



## S-130 Unit 12: Mopup

### Summary:

Mopup is one of the most important phases of fire suppression because any remaining burning debris may rekindle and threaten the integrity of the control line. This unit is intended to serve as an introduction to the strategies, techniques, and procedures used to safely and effectively mopup as required to meet specific incident objectives.

### Incident Position Description (IPD) Alignment:

This unit aligns with the following FFT2 IPD specific duties  
(<https://www.nwcg.gov/positions/fft2/position-ipd>):

- Perform wildland fire and prescribed fire duties including suppression, preparation, ignition, monitoring, holding, and mopup.
- Use and maintain Personal Protection Equipment (PPE).
- Follow crew standard operating procedures (SOPs).

### Objectives:

Students will be able to:

- Describe the cold trail method as it pertains to securing a control line.
- Describe safety considerations present during mop up operations.
- Describe the two mop up methods.
- Demonstrate the process of mopup on a simulated fire.
- Demonstrate the systematic process of conducting a grid to detect heat sources that remain in the black or spot fires in the green.



## Unit at a Glance:

Topics	Method	Duration
Task, Purpose, End State	Field Presentation	5 Minutes
Securing the Control Line	Field Presentation	15 Minutes
Mopup	Field Presentation	20 Minutes
Mopup Safety	Field Presentation	10 minutes
Securing the Fire Perimeter	Field Presentation	20 minutes
MIST	Field Presentation	5 Minutes
<b>Total Unit Duration</b>		<b>1 Hour, 15 Minutes</b>

## Materials:

- *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- *NWCG Glossary of Wildland Fire*, PMS 205, <https://www.nwcg.gov/glossary/a-z>.
- The tools and equipment presented in the unit, as well as local area specific tools and equipment.
- Required fireline PPE.
- Notebook for participants.
- S-130 Student Evaluation Task Sheet.
- Ability to display images and video on large screen (if field presentation not possible).
- White board or easel access for group breakout (if field presentation not possible).

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### Note to Instructor

- This unit is intended to be taught as a hands-on presentation in the field.
- The tools and equipment referenced should be available as props for instructors and hands-on implements for students.
- If field presentation is not possible, the unit can be taught via the PowerPoint in a classroom, utilizing the tools and equipment as reference.

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### Objectives

Students will be able to:

- Describe the cold trail method as it pertains to securing a control line.
- Describe safety considerations present during mop up operations.
- Describe the two mop up methods.

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☐ Review unit objectives.

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### Objectives

Students will be able to:

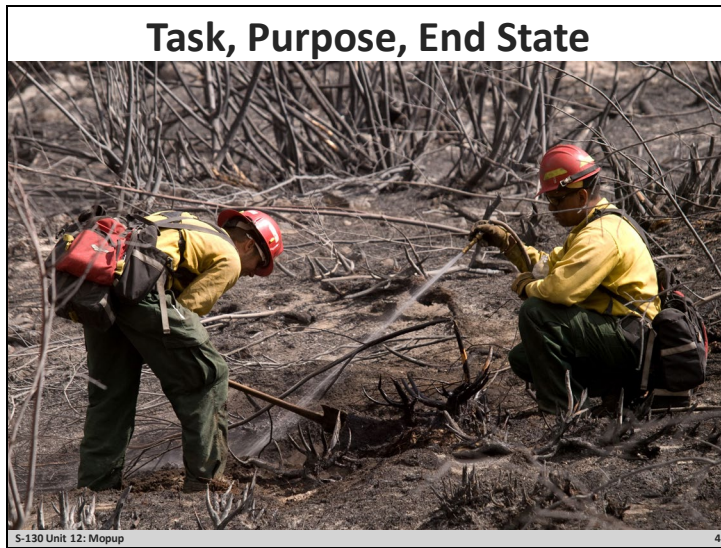
- Demonstrate the process of mopup on a simulated fire.
- Demonstrate the systematic process of conducting a grid to detect heat sources that remain in the black or spot fires in the green.

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- ☐ Review unit objectives.

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- ☐ Discuss that the initial objective or task during mopup is to secure the edge of the fire perimeter, then gradually work deeper into the fire until the required mopup depth is attained on the entire section of control line a module is responsible for.
- ☐ Discuss that mopup is performed by removing one or more legs of the fire triangle by utilizing one or more of the methods identified in this unit.
- ☐ Discuss that the final objective is to put the entire fire out and extinguish all heat sources to an established depth around the perimeter of large incidents. Most small incidents will require mopup and removal of all heat over the fire's entire area.
- ☐ Discuss that the final mop up depth or end state will be determined by the Incident Commander (IC), Division Supervisor (DIVS), or Task Force Leader (TFLD) depending on the incident. Specific strategies and tactics performed to meet those objectives will be determined by a supervisor.

