



# Case History: Southern Alberta Fire Services Adoption of PFR-1006 Drag Reducing Agent

## Customer Overview

Organization: A Southern Alberta Regional Fire Services (Municipal Units)

Region Served: Calgary Region

Primary Operations: Rural–urban interface firefighting, long hose lays, tanker-shuttle operations, grassland/wildland response, industrial/agricultural incidents

Key Operational Need: Increase water delivery efficiency across long distances, improve fire suppression capability, especially in wind-driven grass fires and dispersed rural structures.

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## Background & Regional Challenge

Alberta fire agencies operate in a unique environment defined by:

- Strong influenced winds, which accelerate fire spread
- Large rural service areas, requiring extended hose lays and tanker relays
- Dry prairie fuels, causing rapid ignition and long-duration fire attack
- Cold-season operations, where maintaining pressure and performance is more difficult
- Large agricultural, industrial, and oil & gas sites, requiring high-reach water application

Departments must maximize the efficiency of every litre of water delivered. Many rural zones lack hydrants, meaning tankers and portable reservoirs dominate operations. Boosting water performance without modifying equipment is therefore a critical objective.

To address these challenges, Southern Alberta departments evaluated PFR-1006, a non-toxic, clean drag reducing agent (DRA) designed to improve water flow, enhance jet reach, and reduce turbulence in hoses.



## Solution Provided

PFR-1006 was tested using the same methodology validated in the original evaluation that took place in the lab of Platinum Chemical Solutions:

- 0.1% baseline concentration
- Delivered through standard Canadian fire apparatus
- Performance measured with both 1.5” and 2.5” nozzles

The Southern Alberta testing aimed to determine whether the gains demonstrated in the original controlled study would translate to:

- Realistic rural/grassland operations
- Long-distance water delivery
- High-wind firefighting scenarios common to the region
- Cold-weather flow conditions
- Improved fire pump performance and friction reduction

## Results Observed (Aligned with Verified Test Data)

### 1. Range and Reach Improvements

Based on the validated comparison results (page 3):

<b>Device</b>	<b>Water Spray Distance</b>	<b>Range Increase</b>	<b>RPM</b>	<b>KPA</b>
2.5” Straight Boar Nozzle+ Chem Free	33 m	—	1400	570
2.5” Straight Boar Nozzle + PFR-1006	55 m	<b>+60%</b>	<b>1200</b>	<b>850</b>

Canadian Fire Services context:

This range increase is highly beneficial for:

- Grassland/wildland attack from safe standoff distances
- Reaching rooftops and elevated exposures on farms and industrial sites
- Fighting wind-driven fires where close approach is hazardous



## 2. Drag Reduction & Pressure Efficiency

The PFR-1006 study defines drag reduction as:

$((\Delta p_0 - \Delta p_1) / \Delta p_0) \times 100\%$  — the percent decrease in pressure loss along the hose.

PFR-1006 Fire Trucks DRA

With reduced turbulence and lower friction loss, A Southern Alberta unit observed:

- Higher delivered pressure at the nozzle
- Faster knockdown from increased flow efficiency
- Improved pump performance with no mechanical changes
- Decreased RPM with higher flow output

This is especially valuable during:

- Long rural hose lays from tanker dumps
- Cold weather, where increased viscosity usually reduces flow
- High elevation gradients, common in rolling hills terrain

## 3. Operational Benefits for Southern Alberta

By incorporating PFR-1006, departments achieved:

Enhanced Rural Fire Attack

Tankers supporting 300–500 metre hose lines saw improved flow and reach.

Improved Wildland & Grass Fire Suppression

Extended jet distance allowed safer suppression in fast-moving grass fires driven by chinook winds.

Reduced Water Consumption

Especially beneficial during operations where:

- tanker-shuttles are slow,
- water sources are limited (dugouts, reservoirs), or
- Distance is extended



### Cold Weather Reliability

PFR-1006 remained fully mixable and left no residue, critical for:

- Protecting pumps
- Preventing hose contamination
- Ensuring post-fire cleanup is simple and environmentally safe

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## Environmental & Compliance Notes (Canadian)

PFR-1006 aligns well with Canadian municipal and provincial expectations:

- Non-toxic, harmless to personnel
- Environmentally safe, with no residuals entering soil or water systems
- No special disposal requirements
- Compatible with Canadian Environmental Protection Act (CEPA) expectations for site-safe chemical additives

These characteristics support use in:

- Agricultural zones
- Drinking-water source regions
- Ecologically sensitive grassland ecosystems

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## Customer Impact (Canadian Fire Service)

With PFR-1006, A Southern Alberta fire services noted improvements in:

- Faster initial attack on grass, brush, and structure fires
- Higher operational reach under high wind conditions
- Better water conservation in engine and tanker-based operations
- Safer standoff distance for crews during wildfire and industrial incidents
- More effective suppression with the same equipment and personnel
- Better Nozzle handling in 1.5” and 2.5” lines
- Less resistance in hose movement and handling



## Conclusion

PFR-1006 provides significant advantages customized to the firefighting realities of the Canadian Fire Service:

- Large 60% verified increase in water jet reach with a straight boar nozzle
- Reduced pressure losses, improving hose and pump performance through lower RPM on the fire pump with increased pressure
- Increased suppression efficiency without equipment modifications
- Environmentally safe and residue-free
- Strong value for rural departments operating under resource constraints

**PFR-1006 is a highly practical and impactful performance enhancer for Canadian fire services looking to boost frontline effectiveness, especially in rural and wildland-urban interface regions.**

