

NezPerce-Clearwater National Forest

Hantavirus Protection Plan

APPROVED BY:



FOREST SUPERVISOR

Date: 2-23-18

PREPARED BY:

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FOREST SAFETY MANAGER

REVIEWED AND RECOMMENDED BY:

NCF SAFETY COMMITTEE

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1. Introduction

The Nez Perce-Clearwater National Forest (NCF) has a large number of storage sheds, warehouses, cabins, and other structures that are prone to rodent infestation. During cleaning or use of these structures, employees may inadvertently be exposed to rodent nests or droppings. This can be a safety concern for employees due to the risk of exposure to Hantavirus.

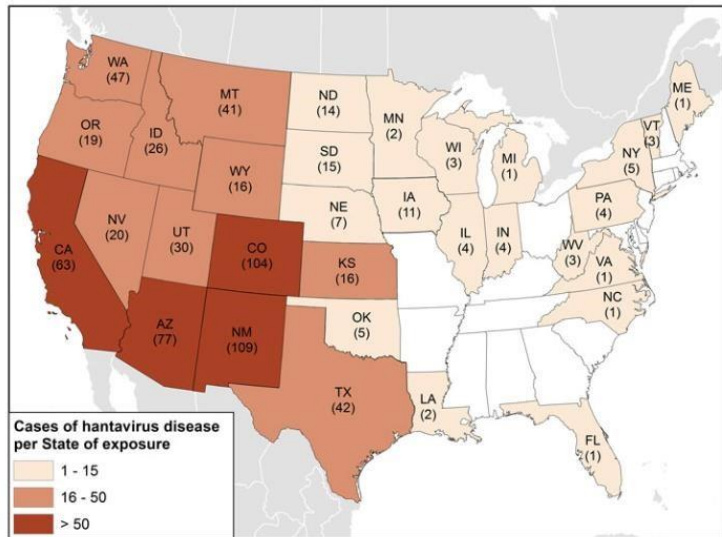
exposure, this plan has been developed to help employees understand the risks of HPS and outline safe work practices to employ during work projects to minimize risk of exposure.

This Hantavirus Prevention Plan covers all NCF employees, including temporaries, AD hires, and volunteers.

2. Program Goals & Policy

Hantavirus pulmonary syndrome (HPS) can be a

Idaho Statistics



deadly disease contracted from aerosolized rodent urine that can infect the upper respiratory system. Because of the risk of

26 cases of HPS were reported in Idaho between 1993 and Jan 2017. 697 cases reported nationally. Source; CDC Sept. 13, 2017

The goals of the Nez Perce - Clearwater National Forest Hantavirus Action Plan include:

- Educating employees on Hantavirus Pulmonary Syndrome (HPS), including exposure risk, hazard mitigation, and control. Reducing opportunities for rodents to find shelter and food in and around buildings
- Rodent-proofing buildings
- Preventing Hantavirus infection while rodent-contaminated areas are being cleaned.

NCF policy regarding Hantavirus protection includes:

Ver. 20180125

- No employee is to work in an area of likely rodent infestation (such as a seasonally closed building) which has not been inspected, and disinfected if necessary.
- Any work project that may expose employees to Hantavirus shall have a project Risk Assessment (RA) or JHA completed that addresses Hantavirus hazards and describes required work practices and Personal Protective Equipment (PPE). Employee must follow all safety precautions described in the RA/JHA.
- Precautions shall be implemented for all rodent droppings and material due regardless of the species of rodent present.
- Employees shall be trained as specified in this written plan.

3. Roles and Responsibilities

Successful implementation of this program depends on management commitment and employee involvement. Management must provide the organizational resources and the leadership to deal effectively with Hantavirus hazards, and employee involvement and feedback are important to identify potential hazards and effectively abate such hazards.

Line Officer and Managers

- Ensure implementation of this Hantavirus Prevention Plan on all unit work projects and structures with potential to create exposure to Hantavirus.
- Review unit work projects that may create exposure to Hantavirus.

Forest Safety Manager

- Maintain this written Hantavirus Prevention Plan.
- Assist in development and implementation of safe work practices by employees.
- Provide and/or assist in training employees on the hazards of Hantavirus and how to protect themselves.

Supervisors

- Assist in training, development, and implementation of safe work practices by employees.
- Work to mitigate risk of Hantavirus exposure through proper maintenance of buildings and storage of materials.
- Conduct a hazard survey of work areas to determine presence of rodent infestation before work projects begin in areas of possible infestation.

