Wildland Fire Situation Analysis

WFSA Information

WFSA Number: 1

Jurisdiction(s): USFS

Fire Name: Canyon Complex

Geographic Area: Northern California

Incident Number: CA-PNF-000539

Unit: Plumas National Forest

Date/Time Prepared: 06/22/2008 1252

Accounting or Management Code: 0511 P5D8LS

Fire Situation

Start Date/Time: 06/21/2008 1400

Current Fire Size: 1000 acres

Fuel Conditions

The fuel conditions are extremely dry.
Fuel loading is heavy.
Low live fuel moisture.
Fuel Model 10.
Numerous snags.
Heavy dead and down.
Part of the complex is burning in previously burned areas such as the Storrie Fire where young brush components have frost killed tops and heavy snags.
The area contains large amounts of shrub from previous fires.

Topography

Steep canyonlands along the Middle and North Fork of the Feather River.
These canyons are very inaccessible.

Jurisdiction and Land Ownership in the Fire Area

Beckwourth--Plumas National Forest, Plumas-Eureka State Park, private landownership includes both permanent and second homeowners, Sierra Pacific Industry and Soper Wheeler have large ownerships in the area.

Feather River--Plumas National Forest, SPI and Soper Wheeler, private landownership includes both permanent and second homeowners.

Mt.Hough--Plumas National Forest, private landownership includes both permanent and second homeowners.

Fire Behavior - Current and Forecast

Moderate to extreme fire behavior has been exhibited.
Heavy fuels susceptible to spotting (from 1-1.5 miles).

Forecast Weather (3 and 10 day) and Current Seasonal Conditions

Temps: Max 70-87 degrees
Rhs: 15-25%
Winds: upslope 4-9 mph becoming south 10-15
Rain: none

National and Regional Fire Preparedness, and Suppression Resource Availability

Type I Team is on site and will assume managment on 6/23.
High competition for resources exist throughout Northern California.

Decision Summary

Selected Alternative
B. Direct/Indirect

Most Cost Effective Alternative: B. Direct/Indirect

Selected Alternative Description
Hold all fires to a minimum acreage considering safety and cost effectiveness, not to exceed 40,000 acres.
Use MIST tactics in the Wilderness Area.

Rationale for selecting this alternative
This alternative would provide for safety under changing weather, timber type and fuel conditions as well as providing for the most flexibility with regards to firefighter suppression tactics.
This alternative provides a balance between minimize acreage and suppressions costs in light of the limited number of suppression resources and fuel moisture.
This complex is a combination of several fires varying in size over three Ranger Districts covering a half million acres.

WFSA revision or amendment thresholds and protocol
If the fire complex becomes larger than 40,000 acres or exceeds total estimated suppression costs..

Critical fire management resources
Type I Team

Special considerations
Firefighting suppression involves very dangerous terrain, steep canyons with a high volume of snags and loose rocks.
Communities at risk include Spring Garden and Green Horn Ranch with only one ingress and egress route.

Analysis prepared by: */s/ Alice B. Carlton*

_____w/ Sabrina Stadler_____

_____ _____

Agency Administrator Approval Date/Time

Daily Review

$21,000,000 40,000 Estimated target suppression cost and size

National Preparedness Level	Regional Preparedness Level	Suppression cost to date	Size to date	Selected alternative remains valid (Y or N)	By	Date	Time

Final Review

The elements of the selected alternative were met on:

Date:_____ Time:_____

By:_____
Agency Administrator

Values at Risk

Item	Value at Risk ($)
Structures Private Prop.	15,000,000
Federal Timber Value	100,000,000
Wildlife	1,000,000
Wild & Scenic River	2,000,000
Historic	1,000,000
Recreation Sites & Value	10,000,000
Private Timber Values	50,000,000
Total value at risk (rounded)	180,000,000

Resource Management Objectives

Canyon Complex

Protect life and property.
Protect known T&E locations.
Protect the Wild and Scenic River as well as Wilderness Area values.
Minimize impact to sensitive species.
Minimize impact to hydro power and municipal water supplies.
Protect cultural and historic resources.
Minimize impact to HFQLG vegetation management projects.

