

BURNED-AREA REPORT
(Reference FSH 2509.13, Report FS-2500-8)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 1. Funding Request for Estimated FFF-FW22 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
 - ☐ Updating the initial funding request based on more accurate site data and design analysis
 - ☐ Status of accomplishments to date
- ☐ 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: **TatooshCedarVan** B. Fire Number: **WA-OWF-550; WA-OWF-553; WA-OWF-638**

NOTE: This 2500-8 includes 3 fires from the same area: Tatoosh Complex, Van Peak and Cedar Creek.

C. State: **Washington** D. County: **Okanogan**

E. Region: **Region 6** F. Forest: **Okanogan-Wenatchee NFs**

G. District: **Methow Valley Ranger District** H. Fire Incident Job codes: Tatoosh Buttes: P6C4WZ; Cedar Cr.: P6C4U1; Van Peak: PNC6LK

I. Date Fire Started: **8-22-2006 (Tatoosh,Cedar); 9-4-06 (Van)** J. Date Fire Controlled: **12/31/2006**
K. Suppression Cost: **\$2,768,000 estimated (9/21/2006)**

L. Fire Suppression Damages Repaired with FFFS-PF12 Funds *:

1. Fireline waterbarred (miles) 0
2. Fireline seeded (miles) 0
3. Other (safety zones, drop points) 0

*Work was done with field crews while observing fire conditions and taking action as necessary.

M. Watershed Number: **Pasayten River (1702000704) Ashnola River (1702000703) and Upper Methow (1702000806)**

N. NFS Acres Burned 38,846 Total Acres Burned: 52,856 (10/2/2006 ICS 209)

Ownership type:

() State () BLM () PVT (14010) Canadian lands

O. Vegetation Types: **Lodgepole pine communities are abundant throughout much of the area with inclusions of Englemann spruce and Subalpine fir in the wetter areas. Subalpine fir, Whitebark pine and subalpine larch are common at higher elevations. Grass and forb meadows (both wet and dry) are common at the highest elevations. Rock outcrops and shallow soils are common on ridgetops with deeper soil in valley bottoms.**

P. Dominant Soils: **Volcanic ash soils over glacial till on slopes up to 40%. Volcanic soils become thinner as slope gradient increases. Slopes over 60% are devoid of volcanic ash and are cobbly, gravelly sandy loam textured soils derived from glacial tills.**

Q. Geologic Types: **Igneous granitics on uplands, overlain by glacial till with outwash in valleys;**

R. Miles of Stream Channels by Class by Fire:

Tatoosh	<u>I- 10.1</u>	<u>II- 5.4</u>	<u>III-8.3</u>	<u>IV- 66</u>
Cedar	<u>I- 0</u>	<u>II- 0.1</u>	<u>III-0</u>	<u>IV- 6.9</u>
Van Peak	<u>I- 0</u>	<u>II- 0</u>	<u>III-0.2</u>	<u>IV- 1.7</u>

S. Transportation System:

Trails: 44 miles Roads: 0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (*1) (acres): ____ (low), ____ (moderate), ____ (high)

Tatoosh	18879 low	11878 moderate	18985 high	1930 unburned
Cedar	841	722	99	
Van Peak	775	906	131	

(*1) Burn severity figures based on 9/28/2006 BARC map from RSAC

B. Water-Repellent Soil (acres): **None expected based on burn severity.**

C. Soil Erosion Hazard Rating (acres):

<u>Fire</u>	(low)	(moderate)	(high)
Tatoosh	575	2475	32572
Cedar	0	0	1663
Van Peak	0	0	1813

D. Erosion Potential: **4.2** tons/acre

E. Sediment Potential: **2660** cubic yards / square mile

Assumptions for items D and E:

The erosion and sediment figures listed above reflect the contribution from overland flow from sheet, rill and gully erosion. The Erosion Potential is estimated to be **4.2 Tons/Acre** and Sediment Potential is **2660 cubic yards/Square Mile**.

Nearly all of the Landtype associations inside the fire perimeter have high soil erosion hazards, based on the Landtype Associations (Davis, 2004).

