

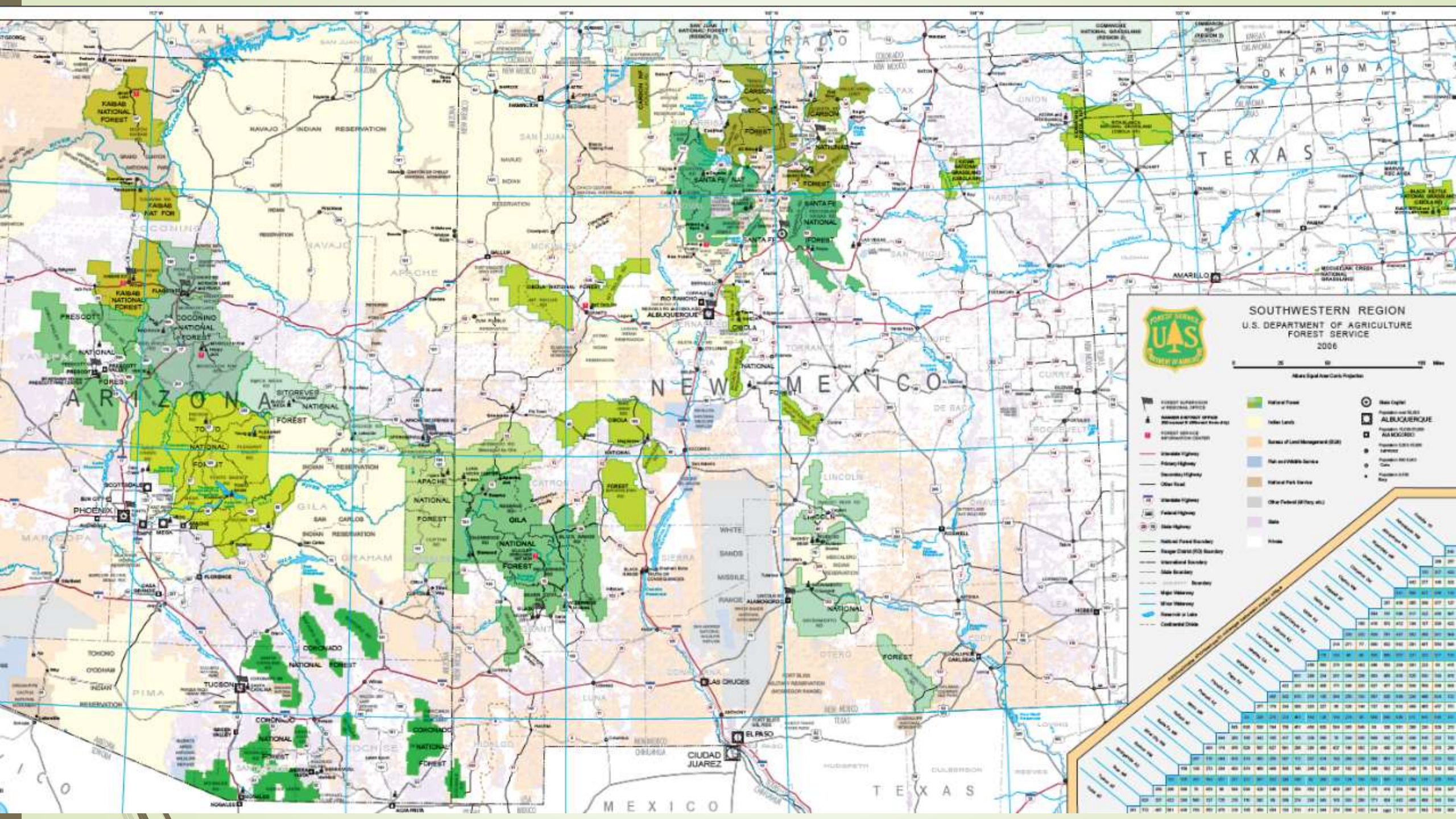
Let's Do This!