Objectives

Objective	Priority (high=10)	Weight
Economic		
Low suppression costs	6	0.09
• Minimize impacts recreation and Wilderness Area values, private landowners, timber values, while keeping suppression costs low.		
• Balance cost with lack of resources for fire suppression.		
Environmental		
Cultural Resources	5	0.07
• Minimize impact to historic (circa 1800's) wood structures and features (foundations, etc.).		
Wild & Scenic River	3	0.04
• Protect water quality of the Wild & Scenic River.		
• The "*Plumas National Forest - Land and Resource Management Plan*" provides management prescriptions for the Wild and Scenic River that apply to the NFS lands: Rx-2, Wild and Scenic River Prescription: General Direction states "Minimize disturbance to the land surface from retardant. Standards and Guidelines states "Obtain approval from the Forest Supervisor for emergency use of other than short-term or fugitive-dye retardants".		
• The Decision Notice and Finding of No Significant Impact for the "Aerial Application of Fire Retardant" states that "Alternative 2, Proposed Action, continues the nationwide aerial application of fire retardant to fight fires on NFS lands while adopting the current interim *Guidelines for Aerial Delivery of Retardant or Foam near Waterways* as permanent". The Guidelines define a waterway as any body of water including lakes, rivers, streams, and ponds whether or not they contain aquatic life. The Guidelines state "Avoid aerial application of retardant or foam within 300 feet of waterways" with exceptions. One exception "When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines" and "When alternative line construction tactics are not available due to terrain constraints, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker)."		
Timber Values	6	0.09
Protect timber values where feasible and minimize high severity fire effects from burn out operations where possible.		
T&E	10	0.14
• Minimize the longterm impacts to T&E species locations (Layne's ragwort, California Red-legged frog).		
• Use "*Aerial Retardant Guidelines*".		
Social		
Public Safety	10	0.14
• Provide for public safety.		

Objective	Priority (high=10)	Weight
Recreation	6	0.09
• Protect scenic values and recreation sites.		
Wilderness Area	6	0.09
• Protect Wilderness Area values.		

Other

Private Property	10	0.14
• Provide for prevention of wildland fire from spreading into structures and other commercial endeavors.		
Range/Cattle	7	0.10

Safety Issues

Safety Issues

Safety is the Number One Priority

Provide for safety in context of lack of available resources needed, cost constraints and minimizing acreage burned.

Hazards

- Difficult inaccessible terrain.
- Very steep canyonland environment.
- Falling rocks and snags.

Alternatives

Alternative A. Direct

- Utilize a direct attack strategy.
- Use existing roads and natural openings to take direct suppression action on fire.
- Use MIST tactics in the Wilderness Areas.

Target Outcome		Extreme Outcome	
Probability:	20%	Probability:	80%
Final Fire Size:	1000 acres	Final Fire Size:	240000 acres
Time to Contain:	7 days	Time to Contain:	60 days
Time to Control:	10 days	Time to Control:	100 days

Alternative B. Direct/Indirect

- Hold all fires to a minimum acreage not to exceed 40,000 acres.
- Use MIST tactics in the Wilderness Areas.

Target Outcome		Extreme Outcome	
Probability:	80%	Probability:	20%
Final Fire Size:	40000 acres	Final Fire Size:	240000 acres
Time to Contain:	20 days	Time to Contain:	60 days
Time to Control:	30 days	Time to Control:	100 days

Alternative C. Worst Case Scenario

- Protect resource values: campgrounds, hydro facilities and railroad facilities.
- Follow-up with perimeter control, keep to minimum acres.
- Not to exceed 30,000 acres.
- Use MIST tactics in the Wilderness Areas.

