



Chipper Projects

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Kern River Valley Fire Safe Council Chipper Projects

Introduction

The Kern River Valley Fire Safe Council was founded in 1999 and incorporated in November 2002 to provide awareness through education and information exchange, and facilitate interagency coordination, fire protection and fire safety projects within Kern River Valley. The corporation is organized and operated exclusively for charitable and educational purposes within the meaning of Section 501(c)(3) of the United States Internal Revenue Code. The boundaries of the area of interest to the Kern River Valley Fire Safe Council are shown in Figure 1.

The Kern River Valley Fire Safe Council maintains a collaborative relationship with the Kern County Fire Department (KCFD), the United States Department of Agriculture Forest Service-Sequoia National Forest (USFS), and the United States Department of Interior Bureau of Land Management-Bakersfield Field Office (BLM). The Kern River Valley Fire Safe Council is also affiliated with the California Fire Safe Council.

The Kern River Valley Fire Safe Council operates under the guidelines of the Kern River Valley Community Wildfire Protection Plan¹ and the appended Kern River Valley Fuel Reduction Projects².

Objective

The Kern River Valley Fire Safe Council supports three active approaches to providing wildfire protection through fuel reduction:

1. Chipper Days - A Chipper Day is a day in which the Kern River Valley Fire Safe Council chipper is brought to a community or neighborhood by the Kern River Valley Fire Safe Council, the Kern County Fire Department, and Camp Erwin Owen to reduce branches and shrub materials piled by property owners into small piles of chips. The chipper is maintained and operated by Kern County Fire Department personnel. Chipping is done by Kern County Fire Department personnel with the assistance of Camp Erwin Owen boys. The council schedules a chipper day for a neighborhood, working with property owner associations or other neighborhood groups.
2. Fuel Reduction Projects – Major fuel reduction projects are supported under grant funds obtained through the California Fire Safe Council Clearinghouse. Proposals for grant funded projects are submitted and

¹ Kern River Valley Community Wildfire Protection Plan (formerly Kern River Valley Community Fire Safe Plan), October 2002 as amended in February 2008.

² Kern River Valley Fuel Reduction Projects, July 2007.

funded annually. Grant funds are used to conduct an assessment of archaeology, biological, and botanical issue, and to obtain licenses to enter. A shaded fuel break is constructed by hand crews with chainsaws, chippers, and where appropriate with an ASV mulching machine. Generally this work has been accomplished under contract by the Kern County Fire Department; however, private contractors have also been used. Typically these projects involve significant matching efforts from the Kern River Valley Fire Safe Council members and home owners.

3. In concert with the Kern River Valley Fuel Reduction Projects² plan the Kern County Fire Department, the Forest Service, and the Bureau of Land Management construct and maintain shaded fuel breaks on public lands using hand crews, chippers, ASV mulching machines, and selective burning.

Approach

The Kern River Valley Fire Safe Council sponsors Chipper Days to assist private property owners in the creation of defensible space around their homes and fuel breaks to improve access to homes. Our goal is to encourage the creation of a fire safe community in which people can live in harmony with their environment.

The Kern River Valley Fire Safe Council obtained a grant from the Bureau of Land Management (BLM Grant 02-BLM-0065) in August 2002 for \$30,000 to purchase a chipper to facilitate wildland fire protection through fuel reduction projects on private property. A Bandit Chipper (see Figure 2) was purchased in January 2003 for \$28,227, with the balance provided to Kern County Fire Department for parts and maintenance.

To initiate planning for a Chipper Day a property owners group should consider the following:

To organize a Chipper Day

I – Elect a representative to approach the Kern River Valley Fire Safe Council Chipper Day representatives, Margaret Belz at (760) 549-3046(C) or Tom Parkin at (760) 661 331-7502(C).

II – There are 3 components to a Chipper Day Project:

1. Selecting a date and time for a Kern River Valley Fire Safe Council Defensible Space Presentation.
2. A minimum of 10 property owners or a community/neighborhood wide brush cutting and collection activity. Ideally, schedule a fuels reduction project with some community members two months prior to the scheduled Chipper Day.

3. Select a weekend date (with 3 alternatives) for the Chipper Day confirming with Kern River Valley Fire Safe Council representative.

