


Joint Base Langley-Eustis (Eustis)

Fort Eustis Wildland Fire Management Plan

This Wildland Fire Management Plan has been prepared by the Joint Base Langley-Eustis (Eustis), Fort Eustis natural resources staff in accordance with Air Force Instruction (AFI) 32-7064. The plan is incorporated as Annex I to the Fort Eustis Integrated Natural Resources Management Plan (INRMP). The Wildland Fire Management Plan remains in effect until 5 June 2024. It shall be used in conjunction with the INRMP and revised in conjunction with the revision of the INRMP which is due on that date.

PLAN APPROVAL:

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Acronyms and Abbreviations

ABW	Air Base Wing
AF	Air Force
AFI	Air Force Instruction
ASA	Army Support Activity
CED	Civil Engineer Division
CEIE	Environmental Element
DoD	Department of Defense
D/O	Driver/ Operator
FES	Fire & Emergency Services
IC	Incident Commander
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
JBLE	Joint Base Langley-Eustis
JBLE-E	Joint Base Langley-Eustis (Eustis)
LAFB	Langley Air Force Base
MAA	Mutual Aid Agreements
MSG	Mission Support Group
NFES	National Fire Equipment System
NFPA	National Fire Protection Association
NWCG	National Wildfire Coordinating Group

Acronyms and Abbreviations (cont.)

PAO	Public Affairs Office
PPE	Personal Protection Equipment
SFS	Security Forces Squadron
USAF	US Air Force
UXO	Unexploded ordinance
WFMP	Wildland Fire Management Plan
WFSA	Wildland fire situation analysis
WUI	Wildland Urban Interface

1. Introduction. This Wildland Fire Management Plan (WFMP) establishes policy, procedures and responsibilities for wildland fire management and prescribes preventive measures, response procedures and responsibilities regarding wildland fires at Joint Base Langley-Eustis, Fort Eustis, Virginia. This plan complies with National Fire Protection Association (NFPA) Standard 1051, *Standard for Wildland Fire Fighter Professional Qualifications*, NFPA Standard 1143, *Standard for Wildland Fire Management*, NFPA 1144, *Standard for Protection of Life and Property from Wildfire*, AFI 32-2001, *The Fire Protection Operations and Fire Prevention Program* and AFI 32-7064 *Integrated Natural Resources Management Chapter 13 Wildland Fire Management*. This plan is an annex to the Fort Eustis INRMP.

2. Definition. A wildland fire is a non-structure fire that occurs in vegetation or natural fuels including wildfires which are unplanned fires resulting from various sources such as (but not necessarily limited to) lightning strikes, munitions use, unauthorized human-caused fires, escaped prescribed fire projects, etc. Prescribed fires are included in the USAF definition of a wildland fire and defined as any fire intentionally ignited by qualified prescribed fire personnel to meet specific land management objectives. Information pertaining to prescribed fires is articulated in the INRMP. Additional information about natural areas and associated natural resources is available from the Fort Eustis INRMP. Information regarding cultural resources can be obtained from the Fort Eustis Cultural Resources Management Plan.

3. Goals and Objectives of Wildland Fire Management. The purpose of this WFMP is to articulate wildfire response and risk mitigation and planning for prescribed fires at Fort Eustis. The following are goals and objectives of wildland fire management at Fort Eustis.

3.1. Goal: Prevent non-prescribed wildland fire ignition.

3.1.1. Objectives for prevention.

- Maintain existing firebreaks.
- Restrict field activities that could increase risks of wildfire ignition depending on existing fire hazard ratings.
- Preclude small arms range firing during periods of drought and high winds.
- Enforce no smoking in training areas and designate smoking areas at firing range facilities.
- Restrict smoking to pre-designated smoking areas and enforce proper disposal of smoking debris in designated containers.
- Enforce no open burning policy to include burning of brush, trash, etc.
- Restrict campfires solely to Boy Scouts of America activities (or equivalent) that have been approved by Fire and Emergency Services (FES), 733d Civil Engineer Division.
- Enforce policies of unauthorized disposal of smoking debris into the environment.
- Manage vegetation to reduce potential fuel load.

- Implement appropriate integrated pest management to reduce invasive vegetation species that could contribute to fire risks such as common reed (*Phragmites australis*).
- Train all personnel (military, DoD civilians, contractors) using ranges/training areas in fire prevention.
- Apply active risk management. All possible precautions are taken to prevent man-made fires from initiating on the ranges.
- Ensure that all vehicles used in routine field operations (including but not limited to natural resources, Range Operations, law enforcement) be equipped with spark arrestors, shovels, and fire extinguishers.
- Park maintenance vehicles only in areas clear of or with minimal vegetation (areas with vegetation less than 6 inches).
- Vehicles are restricted to on-road use unless precluded by emergency.
- Control or remove weeds from around all targets from the start of declared fire season.
- Preclude use of fire or “controlled burns” for simulating conditions military (or other) training event scenarios.
- Maintain healthy commercial forests to reduce risks of insect and fungal-related mortality that increase risks of wildland fires.
- Keep mulch/wood chip piles maintained by turning every 6 weeks between February and November, avoiding green vegetation debris on top and keeping piles at 12 feet height.
- Mulch piles are authorized only at the BLDG 2015 compound.
- Inspect small arms ranges by using units under the supervision of Range Operations to confirm no wildfire risks exist following use of a given range.
- Prepare prescribed fire plans for site-specific natural resource management projects and minimize fuel loads.

3.2. Goal for immediate fire suppression.

3.2.1. Objectives for suppression.

- Maintain fire suppression equipment in ready state by performing routine maintenance and readiness checks.
- Train personnel in wildland firefighting techniques and safety.
- Require personnel to meet and maintain minimum physical fitness requirements within contractual limitations.
- Use established procedures for assistance and coordination during a fire.
- Require any given contractor to follow proper procedures for contacting FES and cooperating during a fire incident.
- Provide annual wildfire training to firefighters as coordinated through FES.
- Have a sufficient number of trained personnel to operate all water tenders simultaneously, if conditions warrant a maximum response during fire season.

