Planning for a Prescribed Burn

Duties & Responsibilities of the Burn Boss/Manager

What is prescribed burning?

The use of fire as a tool to achieve a management objective on a predetermined area, under certain conditions, where the intensity and extent of the fire are controlled in accordance with a written prescribed burn plan.

Burn Manager / Burn Boss Duties

- Responsibility for the burn.
  - Burn Manager
  - Burn Boss
- Pre-burn planning.
- Burn day responsibilities.
- Post-burn responsibilities.

Burn Manager - Pre-burn

- Verify insurance policy covers burn.
- Contact hunters, oil and gas lessees, or other users of the burn property.
- Contact neighbors
  - Reduces risk and encourage good relations.
- Contact County/local officials

Burn Manager - Pre-burn

- Identify resources and equipment required for burn.
- Become familiar with the burn unit.
- Identify potential problem areas, and develop mitigations
- Assess critical values that must be mitigated.
- Identify required on site and potential contingency resources.
- Know prevailing wind direction(s) and access roads.
- Know the surrounding communities and local factors.

Burn Manager - Pre-burn

- Make logistic arrangements for burn day. Ice chests, water coolers, other support - etc.
- Remind neighbors of burn.
- Make list of available personnel and equipment.
- Get all necessary paperwork in order.
  - Burn plan
  - Notifications
  - Insurance policies
  - Maps

Burn Manager - Pre-burn

- Monitor weather
  - http://www.srh.noaa.gov
  - Fire weather planning forecast
  - Online spot-forecast request

Developing the Burn Plan

- The burn plan is a legal document that will protect you in case of an unintended outcome.
- It will specify a range of weather conditions, organization, and required specialized equipment that will successfully meet the objectives of the burn.

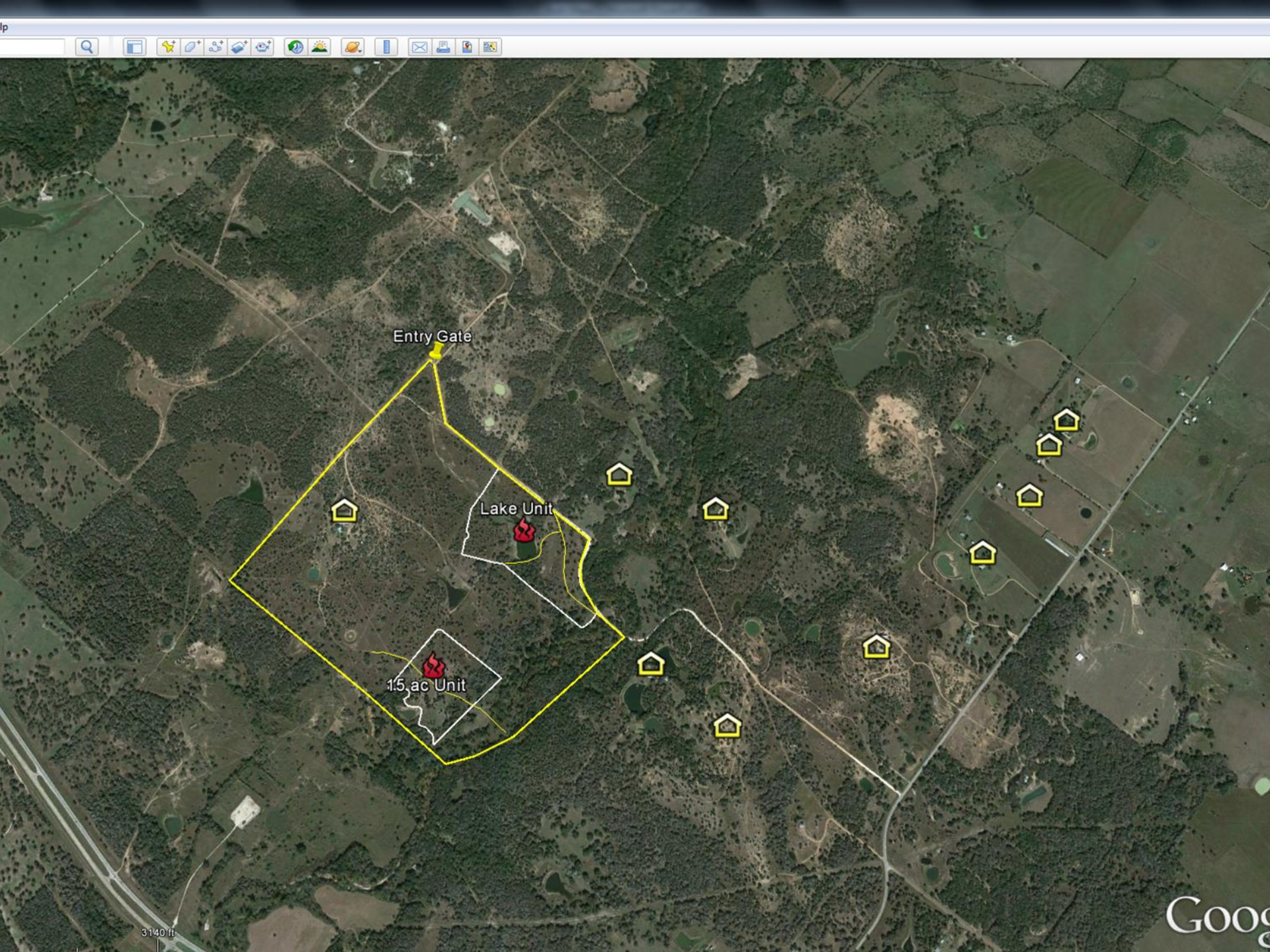
Follow the plan, if you write it do it!!

Elements of a Burn Plan

- Seasonality
- Safety plan - contingency
- Minimal Crew size
- Description of burn unit
- Detailed Map of burn unit
- Pre-burn actions
- Weather conditions
- Fuel Conditions
- Smoke modeling
- Smoke management
- Public Notifications
- Basic Firing plan
- Control and mop-up
- Evaluation and Critique
- Any specific legal requirements
- Fireline standards
- Emergency Contacts

Developing the Burn Plan

- Burn unit boundaries/description - **What**?
- Management objectives – **Why**?
- Prescription parameters – **When**?
- Operational plan – **Who** & **How**?


