FIRE & FLOOD EMERGENCY SERVICES LTD.

"SAVING LIVES, PROPERTY & THE ENVIRONMENT"

Protecting Alberta Communities

Presented to Alberta Municipalities | June 1, 2026

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What We Will Cover Today

01 The Problem

02 How Fire & Flood Came to Be

03 Wildfire Suppression

04 Flood Mitigation

05 Rescue (REMS)

06 Proactive Planning & Rapid Deployment

07 Drayton Valley Case Study

08 Results & Partnership

Emergency Firefighting Water Supply

What This Is About

- Mobile water delivery for wildfire response
- Moving big volumes of water, fast, where it's needed
- A look at where hydrants and trucks can be supplemented
- How mobile hose systems close the gap

Source Material

Based on the California Emergency Firefighting Water Supply White Paper.

The paper lays out where the current system breaks down in big fires - and what it takes to actually get water on the flames at scale.

The Scale of the Wildfire Problem in California

California & the WUI Crisis

- 201 deaths in California in the past 10 years, 48,000 California buildings lost to WUI fires
- 29 fatalities in the Palisades & Eaton (Jan 2025): 12,000+ structures lost in two days as hydrants ran dry
- Urban wildfires need tens of thousands of GPM; most departments reach only a half-mile
- Without it, crews abandon structures and watch fire spread

Sources:
Bullets 1–3: Marshall white paper (V6, Apr 2026), Table 1 p. 53; pp. 51, 52, 55, 68 (Cal Fire data).
Bullet 4: Mydans, "Fighting Fire of the Future," NYT, Oct. 29, 1993.

Meeting the 1906 Moment

"The well-researched paper… is intended for California to meet its 1906 Moment with sound recommendations… starting with a more robust emergency firefighting water supply."

Brian Marshall
Fire & Rescue Chief, California
Governor's Office of Emergency Services

Source: Foreword, "California Emergency Firefighting Water Supply"

The Scale of the Wildfire Problem in Canada

Alberta & Canada Wildfire Crisis

- Jasper 2024: 1 firefighter killed, 358 of 1,113 structures destroyed; 25,000 evacuated; $1.3B insured
- Fort McMurray 2016: 2 deaths during evacuation, ($9.9B, 3,200+ structures) and Slave Lake 2011 (400+ buildings, 15,000 evacuated, no direct fatalities reported)
- Alberta 2023: 1,088 fires burned 2.2M hectares in a single season
- Canada 2023: 8 firefighters killed, 15M hectares (7× average); 232,000 evacuated; 120 days at peak preparedness

Slave Lake wildfire devastation, 2011. Photo: Colette Derworiz / Global News.

Sources:
CatIQ (July 2025); IBC; Government of Alberta; Alberta Wildfire; UNDRR; Jain et al. 2024 (npj Climate); Public Safety Canada.

The Core Problem

Water Supply

- Wildfires and city-edge fires need lots of water, non-stop
- Hydrants often fail in the worst fires
  - Power goes out, pumps stop
  - Pipes and infrastructure get damaged
  - During major incidents, most water supply infrastructure can’t handle large strains of draw on the system
  - Underground infrastructure becomes compromised due to impacted areas

The Result

- Fires spread out of control
- Crews are forced to back off homes they could otherwise save

The Key Point

Supply of water to the fireline is the limiting factor.

Traditional Water Sources

The Usual Tools

- Fire hydrants - the main system in towns and cities
- Water tenders - trucks that haul water in
- Helicopters and air tankers - drops from above

Where They Fall Short

- Hydrant infrastructure compromised
- Trucks have limited capacity
- Air drops are short bursts, not a steady flow

None of these can keep up with a big fire on its own.

Other Water Supply Options

Expanded Toolkit

- Pumps that draw from pools, lakes, and ponds
- Cisterns and underground storage tanks
- Portable above-ground reservoirs
- Dedicated high-pressure systems

Limitations

These options help - but each one is local, or limited in how much water it can move.

None of them solve the real problem for large, catastrophic wildfires along the WUI: moving big volumes of water across long distances, for hours on end.

The Critical Gap

What's Missing

An adequate water supply that has enough volume and pressure to support all responding assets to wildfire events and communities.

Big fires need:

- A constant flow, not just bursts
- Water moved kilometers
- Adequate volumes and supporting pressures
- Something that works across rough terrain and varying elevations

The Answer

This is exactly where mobile hose systems come in.

