

4.1. PREVENTION.

4.1.1. Fire Prevention Program.

a. Fire prevention is the foundation of an effective fire management program. It includes all activities intended to reduce the number and severity of fires. Since the cost of preventing a wildfire is almost certainly less than the cost of suppressing it, fire prevention is one of the most cost-effective fire management activities available to the Army. An accurate determination of fire causes, as they occur within each FMA, provides a statistical basis for establishing fire prevention priorities. To be most effective, the Army's wildfire prevention program must use the cause data to identify ways to prevent fires or reduce the severity of fires within each installation.

b. Fires ignitions on Army training lands are inevitable due to the availability of fuels and the nature of military training. The key to the Army's success in minimizing the impact of these fires is to initiate an aggressive fire prevention program to reduce the number of fire starts and to reduce the impact of those fires that do start.

c. The first step in this planning process is to identify the risks and hazards that exist within each training area. An analysis of all available fire history data for trends in fire frequency, fire cause, fire size and associated weather, topographic, and training conditions may uncover important common denominators that can then be controlled to reduce fire impacts. Existing and projected levels of training use by the Army and other DOD components represent an elevated risk of wildfire as compared to civilian land uses. Any increase in live-fire exercises, access, or the number of troops maneuvering in high hazard vegetative fuel areas will escalate this risk.

d. Wildland fire prevention actions will generally fall into one of the following categories; education, engineering, ignition control, or enforcement. Each component represents a different approach to the common goal of reducing the number and severity of fires within each installation. It is imperative that the different departments of USARHAW, particularly trainers, soldiers and officers, the natural and cultural resource managers, the fire and emergency services personnel, and Range Division, clearly understand their roles and the importance of each component.

4.1.2. Education. All commanders, directors, natural/cultural resource managers, and fire managers have a role in developing fire prevention orientation and training programs to educate the users of USARHAW lands. In coordination with Range Control and resource protection managers, fire prevention orientation and training programs will be designed and implemented to explain wildfire ignition potentials, probability of escape, impact on natural resources, and the threat to high value areas within and outside of each installation.

a. Signage. Signs are an important visual reminder for individuals and groups using the training lands. Posting of fire prevention signs throughout the training ranges also enhances awareness. Fire prevention signs stating "Only You Can Prevent Range Fires!" or "Do You Know the Current Fire Danger Rating?" and/or "Do You Know the Current Training Restrictions?" strategically placed at clearly visible points along major travel ways help increase fire prevention awareness.

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b. Instruction. A portion of all classes that cover the uses of Army land will address the importance of fire avoidance and actions to be taken when fires are detected. Examples of current classes are:

(1) Environmental classes such as Environmental Compliance Officer (ECO).

(2) ITAM Environmental Awareness (EA) courses during Range Officer in Charge/Range Safety Officer (OIC/RSO) classes.

(3) General instructional courses such as the commander's course and range/training area in-briefings.

c. Informational materials. Fire prevention messages can also be placed in already existing information media, publications, and on durable pocket cards that are issued to users to increase individual awareness on other subjects. Examples are:

(1) DPW Environmental videos, newsletters, updates, web sites, and hand out cards/brochures.

(2) ITAM Environmental Awareness videos (Sustainable Range Awareness), newsletters, updates, web sites, and hand out cards/brochures.

(3) Range and training area SOPs.

d. Briefings. Prior to commencement of training exercises, all units will be briefed about fire prevention requirements for the particular training area they are using. Briefings tailored to each FMA are included in the installation SOPs in Appendix 1.

4.1.3. Enforcement. Enforcement is a very important component of an effective fire prevention program.

a. Enforcers of wildfire prevention are:

(1) Range control (Range Division-Hawaii) safety staff. The Range Control (Operations) staff has the responsibility for ensuring that all regulations and SOPs are adhered to in accordance with 25th ID(L) and USARHAW Reg. 210-6 and 25th ID(L) Training Reg. 350-1. Range control has authority to stop live-fire training for noncompliance with any regulation or SOP.

(2) Land management staff. Range Division range inspectors, maintenance, ITAM personnel, DPW Environmental, Real Estate and Grounds staff have the responsibility to report fires and/or any observed noncompliance with fire prevention procedures to Range Division safety staff.

(3) Fire management personnel.

(4) Law enforcement personnel (Military Police, and game wardens).

(5) All commanders, their staff, directors and supervisors/leaders at all levels.

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b. Commanders and managers must be aware and involved in fire prevention to ensure compliance with the requirements of the Wildfire Management Program.

c. Existing military training regulations and SOPs cover training activities and restrictions based on specific fire danger ratings. However, communication and enforcement of these restrictions even at the lowest levels is necessary to make them effective. Supervising personnel will be held accountable for knowing and implementing these restrictions. Range control managers and safety technicians who manage the training areas are also accountable.

d. Public laws, Army Regulations, the Commanding General's command policies/guidance, and range directives outline individual responsibilities and accountabilities for enforcement of fire restrictions and implementation of the IWFMP. This information must be passed along by the commander and supervisor and discussed in training sessions given to individuals using Army land. In order to effectively control ignitions to the maximum extent possible, the installation must ensure that the necessary precautions are followed and that there is strict enforcement and accountability for violations. Though the burden for enforcement will largely fall upon Range Control, it is ultimately the responsibility of all users of USARHAW lands to prevent fires and enforce fire prevention regulations.

e. Wildland fire prevention is similar to personnel safety – everyone has a responsibility to prevent its occurrence. All personnel must know and understand the fire prevention procedures.

4.1.4. Engineering. Engineering involves the alteration of a range design/alignment or a physically disrupting the fuels to reduce the likelihood of a fire starting or to reduce its effects if one does start. This can be accomplished by eliminating fire causes biologically, mechanically or chemically through reduction of available fuel loads, improving access for fire apparatus, increasing water resources available on site, adjusting target placement, and providing buffer or safety zones.

a. Engineering activities include the construction of fuelbreaks and firebreaks and recognized fuel modification programs (i.e., prescribed burns, mechanical/chemical treatments, mowing, and livestock grazing) to minimize the threat of fires. Engineering activities will be coordinated among all the Army's land and fire managers to include appropriate National Environmental Policy Act (NEPA) documentation, and Section 7 and Section 106 consultation, as required.

b. Coordination is essential as engineering activities may result in restricted operations and total or partial closure of the training ranges. A work plan, identifying engineering projects by priority, will be developed. This process will ensure that engineering projects can be completed and will eliminate any conflicts between the required maintenance of the ranges and military training activities. The Range Planner and the Wildland Fire Program Manager shall collaborate to develop an annual work plan facilitating maintenance of all required wildland fire infrastructure.

4.1.5. Ignition Control. The Army must make special considerations for controlling the use of classes of ammunition and pyrotechnics that have higher fire hazards associated with their use. By developing a fire danger rating system for each FMA, wildfire ignitions can be limited and controlled. These ratings depend on weather conditions and let training unit commanders and fire managers know when the potential of wildfire ignition exists. This allows modifications to training tasks that reduce the risk of a wildfire. Specific munitions may be allowed at one level but restricted or forbidden at a higher level. Munitions that are more fire prone are more strictly

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controlled than those that pose little ignition risk. Further discussion on ignition control as related to fire danger ratings can be found in paragraph 4.2.5. below and for each FMA in the appropriate SOP.

4.2. PRE-SUPPRESSION PLANNING.

Effective pre-suppression planning will enable fire managers to easily and efficiently meet the objectives of this IWFMP. Experience and prediction allows fire managers to determine the greatest likelihood of a fire ignition in time and space. Having the right resources at the right place will enable a quick and effective initial attack. As the fire danger increases, the level of preparedness must increase. While both pre-suppression planning and fire prevention fall under

the term pre-suppression, pre-suppression planning focuses on identifying and acquiring the resources needed to suppress anticipated fires once they start, while fire prevention focuses on preventing fires from starting in the first place. Pre-suppression planning is work done before fire occurrence to ensure timely and effective suppression. It is based on the analysis of data to develop strategies that are most effectively use pre-suppression, fuels management, and suppression capabilities to meet management objectives.

4.2.1. Personnel Safety. Public and firefighter safety is the first and highest priority. Safety is the responsibility of everyone assigned to a wildfire incident. Safety is an attitude that must be promoted at all operational levels. Once personnel are committed to an incident, those resources become the highest value to be protected.

a. Fighting wildfires is inherently dangerous, and firefighters risk injury or even death in these operations. Nationally, there are wildland firefighter fatalities nearly every year. In addition to the danger from the fire itself, the need to use cutting tools, mobile apparatus, heavy equipment, and aircraft add to the risk involved. If firefighters know how to recognize potentially hazardous situations and how to mitigate them, they can reduce or eliminate much of that risk.

b. The training program and the qualification and certification process are the foundations of the safety program. Only qualified personnel will be assigned fire fighting duties. All assigned wildland fire personnel, whether on wildfires or prescribed fires, must meet National Wildfire Coordinating Group (NWCG) training standards. All personnel engaged in actual fireline operations (in the vicinity of the fire) must have completed, S-110 Basic Fire Suppression Orientation; S-130, Firefighter Training; S-190, Introduction to Fire Behavior, Your Fire Shelter, and Standards for Survival; and I-100, Introduction to Incident Command System (ICS). All trained personnel will be required to complete an annual four-hour refresher course. All personnel will have NWCG certified training for tasks they are assigned (see Section 4.6).

c. The Incident Commander must ensure that safety briefings occur at all operational levels. The identification and location of escape routes and safety zones will be stressed at every briefing.

d. All fire suppression actions must be in compliance with Army Regulation (AR) 420-90, Fire Protection, and the NWCG “10 Standard Fire Orders” and “18 Watch Out Situations”. A copy of the Fire Orders, Watch Out Situations, and list of mandatory Personal Protective Equipment (PPE) is listed in Reference 4.2.2 of this fire management plan.

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e. It is mandatory that all fire fighting personnel assigned be equipped with the proper PPE necessary for fighting wildfires. Wildland firefighters must be intimately familiar with the tools used and PPE worn. Knowledge of proper selection, use, and care of the various tools used in Wildland fire fighting aids firefighters in performing their job as efficiently and effectively as possible. Likewise, knowledge of the proper donning, care, capabilities, and limitations of PPE, gives firefighters a better sense of which situations are tenable and which are not. Fire fighting personnel will ensure that proper PPE is worn at all times when actively engaged in fire fighting duties.