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 5 years

B. Design Chance of Success: N/A Percent

C. Equivalent Design Recurrence Interval: 10 years

D. Design Storm Duration: 1 hour

E. Design Storm Magnitude: 0.6 inches

F. Design Flow: **37** cubic feet/second/square mile

G. Estimated Reduction in Infiltration: 0 percent

H. Adjusted Design Flow **37** * cubic feet/second/square mile

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Tatoosh, Van Peak and Cedar Fires and potentially impacted areas downstream were considered to determine the threats to critical values.

1. *Threats to Human Life, Property and Safety---*

Values at risk include trails and their structure, cultural resources and dispersed camping sites. These are inside the burned area and downstream of the burned area. Some dispersed camping areas are near streams in the existing flood plains.

Threats to human life are primarily from falling trees, debris failures and flooding. Hazard trees are of particular concern along trails and in dispersed camping areas over the next few years. Wilderness users (Tatoosh Fire, primarily) are at the greatest risk. Exposure to debris slides along trails, and dispersed campgrounds on alluvial fans and in flood plains is greatest in the high and moderate severity burned areas.

Downstream in the Pasayten and Ashnola Rivers in Canada, there are homes and roads. According to Jim Archambeault, assistant recreation staff on the Okanogan and Wenatchee NFs, these include 38 scattered cabins in the Pasayten drainage, south of highway 3 in Canada. The closest cabin to the US is about 10 to 15 km north of the border. There are also 180 homes/cabins in the Eastgate community on Hwy 3, right at the East entrance to Manning Park about 30 km. north of the border. These homes and cabins are too far downstream to be considered at risk from the burned area in the Pasayten Wilderness.

Forest Service property-at-risk includes about 45 miles of trails within the Tatoosh burned area. Cultural sites include at least eight sites. The largest two are the Pasayten River trail shelter and the cabin and barn at the old Pasayten River Airstrip. The other sites are small cabins and mining sites. No trails or cultural sites are in the Cedar burned area or Van Peak burned area.

Large wood debris inside the burned area may remain there or be carried out of the burned area during floods. This will further exaggerate the flooding effects in the larger streams or rivers and cause additional damage to trails or cultural sites and increase the risk to humans that use dispersed recreation sites along streams.

Cultural resource sites are inside the burned area and may require treatment to protect heritage values. The Forest Archeologist will complete appropriate surveys and assessments and determine what needs to be done to protect cultural resources. In compliance with 36 CFR 800, tribal consultation concerning BAER activities will occur.

2. Critical Cultural and Natural Resources (including Water Quality and Soil Productivity)

Change in Soil Productivity –

The natural inherent soil fertility is low in the burned area. Residual and glacial till soils are derived from granitic bedrock and have weathered into very coarse “sandy soils” with low water holding capacity. In the uplands, low soil moisture and low soil fertility often limit plant growth. Soil depths range from very shallow on ridgetops to moderately deep on hill slopes to deep in valley bottoms. The cool, short growing seasons also contributes to the overall low site productivity in the burned area. This fire contains mostly low and unburned to moderate burn severity areas, and it will not significantly reduce inherent soil fertility.

Natural large wildland fires in these burned areas are infrequent, and are stand-replacing fires. Vegetation recovery in high burn severity areas of this group of fires will be slow, especially in all the burned areas, and accelerated erosion will occur until ground vegetation becomes re-established. The effects of high intensity storm events following wildfire are often increased erosion because there is less protection on the soil and so these steep landscapes often suffer flooding and debris slides. These natural disturbance processes have contributed to the relatively low productivity of the uplands, especially where the volcanic ash cover has been eroded.

Reduced or eliminated vegetation cover on the coarse-textured soils on steep rocky slopes increases the erosion potential. Primary erosional processes include shallow, rapid mass failures (debris slides) and surface erosional processes. The entrenched, over-steepened intermittent streams and gullies deliver debris efficiently to stream channels. Loss of vegetation in the moderate and high severity burn areas accelerates surface erosion, surface soil creep and debris slides.