They turn any lake, river, or pond into a working water supply for the fire line over tens of kilometers.

Mobile Hose Systems

Portable Water Supply Above Ground

- Large diameter hoses (6”–12”)
- Laid out fast across kilometers of ground
- Pumped from whatever water is nearby:
  - Lakes, rivers, oceans
  - Reservoirs or staging tanks
- Systems can be sized to the needs

The Big Advantage

Any water source can become a high-volume supply for fire crews - even where there are no hydrants at all.

Think of it as a temporary fire main you can roll out wherever it's needed.

How It Works on the Ground

The Steps

1. Find a water source nearby
2. Drop in high-capacity pumps
3. Roll out miles of large-diameter hose
4. Create a mobile temporary water source
5. Feed multiple emergency response assets at the same time

What Crews Get

- Steady, high-pressure water
- Flow that lasts for hours
- The ability to hold a line on a big fire

That changes what's possible in a fight.

Who We Are

Our Origin

After witnessing the Fort McMurray wildfires and the Calgary/ High River floods, Fire & Flood Founder Terry Raymond built a company designed to move, disperse, and divert water at scale.

Fort McMurray wildfire devastation, 2016. Photo: Global News.

Flooding devastation in Calgary, 2023. Photo: Calgary Herald.

Wildfire Suppression

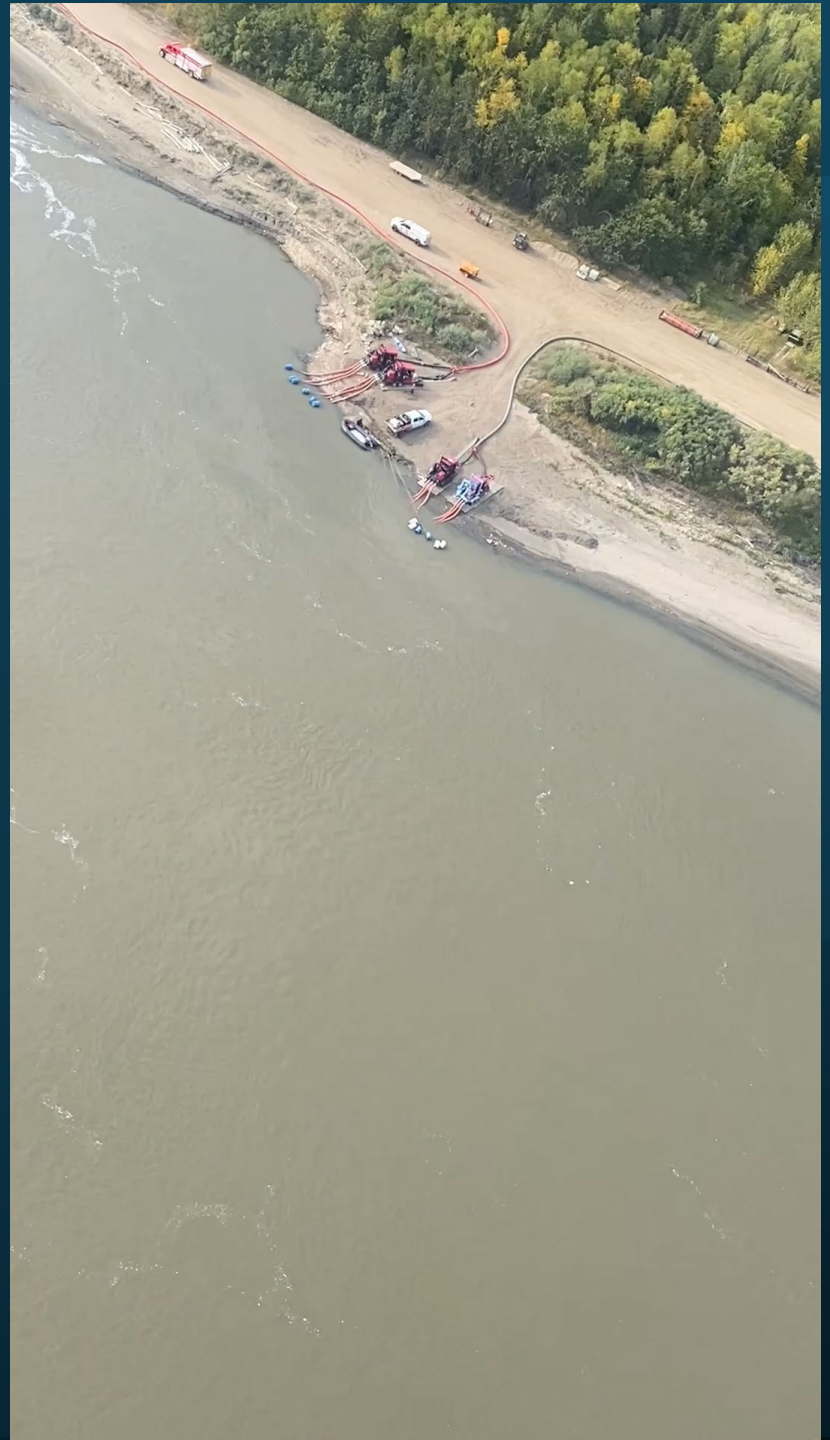
Our Patented High-Volume System

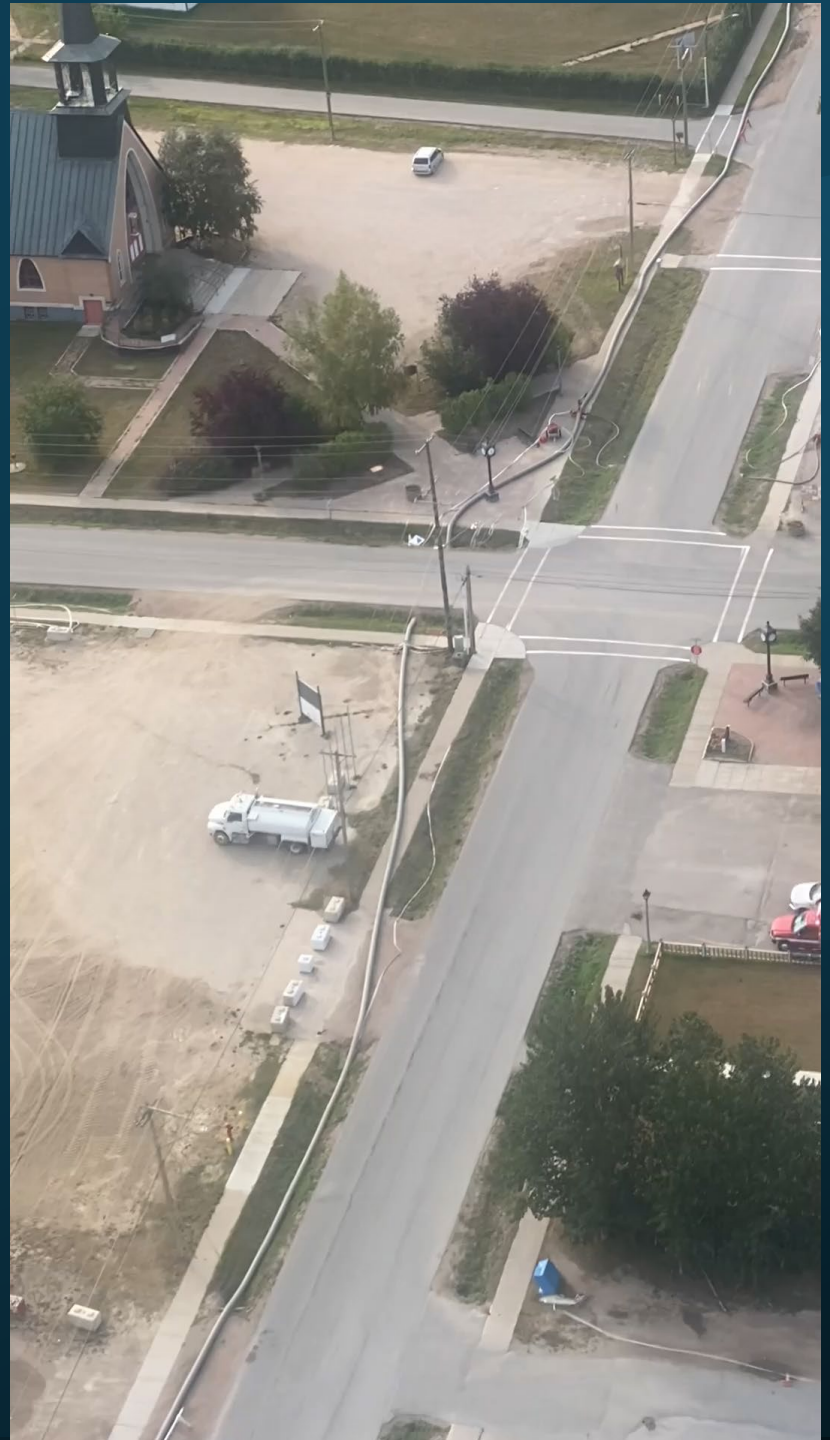
- Four hose sizes: 4", 6", 10", and 12"
  - sized to the water flow each job needs
- Multi-kilometer capacity lines
- Sustained flows up to 8500 gallons per minute
- Continuous defensive coverage exceeding one kilometer
- 120-180 meters of perimeter width

