

HACCP Step 1 – Activity Description

Activity Description	
Facility: Hagerman Nat'l Wildlife Refuge	Site: Refuge-wide. All habitats.
Project Leader: Johnny Beall	Activity: Fire Management Operations e.g. Stream Restoration, Fire Management, Aquatic Survey/Monitoring, Refuge Farming, Fish Production, T & E Recovery/Listing Survey
Activity Leader: Incident Commander in charge of fire operations	
Address: 6465 Refuge Road Sherman, TX 75090	
Phone: 903 786 2826	

Project Description i.e., Who; What; Where; When; How; Why
<p>As one of the system of National Wildlife Refuges managed by the U.S. Fish & Wildlife Service for specific fish & wildlife purposes, Hagerman NWR conducts Fire Management Operations as an integral part of upland habitat management activities. The establishing purpose of Hagerman NWR is for “migratory birds” and both upland and aquatic habitats are present and vital to the refuge meeting its purpose.</p> <p>Fire Management Operations consist of two basic types: prescribed fire or prescribed burning activities; and, wildland fire suppression. Both of these two basic types of fire management activities may utilize the same kind of personnel, equipment and operations in managing fire, and may therefore have the same potential pathways for introducing non-native organisms to refuge habitats. Due to the reactive “emergency” nature of wildfire suppression activities, establishing HACCP processes will be especially useful in anticipating potential pathways that might otherwise be overlooked in the rush to contain, control, and extinguish a fire.</p> <p>In general, fire management activities involve personnel on foot, fire trucks (tankers), and a variety of specialized equipment including 4-wheelers, bull dozers, and helicopters with water buckets. Activities performed for the maintenance of fuel breaks, such as mowing, are also part of fire management operations. The very nature of fire on the landscape requires that personnel and equipment go where the fire is, frequently in off-road situations, creating a number of pathways for picking up and relocating plant parts and other biotics that could then be carried to new environments. The practice of drafting water from a variety of sources and the use of buckets by helicopters also create the potential for aquatic organisms and other biotics to be translocated. This HACCP document will identify specific fire management activities and related pathways or hazards, and offer a step-wise process to establish control points and processes to prevent the unintended spread of organisms in fire management operations.</p>

HACCP Step 2 – Identify Potential Hazards

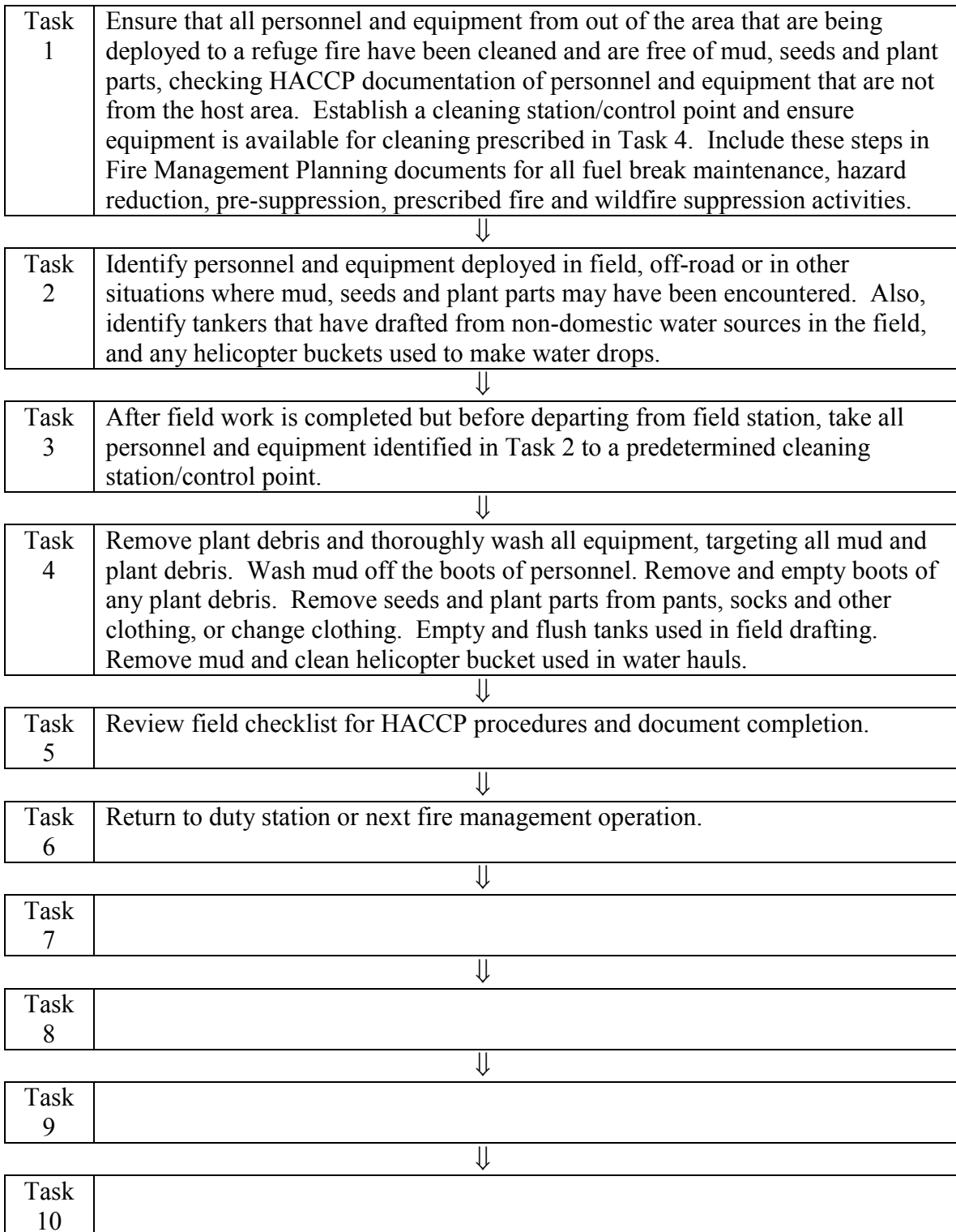
(to be transferred to column 2 of HACCP Step 4 – Hazard Analysis Worksheet)