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#### Securing the Control Line

**Cold Trailing** – A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire, digging out every live spot, and trenching any live edge.



- Once a control line has been established around the fire perimeter, the line must be made safe. This action is called securing the control line.
- ☐ Discuss cold trailing to secure a control line:
  - Make sure the black edge is cold and out.
  - When intermittent heat is found, construct small pieces of check line to connect cold black to cold black.
  - Special attention should be given where wet lines and retardant lines are considered control line.
- ☐ Discuss areas to focus on while cold trailing:
  - White ash pits.
  - Stump holes.
  - Duff edges.
  - Smell of smoke.
  - Insects hovering over warm areas.
- ☐ Discuss how cold trailing as a mop up technique is different from cold trailing while securing the control line.



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### Slide 6

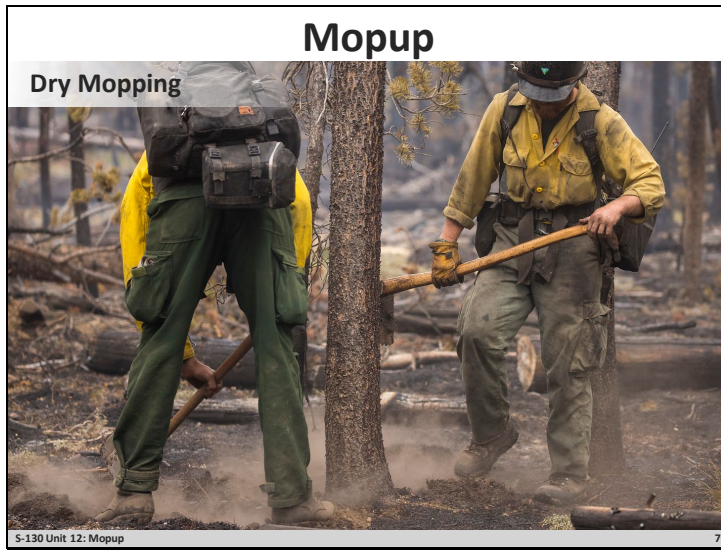


- Mopup is difficult, dirty, and lacks the excitement of initial attack and direct suppression; however, it is a critical phase in the suppression process because remaining burning debris may rekindle and threaten the integrity of the control line.
- ☐ Mopup consists of two methods:
- Dry mopup.
  - Wet mopup.



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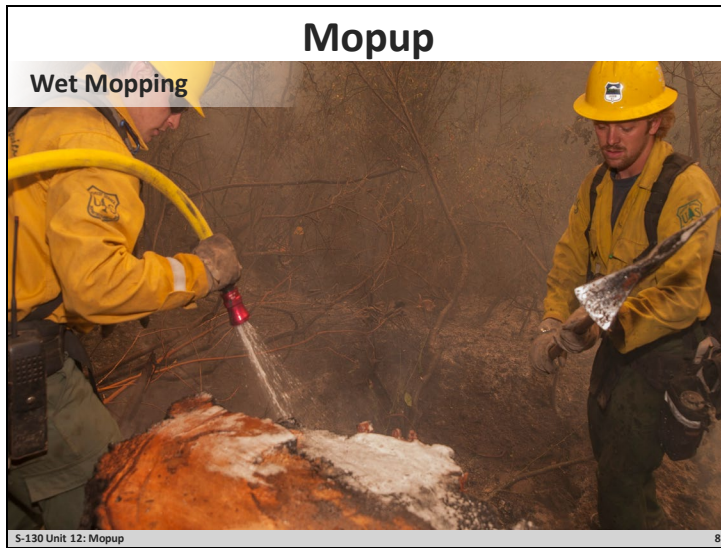
## Slide 7



- ☐ Discuss common mop up tools, how they are utilized, and which have specific benefits for dry mopping:
  - Hand tools and their function.
  - Chainsaws.
  - Hands and knees.
- ☐ Discuss the process for dry mopping:
  - Determining the size of an area and amount of assistance needed.
  - For duff, leaf litter, and other small burning materials, clear a cold area of all unburned organic material down to mineral soil and dig a small hole.
  - Begin pulling small amounts of burning material into your work area and begin mixing it with dirt. Before you add more burning material, cold trail your mixed material. If it has been extinguished, add more hot material and repeat the process.
- ☐ Discuss dry mopping of larger fuels and not bone piling boles of trees:
  - If working on a hillside, place logs perpendicular to the hillside to prevent rolling.
  - Dig pits to secure rounds that have been cut out of trees. You may be able to drag burning rounds interior, place in a pit, and allow to burn.
  - Scrape off burning material off.
  - Rub the logs/ boles of trees with dirt until you can hold your hand on the log.

