U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY **Field Work**	2. LOCATION **Mann Gulch, Helena NF**	3. UNIT **Great Northern**
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)	4. NAME OF ANALYST **Angela Harvieux**	5. JOB TITLE **Mann Gulch Staff Ride SOF**	6. DATE PREPARED **06/11/2008**

7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE
DRIVING TO THE JOBSITE	**Dusty, winding, narrow roads**	**Drive confidently and defensively at all times. Go slow around corners, occasionally clearing the windshield.**
	Rocky or one-lane roads	**Stay clear of gullies and trenches, drive slowly over rocks. Yield right-of-way to oncoming vehicles---find a safe place to pull over.**
	In an unfamiliar vehicle	**Check brakes, steering, seatbelts, fluid levels, lights. Use maintenance checklist in vehicle logbook.**
	Stormy weather, near confused tourists	**Inquire about conditions before leaving the office. Be aware of oncoming storms. Drive to avoid accident situations created by the mistakes of others.**
	When angry or irritated	**Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive.**
	Turning around on narrow roads	**Safely turn out with as much room as possible. Know what is ahead and behind the vehicle. Use a backer if available.**
	Sick or medicated;	**Let others on the crew know you do not feel well. Let someone else drive.**
	On wet or slimy roads	**Drive slow and safe, wear seatbelts.**
	Animals on road	**Drive slowly, watch for other animals nearby.**
COMMUNICATION	**Safety, crew unity**	**Talk to each other. Let other crewmembers know when you see a hazard. Avoid working near known hazard trees. Yell "ROCK!" if you see one start to roll down the hill. Always know the wherabouts of fellow crewmembers. Carry a radio and spare batteries. Review Emergency Evacuation Procedures (see below).**
WALKING AND WORKING IN THE FIELD	**Falling down, twisted ankles and knees, poor footing**	**Always watch your footing. Slow down and use extra caution around logs, rocks, and animal holes. Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. Wear laced boots with a minimum 8" high upper and non-skid Vibram-type soles for ankle support and traction.**
	Falling objects	**Wear your hardhat for protection from falling limbs and pinecones, and from tools and equipment carried by other crewmembers. Stay out of the woods during extremely high winds.**
	Damage to eyes	**Watch where you walk, ecpecially around trees and brush with limbs sticking out. Exercise caution when clearing limbs from tree trunks. Advise wearing eye protection. Ultraviolet light from the sun can be damaging to the eyes; look for sunglasses that specify significant protection from UV-A and UV-B radiation.**
	Bee and wasp stings	**Watch for respiratory problems. Notify dispatcher and get person to a doctor immediately if there is trouble breathing. Gently scrape stinger off of one is present. Apply analgesic swab and a cold pack if possible, and watch for infection. Flag the location of any known nests and inform other crewmembers. Advise packing an inhaler and Benadryl or Epi-pen if you are prone to severe allergic reaction.**
	Ticks and infected mosquitos	**Wear long sleeve shirts. Tuck pants into socks/boots. Visually check each other for ticks while in the field. Check yourself carefully at home at day's end. If a tick is imbedded in you: *Gently pull the tick out with tweezers or fingernails using a quick tug. *Wash the infected area and monitor for a red rash.**
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE
Environmental Health Considerations	**Heat Stress**	**Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load.**

		Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. **NOTE: The severity of the effects of a given environmental heat stress is decreased by reducing the work load, increasing the frequency and/or duration of rest periods, and by introducing measures which will protect employees from hot environments.**
	Severe Environmental Heat Loads	**Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). Some overhydration is strongly recommended.**
		Allow approximately 2 weeks with progressive degrees of heat exposure and physical exertion for substantial acclimatization. Acclimatization is necessary regardless of an employee's physical condition (the better one's physical condition, the quicker the acclimatization).
		Tailor the work schedule to fit the climate, the physical condition of employees, and mission requirements. **a. A reduction of work load markedly decreases total heat stress.** **b. Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization.** **c. Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement.**
	Wet Bulb Globe Temperature (WBGT) Index	**Curtail or suspend physical work when conditions are extremely severe (see attached Heat Stress Index).**
		Compute a Wet Bulb Globe Temperature Index to determine the level of physical activity (take WBGT index measurements in a location that is similar or closely approximates the environment to which employees will be exposed). **WBGT THRESHOLD VALUES FOR INSTITUTING PREVENTIVE MEASURES** **80-90 degrees F Fatigue possible with prolonged exposure and physical activity.** **90-105 degrees F Heat exhaustion and heat stroke possible with prolonged exposure and physical activity.** **105-130 degrees F Heat exhaustion and heat stroke are likely with prolonged heat exposure and physical activity.**
	Cold Extremes	**Cover all exposed skin and be aware of frostbite. While cold air will not freeze the tissues of the lungs, slow down and use a mask or scarf to minimize the effect of cold air on air passages.**
Environmental Health Considerations (CONT"D)	**Cold Extremes (CONT'D)**	**Additional measures to avoid cold weather problems are:** **a. Dress in layers with wicking garments (those that carry moisture away from the body) and a weatherproof slicker. A wool outer garment is recommended.**