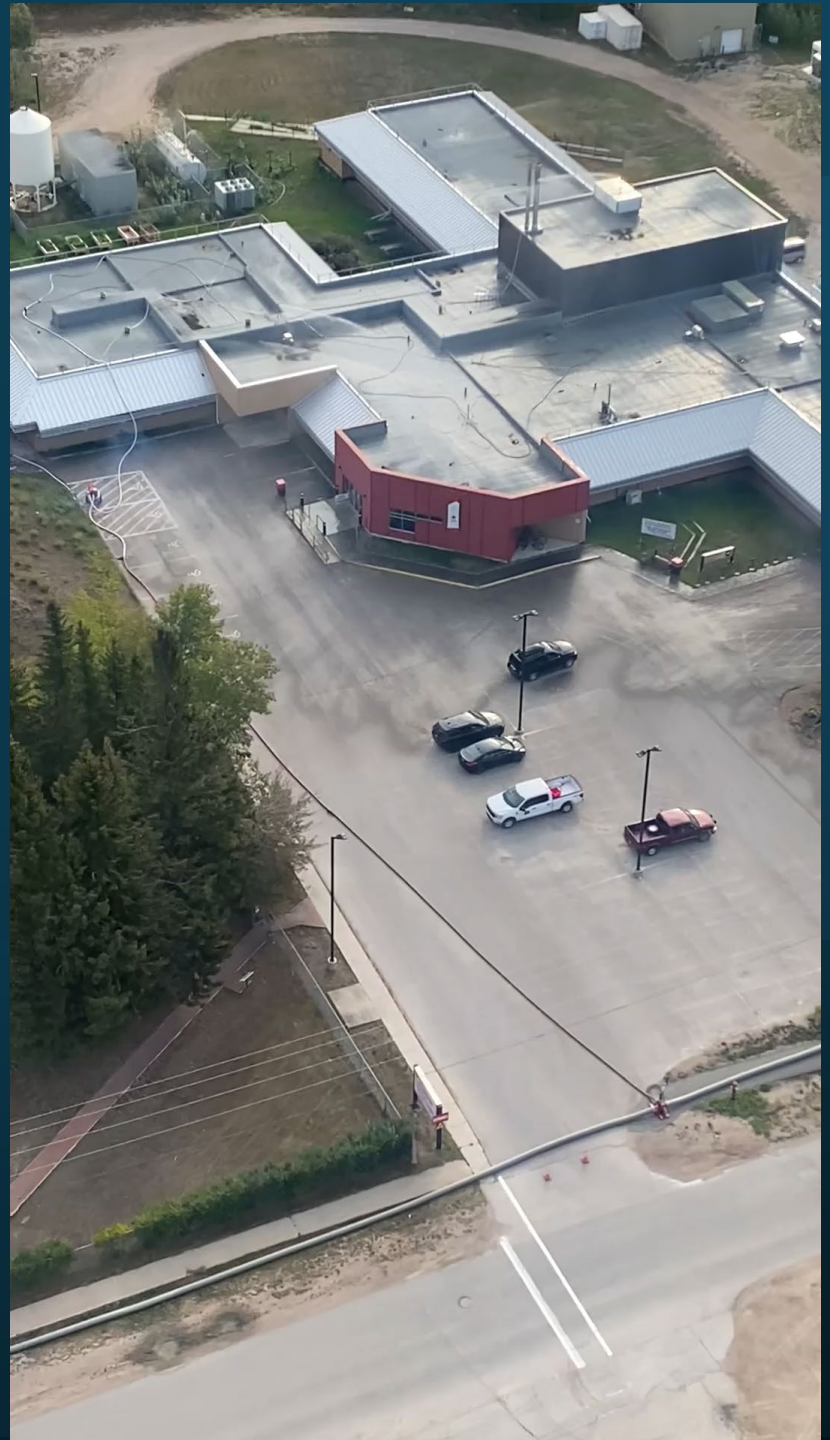
Wildfire Suppression

What This Lets Crews Do

- Protect homes and towns built next to forests (the wildland-urban interface or WUI)
- Defend power lines, pipelines, and utility corridors
- Protect drinking-water sources, highways, and rail lines
- Refill water tankers and helicopter buckets on the ground - and push the fire back as crews advance
- Create a safe, wetted corridor around the community







Wildfire: Operational Efficiencies

How Much Water We Move

- 1 km of high-volume delivery ≈ 100 Large Air Tanker drops
- 1 minute per km of run time ≈ 1 hour of heavy lift helicopter suppression
- Defensive coverage widths comparable to 30-45 D8 bulldozer blades
- A 12-inch supply line services 433 SPU Rainbird sprinklers at 15 GPM
- Frees aviation, engines, and tenders for other priorities

Wildfire: Operational Efficiencies

Freeing Up Agency Resources

- One 80,000 L Mobile Support Tank repurposes 12 min of Bell 212HP flight time (~$1,080/hr)
- One 80,000 L tank equals 8 × 9,500 L relay tanks, running an SPU layout at 600 L/min for 133 minutes
- Continuous hose supply lets 6 × 3,000 gallon water tenders be reassigned to other priorities
- Preserves aviation, engine, and tender resources for priority assignments

The Scale of the Flooding Problem in Canada

Flooding devastation in High River, 2013. Photo: Huffington Post.

Alberta & Canada Flood Crisis

- Alberta 2013: 5 deaths, 100,000+ evacuated (80,000 in Calgary, all 13,000 in High River); $5B+ damages, $1.7B insured
- Toronto July 2024: 100mm of rain in 3 hours; $940M in insured losses
