



# BADGER DAYLIGHTING

## Unearthing Solutions

# 2011 Irrigation Technical Conference



Confidential

Spring 2011

# PRESENTATION OVERVIEW

1. Badger overview
2. Applications
3. Safety Best Practices Developments
  - a) Wands types
  - b) Variable pressure
  - c) equipotential bonding
4. Productivity Differences









# Alberta 2009: 685 Hits

Inaccurate  
Locates  
11%

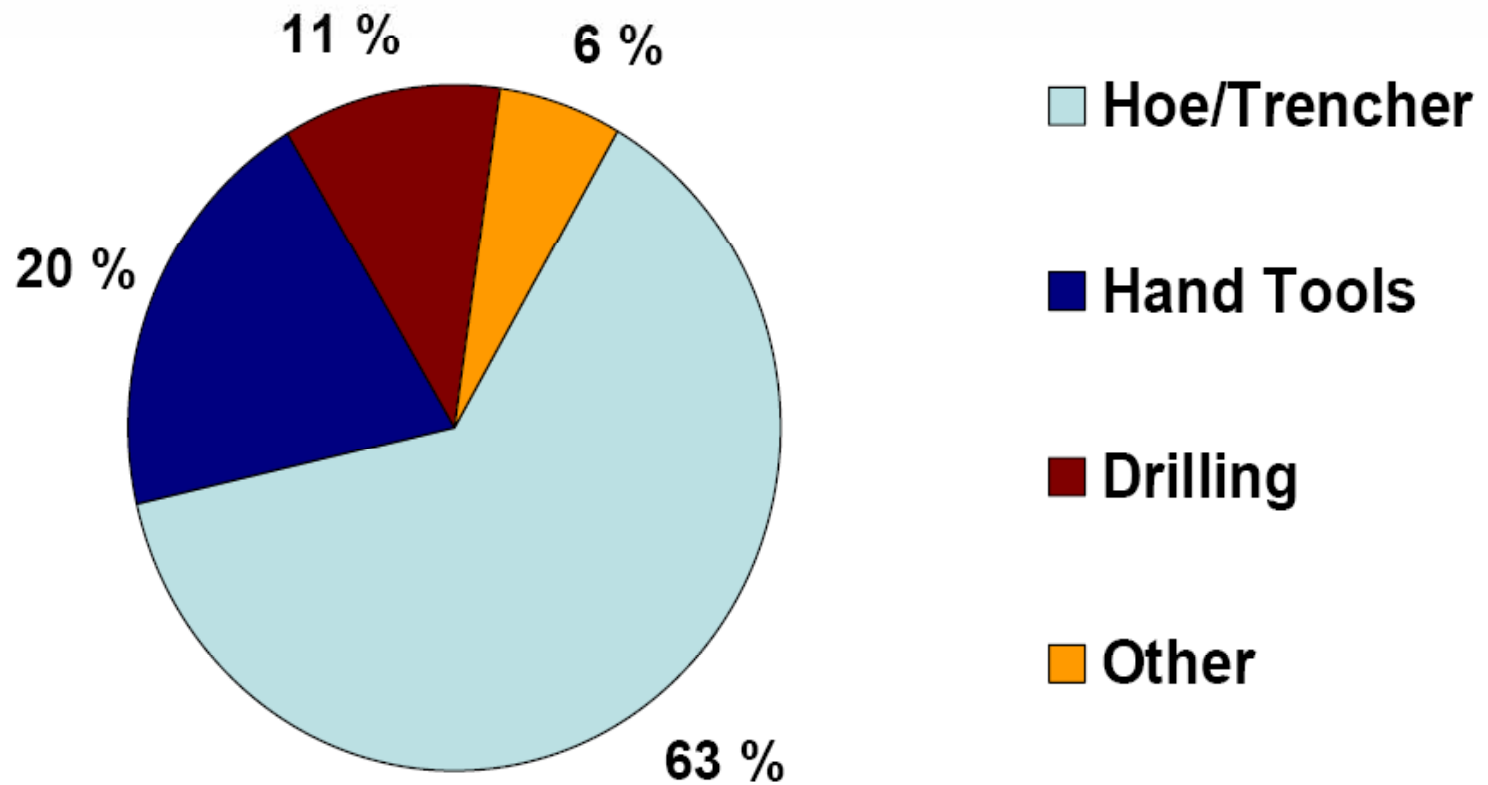
Other  
5%

No Locates  
43%

Not Hand  
Exposed  
41%

4,303 customer outages

# What Do We Hit With?





# Badger Daylighting Overview

- Established 1992 Publicly traded
- 170 Trucks & 25 offices – Western Canada
- 420 Hydrovac Trucks - North America
- Specialize in Hydrovac, Water & Shoring services



# Single Axle



4 x 4

Flotation Tire Compatible





**Calgary - 14 Hydrovacs  
14 years experience**

**Drumheller - 2 Hydrovacs  
11 years experience**

**Brooks - 7 Hydrovacs  
18 years experience**

**Over 30 units in  
Southern Alberta**

**Medicine Hat - 5 Hydrovacs  
10 years experience**

**Lethbridge - 3 Hydrovacs  
12 years experience**

**Taber - Coming Soon**







# Hydrovac Applications

## Main Types of Applications

- ◆ Crossings and Test Holes
- ◆ Shoring systems
- ◆ Pits
- ◆ Trenching
- ◆ Pole Holes & Piling Holes
- ◆ Debris Removal















