Well Site Guard Ltd.

Superior Stuffing Box Leakage Protection - US PATENTED

"Beware of Little expenses.
A small leak will sink a great ship"

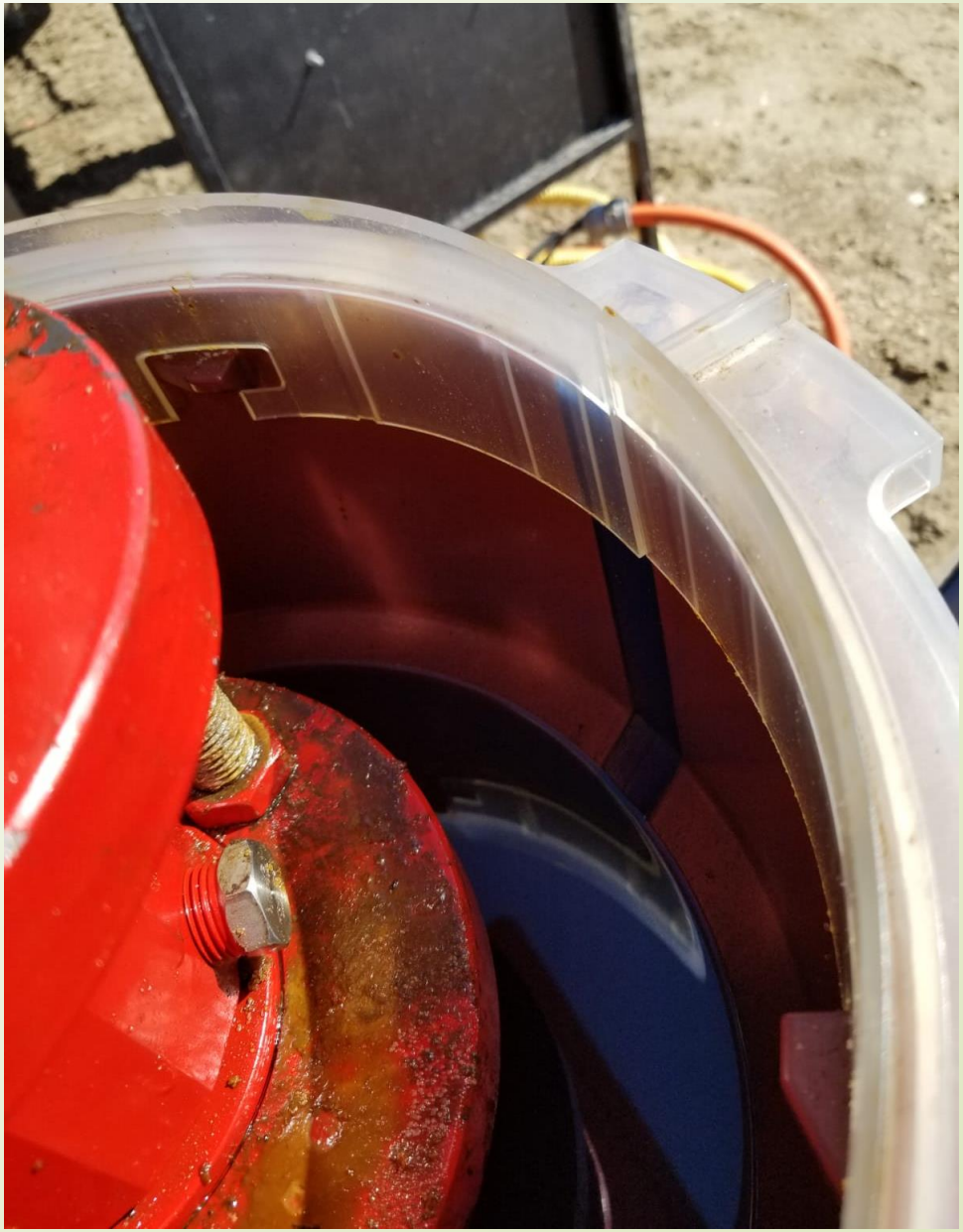
"Benjamin Franklin"

Why do we need containment on our production wells?

