

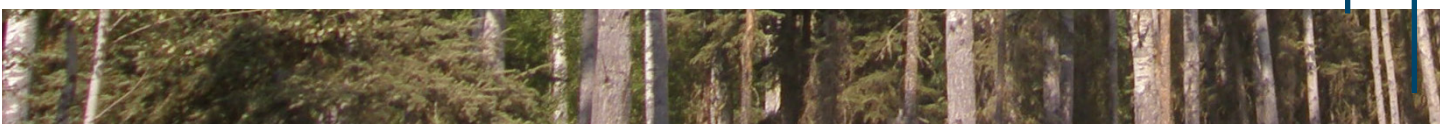


2009/10

BC Oil and Gas Commission

Site Restoration Annual Report

November 2010



About the British Columbia Oil and Gas Commission

The BC Oil and Gas Commission (Commission) is an independent, single-window regulatory agency with responsibilities for overseeing oil and gas operations 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 through the objectives of ensuring public safety, protecting the environment, conserving petroleum resources and ensuring equitable participation in production.



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1.0 Executive Summary

British Columbia's Certificate of Restoration (CoR) Program ensures that land used for oil and gas development is restored to a safe and productive state. The program is designed to ensure compliance with British Columbia's stringent environmental standards and promote the timely restoration of sites. The BC Oil and Gas Commission is responsible for overseeing the restoration activity ensuring all applications approved are in the public interest with regard to environmental, economic and social effects.

Since 1974, all abandoned wells in B.C. are required to apply for and obtain a CoR. To obtain a CoR, an operator must submit a two part application to the Commission. The average number of calendar days to assess new applications in 2008 was 20.4 calendar days and in 2009 dropped to 15.2.

2.0 Background

Oil and Gas activities have been taking place in British Columbia since the first wells were drilled in the East Kootenay region circa 1905. These first wells were largely unregulated and little documentation remains concerning their locations, productivity or abandonment status. As such, these wells are currently being investigated by the Commission to establish their locations and current status and to determine if any remedial activities should be undertaken by the Commission to ensure they have been abandoned in a safe and environmentally responsible manner.

Since 1974, all wells being abandoned within British Columbia have been required to obtain a Certificate of Restoration (CoR) under the Petroleum and Natural Gas Act (PNGA). The CoR ensures that operators restore land disturbed by oil and gas activities to near as practical to pre-activity land use and quality. These requirements have been revised over time, most notably following the 1998 introduction of the Contaminated Sites Regulation (CSR) by the Ministry

During the 2009 fiscal year, the Commission reviewed 115 Part I CoR applications, 26 Part II applications and issued 24 CoRs. Restoration work at 12 sites identified by the Ministry of Energy, Mines and Petroleum Resources (MEMPR) continued and two of the sites were issued Certificates of Restoration.

Occasionally, oil and gas sites may require remedial work but no viable operator can be identified. The Orphan Site Reclamation Fund (OSRF) was created for such situations. The cash balance of the OSRF as of March 31, 2010 was \$3,031,000 compared to \$2,242,000 as of March 31, 2009. The Commission is committed to working with First Nations, other government agencies, industry, landowners, and other stakeholders to appropriately manage site restoration activities.



Border Oils #1 (picture taken 1999)

of Environment and the 2004 revisions to the CSR and the Environmental Management Act (EMA).

In 2005, the Commission established a department within its Engineering Division dedicated to ensuring that sites meet the requirements of

the EMA, in accordance with Section 84.1 of the PNGA, prior to issuance of a CoR. The Commission subsequently made changes to the CoR application process and information requirements as detailed in the information letter - IL 06-14, released in 2006.

3.0 British Columbia's Certificate of Restoration Process

The Certificate of Restoration process ensures that land used for oil and gas development is restored to a safe and productive condition. When an oil and gas site is no longer productive, the operator is required to reclaim the site and receive a certificate of restoration before they are allowed to cease payment on surface

lease agreements or tenure payments. In order to obtain a CoR the impacted lands must be returned to a state, as nearly as is reasonable, to the surface condition which existed before the oil and gas activity was commenced.

3.1 Liability for Remediation

Issuance of a CoR does not absolve the operator of any future liability associated with the impacts their operations may have on a restored site. The CoR simply provides assurance to all stakeholders that the site has been restored in accordance with current standards and requirements and all known contamination issues or other hazards have been mitigated. Should issues arise in the future requiring additional restoration work at a site that has received a CoR, the operator remains responsible for the full cost of that work.

Provisions pertaining to responsibility for contamination are clearly laid out in the EMA. Should contamination issues be identified subsequent to the

issuance of a CoR, the Commission will work with the responsible parties to ensure that the issues are rectified. In the rare event that no responsible party can be identified, the Commissioner may designate a site as an orphan site and draw funds from the Orphan Site Reclamation Fund (OSRF) to complete the necessary work.