4.2.2. Minimum Staffing Requirements.

a. Fire Departments. The PTA Fire Department and FFD shall ensure that proper staffing requirements are in accordance with Department of Defense Instruction (DODI) 6055.6, Fire Protection Program, and established manpower-staffing standards. Having a fully qualified and trained fire fighting staff is an essential part of an effective suppression program.

c. IFSO, Strike Team. The IFSO will acquire a ten person strike team to take over the task of initial attack. This is currently handled by Range Control personnel who are trained for fire fighting, but whose primary duties may conflict with fire fighting efforts. In order to remove this burden from Range Division and to give the IFSO Wildland Fire Program Manager direct oversight of fire fighting personnel, the IFSO will procure funding for this strike team starting in FY 05. This strike team will provide services beyond initial attack, including providing labor for fuels management, firebreak and fuelbreak maintenance, and other labor intensive tasks; maintenance of RAWs; upkeep of fire fighting equipment including bambi buckets, hummers, and water tenders; and other tasks determined at the discretion of the Wildland Fire Program Manager.

b. USARHAW will staff levels of qualified Range Control personnel required to respond safely to wildfires at each FMA. Upper level (300-500 training level) fire manager positions will normally be Civil Service, not military, to provide work continuity and experience. Minimum staffing is based on the safety and complexity of the fire fighting organization during initial attack and extended attack operations. The Range Officer and Range Operations Supervisor will arrange work schedules to allow flexibility while ensuring that minimum staffing levels are met to include overtime authorizations as required. In the event of a fire, fire fighting duties take precedence over other work assignments. Minimum staffing levels at FMAs are addressed in each FMA SOP and Section 5.8.2.

c. Range Division Hawaii. The RDH shall ensure that proper staffing levels are maintained as required at each FMA. As first responders, qualified Range Control/maintenance personnel will provide initial attack and augment the FFD during extended attack operations. Based on the safety and complexity of the fire fighting organization during initial attack and extended attack operations, minimum staffing levels required on response fire vehicles in support of fire suppression operations are as follows:

- | | |
|---------------------------|---|
| (1) Brush Engine (HUMMER) | 2 |
| (2) Water Tender | 1 |

c. Fire Management Areas. Minimum staffing levels vary at each FMA and shall be based on the size and scope of military training activities authorized at each training area. The

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Schofield Barracks East Range, Kahuku Training Area, Kawaihoa Training Area and Dillingham Training Areas are restricted to blank ammunition and limited pyrotechnics. Not all FMA's are manned by Range Control personnel to provide initial attack operations. However, the use of military units training in the area and closest forces, i.e., the nearest available appropriate resources (City/County) to respond to an incident at a specific FMA, must be covered by cooperative agreements or memorandum of understanding with adjacent agencies or fire protection organizations. The RDH will ensure that the following minimum staffing levels are available during live-fire training exercises at each FMA:

- (1) Schofield Barracks: 3*
- (2) Makua Military Reservation: 5*
- (3) Pohakuloa Training Area: 3*
- (4) Kahuku Training Area 3* * Includes Radio Dispatcher

4.2.3. Fire Equipment and Supplies. Caches of fire fighting equipment and supplies will be established and kept in a constant state of readiness for fire suppression.

a. The centralized fire cache facility is at Schofield Barracks. Satellite fire cache sites have been established at Makua Military Reservation, and Pohakuloa Training Area, and one will be established at Kahuku Training Area. The Schofield Barracks central fire cache facility will be equipped to outfit one hundred (100) firefighters with the appropriate PPE as described in the safety portion of this plan. Each fire cache will also maintain an appropriate supply of fire equipment as determined by the Wildland Fire Program Manager. It will be the responsibility of the Wildland Fire Program Manager (Oahu) and the PTA Wildland Fire Coordinator (PTA) to ensure that these caches are properly stocked. Lists of equipment in each fire cache are listed in Reference 4.2.1.

REFERENCE 4.2.1

Minimum Fire Cache Resources

Fire Cache Equipment	SB	MMR	KTA	PTA
Personal Protective Equipment (PPE)	100	40	40	100
Fire Hand Tools	60	40	40	60
Chain Saws	10	5	5	10
Fire Pumps (Portable or Slip-on)	6	2	2	6
Forestry Hose	2000'	1000'	1000'	2000'
Fire Buckets	3	2	0	3
Foam Proportioners	3	1	1	3
Foam Concentrate (5-gal pails)	180	100	40	180
Backpacks	40	20	20	40
Firing Devices (Drip Torches/Fuzees)	10	5	3	10
Fire Shelters	100	40	40	100
Portable Flexitank	2	1	1	2
MicroRAWS	2	1	0	1
Weather Belt Kits	10	4	4	10

b. Quantities are determined by potential manning for initial attack, with reserves, based on suppression requirements.

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c. Each fire cache will be annually inventoried and inspected in order to ensure the equipment is ready to meet the objectives of this plan.

d. If at any time the required fire suppression equipment is not operational, live-fire training will be suspended until all equipment is operational. Live-fire training will only be conducted when fully trained/certified personnel and functioning equipment is readily available for fire suppression. This requirement pertains to all types of fire fighting equipment, water resources, and personnel. Any discrepancies shall be reported to the Wildland Fire Program Manager/PTA Wildland Fire Coordinator for immediate corrective action.

e. Wildfire Response Vehicles. The RDH shall ensure that fire response vehicles (Brush Engines or HUMMERS, and Water Tenders) assigned to specific FMA are available and operating in a constant state of readiness. If at any time the equipment on the fire vehicle is not operational, immediate notification must be initiated to higher authority to correct deficiencies. Priority for repairs shall be in accordance with Memorandum of Understanding between the G3/DPTM, RDH, DPW, DOL or contract services statement of work. The RDH shall maintain a minimum of two (2) HUMMERS at Schofield Barracks, Makua and Pohakuloa Training Area. One HUMMER will be the primary response vehicle while the other HUMMER serves as a reserve backup. Makua Military Reservation shall also be required to maintain a Water Tender as part of the initial attack response.

f. Personal Protective Equipment (PPE). It is mandatory that all fire fighting personnel assigned be equipped with proper PPE necessary for fighting wildfires. The Wildland Fire Program Manager shall maintain a minimum number of PPE at each fire cache facility to outfit all personnel assigned to support fire fighting activities. A list that outlines mandatory PPE for individuals engaged in fire fighting activities is provided in Reference 4.2.2.

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REFERENCE 4.2.2 MANDATORY PERSONAL PROTECTIVE EQUIPMENT LIST FOR FIREFIGHTERS

Mandatory Personal Protective Equipment – Initial Attack

1. Hard hat w/ chin strap, Nomex face shroud
2. Eye Protection goggles
3. Nomex or Indura cotton shirt (or one piece jumpsuit)
4. Nomex or Indura cotton pants
5. Leather gloves
6. Fire shelter
7. 8" Leather boots, No steel toe

Line Gear

1. Fireline pack
2. Canteen (2 quarts minimum)
3. Ear plugs
4. First aid kit
5. File
6. 1 MRE
7. Headlamp with batteries
8. Flagging
9. Fuzees

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4.2.4. Remote Automated Weather Stations (RAWS).

a. Weather is one of the most important factors influencing fire behavior. It is therefore critically important that fire managers be familiar with the seasonal weather patterns at each FMA. Microclimates can vary substantially within a FMA. Knowing what these differences are and when to expect them are essential parts of the pre-suppression planning process. Knowing how weather in the area behaves in the daytime, at night, and various times of the year can mean the difference between timely control of a fire and a long and costly campaign.

b. To obtain current weather data required to develop fire danger ratings, fixed RAWS have been installed at Schofield Barracks, Makua Military Reservation, Kahuku Training Area, East Range, and Pohakuloa Training Area. Portable Micro-RAWS units have also been procured to monitor real-time weather data during wildfires and prescribed fires. Future plans include the installation of at least one RAWS at Kawaioloa, Dillingham, and Puu Pa on the Big Island. A RAWS will also be purchased for South Range Acquisition Area should it be purchased. The location and elevation of current RAWS sites in each specific FMA is provided in Reference 4.2.3 (See also the Resource Locations Figure in the appropriate SOP).

REFERENCE 4.2.3 REMOTE AUTOMATED WEATHER STATIONS (RAWS) SITE LOCATIONS

FMA	LOCATION	GOES ID	LATITUDE	LONGITUDE	ELEVATION
DMR (Proposed)	P1				
KLOA (Proposed)	Puu Kapu				
KTA	Range Control	325A861E	21° 40' 45"	157° 59' 22"	596'
MMR	Range Control	3266B468	21° 31' 43"	158° 13' 43"	20'
MMR	Ridge	3266C2F8	21° 32' 34"	158° 11' 56"	1750'
MMR	Portable	324C075A	21° 31' 34"	158° 12' 15"	520'
PTA	Range 8	3266D18E	19° 40' 58"	155° 32' 43"	6430'
PTA	West	32667176	19° 46' 18"	155° 42' 08"	4290'
PTA	Kipuka Alala	32666200	19° 40' 01"	155° 42' 28"	5385'
PTA	Portable				
PTA (Proposed)	Puu Pa				
SBER	ER-6B	325AB384	21° 29' 58"	157° 59' 36"	1250'
SBMR	Range Control	3266A71E	21° 29' 42"	158° 04' 55"	980'
SBMR	Portable	3266E414	20° 30' 35"	158° 04' 58"	1138'

c. To provide the data necessary for computing FDRS indexes, the RAWS are equipped with automated sensors (rain gauge, wind speed/direction, air temperature, fuel temperature, relative humidity, solar radiation, and battery voltage). Batteries charged by solar panels power these electronically operated stations. Currently, data can be retrieved directly from a RAWS platform via local cable connection to a personal computer located at the Range Control or by Geostationary Operational Environmental Satellite (GOES) telemetry downlink operated by the BLM at the National Interagency Fire Center (NIFC) in Boise, Idaho. Here, the computer transfers the processed data and automatically calculates the fire danger indices. The RAWS data are available for each hour of the day and night, adding greatly to the general knowledge of weather affecting specific problem areas and to the general knowledge of local climatology. Individual authorized users with suitable computer terminal can access the stored data via commercial telephone connection through Internet access. The data is also archived so to facilitate development of a historical fire danger record necessary for fire trend analysis. Data

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can also be shared with other local agencies (i.e., fire cooperators, weather service, etc.) within the State of Hawaii or elsewhere.

d. The daily weather data collected from these stations are used for a variety of purposes. The primary use has been for the National Fire Danger Rating System (NFDRS) calculations. The NFDRS is a system used by wildland fire management agencies to assess current fire danger at local levels. It consists of a variety of outputs (indexes) which portray current potential fire danger conditions. The indices are widely used in preparedness, suppression, and prescribed fire planning and implementation decisions. This system is the keystone of fire danger predictions and provides quantification of risk elements that are critical for fire management decisions including restrictions of military training activities.

e. Weather records have a key role in fire planning efforts. Fire planning is a continuous process. Most fire planning is based on five years of records including both fire weather and fire occurrence data. To date, the Army's database is incomplete and efforts are ongoing to compile enough data for effective fire planning.

f. A cooperative agreement between the BLM and the Army to provide a long-term technical and maintenance service is established. Implementation of this agreement benefits the Army by providing scheduled depot maintenance services and annual technical training to the Range Division maintenance technicians as first responders. Current Army initiatives include procurement of several new RAWs units for future installation at Kawailoa, Dillingham training areas and South Range Acquisition Area, should that land be purchased.

4.2.5. Cooperative Wildland Fire Fighting Resources. There are a number of agencies that cooperate with USARHAW to suppress fires. See Section 5.9 for more details. Hard copies of cooperative agreements with each agency are provided in Appendix 2.

4.2.6. Fire Danger Rating System (FDRS). Fire management planning requires reliable information about when and where fires may occur and what kind of behavior can be expected. A fire danger rating system provides basic fire planning data and guides wildfire management actions and preparedness. The FDRS warns firefighters and soldiers when dangerous conditions can be expected and thus determines preparedness and staffing levels. Specific information on the FDRS for each FMA can be found in the appropriate SOP.

a. A FDRS is established to provide a computer generated set of indices, based on current weather conditions, that forecast:

(1) An ignition component, which indicates the percentage of firebrands that will cause ignitions in light fuels.

(2) A spread component, which states how fast the head of a fire will spread.

(3) An energy release component (ERC), which estimates the amount of heat energy in BTU's produced by the flaming front.

(4) A burning index (BI), which estimates the effort necessary to contain a fire.

b. This information is used to determine the probability of a fire starting and the difficulty of control. With this information, a response can be planned which is appropriate for the expected fire behavior.

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c. The Army's primary objective for developing a FDRS is to alert range operation managers, fire managers, and military training officers of the hourly fire danger and allow them to implement training restrictions associated with that rating. The Army uses the BI as its fire danger index at all FMAs (See Enclosure 4 of each SOP for specific FDRS's).