- Ensure employees have received training on HPS and this plan before undertaking work projects with risk of exposure.
- Ensure all work project RAs that may involve exposure to HPS includes proper hazard mitigation techniques as outlined in the action plan
- Provide applicable PPE to employees and ensure its use

Employees

- Follow all items in work project RAs/JHAs that may involve exposure to Hantavirus; follow administrative and engineering controls and wear all required PPE
- Report any previously unknown areas of rodent infestation to immediate supervisor discovered during work projects. Cease work until a hazard determination has been made.

4. Hantavirus Pulmonary Syndrome (HPS)

HPS was first recognized in 1993 and has been identified throughout the United States. Although rare, HPS is a potentially deadly disease transmitted by rodents that can infect the upper respiratory system, and is potentially deadly. Rodent carriers shed the virus in their urine, droppings and saliva.

Employees are at risk of contracting the virus when exposed to rodent droppings, urine or nesting materials. The virus is normally transmitted to people when they breathe air contaminated with the virus.

Disease Hosts

In the United States, the following rodents are reservoirs for the virus:

- deer mice – western and central United States and Canada
- cotton rats and rice rats - southeastern states
- white-footed mouse – Northeast

The deer mouse is grayish to light brown on top, with a white belly. It has large ears and a furry tail and has eyes that appear to “bug out.”



The typical house mouse, which is not a known carrier of

Hantavirus, is usually entirely gray or light brown (no white on belly). name Deer Mouse. Reservoir for

Peromyscus Maniculatus, common the

Hantavirus (*Sin Nombre Virus*)

Transmission

HPS transmission can occur in any area rodents have been living, including barns, sheds, warehouses, outbuildings, seasonal housing, or other structures that have been closed up during winter.

The virus can be contracted when rodent urine, droppings or nesting materials are stirred up, causing tiny particles or droplets containing the virus to become airborne. Researchers suspect there may be several other ways rodents can pass Hantavirus to humans, including:

- If you touch something that has been contaminated with rodent urine, droppings or saliva, and then touch your nose or mouth;
- If virus-infected rodent urine, droppings or saliva contaminates food you eat.
- If you are bitten by a rodent with the virus.

Symptoms of Exposure

The CDC divides the symptoms of Hantavirus between “early” and “late” symptoms.

- **EARLY SYMPTOMS**

Early symptoms include fatigue, fever and muscle aches, especially in the large muscle groups—thighs, hips, back, and sometimes shoulders.

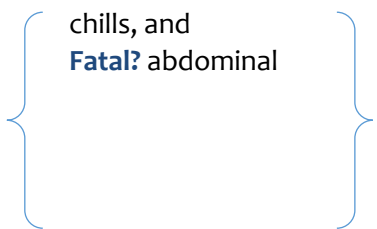
These symptoms are universal. There may also be headaches, dizziness, abdominal problems, such as nausea, vomiting, diarrhea, and **Is Hantavirus** pain. About half of all HPS patients experience these symptoms.

It can be. According to the

- **LATE SYMPTOMS** CDC, Hantavirus has a 38% mortality rate.

Four to 10 days after the initial phase of illness, the late symptoms of HPS

include coughing and shortness of breath, with the sensation of, as one survivor put it, a "...tight band around my chest and a pillow over my face" as the lungs fill with fluid.



Treatment

There is no “cure” for Hantavirus. Currently the only treatment is basically supportive, and is best provided in a hospital's intensive care unit. Early diagnosis of Hantavirus and immediate medical care

increase the likelihood of a full recovery. Individuals exposed to rodents or their waste that experience symptoms should immediately seek medical treatment and notify their provider that they have been around rodents or rodent wastes.

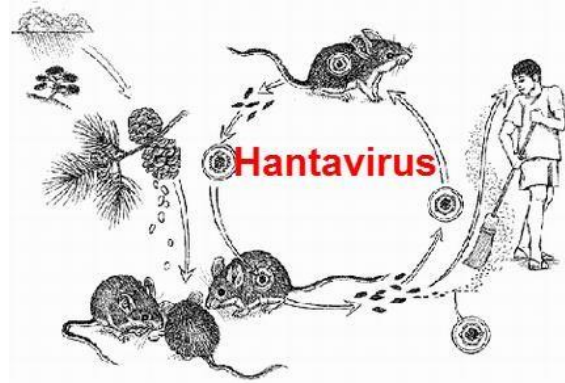
5. Work Tasks with Exposure Risk

The CDC has identified certain seasonal opening activities that may increase employees' risk of exposure to Hantavirus. These activities include open/cleaning structures, sheds, outbuildings, garages, warehouses and storage facilities which have been closed during the winter where rodent proofing has not occurred.

