

# Saskatchewan

## 1. Definitions

- a. **Produced Water (as per this document) – Water brought to the surface during oil or gas well drilling, completion, and production operations, which may include formation water, injected water, and flow-back water.**

As per Saskatchewan's Ministry of Energy and Resources (ER) regulatory:

- Directive PNG008 – Produced Salt Water means water produced in association with the recovery of hydrocarbons and other gases.
- Drilling waste is treated as a different type of fluid and would not be considered produced water. ER has separate requirements for the management of drilling waste disposal Guideline GL 99-01 –
  - Drilling Fluids (fluid phase): a mixture of water, drilling muds, additives and various other wastes that are specifically related to the drilling activity.
  - Drilling Solids (solid phase): the bottom layer of drilling waste material, found in a sump, composed of water, drill cuttings, flocculated bentonite, weighting materials and other additives.
- Frac flowback fluids are covered off separately under GL 2000-01 - Frac Fluid System Classifications:
  - Water-based frac fluids are natural or synthetic polymer gels of water or hydrochloric acid. Gels typically consist of cellulose, guar, guar derivatives or polysaccharides. They include both linear gel and/or cross-linked gel systems. Water-based frac fluids may include the addition of thickening derivatives and stabilizers (i.e. isopropanol, potassium chloride, ammonium nitrate, glycol and acids) to enhance the performance. Water-based frac fluids must have total extractable hydrocarbon concentrations of less than 0.5%.
  - Foams are normally classed as water-based fluids. Nitrogen gas is dispersed in a liquid to create a foam. Surfactant is used as a foaming agent to initiate the dispersion. Stabilizers may be used to enhance the performance. Foam is designed primarily for low-permeability or low pressure gas wells. Water based frac fluids must have total extractable hydrocarbon concentrations of less than 0.5%.
  - Mix-based frac fluids are oil in water dispersion or emulsions that serve as highly efficient fracturing fluids.
    - Cross-linked hydrocarbon gel consists of crosslinked water (95%) with an oil phase (5%) dispersed throughout the mixture. Gel functions to provide a high viscosity in the fluid.

- Polyemulsion (viscous emulsion) is viscous water-outside-phase emulsion containing two parts oil (crude or refined) and one-part water or brine. Polyemulsion is designed to provide high viscosity fracturing fluids at temperatures up to 175°C. It is seldom used because of fire hazards and high cost.
      - Oil-based frac fluids in the past, refined oils, crude oils and soap-type gels of crude, kerosene or diesel were used. Due to safety considerations, lack of temperature stability and cost, these materials are seldom used.
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- a. **Recycle/Reuse – To process or treat produced water or its constituent substances for beneficial use.**

This term is not defined in our legislation.

## 2. Ownership

- a. **Please describe the authority (deed, lease, contract, statute, regulation, case law, common law etc..) and include any relevant citations under which any of the following occurs.**

- i. **The right to produce water during well completion and oil and gas production operations.**

There is no specific approval required to produce the water during well completion and production operations. ER approves extraction schemes that result in the extraction of produced water.

- ii. **Ownership of produced water from oil or gas wells after it has been brought to the surface.**

The Crown (Government of Saskatchewan) owns all water rights.

- iii. **Use and/or reuse of produced water in the oilfield.**

Produced water use in the oilfield, after production, is managed by an application depending on the case. If the water is going to be disposed in a well – the disposal well requires authorization through the well licence process (authority is found in Directive PNG008). Secondary/Tertiary recovery schemes where produced water is to be used require application and approval to inject (*The Oil and Gas Conservation Act*, Section 17(1) and *The Oil and Gas Conservation Regulations*, 2012 Section 54).

- iv. **Use and/or reuse of produced water outside of the oilfield.**

If the produced water is not re-injected to subsurface, the Water Security Agency (WSA) is responsible to permit other uses.

- b. Place an “x” in each box to indicate who holds the right to each of the following regarding water that has not yet been produced.

Who	Possession	Use	Other rights (please specify)
Landowner			
Operator			
Government	X	X	
Other (please specify)			

- c. Place an “x” in each box to indicate who holds the right to each of the following regarding produced water after it has been brought to the surface.

Who	Possession	Use	Other rights (please specify)
Landowner			
Operator			
Government	X	X	
Other (please specify)			

- d. Does the quality of the produced water play a role in the ownership of the water?  
No.

### 3. Liability

- a. Please provide the cite to any relevant state statute/case law/regulation regarding liability for:

- i. Produced water handling (extraction, transportation, sale, etc.).

N/A

- ii. Use and/or reuse of produced water in the oilfield:

1. By the producer

N/A

2. By a different operator

N/A

- iii. Use and/or reuse of produced water outside of the oilfield.

N/A

#### **4. State or Provincial Regulatory Agency**

##### **a. State or provincial agencies charged with regulating the use/reuse of produced water:**

ER and WSA

##### **Brief summary of areas of responsibilities:**

ER develops, co-ordinates and implements policies and programs to promote the growth and responsible development of the province's natural resources industries. The ministry operates as the primary regulatory authority for the oil and gas industry.

Generally, produced water is considered a by-product of oil and gas production and is typically re-injected into the reservoir either for disposal purposes or for pressure maintenance/enhanced recovery purposes.

All water, even produced water is owned by the Crown (the government) in Saskatchewan.

##### **b. Federal agencies charged with regulating the use and/or reuse of produced water: If available, please provide appropriate contact information.**

Indian Oil and Gas Canada  
403-292-5625  
[Aadnc.contactiogc.aandc@canada.ca](mailto:Aadnc.contactiogc.aandc@canada.ca)

#### **5. Incentives**

##### **a. Does your state or province have any incentives to use and/or reuse produced water in the oilfield? If so, please describe.**

Saskatchewan has no specific incentives surrounding the use or reuse of produced water.

##### **b. Outside of the oilfield? If so, please describe.**

Saskatchewan has no specific incentives surrounding the use or reuse of produced water.

#### **6. Innovations and Successes**

##### **a. Do you have any innovative or unique approaches to addressing use and/or reuse of produced water? If so, please provide a brief description.**

N/A

**b. Does the quality of the produced water pose impediments to recycling and reuse?**

N/A

**7. Other Information**

a. Please provide any additional notes or commentary below.