Spotted knapweed and Canada thistle. Small spot infestations of spotted knapweed are scattered along forest roads 470ABCD, 1121, 9701, 289, 1119A, & 9723 which run through the fire perimeter. Other discrete or small populations were identified along forest roads 651 & 1119 leading into the burned area and at Johnson Bar Campground. Spotted knapweed and Canada thistle are invasive weeds that can readily out-compete native plants and dominate disturbed sites. Primary risk comes from the existing infestations within and adjacent to burned area along with introduction of noxious weed seed from firefighting

resources. Invasive species detection surveys and treatment within and adjacent to the burned area is warranted.

Risk Assessment – Threats to native plant communities due to the establishment or spread of noxious weeds.
Probability of Damage or Loss: Very Likely - Based on moderate and high burn severity and proximity to known weed infestations.
Magnitude of Consequence: Major – Loss of native plant communities and spread of noxious weeds.
Risk Level: Very High

Soils in the Johnson Bar burn area consist primarily of a 6-10 inch volcanic ash mantle over soils derived from metasedimentary geology. The predominant rock type in the fire area was quartzite with inclusions of gneiss and schist. The ash mantle on this sites is the primary source of the ecolosystem productivity. An analysis was completed showing the post-fire erosion risk for the fire. The following map shows the post-fire erosion risk created from looking at the burn severity and erosion hazards of the area.



Risk Assessment – Threats to native plant communities due to loss of site productivity through post-fire erosion.
Probability of Damage or Loss: Very Likely - Based on moderate and high burn severity and erosion risk of the ash mantle.
Magnitude of Consequence: Moderate – Loss of ecosystem productivity in the Selway River CFLRA.
Risk Level: Very High

Heritage: After a review of the Nez Perce National Forest Heritage Resource Department files, it was determined that 6 previously documented cultural resource sites were located within the Johnson Bar Fire perimeter and/or within APE on the NPNF. As a result of field review of the fire, an additional four resources were noted and visited for a total of 10 cultural sites within the Johnson Bar Fire APE. Fire activity varied where the sites are documented and does not appear to have negatively impacted any cultural site where they were burned over. Seven of the ten sites were revisited during the BAER field review process. Two sites were not accessible for field review due to continued fire activity which

prohibited allowing any personnel to be present in those locations. From site visits and reviewing the fire severity burned area reflectance classification map (BARC), 4 sites within the fire area were burned over while 6 sites were not burned. One site, Trail 706, was located both within and outside of fire burned locations. Fire severity at the 4 burned sites include: low and unburned, moderate, and high burn severities, generally involving grass, brush, and forested areas.

Of the four sites that were burned during this fire event, three have a low potential to be negatively impacted from increased erosional events due to loss of surface vegetation. The fourth site (a portion of Trail 706) has a moderate potential for disturbance through natural erosional processes. This potential impact is in the area where this site is within the high burn severity zone. All four sites have a slightly increased potential to be visited by recreationists in the area due to increased visibility. This may result in historic and/or prehistoric (Native American) artifacts being collected or removed from those sites due to the removal of surface vegetation at those locations where fire actually was present within the site boundaries. Only one site, Hot Point Lookout, possesses historic artifacts visible on the ground surface due to the high fire severity in this location. In most other instances, the fire quickly moved through the areas within and adjacent to known sites, leaving the duff layer mostly intact and scorched.

Risk Assessment – Threats to historical and cultural resources within the fire area.
Probability of Damage or Loss: Possible - Based on moderate and high burn severity and proximity to known trail.
Magnitude of Consequence: Moderate – Loss of some artifacts due to increased visibility and visitor use.
Risk Level: Intermediate

Moderate severity burn on ridge along the Burned Creek watershed.

B. Emergency Treatment Objectives:

Roughly one-half of the burned area was of moderate to high severity. However, much of more the burned area is on steep hillslopes with highly erosive soils. Thus, even low burn severity slopes devoid of overstory canopy or ground cover are at heightened risk of severe erosion and greatly increased runoff. Furthermore, most of the burned area on NFS land is characterized as landslide prone. In this landscape, burn severity alone is an inadequate indicator of post-fire erosion and runoff risk.

Emergency treatment objectives are to protect roads, trails and culverts susceptible to damage from erosion and elevated runoff within and immediately downstream of the burned area, and to prevent the expansion of noxious weeds in areas burned in the fire, while providing for BAER implementation worker safety.