Additionally, any time employees enter or work in structures, sheds or outbuildings that receive limited use, there is an increased likelihood for risk to Hantavirus exposure. Cleaning of these facilities create the highest risk of exposure due to activity that may disturb rodent nests and waste.

No Vacuuming or Sweeping!

Avoid vacuuming or sweeping when cleaning up rodent infested areas; virus particles escape into the air and then they can be breathed in.



6. Hazard Identification

Signs of Rodent Infestation

- **Rodent Droppings:** Droppings are a reliable indicator you have a rodent problem. You may find droppings in places where you store food or seed, such as in cupboards, drawers or bins. Other common areas where droppings can be found are under the sink, along walls, or on top of wall studs or beams. Storage rooms, sheds, barns, crawl spaces or cabins make ideal homes for rodents, so you may also find droppings there.
- **Rodent Nests:** Rodents tend to build their nests from materials that are soft, fuzzy, or warm. Rodents will nest close to food and water and wherever safety from predators can be found. Places to inspect for infestation include:

- Inside cabinets ○ Under or inside dressers
 - In boxes
 - Behind and inside machinery and appliances (kitchen appliances such as stoves or refrigerators)
 - Inside furniture
 - Inside walls or space between floors of structures, crawl spaces
- **Food Damage:** Containers or food that appears to be nibbled indicate infestation. Rodents will chew through plastic, so plastic bags do not make safe food storage containers.
 - **Gnawing:** To get to food, rodents will gnaw on almost anything that is softer than the enamel of their teeth. This includes such things as wood, paperboard, cloth sacks and plastic. Because rodents' teeth grown continuously, they must gnaw to keep them short.
 - **Odd, Stale Smell:** In closed-up rooms infested by rodents, you will commonly smell an unusual, musky odor.
 - **Mouse Sightings:** Lack of mouse sightings is not a reliable indicator, since rodents are normally active at night and generally avoid humans.

7. Hazard Prevention and Control

Prevention of Rodent Infestation

The primary means of preventing the risk of Hantavirus exposure is by elimination of the presence of rodents through a combination of engineering and administrative controls and work practices. The primary methods of prevention include:

- Rodent proofing buildings ○
Food and harborage elimination
- A continuous trapping program

The following outlines procedures to prevent rodent infestation and should be implemented **TO ELIMINATE RODENTS AND REDUCE THE AVAILABILITY OF FOOD SOURCES AND NESTING SITES USED BY RODENTS INSIDE HOME, CABINS, AND OTHER BUILDINGS:**

Keep food (including pet food) and water covered and stored in rodent-proof metal or thick plastic containers with tight-fitting lids.

- Store garbage in rodent-proof metal or thick plastic containers with tight-fitting lids.
- Wash dishes and cooking utensils immediately after use and clean up any spilled food.
- Do not leave pet food in feeding dishes.
- Dispose of trash and clutter.
- Implement a continuous trapping program on your unit utilizing the following tips:
 - Choose the trap to fit the type of rodent you intend on catching
 - Use spring loaded rodent traps; do NOT use live or glue traps because live rodents ○ urinate and defecate once caught which increases your risk of becoming infected ○ Read the instructions that accompany the trap
 - Place traps in areas where you have seen rodents, droppings, and nests or where you suspect the rodents are entering your building ○ Position the trap perpendicular to the wall ○ Keep children and pets away from traps and bait ○ Chunky peanut butter is a very effective snap trap bait ○ Check traps regularly and refill or move them when necessary

TO PREVENT RODENTS FROM ENTERING HOMES, CABINS, AND OTHER BUILDINGS:

- Use steel wool or ¼” wire mesh to seal, screen or otherwise cover all opening into the building which have diameter > 1/4 inch.
- Place metal roof flashing or mesh as a rodent barrier around the base of wooden or earthen dwellings up to a height of 12 inches and buried in the soil to a depth of 6 inches.