III – Before the Chipper Day, submit Request Form (see below) indicating the number of contributing households.

- ✓ Minimum 10 homeowners/property owners or community/neighborhood wide cutting and collection to contribute fuel to be chipped.
- ✓ Minimum 3 (Maximum 10) property owner's representatives to physically participate in the Chipper Day if required by KCFD.

Once a date is confirmed for the Chipper Day

I – Arrange for an on-site Port-A-Potty for the chipping crew and the camp Erwin Owen Boys.

- ✓ Please understand that the cost of furnishing a Port-A-Potty (approximately \$50) is the responsibility of the property owners.

II – Select an outdoor area for the crews to have lunch and rest.

- ✓ It is traditional, and greatly appreciated, for the property owners to provide a modest lunch (pizza) for the chipper crews.

III – Consider advertising your Chipper Day Project.

Contact the Kern River Valley Fire Safe Council (Robin Wyatt-Little at (760) 376-6842) for templates and media contact information.

- ✓ Press Releases and/or public announcements (Kern Valley Sun, QAB Radio).
- ✓ Property Owner's Association newsletters, posters or flyers.

IV – The Council suggests contacting your community/neighborhood, reminding them they only have a few days left to provide dead and down fuel to be chipped.

V – Please take; BEFORE, DURING and AFTER pictures of the Chipper Day.

After the Chipper Day

I – Submit to the Kern River Valley Fire Safe Council:

- ✓ BEFORE, DURING and AFTER pictures of the Chipper Day

- ✓ Post Chipper Day Data Form (appended) with estimates of the co-operators, man hours, equipment, fuel chipped and people affected by the Chipper Day.

A request for a Chipper Day is initiated by completing the following form:

Name	<input type="text"/>
Title	<input type="text"/>
Organization	<input type="text"/>
Work Phone	<input type="text"/>
FAX	<input type="text"/>
E-mail	<input type="text"/>
Project Name	<input type="text"/>
Select Date for FSC Presentation. Please provide at least 3 alternatives	<input type="text"/>
Select date for Chipper Day, with alternatives	<input type="text"/>
Number of participating households, if applicable	<input type="text"/>
Number of community volunteers, if applicable	<input type="text"/>

This form can be completed and submitted from the Kern River Valley Fire Safe Council website (KRVfiresafecouncil.com or KRVfiresafecouncil.org).

Chipper Days for property owners are conducted using the following guidelines:

1. All material should be stacked alongside the roadway in several small piles rather than a few large ones (because it takes too long to separate the brush), accessible to the chipper crew.
2. No material should be greater than 3" in diameter.
3. Pine slash should be cut at least 7 days prior to chipping. Freshly cut pine may stimulate bark beetle feeding and attack healthy trees.
4. Following the project the chips could be broadcast back onto the property or collected and then made available to property owners to spread on their property for garden mulch, dust abatement, to limit weed growth and inhibit erosion.
5. Material should be freshly cut, green material chip are better than old dry vegetation and is less wearing on the equipment.

6. All vegetative material should be free of rocks, dirt and other foreign material that could damage the equipment.

Data and Analysis

The Kern River Valley Fire safe Council has conducted twenty one separate Chipper Days since beginning of the project in April 2003. These projects and some tabulated data are identified in Table 1.

Table 1. Chipper Projects Completed							
Date	Location	Area¹ (acres or cu yds)	KCFD Crew	Camp Owen Crew²	Hours	Participating Residents	Value of Homes
2003							
4/12/03	Hungry Gulch & Boulder Canyon	3a	9	9	7.5	22	\$770,000
4/26/03	Sawmill & Isabella Highlands	7a	5		8	20	\$375,000
5/31/03	Squirrel Valley	15a	8	8	7	50	\$750,000
6/3/03	Rodgers & Walker Roads	12a	5 4 owners		8	28	\$1,260,000
7/7/03	Meyers Canyon	57a	5	6	6	85	\$2,850,000
9/5/03	Tillie Creek	40a	10		8	54	\$3,825,000
11/22/03	Myers Canyon	57a	8 6 owners 6 SCE	6	8	143	\$2,850,000
2004							
4/17/04	Hungry Gulch	45cy					
4/24/04	Myers Canyon						
5/15/04	Squirrel Valley	85cy					
2005							
5/7/05	Squirrel Valley	60cy	6	7		40	
6/11/05	Greenhorn Mt. & Alta Sierra	2 chippers	16		10	28	
6/25/05	Hungry Gulch						
2006							
6/10/06	Isabella Highlands					12	
6/16/06	Greenhorn Mt. & Alta Sierra						
6/24/06	Walker Pass					6	
2007							
5/5/07	Squirrel Valley						
5/12/07	Walker Pass						
5/19/07	Pala Ranches						
6/2/07	Greenhorn Mt. & Alta Sierra						
6/9/07	Myers Canyon						