Recycling on Wildfire Incidents

Cradle to Contract Communication

Kelly Jaramillo, Forest Service,
Southwestern Region Sustainable Operations Specialist



Forest Service Sustainable Operations



Reduce Waste



Save Energy

Reduce Emissions

Save Water



Save Money

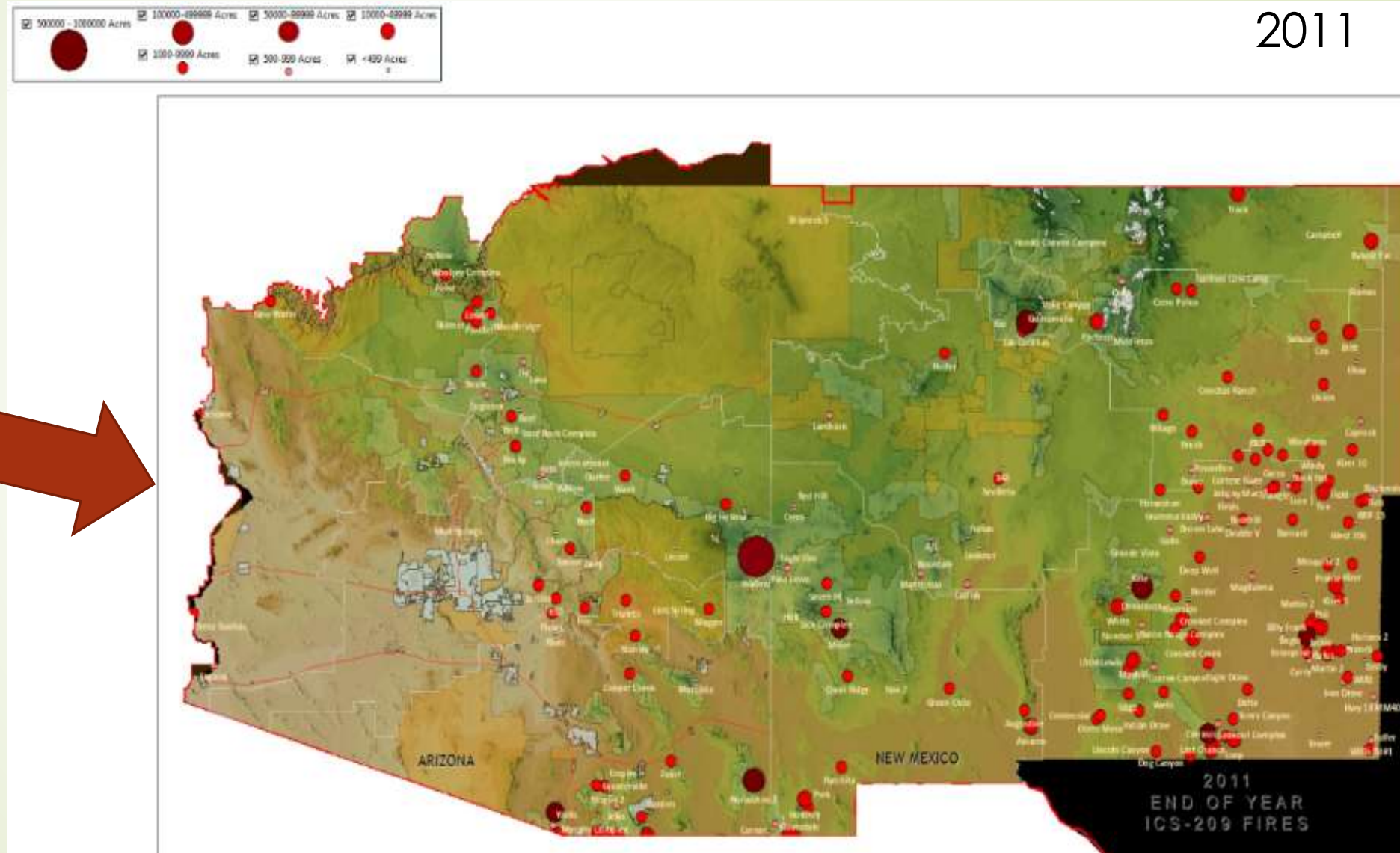
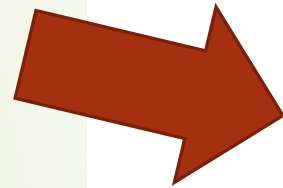


Fires and Waste

2011

Based on the duration and # of personnel on fires in 2011, our interagency fire fighting teams are estimated to have generated between **6.7 and 9 million pounds of trash** in AZ and NM.

NOTE: It is estimated that **40-70% of the waste from fire camps is recyclable and/or compostable.**



Source for converting CY of trash to pounds of Municipal Solid Waste: https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf

What have we
learned so far?



2017 Pinal Fire, Tonto National Forest (AZ)

Type 1 Fire, ~600 fire staff personnel



What is wrong with these photos?



Signage and Location are Critical

Do you think this signage worked?

Nope!