- Annually review fire procedures, including coordination, reporting, and assistance procedures prior to fire season.

4. Description of Fort Eustis. Fort Eustis is located in southeast coastal Virginia in the Mid-Atlantic Coastal Plain. The installation consists of approximately 7,869 acres adjacent to the city of Newport News, Virginia. Additionally, Training Area 30 (which consists of an estimated 50 acres of natural area) is located adjacent to James City County on the north side of Skiffes Creek. This area is rarely used and virtually no military activities occur there that would pose a wildfire risk. No prescribed fires are conducted in this area. Natural areas on Fort Eustis consist of tidal and non-tidal wetlands, mixed hardwood-pine upland forest, riparian habitats and shorelines. A complete description of these areas as well as the installation in general can be found in the INRMP.

5. Wildland Fire History.

5.1. General. This wildland fire history is maintained by FES, 733d Civil Engineer Division, 733d Mission Support Group. Historical and annual fire data is collected and maintained by FES.

5.2. Outdoor fire history. Information concerning fires occurring outdoors (other than structural fires) exists for the period of 2011 through 2019. Some of these incidents were not considered wildfires but are included to ensure an appropriate analysis of wildland fire risks. Table 5 provides information about the fire history.

Table 5: Outdoor Fire History.

Year/ Date/	Incident #	Affected Area Size	Location	Cause
2011				
26 Nov	11-1429	4 ft X 10 ft	Cantonment area: front of Bldg 2527 on Hagood St.	Leaves/grass caught fire. Cause not identified.
2012				
10 April	12-390	Less than 3 ft ² area.	Cantonment area: Curb in front of Bldg 705 on Washington Blvd.	Tree debris caught fire. Cause not identified.
11 April	12-390	Less than 3 ft ² area.	Cantonment area: Curb in front of Bldg 705 on Washington Blvd.	Tree debris caught fire. Cause not identified.
18 April	12-426	Less than 3 ft ² area.	Cantonment area: Inside drain at intersection of Madison Ave. & Jefferson St.	Vegetation inside drain was smoking. Possibly caused by cigarette.
19 April	13-404	5 ft by 10 ft area.	Cantonment area: mulch bed by loading dock at Bldg 576 (Jefferson Ave.	Cause not confirmed.

Table 5: Outdoor Fire History (continued).

Year/ Date	Incident #	Affected Area Size	Location	Cause
2013 None				
2014				
1 July	14-887	100 ft by 140 ft area.	Behind Range 2.	Caused by tracer rounds.
7 July	14-917	Less than 3 ft2	Embankment at Gate 2.	Unauthorized campfire. No persons identified.
18 July	14-964	0.25 acre area.	Behind Range 2.	Caused by tracer rounds.
2015				
2 June	15-721	30 ft by 50 ft area.	Cantonment area: Forested area adjacent to Community Gardens on Wilson Ave.	Possible lightning strike.
2016 - None				
2017 - None				
2018				
August	2018-1064	600 ft2	Forest area adjacent to Range 3.	Likely resulting from range firing.
2019				
January	2019-0123	Approximately one acre	Range 3.	Firing on range caught brush on fire.
February	2019-0266	75 ft by 30 ft size area.	Range 3.	Firing on range caught brush on fire.
March	2019-0512	single tree trunk	Training Area 1.	Cause unknown.
April-December	NONE			

5.3. Prescribed Fire History. Prescribed fires were originally performed by the Environmental Element, Civil Engineer Division (CED) (formerly the Environmental & Natural Resources Division, Directorate of Public Works prior to realignment with LAFB) for natural habitat management on a limited basis. Prior to 1998, very little documented information existed on prescribed fires at Fort Eustis. Some prescribed fires have been performed at Felker Army Airfield, adjacent areas of The Pines Golf Course, B1424 pine stand, early successional habitat vicinity Mulberry Island Road & Taylor Avenue, marsh habitat adjacent to Eustis Lake & Taylor Avenue, and Training Area 28. However, after 2013 the installation lost control of coordinating and conducting prescribed fires and the subsequent flexibility needed to implement a prescription fire program. Consequently, prescribed fires have not been performed since 2013.

5.4. Analysis of fire history. Fires have occurred in outdoor areas in both training areas and non-training areas based on various causes. The primary causes based on the fire history of 2011-2019 include:

- Tracer rounds at small arms firing ranges (5 incidents based on Table 5).
- Cigarettes (suspected cases).
- Training flares/pyrotechnics (possible cases but not confirmed).

Five outdoor fire incidents of the 13 recorded for the period of 2011-2019 represent potential wildfire concerns. All were the result of small arms range firing particularly involving tracer rounds.

6. Wildland Fuel Factors. Predicting the potential behavior and effects of wildland fire is an essential task in fire management. Fire behavior is the way a fire reacts to available fuels, weather, and topography. A change in any of these components results in a change in fire behavior. Fire behavior is complex with many contributing factors, all of which fall into the broader elements of:

6.1. Topography (slope, aspect, and elevation), weather (climate, air temperature, wind, relative humidity, atmospheric stability) and fuels (size, type, moisture content, total loading, and arrangement) constitute the three elements that comprise the fire environment, surrounding conditions, influences, and modifying forces. Together they determine fire behavior.

6.2. Topography and Weather. The topography and weather of a given location are beyond the ability of management to control. Weather conditions such as drought, high temperature, and high wind play a significant role in the spread of wildfire, and are influenced by topography and geographic location.

6.3. Fuels. Fuel hazard, based on vegetative composition and structure constitutes special challenges based on access to areas, frequency of storm events and type of habitats. Fuels are made up of the various components of vegetation, live and dead, that occur on a given site. The type and quantity depends upon the soil, local weather, geographic features, land use, and the fire history of the site. Fuel load conditions can be highly variable and assessing fuel loads is manpower-intensive.