Target Outcome		Extreme Outcome	
Probability:	75%	Probability:	25%
Final Fire Size:	120000 acres	Final Fire Size:	240000 acres
Time to Contain:	30 days	Time to Contain:	60 days
Time to Control:	50 days	Time to Control:	100 days

Estimated Suppression Costs

Alternative A. Direct

Target Outcome

Estimated suppression cost: $1,170,000

Basis for cost estimate:
Historic average cost per acre

Extreme Outcome

Estimated suppression cost:
$108,000,000

Basis for cost estimate:
Historic average cost per acre

Alternative B. Direct/Indirect

Target Outcome

Estimated suppression cost: $21,400,000

Basis for cost estimate:
Historic average cost per acre

Extreme Outcome

Estimated suppression cost:
$108,000,000

Basis for cost estimate:
Historic average cost per acre

Alternative C. Worst Case Scenario

Target Outcome

Estimated suppression cost: $54,000,000

Basis for cost estimate:
Historic average cost per acre

Extreme Outcome

Estimated suppression cost:
$108,000,000

Basis for cost estimate:
Historic average cost per acre

AAC Tables

From	To	Cost
0	0.25	$8250
0.26	10.00	$5400
11.00	100.00	$2300
101.00	300.00	$1170
301.00	1,000.00	$1170
1,001.00	100,000.00	$535
100,001.00	100,000,000.00	$450

Values Protected

Note: Outcome values are rounded to 3 significant digits counting from the left.
Totals are rounded to 2 significant digits.

Alternative A. Direct

Item	Values At Risk	Protected in Target Outcome (20%)	Protected in Extreme Outcome (80%)	Expected Values Protected
Structures Private Prop.	15,000,000	15,000,000	0	
Federal Timber Value	100,000,000	100,000,000	0	
Wildlife	1,000,000	1,000,000	0	
Wild & Scenic River	2,000,000	2,000,000	0	
Historic	1,000,000	1,000,000	0	
Recreation Sites & Value	10,000,000	10,000,000	0	
Private Timber Values	50,000,000	50,000,000	0	
Total (rounded)	$180,000,000	$180,000,000	$0	$36,000,000

Alternative B. Direct/Indirect

Item	Values At Risk	Protected in Target Outcome (80%)	Protected in Extreme Outcome (20%)	Expected Values Protected
Structures Private Prop.	15,000,000	14,500,000	0	
Federal Timber Value	100,000,000	50,000,000	0	
Wildlife	1,000,000	500,000	0	
Wild & Scenic River	2,000,000	1,900,000	0	
Historic	1,000,000	500,000	0	
Recreation Sites & Value	10,000,000	5,000,000	0	
Private Timber Values	50,000,000	50,000,000	0	
Total (rounded)	$180,000,000	$120,000,000	$0	$96,000,000

Alternative C. Worst Case Scenario

Item	Values At Risk	Protected in Target Outcome (75%)	Protected in Extreme Outcome (25%)	Expected Values Protected
Structures Private Prop.	15,000,000	0	0	
Federal Timber Value	100,000,000	0	0	
Wildlife	1,000,000	0	0	
Wild & Scenic River	2,000,000	0	0	
Historic	1,000,000	0	0	
Recreation Sites & Value	10,000,000	0	0	
Private Timber Values	50,000,000	0	0	
Total (rounded)	$180,000,000	$0	$0	$0

Resource Value Losses

Note: Outcome values, including totals, are rounded to 3 significant digits counting from the left.
Expected Impact is rounded to 2 significant digits.

Alternative A. Direct

Item	Target Outcome (20%)		Extreme Outcome (80%)	Expected Impact
Mature Timber	5,260,000		1,260,000,000	
Immature Poles	68,400		16,400,000	
Seed and Saplings	29,800		7,150,000	
Forage	210		50,400	
Water Storage	5,470		1,310,000	
Fisheries - Wm/Cd Wtr	0		0	
Wildlife - Big Game	130		31,200	
Wildlife - Other	0		0	
Recreation - Disp/Dev	83,700		20,100,000	
Total (rounded)	$5,400,000		$1,300,000,000	$1,000,000,000

Alternative B. Direct/Indirect

Item	Target Outcome (80%)		Extreme Outcome (20%)	Expected Impact
Mature Timber	210,000,000		1,260,000,000	
Immature Poles	2,740,000		16,400,000	
Seed and Saplings	1,190,000		7,150,000	
Forage	8,400		50,400	
Water Storage	219,000		1,310,000	
Fisheries - Wm/Cd Wtr	0		0	
Wildlife - Big Game	5,200		31,200	
Wildlife - Other	0		0	
Recreation - Disp/Dev	3,350,000		20,100,000	
Total (rounded)	$220,000,000		$1,300,000,000	$440,000,000

