

CLEANING UP: STRATEGIES IN DEBRIS REMOVAL TO SPEED RECOVERY AND MINIMIZE EXPENSE

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Debris Management



Faulkner County, AR

Tornado of April 27, 2014 Faulkner County, Arkansas





Tornado Overview...

EF4, 24.16 miles across Faulkner County,
Including towns of Mayflower & Vilonia

17 fatalities, 13 in Faulkner County

> 1000 loads of debris in this subdivision

Similar track to 2011 tornado

In sum: Direct hit on two towns: Scale*

What is debris management?

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It's the removal and disposal of debris, (Obviously) but...

What is successful debris management?

What is successful debris management?

Not illegal; within the law; no trespass/exaction (on easement/debris not non-debris)

Best use of taxpayer money (frugality, value, reimbursement)

Minimize financial risk

Quick/efficient

Strong communications – for complete, continuous public awareness (& expectations)

Minimize failures

Minimize damage to property & infrastructure

Benefiting injured community (not out of state)(\$ stays; they're vested/care personally)

Bottom Line:

1. Know the Law. Authority, Burners, easement, sort
2. Citizens > Govt. & Contractors. Fast Messaging.
3. View Long Term, Not Short Term. Don't start wrong in the name of starting early. Logistics/Design/Backend.
4. Fiscal Responsibility & Control. Mutual Aid. EPA HazMat layout. Don't make the disaster worse. Finding a way is not enough, you must figure out a good way.

* * * *

1. Contractor Quality Control (Monitor/restrict)
2. Debris Site Selection: Wx



A yellow excavator is positioned on the left side of the image, working on a demolition site. The ground is covered in a large pile of brownish debris, including wood and metal. In the foreground, there is a deep, narrow trench or pit. The background shows a line of green trees under a clear blue sky. The overall scene is one of active demolition work.

Know the Law

- Authority, jurisdiction, easements & roles – Omnipresent
- Legal requirements of disposal – de facto & reimbursement
- Reimbursement requirements, timelines, etc.
- Acceptable disposal techniques
- Type & number of staging & disposal sites permissible

Citizen Capacity > Gov't & Contractor Capacity

The huge numbers of citizens can do more work, more quickly, on a broad scale than the government and its contractors.