Hazards: Species Which May Potentially Be Moved/Introduced
<p>Vertebrates: Fish may be picked up by helicopter bucket operations and deposited to a new location, but in most cases the new location would not afford an aquatic habitat, or the period away from water would not create a viable pathway for a non-target fish species.</p> <p>Equipment and supplies may harbor mice or other rodents, especially if in storage for extended periods.</p>
<p>Invertebrates: Spiders and insects could be in stored equipment and clothing at Hagerman or in same imported to Hagerman for a fire. Aquatic invertebrates could be picked up in helicopter bucket operations.</p>
<p>Plants: Numerous plant species could be identified as hazards in fire operations that could be imported or exported. Invasive species established at Hagerman include Chinese bush clover (<i>Lespedezia cuneata</i> aka <i>Sericea lespedeza</i>), field bindweed (<i>Convolvulus arvensis</i>), Johnsongrass (<i>Sorghum halpense</i>), henbit (<i>Lamium amplexicaule</i>). These species and other plants at Hagerman could be hazards to other sites at Hagerman or to other fire sites where personnel, vehicles or specialized equipment might move. Also, any number of hazardous/invasive plant species could be imported to Hagerman from other locations.</p> <p>Another consideration is that be aquatic plants that may cling to a helicopter bucket.</p>
<p>Other Biologics (i.e. disease, pathogen, parasite): None known at this time.</p>
<p>Physical Pathways (i.e., materials, debris, mud in tires, etc.): Physical pathways involving fire operations are numerous including footwear, clothing, tires, chassis, equipment parts, drafted water, aerial bucket used in water drops.</p> <p>Note: Due to the mobile nature of fire personnel and equipment and the associated potential for both import and export of hazards, this HACCP process will focus on managing the activities which create physical pathways rather than on species involved in pathways.</p>

HACCP Step 3 – Flow Diagram

Flow Diagram Outlining Sequential Tasks to Complete Activity/Project
Described in HACCP Step 1 – Activity Description

(to be transferred to column 1 of the HACCP Step 4 – Hazard Analysis Worksheet)



HACCP Step 4 - Hazard Analysis Worksheet

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 1 Importation of personnel and equipment to Hagerman Refuge Ecosystem	Vertebrates None Likely	no			
	Invertebrates None expected but potential for some non-native species	no			
	Plants Several invasive and other non-native species possible	yes	Invasive species Imported	Washing, cleaning	Yes
	Others Mud containing plant parts	yes	Invasive species Imported	Washing, cleaning	Yes

Task 2 Deployment of personnel and equipment in off-road field conditions	Vertebrates				
	Invertebrates				
	Plants	yes	Collection of invasive and other non-native species	Avoid weed patches	No
	Others	yes	Collection of invasive and other non-native species	Avoid Weed patches	No

Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Tasks # 3 and 4	Vertebrates				
	Invertebrates				
	Plants Various seeds and plant parts	Yes	Exportation of Invasive Species	Clean	yes
	Others Mud, plant debris	Yes	Exportation of Invasive species	Clean	yes

Task # 5	Vertebrates				
	Invertebrates				
	Plants	Yes	Ensures HACCP procedures done	Review checklist and document	Yes
	Others	Yes	Ensures HACCP procedures done	Review checklist and document	Yes

For additional pages, select entire page and copy to a new page.

HACCP Step 5 – HACCP Plan Form

HACCP Plan Form								
(all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)								
Critical Control Point (CCP)	Significant Hazard(s)	Limits for each Control Measure	Monitoring				Evaluation & Corrective Action(s) (if needed)	Supporting Documentation (if any)
			What	How	Frequency	Who		
T1 import eq. & personnel	Invasive plant parts	Visually absent						
T2 Deploy eq. & personnel	Weed patches	Avoid identified sensitive sites						
T3&4 Clean eq. & personnel	Invasive plant parts	Visually absent						
T5 Review & Document HACCP proc.	Invasive plant parts	S.O.P. done every time						
Facility: Hagerman NWR					Activity: Fire Management Operations			
Address: 6465 Refuge Road Sherman, TX 75090								
Signature:					Date:			
HACCP Plan was followed.								