Alternative C. Worst Case Scenario

Item	Target Outcome (75%)		Extreme Outcome (25%)	Expected Impact
Mature Timber	631,000,000		1,260,000,000	
Immature Poles	8,210,000		16,400,000	
Seed and Saplings	3,570,000		7,150,000	
Forage	25,200		50,400	
Water Storage	656,000		1,310,000	
Fisheries - Wm/Cd Wtr	0		0	
Wildlife - Big Game	15,600		31,200	
Wildlife - Other	0		0	
Recreation - Disp/Dev	10,000,000		20,100,000	
Total (rounded)	$650,000,000		$1,300,000,000	$810,000,000

Computation of NVC Losses by FMU and FIL

Alternative A. Direct

			Target Outcome				Extreme Outcome		
FMU	FIL	$/acre	%	Acres	Impact		%	Acres	Impact
	1	-1280	0	0	0		0	0	0
	2	-2120	0	0	0		0	0	0
	3	-3900	0	0	0		0	0	0
	4	-5450	100	1000	-5450000		100	240000	-1308000000
	5	-5960	0	0	0		0	0	0
	6	-6020	0	0	0		0	0	0
Total			100	1000	-$5,400,000		100	240000	-$1,300,000,000

Alternative B. Direct/Indirect

			Target Outcome				Extreme Outcome		
FMU	FIL	$/acre	%	Acres	Impact		%	Acres	Impact
	1	-1280	0	0	0		0	0	0
	2	-2120	0	0	0		0	0	0
	3	-3900	0	0	0		0	0	0
	4	-5450	100	40000	-218000000		100	240000	-1308000000
	5	-5960	0	0	0		0	0	0
	6	-6020	0	0	0		0	0	0
Total			100	40000	-$220,000,000		100	240000	-$1,300,000,000

Alternative C. Worst Case Scenario

			Target Outcome				Extreme Outcome		
FMU	FIL	$/acre	%	Acres	Impact		%	Acres	Impact
	1	-1280	0	0	0		0	0	0
	2	-2120	0	0	0		0	0	0
	3	-3900	0	0	0		0	0	0
	4	-5450	100	120000	-654000000		100	240000	-1308000000
	5	-5960	0	0	0		0	0	0
	6	-6020	0	0	0		0	0	0
Total			100	120000	-$650,000,000		100	240000	-$1,300,000,000

NVC Tables

Only negative values are included for this fire.

	FIL 1	FIL 2	FIL 3	FIL 4	FIL 5	FIL 6
Mature Timber	-1219.55	-2027	-3768.07	-5260.32	-5692.43	-5692.43
Immature Poles	-37.64	-58.18	-68.44	-68.44	-68.44	-68.44
Seed and Saplings	-21.59	-28.29	-29.78	-29.78	-29.78	-29.78
Forage	0	0	0	-0.21	-0.42	-0.86
Water Use	0	0	0	0	0	0
Water Storage	-1.81	-3.66	-5.47	-5.47	-9.12	-9.12
Fisheries - Wm/Cd Wtr	0	0	0	0	-15.47	-19.49
Fisheries - Anad Sport	0	0	0	0	0	0
Fisheries - Commercial	0	0	0	0	0	0
Wildlife - Big Game	0	0	0	-0.13	-0.16	-0.19
Wildlife - Other	0	0	-0.02	0	-0.05	-0.07
Recreation - Disp/Dev	0	0	-27.12	-83.7	-142.14	-198.72
Recreation - Wilderness	0	0	0	0	0	0
Improvements	0	0	0	0	0	0
Totals	-$1,281	-$2,117	-$3,899	-$5,448	-$5,958	-$6,019