Here's an example of properly sorted debris placed at the easement,



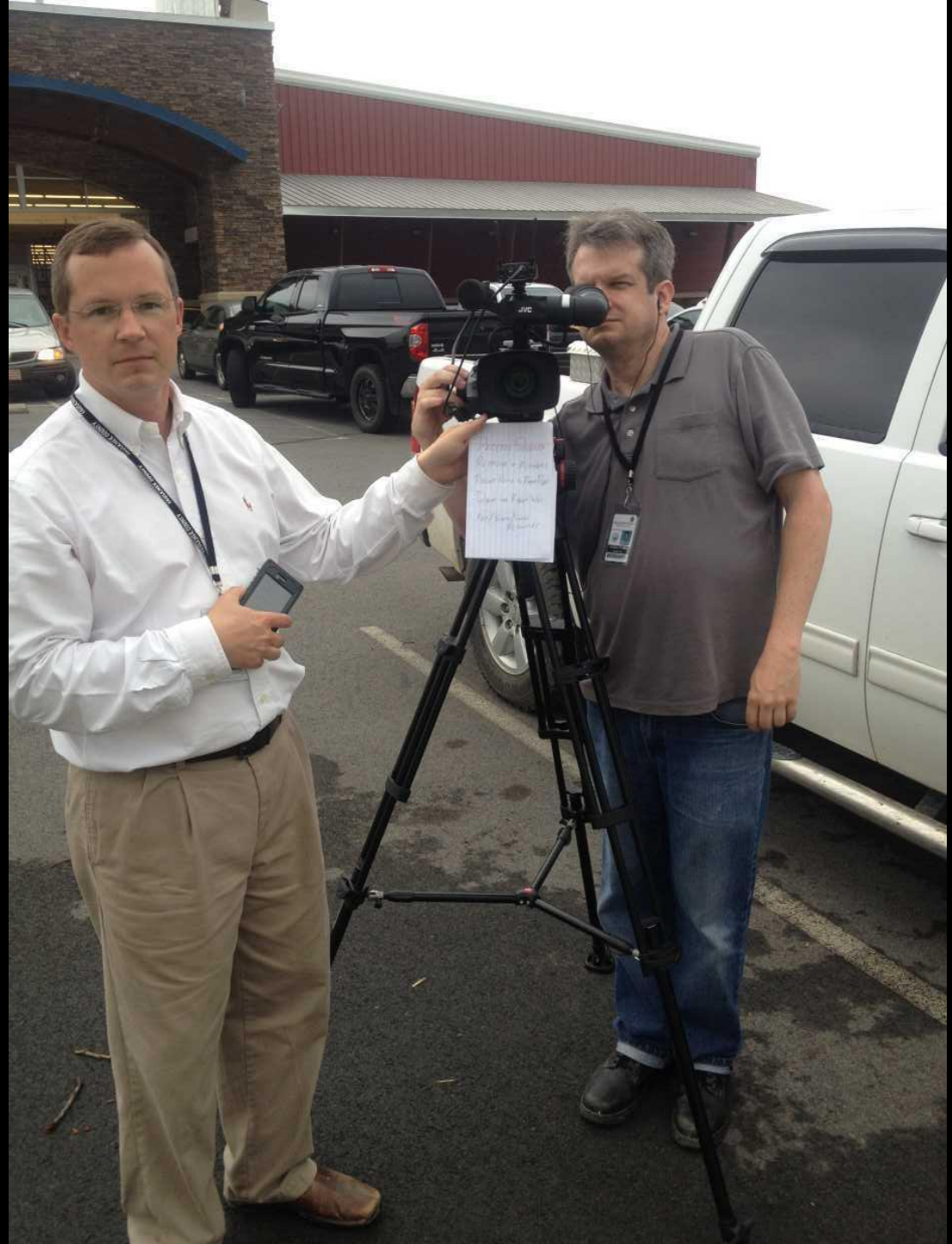
Here's an example of properly sorted debris placed at
the easement,
*before the government (or its contractors) ever
touched it.*





You can harness
citizen capabilities
only if you act
quickly with clear
messaging.

You can harness citizen capabilities only if you act quickly with clear messaging.





Think Long Term,
...Not Short Term



For debris management there are...

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1,000 poor solutions

For debris management there are...

1,000 poor solutions

and

1 best, most reasonable solution

How many chances do you have to get it right?

One.

If you begin debris handling before you design and implement the infrastructure and process, you will have to correct what you have already done.

Debris Management Goals:

1. Handle it as few times as possible
2. Haul as little volume as few miles as possible
3. Landfill as little as possible
 - avoid shortening landfill life as much as possible
 - avoid landfill expense where possible
4. Use as few man-hours, fuel, & equipment time as possible
5. Complete it as quickly as possible
6. Impact the environment as little as possible
7. Impacting property & infrastructure as little as possible
 - traffic interference
 - utility outages

System Design (in-house):

Temporary Debris Storage & Disposal Site Operations

1. Locate temporary debris storage & disposal sites as close to Densest areas of debris, nearest the direction of the landfill
2. Lay out the sites for best workflow (in/out, handling & disposal)

Debris Loading & Hauling (to Storage & Disposal Site) Units

1. Loading machine, tending equipment, dump trucks, spotters & traffic control
2. Conduct these operations in waves
3. Scale up by adding simple load & haul resources by mutual aid or contractors
4. # of trucks fluctuates by area worked according to distance
5. Scalable

Example One:



Example Two:



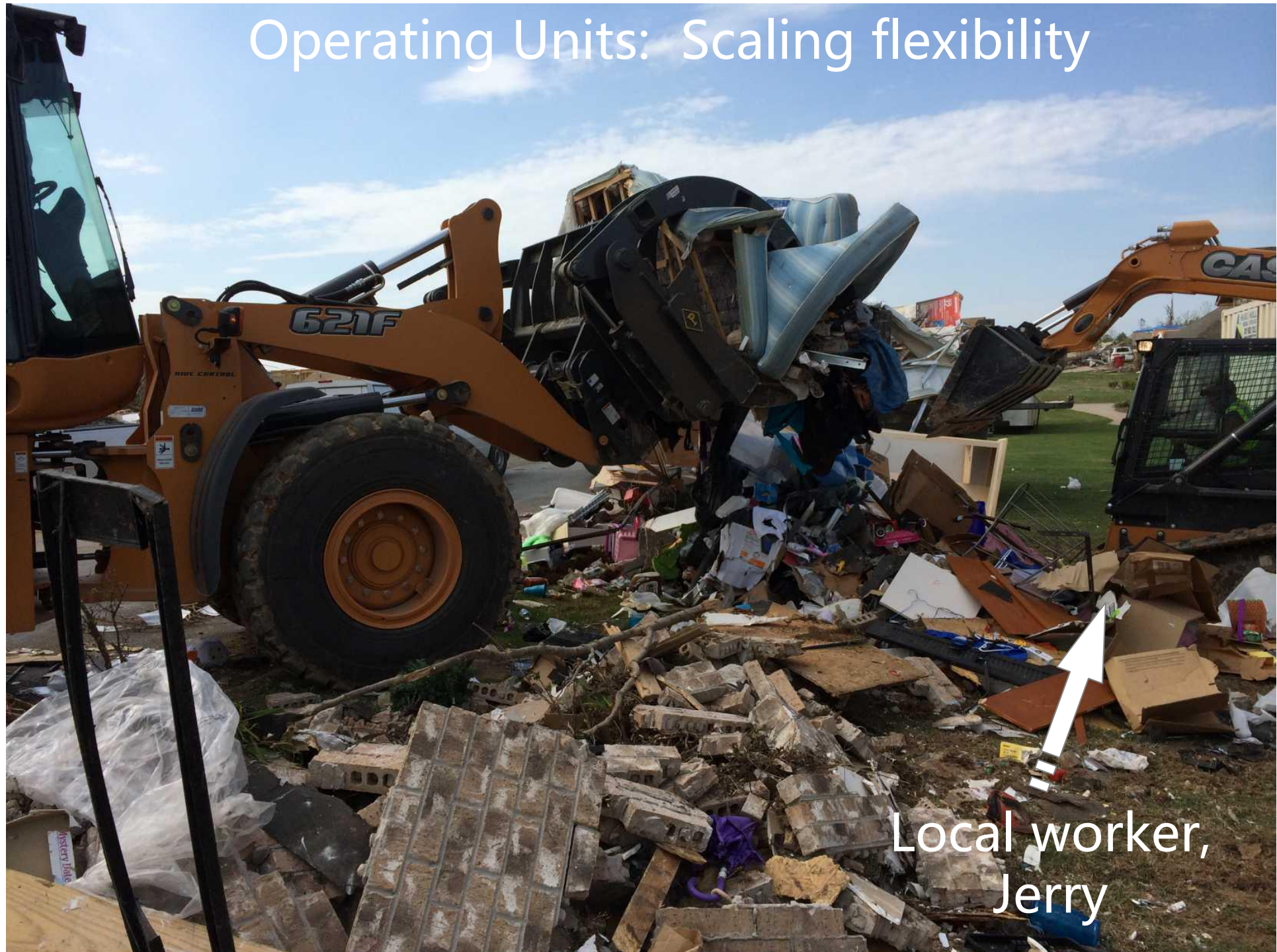




Thumb



Operating Units: Scaling flexibility



Local worker,
Jerry

Local worker,
Jim



What can you do right now?





What can you do right now?

Identify potential debris storage and disposal sites around your jurisdiction.

Know landowners and who would allow you to use their property. Relationships.

Know the EPA OSC's,

& know your DEQ director personally, as well as field agents. Relationships.

Know the law. Trench burners for C&D? Landfill locations and classes.