7. Wildfire Ignition Source Risks at Fort Eustis.

- Severe weather involving thunderstorms.
- Unauthorized/improper disposal of smoking/cigarette debris.
- Unauthorized open burning.
- Small arms range firing/tracer rounds particularly during dry conditions.
- Use of military training pyrotechnical devices in training areas particularly during dry conditions.
- Unmanaged wood chip or mulch piles.
- Mortality of commercial forest stands resulting from biotic (i.e., insect infestation and fungal diseases), abiotic (i.e., extended drought).
- Periods of extended drought conditions resulting in dead vegetation and dry conditions in natural areas.

8. Fire Behavior.

8.1. Effects of weather.

- Local fire weather elements are wind, relative humidity, and temperature. Each of these elements contributes to the atmospheric stability of an area. Accurate, local weather information is critical to evaluate conditions that could lead to a wildland fire.
- Complete weather data is available from the National Oceanic and Atmospheric Administration office in Wakefield, Virginia.
- Wind. Wind affects fires in several ways. Wind transports moisture-laden air and speeds up the drying of fuels. Once a fire is started, wind stimulates combustion by increasing oxygen supply. Wind spreads fire by carrying heat and burning embers to new fuels, and by bending flames towards unburned fuels, causing preheating and ignition. The direction a fire spreads is primarily a function of wind. Generally, wind speeds are highest during the middle of the afternoon and are reduced during the evening, except with approaching fronts.

8.2. Moisture/Humidity.

- Humidity is atmospheric moisture, or invisible water vapor in the air. Moisture in the air is important because it affects the amount of moisture in the fuel, especially fine and dead fuels. Relative humidity is the amount of moisture in a volume of air compared to the total amount (saturation) that volume can hold at that temperature and pressure. The change of relative humidity with temperature follows the diurnal change. Relative humidity decreases as the temperature increases during the day, and then increases as the temperature decreases at night.
- Changes in fine and dead fuel moisture closely follow diurnal changes in relative humidity. Fire in dry fuels starts easily and spreads rapidly. When the moisture content is high, fuels are more difficult to ignite, and fire spreads slowly. It takes varying amounts of time for fuels to absorb from the air or lose moisture to it. Fine fuels such as grass, leaves and small twigs can reach equilibrium moisture content in a few minutes, but large limbs and logs take a longer.
- Understanding relative humidity effects on fuels is essential to meet burn objectives and minimize fire control problems. Late afternoon or nighttime burning generally is less intense and more easily controlled due to higher fine fuel moistures.

8.3. Temperature.

- Temperature is an important cause of fire, a necessary part of the combustion process, and an element of the weather that is related to other fire weather elements -moisture and wind. Most extremes of climate occur nearest the ground, except when forest canopy cover is present. Temperatures at the surface of a closed forest canopy have higher daytime temperatures than the air at the ground. The night temperatures are lower near the top of the crown canopy because this is the site where radiation takes place. Ground temperatures are fairly uniform in a broad leaf forest in the winter, while pine forest show significant variation in both summer and winter. If the vegetation is sparse, with openings and pockets, more heat reaches the ground. Therefore, cleared areas may be 10-15 degrees Fahrenheit warmer than shady areas.
- The average lethal temperature for living tissue (under the bark) is about 145 degrees F. Air temperatures below 60 degrees F are recommended for winter understory burns because more heat is needed to attain lethal temperatures for larger trees.

8.4. Effects of the diurnal change.

- Characteristically, temperatures are lower during the night than during the day. Peak summer daily temperatures generally occur between 1400 and 1500. Temperatures begin to drop as the sun goes down, and continue to drop until just before dawn.
- Variations to this diurnal change may occur in response to amount of cloud cover, season of the year and the influence of weather changes.
- Relative humidity closely follows daily temperature changes. Fire danger, intensity of burning and rate of spread also generally follows daily temperature changes. Wind speeds peak in the late afternoon and subside during evening hours.
- Low intensity prescribed fires are generally scheduled for late afternoon or evening, while prescribed burns will lead to clear a site of logging debris prior to reforestation are best done in the middle of the afternoon when the potential for fire intensity is the greatest.

8.5. Effects of Seasonal Change. Effects of seasonal change on fire behavior is significantly affected by seasonal changes that influence fuel condition and type, ground moisture, wind speeds and direction, and air temperature. A useful measure of the cumulative impacts of fire weather conditions is the Cumulative Severity Index (CSI). This index is compiled by the Virginia Department of Forestry and is an indication of drought conditions. The index ranges from 0 to 800, with 800 indicating extreme drought conditions.

8.5.1. Winter vegetation. Winter vegetation is dormant in winter. Ground water levels are elevated at the highest point of the year. Large surface fuels, such as downed large limbs, logs and stumps, have the highest moisture content than at any other season. Smaller surface fuels adjacent to mineral soil are typically wet. Surface fuels exposed to air and subject to low relative humidities may become dry and capable of ignition. Fires generally burn very shallow during this season, and may cause mortality to thin-barked hardwood saplings. Larger pines and hardwoods are generally unaffected. Within hardwood stands, the lack of deciduous leaves increases surface fuel temperatures and allows generation of higher surface winds that, when ignited, may result in fast, shallow-burning fires. In grassland communities, fires during this period may select against grass species by eliminating seeds susceptible to fire while favoring those grass communities that are fire-tolerant or fire dependent. Air temperatures are generally low, reducing the potential of attaining lethal temperature thresholds that could result in vegetation mortality. Day length is the shortest of any season, thereby reducing capacity of solar radiation to dry fuels.

8.5.2. Spring vegetation. In mid-February, forest vegetation is beginning to emerge from winter dormancy. Buds on trees begin to swell and trees begin uptake of ground moisture. Ground water levels begin to fall. Surface fuel moisture will be quickly reduced in response to reduction of ground water levels, rising air temperatures and associated winds. Surface wind speeds will be volatile until deciduous leaves emerge and deflect winds above forest canopies. From 15 February through 15 May, the State 4:00 PM (1600) burning law is in effect. This is the ideal time to conduct maintenance burns for hazard reduction and wildlife habitat improvements. From mid-April to mid-May, grasses begin to emerge, reducing surface fuel availability.