Entry Gate
Lake Unit
1.5 ac Unit
3140 ft

Fuels Assessment

Fuels Assessment

Goals and Objectives

- What are you trying to achieve?
- How will the vegetation affected by the burn respond?
- What does the landowner want to achieve in one burn, two burns, or three?
- How will the success of the burn be evaluated?

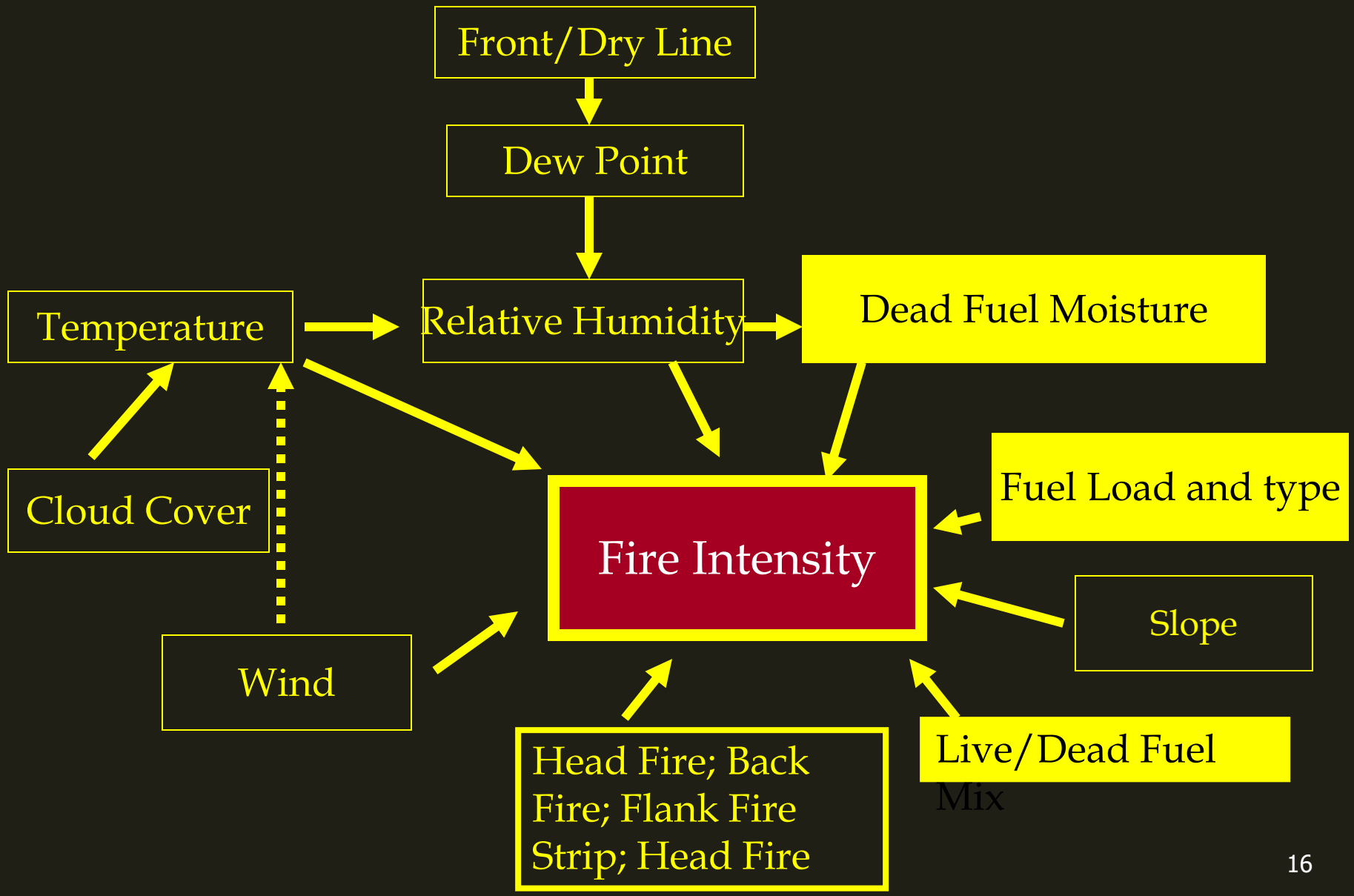
What does success look like?

Prescription Parameters

The set of weather and environmental conditions that need to be present to achieve the objectives of the fire.

- Burn timing – seasonality
- Objectives
- Fuel Type
- Fuel moisture
- Fuel loading
- Firebreaks
- Terrain
- Downwind fuels
- Smoke Management
- Crew Experience
- Equipment quality

Factors Affecting Fire Intensity



Sample Prescription

Prescription Parameters	Acceptable Range	
Weather Conditions	Low	High
Temperature (°F)	40	90
Relative Humidity (%)	20	60
Wind Speed, 20-ft forecast (mph)	6	23
Wind Speed, mid-flame (mph)	3	12
Wind Direction	Any. 90°-135° (E-SE) preferred.	
Transport Wind Speed (mph)	>9	
Transport Wind Direction	Within 45° of surface wind.	
Mixing Height (ft)	>1700	
Environmental Conditions		
1-hr Fuel Moisture (%)	4	12
10-hr Fuel Moisture (%)	6	15
100-hr Fuel Moisture (%)	8	25
Live Fuel Moisture (%)	70	150
Soil Moisture (KBDI)	0	700
Fire Behavior		
Flame Length (ft)	3	18
Rate of Spread (ch/hr, [ft/min])	30[3]	250[275]
Fireline Intensity (BTU/ft/sec)	400	2500

Burn Unit Prep

- Fire Breaks
- Values at Risk

The more work done before the burn; the less work done when burning.

Fire Breaks

- Minimum width = 2x height of the fuel
- Less vegetation in break, the better
- Use natural breaks whenever possible
  - Existing roads
  - Creeks
  - Cedar breaks*

The better the fire break, the less equipment/personnel needed to implement the burn.