- Reclamation planning starts at the beginning of the oil or natural gas well development life cycle
- Reduce labor costs, improve operational efficiencies, enhance environmental stewardship, and mitigate regulatory non-compliance
- Oilfield waste are any unwanted mixture of substances, that are generated at any stage of a wellsite's lifecycle, from construction to reclamation
- Protect the ground and surface water (e.g. snow/rain runoff) meeting ERCB/EPA compliance

Why do we need containment on our production wells?

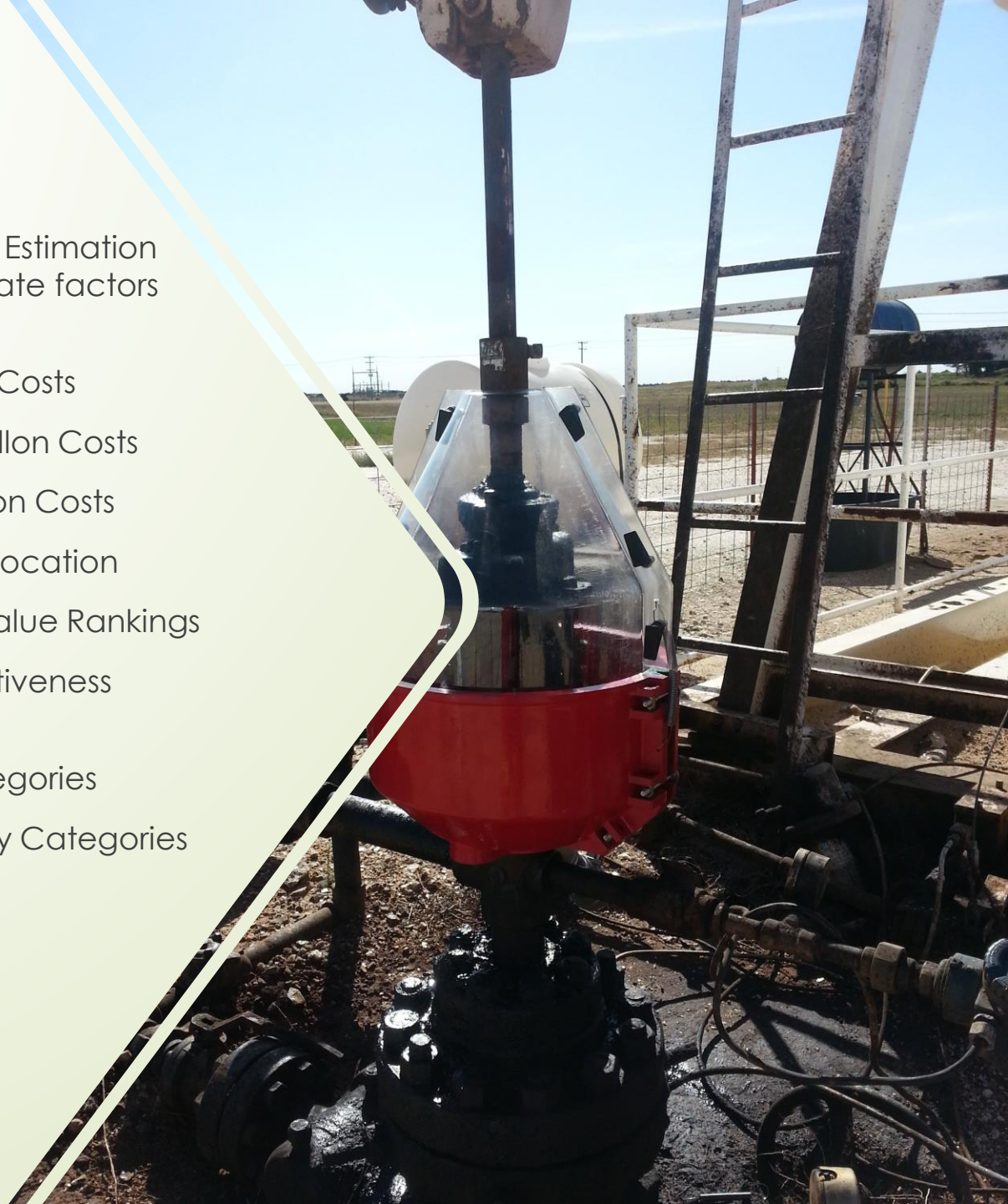
- An average oil well is checked once every 24 hours, however remote locations may only be checked 48 to 72 hours
- Even a small leak can quickly lead to environmental damage and a costly clean-up expense
- Increased volumes of produced water are destructive to stuffing box rod seals
- Operator workload represents a significant resource expense.
- Implement "Operator with a purpose" strategies