8.5.3. Summer vegetation. All vegetation is actively growing and generally less susceptible to ignition unless associated with drought conditions. Ground water levels are at their lowest of the year. Large surface fuels, such as limbs, logs and stumps contain the lowest moisture of the year. Daily air temperatures are at the highest level of any season; daily relative humidities are typically at the lowest level of year. During drought periods, fires that occur can burn with extreme intensity, causing maximum vegetative mortality.

8.5.4. Fall vegetation. All vegetation is beginning to enter dormancy. Transpiration of trees is no longer withdrawing ground water and ground water levels begin to rise through mid- December when soil saturation generally occurs. Large surface fuels, such as large limbs, logs and stumps gradually absorb moisture in response to rising ground water. Deciduous trees lose their leaves. In response, within hardwood stands the potential for surface wind speeds and surface air temperatures increase and accelerate surface air.

9. Firebreaks and Fuel breaks. When planning for prescribed fires and when suppressing wildfires, natural and existing man-made features are used whenever possible. If a wildfire escapes initial attack, firebreaks or fuel breaks provide the most logical location for fire containment lines. Well maintained firebreaks and fuel breaks provide defensible space, which aids in wildfire containment. Maintenance treatments are necessary because vegetation will grow back over time. Firebreaks are also constructed and maintained, or rehabilitated to prevent weed invasion.

9.1. Fuel Management. Management of fuels is limited due to manpower and accessibility. Fuels are managed using a wide variety of tools. Mowing (of selected areas where feasible and authorized) and reducing weeds through seeding and herbicides are all vegetation manipulation techniques with varying degrees of effectiveness. Vegetation manipulation tools are selected based on starting points and desired future condition but must also be considered with other requirements. Vegetation is not managed only to reduce hazardous fuels - management must be holistic and provide for the total number and types of uses. Ultimately, fuel management should reduce wildfire risk, be cost-effective, result in an upward/improving vegetation trend, reduce weeds, support wildlife/biodiversity, and be integrated with mission requirements.

9.2. Wildland Urban Interface (WUI). WUI is a zone of transition between wildland (unoccupied land) and human development. Communities in the WUI are at risk of catastrophic wildfire and their presence disrupts the ecology. WUI areas on Fort Eustis are identified before, during and after any construction projects. They mostly include housing areas developed years ago along Wilson Avenue that are surrounded by wildland vegetation. Although these areas are identified as WUI areas, fire breaks and fuel breaks are crucial to eliminating the fire danger in these areas. Firebreaks have been extremely critical in keeping any ensuing wildfires from becoming conflagrations.

10. Establishing Fire Season and Daily Fire Rating.

10.1. Weather. Coastal Virginia (Tidewater Region) is considered a mild, humid climate. Table 4 provides average climatic conditions for coastal/Tidewater Virginia.

Table 10: Average Climate Conditions in Coastal/Tidewater Virginia

January Average Temperatures	July Average Temperatures	January Average Precipitation	July Average Precipitation	Annual Average Precipitation
35-48 (F)	71-85 (F)	2.81 inches	4.65 inches	41.32 inches

Fort Eustis annual average 44.4 inches

10.2. Fire Season. The wildland fire seasons in Virginia is October 15-November 30 (fall fire season) and 15 February - 30 April (spring fire season). Conditions may sometimes warrant an earlier declaration or extended fire season. Conditions that may cause an earlier or extended fire season declarations include below normal precipitation, above normal temperatures, sustained and greater than normal winds, 10 hour fuel moistures of 15% or less, consecutive thunderstorms with dry lightning, excess vegetation, build-up of fuels in the training areas or non-training areas, or any combination of these factors. There are significant peaks in fire danger in late summer when dry thunderstorms, standing dead and dormant vegetation, and lower relative humidity increase the susceptibility of ignition. Extended drought conditions are also possible.

11. Daily Fire Ratings.

11.1. Fire ratings provided by the Virginia Department of Forestry establish the starting point for FES fire ratings. The FES uses an interagency system, the National Fire Danger Rating System, for daily fire danger indices to predict ignition potential for specific areas. These indices are generated for an area by analyzing vegetation types, temperature, precipitation, fuel moisture, humidity, wind, lightning activity, and human factors. The FES uses weather data to calculate a burning index and then add in lightning, human interaction, and fire suppression resource availability to produce a fire rating classification.

11.2. Daily fire ratings for USAF property are determined every day during fire season by FES. FES determines and broadcasts daily fire ratings for JBLE, Fort Eustis.

12. Organizational Structure for Fire-related Activities.

12.1. Responsibilities.

12.1.1. HQ AFCESA/CEXF is the executive agent for the DoD Fire Fighter Certification Program and is responsible for issuing, maintaining and tracking NFPA wildland firefighter certifications for levels identified in AFI 32-7064, Chapter 13, table 12.1 and NFPA 1051.

12.1.2. Commander, 633d Air Base Wing (ABW).

- Approves the Wildland Fire Management Plan.

12.1.3. Director, 733d Civil Engineer Division (CED).

- Serves as the Fire Marshal for the installation.
- Designates in writing a Wildland Fire Program Manager.

12.1.4. Chief, Environmental Element (CEIE), CED.

- Serves as the custodian for the wildland fire program management.

12.1.5 Natural Resources Manager (Chief, Natural Resources & Integrated Pest Management (IPM) Branch, CEIE).

- Serves as the Wildland Fire Program Manager.
- Prepares and manages the WFMP.
- Coordinates revisions to the WFMP with the INRMP and other natural resources-related plans.
- Coordinates prescribed fires.
- Maintains fire breaks in the impact area.

12.1.6. Fire and Emergency Services, CED.

- Responds to wildfires.
- Reviews the installation WFMP annually and provides recommendations to updates.
- Ensures the maintenance of training records of FES personnel.
- Serves as the Incident Commander/On-Scene Coordinator for all wildland fire situations.
- Responsible for wildland fire response and coordination for external support.
- Assesses and posts daily wildland fire hazard ratings.