Fireline Construction

- Must be bladed down to mineral soil.
- Wider is better.
- Throw the “roll” of the soil away from burn area.
- Straight lines are more efficient and easy to hold.
- Try to avoid steep topography.
- Avoid establishing lines along fences if possible.

The more work you put into the prep, the smoother and easier the burn will go. Mitigate potential issues early.

Areas of Concern

Areas of Concern

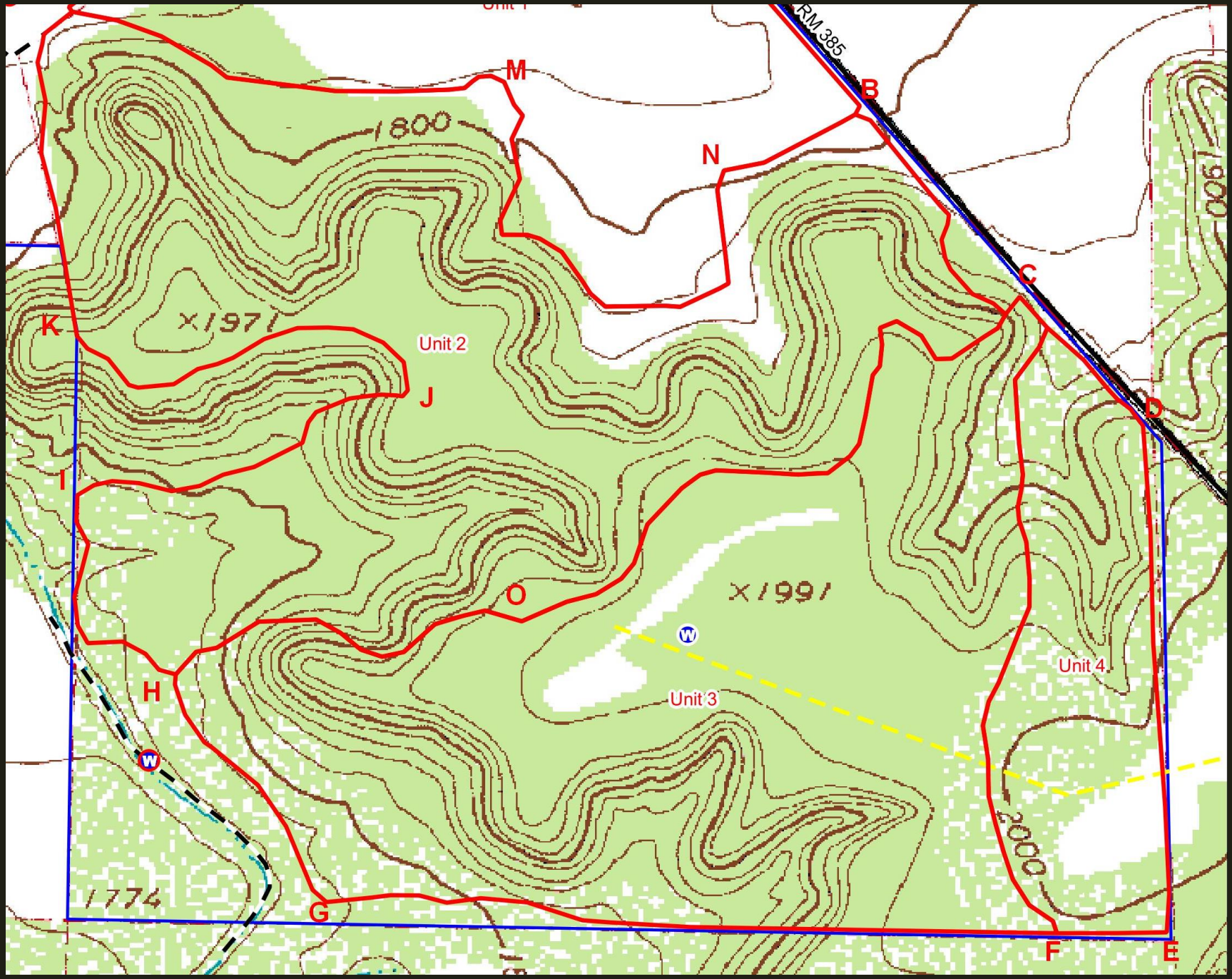
- Volatile fuels near fire breaks.
- Brush piles
- Terrain
- Powerlines