¹The measure was changed from acres to cubic yards in 2004

² A supervisor must accompany the Camp Owen crews.

The data in Table 1 is very sparse for years 2004 through 2007, though summarizing the data for 2003 provides a starting point. Table 2 tabulates the man-hours and estimated costs to complete each Chipper Day in 2003. When Kern County Fire Department conducts a Chipper Day project there is no cost assign to it separately. When they plan for Chipper Days they budget \$2000 for each Chipper Day assuming a 4-6 hour day for a crew of six. So the cost estimates in Table 2 are derived assuming a 6 person Kern County Fire Department crew for 5 hours, or 30 man-hours per event. Then if there are more than 6 in the crew or the project takes longer than 6 hours the cost is adjusted. There is no cost for the Camp Erwin Owen crews or supervisors. The annual maintenance costs are budgeted at \$150 for oil changes, belts, hoses and blades.

Table 2. Man-Hours and Estimated Costs for 2003					
Date	Location	KCFD Crews	Hours	Man-Hours	Estimated Cost
4/12/03	Hungry Gulch & Boulder Canyon	9	7.5	67.5	\$4,500
4/26/03	Sawmill & Isabella Highlands	5	8	40	\$2,667
5/31/03	Squirrel Valley	8	7	56	\$3,733
6/3/03	Rodgers & Walker Roads	5	8	40	\$2,667
7/7/03	Meyers Canyon	5	6	30	\$2,000
9/5/03	Tillie Creek	10	8	80	\$5,333
11/22/03	Myers Canyon	8 +6 SCE	8	64	\$4,267 + SCE\$
Maintenance Costs					\$150
Total Cost for 2003					\$25,317
Average per Event					\$3,617

Taking the estimated value of the properties protected in 2003 (\$12,680,000), and dividing that by the total estimated cost of the Chipper Days, yields approximately a 500:1 return on investment (ROI). Assuming the average per event costs remained relatively constant during the other years, then for the twenty one events the total project cost to Kern County Fire Department is \$76,245 over the five years of operation.

Chipping, in lieu of burning, is definitely a viable alternative to burning since it reduces the health hazard of air pollution. However, dragging brush more than 100 to 150 feet becomes very labor intensive and is not cost effective.

An alternative to chipping will be introduced in 2008 by Kern County Fire Department through their acquisition and use of an ASV mulching machine. The ASV mulching machine can drive through the brush, mulching it down to approximately 2 to 3 inches above the ground, with a minimal impact on the ground. Significant reduction in the height of brush reduces the flame height of a fire thereby making it easier to suppress and/or control.

Chipper Days in the Kern River Valley depend on other fuel reduction projects and fire fighting responsibilities of the Kern County Fire Department. It is fully anticipated that the Kern County Fire Department, with the full support of the Kern County Board of Supervisors, will continue to support 5 to 7 Chipper Days sponsored by the Kern River Valley Fire Safe Council each year. Table 3 is a list of the currently planned 2008 Chipper Days.

Table 3. Chipper Projects Proposed							
Date	Location	Volume (cu yds)	KCFD Crew	Camp Owen Crew¹	Hours	Participating Residents	Value of Homes
2008							
3/29/08	Walker Pass	5,917	12	0	10	28	\$4,300,000
4/5/08	Frontier Trails	CANCELLED					
5/3/08	Squirrel Valley	11,600	10	12		38	\$85,000,000
5/19/08	Pala Ranches	318	12	0	4.5	12	
5/31/08	Greenhorn Mt. & Alta Sierra	8,600	13	0	8	37	
11/21/08	Keyesville	700	12	0	7	4	\$3,000,000
Totals		27,135			29.5	119	

Recommendations

The Kern River Valley Fire Safe Council Chipper Days have a demonstrated high return on investment, 500:1. The benefit of enhanced wildland fire protection is imperative and Chipper Days facilitates the creation of defensible space while not contaminating our air or filling our landfills.