Safety Assessment

Alternative A. Direct

Target Outcome	Fallback Outcome	Extreme Outcome
	Issue: Safety is the Number One Priority	
Rating: 8 / 10		Rating: 1 / 10
	Issue: Hazards	
Rating: 8 / 10		Rating: 1 / 10

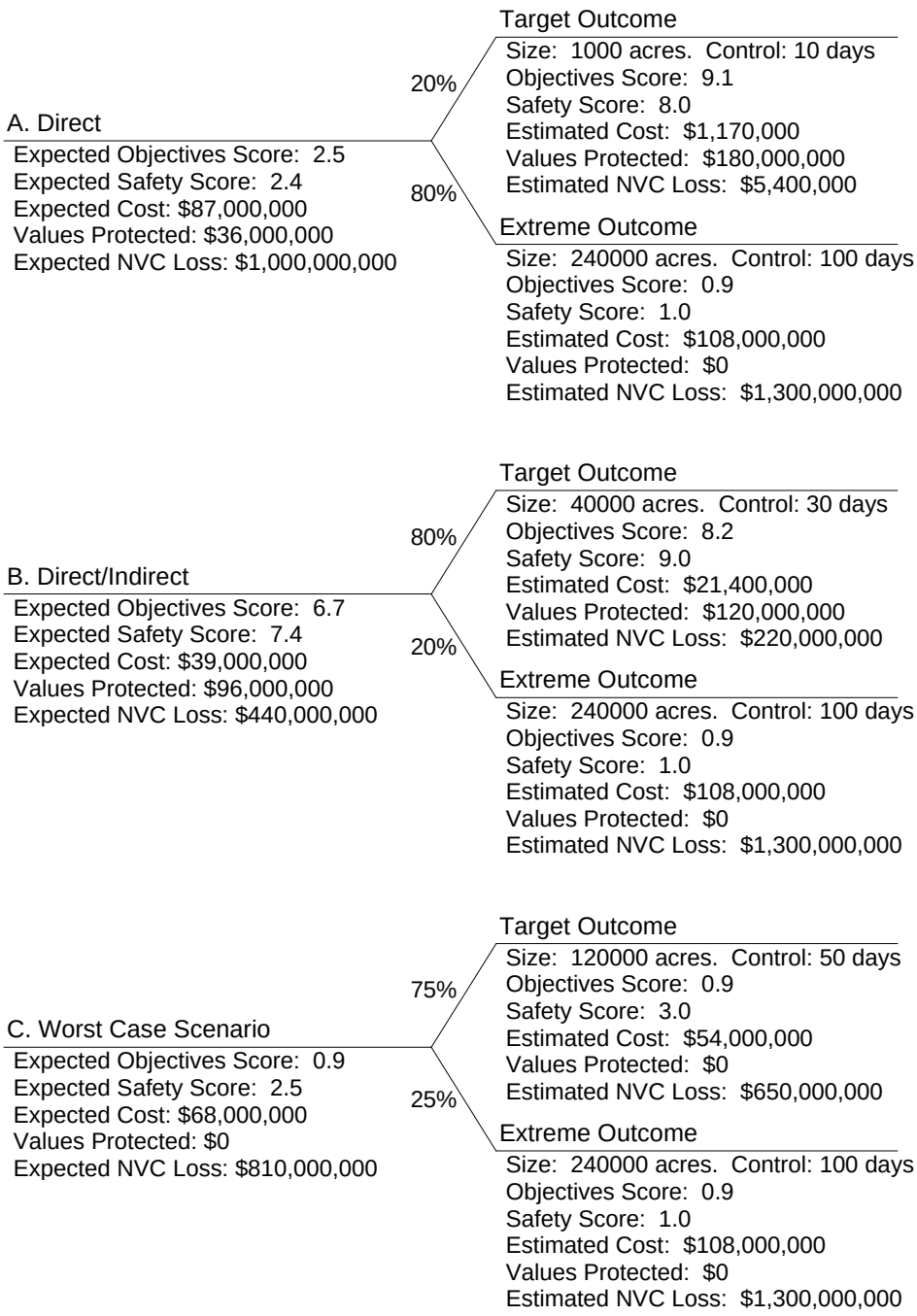
Alternative B. Direct/Indirect

Target Outcome	Fallback Outcome	Extreme Outcome
	Issue: Safety is the Number One Priority	
Rating: 9 / 10		Rating: 1 / 10
	Issue: Hazards	
Rating: 9 / 10		Rating: 1 / 10