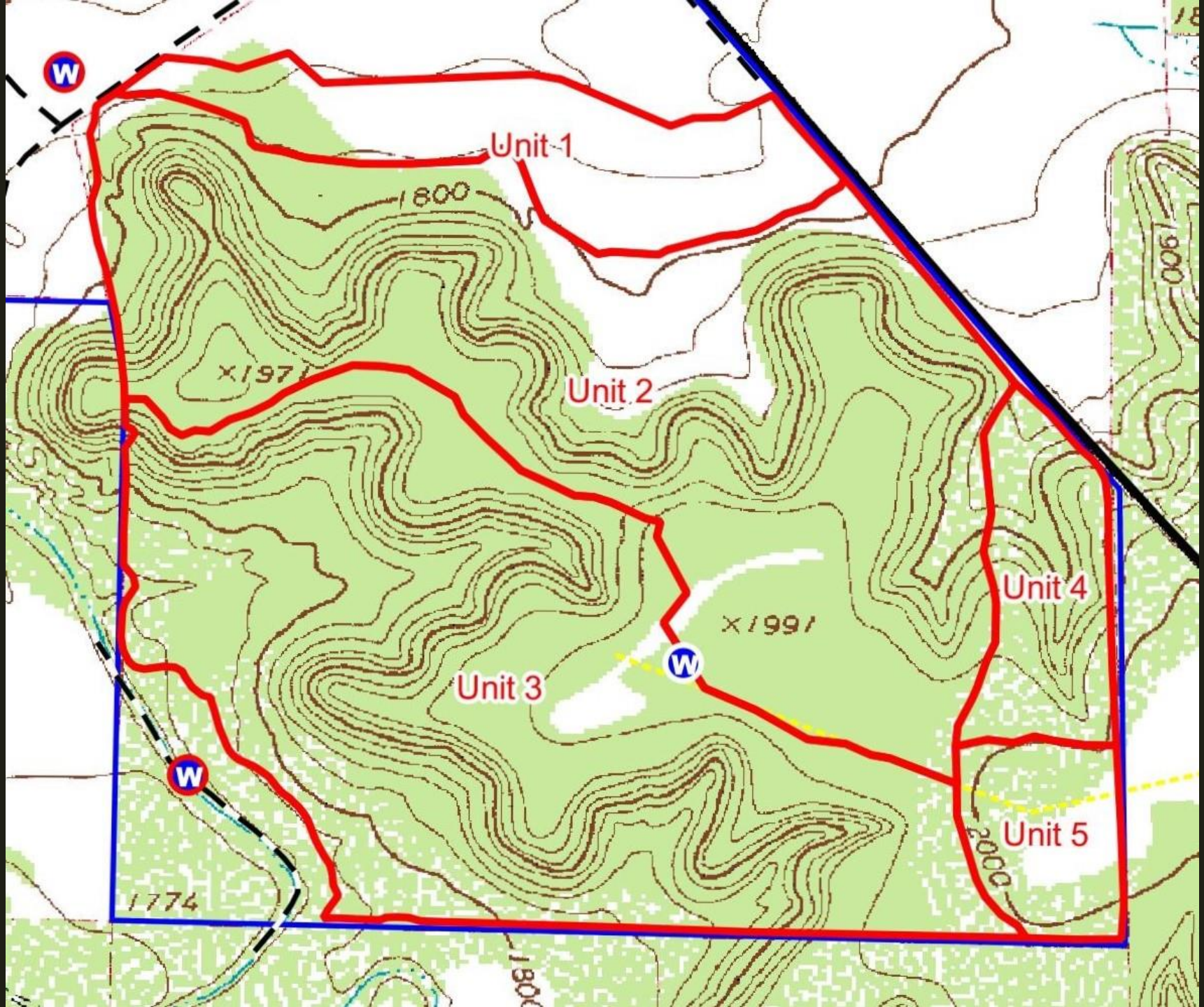
- Others?

Brush Piles within 300 ft. of Fire Break


3/2012
N
Google Earth
1985
Imagery Date: 3/30/2012 29°42'15.44" N 99°52'11.72" W elev 2087 ft eye alt 2880 ft


1/2019
N
Google Earth
1985
Imagery Date: 1/18/2019 29°42'21.26" N 99°52'21.29" W elev 2090 ft eye alt 2880 ft


RM 385
M
B
N
C
K
X1971
Unit 2
J
D
I
O
X1991
Unit 4
Unit 3
H
1774
G
F
E
1600
1900
2000


Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
1800
1900
2000
1774
X1971
X1991

Fight the fire before striking the match

Values at Risk

Water Lines

Operational Planning

- Resources needed
  - People
  - Equipment
- Ignition – **lighting the fire**
- Holding – **keeping the fire "inside the box"**
- Contingency – **what if's**