Reactive Installation

- 2002 USA; EPA Basic Oil Spill Cost Estimation Model (BOSCEM) specifies 8 separate factors for cost consideration

- 1: Per-Gallon Oil Spill Response Costs
- 2: Socioeconomic Base Per-Gallon Costs
- 3: Environmental Base Per-Gallon Costs
- 4: Response Cost Modifiers for Location
- 5: Socioeconomic & Cultural Value Rankings
- 6: Response Method and Effectiveness Adjustment Factors
- 7: Freshwater Vulnerability Categories
- 8: Habitat and Wildlife Sensitivity Categories



Pro-Active Installation
Risk avoidance

Well Site Guard is designed to fit common well head and flow tee sizing.

Can also be customized to fit specialty applications.

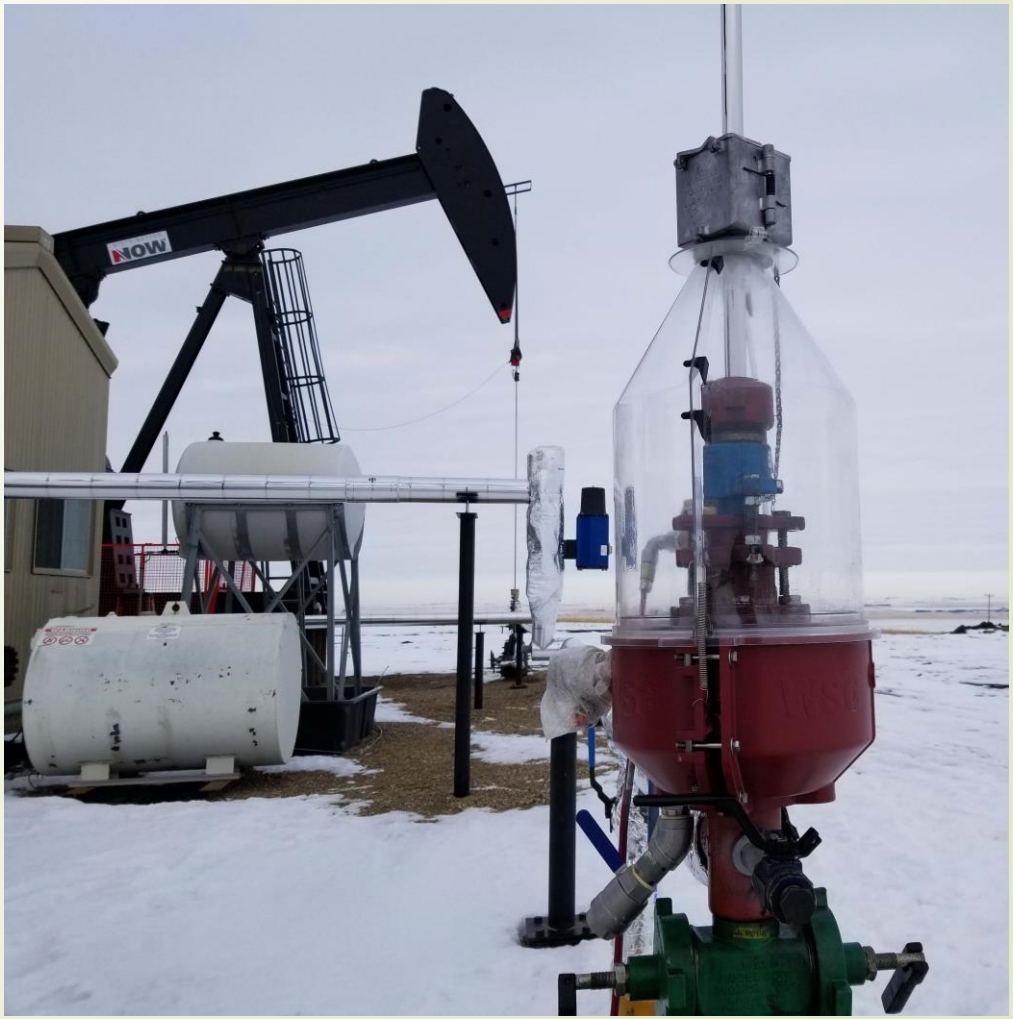
Enclosing the stuffing box we capture oil and produced water that escapes during normal production cycle, reducing unscheduled maintenance