- Documents all wildfire incidents to include date and time of the incident, cause(s) of the wildland fire, location, acres burned, suppression techniques and any special notes.
- Serves as final authority for prescribed fire plans.

12.1.7. Army Support Activity (ASA)/Range Operations.

- Establishes designated smoking areas/enforces no smoking in training areas and live fire ranges.
- Precludes range firing and use of pyrotechnics on days that with conditions equate to increased risks of wildland fires.
- Documents type and number of pyrotechnical devices military units plan to use when given authorization of training area use.
- Contact FES immediately in the event wildfires occur in training areas or firing ranges.
- Provide fire prevention training to military personnel using training areas and firing ranges.

12.1.8. Security Forces Squadron (733 SFS).

- Provides security and access control during wildfire incidents.

12.2. Firefighting Vehicles and Equipment.

- Vehicles dispatched to combat wildfires shall be suitable for the assigned task. As a general rule, firefighting involves vehicles, operators, and water application to the fire. Most of the installation is readily accessible by vehicle traveling on roads. Off road travel is allowed for suppression response with vehicles capable of off-road movement.
- Using hand tools is not the primary firefighting strategy. However, hand tools used for ground operations are maintained at respective fire stations. All vehicles and equipment will be inspected, serviced, repaired, and maintained according to technical order requirements, manufacturer's guidance, NFPA requirements and recommended practice prior to, during, and after fire season.
- Radio communications shall be provided and utilized by all units/personnel operating on the fire ground.
- Tables 12.1 and 12.2 provide additional information regarding equipment available.

Table 12.1: List of Wildland Fire Response Equipment Used by FES

<u>Wildland Response Vehicles</u>	<u>Pump size</u>	<u>Capacity</u>	<u>Manning Level</u>
Brush 25	250gpm	250 gallons	2 (cross manned 1 from Truck 10)
Brush 33 (Kubota)	40gpm	100 gallons	Used for difficult to reach areas
Tanker 24	1250gpm	5000 gallons	1
Crash 23	1000gpm	1000 gallons	2
Engine 11	1250gpm	500 gallons	4
Engine 21	1250gpm	500 gallons	Reserve vehicle
Truck 10	2000gpm	470 gallons	3 (1 person cross mans Brush 25)

Table 12.2: Natural Resources & Integrated Pest Management (IPM) Branch, CEIE Equipment. The Natural Resources & Integrated Pest Management (IPM) Branch maintains the following equipment available for use under the direction/supervision of FES:

2 Pick-up trucks
2 Drip torches
4 Flappers
4 McLeod rakes
4 Fire rakes
1 Tractor
1 Trailer

13. Personal Protective Clothing and Equipment (PPE).

13.1. Fire and Emergency Services personnel shall be issued the following NFPA 1977 compliant Wildland Fire Personal Protective Clothing and Equipment:

- Hard hat.
- Shirt, pants, boots, gloves.
- Goggles.
- Fire shelter.
- Two 1-quart canteens.
- Web belt.
- Back pack.
- Standing order/watch out card.
- Particulate filter masks (or applicable NFPA standard).

13.2. Wildland firefighting PPE will be worn by firefighters assigned to JBLE and shall be worn on all wildland fire responses. Rubber boots and structural pants are not to be worn for wildland firefighting.

13.3. Certified natural resources staff assisting FES in wildland fires have the following prescribed fire PPE:

- Hard hat.
- Burn resistant shirt, pants, leather boots and gloves.
- Goggles.
- Particulate face mask.
- Camel back (or equivalent) water canteen.

14. Personnel Training and Certification Standards and Records.

14.1. All wildland firefighting personnel at Fort Eustis shall receive training and appropriate certifications prior to conducting wildland firefighting operations.

14.2. Certification: All personnel conducting wildland firefighting operations shall meet the certification standards specified in NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications for Wildland Firefighter I* and NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*.

14.3. As an interim measure, until HQ AFCESA/CEXF develops the Driver/Operator (D/O) Wildland Fire Apparatus course, the D/O Pumper, Mobile Water Supply and ARFF will be the acceptable certification levels.

14.4. HQ AFCESA/CEXF issues Wildland Firefighter I Certification (when available), through reciprocity following successful completion of those requirements identified in NFPA 1051.

14.5. Wildland Firefighting training IAW NFPA 1051 and the National Wildfire Coordinating Group (NWCG) shall be provided for all personnel conducting wildland firefighting operations initially and annually.

14.6. Training documentation shall be maintained on the AF Form 1028, and the 6-part folder and the Assistant Chief for Training's Certification database. Civilian employees may elect to enter the data into their career brief, part 3 of the civilian employee work folder, in addition to the 6-part folder and the Assistant Chief for Training Certification database.

15. Physical Fitness Standards.

15.1. Firefighter Fitness and Wellness Program is applicable for all Air Force firefighters whose position descriptions require participation in emergency incident operations. In addition to Air Force fitness requirements applicable to Airmen, all firefighters shall participate in a fitness and wellness program consistent with NFPA Standard 1500, *Occupational Safety and Health Program* as established by the Fire Chief. Individuals not physically capable of performing essential job functions will be referred to the appropriate medical authority for a fitness-for-duty evaluation in accordance with 5 CFR Part 339, *Medical Qualification Determination*.

15.2. The practical skills identified in NFPA 1051 shall be completed during initial and recurring training. Medical and physical examinations are conducted annually, (IAW NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*). Fort Eustis firefighters meet Physical Fitness Standards under the appropriate category of Wildland Firefighter certification commensurate with job duties.

16. Wildfire Detection and Response Procedures.

16.1. Detection.

- It is the responsibility of military units and all persons operating within training areas/firing ranges to immediately notify Range Operations and FES upon observing any type of fire. In non-training areas, it is the responsibility of every individual to immediately notify FES if any fire is observed.
- All persons reporting a wildfire to FES shall call 911 or 878-1008.

16.2. Response Procedures for JBLE, Fort Eustis.

- FES responds to and constitutes the Incident Commander (IC) for all wildfires. Should the wildfire exceed the capabilities of FES, Fort Eustis has mutual aid agreements with surrounding fire departments to provide wildfire fighting capabilities on request.