Tools & Equipment

Humidity

Wind speed

Temperature

Fire Weather Kit

Drip Torch

3:1 Fuel ratio

75% diesel

25% gas

Equipment


SMITH
INDIAN
FIRE PUMP

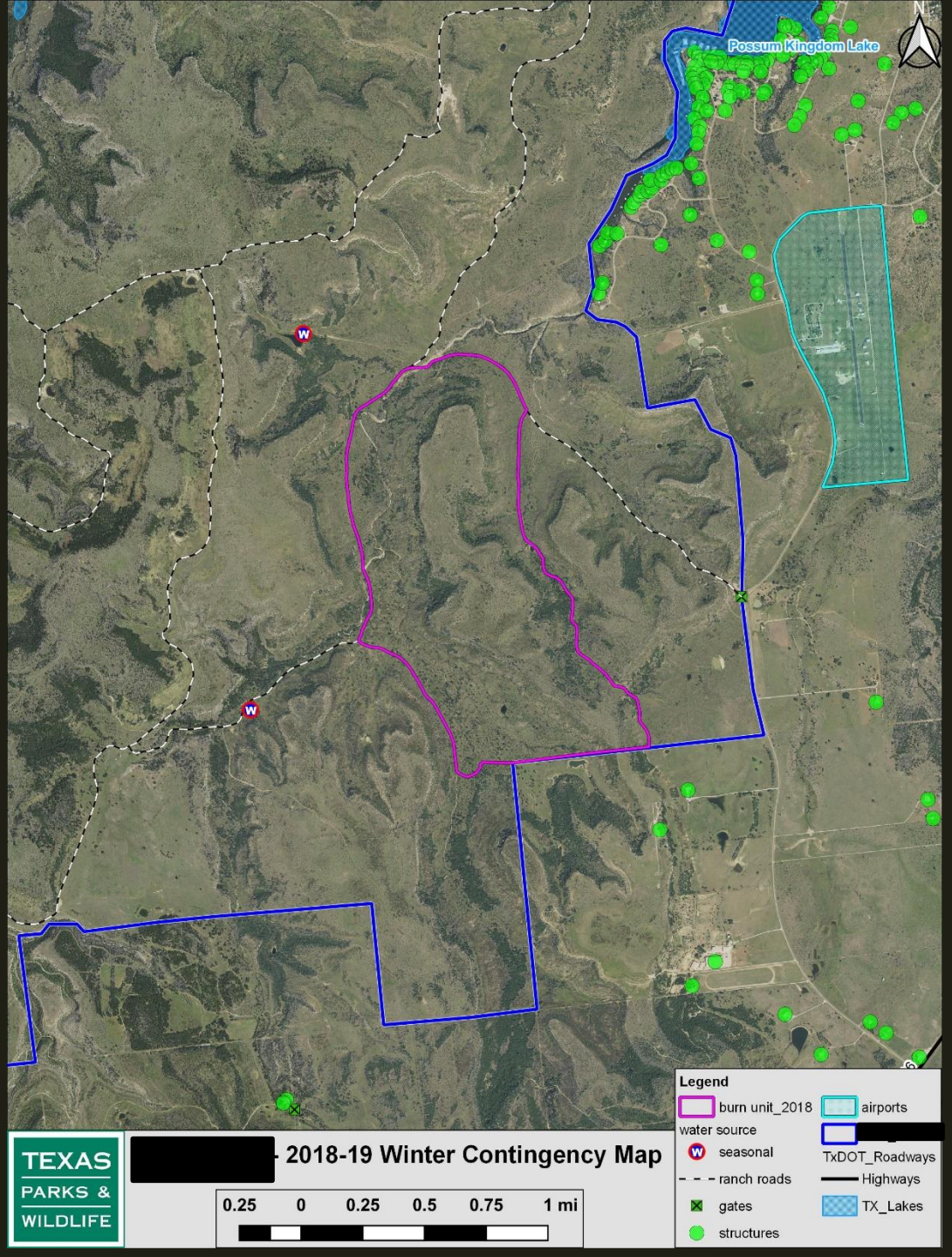

HONDA
RANCHER


CAT
D5G


TX
VOX
RX
22
SCAN
MODE
MIDLAND
X-TRA TALK

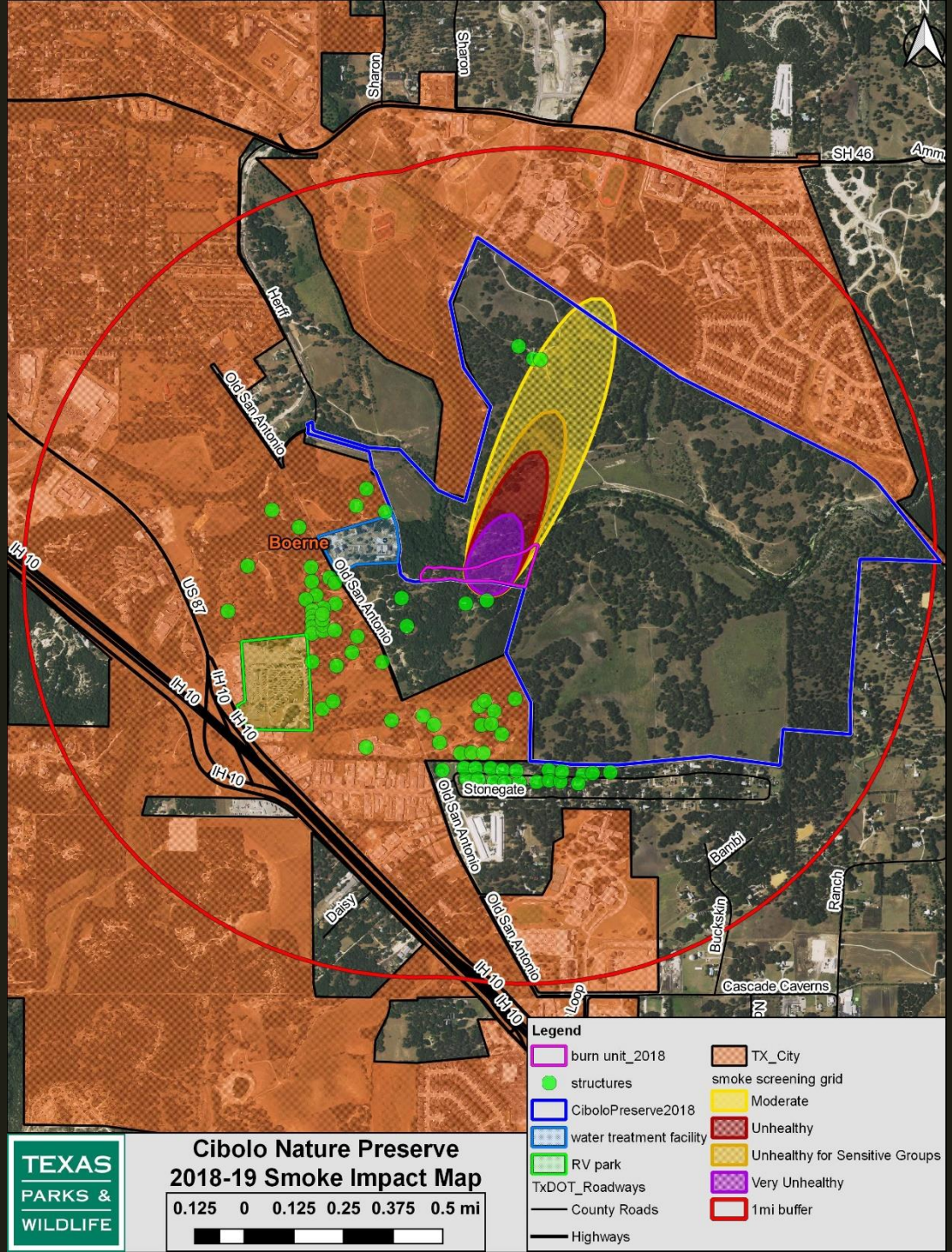
Water Sources

Contingency Planning




E-72
2
4

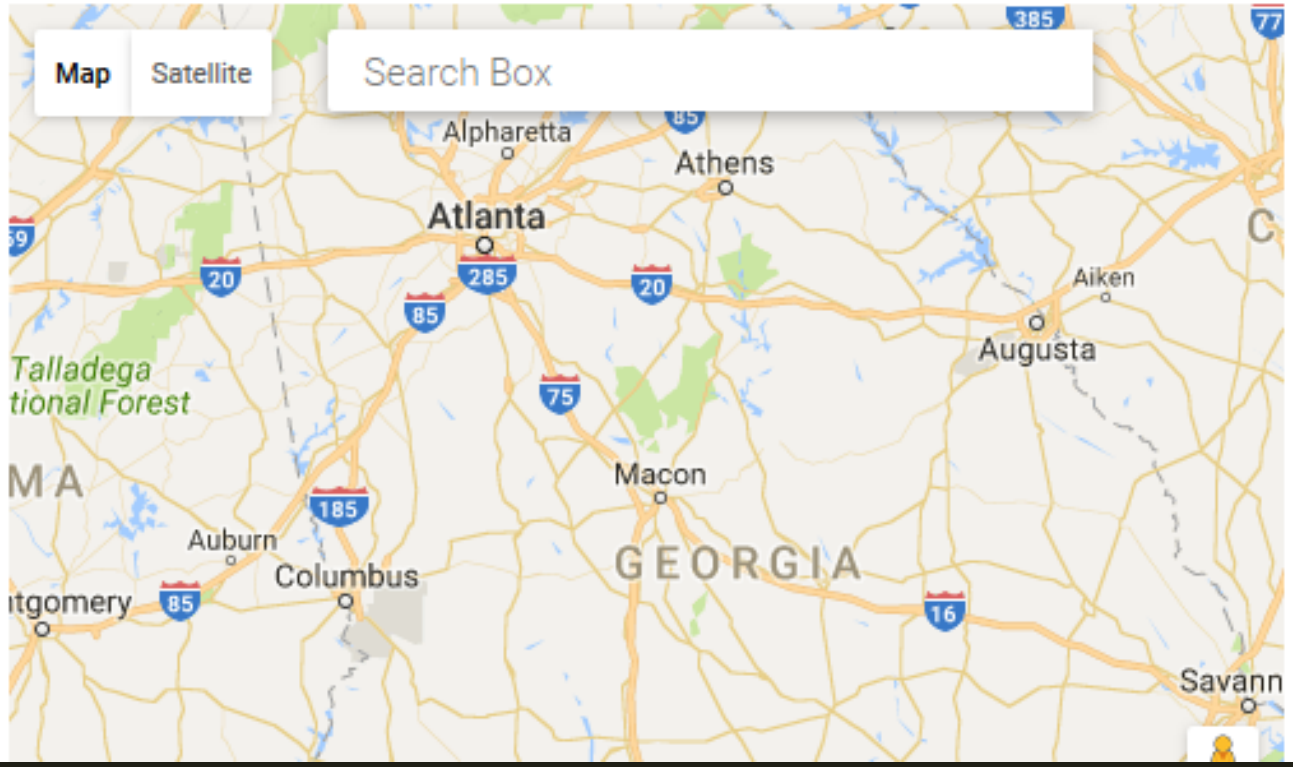
Smoke Management


Sharon
Sharon
SH 46
Amm
Herff
Old San Antonio
Boerne
Old San Antonio
IH 10
US 87
IH 10
IH 10
IH 10
IH 10
Stonegate
Old San Antonio
Old San Antonio
Bambi
Ranch
Buckskin
Daisy
IH 10
IH 10
Loop
Cascade Caverns
Legend
burn unit_2018
structures
CiboloPreserve2018
water treatment facility
RV park
TxDOT_Roadways
County Roads
Highways
TX_City
smoke screening grid
Moderate
Unhealthy
Unhealthy for Sensitive Groups
Very Unhealthy
1mi buffer
TEXAS PARKS & WILDLIFE
Cibolo Nature Preserve
2018-19 Smoke Impact Map
0.125 0 0.125 0.25 0.375 0.5 mi

VSmoke-Web

FCAMMS >> SHRMC >> Smoke >> VSmoke

Estimating Prescribed Fire Smoke Impacts



Fire & Weather Info

1. Location

Lat:

Lon:

2. Fire Size

Acres: 100

Duration: 2 hours

Ignition Method:
Backing/Spot

3. Fuel Load

Fuel Type: Grass - Mod

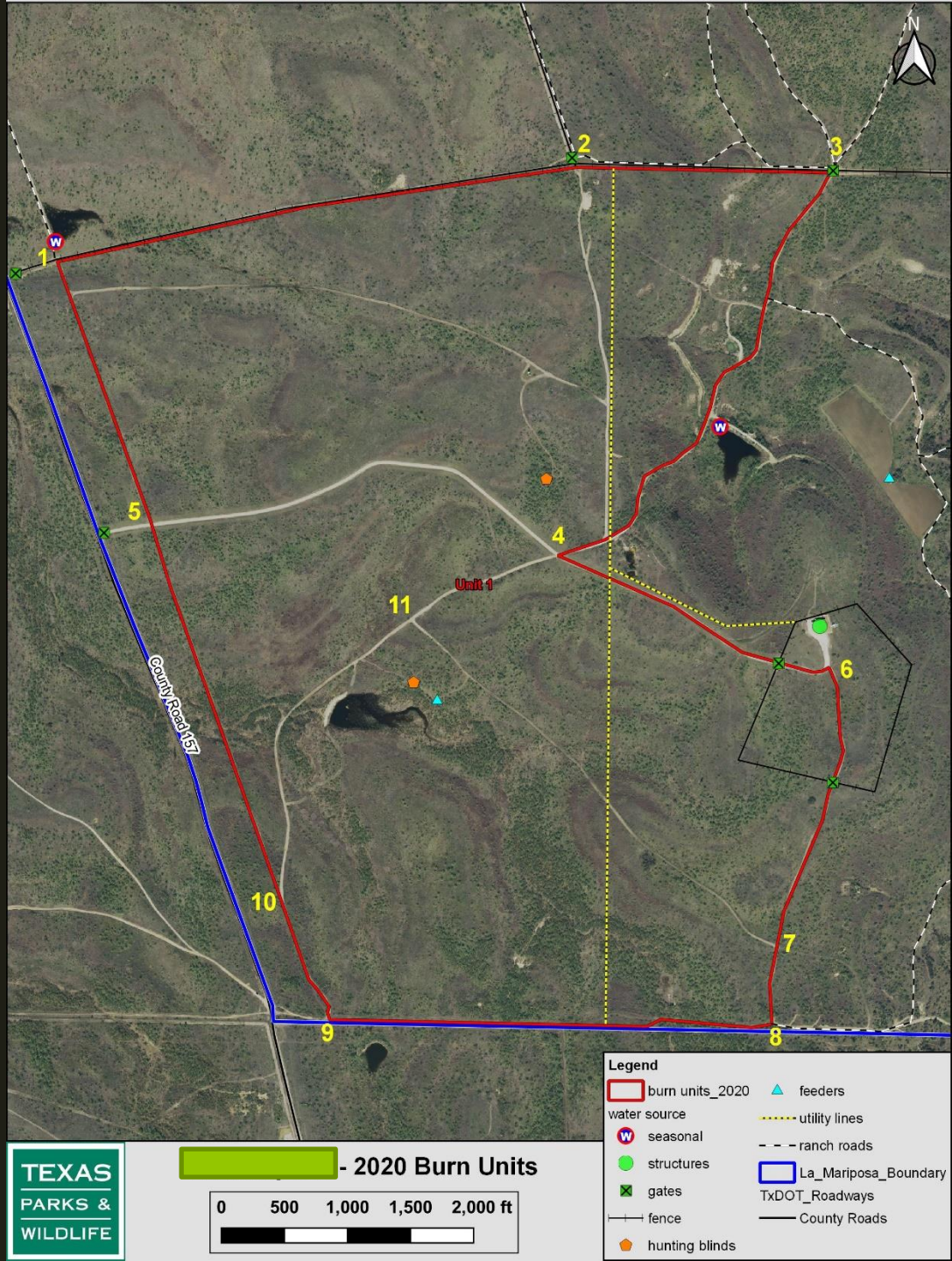
Notifications

- County Dispatch (usually Sheriff's Dept.)
  - Call before **AND** after
- Fire Dept
- Neighbors
- County officials
- Texas A&M Forest Service
  - rxburns@tfs.tamu.edu

- TCEQ?

Maps

- Burn area
- Values at risk
- Water sources
- Property boundaries
- Contingency lines
- Name/number corners



Burn Boss
Burn Day Responsibilities

There is Only One Burn Boss!

- If someone is hired or designated to act as the burn boss, let them be the burn boss.
- Ultimately the burn boss decides whether it is appropriate to burn.
- Has final say on GO / NO GO.

Listen to your gut…

Burn Boss Responsibilities

- Know local laws and regulations. (TECQ Outdoor Burning Guide)
- Check needed equipment, verify that the minimal requirements of the plan are met.
- List individuals who will assist in burn, confirm availability.
- List all contacts required to conduct burn.
- Ensure you meet all prescription requirements and plan elements.

Burn Boss Responsibilities

- Develop an accurate, flexible operational plan.
- Be mindful of the prescription and do not burn unless prescription conditions are forecasted and exist.
- Plan for fire escapes, spot fires, equipment failures, smoke impacts and weather changes.
- If it can go wrong – it usually will.

Stop and think about it before you drop the match.

Planning for the Unexpected

P.A.C.E

P: Plan

A: Alternate Plan

C: Contingency Plan

E: Emergency Plan

When you have an unplanned event is not the time to come up with a plan on how to deal with it.

Burn Boss Responsibilities

- Check the burn area.
- Check weather. Get the current fire weather forecast.
- Call proper authorities. Make required contacts.
- Brief personnel on the operational plan.
- Ensure burn participants are familiar with maps and burn plan.
  - Have crew scout area of operations before beginning burn.

Scouting the Burn Unit

- Condition of fire breaks
- Accessibility
- Changes in fuel conditions

Burn Boss Responsibilities

- Operational Briefing – Critical to Success.
- Assign each crew member with a task. Who's responsible?

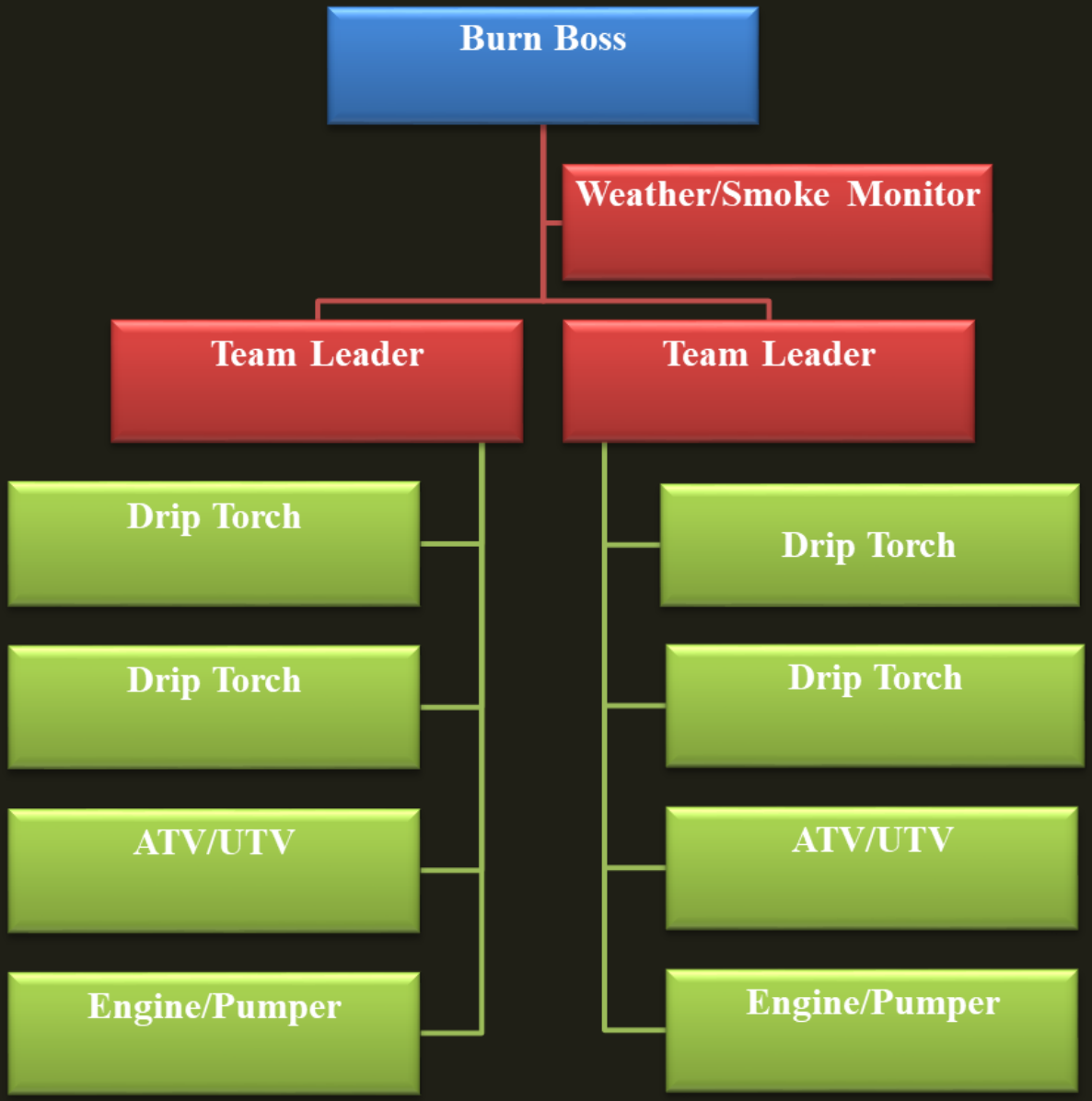
- Brief crew on predicted weather.