Key Benefits

- Avoid daily cleanup costs
- Avoid environmental damage
- Avoid socioeconomic and corporate image damage
- Decrease size and frequency of spills, avoid govt. fines

Some Pumpjack facts

- Average production 5 to 40 liters /1.5 -10.5 US gal of liquid per stroke
- This is usually an emulsion of crude oil and water
- Pumping speeds - Strokes per Minute (SPM) – average 7 strokes per minute or10,800 strokes per day
- Average rod stroke length is 7’ to 8’ equal to 85,000 feet of travel per day
- A stuffing box has a replaceable packing seal designed to withstand repetitive rod travel and prevent major leakage
- Packings wear and are replaced every 3 – 12 months depending on the oil emulsion being pumped
- With worn seals comes increased leakage potential



More Pumpjack facts

- In North American wells, the ratio of produced fluid is (12:1) 10 – 12 barrels of water to each (1) barrel of oil
- USA & Canada produced **15** million barrels of oil in 2018, accompanied by about **184** million barrels of produced water
- Visible well leakage can mean that for every ounce of oil on the surface = as much 12 ounces of water & salts have already seeped into the ground,
- Contaminates from leaked produced water are left behind on equipment and soil surfaces to be washed into the ground by the next rain or snowfall

Even More Pumpjack Facts

- 1 drop of oil every 10 seconds is next to impossible to observe
- But 1 drop = 18.25 oz in 24 hours, that is 415 US pints / 196 liters a year
- Canada had 82,638 conventional oil producing wells in 2018
- If 15% of these wells seeped at; 1drop / 10 seconds, that would be 5.5 million US pints of oil each year. That is over 15,000 barrels a year
- Operators catch most of these daily leaks and spend a large part of their day to ensure the well site is cleaned, and major problems and fines avoided.
- But at what cost to operator productivity & maintenance expense, that could be avoided!