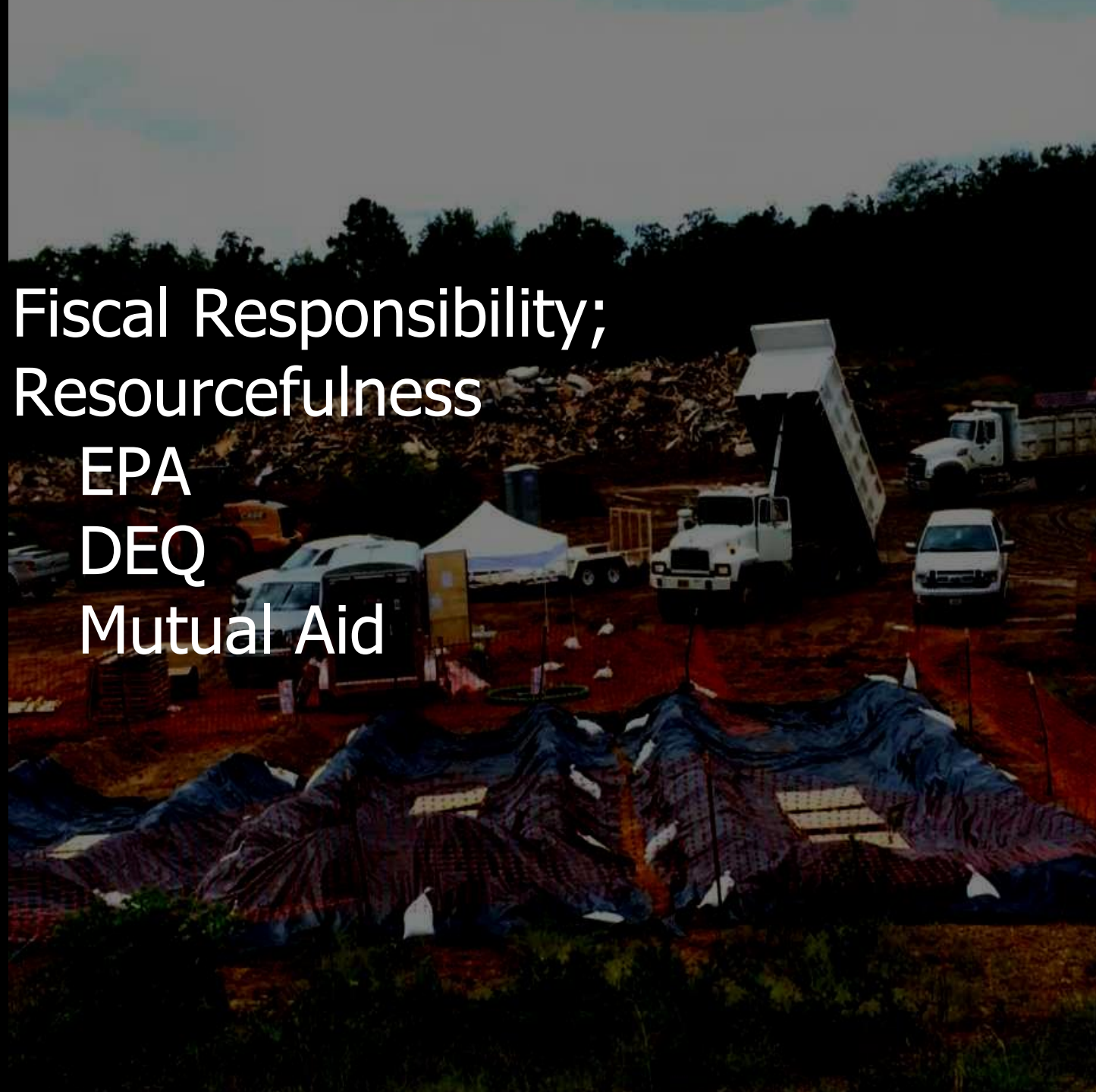
Know who has debris handling equipment. Purchase, share.