- Ensure crew members can operate equipment.
- Make sure equipment is working properly.

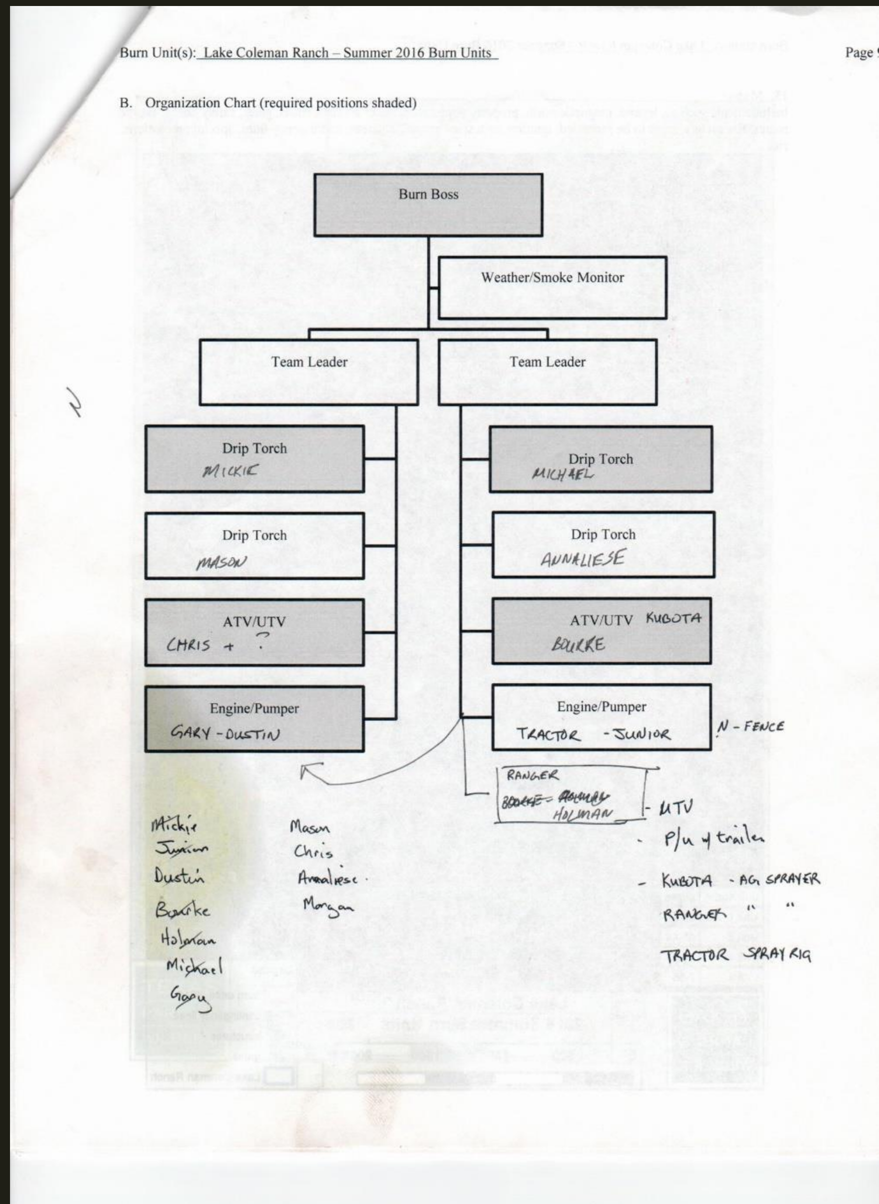
- Be willing to cancel the burn if needed.

Pre-burn Briefing

Organization Chart



Organization Chart


Burn Unit(s): Lake Coleman Ranch – Summer 2016 Burn Units

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B. Organization Chart (required positions shaded)

Go/No-Go Checklist

YES	NO	QUESTIONS
		Are ALL pre-burn prescription parameters met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecasts been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

Test Burn

Burn Boss Duties During The Burn

- Provide oversight, guidance, and direction.
- Be a good communicator.
  - Remain calm. Your actions control the tempo and tone of the burn crew.
  - Speak slow and clear on radios.
  - Communicate changes in plan or weather.
- Oversee the burn operation.
- Duty. Respect. Integrity.
- P.A.C.E

Patrolling the Fire & Mop-up

- Frequent patrols along the perimeter of the burn
- Equipment/personnel watching problem areas
- Mop-up at least **30′** inside fire – **60′** for aerial fuels
- Monitor the burn for at least one day after ignitions completed

Mop-up

Post-burn Responsibilities

- Check weather. Know what the winds and weather are going to do over the next 48 to 72 hours.
- Beware of wind shifts, what will that be putting pressure on then?
- Clean up the perimeter to ensure burn is safe to leave.
- Be prepared to stay with and patrol the burn as long as necessary.
- Think about overnight smoke impacts. Fog potential?

Burn Boss Lessons Learned

Burn Boss Lessons Learned

- Crew assessment
- Radio and equipment checks
- Burn downwind unit(s) first
- Assess risks of ignition procedures
- Thoroughly check downwind of ember sources

Burn Boss Lessons Learned

- Avoid tunnel vision
- Think ahead
  - Anticipate problems
  - Logistics
- Stay flexible

Any questions?

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