TO REDUCE RODENT SHELTER & FOOD SOURCES WITHIN 100 FEET OF BUILDINGS:

- Place woodpiles 100 feet or more from buildings and elevate wood at least 12 inches off the ground.
- Store grains, seeds and animal feed in rodent-proof containers.
- Near buildings, remove food sources, which might attract rodents or store food and water in rodent-proof containers.
- Store hay or other feed on pallets to keep free of rodents. Elevate 12” if possible and use traps continuously.
- Dispose of garbage and trash in rodent-proof containers that are elevated at least 12” off the ground.
- Haul away trash and other items that may serve as rodent nesting sites.
- Cut grass, brush, and dense shrubbery within at least 30 feet of buildings. Do not use dense ground covers in landscaping areas.
- Eliminate water sources such as standing water (barrels, buckets), leaking faucets or pipes. (Keep shrubbery and grass cut or eliminated around ponds).

Hazard Removal – Cleanup

If an infestation occurs, employees may be required to remove the hazard through proper cleanup. The goal of cleanup is to remove the potentially hazardous material while minimizing employee exposure through dust control and preventing contact with rodent material.

The following paragraphs are the safety precautions and cleaning procedures to protect individuals working with or coming in contact with rodent contamination as found in the Center for Disease Control (CDC) report Hantavirus Pulmonary Syndrome—United States: Updated Recommendations for Risk Reduction - MMWR 2002; 51 [No. RR09]:1-12.

(<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5109a1.htm>)

CDC - Precautions for Cleanup of Rodent- Contaminated Areas and Dead Rodents

Areas with evidence of rodent activity (e.g., dead rodents and rodent excreta) should be thoroughly cleaned to reduce the likelihood of exposure to hantavirus-infected materials. Cleanup procedures must be performed in a manner that limits the potential for dirt or dust from contaminated surfaces to become airborne.

CLEANUP OF RODENT URINE AND DROPPINGS AND CONTAMINATED SURFACES

- Wear rubber, latex, vinyl, or nitrile gloves.
- Spray rodent urine and droppings with a disinfectant or chlorine solution until thoroughly soaked.
- To avoid generating aerosols, do not vacuum or sweep rodent urine, droppings, or contaminated surfaces until they have been disinfected.
- Use a paper towel to pick up the urine and droppings. Place the paper towel in the garbage.
- After the rodent droppings and urine have been removed, disinfect items that might have been contaminated by rodents, their urine or droppings.
 - Mop floors with a disinfectant or chlorine solution.
 - Disinfect countertops, cabinets, drawers, and other durable surfaces with a disinfectant or chlorine solution.
 - Spray dirt floors with a disinfectant or chlorine solution.
 - Disinfect carpets, rugs, and upholstered furniture with a disinfectant or a commercial grade steam cleaner or shampoo.

- Launder potentially contaminated bedding and clothing with hot water and detergent. ○
Use rubber, latex, vinyl, or nitrile gloves when handling contaminated laundry. ○
Machine dry laundry on a high setting or hang it to air-dry in the sun.
- Leave books, papers, and other items that cannot be cleaned with a liquid disinfectant or thrown away, outdoors in the sunlight for several hours, or in an indoor area free of rodents for approximately 1 week before cleanup. After that time, the virus should no longer be infectious. Wear rubber, latex, vinyl, or nitrile gloves and wipe the items with a cloth moistened with disinfectant.
- Disinfect gloves before removing them with disinfectant or soap and water.
- After removing cleaned gloves, thoroughly wash bare hands with soap and warm water.

CLEANUP OF DEAD RODENTS AND RODENT NESTS

- Wear rubber, latex, vinyl, or nitrile gloves.
- In the western United States, use insect repellent (containing DEET) on clothing, shoes, and hands to reduce the risk of fleabites that might transmit plague.
- Spray dead rodents and rodent nests with a disinfectant or a chlorine solution, soaking them thoroughly.
- Dispose of the dead rodent or nest by discarding it 100 feet from any developed setting, allowing it to naturally decompose. If you are in an area where children or pets may disturb or come into contact with the discarded material, double bagging, sealing and discarding in a covered trash can that is regularly emptied is preferred.
- Clean up the surrounding area as described on page 9.

DISINFECTING SOLUTIONS

Two types of disinfecting solutions are recommended to clean up rodent materials:

- **General-Purpose Household Disinfectant** --- Prepare according to the label, if not pre-diluted. Almost any agent commercially available in the United States is sufficient as long as the label states that it is a disinfectant. Effective agents include those based on phenols, quaternary ammonium compounds, and hypochlorite.
- **Hypochlorite Solution** --- A chlorine solution, freshly prepared by mixing 1½ cups of household bleach in 1 gallon of water (or a 1:10 solution) can be used in place of a commercial disinfectant. When using chlorine solution, avoid spilling the mixture on clothing or other items that might be damaged by bleach. Wear rubber, latex, vinyl, or nitrile gloves when preparing and using chlorine solutions. Chlorine solutions should be prepared fresh daily.