# Shoring Solutions Up to 7.3m



# 4" & 6" Steel Trench Shields







# PITS





# Trenching





Pole & Post Holes

20-30/day





# Piling Holes







# DEBRIS REMOVAL

Remote  
Excavating  
up to 125m



# Hydrovac Best Practices

3 main developments in the industry

1. Wand head type
2. Water Pressure
3. Energized cables

# ATCO GAS Hydrovac Procedure

**Hydrovac Operation:** What you need to know when exposing natural gas lines.



**Call before you dig!  
1-800-242-3447**

*Before starting any project, contact Alberta 1 Call to identify the location of the underground lines. ATCO Gas is a member of the toll-free service. Call at least two working days before digging or excavating the underground lines.*

## **Our pipes**

ATCO Gas has a detailed network of pipelines in urban and rural areas of Alberta. The material originally used was bare steel pipe, progressing to steel coated pipe (Tar, Enamel, Yellow Jacket), to PVC (Polyvinyl Chloride) and then PE (Polyethylene). Each of these materials can be damaged if not careful.

- Steel pipe – when damaged can cause corrosion and potential leaks in the future
- PVC pipe – can be brittle and may break when bumped with the wand, suction hose or any other materials that may fall onto the pipe
- PE pipe – can be damaged by the force of the water stream or the impact of the wand

Reducing water temperature and pressure can help eliminate damage to the pipe or coating. Ensure the excavation is large enough to positively identify the pipeline.

## **The benefits of using a Hydrovac**

It's fast, convenient and causes minimal damage to property. During frozen ground conditions a Hydrovac is an effective method of exposing pipelines.

When operating a Hydrovac, operators need to be aware of the proper procedures that must be followed when exposing a natural gas pipeline to prevent personal injury and damage to pipelines.

## **Hydrovac requirements**

1. Wand tip should have a three-jet tip or an agitating spinner assembly.
2. Wand must be covered with teflon, rubber or some other material that will not damage the pipeline.
3. *Wand must be in motion at all times* in order to limit potential damage to the pipe or coating. When the line is found, ensure the wand tip is held no closer than .3m (12 in.) from the line. Reduce the pressure to finish the exposure.
4. The suction hose will have a rubber bumper or other protective cover that will not damage the pipe or coating.
5. Damage to the pipe or coating should be reported to ATCO Gas.

## **Hydrovac contractors:**

1. Are responsible for any and all damage that occurs to company pipeline during Hydrovac exposing operations, and for any incidental damages related to gas loss, customer re-lights, fire department call-outs, dangerous goods response, etc. The Hydrovac procedure must not be used for exposing leaking gas lines.
2. Must be aware of the hazards associated with natural gas.
3. Must carry a Material Safety Data Sheet (MSDS) for natural gas and be made aware of emergency procedures.
4. Are required to provide adequate access to pipe or cable for repairs or recoating applications. Minor coating damage will be repaired at no charge to the contractor.
5. Are required to contact the proper authorities and ATCO Gas immediately if damage occurs. In an emergency situation the Hydrovac contractor is also expected to make the area safe and render any required assistance.
6. Are responsible for public safety at all open excavations until inspection and backfill operations have been completed.







# Wash Pump

- ◆ Pressure limit – 2250 psi
- ◆ Variable pressure







## Bright Finish Aluminum Tanks

for the Septic Pumping Industry



*Thanks for visiting us!*



## Liquid Truck - DOT 407/412

Designed for industrial  
liquid applications



## Powervac 5300 for Wet/Dry Operation

5300 CFM air flow/28" HG vacuum,  
Dump chutes extended to rear of truck,  
Stainless steel 316, DOT 407/412



## Hydro-Trencher

5300 CFM air flow/28" HG vacuum  
with 8" hydraulic actuated boom, 3000  
U.S. gal. stainless debris tank, 1000 U.S.  
gal. stainless water tank, 9 G.P.M. water  
pump with pressures to 5800 p.s.i.