Fiscal Responsibility; Resourcefulness

EPA

DEQ

Mutual Aid













HSE – Safety Gear, Spotters, Traffic



24/7 monitoring of all contractors



Consider weather implications on debris management site selection









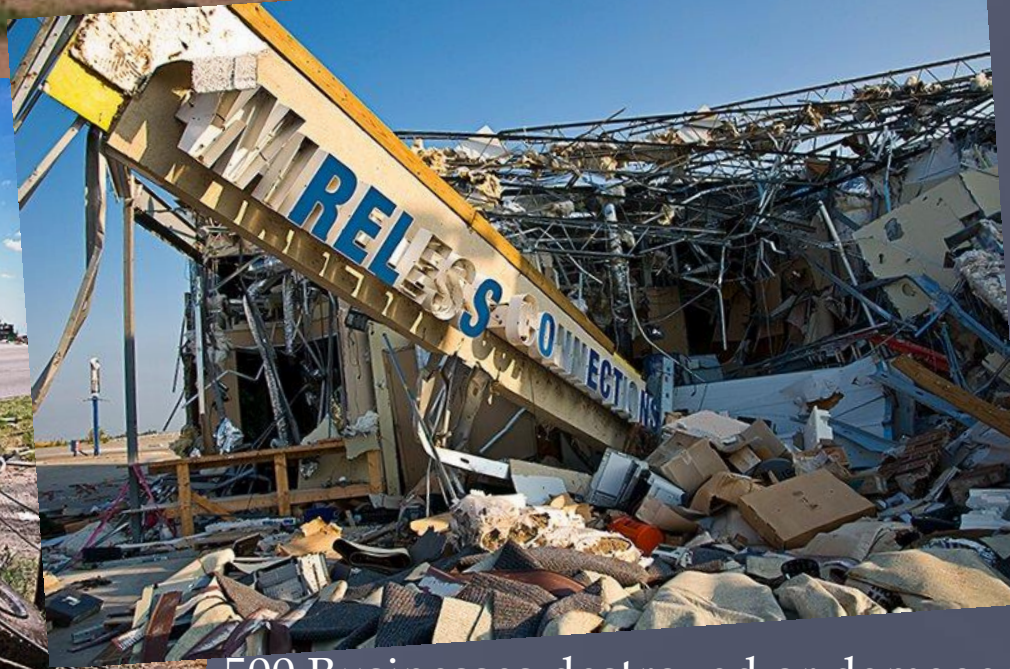


20 MINUTES IN MAY...
THE JOPLIN TORNADO
MAY 22, 2011





7,500 Residential dwellings destroyed or damaged
9,200 People displaced



500 Businesses destroyed or damaged
5,000 Employees affected



9,000 People Injured
162 Deaths



CITY OF JOPLIN - UTILITIES



Electricity, Gas and Water services are provided by a private 3rd party utility company.

The city has recently undergone a resurgence of business in the downtown area but the main business and retail area remains about 3 miles from the downtown area.

INFRASTRUCTURE – UTILITIES



Wide spread electrical outages

Damaged/missing distribution points

Numerous natural gas leaks

Water system was OOS

- Missing hydrants
- Damaged Houses and commercial buildings
- Damaged sprinkler systems

Land line phone system

Cell phone voice messaging was out/spotty

- Texting worked



INFRASTRUCTURE - STREETS



95% of Primary & Secondary Streets in the Destruction Area was impassible.

Most street signs, street lights, & traffic signals /signs were missing.

More than 110 Public Works departments responded with crews and equipment.

Within 36 hours after the storm 100% of primary and 70% of the secondary streets were accessible.



TORNADO DAMAGE



VEHICLE DAMAGE



FEMA - RESPONSE

On scene within first 24 hours.

Provided support of emergency operations already in place.

Providing assistance with replacement of Infrastructure.

Corps of Engineers provided and oversaw debris removal including EDR program

Provided more than \$20 million assistance to residence with housing and transportation issues.



Types of Debris to Remove and Placement of Debris at the Curb

Debris removal guidelines

In efforts to expedite the debris removal process, please follow these rules

Placing debris **near or on trees, poles or other structures** makes removal difficult. This includes fire hydrants and meters.

Debris separation

Please separate debris into the **six categories**, shown below.