Decrease in Water Quality –

Water quality parameters most affected by the Tatoosh, Cedar and Van Peak fires will be water sedimentation. The fire reduced some vegetative cover over segments of the Pasayten River and water will runoff faster, increasing peak stream flows. Higher peak flows will increase in channel erosion and deposition.

Water temperatures may increase in some locations where all the vegetation was burned. Sources of cooler water from adjacent springs or shallow ground water recharge through colluvial and alluvial deposits will buffer slight stream temperature increases. Riparian area shrubs are expected to rapidly recover over the next few years and provide cover to keep water temperatures relatively low. The fire killed trees provide some shade, but large tree recovery is not expected for another 50 to 100 years. Overall, water temperatures are not expected to be a problem.

Stream sediment loads in the Pasayten River and Cedar Creek drainages are expected to increase from debris slides and surface erosion from the severe and moderately burned areas. Most of the delivered sediment will initially be very coarse sand, gravel, cobbles, and boulders during larger high intensity storms or peak runoff. The debris fans at the mouths of streams, especially Lease Creek and other streams draining into the Pasayten River are expected to enlarge where the drainage-ways contributing to the fans were burned. These fans encroach on and add sediment to the receiving stream. Sediment and large woody debris moving downstream into receiving waters may accumulate upstream of fans where the channel has been restricted by debris added to existing fans.

The other sediment source is from runoff from trails throughout the severe and moderately burned areas. Wooden trail drainage structures were destroyed by the fire and no longer divert water from the trail and tread erosion accumulates in streams, ephemeral draws or downslope of the trail. Trails are damaged, as well. Peak flows in the spring or high intensity rain storms can carry large amounts of sediment downstream.

B. Emergency Treatment Objectives:

The primary objectives of emergency treatment are to protect life and property, protect critical natural and cultural resources. Conditions within the burn should support long-term, natural vegetative recovery while reducing short-term negative impacts. BAER treatments are necessary to minimize both on-site and downstream damage to values at risk. Natural recovery of vegetation is expected to occur without intervention over the next 3-5 years.

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

Land 70 % Channel NA % Roads NA % Other NA %

D. Probability of Treatment Success

<----Years after treatment----->			
	1	3	5
Land	%	%	%
Channel	%	%	%
Roads/Trails	90%	90%	90%
Protection/Safety	%	%	%

E. Cost of No Action (Including Loss): **\$720,000**

F. Cost of Selected Alternative (Including Loss): **\$697,800**

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input type="checkbox"/> Range
<input type="checkbox"/> Timber	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input type="checkbox"/> Research	<input type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Recreation/Wilderness			<input type="checkbox"/> Fish Biologist

Team Leader: \s\ Mel Bennett

Phone: (509) 826-3164 Electronic Address: mbennett@fs.fed.us

H. Treatment Narrative:

No Channel treatments are being proposed. Treatments are being proposed for trails and cultural sites. Trail treatments are for protection of trail infrastructure, to reduce erosion from trails and to reduce hazard trees along trails. To reduce erosion from trails, waterbarring is being proposed. In order to implement this treatment hazard tree reduction and trail logout are required. It is important to note that this area is within the Pasayten Wilderness and is many miles from a road. The 44 miles of trails within the fire area are critical to the access and use of the whole area in and around the fire. All work proposed will require the use of non-motorized hand tools and equipment unless the Forest Supervisor grants exception to use power tools. Cultural treatments are for the evaluation and protection of 8 known cultural sites within the fire area.

Land Treatments

Purpose: To assess, stabilize and protect cultural sites within the Tatoosh, Cedar and Van Peak fires.

Treatment #L1 – Cultural Resource assessment, survey and tribal consultation: Identify and preserve and protect significant cultural sites and consult with the Colville and Yakama tribes.

Trail Treatments

Purpose:

Minimize the concentration of accelerated surface runoff and trail erosion from over 44 miles of Forest Service Trails in the burned area. These treatments will provide for BAER implementation access, reduce the risk to Forest Service personnel and the public associated with trail use, protect trail infrastructure and reduce water quality impacts from soil erosion off trails. For Hazard Trees see the Protection/Safety Section.