Record keeping should be an essential part of Chipper Days. Recording the value protected provides leverage for continuing the chipper program and other grant applications:

- **Homes Protected:** The total number of homes that are directly (such as defensible space) or indirectly (such as a fuel break) protected from wildfire.
- **Community Members Protected:** The total number of individuals living in the community that are protected from wildfire by your project. Educational projects can protect community members by increasing awareness that creates behavioral change.
- **Property Protected:** The total value of property protected from wildfire by your project.

Guidelines for computing acres and cubic yards are appended (Appendix B) and should be used to develop the require data.

Although current guidelines do not allow the procurement of chippers or other capital equipment using grant funding from the California Fire Council

Clearinghouse, grant funding should be pursued from other sources to procure an ASV mulching machine.

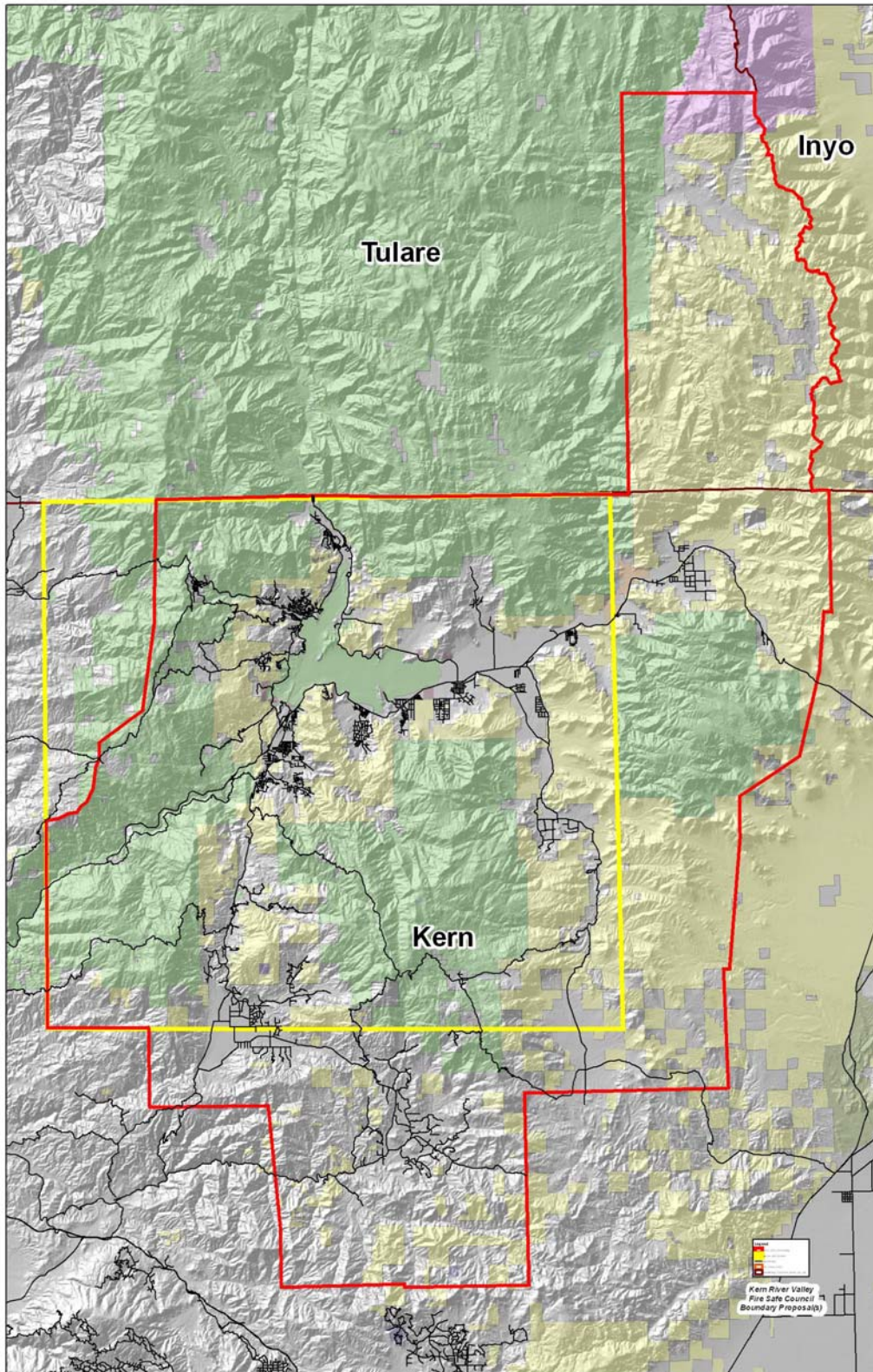


Figure 1. Area of Interest to Kern River Valley Fire Safe Council



Figure 2. Bandit Chipper in Operation – Let the Chips Fly!

Kern River Valley Fire Safe Council

Post Chipper Day Data Form

A. Contact Information		
Name:		
Mailing Address:		
Physical Address:		
Phone #	()	Work # ()
Mobile Phone #:	()	Fax # ()
Email:		
B. Project Information		
Name of Project:		
Type of Project:	Chipper Day	
Date of Chipper Project		
Date of Presentation		
Description of work:		
How has KRVFSC helped your project?		
C. Numeric Estimate of People and Property affected by Project		
		Numeric Estimate
Estimate the number of households protected by the Chipper project		

Appendix A

		Numeric Estimate
Estimate number of people protected by the Chipper project		
Estimate the total value of property protected by the Chipper project		
Estimate number of acres		
Estimate total volume of fuel chipped (cubic ft)		
* Please include photographs of Before, During and After the Chipper Day		