Electronics

Television, computer, stereo, phone, DVD player

Large Appliances

Refrigerator, washer/dryer, air conditioner, stove, water heater, dishwasher

Hazardous waste

Oil, battery, pesticide, paint, cleaning supplies, compressed gas

Vegetative debris

Tree branches, leaves, logs, plants

Construction debris

Building materials, drywall, lumber, carpet, furniture, plumbing

Household garbage

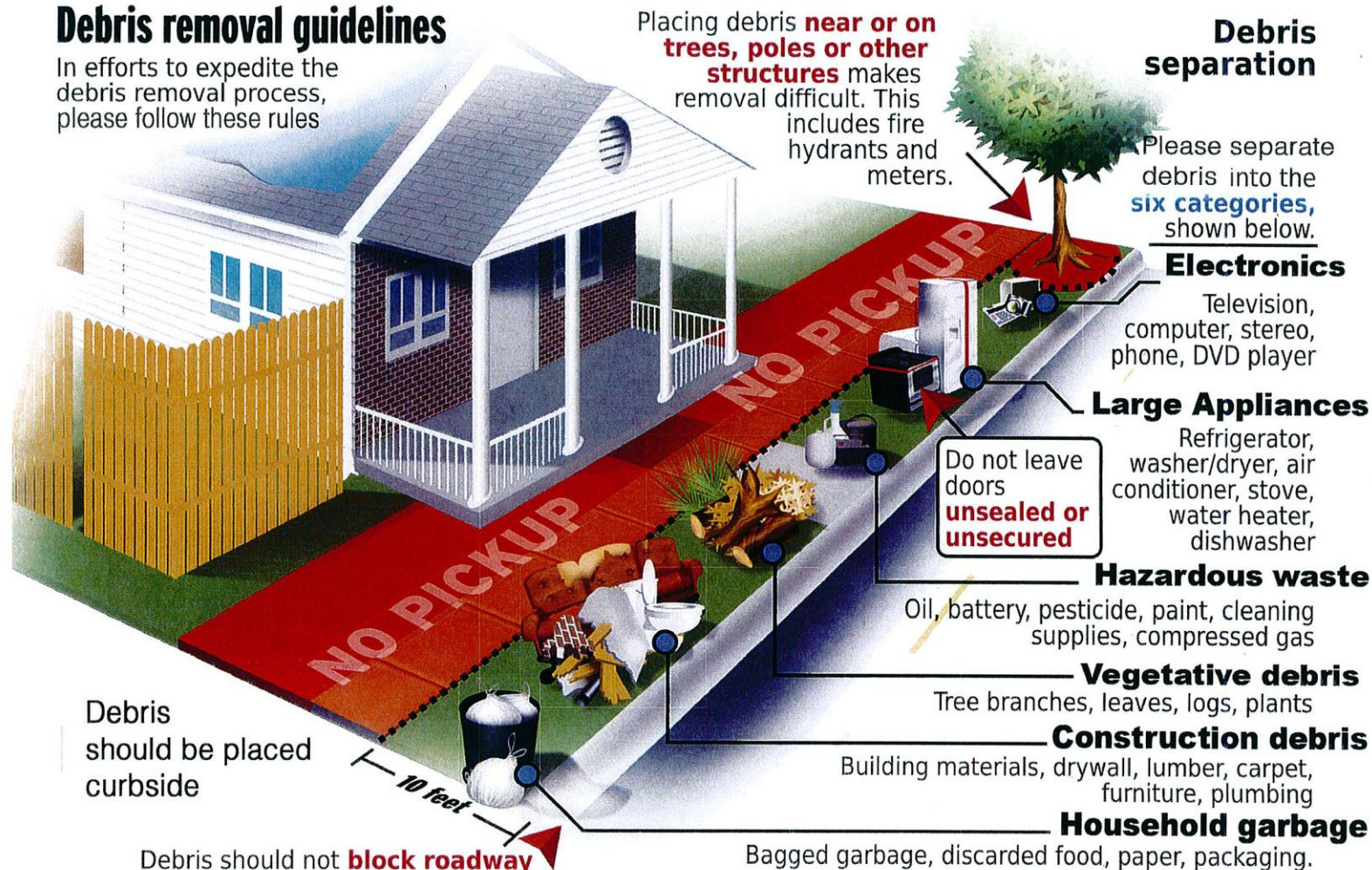
Bagged garbage, discarded food, paper, packaging.