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- ☐ Discuss that water will make mopup much easier and faster and should be used whenever feasible.
- ☐ Discuss the many ways water can be delivered to a work area:
  - Hose lays off an engine or portable pump.
  - Mopup kits and wands.
  - Sprinkler kits.
  - Bladder bags, backpack pumps, and blivets.
  - Helmet/ hardhat or collapsible buckets.
  - Aerial delivery methods.
  - Other options in your local area.
- Explain the use and effectiveness of foam.
- ☐ Discuss water conservation, especially when hose lay is supported by engines.
- ☐ Discuss the overuse and reliance on water alone:
  - Water is to be used with hand tools, not in place of hand tools.
  - Describe the process for spraying and stirring during mopup.

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#### Note to Instructor

This photo series represents a hazard during mopup when standing fuels have been weakened by fire.

- ☐ Reference Common Denominators on Tragedy Fires in the *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- ☐ Discuss safety concerns that are specific to mop up operations, including:
  - Blowback when applying water to hot areas.
  - Smoke and dust inhalation.
  - Ash pits.
  - Complacency.
  - Snags.

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### Knowledge Check

During mopup, how deep do firefighters need to check for heat when there is a heavy duff layer?

**Answer:**

Until they reach mineral soil and the source of the heat is removed and extinguished.



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**Question:** During mopup, how deep do firefighters need to check for heat when there is a heavy duff layer?

*Answer: Until they reach mineral soil and the source of the heat is removed and extinguished.*

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- ☐ Discuss the process of gridding using a leapfrog or progressive method based on module size.
  - Gridding is led by the person positioned on the control line who determines the pace and spacing, sending messages to ensure personnel stay in a straight line.
  - It may be appropriate to have a stagger in your grid line to avoid rolling material on other crewmembers.
- ☐ Discuss achieving a depth that is attainable to cover a piece of ground within an operational period.
- ☐ Discuss terminology used while gridding such as:
  - Don't pass the person on your left/ right.
  - Bump left/ right a given distance.
  - Hold left, swing right, or vice versa.
  - Hold for heat.
  - Other terminology used for gridding fireline on your unit.
- ☐ Discuss when it is appropriate to drop one or two people out of the grid to address hot areas while the rest of the grid continues.
- ☐ Discuss placement of saw teams in grid lines and duties performed by saw teams during mopup operations. Some tasks may include:
  - Limbing trees with torching potential ahead of grid.
  - Bucking hot ends or rounds out of heavy fuels.
  - Bonepiling fuels considering blowing embers, ash pits created after the pile is consumed, distance from control line, and torching or damaging additional trees.
- ☐ Discuss how to monitor during a grid to ensure nothing has crept out of control lines, embers have not blown over the line, and there are not unidentified spot fires outside the line.
- ☐ Discuss a green grid and its purpose as well as any change in tactics.
- ☐ Discuss procedures if an unidentified spot is found during a green grid.



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- ☐ Reference Minimum Impact Suppression Tactics in the *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- ☐ Discuss areas where MIST may be implemented on the local unit.

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### Knowledge Check

Dry mopping requires the use of a backpack pump.

True/False?

**False**



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**Question:** Dry mopping requires the use of a backpack pump.  
*Answer: False*



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### Knowledge Check

What does the acronym MIST stand for?

Answer:

- Minimum
- Impact
- Suppression
- Tactics



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**Question:** What does the acronym MIST stand for?

*Answer: Minimum Impact Suppression Tactics*

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Objectives
<p>Students will be able to:</p> <ul style="list-style-type: none"><li>• Describe the cold trail method as it pertains to securing a control line.</li><li>• Describe safety considerations present during mop up operations.</li><li>• Describe the two mop up methods.</li></ul>
<small>S-130 Unit 12: Mopup 15</small>

☐ Review unit objectives.

### Slide 16

Objectives	
<p>Students will be able to:</p> <ul style="list-style-type: none"><li>• Demonstrate the process of mopup on a simulated fire.</li><li>• Demonstrate the systematic process of conducting a grid to detect heat sources that remain in the black or spot fires in the green.</li></ul>	
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- ☐ Review unit objectives.