CLEANING SHEDS AND OTHER OUTBUILDINGS

Before cleaning closed sheds and other outbuildings, ventilate the building by opening doors and windows for at least 30 minutes. Use cross ventilation if possible. Leave the area during the airing out period. This airing helps to remove infectious primary aerosols that might be created when hantavirus-infected rodents urinate. In substantially dirty or dusty environments, additional protective clothing or equipment may be worn. Such equipment includes coveralls (disposable when possible) and safety glasses or goggles, in addition to rubber, latex, vinyl, or nitrile gloves. For recommendations regarding precautions for cleanup of outbuildings with heavy rodent infestations, see section below “CDC-Special Precautions...”

CDC - Special Precautions for Homes of Persons with Confirmed Hantavirus Infection or Buildings with Heavy Rodent Infestations

Special precautions are indicated for cleaning homes or buildings with heavy rodent infestations. A rodent infestation is considered heavy if piles of feces or numerous nests or dead rodents are observed. Persons cleaning these homes or buildings should contact the local or state public health agency or CDC for guidance. Workers who are either hired specifically to perform the cleanup or asked to do so as part of their work activities should receive a thorough orientation from the responsible health agency or employer about hantavirus transmission and disease symptoms and should be trained to perform the required activities safely.

CDC - RECOMMENDATIONS FOR CLEANING HOMES OR BUILDINGS WITH HEAVY RODENT INFESTATIONS:

- If the building has been closed and unoccupied for a long period (weeks or months), ventilate the building by opening doors and windows for at least 30 minutes before beginning any work. Use cross ventilation if possible. Leave the area during the airing-out period. The ventilation helps to remove aerosolized virus inside the structure.
- Persons involved in the cleanup must wear coveralls (disposable if possible); rubber boots or disposable shoe covers; rubber, latex, vinyl, or nitrile gloves; protective goggles; and an appropriate respiratory protection device, if needed (see Respiratory Protection below).
- Personal protective gear should be decontaminated or safely disposed of upon removal at the end of the day. Reusable coveralls must be laundered on-site. If no laundry facilities are available, the coveralls should be immersed in liquid disinfectant until they can be washed.

- Unless burned on-site, all potentially infectious waste material from cleanup operations should be double-bagged in appropriate plastic bags. The material in the bags should then be labeled as infectious and disposed of in accordance with local regulations for infectious waste.
- Persons involved in the cleanup who develop a febrile or respiratory illness within 45 days of the last potential exposure should immediately seek medical attention and inform the attending physician of the potential occupational risk of Hantavirus infection. The physician should contact local health authorities promptly if hantavirus-associated illness is suspected. A blood sample should be obtained and forwarded through the state health department for Hantavirus antibody testing

10. CDC - Heavy Rodent Infestation – Respiratory Protection

As stated in the “Recommendations for Cleaning Homes or Buildings with Heavy Rodent Infestations” section of the CDC report *Hantavirus Pulmonary Syndrome---United States: Updated Recommendations for Risk Reduction*, an appropriate respiratory protection device should be used as detailed in “Precautions to Limit Occupational and Recreational Exposure to Rodents” section.

The following excerpt from that section outlines this direction;

“When removing rodents from traps or handling rodents, workers should wear either a half-face, tightseal, negative-pressure respirator or a (positive pressure) PAPR (powered air-purifying respirator), equipped with N-100 or P-100 filters (formerly designated high efficiency particulate air filters [HEPA]). Negative-pressure respirators are not protective if facial hair interferes with the face-piece to face seal because a proper fit cannot be assured. Respirator use practices in an occupational setting should be in accordance with occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.134, which includes a written program specific to respirator use, risk assessment for personal protective equipment, medical clearance to wear respiratory protection, and annual training and fit testing in each approved respirator type (43). The comprehensive user program should be supervised by a knowledgeable person (44). Given the predictable nature of HPS risk in certain professions or environmental situations, provisions should be made in advance for respiratory protection. Because of the expense associated with purchasing a PAPR system, a negative-pressure tight-seal respirator equipped with N-100 or P-100 filters is recommended when respiratory protection is required for home use. Respirators might cause stress to persons with respiratory or cardiac conditions; these persons should be medically cleared before using such a respirator. Home or other users with potentially impaired respiratory function also should be aware of the risks associated with the use of negative-pressure respirators (43).”