4.2.7. Fire Response Planning.

a. Fire planning is a continuing process. Most fire planning is based on five years of records including both fire weather and fire occurrence. The fire reporting system at USARHAW has been improved with the addition of the RAWS, which provide daily weather data collection, and WeatherPro™ software that automatically archives weather data that can be analyzed for fire planning purposes. Combining this information with fire occurrence data can improve the efficiency with which USARHAW can staff its response resources. Based on fire occurrence data and response time, fire managers can determine if existing fire control forces are adequate and if additional suppression forces will be needed.

b. Range Division-Hawaii can also determine if additional training restrictions need to be imposed as a result of unfavorable fire danger ratings or, conversely, if the FDRS restrictions are too tight. This kind of planning, based on experience with the fire danger, allows fire managers to fine tune the FDRS and associated restrictions over time.

c. FDRS data can also be worked into the ITAM Geographic Information Systems (GIS) computer database. By putting spatial data in an integrated system where it can be organized and analyzed, fire managers will be able to find patterns and relationships to increase efficiency in the decision making process. Response times, suppression success, and risk factors can all be combined to determine what locations and times require more or fewer suppression resources. In addition, fire managers need to analyze such things as the adequacy of detection to determine if fires are reported while they are small enough to control.

4.2.8. Pre-Suppression Priority

a. Wildfire prevention analyses are used to prioritize areas for wildfire pre-suppression funding and implementation. The first step is to split the installation into units based on existing and planned roads, fuel and firebreaks, or natural barriers to fire. Three factors are then considered to assess each unit for protection from wildfire: ignition potential, hazard, and value.

(1) Ignition potential is the likelihood that an ignition will occur that starts a fire and is often validated to the degree possible with fire history. It is based on the likelihood of an ignition source coming into contact with and igniting receptive fuels.

(2) Hazard is the degree of difficulty in controlling a fire that has been ignited in the given topography and fuels. Hazard, along with weather, is what determines whether a fire remains small or grows into a larger fire. Hazard also considers accessibility to the fire, since part of the difficulty in controlling a fire and part of limiting a potentially large fire to a small area is gaining access to it.

(3) Value is the importance or replacement cost of resources within the area. In the analyses in this IWFMP, values are almost exclusively threatened and endangered species.

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b. Each area is assigned an ignition potential, hazard, and value of Low, Moderate, or High, based upon the best currently available information.

c. The ratings applied to each of the factors are subjective, however, they are rated relative to other units within the FMA. Experienced fire managers have a very good idea of where ignition potential and hazards are high or low within an FMA, and natural and cultural resource managers have a very good idea where the values are high or low. This expertise is used to rate each unit.

d. By assigning values of 0, 1, and 2 to the Low, Moderate, and High designations respectively, and adding the values for ignition potential, hazard, and value, a priority level for each pre-suppression area is determined. Specific pre-suppression priorities for individual installations and maps of pre-suppression priority areas can be found in Chapter 7.

4.3. FUELS MANAGEMENT.

All USARHAW land managers support the wildland fire pre-suppression program by assisting in providing strategies and resource allocation for fuels management, fuelbreak research, and firebreak road maintenance. A concerted effort between the Wildland Fire Program Manager, the ITAM Coordinator, the DPW Environmental Office, and the Range Facility Manager is imperative to the success of the pre-suppression program.

4.3.1. Fuelbreaks, Firebreaks, and Natural Barrier Systems.

a. The Army maintains a fuelbreak/firebreak system on installations at highest wildfire risk to minimize the spread of fires. If a wildfire escapes the initial attack, fuelbreaks and other fuel modification areas provide the most logical location for fire containment lines. Well maintained fuelbreaks and fuel modifications provide defensible space that aids in wildfire containment. Incorporating them into wildfire pre-suppression planning, initial attack responses, and resource deployment strategies can enhance the effectiveness of fire suppression. They also provide follow-up resources with a quick alternative attack strategy and a place to assemble that has been designated in advance and well documented and mapped. USARHAW specifications for fire/fuelbreaks are listed below. Information specific to each FMA can be found in Chapter 7.

b. Fuelbreaks.

(1) Fuelbreaks are defined as strategically located blocks or strips within which vegetation has been manipulated to reduce fuel volume or flammability as an aid to fire control. Fuelbreaks are most effective if they are linked to other natural or man-made fire containment barriers. Drivable fuelbreaks, or fuelbreaks that have periodic access are an important part of a successful fuelbreak system. Additionally, a fuelbreak system encompassing a large area is much more effective than an isolated single fuelbreak or small segments of fuelbreaks. Fuelbreak widths are determined by fuel type, terrain features, and expected fire weather conditions, especially wind direction and speed. Generally, the wider the fuelbreak, the higher probability and safer the task of containing the fire.

(2) Fuelbreaks may have a single ten foot strip of bare mineral soil or a mowed path located inside a wider brush cleared area to provide the most desirable containment line, however, this is not essential. This bare mineral soil can be maintained by disking or blading,

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depending on environmental considerations. A road for all-wheel drive emergency vehicles should be provided within the fuelbreaks, though this is not absolutely necessary. This road does not have to be cleared of vegetation, provided the access route is mowed on an annual basis. On USARHAW lands, a firebreak is often combined with the fuelbreak to provide access and a stronger barrier to fire. Firebreaks are discussed in detail below.

(3) Fuelbreaks provide safe access for fire fighting personnel and equipment. Firefighters can be rapidly positioned along these predetermined fire control lines. The low volume fuels within the fuelbreak, can be fired out (black lined) quickly to further widen an existing firebreak or quickly create a new one under conditions where backfiring operations would be impossible in the adjacent dense vegetation. In situations where the vegetation within the fuelbreak is not too dense, the fuelbreak can be used to anchor a backfire, thus allowing a wide blackline to be established between the fire and the fuelbreak.

(4) Fuelbreaks normally will not stop the head of a fast spreading, high intensity wildfire that has the potential for long distance spotting. In this situation, the overall fuelbreak system aids firefighters in the containment of the flanks, rear of the wildfire, and/or reducing the size of the main fire front. If time permits, they may also provide a location from which to backfire, potentially slowing or stopping the advance of the main fire.

(5) Fuelbreaks will only remain effective if they are continually maintained. The condition of the fuelbreak and vehicle accessibility will be reviewed annually to determine necessary maintenance. Fuelbreaks shall be cleared at the end of the growing season, before the grasses dry and add to the dead fuel load in the area.

c. Firebreaks.

(1) Firebreaks are defined as cleared-to-mineral-soil fire control lines. Similar to fuelbreaks, to be effective, firebreaks must be maintained each year prior to potential use in fire control. Firebreaks in Hawaii will be 6 to 10 meters in width or more, but will sometimes be constrained by terrain.

(2) An annual preventive maintenance schedule for all designated firebreaks will be implemented. During construction and maintenance all berms and catpiles should be removed to the extent necessary to minimize erosion. Waterbars are to be installed at all natural watercourses on firebreaks, except where permanent drainage structures are provided.

d. Fuel Management Corridors and Natural Fire Barriers.

(1) Natural fire barriers (i.e., barren lava, rivers, streams, roads, etc.) can be used as a control line to stop the spread of fire. A natural barrier is defined as any area where a lack of flammable material obstructs the spread of wildfires. An indirect attack strategy may involve the withdrawal of fire suppression resources to roads, trails, and other natural fuelbreaks. The fuel between these barriers and the fire can be burned out or backfired if necessary.

(2) Fuel management corridors will be established at PTA only. These are designed around existing natural fire barriers that may become overgrown with vegetation in the future. The corridor is monitored for encroaching vegetation and management is initiated when it reaches a threshold level. Fuel management corridors are much wider than fuelbreaks but do not include any road infrastructure.

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(3) Fuel management corridors are designed to slow or even stop a fire. At a minimum, they provide an area in which fire intensity is much lower than the surrounding vegetation, much the same as a fuelbreak.

4.3.2. Standards for USARHAW Fire and Fuelbreaks.

a. Fire and fuelbreak effectiveness in the event of a wildfire depends on regular maintenance. Standards will be adhered to wherever terrain permits. In some locations slope, drainages, or other factors may make these standards unreasonable. In these situations, the standards will be met to the greatest extent feasible. The following will apply to all firebreaks, fuelbreaks, and fuel management corridors on USARHAW lands:

(1) Firebreaks

(a) Firebreaks on Oahu will be no less than 6 meters in width of bare mineral soil. All vegetation will be removed from the firebreak, including overhanging branches from shrubs and trees, if possible. Depending on species, overstory trees on the perimeter of the firebreak may be left intact to reduce sunlight available to grassy fuels growing in the understory. This decision will be made on a case by case basis by the Wildland Fire Program Manager or other qualified individual.

(b) At PTA, firebreaks will be no less than 4.5 meters in width of bare mineral soil where they pass through grassy fuels, and no less than 9 meters in width of bare mineral soil where they pass through shrub or forest cover.

(c) All firebreaks will be maintained at least once per year. Firebreaks on Oahu will be maintained semi-annually should that be necessary to maintain a fuel free surface.

(2) Fuelbreaks

(a) Fuelbreaks will not be standardized for Oahu because of their limited use and the generally extreme topography which hampers their implementation. There are few locations where fuelbreaks of sufficient width can be emplaced to be considered effective deterrents to fire and there are no fuelbreaks planned on Oahu at this time.

(b) Fuelbreaks at PTA will be 25 meters wide where they pass through grass fuels and 45 meters wide where they pass through shrub or forest fuels.

(c) Fine fuels, such as grasses, and shrubs within fuelbreaks will be kept to less than 20% crown cover OR a maximum of one foot high. Generally speaking, fuels whose growth forms are based on clumps (e.g. bunch grasses) or stem growth (e.g. shrubs) will be limited via the 20% crown cover measure. Grasses that grow in mats or thickets, such as *Panicum maximum* (guinea grass) will be managed via the one foot height measurement. Tree species may be limbed to 2 meters high, rather than removed entirely, to reduce the impacts to sensitive ecosystems such as Palila Critical Habitat.

(d) Dead and cut fuels will be left where they fall except in cases where shrubs or trees are felled. In this case branches and limbs will either be removed from the fuelbreak entirely, scattered to a sufficient degree to meet the 20% crown cover requirement, or dragged to the outside of the fuelbreak away from the expected direction of the fire.

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(e) Fuelbreaks will be monitored once annually. Ocular estimation will be used to determine crown cover and stubble height. Wherever fuelbreaks are not to standard, maintenance of the fuels will be implemented to reduce them.

(3) Fuel Management Corridors (PTA only)

(a) Fuel management corridors will be no less than 60 meters wide, and will ideally be 100 meters or more in width.

(b) Fuels within the corridor will be limited to the same specifications as in fuelbreaks (20% crown cover OR one foot in height).

(c) All of the corridors are located where there is little vegetation at this time. Because it is expected that fuel encroachment on these locations will slowly occur over the years, the fuel management corridors will be monitored once every 5 years. If fuels within the corridors form a continuous fuelbed outside of specifications that reaches across the corridor in any location, fuel management will be initiated. Fuels will only be managed where they are contiguous to reduce the impact of cutting and herbicide application on the native ecosystems.

(d) Once fuel management has been initiated for a particular fuel management corridor, that location will be monitored biannually thenceforth and maintained to comply with specifications.

Table 4.1
Minimum specifications for USARHAW fire and fuelbreaks

	<i>PTA</i>	<i>Oahu</i>	<i>Maintenance</i>	<i>Standard</i>
Firebreak	4.5 Meters (Grass) 9 Meters (Shrub or Forest)	6 Meters	Yearly	Bare Mineral Soil
Fuelbreak	25 Meters (Grass) 45 Meters (Shrub or Forest)	None Planned	Yearly	20% Crown Cover or One Foot High
Fuel Management Corridor	60 Meters	None Planned	Once every 5 Years until fuel reduction begins. Then biannually.	20% Crown Cover or One Foot High

b. Records of firebreak and fuelbreak maintenance will be kept on an ongoing basis.

(1) One record will be completed for each maintenance task (i.e. mowing CR-1).