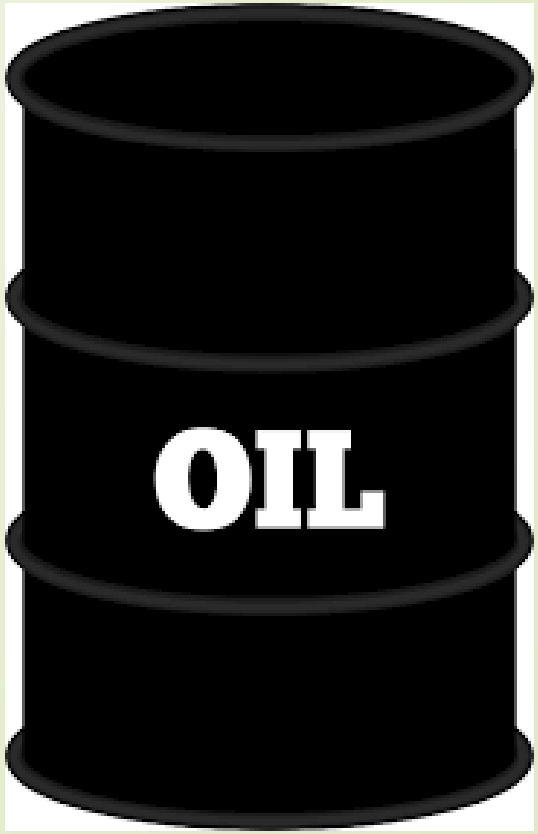
Review of Alberta Energy Regulator "Reported Release Report 2019-11-05

- Amounts represented here are only reported spills from Stuffing box failures over the past 10 years in Alberta
- Note! The total recovered amount is approximately 4 times the original spill. This includes all cleaning fluids, steam cleaning residue and soil remediation required
- Recovered volumes are what incur high cost for transportation and disposal at Registered Contaminated Substance Treatment Facilities

Stuffing Box Leakage	Volume Released		Volume Recovered	
Row Labels	m3	Barrels	m3	Barrels
Crude Oil	488	3,070	538	3,386
Oily Sludge	422	2,656	422	2,656
Crude Bitumen	38	240	38	236
Salt/Produced Water	**778**	**4,895**	**779**	**4,897**
Waste Contaiminated Ground	**626**	**3,936**	**5,262**	**33,097**
Fresh Water	35	223	593	3,729
Process Water	16	103	16	103
Condensate	5	28	4	28
Methanol	0	1	0	1
Contaminated Surface Water	0	0	842	5,295
Grand Total	**2,409**	**15,151**	**8,495**	**53,429**

POTENTIAL CLEANUP & DAMAGE COSTS OF A HYPOTHETICAL OIL SPILL: Prepared for: Trans Mountain Pipeline (Calgary) December 2013

