



# Well Fluid Analysis – Sampling and Reporting Requirements Guide

**VERSION 1.0: May 2019**

## About the Commission

The BC Oil and Gas Commission (Commission) is the single-window regulatory agency with responsibilities for regulating oil and gas activities in British Columbia, including exploration, development, pipeline transportation and reclamation.



The Commission's core roles include reviewing and assessing applications for industry activity, consulting with First Nations, ensuring industry complies with provincial legislation and cooperating with partner agencies. The public interest is protected by ensuring public safety, protecting the environment, conserving petroleum resources and ensuring equitable participation in production.

## VISION

Safe and responsible energy resource development for British Columbia.

## MISSION

We provide British Columbia with regulatory excellence in responsible energy resource development by protecting public safety, safeguarding the environment and respecting those individuals and communities who are affected.

## VALUES

### Transparency

Is our commitment to be open and provide clear information on decisions, operations and actions.

### Innovation

Is our commitment to learn, adapt, act and grow.

### Integrity

Is our commitment to the principles of fairness, trust and accountability

### Respect

Is our commitment to listen, accept and value diverse perspectives.

### Responsiveness

Is our commitment to listening and timely and meaningful action.



## Additional Guidance

As with all Commission documents, this manual does not take the place of applicable legislation. Readers are encouraged to become familiar with the acts and regulations and seek direction from Commission staff for clarification. Some activities may require additional requirements and approvals from other regulators or create obligations under other statutes. It is the applicant and permit holder's responsibility to know and uphold all legal obligations and responsibilities.

Throughout the manual there are references to guides, forms, tables and definitions to assist in creating and submitting all required information. Additional resources include:

- [Glossary and acronym listing](#) on the Commission website.
- [Documentation and guidelines](#) on the Commission website.
- [Frequently asked questions](#) on the Commission website.
- [Advisories, bulletins, reports and directives](#) on the Commission website.
- [Regulations and Acts](#) listed on the Commission website

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## Manual Revisions

The Commission is committed to the continuous improvement of its documentation. Revisions to the documentation are highlighted in this section and are posted to the [Documentation Section](#) of the Commission's website. Stakeholders are invited to provide input or feedback on Commission documentation to [OGC.Systems@bcogc.ca](mailto:OGC.Systems@bcogc.ca) or submit feedback using the [feedback form](#).

<b>Version Number</b>	<b>Posted Date</b>	<b>Effective Date</b>	<b>Chapter Section</b>	<b>Summary of Revision(s)</b>
1.0	May 8, 2019	June 1, 2019	Various	This is a new document. Users are encouraged to review in full.

## Chapter 1: Gas Analyses

An initial gas analysis is required for each producing formation within a well, in accordance with [Section 67](#) of the Drilling and Production Regulation (DPR). Any further gas analyses taken throughout the life of the well must also be submitted to the Commission.

An initial gas sample must be representative of the producing formation. Samples should be taken as close to the wellhead as possible. GPA Midstream Standard 2166-17 provides detailed gas sampling procedures for a variety of test methods.

Samples taken following hydraulic fractures using energizers (such as, but not limited to, N<sub>2</sub> and CO<sub>2</sub>) may show elevated levels of the energizer. A subsequent sample, taken at a later date, may be required to ensure the analysis is representative of the natural gas being produced from the producing formation.

### 1.1 Initial Gas Analysis

A representative natural gas sample from each producing formation in a well must be taken within six months of the initial production date. The corresponding analysis must be submitted to the Commission within 60 days of sampling or 30 days of analysis, whichever is sooner. The analysis must report the component analyses and physical properties of the natural gas and hydrocarbon liquids.

#### 1.1.2 Hydrocarbon Liquid Analysis

Gas wells which produce condensate are required to submit a hydrocarbon liquid analysis. The analysis must be a liquid analysis, reporting components up to C30. A C7+ extended gas analysis or a C7+ fluid analysis is not equivalent to a hydrocarbon liquid analysis.

Hydrocarbon liquid analysis are used in the primary product determination in Montney formation wells. When the API value of a hydrocarbon liquid sample is below API 46 an oil sample analysis is required. For further information please see the [Primary Production Determination for Montney Formation Wells](#).

A hydrocarbon liquid analysis forms part of the gas analysis submission. A hydrocarbon liquid analysis report cannot be submitted separately.

## 1.2 Subsequent Gas Analysis

Production gas composition can change over the producing life of a well. Maintaining a complete database of all gas analyses provides valuable information for production modeling.

Any further natural gas sampling and analysis conducted throughout the life of a well must be reported to the Commission. The analysis submission must report the component analyses and physical properties of the natural gas and hydrocarbon liquids. The submission must be made within 60 days of the sampling or 30 days of analysis completion; whichever is sooner.

## 1.3 Submission of Gas Analyses

A gas analysis is submitted as a GAN in eSubmission. Each GAN submission is comprised of one PDF file and one PAS file and must follow the naming conventions outlined in the [Well Data Submission Requirements Manual](#).

The PDF file must report the component analysis and physical properties of the sample. Where a hydrocarbon liquid analysis was conducted, the gas analysis report and the hydrocarbon liquid analysis report must be merged into a single PDF for submission.