Photos from Whitewater ICP, Aug 2017



Who are the players?

Logistics and Facilities

These are the individuals that initiate the request for incident recycling

Dispatch and Buying Teams

These are the individuals that receive the request, process it, and handle the procurement

Incident Leadership

These are the individuals that set the leadership tone on the fire camp.

Some concerns I heard along the way...

- We don't have recycling in our community.
- Recycling is too expensive.
- There aren't any companies that do this.



Building
momentum
starts with
resolving
concerns and
perceptions





I needed to do my research...

- Concern 1: We don't have recycling in our community.
 - Where can we recycle?
 - What can we recycle?
- Concern 2: Recycling is too expensive.
 - What is the staffing requirement to manage a recycle program at a fire camp using "in-house" resources?
 - If we contract this service instead, will it cost more? How much more?
- Concern 3: There aren't any companies that do this.
 - What companies can provide on-site recycling services for an unknown number of consecutive days in an unknown but likely rural location with extreme circumstances?



Let's Do This!

Southwestern Region Recycle Matrix

Detailed recycling
information for every District
Office in AZ and NM

Forest Name	District Name	Full Address	City	County	State	Zip Code	Waste Management Services	Cardboard	Mixed Paper	Plastics	Aluminum cans	Scrap Metal	Batteries	Remarks
Apache-Sitgreaves	SD	30 South Chiricahua Street PO Box 640 Springerville, AZ 85901	Springerville				Blue Hills Environmental Association 928-333-1628 Alpine Transfer Station: Wednesday & Saturday from 1:00 p.m. to 5:00 p.m. http://bluehillsevenvironmental.com/offices/ Blue Hills can provide dumpsters & collection services for incidents in this area, but no recycle collection services. Alpine Transfer Station: Wednesday & Saturday from 1:00 p.m. to 5:00 p.m.	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Plastics #1-2 (need to transport to drop-off location)	Yes (need to transport to drop-off location)			SORTED recyclables can be dropped off at Round Valley TS (5 mi west on AZ 260, Eagar 85925) , 15 miles from Springerville. They are open Tues through Saturday, 9:00 - 4:45. Call Blue Hills Environmental Assoc for more info, 928-333-1628 or 928-337-2387. The Round Valley TS charges a minimum of \$3 per load, depending on the weight of the load (even for recyclables). They accept cardboard, plastics, steel and aluminum cans, metal, tires, and oil.
Apache-Sitgreaves		Alpine, AZ 85920-0640	Alpine	Apache	AZ	85920	Blue Hills Environmental Association 928-333-1628 Alpine Transfer Station: Wednesday & Saturday from 1:00 p.m. to 5:00 p.m. http://bluehillsevenvironmental.com/offices/ Blue Hills can provide dumpsters & collection services for incidents in this area, but no recycle collection services. Alpine Transfer Station: Wednesday & Saturday from 1:00 p.m. to 5:00 p.m.	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Plastics #1-2 (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)		SORTED recyclables can be dropped off at Round Valley TS (5 mi west on AZ 260, Eagar 85925) , 27 miles from Alpine. They are open Tues through Saturday, 9:00 - 4:45. Call Blue Hills Environmental Assoc for more info, 928-333-1628 or 928-337-2387. The Round Valley TS charges a minimum of \$3 per load, depending on the weight of the load (even for recyclables). They accept cardboard, plastics, steel and aluminum cans, metal, tires, and oil.
Apache-Sitgreaves							Navajo County Waste Management Mel Bowers, Navajo County Sanitation Board, 928-535-5356 https://azdeq.gov/node/1255 Heber-Overgaard Transfer Station Operator: Larson Waste Contact: Donna Porter - 928-536-3398 or 928-296-6207 (for Steve Cramer at Overgaard TS, direct)	Yes (need to transport to drop-off location)						Cardboard, aluminum cans, and scrap metal can be dropped off at Overgaard TS .
							86032) Snowflake TS (1440 W Rutledge, Snowflake, AZ 85937) Lone Pine TS (7654 Lone Pine Dam Road, Show Low, AZ 85901) Taylor TS (750 Pinedale Rd, Taylor, AZ) Lakeside Wagon Wheel Roll-Offs Winslow TS (600 North Rd, Winslow AZ 86047)							Other recyclables can be taken to Lone Pine Transfer Station for free (36 miles from Overgaard).
Apache-Sitgreaves	Clifton					85534	Greenlee County Public Works Landfill David Manuz, Public Works Manager 928-687-2001 https://www.co.greenlee.az.us/pubworks/landfillhours.aspx Vista Recycling provides recycling services for Graham and Greenlee Counties. Vista Recycling can provide 20 CY, 30 CY roll-offs also. http://www.vistarecycling.com/	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Vista Recycling will "buy" scrap metal. http://vistarecycling.com/ 114 West Main Street, Safford AZ 86526 The Vista Recycling Center in Safford will accept plastics, paper, cardboard, and metal (but will not buy it).
Apache-Sitgreaves	Springerville	165 South Mountain Avenue PO Box 760 Springerville, AZ 85938-0760	Springerville	Apache	AZ	85938	Blue Hills Environmental Association 928-333-1628 Alpine Transfer Station: Wednesday & Saturday from 1:00 p.m. to 5:00 p.m. http://bluehillsevenvironmental.com/offices/ Blue Hills can provide dumpsters & collection services for incidents in this area, but no recycle collection services.	Yes (need to transport to drop-off location)	Yes (need to transport to drop-off location)	Plastics #1-2 (need to transport to drop-off location)	Yes (need to transport to drop-off location)			SORTED recyclables can be dropped off at Round Valley TS (Eagar) , 15 miles from Springerville. They are open Tues through Saturday, 9:00 - 4:45. Call Blue Hills Environmental Assoc for more info, 928-333-1628.