D. Co-operators involved the day of the Chipper Day Project		
i. Camp Erwin Owens		1)
Number of boys		2)
Number of supervisors		
Name(s) of Camp Erwin Owens Supervisor(s)		1)
		2)
ii. Kern County Fire Department		
Number of crew members		
Number of supervisors		
Name(s) of KCFD Supervisor(s)		1)
		2)
iii. Bureau of Land Management		
Number of crew members		
Number of supervisors		
Name(s) of BLM Supervisor(s)		1)

Appendix A

		2)
iv. United States Forest Service		
Number of crew members		
Number of supervisors		
Name(s) of USFS Supervisor(s)		1)
		2)
v. Student Conservation Association Fire Education Corps		
Number of crew members		
Number of supervisors		
Name(s) of SCAFEC Supervisor(s)		1)
		2)
vi. Volunteer Property Owners		
Number of volunteers		
Name(s) of Property Owner(s)	1)	2)
	4)	3)
	6)	5)
	8)	7)
	10)	9)
	11)	12)



How to Calculate Acres - Example

Example: A roadside fuel break is 3 miles long by 50 feet wide.
How many acres are included in this project?

- Step 1: Convert all measurements to feet
 - 1 mile = 5,280 ft
 - 3 miles X 5,280 ft/mile = 15,840 ft
- Step 2: Multiply the length by the width
 - 15,840 ft X 50 ft = 792,000 sq ft
- Step 3: Convert to acres by dividing total area (sq ft) by 43,560 sq ft/acre
 - 792,000 sq ft / 43,560 sq ft/acre = 18.18 acres
- Step 4: Round to whole acres
 - 18.18 acres >> 18 acres



How to Calculate Volume of Fuel Chipped

Example: The first pile of brush is estimated to be 10 feet in length, by 8 feet wide, by 6 feet high. A second pile of brush is estimated to be 12 feet long, by 12 ft wide, by 6 feet high. What is the volume of fuel chipped?

- Step 1: Multiply the length by the width by the height for the first pile
 - $10 \text{ ft} \times 8 \text{ ft} \times 6 \text{ ft} = 480 \text{ cu ft}$
- Step 2: Multiply the length by the width by the height for the second pile
 - $12 \text{ ft} \times 12 \text{ ft} \times 6 \text{ ft} = 864 \text{ cu ft}$
- Step 3: Add the volume of each pile to obtain the total volume of the fuel chipped
 - Total volume of Fuel chipped = $480 \text{ cu ft} + 864 \text{ cu ft} = 1,344 \text{ cu ft}$