(2) The records will include the date maintenance was initiated and completed, the location of the maintenance, the type and amount of fuel modification/removal used, the type and amount of herbicide applied.

(3) Each completed record will be given to the Wildland Fire Program Manager for storage.

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4.3.3. Fuels Modification. Fuels modification is defined as removing and/or modifying an area or wide strip of flammable vegetation. Fuel modification can provide a reduction in radiant and convective heat, thereby providing fire suppression forces a safer area in which to fight the fire. Specific fuel management for each FMA can be found in Chapter 7.

a. Fire hazard is managed by changing the vegetation type. The goal is to maintain a fuel condition that makes fires easier to control. Maintenance treatments are necessary because the flammable biomass will grow back over time thus making fires more difficult to suppress.

b. The following methods, in order of decreasing effectiveness, are used to achieve lower fuel loading or a more manageable fuel matrix. A mixture of these techniques are often used in fuel management:

(1) Reduction. Reducing total amount of fuels so that there is not enough, or as much, to burn. Examples are prescribed burning, mechanical or chemical removal.

(2) Spacing. Manipulating the spacing of vegetation (both horizontally and vertically) so that it is difficult for fire to spread. Examples are mowing, grazing, or masticating.

(3) Moisture content. Reducing the flammability of fuels, by increasing the moisture of the vegetation or by changing the vegetation to less flammable species. This can be accomplished by watering, but this technique is only applicable for very small plots of land, such as around an individual house. More often this is accomplished by partially or totally replacing the fuels with fire resistant plants.

c. There are five categories of fuel modification treatments that can accomplish these objectives. In many situations, a combination of these treatments is applied:

(1) Prescribed burning reduces the volume of fuel through combustion. Fuel material can be ignited by hand or by mechanical devices at some distance from the site (i.e., helitorch, aerial firing device, etc.). Burning generally takes place when conditions permit adequate combustion as well as control. Prescribed burning is executed by qualified individuals under precise weather conditions and after extensive precautions are taken, such as installing firebreaks or control lines. The Army will initiate consultation with the U.S. Fish and Wildlife Service if any prescribed burning is planned to take place outside of firebreak roads. Prescribed burning is the fastest, most complete, and most cost-effective fuel removal treatment available. However, it generates many concerns over the chance of escape as well as air quality impacts. Coordination and notification of interested parties are major tasks. The Army has successfully conducted prescribed burns on Army training lands in the past. (Refer to Section 4.4, Prescribed Fire).

(2) Mechanical treatments rip up, bury, flail, or cut down vegetation and rearrange the fuel structure. Mechanical treatments generally involve the use of a bulldozer or tractor with a variety of attachments, such as a blade, large chain, rollers, a cutting (or pushing) blade, or a disk. These attachments scrape or break off the vegetation, beat up and crush or cut the fuel into small pieces, or bury the pieces. Mowing is the most commonly used mechanical treatment on USARHAW lands. It reduces the fuel height and thus reduces the intensity of a grass fire. Mowing is especially effective in increasing the ease of fire control if it takes place just inside the firebreak. Mowing is done by a tractor (usually with a rotary or flail mower attachment) in areas of grass and typically carried out by contract or range maintenance personnel. Hand labor is a subset of mechanical treatment, where human labor is used instead of mechanized equipment.

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Its primary disadvantage is its labor cost, but in certain situations there is no other viable alternative.

(3) Chemicals such as herbicides and growth retardants can prevent seeds from germinating and kill mature fuels. Chemicals can be applied by hand, with a truck/tractor sprayer, or aurally. Vegetation is not removed, but further growth is stopped. Where plants are killed, the standing vegetation presents a temporarily increased fire hazard until the plant material decays. Thus, the fuel volume is not decreased immediately by this treatment, but will slowly be reduced by decomposition. It is essential that treatment frequency be high enough to prevent significant growth in the interim periods. Chemical treatments that reduce or prevent growth are most desirable. The choice of herbicides depends on the environmental setting, effectiveness on the vegetation in question, and the consequences for native species and human health and safety. While it can be an effective and efficient method, chemical control may not be appropriate in all settings.

(4) Biological treatments are the introduction of a biological control measure to counteract the undesired fuels. These measures can include the deliberate introduction of other plants or insects that will replace, modify or retard the undesired fuels.

(a) Simple. Simple biological treatments may be the introduction of fire resistant native or alien plants to out compete undesired fuels. Creating a vegetative fuelbreak is a common means of a simple biological treatment, though it is not an effective means of fire control in all situations. Another example is the introduction of a species of plant(s) to shade out or outcompete undesired fuels in a controlled area. Grazing is another form of a simple biological control. Livestock such as cattle, goats, horses, and sheep are most commonly used. It is only effective in non-forest fuels where the vegetation is palatable to livestock. The livestock consume the vegetation, thus keeping the amount of fuel in check. Goats prefer forbs and shrubs, but will also eat grass, whereas cattle and horses will eat primarily grass. Sheep will eat both forbs and grass. Steep slopes can be grazed by goats, sheep, and horses, but cattle prefer not to graze slopes over 30%, making them ineffective in mountainous terrain. Livestock control requires extensive enclosures and many times is not cost effective. Another disadvantage is animal escapes that result in damage to biologically sensitive areas.

(b) Complex. Complex biological measures involve organisms that will directly destroy the targeted vegetation. Normally these types of treatments are strictly implemented, monitored and tightly controlled and must be coordinated with multiple agencies because they involve the introduction of a non-native biological organism. There have been a number of disastrous complex biological treatments in Hawaii (e.g. mongoose to control rats), and because of possible unpredicted responses and potential damage to the native ecosystem, no complex biological treatments are planned on USARHAW lands for fire management.

d. The methods used in fuel modification, fuelbreaks, and firebreaks will vary due to terrain and acreage, and the shapes of areas to be treated.

e. Any removal or modification of native vegetation may be conducted only with the approval of the DPW Environmental Division, Conservation Section, following surveys to ensure that no endangered, threatened, or candidate species are in the area.

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4.4. USE OF PRESCRIBED FIRE.

4.4.1. General.

a. Prescribed burning is defined as the controlled application of fire under specified environmental conditions that allow the fire to be confined to a predetermined area while at the same time producing fire behavior required to attain resource management objectives. Because of the potential for unintended circumstances, extensive planning, coordination, and risk management must be completed prior to ignition of any prescribed burn.

b. In the process of developing practical fuel reduction programs, fire managers will consider the use of prescribed fire. When applied in a safe, carefully controlled situation, it is often the most cost-effective means of achieving management and natural resource objectives. Consideration will be given to prescribed fire to protect habitats, natural resources, and capital improvements as well as reduce hazardous fuels, construct and reinforce fuelbreaks, and control alien plants. Well placed prescribed burning units can help prevent large wildfires or slow their advance.

c. Prescribed burning on Army training lands will only be executed by qualified individuals. A National Wildland Coordinating Group certified Prescribed Burn Boss must supervise all prescribed burns. The Burn Boss has the responsibility to make the on-site, tactical “go, no-go” decisions. The Burn Boss ensures all prescription, staffing, equipment, and other prescribed burn requirements are met before and during the burn.

d. Special considerations are necessary for any prescribed burn planned for Makua Military Reservation due to its ecological and cultural sensitivity. Because of the high resource value, additional restrictions have been developed and are included in the MMR SOP (See Appendix 1).

4.4.2. Objective.

Use management ignited or training ignited prescribed fires in a safe, carefully controlled, and cost-effective manner as means of achieving fire management objectives. Management ignited prescribed fires, often referred to as simply ‘prescribed fires’, are defined as intentionally set fires used to achieve a resource management objective. Training ignited prescribed fires are defined as fires that are unintentionally started during normal military training, but are allowed to burn to achieve a predetermined resource management objective. These are a special use, and are referred to throughout this document with their full name. Training ignited prescribed fires will be restricted to use within the impact area at SBMR and will be carefully planned and monitored. See Section 4.4.6(c) for further details.

4.4.3. Policy. The following policy statements apply to the use of prescribed fire on all U.S. Army Hawaii (USARHAW) managed training lands, regardless of the type of ignition:

a. A management ignited Prescribed Fire Burn Plan must be completed for all prescribed burning projects in advance of ignition.

b. A Training Ignited Prescribed Fire Burn Plan must be in place prior to any declaration of any training ignited fire as a Training Ignited Prescribed Fire (TIPF).

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c. Prescribed Natural Fires are not considered in this document because there are very few naturally ignited fires in Hawaii. The lack of natural ignitions precludes a prescribed natural fire program.

d. In the Prescribed Fire/TIPF Burn Plan, address appropriate actions to take if onsite conditions change and cause one or more prescription parameters to exceed acceptable limits. A prescribed fire that exceeds, or is anticipated to exceed, one or more prescription parameters and/or line holding capability must be declared a wildfire and cannot be re-delegated as a prescribed fire. At this point, appropriate suppression action must be taken.

e. The U.S. Fish and Wildlife Service will be consulted before any prescribed fire is implemented.

f. Conduct each prescribed fire in compliance with the approved burned plan.

g. Use only trained and qualified personnel to execute each prescribed burn plan.

h. Base the number of resources required to safely achieve prescribed fire objectives on the size and complexity of each project. Minimum manning will vary with the size and complexity of each prescribed burn.

i. The IFSO Wildland Fire Program Manager must personally approve the Prescribed Fire/Prescribed Natural Fire Burn Plan and any changes. Only in the absence of the Wildland Fire Program Manager may this responsibility be re-delegated.

j. Other than the Wildland Fire Program Manager, the Burn Boss, Safety Officer, or appointee of the Wildland Fire Program Manager, has the authority to stop all firing.

4.4.4. Responsibilities.

a. United States Army Hawaii (USARHAW) shall:

1. Develop guidelines for the use of prescribed fire, including both management ignited and training ignited prescribed fires, in land and resource management planning within G3/DPTM, Range Division Hawaii sphere of influence.

2. Develop USARHAW standards for the preparation of Prescribed Fire/TIPF Burn Plans, including resource coordination, review, and approval by the appropriate line officer.

3. Approve all management plans that propose the use of prescribed fire from training ignitions.

4. Delegate Prescribed Fire/TIPF Burn Plan approval authority to the Wildland Fire Program Manager. Where appropriate, limit the approval authority to the Wildland Fire Program Manager, or in his absence, the designated acting.

5. Develop qualification standards for personnel involved in the prescribed fire program that meet or exceed NWCG standards.

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6. Develop smoke management criteria for making "go/no go" decisions on use of prescribed fire from both management ignited and training ignited fires.

7. Develop a USARHAW process to:

(a) Coordinate workforce and equipment needs for prescribed fire and wildland suppression activities.

(b) Ensure that prescribed fire use and fire protection responsibilities do not exceed USARHAW capabilities and are coordinated with Command suppression needs.

(c) Annually monitor and evaluate the results of the TIPF program and provide copies of all reports to the USFWS for review.

b. Director, IFSO (Command Fire Marshall) shall:

1. Integrate the role and use of prescribed fire into G3/DPTM Range Division Plans.

2. Approve Prescribed Fire/TIPF Burn Plans. Where appropriate, delegate Prescribed Fire/TIPF Burn Plan approval authority to the Wildland Fire Program Manager based on the complexity of the prescribed fire proposal. Limit approval authority delegation to the Wildland Fire Program Manager, or in his absence, the designated acting.

3. Ensure that Prescribed Fire/TIPF Burn Plans and the personnel executing them meet minimum NWCG, DoD-wide, and Army Wildland Fire Policy requirements.