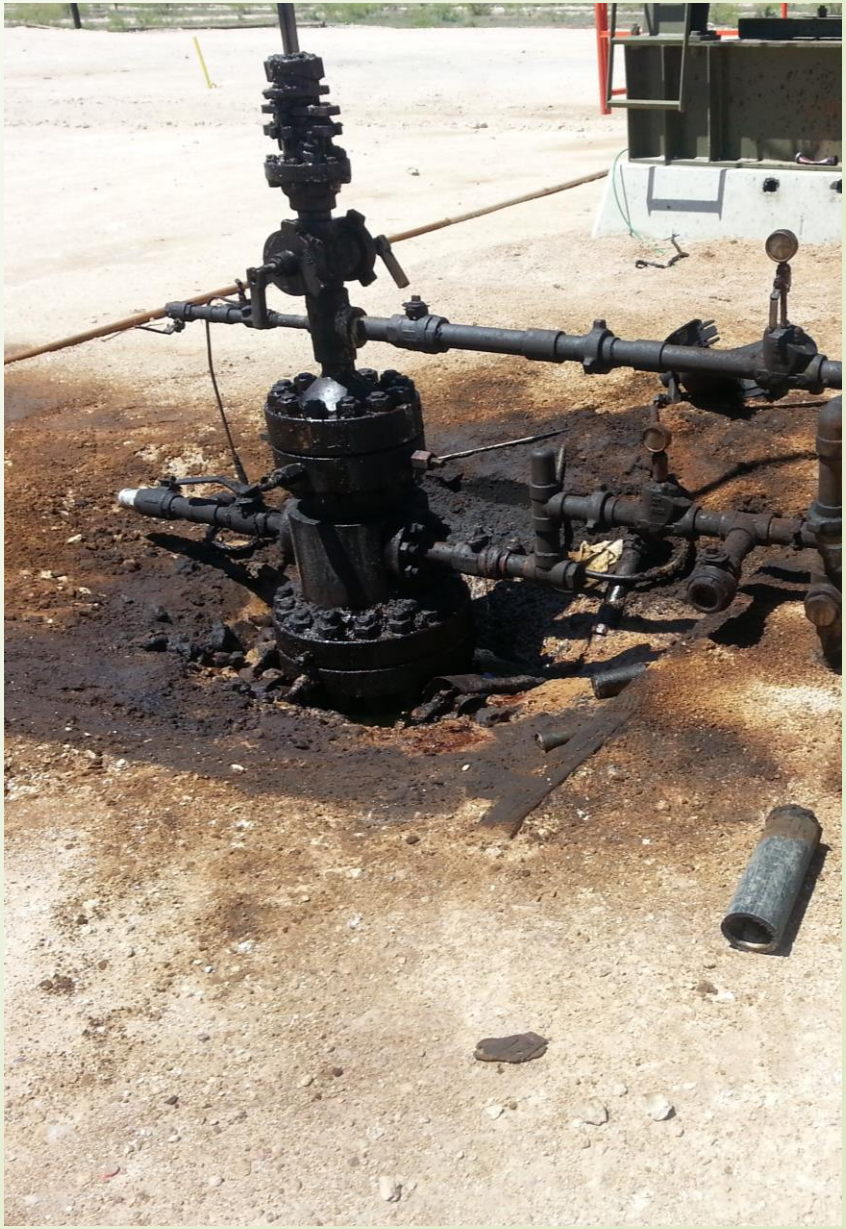
- Various publications have provided a wealth of costing information relating to oil spill cleanup and damage costs in North America. (Dagmar Schmidt Etkin, Cutter Information Corp)
- All other things equal, unit spill costs are higher for heavy oils, for impacts on water, for remote locations, and for manual cleanup techniques; also economy of scale in cleanup are realized such that larger spills tend to have lower unit cleanup costs.
- The cost range is from **$553/bbl. to $7,372/bbl**., with the highest costs associated with small spills (<240 bbl.) and the lowest unit costs associated with larger spills (>12,000 bbl.) based on "Terrestrial Spills"
- Spills impacting navigable waters was found that on average the damages added another **187%** to cleanup costs
- Most of the variation in unit spill costs can be explained by spill volume, oil type, proximity to water, location remoteness, and cleanup methods.