The fire has consumed much of the woody material and duff in the moderate and high intensity burn areas, which will result in hill slope raveling (soil, rock, and logs) that is expected to fill trail tread in many locations. In addition, in some trail sections, the trail shoulder has been supported by shrub and tree roots which were severely burned, resulting in anticipated sloughing of the shoulder. As a result of these fire-related impacts, trail drainage features have been rendered non-functional and the tread condition represents a hazard to both Forest personnel and the public. Soil erosion of the trail tread is expected where drainage features are destroyed. Water quality would be degraded by unchecked soil erosion from untreated trails.

Treatment #T1- Improve Trail Drainage: Install drain dips on 44 miles of trail to reduce the potential for runoff concentration and accelerated surface erosion from anticipated fire effects. Dips vary from rolling outslope dips to waterbars constructed from peeled and anchored native wood material. This treatment will occur on trail segments within the burn where the potential for post-fire increases in surface runoff is high.

Treatment #T2 – Log out Trails: A number of fire-killed trees are falling and blocking trail access. Trail log out will be necessary on 44 miles of trail in order to gain access to the sections of trail that need drainage (T1).

Protection/Safety Treatments:

Purpose: The objective of these treatments is to ensure public trail users are not injured by hazard trees, damaged tread, or compromised trail structures (such as turnpikes) and trail infrastructure is maintained). Implement actions to minimize the risk to BAER personnel and the public from hazard trees. Provide road signage to efficiently implement BAER treatments along roads. Also included are actions to assess, stabilize and protect cultural sites.

Treatment #PS1 – Hazard Tree (Trails): This treatment will occur primarily on trail segments within high severity burn where most all of the larger over story tree were killed, this treatment will mitigate safety concerns for hazard tree risks during access for installation of trail drainage structures.

Treatment #PS2 – Public Safety and Awareness: Hold a public meeting in Winthrop, to inform potential outfitters and interested individuals about the ongoing work and hazards; and develop public information materials and mailings.

BAER Evaluation

BAER Survey and Implementation Plan. Supports completion of BAER survey.

BAER Treatment Monitoring: No monitoring is recommended.

Part VI

10/3/2006 8:39			NFS Lands				Other Lands		All
Tatoosh, Cedar, Van Fires		Unit	# of	WFSU	Other		Fed	Non Fed	Total
Line Items	Units	Cost	Units	SULT \$	\$		\$	\$	\$
A. Land Treatments									
#L1 Cultural Resource Assess & Consult	ea	\$20,000	1	\$20,000					\$20,000
<i>Subtotal Land Treatments</i>				\$20,000	\$0		\$0	\$0	\$20,000
<i>Insert new items above this line!</i>									
B. Channel Treatments									
NONE PROPOSED									
<i>Insert new items above this line!</i>									
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0	\$0	\$0
C. Roads and Trails									
#T1 Trail Opening for access	mi	\$600	44	\$26,400					\$26,400
#T2 Trail Erosion Control (water mgt structures)	mi	\$3,750	44	\$165,000					\$165,000
<i>Insert new items above this line!</i>									
<i>Subtotal Road & Trails</i>				\$191,400	\$0		\$0	\$0	\$191,400
D. Protection/Safety				\$0	\$0		\$0	\$0	\$0
#PS1 Hazard Tree Reduction (Trails)	mi	\$600	44	\$26,400					\$26,400
#PS2 Public Safety and Awareness	ea	1000	1	\$1,000					\$1,000
<i>Insert new items above this line!</i>									
				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Protection/Safety</i>				\$27,400	\$0		\$0	\$0	\$27,400
<i>Subtotal Other</i>				\$0	\$0		\$0	\$0	\$0
E. BAER Assessment (not part of WFSU)				\$0	\$6,500		\$0	\$0	\$6,500
					\$0		\$0	\$0	\$0
<i>Subtotal Evaluation</i>				\$0	\$6,500		\$0	\$0	\$6,500
F. Monitoring				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0	\$0	\$0
G. Totals				\$238,800	\$6,500		\$0	\$0	\$245,300

