Teton to Snake Fuels Management Project – Frequently Asked Questions

July 10, 2015

Are fuel treatments effective under severe conditions?

This question has arisen from research in different fuels types such as chaparral where fuel treatments have limited effectiveness. There are many examples in pine types, ponderosa pine and long-leaf in particular but lodgepole and subalpine fir as well, where fires burning under extreme conditions (crowning) dropped to the ground when entering the fuel treatment and allowed for safe and effective firefighter activity. There have been studies and fuel treatment effectiveness reports documented in similar fuels as we have locally that demonstrate the effectiveness (Central Idaho fires of 2007, Fontenelle fire on the Bridger-Teton in 2012, etc.). Many of these success stories can be queried here: http://www.forestsandrangelands.gov/success/index.cfm

Fuel treatment effectiveness assessments have been completed for 2013 on wildfires that burned into 321 different treatments completed within the last 10 years in the west/last 3 years in the east. Ninety percent of the fuel treatments analyzed were effective in changing fire behavior and/or helping with control of the wildfire.

Based on the results of the assessments fuel treatments:

- Improve initial attack success rate.
- Provide safer options for firefighters.
- Improve success in protecting homes and communities.
- Reduce wildfire damage and cost.
- Improve forest resilience to wildfire.

Table 1: Summary of FS Fuel Treatments Effectiveness on Wildfires

Number of Treatments Tested By Wildfire**									
Year*	**Did Treatment Change Fire Behavior?**				**Did Treatment Help Control Wildfire?**				**Total Records**
	No		**Yes**		**No**		**Yes**		
	Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**	
2006	-	0%	10	100%	-	0%	10	100%	10
2007	7	3%	231	97%	2	1%	236	99%	238
2008	3	2%	156	98%	1	1%	158	99%	159
2009	15	14%	91	86%	9	8%	97	92%	106
2010	18	11%	142	89%	6	4%	154	96%	160
2011	51	11%	400	89%	66	15%	385	85%	451
2012	46	15%	267	85%	107	34%	206	66%	313
2013	92	29%	229	71%	135	42%	186	58%	321
Total	**232**	**13%**	**1,526**	**87%**	**326**	**19%**	**1,432**	**81%**	**1,758**

**Reporting was optional until Dec 2010*

***Reporting current as of Feb 18, 2014. Units have 90 days to complete the assessments.*

Can fuel breaks prevent wildfires?

Our fuel breaks are not designed to stop wildfires (only area devoid of vegetation and fuel can eliminate fire). Our fuel breaks are designed to reduce potential fire behavior. Generally speaking we are creating conditions conducive to ground fires with minimal spotting potential opposed to crown fires (fire in the top of trees) and excessive spotting. Firefighters can be extremely successful stopping fires when the flame lengths are less than 4 feet and limited to the ground. Crown fires are very difficult to stop; they can be slowed with aerial drops but not stopped.

Fuel treatments also reduce fire intensity and minimize damage to soils and seed banks/sources which help create those “fire resilient landscapes” that we need to combat the effects of climate change.

Jack Cohen’ studies show that treating fuels around individual home sites is the most effective way to protect homes. So why does Teton to Snake have fuel treatments so far away from homes? If this is the case, why can’t we just make the homeowners treat their own fuels which should be good enough, correct?

Jack Cohen is correct that this is the best way to protect an individual home from a wildland fire. This does not stop help firefighters stop a fire starting on public land from burning onto private lands though. The Forest Service has a responsibility to keep fires from exiting public lands onto private lands. Additionally, we are mandated to reduce risks of wildfire impacts to private lands through mitigating hazardous fuels near private lands. The fuel treatments for Teton to Snake have been strategically placed on the landscape to allow firefighters to be successful at stopping large wildfires from existing the forest onto private lands. These strategically placed treatments (prescribed burns) sever the paths of least resistance for fire spread. Additionally the mechanical treatments will set firefighters up for success directly adjacent to private subdivisions. These mechanical treatments have been limited to areas adjacent to private lands to provide firefighters suitable conditions for stopping a fire from burning across the jurisdictional boundary.