		b. Take layers off as you heat up; put them on as you cool down. **c. Wear head protection that provides adequate insulation and protects the ears.** **d. Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia.** **e. Acclimate to the cold climate to minimize discomfort.** **f. Maintain adequate water/fluid intake to avoid dehydration.**
		Wind chill greatly affects heat lose (see attached Wind Chill Index).
	Wind	**Avoid marking in old, defective timber, especially hardwoods, during periods of high winds due to snag hazards.**

Line Officer's Signature	**Title**	**Date**

HEAT STRESS INDEX

RELATIVE HUMIDITY	Actual Thermometer Reading (F°)															
	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104
	HUMIDITURE F° (Equivalent Temperature)															
10%	68	70	72	75	77	78	80	82	85	87	89	91	93	95	97	98
20%	70	72	75	77	79	81	84	86	88	90	93	95	97	99	101	104
30%	73	75	77	78	80	83	85	87	90	92	95	98	101	105	108	110
40%	74	76	78	79	81	85	87	89	92	96	100	104	106	110	117	120
50%	75	77	79	81	84	86	90	93	96	100	105	108	110	120	125	132
60%	75	77	80	83	86	89	92	95	100	106	111	120	125	132		
70%	75	77	81	85	89	91	96	100	106	115	122	128				
80%	76	78	83	86	91	95	100	106	114	122						
HUMIDITURE F°	Below 80		80 - 90		90 - 105		105 - 130			Above 130						
DANGER CATEGORY	NONE		CAUTION		EXTREME CAUTION		DANGER			EXTREME DANGER						

NONE	Little or no danger under normal circumstances.
CAUTION	Fatigue possible, if exposure is prolonged and there is physical activity.
EXTREME CAUTION	Heat cramps and heat exhaustion, if exposure is prolonged and there is physical activity.
DANGER	Heat cramps or exhaustion likely; heat stroke possible, if prolonged and there is physical activity.
EXTREME DANGER	HEAT STROKE IMMINENT!

NOTE: Add 10° F when protective clothing is worn and add 10° F when in direct sunlight.

WIND CHILL INDEX

	Actual Thermometer Reading (F°)											
Wind Speed (mph)	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Temperature (F°)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-118	-129	-145
40	26	10	-5	-21	-37	-53	-69	-85	-100	-116	-132	-148
	LITTLE DANGER (for properly clothed person)				INCREASED DANGER			GREAT DANGER				
					DANGER OF FREEZING EXPOSED SKIN							

NOTE: Wind speeds greater than 40 mph have little additional effect.

JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) writing the JHA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.

Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

a. Research past accidents/incidents

b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature.

c. Discuss the work project/activity with participants

d. Observe the work project/activity

e. A combination of the above

Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:

a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture.

b. Substitution. For example, switching to high flash point, non-toxic solvents.

c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices.

d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills portable water pumps)

e. A combination of the above.

Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.

Be prepared to provide the following information:

a. Nature of the accident or injury (avoid using victim's name).
b. Type of assistance needed, if any (ground, air, or water evacuation)
c. Location of accident or injury, best access route into the worksite (road name/number), identifiable ground/air landmarks.
d. Radio frequency(s).
e. Contact person.
f. Local hazards to ground vehicles or aviation.
g. Weather conditions (wind speed & direction, visibility, temp).
h. Topography.
i. Number of person(s) to be transported
j. Estimated weight of passengers for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:

SIGNATURE	DATE	SIGNATURE	DATE
Work Leader			