Drainage on roads and trails will be improved to allow for discharge of elevated runoff in a manner that protects both the travel surface and stream water quality and aquatic habitat. Undersized culverts identified on FS road 652 will be upgraded to pass the post-fire 10-year (10% exceedance probability) event or removed. Known populations of noxious weeds will be treated in the first growing season following the fire, allowing for a more robust native vegetation recovery.

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

Land 70**%** **Channel** N/A **Roads/Trails** 70% **Protection/Safety** 90%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Heritage	na	na	na
Weed treatment	50	50	50
Channel	na	na	na
Roads/Trails	70	80	90
Protection/Safety*	90	90	80

E. Cost of No-Action (Including Loss): >$500,000

The potential cost of no action includes the failure of culverts/stream crossings on major roads in the burned area, severe erosion damage on several public roads needed for FS and public access, entrainment and deposition of road sediment in important fishery streams, and erosion damage and failure of trails. The cost of repairing roads, trails, and stream crossings would most likely exceed the cost of the selected alternative. The value of critical habitat for three separate ESA-listed fish species, as well as species of concern, cannot easily be quantified, but would likely far exceed the cost of sediment-mitigation measures proposed here. The value of protecting the ecological integrity and soil productivity of the burned area from noxious weed infestation likely exceeds the cost of weed treatment and monitoring, although this too was not quantified.

F. Cost of Selected Alternative (Including Loss): ~$124,000

In accordance with the revised Forest Service manual, the risk matrix below, Exhibit 2 of Interim Directive No.: 2520-2012-1, was used to evaluate the Risk Level for each value identified during the Sheep fire BAER assessment. Only treatments that had a risk of Intermediate or above are recommended for BAER authorized treatments.

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High **weeds, roads, trails**	Very High **soil productivity**	Low
Likely	Very High	High **fisheries**	Low
Possible	High	Intermediate **heritage**	Low
Unlikely	Intermediate	Low	Very Low

G. Skills Represented on Burned-Area Survey Team:

[x] Hydrology [x] Soils [x] Range [x]Weeds

[ ] Forestry	[ ] Wildlife	[x] Fire Mgmt.	[x] Engineering
[ ] Contracting	[ ] Ecology	[ ] Botany	[x] Archaeology
[x] GIS	[ ] Air Quality	[ ] Research	[x] Fisheries
[x] Recreation			

Team Leader: Cara Farr
Email: clfarr@fs.fed.us Phone: 208-893-4045 FAX: 208-983-4099

H. Treatment Narrative:

Land Treatments:
Noxious weed control with herbicides is recommended for new populations of current and new invader weed species within the Johnson Bar Fire. Herbicide applications will follow the requirements and mitigation outlined under the latest NEPA and Biological Assessment for listed fish species. A weed management strategy within the Clearwater River Basin Weed Management Area, in interagency cooperative, is currently in place. Areas infested with noxious weeds will be treated within the burn perimeter to reduce the probability of spread into uninfested burned areas. BAER funding is only available for the first year of the treatments (2015). In 2015, existing weed populations will be treated. If subsequent monitoring identifies weeds populations not effectively removed with initial treatment, additional treatment will be planned, and funds requested in an interim request. Many of the weeds are difficult to find the first year after a fires, so the acres of known populations within the burn perimeter will be covered twice in 2015 to ensure that all weeds are located and treated effectively. Other funding sources will be sought in out-years to treat any expansions of noxious weeds identified in subsequent monitoring. All of this work will be accomplished using ground-based equipment. Treatment will include the following:

- Mix of backpack/truck spraying and hand-pulling, as appropriate, in spring/early summer 2015 before weeds begin to seed
- Using approved herbicides and application techniques based on weed species, topography and environmental factors, in compliance with NPNF Weeds EIS.

Hillslope treatments (e.g. mulching) were considered in order to protect soil productivity and critical fishery habitat.

Channel Treatments: No channel treatment prescribed at this time.

Roads and Trail Treatments:
Road treatments will be targeted at effectively draining anticipated increased runoff in the first several years following the fire. Efforts will include clearing of clogged ditches and cross drain inlets and outlets, re-establishment of damaged/non-functional ditch, as well as replacement of burned drainage structures and cross drains. Armored dips or sags will be installed at most stream crossings in order to protect the road prism in the event of a flood event that overtops the road. Work will be done on open roads within the burned area that were judged to be at high risk of elevated post-fire runoff. Without proposed treatments, overland flow and erosion will likely damage the roads as well as transport sediment to streams, impacting aquatic habitat. In the steep terrain and granitic soils of the burned area, roads would likely be heavily eroded in the first year following the fire in their current condition.