Primary waste managers

Hours of Operation

Closest recycle drop-off

What recyclables are accepted

Contact Info

Equipment pricing, etc.

In-House versus Contract Incident Recycling Costs

- Assuming a fire camp with 1,000 personnel, the daily cost to provide on-site recycling management was estimated:
 - "In-House"** Resources: ~ \$2,947 - \$4,447
 - Contracted** Services: ~ \$2,600 - \$3,045
- This cost equates to **roughly \$2.50 per person, per day** on the fire camp.
- As a point of comparison to other fire camp operating costs, providing port-a-potties and handwash stations is 3X more expensive than incident recycling when there are 1,000 people at a fire camp.
- On the Whitewater fire, incident recycling was estimated to cost **0.05% of the total daily fire camp operating costs**.

Recycling by contract is close to and sometimes cheaper than the cost of using in-house resources.

Item	Daily Costs			
	200 personnel	200-499 personnel	500-999 personnel	1,000 personnel
Port-a-potties and hand wash stations	\$1,760	\$4,328	\$8,791	\$8,800
Contracted Incident Recycling	\$1,400	\$2,000	\$2,400	\$3,000

Economic Costs and Benefits from Incident Recycling

- If we do not divert recyclable and compostable material from our waste streams, our landfills will reach their maximum capacity prematurely.
 - The EPA estimates that a **new landfill costs between \$11.9M and \$27.5M!**
- Recycling creates **6 times as many jobs** per ton of solid waste managed when compared to landfilling.¹
 - Based on EPA data, there are 1.57 jobs, \$76B in wages generated from every 1,000 tons of recyclables collected and recycled.²
- NM currently recycles roughly 16% of its waste stream (many states are already achieving 50% to 75% waste diversion rates).
 - If New Mexico could achieve a 50% diversion rate, it is estimated that **9,000 direct and indirect new jobs** would be created³

1. <https://www.thebalance.com/recycling-and-new-job-creation-2878003>

2. <https://www.epa.gov/smm/recycling-economic-information-rei-report>

3. 2013 study completed by NM Recycling Coalition

Market Research on Incident Recycling Companies



Meadow Hawk Recycling
“Wildfire Incident Recycling Unit”

**Leadership
commitment
through policy
really matters**



Leadership and Policy Drive Change



Forest Service

Washington Office

1400 Independence Avenue, SW
Washington, D.C. 20250

File Code: 5100

Date: MAR 28 2018

Route To:

Subject: Sustainable Operations in Incident Management


To: Regional Fire Directors

In the Washington Office Fire and Aviation Management program, we recognize and value all of the accomplishments made towards implementing sustainability efforts at incidents and fire caches across the nation. We have the opportunity to learn from each other and do even more to help reduce

Incident Leadership and Sustainability Presence

- Within the Delegation of Authority, include expectations for sustainable operations (refer to Appendix B for sample language). The hosting unit should provide local expertise on recycling capabilities and other opportunities for sustainable operations. Consult local Green Team Chair, Dispatch Centers, or applicable staff member.
- Divert waste generated at camps from the landfill by recycling or other appropriate processes (e.g., reduce, re-use). A 2017 trial (Whitewater Fire) demonstrated that diversion rates of 50% are achievable.