17. Notifications. Notifications of a wildfire are reported by the observer to FES at 911 or 878-1008. FES makes appropriate notifications as outlined in flight management plans.

18. Firefighting procedures. Whenever a wildfire occurs in training areas or firing ranges, Range Operations directs the termination of all range operations at Fort Eustis. Range Operations immediately reports the location, size, and status to FES.

- Whenever a wildfire affects aircraft/Felker Army Airfield Operations, 1st Fighter Wing (Felker Army Airfield) would direct the termination of aircraft operations on the installation.
- All wildfires shall be extinguished immediately.
- Controllable Range Fire: A wildfire on the installation that can be extinguished with installation assets.
- Uncontrollable range fire: A wildfire where FES determines the size, location, wind conditions, or other factors may cause the fire to exceed assigned equipment and resources.
- Natural Resources & IPM Branch staff with their internal equipment can augment FES. However, these staff shall provide the requested support that is within their technical and logistical means and shall be under the direct control and supervision of the Incident Commander/On-Scene Coordinator. Support consists of mop-up of non-active fire areas (areas containing smoldering vegetation debris) using water spraying and flappers, and advice on wildlife or habitat affected by a wildfire.

19. Communication.

19.1. An informal after action review (lessons learned) critique involving the major players shall be conducted as needed after a wildfire or prescribed fire to evaluate topics such as the initial response, control methods used, and safety concerns.

19.2. FES conducts a post incident analysis of significant incidents or those that involve serious injury or death.

19.3. FES incident safety officer shall be involved in the post-incident analysis as defined in NFPA 1561, *Standard on Emergency Services Incident Management System*.

19.4. The analysis process shall include a standardized action plan for any necessary changes.

19.5. On an annual basis, the Wildland Fire Plan Manager, Range Operations Officer and the Fire Chief reviews the activities of the year to determine program effectiveness.

20. Safety and Emergency Operations.

20.1. Firefighter and public safety shall be the highest priority while operating at any emergency scene. Firefighter and public safety is the first priority on every fire, including prescribed fire. No improvement or natural resource takes precedent over human safety. It is the responsibility of the IC to ensure all operational decisions are based on sound risk management principles.

20.2. The safety and welfare of all personnel conducting wildland fighting operations shall be the first and foremost consideration in all incident operations and decisions. Personnel accountability is ultimately the responsibility of each person conducting wildland firefighting operations. FES assumes responsibility when on-site.

20.3. Vehicle operators keep all personnel conducting ground operations in full view at all times. Vehicles shall stop when all personnel cannot be observed.

20.4. Special Areas of Concern. Fort Eustis property contain Unexploded Ordinance (UXO). Personnel conducting wildland firefighting operations are required to have a UXO safety brief from Range Operations annually to ensure hazards are well known and appropriate courses of action are taken if UXO hazards are encountered.

20.5. Wildfire Evacuation Plan. Plans and procedures for emergency evacuation of surrounding communities are covered under the base *Comprehensive Emergency Management Plan* and *CE Contingency Response Plan*. In the event a wildfire escapes control and threatens nearby communities, these emergency guides shall be implemented.

21. Risk Assessment/Decision Analysis Processes. Sound operational risk management is the foundation for all wildland fire management plans and activities. Setting accurate daily fire ratings and following activity restrictions are important factors to minimize risks.

21.1. Values at Risk. Values which may be at risk of wildfires due to their proximity to wildland fuels include Balfour Beatty Communities (military family housing) residential areas, various structures and training area/range infrastructure.

22. Interagency Cooperation and Mutual Aid Agreements (MAA). Fort Eustis FES has numerous MAA with surrounding Fire Departments. If a wildland fire was so large, or the fire grew out of control of FES, several MAA would be activated for support. These MAAs are activated by Fire Chief (who is the Incident Commander [IC]) through the E911 Center.

22.1. FES maintains MAAs with the following entities:

- Newport News Fire Department.
- James City County Fire Department.
- York County Department of Fire and Life Safety.
- Williamsburg Fire Department.
- Peninsula Airport Commission.

23. Mission Impact Considerations. Operations at Fort Eustis are adjusted to respond to wildland fire, smoke, or daily fire ratings at FES direction. Fire damage may create conditions adversely affecting training operations. Bare ground created by fire damage may inhibit flying and ground operations due to low visibility from blowing dust.

24. Natural & Cultural Resource and UXO Considerations.

24.1. Natural Resources. Prescribed fires are used to manage certain habitat types as part of an ecosystem approach as discussed in the Fort Eustis Integrated Natural Resources Management Plan (INRMP) if feasible. Such fires however, are performed infrequently due to personnel availability, limited accessibility to some areas, challenges with scheduling (due to military training being a priority), lack of flexibility to plan/conduct such fires, and need for appropriate weather conditions. When feasible some invasive vegetation control may involve prescribed fires. Examples may include burning stands of common reed (*Phragmites australis*); however, this would likely occur in conjunction with other integrated pest management techniques. Prescribed fires shall be in a limited scope to attain a specific objective and shall be approved by FES.

24.2. Cultural Resources. CEIE, 733 CED maintains considerable information for over 230 known archaeological sites and historic structures. Archeological surveys are performed routinely with cultural resource information being routinely updated. GPS data, maps and additional information about archaeological sites on the installation shall be obtained from the Cultural Resources Manager (CEIE, 733 CED). Several cultural resource sites on Fort Eustis are eligible or potentially eligible for the National Register of Historic Places. Generally, none of these sites are directly open to the public except where prior coordination and escort is implemented. All fire-related activities are coordinated with the Cultural Resources Program Manager (CEIE, 733 CED).

24.3. Burned Area Rehabilitation. Following a severe wildland fire at Fort Eustis the Natural Resources Program Manager determines the level of effort and plan of action for the affected area. Not all fires require rehabilitation efforts. The Natural Resources Program Manager develops plans for reseeding/replanting on.