Additionally, fires that come off public lands onto State, County and private lands can be extremely costly to those agencies that have fire responsibility. The National Cohesive Strategy requires all land management to “Be Good Neighbors” and mitigate fuel loads within their respective areas of responsibility to reduce the potential of an unwanted wildland fire impacting another jurisdiction.

Will open areas created by thinning facilitate rapid fire spread?

This claim is made on the fact that removing heavy dead-down fuels and opening up the canopy creates a more uniform fine fuel load (grass/forbes/shrubs) in the understory that then receives more sun and wind making the surface fuels burn more readily than when they would when shaded by a closed overstory. The “surface rate of spread” can increase due to this change as a fine fuel dominated fuel bed is going to carry fire quicker but this does not translate into increased overall fire spread or larger fire sizes for the following reasons:

1) In forested landscapes, the highest rates of spread are related to crown fire behavior and ember spotting distance, so by reducing crown fire and spotting potential/distances, you are reducing the expected rate of spread even if you increase the surface rate of spread in the process. This can be easily demonstrated using a fire modeling run with crowning-spotting turned on/off to show results.

2) Two things often determine final fire spread/size: fuels response to changing weather and firefighting effectiveness.

> a) Dense forest cover makes firefighting more difficult than open sparse cover. For example, a Type 1 handcrew can dig 1,122 feet of fireline in an open stand timber versus 693 feet in a closed stand (Fireline Production Rates, 1151 1805—SDTDC, April 2011).
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> b) Fine fuels respond more rapidly to increased moisture thus when humidity or rain does show up, a fine fuel bed is more likely to self-arrest than a heavy fuel type that holds heat and can restart when burning conditions improve days later. For example a sage/grass fire can go out overnight if here is decent humidity recovery overnight whereas a timber fire can sustain multiple days of rain or snow because the heavier fuel loading (logs, duff, etc.) can withstand much more moisture.

What's the probability that fire would encounter any of these proposed fuels treatments?

Based on some of our analyses we have done on Teton to Snake, there is a high likelihood these treatments would be impacted by a wildland fire. On a national interagency basis, we are seeing 600-800 interactions each year with fuel treatments with expectation that this will go up as more treatments are implemented. Additionally, we are getting much better at reporting when these interactions take place.

A good analogy – I would much rather have my seatbelt on and not need it, rather than need it and not have it on (we could replace seatbelt with helmet, levy, any type of insurance, etc.). The point is that you hope you don't have to use it but in the event that you do, you're much better off having the mitigation in place rather than not be prepared.

Do beetle killed trees contribute to the fire hazard?

This is not a simple answer. In the short term after trees have been hit by beetles, foliar moisture content drops significantly which increases the flammability of the needles even before the needles turn red. The trees are more flammable until the needles start falling out of the trees which happens over the first few years following the beetle attack. Some tree species can remain quite flammable even after the needles drop such as Whitebark Pine that typically have many tree branches and some of these stands can be continuous enough to sustain torching and some crown fires. But, in general fire potential tends to decrease after the needles have fallen of the trees. As the needles fall, fine fuels load begin to increase with grasses, forbs and regenerating tree species. Then the standing dead trees begin to fall about 10 years after the initial beetle infestation and become additional fuel that would support wildfires. Eventually (10-20 years out) fire potential will begin to increase in these stands.

The biggest concern for fire responders associated with beetle killed trees is the potential for those trees to fall unexpectedly during fire operations. Falling snags and hazard trees are one of the second leading cause of fatalities and serious injury during wildland firefighting operations (11 fatalities over the last 10 years, 3 fatalities in 2013 alone).

This seems to be an excessive amount of treatment. Why does so much of the landscape need to be treated to accomplish your objectives?

The Teton to Snake Fuels Management Project proposes to treat ~14,280 acres (12,524 prescribe burns and 1,756 mechanical treatments) under the preferred alternative 3. By treating those acres, we will benefit a much larger area, in excess of 300,000 acres, by being able to allow fires to play their natural role in the Palisades WSA and other roadless areas both on the Caribou-Targhee NF and the Bridger-Teton NF. Additionally, we will be able to use much lighter on the land suppression tactics to stop fires from escaping the forest onto private lands such as handcrews versus dozer and heavy equipment use.