Our National Fire Director published a memo this year related to increasing waste diversion at fire camps.



Results



Greening Fire...It really is possible.



- In 2017, an incident recycling company was hired to provide on-site, comprehensive recycling services on the Willamette National Forest fire.
- They worked 41 consecutive days on this fire and diverted nearly 50% of the waste from the landfill (and would have diverted 71% with compostables).
- Over \$8,000 was credited back to the host Forest utilizing Oregon's \$0.10 bottle redemption program.

Pacific Northwest Region Incident Recycling – 2018

- On the Taylor Creek fire in southern Oregon, Triple Flare was recycling roughly **30,000 bottles/cans** and **40 cubic yards of cardboard per week**.
- On the nearby Klondike fire, Triple Flare achieved almost **50% diversion rate**, was averaging over **4,000 bottles a day** and truckloads of cardboard, and is now managing recycling on the Delta fire in California



Daily Courier

WEEKEND
AUGUST 12, 2018

Klondike adds nearly 9,000 acres in 24 hours

Flames from the Klondike Fire light up the night in the Snailback Creek and Kerby Flat area north of the Illinois River.

By Jeff Duwel of the Daily Courier

The Klondike Fire west of Selma put on a good show Friday afternoon and into the night, as strong winds fueled flames that added nearly 9,000 acres to the fire area.

Plumes of smoke were visible from Grants Pass, where the air improved for the first time in days. By Saturday morning, air quality was moderate (yellow), after several days of unhealthy (red).

West of Selma, flames blow up hillsides, torching trees were visible after dark, and as late as midnight people were still pulling over on Redwood Highway to watch.

But fire officials are confident that wide firelines west of Selma will keep the fire from getting any closer to the highway.

Chief Dennis Hoke of Illinois Valley Fire District said Saturday that people in Selma were so concerned they met with the fire team late Friday night.

"They are very nervous right now, rightfully so, but I think the team is doing a good job," Hoke said.

Containers will bring in about \$3,000 in deposit money, to be put back.

Phil Torchio (left) and Jason Schurmer of Triple Flare Recycling stand in front of a mountain of cans and plastic bottles gathered from the Taylor Creek firefighting effort.

At fire camp, recycling gurus wrangle 30,000 containers

By Jeff Duwel of the Daily Courier

TAYLOR CREEK FIRE	
ACRES	45,055
PERSONNEL	1,200
CONTAINMENT	45%
KLONDIKE FIRE	
ACRES	47,030
PERSONNEL	600
CONTAINMENT	16%

(Source: Incident management teams)

Southwestern Region Incident Recycling – 2018

Rattlesnake Fire (26 Apr - 1 May)

Cardboard: 3,200 lbs.

Plastics: 600 lbs.

Aluminum/tin: 25 lbs.

Non-perishable food collected/donated: 125 lbs.

Batteries recycled: 250 lbs

Metal: 10 lbs

Dienier Canyon Fire

Cardboard recycled: 2,500 lbs

Plastic/paper: 500 lbs

Aluminum: 5 lbs

Metal: N/A

Non perishable food donated: 75 lbs

Batteries recycled/donated: 250 lbs



**3 Fires: 12,605 pounds diverted
from the landfill**

Tinder Fire (2-7 May)

Cardboard: 4,000 lbs.

Plastics: 500 lbs.

Aluminum/tin: 10 lbs.

Non-perishable food collected/donated: 250 lbs.

Batteries recycled: 300 lbs

Metal: 5 lbs



Can we take the “think” out of recycle,
so that the “do” is automatic?





Let's Do This!

Words from the field, 11 May 18

- “I actually brought up in our <After Action Report> from the XX Fire that our team needs to consider **being leaders instead of responders** to this **recycling** initiative. I emphasized that in the future recycling will not be something we think about doing half way through the incident, but something that will just be on the pre-order and what we do. I encouraged that we be leaders in this. The **change can be slow** Kelly, as you know, but I think if we **keep pushing** and keep showing how easy it is with these contractors, eventually it WILL take hold. I’ll admit that as I started in facilities it was something “I had to do when they made me”, but I understand and now want to embrace this concept as it is the future of fire, it’s not as tough as people think, it actually saves in some ways and it’s **really just “the right thing to do”.**”

Please let me know
your ideas to help me
improve this program.

Thank you!

Kelly Jaramillo
USDA FS Southwestern Region Sustainable
Operations Specialist
505-842-3827
kjaramillo@fs.fed.us