PART VII - APPROVALS

TATOOSH/CEDAR/VAN PEAK FIRES

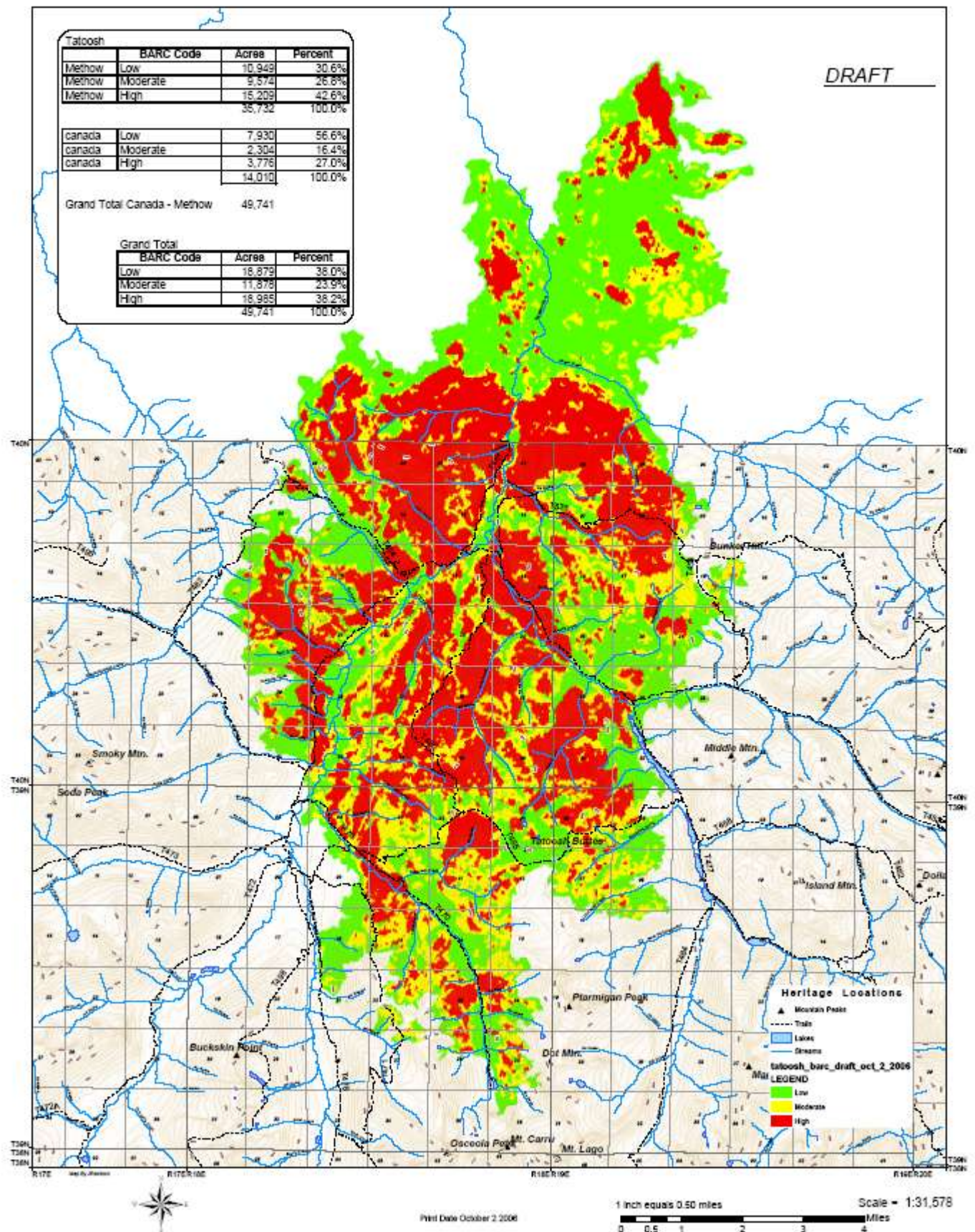
1. *\s\ Maureen Hanson* _____
 for Forest Supervisor