The PAS file component must follow the standards outlined in the [Pressure ASCII Standard \(PAS\) – Reference Guide](#). Where a hydrocarbon liquid analysis has been completed the information must be included in the GAN PAS file. This information is captured in the Condensate/Liquid Analysis and the Data Table – Condensate/Liquid Analysis sections of the PAS file.

For further information on eSubmission please see the [eSubmission User Guide](#).

## 1.4 Disposal Well Gas Analysis

Acid gas disposal wells must have a disposal fluid sample taken and analyzed at least twice a year. The analyses must be submitted against the disposal well, even when taken at a compressor outlet. The analyses must be submitted within 60 days of the sample date or 30 days of the analysis date; whichever is sooner.

For further information please see the [Acid Gas Disposal Well Summary Document](#).

## Chapter 2: Oil Analyses

An initial oil analysis is required for each producing formation within a well, in accordance with [Section 62](#) of the DPR. Any further oil sampling and analyses taken throughout the life of the well must also be submitted to the Commission.

### 2.1 Initial Oil Analysis

A representative crude oil sample from each oil producing formation in a well must be taken within six months of the initial production date. The corresponding analysis must be submitted to the Commission within 60 days of the sampling or 30 days of the analysis, whichever is sooner. The analysis must report the component analyses and physical properties of the natural gas and hydrocarbon liquids.

### 2.2 Subsequent Oil Analysis

Any further representative oil samples taken and analyzed throughout the life of a well must be submitted to the Commission within 30 days of the analysis date.

### 2.3 Submission of Oil Analyses

An oil analysis is submitted as an OAN in eSubmission. Each OAN submission is comprised of one PDF file and one PAS file and must follow the naming conventions outlined in the [Well Data Submission Requirements Manual](#).

The PDF file must report the component analysis and physical properties of the sample. The PAS file component must follow the standards outlined in the [Pressure ASCII Standard \(PAS\) – Reference Guide](#).

For further information on eSubmission please see the [eSubmission User Guide](#).



## Chapter 3: Water Analyses

A water analysis is required for each zone in a well that produces enough water to allow sampling, in accordance with Section 71 of the DPR. This includes formation water associated with gas or oil production, water source well production, and hydraulic fracture flowback. Any further water sampling and analyses taken throughout the life of the well must also be submitted to the Commission.

### 3.1 Initial Water Analysis

An initial water analysis should be taken within six months from any zone producing sufficient water to permit sampling. The corresponding analysis must be submitted to the Commission within 60 days of the sampling or 30 days of the analysis, whichever is sooner. The analysis must report the mineral and ion content of the sample.

For the purpose of Section 71 of the DPR water from the zone is not restricted to representative formation water but also includes any water that is introduced into the zone (i.e. hydraulic fracturing fluid or load fluid). Analyzed samples of produced water provide valuable data on the qualities of flowback fluid, which may be held in storage, recycled for the purpose of hydraulic fracturing or sent to water disposal injection wells.

### 3.2 Subsequent Water Analysis

Any further representative water samples taken and analyzed throughout the life of a well must be submitted to the Commission within 60 days of the sample date or 30 days of the analysis date, whichever is sooner.

In wells that have been hydraulically fractured, produced water properties may vary with formation retention time. The Commission encourages well permit holders to take multiple water samples from the same well over the production life. These samples provide insight on effects to formation mineralogy and potential impacts to production, and inter-well communication.

### 3.3 Disposal Well Water Analysis

An analysis of the water in the disposal formation and an analysis representing typical disposal water must be provided as part of the application for Deep Well Disposal of Produced Water and/or Non-Hazardous Waste. The analysis performed on the disposal formation sample must be submitted as a WAN in eSubmission against the disposal well.

The Commission encourages the operators of deep well water disposal wells to sample and analyze disposal fluids. A water analysis conducted in conjunction with a reservoir pressure test can increase confidence in calculations associated with determining the reservoir pressure by determining water density.

Multiple water samples taken throughout the life of a disposal well provide insight on effects to formation mineralogy, precipitate in formation, wellbore and sandface scale maintenance and potential impacts to injection performance.

All water analysis conducted must be submitted against the corresponding disposal well within 60 days of the sample date or 30 days of the analysis date; whichever is sooner.

## 3.4 Submission of Water Analyses

A water analysis is submitted as a WAN document type in eSubmission. Each WAN submission is comprised of one PDF file and one PAS file and must follow the naming conventions outlined in the [Well Data Submission Requirements Manual](#).

The PDF file must report the mineral and ion content of the sample. The PAS file must follow the standards outlined in the [Pressure ASCII Standard \(PAS\) – Reference Guide](#).

For further information on eSubmission please see the [eSubmission User Guide](#).

## Chapter 4: Analyses Exemptions

The requirement to conduct initial fluid analysis may be exempted under Section 4(1)(z) of the DPR. Well permit holders should submit requests for exemption to the Supervisor, Reservoir Engineering. Requests for exemption from initial sampling requirements must include robust rationale for the exemption. Exemptions granted from initial sampling will generally require additional sampling later in the life of the well.