- Quebec Aug 2024 (Hurricane Debby remnants): $2.8B insured across 55 communities; province's costliest weather event ever
- 1.5M Canadian households (~10%) highly exposed; ~$800M in insured losses every year, with BC's 2021 atmospheric river severing every major highway out of Vancouver

Flood Mitigation

What We Deploy

- Modular flood barrier systems
- Sustained barrier pressurization pumping
- Controlled diversion of floodwaters
- Active dewatering
- Real-time monitoring sensors

Flood Mitigation

What We Protect

- Transportation corridors
- Municipal assets
- Communities, infrastructure, and heritage sites
- Private assets

How We Operate

- Integrated within ICS under agency direction

Flood Mitigation

Rapid H_20 Flood Barriers

Flood Barriers

Water Gate Flood Barriers

Flood Mitigation: Operational Efficiencies

Scale of Deployment

- Modular barriers plus sustained pumping replace ~1,500–15,000 sandbags per deployment
- Eliminates hundreds of labor hours typically required for sandbag filling and placement
- Reduced environmental impact

Deployment Track Record

- Flood barriers installed:
  - ~3 km rapid deployment
  - ~24 km pre-planned deployment
- Over 72 flood operational days with 150+ response personnel

Rescue (REMS)

Keeping Responders Safe

- Certified rescue-and-safety teams on standby for responders
- Medical and technical rescue support on-site

Proactive Disaster Planning & Rapid Deployment

Planning Ahead

- Custom-built, service-backed plans for each town or region we work with
- Detailed site maps so crews know exactly where to go
- Built around what each agency and community needs to protect
- Integrates with the agency's existing command structure