4.4.5. Prescribed Fire Ignitions.

a. Types of Ignitions. On USARHAW lands, two types of ignitions are recognized: Management ignition, resulting in a management (deliberate) ignited prescribed fire and training ignitions (lightning, lava), resulting in a training ignited prescribed fire. Natural ignitions, should they occur, will be grouped under training ignited fires.

b. Prescribed Fire Complexity. Determination of prescribed fire complexity shall be based on an assessment of technical difficulty and potential consequences. Complexity shall be used to delegate approval authority, set standards for personnel staffing and skill requirements, and to determine the level of burn plan detail. Prescribed fire projects should be classified as Complex, Intermediate, or Basic. Burn complexity will be determined by the Wildland Fire Program Manager and shall be made in the context of existing or potential social, political, economic, biological, and/or legal consequences.

1. Complex. Complex prescribed fires is defined as those where prescribed burning occurs under particularly challenging conditions and/or constraints. This classification includes prescribed fires where the difficulty of achieving resource management objectives is high, or where the consequences of project failure may be serious. All TIPFs shall be classified as complex fires.

2. Intermediate. This classification includes prescribed fires where the difficulty of achieving resource management objectives is not particularly high or complicated, and where the consequences of project failure are less serious and can be mitigated.

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3. Basic. Prescribed fires of basic complexity are defined as those where few constraints, other than the normal prescription parameters, exist. This classification includes prescribed fires where achieving resource management objectives is routine and the probable consequences of project failure are low.

4.4.6. Prescribed Fire Requirements.

a. Management Ignited Prescribed Fires. A Prescribed Fire Burn Plan shall be completed for each management ignited prescribed fire. Prescribed Burn Plans describe expected results and the conditions necessary to achieve them as part of a vegetation management program. It shall include all items outlined below. The detail needed should be commensurate with project complexity. If a given item is not applicable (NA), it should be so indicated in the plan.

1. A description of the burn unit's physical location, including a map.
2. Identification of resource management objectives to be accomplished by the prescribed fire.
3. Desired effects and tolerable deviations.
4. Post burn evaluation responsibilities. Prescribed fire management of vegetation on Army training lands in Hawaii requires an understanding of the type, age class, condition, availability, and arrangement of the fuel that can impact the natural resources, structures, and soils. All prescribed burns must have measurable objectives. Monitoring must occur before and after each prescribed fire to document and verify that the stated objectives have been met.
5. Project area description that includes unit and fuel descriptors.
6. A fire prescription containing those key parameters needed to achieve desired results (i.e., acceptable fire behavior, acceptable limits of environmental elements) and provisions to record onsite conditions.
7. Sample outputs of desired ranges. The range of acceptable results expected, expressed in quantifiable terms.
8. Smoke management analysis. Prescribed burn plans shall include the following smoke management components: Actions to minimize prescribed fire emissions, evaluate smoke dispersion, public notification, air quality monitoring, and exposure reduction precautions. The Army fully supports the Clean Air Act (1967) and amendments to the Act (1972, 1977) to protect and enhance the quality of national air resources and to protect public health and welfare. The Army will comply with all applicable State of Hawaii and local laws pertaining to prescribed burning and the acquisition of appropriate burning permit(s).
9. Provisions for weather data collection, acceptable parameters, and forecasts.
10. Provisions for public safety and protection of sensitive features.
11. Provisions for inter/intra agency pre-burn coordination and, where applicable, public involvement and burn day notification to appropriate individuals, agencies, and the public.

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Prescribed burn plans will be coordinated with directorates to include: Directorate of Public Works (DPW); Installation Fire and Safety Office (IFSO); Staff Judge Advocate (SJA); the Assistant Chief of Staff, G3, Directorate of Plans, Training, & Mobilization (ACofS, G3/DPTM); and Range Division - Hawaii. Technical experts from outside agencies (i.e., US Forest Service, National Park Service, and State of Hawaii, Division of Forestry & Wildlife) may review the Army's prescribed burn plans

12. Identification of the level of complexity of the fire and the appropriate organization needed. No less than the organization described in the approved plan shall be used to execute the burn. Minimum requirements for skill/knowledge element ratings of all elements of each position listed shall be stated. Describe the duties and responsibilities of positions within the organization.

13. A communication Plan.

14. Provisions for line construction, pretreatment, and holding actions to keep the fire within prescription. Firing techniques, containment, patrols, and mop up procedures are required.

a. Holding actions must be defined in the prescribed burn plan. The burn plan will allow the burn boss to take limited holding actions on fires outside the planned perimeter. However, there must be defined limits in the amount and kind of holding that can be done before any fire is determined to have exceeded the approved plan and must be declared a wildfire.

b. The limits of acceptable holding actions must be clearly stated in the prescribed burn plan. These limits must be defined as specific actions that can be taken, not general terms. If a prescribed burn accidentally crosses the prescribed perimeter, immediate action by the holding crews must be taken to control it.

15. Identification of contingency actions to be taken if the fire exceeds prescription parameters and/or line holding capabilities and cannot be returned to prescription with project resources. If the fire exceeds the predetermined and pre-approved constraints on holding actions, the fire must be declared a wildfire and appropriate fire suppression action taken. If a single spot fire escapes, it may be designated as a separate fire. If additional suppression forces are needed, the spot fire is declared a wildfire. The prescribed burn may continue as long as adequate holding forces remain on the prescribed burn as specified in the prescribed burn plan, separate from the suppression action on the spot fire, and the burn remains in prescription. In no case should the capability to hold the prescribed burn be jeopardized by moving essential holding forces to fight a spot fire.

16. A risk assessment that portrays an estimation of the probabilities and consequences of success/failure to the approving official. A safety plan and a "go-no-go" checklist is required.

17. Provisions for fire proximity to endangered species and plant boundaries; consideration of existing and predicted weather, fire behavior, and fuel conditions; and drought evaluation impact and/or effect.

18. The source of funding and estimated costs.

19. Provisions for a test fire and recording the results.

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20. USARHAW/DPTM, RDH may establish additional requirements as needed to achieve prescribed fire objectives.

b. Training Ignited Prescribed Fire Burn Plan.

1. A site specific TIFP Burn Plan is required for each training ignited prescribed fire. This plan will be developed and approved prior to declaration of any fire as a TIFP. The only location that TIFPs will be allowed within USARHAW is within the impact area firebreak of SBMR and within the designated impact area of PTA. No other locations are suitable for use of this designation.

2. TIFPs will not be allowed during “RED” fire danger. Any previously designated TIFP that is still burning when the fire danger turns to “RED” will be declared a wildfire and suppressed accordingly.

3. Fires may only be designated as TIFPs by the Director, IFSO; the Wildland Fire Program Manager; or the PTA Deputy Fire Chief and/or Wildland Fire Coordinator (PTA only). Fires must be designated as a TIFP within 4 hours of ignition.

4. No more than one TIFP will be allowed within each impact area (SBMR or PTA) at any given time.

5. Once developed, the pre-existing plan will be approved by the Director, IFSO and by the Wildland Fire Program Manager. The programmatic elements of the TIFP Burn Plan shall include the following:

(a) General description of the area, history (including fire history), and map.

(b) Objectives to be achieved by the TIFP and identification of acceptable outcomes.

(c) Required skills, qualifications and organization necessary to implement and manage the training ignited prescribed fire program.

(d) Funding requirements.

(e) Inter/intra-agency coordination, including joint planning and review where fires may cross multi-agency boundaries.

(f) Program “Inform and Involve” actions both internally and externally. Include program planning as well as execution.

(g) Potential impacts of plan implementation including environmental, on/off site, socio-economic, and political impacts.

(h) Analysis and decision process that provides for:

(1) Identification of local approval authority.

(2) Identification of evaluation criteria for the initial “go/no go” decision.

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(3) Risk assessment that considers, at a minimum, fire growth predictions; threat to life and property; smoke management concerns; local/regional/nation fire situation, including availability of resources; potential impacts on endangered species and plants; fire proximity to endangered species and plant boundaries; assessment of the amount of TIPF that is acceptable and manageable; consideration of existing and predicted weather, fire behavior, and fuel conditions; and drought evaluation impact and/or effect.

(4) Provision for daily revalidation.

(5) Timely decision by the Wildland Fire Program Manager.

(i) Identification of fuel treatment measures needed to reduce hazard fuels in support of the Army's prescribed fire program, including identification of areas or developments that need protection from fire.

(j) Process for development of a TIPF Plan.

(k) Process for monitoring and evaluating the TIPF.

(l) Escaped Fire Situation Analysis and contingency plan.

(m) Identification of maximum allowable perimeter.

(n) Monitoring actions to assure accurate and timely information on fire behavior, location, etc.

(o) Evaluation Plan for assessing outcome of the fire.

6. Some information will not be known until a TIPF fire actually starts. Individual TIPF Burn Plans shall also include the following:

(a) Holding actions necessary to keep the fire within prescription.

(b) Fire projections using both "expected" and "most severe" weather scenarios.

(c) An estimate of resource needs to manage the fire.

(d) Cost estimates to manage the fire.

4.4.7 Prescribed Fire Organization.

a. A Burning Boss, experienced with local weather, fire behavior, fuels, and terrain conditions shall personally supervise the burning operations on each management ignited prescribed fire. More complex burns may require a Lighting Boss and a Holding Boss. A Prescribed Fire Manager qualified to manage prescribed management ignited and TIPFs shall personally supervise operations.

1. Every management ignited prescribed fire requires the performance of the duties shown in this SOP. On smaller or less complex projects, one person may perform more than

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one of the required duties. Larger or more complex projects will require more qualified people to perform necessary duties.

2. Every TIPF requires the performance of the duties outlined in Reference 4.4.1. The Prescribed Fire Manager will determine, through the development of the TIPF Burn Plan, the organization, expertise, and positions necessary to manage the prescribed natural fire.

3. The organization required varies with the size and complexity of each prescribed fire.

4. In the event of an escape, use personnel qualified under National Interagency Fire Qualification Handbook standards (NWCG Guide 310-1) to accomplish the required suppression activity. The temporary use of personnel who do not meet these qualifications is appropriate for prescribed fires that escape and are declared wildfires.

b. Prescribed Fire Planning Specialist. The Prescribed Fire Planning Specialist develops the Prescribed Fire Burn Plan for each management ignited or TIPF.

c. Prescribed Fire Manager. The Prescribed Fire Planning Specialist may determine by the complexity or number of prescribed fires that a Prescribed Fire Manager is necessary. On management ignited prescribed fires, the Burning Boss is responsible directly to the designated Prescribed Fire Manager for implementation and coordination of the assigned prescribed fire activities. The Prescribed Fire Manager shall:

1. Coordinate and schedule the ignition and management of two or more management ignited prescribed fires, or the management of a single TIPF.

2. Develop and implement the TIPF Burn Plan on appropriate training ignited fires.

3. Coordinate personnel and equipment requirements, including resources called for holding actions and contingency action section of the burn plan.

4. Ensure appropriate public notice is given prior to and during the prescribed fire activity.

5. Coordinate prescribed burn projects to avoid exceeding holding and contingency capabilities.

6. Monitor prescribed burn projects to ensure that all plan requirements are being met.

7. Record and report costs and accomplishments and recommend improvements to the Wildland Fire Program Manager.

d. Burn Boss. The Burn Boss has direct responsibility for on site implementation of specific actions in strict compliance with the approved Prescribed Burn Plan. The Burn Boss is accountable to the Prescribed Fire Manager. The Burn Boss has the following responsibilities that cannot be re-delegated:

1. Ensure safety of personnel.

2. Supervise all operations on the project site.

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3. Ensure that all Prescribed Fire Burn Plan requirements are met and that personnel are briefed before proceeding with ignition.

4. To make the decision to proceed, accelerate, defer, or curtail operations based on attainment of the approved prescription criteria or lack thereof, including daily validation of prescribed criteria on multi-day projects.

5. Ensure that the fire prescription is met before proceeding with ignition.

6. Ensure that the forecast on site weather parameters are within prescription at the time of ignition and predicted to remain so during the expected life of the burn.