# Energized Cables





# Safe Procedures Required - Equipotential Bonding Mat





# Supplier Related Productivity Differences

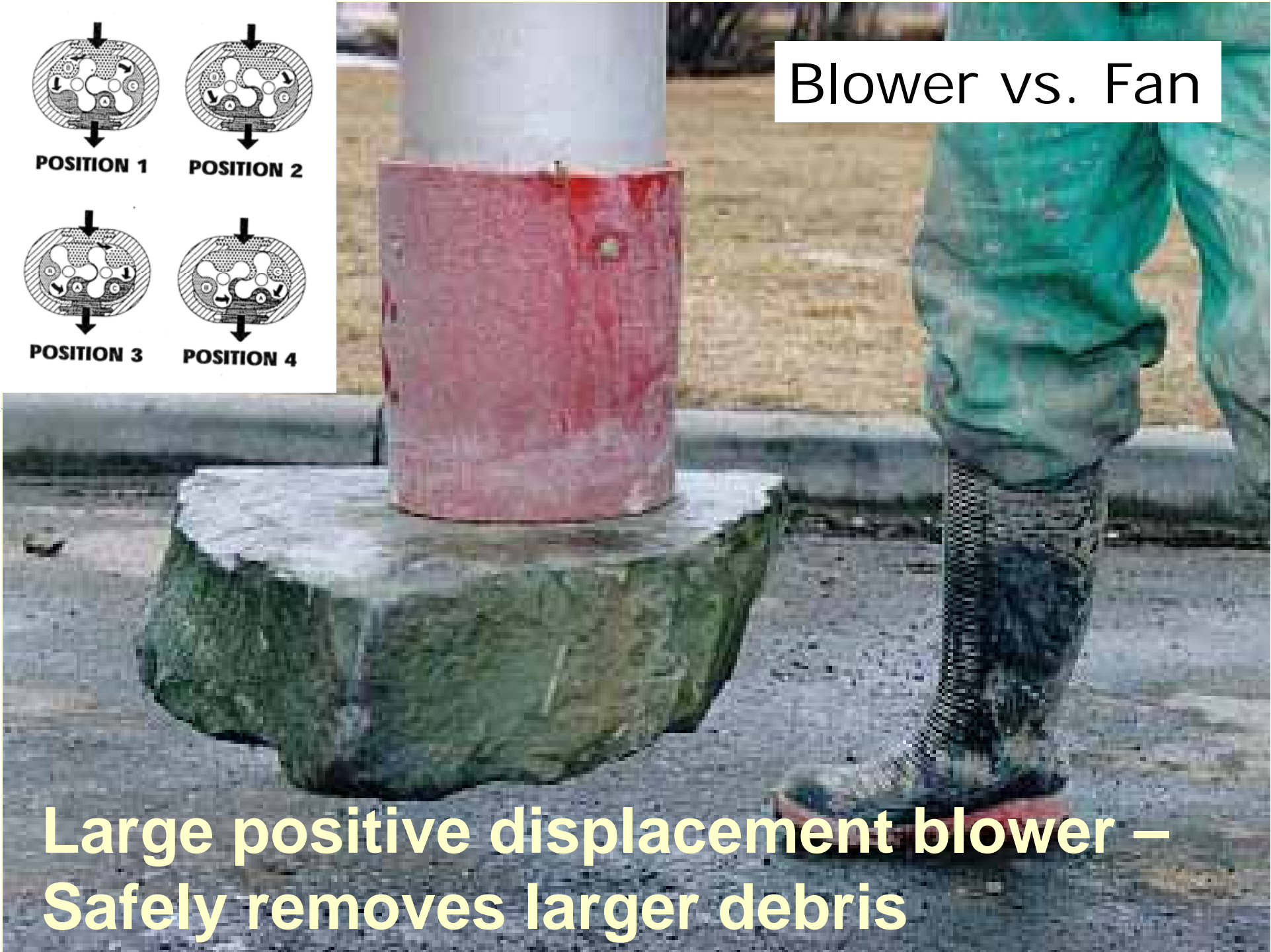
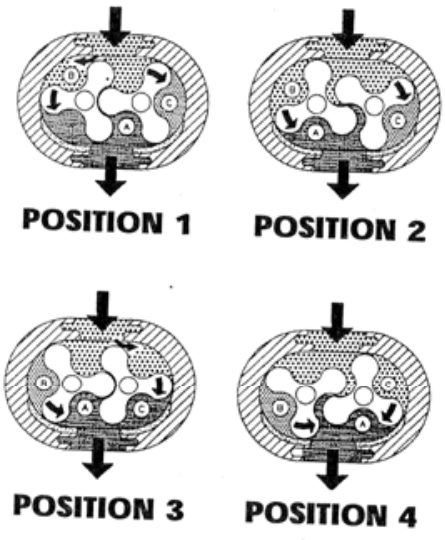
NOT ALL HYDROVACS ARE CREATED EQUAL



# Supplier Related Cost Factors

- ▶ Up to 100% difference in productivity
- ▶ Equipment specifications – size & design
  - Water & debris tank sizes: 2m<sup>3</sup> - 10m<sup>3</sup>
  - Water pump size: 5-60 + gal/minute
  - Water pressure: 1000-5000+ psi
  - Dig tube sizes: 3"-8"
  - Vacuum system and size:
    - fan vs. blower
    - 1000-6100 CFM
  - Dumping process – manual vs. hydraulic
- ▶ Worker expertise greatly influences dig time
- ▶ Availability of water
- ▶ Vicinity to work – increased travel – increases \$

# Blower vs. Fan



**Large positive displacement blower –  
Safely removes larger debris**









**Big blowers and large dig tubes Increases Productivity.**





# Supplied Water Improves Productivity





ADDITIONAL QUESTIONS?  
THANK YOU FOR YOUR TIME.

Western Canada (800) 465-4273

Eastern Canada (888) 276-0546

[www.badgerinc.com](http://www.badgerinc.com)