24.4. Natural & Cultural Resources Considerations Checklist. Wildland fire management activities could affect sensitive natural and cultural resources. Such activities include prescribed fires and maintenance of fuel loads. The following checklist shall be considered before implementing WFMP activities.

- Cultural resources. Consult with the CEIE Cultural Resources Manager/Archaeologist to identify current boundaries of known archaeological/cultural resource sites to include areas cleared of such resources. The Cultural Resources Manager/Archaeologist shall generate a map/provide GIS data points.

- Matthew Jones House. Prescribed fires shall be precluded from the Matthew Jones House plantation reforestation site to avoid risks to the Matthew Jones House site.
- Other historic structures and sites. Prescribed fires are precluded from Training Areas 19 and 28 to avoid damage to the Compton-Davis Brickyard and Fort Crafford historical sites, respectively.
- Training Area 1 & 2. Prescribed fires shall be avoided in Training Area 1 and 2 due to archaeological resources, proximity to Newport News and limited area size.
- Other training areas. Consultation with Army Support Activity/Range Control is required when developing WFMP activities. Such activities must support military training area maintenance.
- Bald eagle nest sites. The JBLE-E INRMP (to which this WFMP) is an annex discusses bald eagle nest sites. Consultation with the natural resources manager shall occur before conducting WFMP activities. While a map of known nest sites exists is provided in the INRMP, new site sites can arise at any time.
- Federally threatened and endangered species. Two federally listed bat species occur on the installation. Consultation with the natural resources manager is required to ensure Section 7 consultation under the Endangered Species Act as well as compliance with the Air Force (AF) Environmental Impact Assessment Process (EIAP).
- Wetlands. The installation contains approximately 3,600 acres of wetland habitats. Fuel load maintenance requires consultation with the natural resources manager to ensure EIAP is followed as well as determining impacts to wetlands may exist and whether a permits from respective regulatory agencies are required.

24.5. UXO Considerations. Fort Eustis has a history of aerial bombing across the lower portion of installation in the 1930s-1940s. Much of the affected area encompasses the Impact Area. However, evidence suggests that a larger area exists beyond the Impact Area and the extent is not fully defined. For the purposes of planning wildland fire activities, all areas south of Milstead Island Creek are considered to potentially contain UXOs.

25. Public Relations. All information released to the public shall be coordinated through the 633 ABW Public Affairs Office (PAO).

26. Environmental Impacts of Plan Implementation. This WFMP supports the goals and objectives of the Integrated Natural Resources Management Plan (INRMP).

27. Funding Requirements. Wildland fire management activities that are conducted for the purpose of compliance with environmental laws and regulations shall be supported by conservation funds. Wildfire suppression, prescribed fires and other wildland fire management activities to support training, range use, munitions testing and evaluation, or other mission activity shall be supported by the responsible activity through direct funding or reimbursement. Funding for wildfire prevention and fuels management for hazard reduction is an installation operations and maintenance responsibility.

28. Monitoring Requirements. Any wildfire occurring on Fort Eustis shall be documented by FES. Post-fire assessments are completed as soon as possible after a fire. Assessments shall be made for damages occurring to natural/cultural resources, and real property.

29. Prescribed Fires.

29.1. Prescribed fires are used as a tool to manage and enhance natural resources when feasible. Examples of their use include (but not necessarily limited to) invasive plant vegetation control, remove high fuel load debris, retain early successional habitats and prepare timber harvest sites for follow-up tree planting. Prescribed fires are expected to be conducted infrequently because the installation no longer has the flexibility needed to plan and execute prescribed fires in long-term habitat management. Prescribed fires may be considered if adequate rationale supports the need, if locations are appropriate for prescribed fires, and if resources exist. In such cases prescribed fires are planned and coordinated in advance and conducted under strict conditions to prevent loss of control. All personnel conducting prescribed fires must have, prior to conducting any prescribed fire:

- A Prescribed Fire Plan reviewed and approved by the Fire Chief.
- An AF Form 813, Request for Environmental Analysis shall be prepared.
- Documented coordination with the FES.

29.2. Monitoring of the weather and fire behavior conditions is done to ensure prescribed criteria are met. In addition, monitoring of the effects of the burn on natural resources is done to ensure that the prescribed criteria produce the desired effects on the resources. A general guide for burn monitoring immediately following the burn includes the following topics:

- Adherence to plan.
- Meeting objectives.
- Fire containment, spot fire number and size.
- Accuracy of burning prescribed and lighting technique.
- Suggestions for improvement for future burns.
- Unanticipated impacts to natural and cultural resources or infrastructure.

29.3. Prescribed Fire Plan Requirements.

29.3.1. A site-specific prescribed fire plan shall be developed for each proposed area and evaluated in an AF Form 813, Request for Environmental Analysis. Prescribed fire plans are approved by the Fire Chief and contain, at a minimum, the following components:

- Objective(s) of the prescribed fire.
- Location(s) and description of the location(s).
- Map(s) of proposed affected locations.
- Required personnel/task organization and equipment.
- Scheduling.
- Communication plan.
- Safety and emergency response plan.
- Acceptable weather and fuel moisture parameters.
- Smoke management plan.
- Post-burn monitoring plan.
- Approval statement from Chief, Fire and Emergency Services.

29.3.2. Prescribed fire planning shall be coordinated with the following installation staff:

- Environmental Element.
- 733d Security Forces Squadron.
- Army Support Agency/Range Operations.
- 1st Fighter Wing/Felker Army Airfield.
- Safety.
- PAO.

29.3.3. Primary Contacts.

JBLE-E Fire Chief.
Fire & Emergency Services
733d Civil Engineer Division
Building 648
757-878-4281

Installation Fire Marshal
Director, 733d Civil Engineer Division
Building 1407
757-878-3642

Wildland Fire Program Manager
Environmental Element (CEIE)
733d Civil Engineer Division
Building 1409
757-878-4231

733d Security Forces Squadron (Military Police)
Building 648
757-878-4555

1st Fighter Wing
Building 2413
Felker Army Airfield
757-878-3398

Safety Office
757-501-8263

Office of Public Affairs
633d Air Base Wing Public Affairs
757-878-6115

Army Support Activity
Range Control
757-878-4412

30. Definitions.

Appropriate Management Response – The response to a wildland fire is based on an evaluation of risks to firefighter and public safety, the circumstances under which the fire occurs, including weather and fuel conditions, natural and cultural resource management objectives, protection priorities, and values to be protected. An appropriate action would be the action a reasonable person would be expected to take based on the available information. The evaluation must also include an analysis of the context of the specific fire within the overall local, geographic area, or national wildland fire situation.