Alternative C. Worst Case Scenario

Target Outcome	Fallback Outcome	Extreme Outcome
	Issue: Safety is the Number One Priority	
Rating: 1 / 10 The worst case scenario is our extreme outcome.		Rating: 1 / 10
	Issue: Hazards	
Rating: 5 / 10		Rating: 1 / 10

Decision Tree

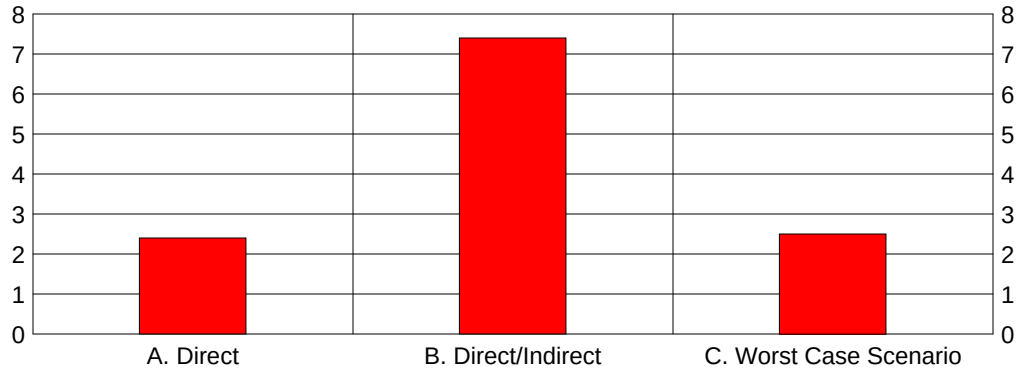


Comparison of Alternatives

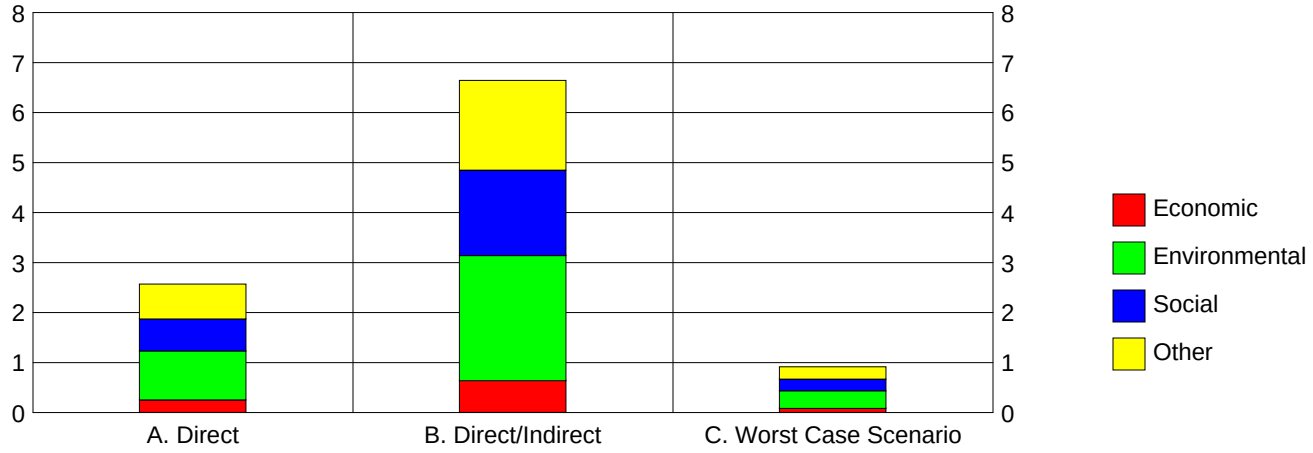
		Alternatives								
		A. Direct			B. Direct/Indirect			C. Worst Case Scenario		
Estimated Target Suppression Cost		$1,200,000			$21,000,000			$54,000,000		
Expected Suppression Cost		$87,000,000			$39,000,000			$68,000,000		
Expected Values Protected		$36,000,000			$96,000,000			$0		
Expected Resource Loss		$1,000,000,000			$440,000,000			$810,000,000		
Total Expected Financial Impact		**-$1,051,000,000**			**-$383,000,000**			**-$878,000,000**		
Expected Objectives Score		**2.5**			**6.7**			**0.9**		
		Outcomes			**Outcomes**			**Outcomes**		
				Alt. A			**Alt. B**			**Alt. C**
		Tg	**F**	**Ex**	**Tg**	**F**	**Ex**	**Tg**	**F**	**Ex**
Probability (%)		20	0	80	80	0	20	75	0	25
Objective	**Wgt**									
Economic										
Low suppression costs	0.09	10	1	2.8	9	1	7.4	1	1	1.0
Environmental										
Cultural Resources	0.07	10	1	2.8	9	1	7.4	1	1	1.0
Wild & Scenic River	0.04	10	1	2.8	9	1	7.4	1	1	1.0
Timber Values	0.09	10	1	2.8	9	1	7.4	1	1	1.0
T&E	0.14	10	1	2.8	9	1	7.4	1	1	1.0
Social										
Public Safety	0.14	10	1	2.8	9	1	7.4	1	1	1.0
Recreation	0.09	10	1	2.8	9	1	7.4	1	1	1.0
Wilderness Area	0.09	0	0	0.0	0	0	0.0	0	0	0.0
Other										
Private Property	0.14	10	1	2.8	9	1	7.4	1	1	1.0
Range/Cattle	0.10	10	1	2.8	9	1	7.4	1	1	1.0
Expected Safety Score		**2.4**			**7.4**			**2.5**		
Safety is the Number One Priority	0.50	8	1	2.4	9	1	7.4	1	1	1.0
Hazards	0.50	8	1	2.4	9	1	7.4	5	1	4.0