7. Ensure the availability of suppression resources in the event the prescribed fire escapes and is declared a wildfire.

8. Control directly, or through supervision of Lighting Bosses, the method, rate, and location of firing.

9. Maintain immediate and clear communications with the Lighting Boss and Holding Boss at all times.

10. Monitor fire behavior and terminate operations if fire behavior or effects are not according to prescription.

11. Accomplish mop up to predetermined standards in accordance with the Prescribe Fire Burn Plan.

12. Certify that the fire is out.

e. Lighting Boss. The Lighting Boss reports to the Burning Boss. The Lighting Boss will:

1. Maintain control of the ignition sources, including aerial ignition, on the burn project at all times.

2. Ensure deployment, sequence, and timing of all ignition sources to meet project objectives.

3. Supervise assigned personnel and ensure their safety.

4. Maintain immediate and clear communications with the Burning Boss and Holding Boss at all times.

5. If aerial ignition is used, ensure that the aerial ignition pilot is briefed on the Job Safety and Health Hazard Analysis, with emphasis on aerial flight hazards.

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f. Holding Boss. The Holding Boss reports to the Burning Boss on management ignited prescribed fires. On prescribed natural fires the Holding Boss may report directly to the Prescribed Fire Manager. The Holding Boss shall:

1. Confine the prescribed fire within the planned area.
2. Take action when fire exceeds, or has the potential to exceed, the planned area.
3. Confer with the Lighting Boss, Burning Boss, Prescribed Fire Manager, as appropriate, to match holding and contingency capability with firing sequence.
4. Supervise assigned personnel and ensure their safety.
5. Maintain immediate and clear communications with the Burning Boss, Lighting Boss, or Prescribed Fire Manager, as appropriate, at all times.

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REFERENCE 4.4.1 PRESCRIBED FIRE QUALIFICATIONS

Prescribed Fire Crewmember:

- S-130 Basic Firefighter
- S-190 Introduction to Fire Behavior
- I-100 Introduction to ICS

Holding Specialist

- I-220 Basic ICS
 - S-211 Portable Pumps and Water Use
 - S-270 Basic Air Operations
 - S-290 Intermediate Wildland Fire Behavior
 - S-200 Initial Attack Incident Commander Type IV
 - S-201 Fire Supervision
- Qualified as a Prescribed Fire Crewmember

Ignition Specialist

- S-215 Firing Methods
- Qualified as a Holding Specialist

Prescribed Burn Boss II

- RX-90 Burn Boss
- Complete two certification burns under the supervision of a qualified Burn Boss
Qualified as an Ignition Specialist
Fire Behavior and Weather II
Two trainee assignments
Qualified as a fire crew member

Prescribed Fire Manager and Prescribed Fire Planning Specialist

- Introduction to Fire Behavior Calculations S-390
- Qualified as an Ignition Specialist 2 (RXF2) or as Incident Commander, Type 4 (ICT4)
- RX-300 Burn Boss
 - RX-340 Introduction to Fire Effects
 - RX-450 Smoke Management Techniques

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4.5. PREPLANNING WATER RESOURCES.

a. One of the most important resources for firefighters is an ample water supply. However, wildland fires often occur in areas where a water supply system is limited or not available. Firefighters must take advantage of auxiliary water resources near the fire or depend on water (and other agents) that are transported to the fire. Having access to water sources and the efficient use of that water can significantly affect the outcome of control efforts. Water storage resources are primarily used by fire trucks and for aerial fire bucket operations by rotary winged aircraft. If off military land, formal agreements between the Army and landowners that own these water resources are needed for those sources to be used.

c. In 1996, the Army constructed two dip ponds (each 300,000 gallon capacity) at Makua Military Reservation and six above ground dip tanks (each 80,000-gallon capacity) at Pohakuloa Training Area to enhance its water supply resources and fire fighting capability. (A list of available water resources and grid coordinates are included in Section 5.7, Aviation Plan). There are current plans for dip ponds at SBMR and KTA as well as 3 more dip tanks at PTA.

d. Sea and brackish waters are often the most readily available sources of water for wildland fire fighting in Hawaii. Military and local private contracted helicopters equipped with suspended buckets have been used routinely for some time in many areas to apply these impure waters on and around the fire. Most saline water research to date has been done on agriculture crop plants, which were evaluated for salt tolerance. However, no additional practical research is available in respect with native plants found in the Hawaiian ecosystems. What is known about the effects of using seawater on plants varies considerably. Those that are highly tolerant generally survive and predominate in areas subject to marine spray. Normally salt water spray can impact leaf and/or needle drop, but toxic effects will only be experienced when the salt solution penetrates the soil sufficiently to reach the root area. Thus, atmospheric conditions that favor rapid evaporation (high temperatures and winds) will generally result in the salt deposit being at or near the surface rather than in the root zone. Subsequent precipitation then impacts either penetration into the soils or runoff depending on the quantity of precipitation per unit time and the natural permeability of the soil in question. While the use of sea water is not recommended when fresh water is available, sea water will be used in emergency situations when fresh water is not available.

4.6. FIREFIGHTER TRAINING.

4.6.1 General.

a. USARHAW has adopted the standard training requirements as outlined in the 310-1, Wildland Fire Qualifications Guide, parts 1 & 2, (NWCG). All 25th ID(L) & USARHAW personnel engaged in suppression and prescribed fire responsibilities are required to meet the standards set in this plan.

b. The Federal Fire Department, Army Firefighters or outside cooperating agencies shall meet the required wildland training and physical fitness requirements outlined within each respective agency's established policies or training program.

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c. Individuals will not be assigned to duties for which they lack training and/or certified experience. All personnel dispatched or assigned to wildfires or prescribed fires will be qualified for the fire position assigned, unless assigned as trainees under the direct supervision of higher qualified personnel at all times.

d. Applicability.

1. 25th ID(L) & USARHAW. This program establishes training and qualification requirements for wildland fire fighting personnel, planning, prevention, suppression, and supervision duties. The Wildland Firefighter Qualification Program is established to provide standardization for directorates and organizations that are responsible for wildfire duties under the Wildfire Management Program. Any USARHAW organization or directorate intending to supply human resources to wildfire incidents will be expected to meet the requirements described in this program.

2. Federal Fire Department (FFD), Naval Station, Pearl Harbor. Through an Interservice Support Agreement (ISA), the FFD has the responsibility for fire protection services on all Army lands on the island of Oahu. USARHAW recommends that the FFD adopt this program, or institute a similar policy to ensure that USARHAW receives the highest quality wildfire protection (See paragraph 4.6.3(b) below).

3. Fire Cooperating Agencies (DOFAW, County Fire, NPS). When responding to a wildfire incident on Army lands, the responding cooperative agency's wildfire qualifications are accepted at the firefighter level, and for internal agency supervision (within their own organization), while on the fire. (See paragraph 4.6.3(c) below)

e. Training Standards. USARHAW adopts the training standards established by the NWCG, Interagency Incident Management Systems for Wildland Fire Qualification under PMS 310-1, Wildland Fire Qualifications Subsystem Guide dated 2000. This program is designed to:

1. Establish minimum training, skills, knowledge, and experience for individuals involved in wildland fire fighting duties and to be qualified for wildland fire Incident Command System (ICS) positions.

2. Allow participating directorates and organizations within USARHAW to plan individual training requirements and assign responsibilities based on training, skills, and experience standards required to meet wildfire management needs within their areas.

4.6.2. Description of the Program.

a. Training Method.

1. The USARHAW Wildland Firefighter Qualification Program is an "educational" and "performance based" qualifications program. In this program the primary criteria for qualification is an individual's education in the courses described below, and hands on performance as observed by qualified individuals using approved standards.

2. The educational base of the program uses the completion of approved training courses with a passing score on an examination.

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3. The performance-base of the program uses hands on evaluation under realistic conditions to ensure potential performance under live field conditions.

4. Qualification is based upon hands on course completion and real performance, as measured on the job, versus perceived performance, as measured solely by classroom activities.

5. Personnel who have learned skills from sources outside the Army, such as other agency specific training programs, may not be required to complete specific courses or training again in order to qualify in a wildfire position. However, this training and experience must be documented and be consistent with the requirements outlined in this program and approved by the Wildland Fire Program Manager.

b. Training Components. The components of the Wildland Firefighter Qualification Program are as follows:

1. Courses of Instruction. Courses of instruction have been developed by the NWCG for each position in the wildfire ICS. These courses have been designed to teach the basic information required to gain a general understanding of the position and provide technical knowledge required to perform duties required by the job. These courses are similar to college courses in that they start out at a basic level (100 level basic firefighter skills) and work up through higher levels of the ICS (up to 500 level national ICS skills). Courses are to be taught by trained and qualified instructors, experienced in the skill being taught. USARHAW will provide its own instructors for basic level courses (100/200 level), but will bring in outside qualified personnel from other state or federal agencies to teach at higher levels.

2. Position Task Books (PTB). PTBs are used to document performance demonstrations. PTBs are NWCG published booklets that apply to a specific position in the ICS. A PTB contains all critical tasks that are required to perform a given job. These booklets will be used by wildfire managers and supervisors to keep track of an individual's training experience. There will be a PTB for most positions included in the program. The tasks in each PTB have been established by the NWCG. PTBs have been designed in a format that allows documentation of a trainee's ability to perform each task. Tasks pertaining to tactical decision making and safety are flagged and require a position performance on a wildfire. Remaining tasks can be evaluated through other means such as simulation or other emergency and non-emergency work. Successful completion of all tasks required of the position will be the basis for recommending certification for a specific position in the ICS.

4.6.3. Certification.

a. Initial Certification.

1. Training certification requirements include completion of all required training courses prior to obtaining a PTB. Use of the training courses is required to prepare the employee to perform in the position. An employee will not be given a position assignment unless they have completed all necessary courses and training and applicable PTBs.

2. Training courses provide the specific skills and knowledge required to perform are listed in Reference 4.6.2.

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3. Required training has been held to the minimum required for safe operations on a wildfire. All training will be available within USARHAW and is intended as the primary means by which personnel can prepare for qualification.

4. Certification of qualification for a position in the ICS will be documented and tracked by the IFSO, Wildland Fire Program Manager. Upon completion of each training course the Wildland Fire Program Manager, or training agency/organization will publish a memo to the Director of Fire and Installation Safety identifying personnel who successfully completed each course by name, organization, and ICS position that the individual is authorized to hold. A copy of the memo will be provided to the FFD, the individual who successfully completed the training, and the commander or director of organization that the individual belongs to. The Wildland Fire Program Manager is responsible for maintaining all memos and will compile a qualification list of all wildland trained personnel in USARHAW. Additionally, the Wildland Fire Program Manager may document training by issuing an incident qualification card. This is for use in identifying to outside agencies that the individual is qualified to perform in a specified position.

5. The quality of experiences gained in a given position will be closely evaluated when making a determination for advancement to the next higher position or to a different position. The quality of experience may relate to the number of assignments in which an individual performed, the size of the incident, and the complexity of operations overseen.

6. This program will not determine the number of times an individual should serve as a trainee or how many times a given position should be filled before advancement. Determination will be made by the supervisor based on task evaluations, position performance evaluations, and their own judgment on the quality of an individual's experience. Supervisors will submit recommendations for advancement or change in positions to the Wildland Fire Program Manager.

7. Personnel will not be assigned any wildland fire duties without proper certification. Personnel that have the basic Firefighter 2 (FFT2) can be assigned a training status to higher level positions provided that they are directly supervised by an individual qualified/certified for that position and have completed the necessary coursework.

b. Currency Requirements

1. Unless otherwise noted, the maximum time allowed for maintaining currency is five (5) years for all positions. For example, the currency requirement for a Task Force Leader is to have functioned in a satisfactory manner in the last five years as a Task Force Leader or above.