NezPerce Clearwater NF (NCF) Policy

The NCF requires use of a respirator when cleaning areas of heavy rodent infestation, and allows for voluntary use in areas of light rodent infestation as specified in the NCF Respiratory Protection Plan. This program includes medical screening and fit testing as part of the program.

Employee Training

All Forest employees shall receive training on Hantavirus before working in an area of possible exposure or performing any cleanup duties while at work. This training can be included as part of the RA/JHA for work projects.

Training shall include the following information at a minimum:

- Review of this written Hantavirus Prevention Plan
- Hantavirus Pulmonary Syndrome disease – transmission, symptoms, and treatment
- Work tasks that create exposure risks
- Hazard identification
- Hazard prevention
- Hazard removal / cleanup protocols and procedures

Documentation and Plan Review

A written copy of this plan will be kept by the Forest Safety Manager and is available to all employees for review. It will also be available electronically on the Forest Safety and Health intranet website.

Training on HPS shall be documented and filed. Records of training will be kept by each unit following safety training policy for that unit.

This plan will be reviewed and updated bi-annually by the Forest Safety Manager.

Additional Resources

Useful resources available to employees regarding HPS include:

- CDC Brochure on HPS - http://www.cdc.gov/hantavirus/pdf/HPS_Brochure.pdf

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- OSHA Safety and Health Topic – Hantavirus - <https://www.osha.gov/SLTC/hantavirus/>
- Montana State University publication on Hantavirus - <http://msuextension.org/publications/homehealthandfamily/mt199404hr.pdf>

Risk Assessment Analysis				Project Risk Assessment					
Identification of Hazards and Risk Assessment				Project Risk Assessment					
Subsystem	PRE-MITIGATION			Mitigation(s), Warnings and Reminders	POST-MITIGATION				
	Hazards (Loss of)	Likelihood	Severity		Risk Level	Likelihood	Severity	Risk Level	Additional Local Mitigation
	Working in an area of high potential hantavirus exposure; seasonal-use buildings, storage sheds, areas of pest harborage	Remote	Catastrophic	SERIOUS	<ul style="list-style-type: none"> Trained individuals perform an inspection of the work area before entry Trained individuals clean areas as deemed necessary before entry Employees must notify supervisor of any new signs of rodent activity Clean and maintain buildings to reduce rodent harborage 	Remote	Critical	MEDIUM	
	Exposure to hantavirus during mitigation; cleanup and removal of dead rodents, nests, droppings	Remote	Catastrophic	SERIOUS	<ul style="list-style-type: none"> Train employees on safe removal practices and procedures. Follow CDC guidelines for Hantavirus risk reduction as outlined in local Forest Hantavirus Protection Plan, including: <ul style="list-style-type: none"> Ventilation for at least 30 minutes prior to entry Wetting material with bleach solution Use of proper PPE; gloves, respiratory protection, etc.; follow unit respiratory protection plan if utilizing respirator 	Improbable	Critical	MEDIUM	
	Contamination of clothing and equipment	Remote	Catastrophic	SERIOUS	Clean and dispose of contaminated PPE and other equipment as outlined in the Forest Hantavirus Protection Plan.	Remote	Critical	MEDIUM	
	Continuous Rodent Presence	Frequent	Critical	HIGH	<ul style="list-style-type: none"> Forest will work toward <ul style="list-style-type: none"> Rodent proofing buildings Food and harborage elimination A continuous trapping program were feasible as outlined in the Forest Hantavirus Prevention Plan 	Occasional	Critical	SERIOUS	
	Increased rodent presence within seasonal-use buildings	Frequent	Critical	HIGH	<ul style="list-style-type: none"> Rodent proof before off-season Pre-use inspection that addresses rodent presence Clean before opening to occupation 	Remote	Critical	MEDIUM	

Lack of awareness of hantavirus and exposure potential	Probable	Critical	HIGH	<ul style="list-style-type: none"> • Provide hantavirus awareness training to all employees that may be reasonably expected to experience exposure to hantavirus, utilizing the Forest Hantavirus Prevention plan • Provide hantavirus awareness information in areas of likely pest harborage and exposure; bulletin boards, rentals 	Occasional	Critical	SERIOUS	
Prepared by					Date			
Line Officer Signature			Title		Date			

Reviewed By

We, the undersigned work leader and crew members, acknowledge participation in the review of this Risk Assessment. We have thoroughly discussed and understand the provisions of each of the document, including hazards and associated risk, and procedures for mitigation.

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