Debris should be placed curbside

Debris should not **block roadway**

10 feet

Do not leave doors **unsealed or unsecured**





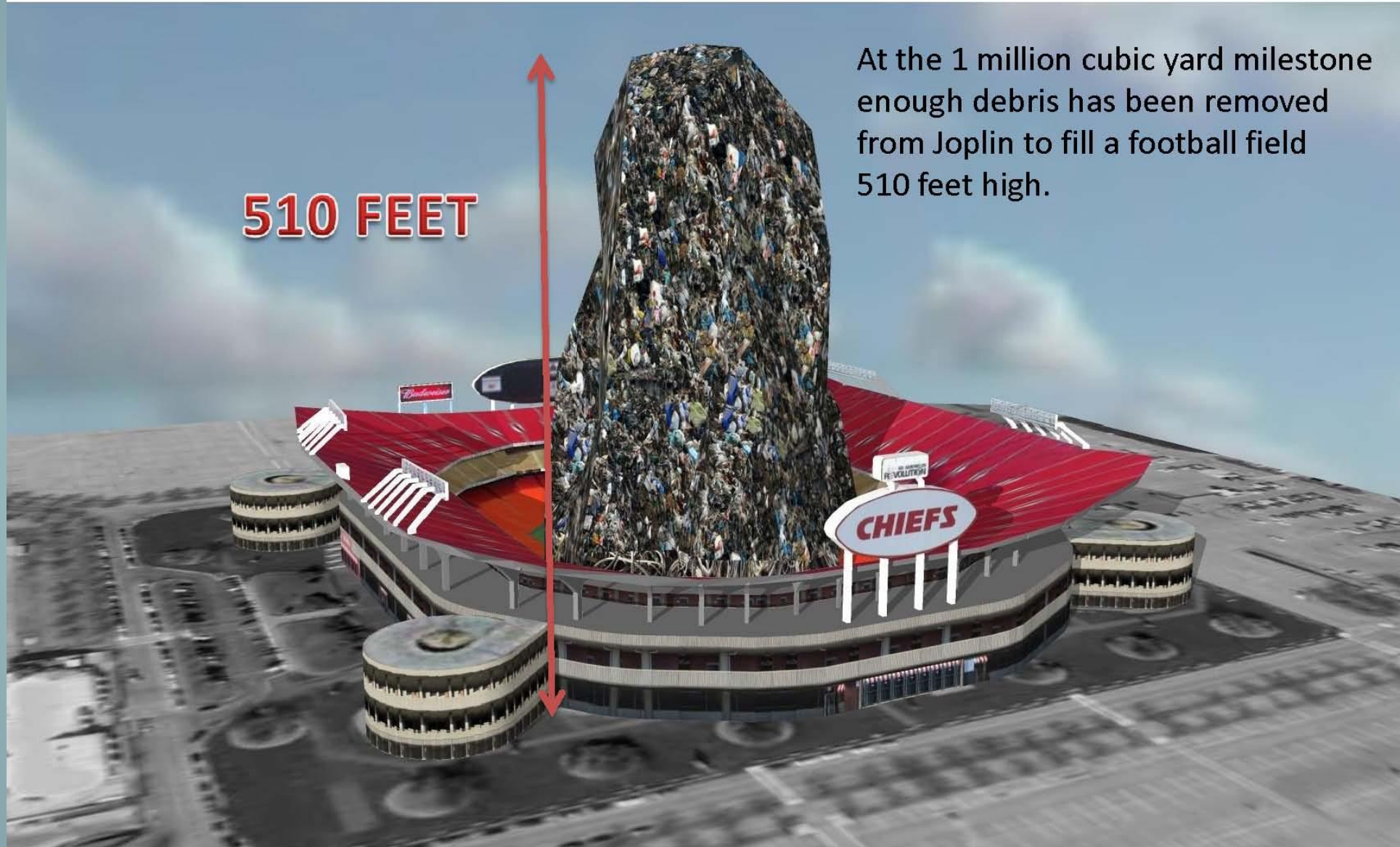
Tornado generated an estimated 3 million Cubic Yards of Debris.

FEMA/USACE contractors removed 1.46 million Cubic Yards by Aug 7 under the 90/10 EDR Initiative.