Belt weather kit - Belt-mounted case with pockets fitted for anemometer, compass, sling psychrometer, slide rule, water bottle, pencils, and book of weather report forms. Used to take weather observations to provide on-site conditions to the fire weather forecaster or fire behavior analyst. Observations include air temperature, wind speed and direction, and relative humidity.

Disturbance – Any relatively discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

Confine – The strategy employed in appropriate management responses where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuel, and weather factors.

Ecological process – The actions or events that link organisms and their environment, such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay.

Escaped fire – A fire which has exceeded or is expected to exceed initial attack capabilities or prescribed.

Expected weather conditions – Those weather conditions indicated as common, likely, or highly probable based on current and expected trends and their comparison to historical weather records. These are the most probable weather conditions for this location and time. These conditions are used in making fire behavior forecasts for different scenarios.

Fire dependent or fire maintained ecosystems – an ecosystem can be called fire dependent or fire maintained if periodic perturbations by fire are essential to the functioning of the system.

Fire evaluation – The process of examining and appraising fire monitoring information.

Fire monitoring – The act of observing a fire to obtain information about its environment, behavior, and effects for the purpose of evaluating the fire and response.

Fire prescribed – A written statement defining the objectives to be attained, and the conditions of temperature, humidity, wind direction and speed, and fuel moisture, under which a fire will be allowed to burn. Generally expressed as an acceptable range of the various indices, and the limit of the geographic area to be covered.

Fire regime – The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short-interval, low-intensity (stand maintenance) fires to long interval, high-intensity (stand replacement) fires.

Fuel – All material (whether in the ground, on the surface, or in the air) that may be burned, including duff, logs, branches, needles and twigs. Fuel is divided into four size classes:

1-hour time lag - < 1/4 inch (grass, litter, duff)

10-hour time lag - 1/4 inch - 1 inch (twigs and small stems)

100-hour time lag - 1 inch - 3 inches (branches)

1,000-hour time lag - > 3 inches (large branches and stems)

Fuel Model – A simulated fuel complex for which all the fuel descriptors required for the solution of a mathematical fire spread model have been specified.

Hazard fuels – live and/or dead wildland fuel accumulations (either natural or created) having the potential for the occurrence of uncharacteristically intense wildland fires.

Holding actions – Planned actions required to achieve wildland and prescribed fire management objectives. For prescribed fires, these actions are developed to restrict the fire inside the planned burn unit. For suppression actions, holding actions may be implemented to prohibit the fire from crossing containment boundaries. These actions may be implemented as firelines are established to limit the spread of fire.

Initial attack – An aggressive suppression action consistent with fire fighter and public safety, and with values to be protected.

Mixing height - Measured from the surface upward, the height to which relatively vigorous mixing occurs due to convection. Also called mixing depth.

Preparedness/ Pre-suppression – Activities that lead to a safe, efficient and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Prescription – A set of measurable criteria that guides the selection of appropriate management strategies and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Prescribed Burn Boss - Person responsible for supervising a prescribed fire from ignition through mop-up.

Prescribed fire – Any fire ignited by management actions to meet specific objectives. Prescribed fires are conducted in accordance with prescribed fire plans. Also known as prescribed burns.

Prescribed fire plan – A plan required for each prescribed fire. Plans are documents prepared by qualified personnel, approved by the agency administrator, and include criteria for the conditions under which the fire will be conducted (a prescription).

Red Flag Warning – Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.

Timelag (TL) – The time necessary for a fuel particle to lose approximately 63 percent of the difference between its initial moisture content and its equilibrium moisture content.

Transport wind speed - A measure of the average rate of the horizontal transport of air within the Mixing Layer. May also be the wind speed at the final height of plume rise. Generally refers to the rate at which emissions will be transported from one area to another.

Value – In terms of fire prevention, it is defined as natural or developed areas where loss or destruction by wildfire would be unacceptable.

Wildfire – A non-structural fire in natural areas of the installation.

Wildland fire – A non-structure fire that occurs in vegetation or natural fuels including wildfires which are unplanned fires resulting from various sources such (but not necessarily limited to) lightning strikes, munitions use, unauthorized human-caused fires, escaped prescribed fire projects, etc.

Wildland fire management – All activities related to the prevention, control or use of fire burning through vegetation under specific prescriptions for the purpose of achieving fire management objectives.

Wildland fire situation analysis – A decision making process that evaluates alternative management strategies against selected safety, environmental, social, political, and economic criteria.

31. References.

AFI 32-2001, Fire Emergency Services (FES) Program, 24 February 2014.

AFI 32-7064, *Integrated Natural Resources Management*, 18 Nov 2014 (w/ Incorporating Change 2, 22 Nov 2016).

DODI 6055.06, *DoD Fire and Emergency Services (F&ES) Program*, 3 October 2019.

Fort Eustis Integrated Natural Resources Management Plan, 5 June 2019.

Guidance for Implementation of Federal Wildland Fire Management Policy, February 2009.

NFES 1596, *Fitness and Work Capacity*, April 1997.

NFES 2724, *Interagency Standards for Fire and Fire Aviation Operations*, 2020.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2017.

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications for Wildland Firefighter I and NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2007.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*, June 2014.

NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2018.

PMS 307/NFES 1109, *Work Capacity Test Administrator's Guide*, April 2003.

PMS 310-1/NFES 1414, *Wildland Fire Qualification Subsystem Guide*, October 2019.

PMS 420-2/NFES 1270, *Prescribed Fire Smoke Management Guide*, February 2018.