Claims costs in oil and gas industry are increasing despite downturn

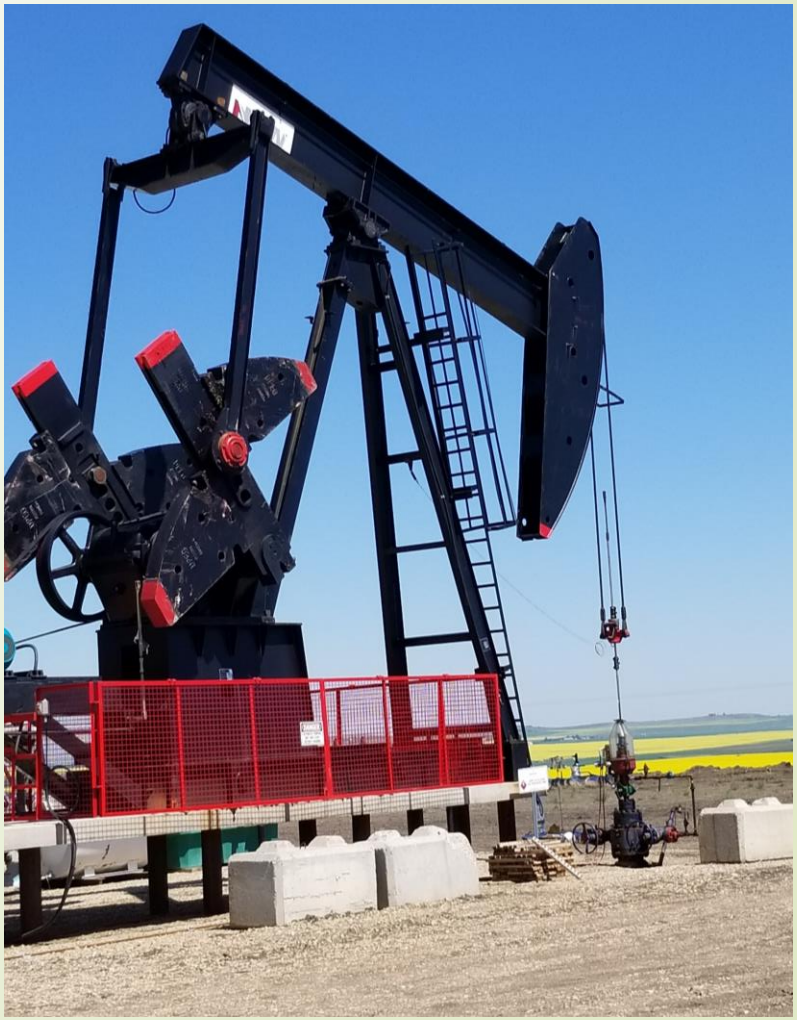
Four main variables in how much a crude oil spill costs to clean up:

- **Quantity:**
  - It is easy to determine that more is worse
- **What is spilled:**
  - Saltwater content in production fluid creates additional contamination issues
  - Crude oil varies drastically, one end of the spectrum is bitumen to light oils and distillates



Claims costs in oil and gas industry are increasing despite downturn

- **Where it was spilled;**
  - Location – the more remote the worse, difficult and expensive to get equipment to a spill site that is hundreds of kilometers away
  - When disposing of dangerous chemicals, they must be taken to a specialist landfill.
  - The more remote you are, the further you must truck it. Trucking costs can be a big driver of environmental remediation clean-up.
  - Most effective, but also most costly, way to clean up an oil spill is to "dig and dump," which involves removing all the contaminated soil, putting it in a truck and taking it to the nearest regulated landfill.



Claims costs in oil and gas industry are increasing despite downturn

- **Receptors are in the area:**
  - Includes considerations such as if the spill was in sandy soil or clay-based soil
  - Spills in waterways – fast-moving water is the fastest way to escalate your claim
  - Spills in muskegs, these are essentially like a giant, slow-moving river or swamp and offers no good remediation options
  - Major challenges arise in wet conditions when trying to deploy traditional spill cleanup products
  - Old-fashioned sorbents operate at less than one-third their capacity in wet weather
  - Standard sorbents are bulky and require significant storage space, forcing workers and cleanup teams unable to equip their vehicles with enough product

"Beware of Little expenses. A small leak will sink a great ship"

Benjamin Franklin

www.wellsiteguard.com

Toll Free: 1-888-862-0060
Fax: 1-888-862-0009
Direct: 1-403-660-2500
Direct: 1-403-862-0060

#7, 2020 – 35th Ave NE
Calgary, AB
Canada, T2E 6W4

Well Site Guard Ltd.

Superior Stuffing Box Leakage Protection - US PATENTED

Well Site Guard directly addresses the financial costs and risks to your R.O.I.
While promoting the **"Keystones of your successful Company."**

Environmental Stewardship

- Minimize the risk and impact to plants and wildlife
- Prevent contamination of soil and ground water

Corporate Social Responsibility

- Avoid damage to corporate name & brand
- Promote a "Pro-active" environmental exposure

Risk Mitigation

- Provide a clean and safe working environment
- Reduce AER fine exposure for major stuffing box seal failure

Investor Confidence

- Corporate leadership promoting cost reduction through innovation
- Confidence in regulatory compliance
- Improved operator efficiency, "Operators with a purpose"