Comparison of Alternatives

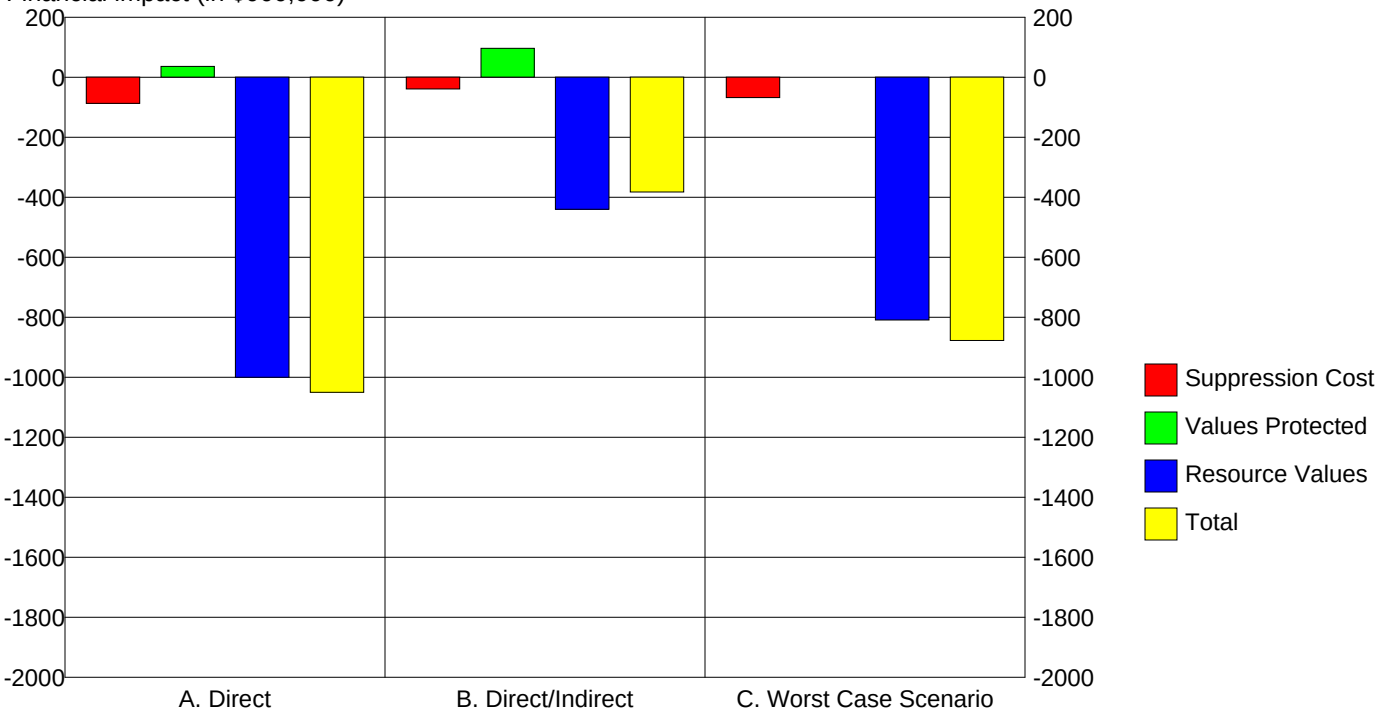
Safety Score (0=worst, 10=best)