2. Currency requirements for positions may be met by performing the particular position or any higher position, and any specified lower or similar duties. This type of position experience will be considered as qualifying only if the individual has previously met all training and prerequisite experience requirements for the position. Serving in a position for which the individual is qualified will maintain the currency of a prerequisite position, providing that the individual was previously qualified in that position.

3. Refresher training is also a way to maintain currency. Refresher training will be arranged at various intervals to keep personnel updated on the requirements for specific positions but also new developments within the given field.

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4. Recertification. This responsibility includes evaluation of personnel for recertification in cases where position qualifications have been lost as a result of a lack of current experience. A key component in the certification or recertification process is the subjective evaluation by management of an individual's capability to perform in a position. Managers can request recertification of prior qualified personnel by submitting a memo to the Wildland Fire Program Manager stating the reasons for recertification and any mitigating issues that can show the individual has either maintained or relearned skills necessary to accomplish the job. The Wildland Fire Program Manager may design a specific individual refresher course prior to recertification.

c. Training.

1. The Wildland Fire Program Manager will develop an overall program.

2. The Wildland Fire Program Manager will develop an annual schedule of course instruction and a training plan for each Fiscal Year (FY) for all of USARHAW.

3. Training will be coordinated among USARHAW fire managers, land managers, and the FFD. Training will be announced with sufficient time for supervisors to schedule and meet workloads.

4. Training may be arranged by any USARHAW agency. However, training must meet the criteria of this program and meet NWCG standards. Training by any USARHAW agency will be open to include personnel from the command or outside cooperative fire agencies.

5. The training plan should be coordinated with other outside fire managers and other outside cooperative agencies for cross-leveling and sharing of training opportunities within the State of Hawaii.

4.6.4. Fitness Standards. Personnel assigned to wildfire duties are required to meet the following standards for physical fitness. The fitness level that personnel shall meet depends on what ICS position they are assigned (See Section 4.6.6).

a. Fitness Categories.

1. Arduous. Duties involve fieldwork requiring physical performance, over an extended period of time, calling for above-average endurance and superior conditioning. These duties may include a demand for extraordinarily strenuous activities in emergencies under adverse environmental conditions and over extended periods of time. Requirements include running, walking, climbing, jumping, twisting, bending, and lifting more than 50 pounds; the pace of work typically is set by the emergency situation.

2. Moderate. Duties involve field work requiring complete control of all physical faculties and may include considerable walking over irregular ground, standing for long periods of time, lifting 25 to 50 pounds, climbing, bending, stooping, squatting, twisting, and reaching. Occasional demands may be required for moderately strenuous activities in emergencies over long periods of time. Individuals usually set their own work pace.

3. Light. Duties mainly involve office type work with occasional field activity characterized by light physical exertion. Activities may include climbing stairs, standing, operating a vehicle,

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and long hours of work, as well as some bending, stooping, or light lifting. Individuals almost always can govern the extent and pace of their physical activity.

4. None. Duties are normally performed in a controlled environment, such as an incident base or camp.

b. Fitness Testing. There are four accepted methods of testing physical fitness:

1. A 1-1/2 mile run/walk. The individual, of any age or sex, must run/walk a distance of 1-1/2 miles on level terrain within 11 minutes and 40 seconds.

2. The Pack Test. Similar to the run/walk, the individual carries a backpack a prescribed level distance within a prescribed time:

Arduous. Individual must carry a 45-lb backpack 3 miles in 45 minutes or less.

Moderate. Individual must carry a 25-lb backpack 2 miles in 30 minutes or less.

Light. Individual must hike 1 mile in 15 minutes with no pack.

The Army Physical Readiness Test (APRT) per FM 21-20.

3. The Volume Oxygen. VO₂ test determines physical fitness as the measurement of an individual's ability to take in, transport, and use oxygen, which is the most important factor affecting ability to perform sustained arduous work. The best measure for determining health and functional ability is maximal oxygen consumption (Max VO₂). Max VO₂ is a measure of the maximum rate that oxygen can be consumed and is expressed in milliliters of oxygen per kilogram of body weight per minute. This ranges from about 20 milliliters for poorly conditioned people to about 80 for endurance athletes such as distance runners and cross-country skiers. Only medical staff may administer the VO₂ test. This test requires a clinic with the equipment and trained staff to administer the test. The following Max VO₂ levels have been set for the four categories of physical fitness:

Arduous, requires a Max VO₂ of 45.

Moderate, requires a Max VO₂ of 40.

Light, requires a Max VO₂ of 35.

None, no testing is required.

4.6.5. Responsibilities.

a. IFSO Wildland Fire Program Manager

1. The IFSO, Wildland Fire Program Manager is responsible for selecting required courses, potential trainees, proper use of task books, certification of trainees, documentation of course completion, and qualification and selection of the personnel to fill ICS positions.

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2. The Wildland Fire Program Manager is responsible for certifying and recertifying qualifications of personnel based on the requirements of this program.

3. The Wildland Fire Program Manager will develop an annual schedule of course instruction and a training plan for each Fiscal Year. The Wildland Fire Program Manager will submit the training plan and course of instruction to the Director of Installation Fire & Safety for review and approval.

4. The training plan should be coordinated with other fire managers and outside agencies for cross-leveling and sharing of training presentation.

b. Director of Installation Fire & Safety.

1. Approve the annual training plan and courses of instruction.

2. Monitor training for standardization.

3. Coordinate training with the FFD.

c. Commanders, Directors, Supervisors and Leaders.

1. Ensure individuals assigned to ICS positions are qualified.

2. Ensure individuals are available for scheduled training.

3. Notify the Wildland Fire Program Manager when qualification of personnel expires.

d. Incident Commander (IC).

1. The supervisor or IC on an incident is responsible for managing a training and qualification program on the incident, should one be used.

2. Consider the qualifications of outside fire departments or cooperating responders for duties at the incident.

3. Ensure qualified/certified personnel are assigned fire duties.

4. Ensure that if personnel are assigned duties for which they are not properly certified, that they are directly supervised by someone who is qualified.

e. Individuals Firefighters.

1. The individual is responsible for showing proof of qualifications and completing training.

2. The individual is responsible for informing their supervisor when qualification requirements have expired.

4.6.6. Complexity of Incidents for Qualification.

a. Incident Types. A specific fire incident can be resolved through simple or complex responses. Normally larger fires affecting multiple landowner and requiring multiple agency response are more complex than single resource or agency responses. These increases in complexity are referred to as “Types” of incidents.

1. There are many factors that determine the complexity of an incident, such as size, location, threat to life and property, political sensitivity, organizational complexity, jurisdictional boundaries, values-at-risk, fuel type, topography, policy, etc.

2. The ability and qualifications of the ICS personnel assigned to manage a specific type of incident are the responsibility and at the discretion of the Senior Fire Officer (SFO) in charge at the scene of the fire incident. The IC, or designated representative must determine the complexity of an incident and assign qualified personnel as needed.

3. The following descriptions are only guidelines to assist the SFO in determining the complexity of an incident. The IC must obtain the qualifications necessary to handle the incident separately from the typing of the fire incident. NOTE: The incident types are in no way related to the federal firefighter certification qualifications (e.g., FFT1/2).

b. Type 4 Incident. (Initial Attack Response)

1. Within USARHAW about 95 percent of all wildland fire incidents fall into this type. These are small incidents of relatively simple complexity that are handled with very few fire fighting forces. This type of incident has the following characteristics:

2. Resources vary from a single firefighter to several single resources. Possibly a single Task Force or Strike Team.

3. Normally limited to one operational period (workday) – at least the control phase. Mop up may extend into multiple periods.

4. Normally does not require a written action plan.

5. Normally the ICS upper level (fire fighting) positions will not be activated.

c. Type 3 Incident. (Extended Attack Response)

1. Initial responses with a large number of resources or an extended attack are examples of this incident type. In large Type 3 situations, the incidents may be relatively small (less than 40 hectares), but in rangeland vegetation the fire size could be significantly larger (400 hectares or more). Characteristics of a Type 3 Incident are:

2. Resources vary from several single resources to several Task Forces/Strike Teams.

3. The incident may be divided into divisions, but usually not meet the Division/Group complexity in regards to span-of-control. The incident could be divided into segments.

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4. May involve multiple operational periods prior to control. If so, a written action plan would be required.

5. Some fire fighting Command and General Staff positions may be activated, but usually not at the Division/Group Supervisor and Task Force Leader level.

6. May utilize staging areas and establish a base.

d. Type 2 Incident. (Extended Attack, Multiple Agency Response)

1. This is the first level at which most or all of the Command and General Staff positions are activated. The IC and the Command/General Staff must function as a team. Handling all aspects of supervising a large organization, multiple operational periods, gathering information to develop an action plan, the development of an action plan, and providing logistical support to include the establishment and operation of a base and possibly camps. Characteristics of a Type 2 Incident are:

2. Most or all of the Command/General Staff positions are filled.

3. Base/camp(s) are established.

4. The incident extends into multiple operational periods.

5. A written action plan is needed and prepared.

6. Many of the functional units are needed and staffed.

7. Number of line workers per operational period usually does not exceed 200 and the total personnel on the incident normally does not exceed 500.

e. Type 1 Incident. (Large Scale Extended Attack Response)

1. The primary difference between a Type 1 and a Type 2 Incident is a matter of size and complexity. USARHAW does not have a requirement to form a Type 1 ICS. A fire this size will have extended beyond the installation boundaries and involve multiple agencies and landowners. If the Army has a requirement to maintain responsibility for the fire, USARHAW may need to request a Type 1 Command team from another federal agency. However, USARHAW may be required to assist in staffing a Type 1 ICS with personnel that may be trained in Type 1 duties. The factors that affect the decision to go to a "Type 1" operation are extremely variable and depend to a large extent upon the needs of the local fire fighting force. A Type 1 Incident almost always requires the establishment of divisions that require Division/Group supervisor qualified personnel and may require the establishment of branches. Incident management teams assigned to Type 1 Incidents are the fire departments most qualified personnel. The Type 1 Incident meets all of the criteria of a Type 2 Incident plus the following:

2. Usually all Command and General Staff positions are activated.

3. Operations personnel may often exceed 500 personnel per operational period and total personnel on the incident will exceed 1000.

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4. This is a large, complex incident and requires well-qualified personnel at the IC and Command/General Staff level. In most cases the personnel qualified at this level will have had multiple Type 2 assignments before being qualified and assigned at this level.

4.6.6. Position Categories. Positions found in the ICS organizational system can be divided into three categories: Non-Operational Technical Specialists, Skilled Operational positions and Aviation Pilots, as listed on the following pages.