All of the culverts determined to be undersized for the post-fire design event are recommended for removal. Except for Elk City Creek, the streams draining under road 652 transition at the road from steep burned ground to a low gradient terrace above the Selway River. The burn severity combines with this geomorphic setting to leave the culvert inlets vulnerable to plugging from sediment and debris deposition, regardless of culvert size. The crossings needed for private and state land access as well as FS management access should be improved with hardened fords—preferably using pre-cast concrete planks with a rock/gravel subgrade. The culvert at Elk City Creek should be removed and the crossing location restored to natural contours.

Trail work will treat the segments of the trail system within the burned area that is at high risk of damage from elevated post-fire runoff and erosion. Treatments will consist of replacement of burned drainage

structures, installation of new drainage structures in anticipation of greater runoff and erosion, cleaning of existing intact drainage structures, and spot outsloping to improve trail drainage especially on steep slopes and near streams. Visitor warning signs will also be posted at trailheads.

Protection/Safety Treatments:
To provide for worker safety during implementation of trail drainage improvements, hazard trees along the trails mentioned above will be removed. Roads have generally been snagged as part of suppression efforts.

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.)

Monitoring of road and trail treatments will occur during and after implementation in 2014-15 to ensure that treatment objectives are met. Hillslope and road treatments will be monitored again after snowmelt and during the summer to evaluate effectiveness. In October 2014, one or more tipping-bucket rain gauges will be installed to monitor precipitation in the drainage. The precipitation data will provide useful information when compared to assessments of treatment effectiveness following subsequent precipitation and runoff events.

In 2015 all of the known areas of infestation will be re-surveyed by NP-CNF Weeds staff. Any noxious weed populations not effectively treated during initial treatment efforts will be targeted for additional herbicide application.

VI – Emergency Stabilization Treatments and Source of Funds

			NFS Lands				Other Lands				All
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$		units	$	Units	$	$
A. Land Treatments											
Weed treatment & assessment	*acre*	*325*	*70*	*$22,750*							
Subtotal Land Treatments				$22,750	$0			$0		$0	$0
B. Channel Treatments											
Subtotal Channel Treat.				$0	$0			$0		$0	$0
C. Road and Trails											
x-drain inlet drop structure	*each*	*650*	*60*	*$39,000*							
culvert removal/ install concrete ford	*each*	*7,000*	*4*	*$28,000*							
culvert removal/reshape banks, grade control	*each*	*4,000*	*4*	*$16,000*							
road stormproofing (outslope, drainage, seed)	*mile*	*2,500*	*1*	*$2,500*							
FS pipe gate installed	*each*	*3,500*	*1*	*$3,500*							
new 18" CMP cross drain on 470	*each*	*2,600*	*1*	*$2,600*							
Trail drainage structures	*each*	*115*	*10*	*$1,150*							
Trail drainage clean out	*each*	*30*	*10*	*$300*							
Trail spot stabilization	*mile*	*500*	*1.5*	*$750*							
Trail tread outslope/drainage	*mile*	*500*	*1.5*	*$750*							
Culvert upgrade, road 9303	*each*										
Subtotal Road & Trails				$94,550	$0			$0		$0	$0
D. Protection/Safety											
Hazard tree removal	*mile*	*1,500*	*1.5*	*$2,250*							
Trail warning signs	*each*	*50*	*10*	*$500*							
Subtotal Structures				$2,750	$0			$0		$0	$0
E. BAER Evaluation											
Assessment					$15,000			$0		$0	$0
Subtotal Evaluation					$15,000			$0		$0	$0
F. Monitoring											
				$0				$0		$0	$0
Trail treatment effectiveness	*day*	*250*	*5*	*$1,250*							
Road treatment effectiveness	*day*	*280*	*10*	*$2,800*							
Subtotal Monitoring				$4,050	$0			$0		$0	$0
G. Totals				$124,100	$15,000			**$0**		**$0**	**$0**
Previously approved											
Total for this request				**$124,100**							

PART VII - APPROVALS

1. /s/ Ralph E. Rau "for" 09/26/2014
Rick Brazell, Nez Perce-Clearwater NF's Forest Supervisor Date

2. /2014
Region 1 Regional Forester Date