Objectives Score (0=worst, 10=best)



Financial impact (in $000,000)



Incident Complexity Analysis

Incident Complexity Rating: Type
Rationale:

NO	YES	FACTOR
		A. Fire Behavior
	X	Burning index predicted to be above the 90% level.
	X	Potential exists for "blowup" conditions (fuel moisture, winds, etc.).
	X	Crowning, profuse or long-range spotting.
	X	Weather forecast indicating no significant relief or worsening conditions.
		B. Resources Committed
	X	200 or more personnel assigned.
	X	Three or more divisions.
	X	Wide variety of special support personnel.
	X	Substantial air operation which is not properly staffed.
	X	Majority of initial attack resources committed.
		C. Resources Threatened
	X	Urban interface.
	X	Developments and facilities.
	X	Restricted, threatened or endangered species habitat.
	X	Cultural sites.
	X	Unique natural resources, special designated zones or wilderness.
-		Other special resources.
		D. Safety
	X	Unusually hazardous fire line conditions.
	X	Serious accidents or fatalities.
	X	Threat to safety of visitors from fire and related operations.
	X	Restrictions and/or closures in effect or being considered.
	X	No night operations in place for safety reasons.
		E. Ownership
	X	Fire burning or threatening more than one jurisdiction.
	X	Potential for claims (damages).
	X	Different or conflicting management objectives.
-		Disputes over suppression responsibility.
	X	Potential for unified command.
		F. External Influences
	X	Controversial wildland fire management policy.
	X	Pre-existing controversies/relationships.
-		Sensitive media relationships.
	X	Smoke management problems.
	X	Sensitive political interests.
	X	Other external influences.
		G. Change in Strategy
-		Change to a more aggressive suppression strategy.
	X	Large amounts of unburned fuel within planned perimeter.
-		WFSA invalid or requires updating.
		H. Existing Overhead

- Worked two operational periods without achieving initial objectives.
- Existing management organization ineffective.
- Overhead overextended themselves mentally and/or physically.
- Incident action plans, briefings, etc. missing or poorly prepared.

Decision Summary

Selected Alternative
B. Direct/Indirect

Most Cost Effective Alternative: B. Direct/Indirect

Selected Alternative Description
Hold all fires to a minimum acreage considering safety and cost effectiveness, not to exceed 40,000 acres.
Use MIST tactics in the Wilderness Area.

Rationale for selecting this alternative
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WFSA revision or amendment thresholds and protocol
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Critical fire management resources
Type I Team

Special considerations
Firefighting suppression involves very dangerous terrain, steep canyons with a high volume of snags and loose rocks.
Communities at risk include Spring Garden and Green Horn Ranch with only one ingress and egress route.

Analysis prepared by: /s/ Alice B. Carlton

w/ Sabrina Stadler

Agency Administrator Approval

6/23/08
Date/Time