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a. Non-Operational Technical Specialist. Technical Specialists are personnel with special knowledge or skills who are activated for type 3 or higher wildfire incidents and only when needed. These Technical Specialists are normally not required on the fireline and are used at base camps or support facilities. Due to the nature of the military, the Army's organizational structure is similar to the ICS and its designed functions. These are jobs that are typically found in the normal daily operations of the USARHAW. Personnel that can man these Technical Specialist positions normally have a daily job were their Civil Service classification or Military Occupation Skills (MOS) match the position named in the ICS. No minimum ICS qualifications are prescribed in this program because these personnel normally perform the same duties during an incident that they perform in their everyday job and are not near the fireline. Most Technical Specialists are certified in their field or profession. The support they provide an IC is exactly that which they apply daily. The ICS positions below are listed with the acceptable civil service or military position listed on the same line. These are the only positions that may be substituted for formal ICS training:

ICS POSITIONS (Non-Operational)

Agency Representative:	Commander, Director or Public Affairs Officer (PAO)
Information Officer:	PAO
Base/Camp Manager:	Commanders or Operations/Maintenance/Range Officers
Logistics Section Chief:	Supply or Director of Logistics (DOL) Representative
Claims Specialist:	Staff Judge Advocate (SJA) Representative
Commissary Manager:	Unit Food Service Officer/NCO or DOL
Medical Unit Leader:	Division Surgeon, Senior Medical Officer
Communications Unit Leader:	Signal Officer or Operations Officer
Compensation/Claims Unit Leader:	SJA
Compensation-for-Injury Manager:	Civilian Personnel Assistance Office (CPAC) and SJA
Cost Unit Leader:	Director of Resource Management (DRM)
Demobilization Unit Leader:	Commander or Operation/Range Officer
Display Processor:	PAO or Operations/Range Officer
Ordering Manager:	Unit /Organizational Supply or DOL
Documentation Unit Leader:	Management Assistant or Secretary
Equipment Manager:	Unit Organizational/Supply, Maintenance and DOL
Equipment Time Recorder:	Owning unit or organization DOL/DPW
Facilities Unit Leader:	Operations/Range Officer or Director of Public Works (DPW)
Finance/Admin Section Chief:	Agency/Organizational Management Assistant or DRM
Food Unit Leader:	Unit Food Service Officer/NCO or DOL
Security manager:	Military Police
Service Branch Director:	Commander, Director, Operations/Range Officer
Personnel time Recorder:	Organizational Management Assistance/Time Keepers
Procurement Unit Leader:	Unit/Organizational Supply or DOL
Receiving/Distribution Manager:	Unit/Organizational Supply or DOL
Staging Area Manager:	Operations/Range Officer
Status/Check-In Recorder:	Management Assistant or Time Keeper
Supply Unit Leader:	Unit/Organizational Supply
Support Branch Director:	Operation/Maintenance/Range Officer or DOL/DPW
Infrared Interpreter (IRIN):	G2, ITAM LCTA Coordinator

There are no fitness requirements for non operation technical specialist positions if they are not located on the fire lines. For all technical specialist personnel whose skills are needed on the fireline, the physical fitness level shall be light.

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b. Skilled Operational Positions. These positions are fireline or fire area jobs unique to wildland fire suppression. They require a level of specific skills and knowledge to perform wildfire suppression jobs and are those positions not normally found in other civil service positions in the Army. Personnel should be assigned only positions in which they have demonstrated the ability to perform successfully. The following positions require skill qualification training per Reference 4.6.3 to qualify for Wildland fire fighting and ICS positions:

ICS POSITIONS (Skilled Operational)

Advanced Firefighter/Squad Boss (FFT1)
Crew Representative (CREP)
Crew Boss (Single Resource) (CRWB)
Dozer Boss (Single Resource) (DOZB)
Engine Boss (Single Resource) (ENGB)
Felling Boss (single Resource) (FELB)
Firing Boss (Single Resource) (FIRB)
Fire Behavior Analyst (FBAN)
Firefighter (FFT2)
Helibase Manager (HEB)
Helicopter Coordinator (HLCO)
Helicopter Crew Member (HECM)
Helicopter Manager (HEMG)
Incident Commander Type 1 (ICT1)
Incident Commander Type 2 (ICT2)
Incident Commander Type 3 (ICT3)
Incident Commander Type 4 (ICT4)
Incident Communications Manager (INCM)
Planning Section Chief Type 1 (PSC1)
Planning Section Chief Type 2 (PSC2)
Resource Unit Leader (RESL)
Safety Officer (SOF1)
Safety Officer (SOF2)
Situation Unit Leader (SITL)
Strike Team Leader Dozer (STDZ)
Strike Team Leader Crew (STCR)
Strike Team Leader Engine (STEN)
Strike Team Leader Tractor/Plow (STPL)
Task Force Leader (TFLD)
Tractor/Plow Boss (Single Resource) (TRPB)
Training Specialist (TNSP)

These positions require the specific training listed in this program. Personnel with basic qualifications may be assigned to upper level positions without the qualification, provided that they are directly supervised by a supervisor qualified in that position.

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c. Aviation Pilots.

(1) Qualification/Currency: Commanders must consider training limitations, (lack of fire bucket mission availability), prior to inclusion of additional Task #3016 (below) on an individual's Commander's Task List.

(2) Crew members are required to have demonstrated proficiency to an Instructor Pilot (IP), Standardization Pilot (SP), Non-rated Crew Member Instructor (FI), Non-rated Crew Member Standardization Instructor (SI) in Task #2016, External Load Operations, prior to participation in fire bucket operations. For initial qualification, crew members must be familiar with this SOP and demonstrate proficiency to an IP/SP, FI/SI as appropriate in Additional Task #3016, Perform Fire bucket Operations.

(3) Currency: Crew members will be considered current for fire bucket operations as long as they comply with annual task/iteration requirements specified on the Commander's Task List.

(4) Training requirements. (See Section 5.7)

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REFERENCE 4.6.2

TRAINING COURSES, INCIDENT COMMAND SYSTEM (Wildland Firefighter Skills)

TRAINING COURSES

ICS Courses

I-100 Introduction to ICS
I-200 Basic ICS

I-300 Intermediate ICS
I-400 Advanced ICS
I-401 ICS for Executives

Skill Courses

S-000 Agency Specific Training
S-110 Wildland Fire Suppression Orientation Principle
for Non-Operations Personnel (optional)
*S-130 Firefighter Training
*S-190 Introduction to Fire Behavior
S-200 Initial Attack Incident Commander
S-201 Fire Supervision - 2nd Edition
S-203 Introduction to Information Officer
*S-205 Fire Operations in the Urban
Interface
S-211 Portable Pumps and Water Use
S-212 Power Saws
S-216 Driving for Fire Service
*S-217 Interagency Helicopter Training
Guide
S-230 Crew Boss (Single Resource)
S-231 Engine Boss (Single Resource)
S-232 Dozer Boss (Single resource)
S-233 Tractor/Plow Boss (Single
Resource)
S-234 Firing Methods and Procedures
S-235 Felling Boss (Single Resource)
S-244 Field Observer
S-258 Communications
Equipment/Procedures
*S-590 Fire Behavior Analyst

S-260 Fire Business Management
S-270 Basic Air Operations
*S-271 Helibase Manager
*S-290 Intermediate Fire Behavior
S-300 Incident Commander
Extended Attack
S-301 Dynamic Unit Leadership
S-320 Unit Leader
S-330 Task Force/Strike Team LDR
*S-336 Fire Suppression Tactics
S-339 Division/Group Supervisor
*S-378 Air Attack Group Supervisor
S-390 Fire Behavior Calculations
S-401 Effective Management
S-402 Liaison Officer
S-403 Information Officer
S-404 Safety Officer
S-420 Command and General Staff
S-443 Infrared Interpreter
S-445 Training Specialist
*S-470 Air Operations Branch
Director
*S-490 Advanced Fire Behavior
Calculations
S-520 Advanced Incident
Management
S-620 Area Command

*Indicates a course that contains critical knowledge and skills required for safe operations on a wildfire. Training in this course or an agency equivalent course with like learning and performance objectives is mandatory. Statistics indicate that lack of this type of knowledge and/or skill may have contributed to accidents.

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REFERENCE 4.6.3 WILDLAND FIREFIGHTER TRAINING QUALIFICATION REQUIREMENTS FOR ASSIGNED PERSONNEL

WILDLAND FIREFIGHTER QUALIFICATION COURSES FIREFIGHTER & AUXILIARY PERSONNEL

FIREFIGHTERS/AUXILIARY OPERATIONS TRAINING			FIREFIGHTER COMMAND/STAFF TRAINING		
COURSE	TITLE	HOURS	COURSE	TITLE	HOURS
FIREFIGHTER 2 (FFT2)			DIV/GROUP SUPERVISOR (DIVS)		
S-130	Firefighter Training	32	I-339	Div/Group Supervision	12
S-190	Introduction to Fire Behavior	8	I-375	Air Support Group Supervisor	32
I-220	Basic Incident Command Sys	16	OPERATION SEC CHIEF 2 (OSC2)		
FIREFIGHTER 1 (FFT1)			S-401	Effective Management	
S-210/200	Fire Supervision	40	I-420	Command & General Staff	40
S-211	Portable Pump & Water Use	16	I-400	Incident Command	24
S-212	Wildfire Powersaws	32	I-430	Operations Section Chief	40
CREW BOSS (CRWB) Single Resource			OPERATION SEC CHIEF 1 (OSC1)		
S-230	Crew Boss	32	S-520	Advanced Incident Mgt	40
S-234	Firing Methods & Procedures	24	INCIDENT COMMANDER 4 (ICT4)		
S-260	Fire Business Mgt Principles	8	CRWB	QUALIFIED	
S-270	Basic Air Operations	16	INCIDENT COMMANDER 3 (ICT3)		
S-290	Intermediate Wildland Fire Behavior	32	TLFD	QUALIFIED	
STRIKE TEAM LEADER (STLD)			S-300	Incident Cmd Multiple Resources	8
S-200	Initial Attack Incident CMD	32	INCIDENT COMMANDER 2 (ICT2)		
TASK FORCE LEADER (TFLD)			DIVS	QUALIFIED	
S-336	Fire Suppression Tactics	32	I-400	Incident Commander	24
S-390	Intro to Wildland Fire Behavior	40	AREA COMMANDER (ACDR)		
I-333	Strike Team Ldr	16	All operations training		
I-330	Task Force, Strike Team Ldr	40	All Command/Staff training		
S-205	Fire Operations in the Urban Interface	32	S-620	Area Command	40
HELICOPTER AIR OPS					
S-270	Basic Air Operations	16			

CHAPTER 4 – PRE-SUPPRESSION ACTIONS

REFERENCE 4.6.4

WILDLAND FIREFIGHTER TRAINING QUALIFICATIONS REQUIREMENT FLOW CHARTS

KEY TO WILDLAND FIREFIGHTER QUALIFICATION FLOW CHART

The chart in this reference shows the progression of qualifications from one position to another within the USARHAW Fire Management system. Because there is not a formal USARHAW wildland fire fighting force, these charts are not organization charts but are used to illustrate the training and physical fitness requirements for personnel that are assigned to each job classification. Each box within the chart contains information pertaining to prerequisite qualifications, training and physical fitness and should be read as shown in the diagram below:

An asterisk (*) indicates that a “position performance assignment” on a wildland fire is required prior to final qualification in this position

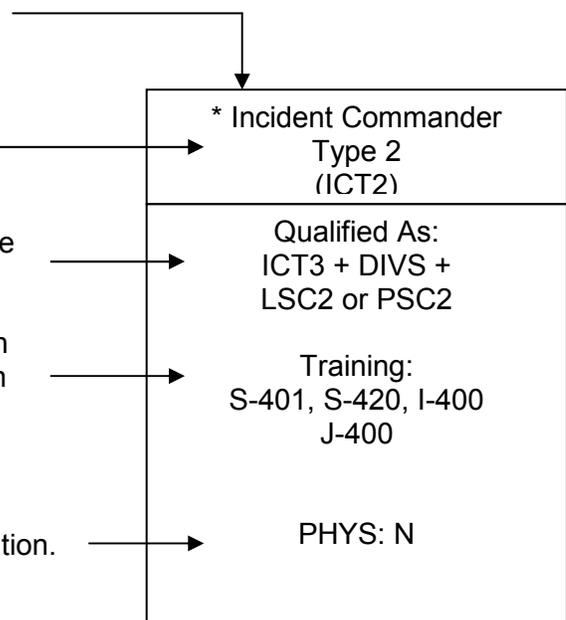
Job title & mnemonics identifier for position.

Lists positions (by mnemonics) for which a prerequisite qualification is required.

List training courses (S & I courses & job J aids) which will support performance & qualification in this position

Identifies required level of physical fitness for this position.

A – Arduous
M – Moderate
L – Light
N – None



**REFERENCE 4.6.4 (CONT.)
WILDLAND FIREFIGHTER TRAINING QUALIFICATION REQUIREMENTS FLOW CHARTS**

OPERATIONS

COMMAND & STAFF