Drayton Valley, May 2023

Drayton Valley, May 2023

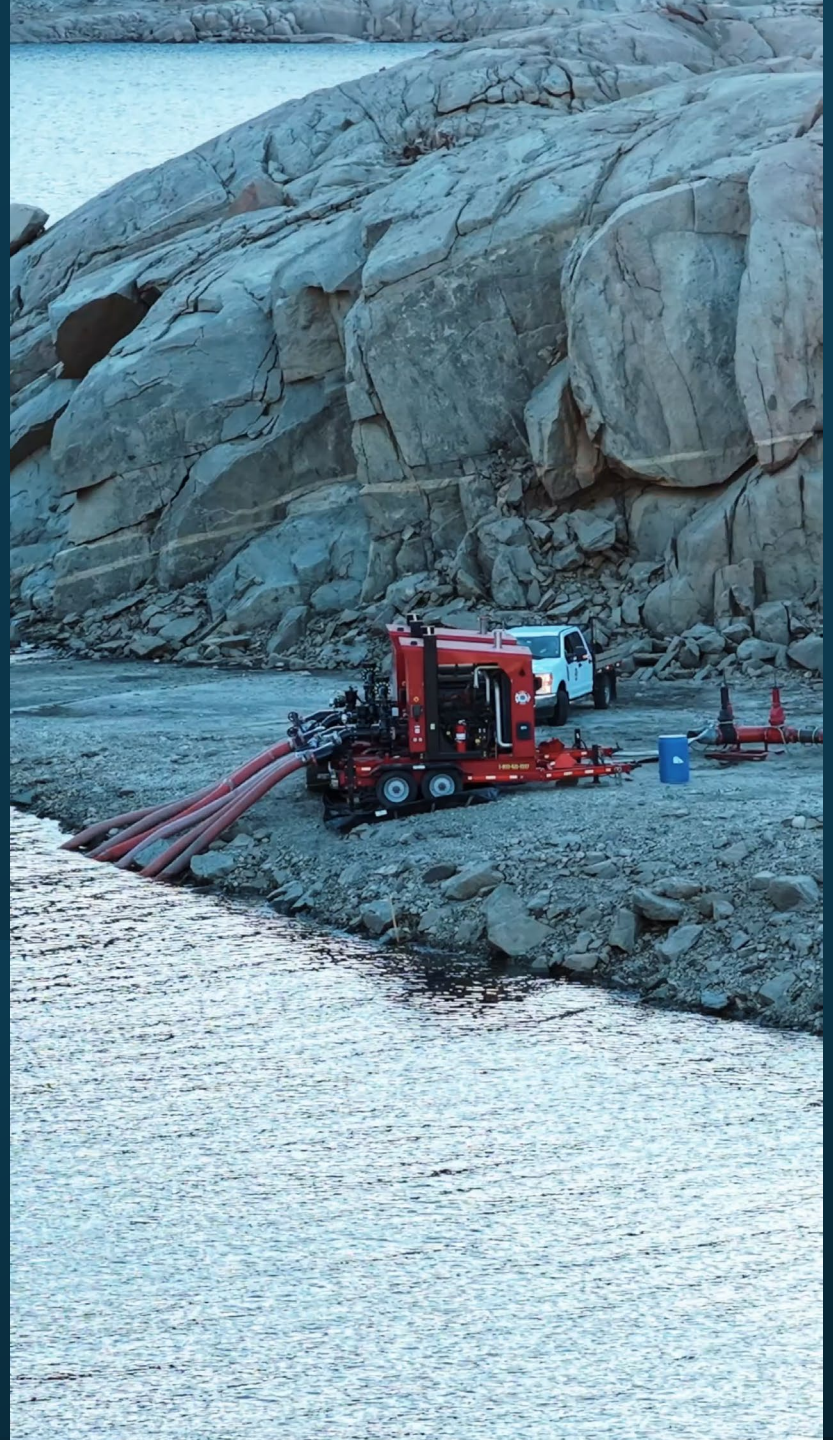
Conditions on the Ground

- Extreme fire weather and a multi-year drought
- Aggressive wildfire behaviour with limited Alberta resources nearby
- Steep terrain rising from the river up to the town

Our Role

- Dispatched 02:00.
- Advance team on scene 04:00.
- Team Lead with IC by 06:30.
- Perimeter operational at 10:37.
- Fire hit the line at 15:00.
- We had 4 hours and 23 minutes of margin - and the town held.

Independently reviewed by Wildland Fire Works.



How to Work With Us

How We Work Together

- We extend what your emergency agencies can already do
- We fit into your chain of command, not the other way around
- Planning before disasters strike, fast deployment when they do
- Closes the protection gap where homes meet the wildland
- Helps communities prepare for - and ride out - bigger and bigger emergencies

Questions?

CONTACT INFORMATION

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