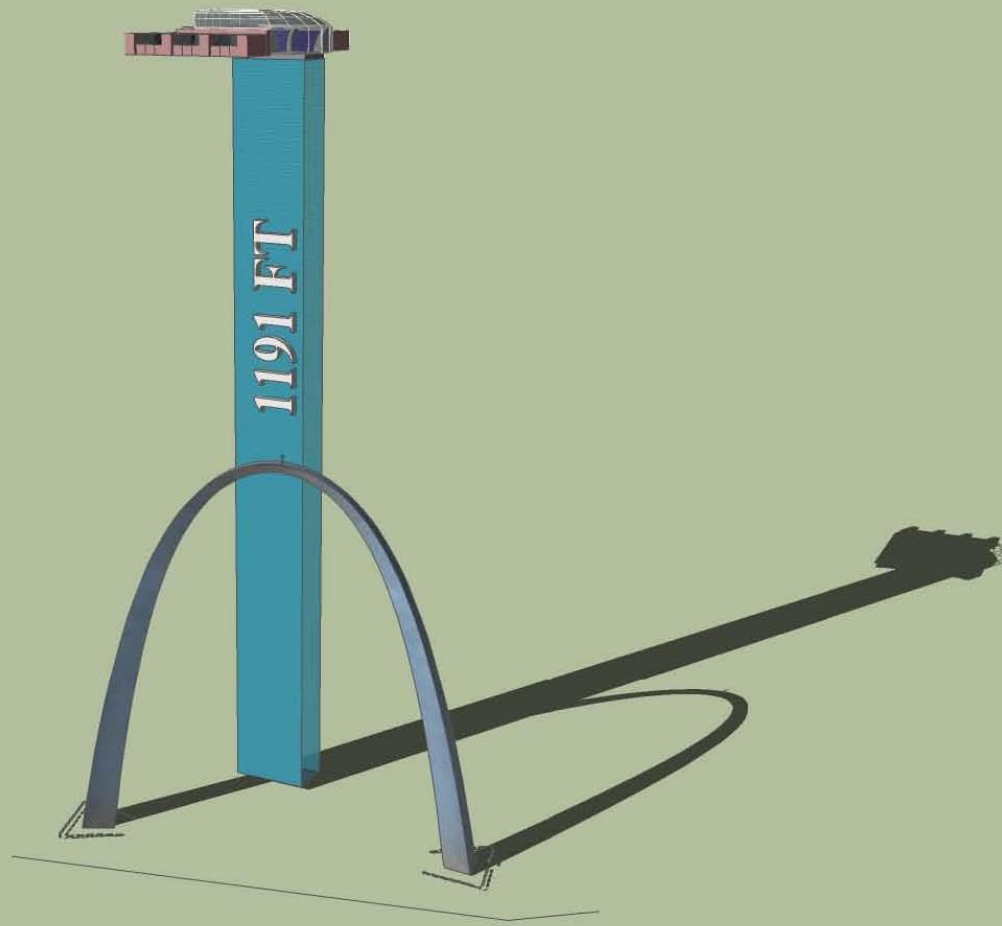


510 FEET

At the 1 million cubic yard milestone
enough debris has been removed
from Joplin to fill a football field
510 feet high.



Comparison to the Gateway Arch





Tornado Debris



Ten Weeks Later



Angela Covington
Photography



Tornado Debris

Ten Weeks Later



Angela Covington
Photography

Angela Covington
Photography



Tornado Debris

Ten Weeks Later



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VOLUNTEERS MIRACLE OF THE HUMAN SPIRIT



142,754 registered volunteers
877,301 hours of service
(100 years of service @
24 hrs/day 7 days/week)
Millions of dollars in donations

PUBLIC ASSISTANCE PROJECTS FEMA/FHWA



WHY WE ARE SUCCEEDING

Teamwork

- Provided clear goals, objectives and assignments
- Uniform focus and direction

Pre-established relationships: local, regional & state networks.

Success of local, regional and state mutual aid systems

Can do type of attitude, Failure/lack of action was not acceptable

Accountability





J
O
P
L
I
N

Rebuilding
one day at
a time