Mark A. Finney's research notes that we can effectively reduce fire behavior across an entire landscape by treating approximately 20% of that landscape with strategically placed fuel treatment blocks ("Finney Blocks").

What is the fire history in the project area and Palisades WSA?

Fire has been the major influence on vegetation patterns, composition, structure, function, age and development of both individual stands and the larger landscape (Arno 2000). Historically wildfires in the project area appear to have been more frequent and greatly impacted forest vegetation.

About 21,918 acres within the project area have been burned by wildfires greater than 80 acres since the early 1930s, not including the numerous small wildfires that occurred and were suppressed or simply went out. Most of that acreage burned during three wildfires in 1934, which was prior to the institution of the "10 am Policy" in 1935. The "10 am Policy" made aggressive fire suppression the standard response and which led to reductions in the numbers of wildfires. Table 2 includes about 700 acres of wildfire area that was burned in 1934 and then again in 2001. Historic fire occurrence data also show 198 fires, an average of four fires per year have been suppressed in the project area from 1953 to 2007. Although fires occur in the project area during most years, the drought years of 1934 and 2001 saw large acreages burned.

Table 2: Acres burned in project area

Fire	Acres
1931	284
1934	17,469
2004	4,165
Total	21,918

There have been occasional large, stand-replacement fires occurring under very dry and windy conditions. Recent examples in the project area include the Green Knoll Fire in 2001. The Green Knoll Fire burned approximately 4,700 acres and threatened the communities of Wilson, Teton Village and many landowners in the surrounding area. The fire burned for over a month and resulted in the evacuation of many homeowners.

The Green Knoll Fire costs approximately $12 million dollars to suppress with $5 million of the total attributed to aircraft costs alone. A growing literature indicated that the cost of suppressing a fire nearly always include damage to ecosystems (Backer, et al. 2004)

What were the impacts of the Green Knoll Fire and all historically suppressed fires located in the WSA?

The suppression activities on the Green Knoll Fire resulted in 16.24 miles of bull-dozer fire line and 7.83 miles of hand line. 8 miles of the dozer line was inside the Palisades WSA. Impacts from this fire, and all of the suppressed fire in the area, have impacts related to soil compaction, erosion, water quality contamination, habitat disturbance and the introduction of non-native species.

Continuing to suppress all fires within the Palisades WSA does not meet the obligation to maintain wilderness character. Fires are routinely suppressed in the WSA because the existing fuels conditions create an unacceptably high risk of fire burning onto adjacent private land. The wilderness character of the WSA, including natural and untrammeled qualities, is harmed because fire cannot be left to operate freely as a natural ecosystem function.

What are the impacts of fire suppression activities on fuels and natural communities?

Continued fire suppression results in increased surface, ladder and crown fuels that affect flame length, contribute to the torching of trees, and make crown fire more likely (Peterson et al. 2005 and Graham 2004). Wildfires that escape initial attack may impact adjacent private lands and other resource values. Direct suppression tactics by firefighting forces would not be as effective as compared with the proposed actions. Taking no action maintain the status quo and would restrict local fire managers from utilizing fire for meeting various land management objectives and would not reduce snag levels to provide a greater margin of safety for firefighters engaging in fire suppression activities. Fire suppression activities would continue in the project area without opportunities to allow natural fire ignitions to be managed in the Palisades WSA. Suppressing lightning caused wildfires runs counter to the goal of protecting natural and untrammeled qualities in wilderness (Miller 2012).

We do not want to see the FS taking a "gardener role" in the WSA – this is contrary to wilderness management. Will the project need to be maintained in the future?

It is hard to tell exactly what the future will bring. In general, we do not anticipate having to do much in the future to maintain the proposed fuel breaks. We are planning on allowing enough fires to play their natural role in this area to maintain the fuel breaks created by implementing the proposed Teton to Snake project. There would be no need to retreat prescribed fires under this scenario but there could be a need down the road 20+ years where some of the mechanical fuel treatments directly adjacent to private property could have a need to be maintained.