Date: 10/3/2006

2. _____
 Regional Forester

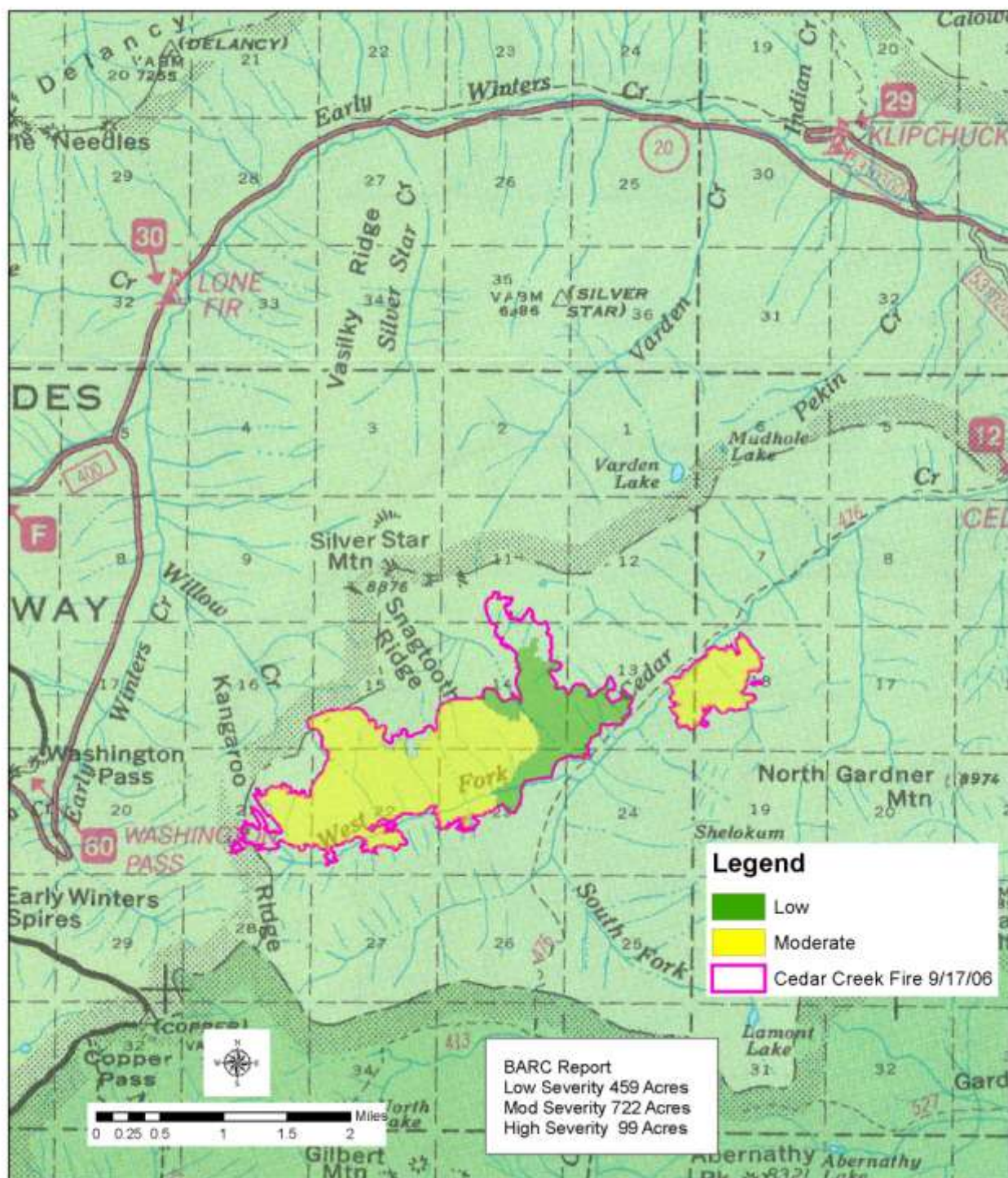
Date: _____

Tatoosh Incident Severity(BARC Codes) Map



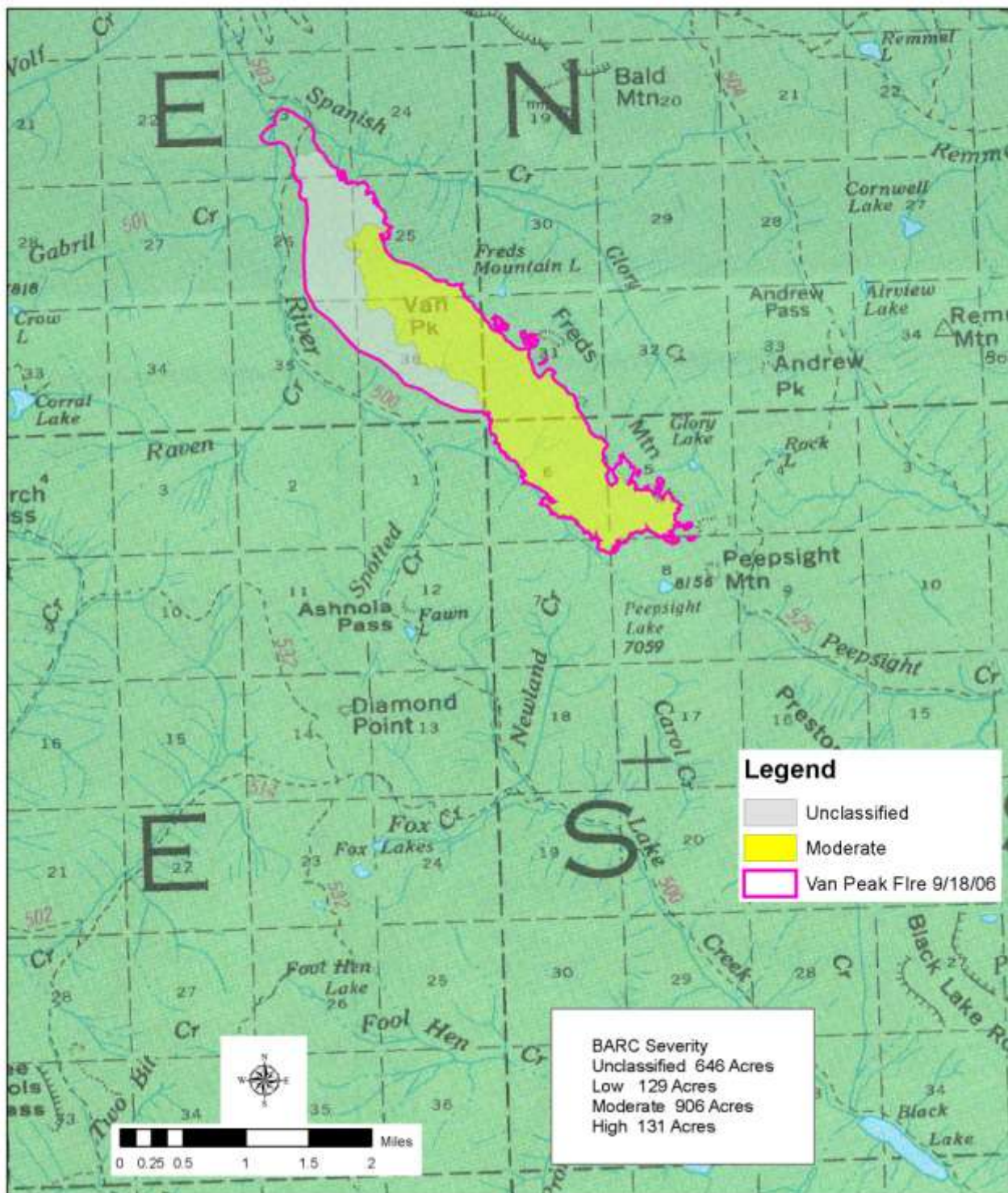


Cedar Creek Fire BARC Fire Severity





Van Peak Fire BARC Fire Severity



Values at Risk

The values at risk from the burned area include the area from the burned area are in the Pasayten River basin..

<u>Values at Risk</u>	<u>Number</u>	<u>Value each</u>	<u>Total Value</u>	<u>Risk from Fire</u>
Trails	44 Miles	20,000	880,000	High
Heritage/Cultural Properties	8 each	40,000	320,000	High
Total			\$1,200,000	