Landowners who enter a surface lease under the PNGA to allow a company access to subsurface resources cannot be held responsible for contamination resulting from activities at oil and gas sites unless the contamination was caused or made worse by their own gross negligence or willful misconduct (per Section 30 of the CSR).

3.2 What is involved in Environmental Site Assessment?

Localized soil and groundwater contamination may occasionally be found on oil and gas well sites and related facilities. Where contamination has occurred it may range from almost undetectable levels of inorganic contaminants such as trace metals to more complex situations involving both inorganic and organic contamination. In all cases, when contamination is found, companies must comply with the provisions of the PNGA and the EMA. All decisions made by the Commission in issuing a CoR

are guided by the CSR standards established by the Ministry of Environment (MoE). When evaluating applications for certificates of restoration, the Commission relies on the established MoE standards with limited allowance for risk based assessments¹. For lands within the Agricultural Land Reserve, the surface reclamation requirements of the Delegation Agreement between the Commission and the Agricultural Land Commission apply in addition to the requirements of the CSR.

¹Where numerical standards are exceeded, established MoE procedures such as detailed risk assessment and screening level risk assessment provide alternative means for site owners to demonstrate that certain sites do not pose a significant risk to human health and the environment. Rationale developed following such procedures may also be used to support a CoR application.

A very small number of sites may be identified as priority sites based on the Site Classification Tool. The Commission refers these sites to the MoE and they are not eligible for a CoR until the MoE is satisfied

that all high risk conditions have been addressed. The Commission will then ensure concerns have been resolved regarding residual contamination at the site prior to issuing a CoR.

3.3 CoR Application Process

To obtain a CoR for a site, the operator must submit a two part application to the Commission.

Part I of this application includes a site assessment to identify the presence of contamination. If contamination has been identified, the operator must submit a report detailing how the contamination has been managed and how the site has been remediated. The Commission reviews all CoR Part I submissions and may request additional information, site sampling or other actions where necessary to determine the adequacy of the site assessment and the effectiveness of any remedial activities. When a site is classified as a priority site, it is immediately referred to the MoE for review. In addition, the Commission may, upon receiving the CoR application, forward any submission to the land remediation section of the MoE for oversight of remediation under the CSR site profile process.

Part II of the application requires the operator to complete an effectiveness assessment of surface reclamation activities in restoring site productivity. Upon acceptance of a Part II application, the

Commission will issue a CoR. Because of the time necessary for a determination on the success of vegetation reestablishment and other factors, Part II applications are commonly made one or more years after a Part I application is made.

All applications for CoR's (Parts I and II) must be submitted by certified environmental professionals operating under a strict code of conduct and are legislated and controlled by the Province of British Columbia. For this reporting period, eligible professionals include Professional Engineers, registered with the Association of Professional Engineers and Geoscientists of British Columbia, Professional Agrologists, registered with the British Columbia Institute of Agrologists, and Applied Science Technologists registered with the Applied Science Technologists and Technicians of British Columbia.

These applications are reviewed by the Commission's own professional staff to verify that all requirements have been met, ensure that the sites have been restored to an acceptable condition, and, when appropriate issue the CoR.

3.4 CoR Application Statistics

Fiscal Year	Part-I Received	Part-I Accepted	Part-II Received	Part-II Accepted (CoR issued)
2006	16	15	0	0
2007	100	94	11	11
2008	98	91	16	16
2009	115	88	26	24

Table 1. CoR Applications Reviewed (fiscal year)

4.0 Commission Effectiveness and Performance Measures

The Commission has an obligation and duty to stakeholders to ensure well sites and pipelines are adequately restored in a timely and effective manner.

To gauge the Commission’s effectiveness, five key measures have been developed and are

reported annually. These measures are Liability Management, Application Quality, Commission Timeliness, Representative Sampling of Submissions, and Agricultural Pipeline Reclamation. These are described below.

4.1 Liability Management Measure (LMM)

The LMM is calculated as the number of wells which have received a CoR divided by the number of wells that have been plugged². Plugged wells are wells where operators should be in the process of obtaining a CoR.

Recalling that the CoR process consists of two parts, there is almost always a one or two year delay from the time a well is plugged to the time it may be eligible to receive a CoR. In addition, there are approximately 3,656 Legacy Sites which were reclaimed prior to the advent of legislated CoR requirements in 1974 and subsequent changes discussed in the Background Section of this report. These Legacy Sites will be described in detail in a forthcoming Legacy Site Report to be published by the Commission.

A consistent LMM ratio indicates that the CoR process is being managed effectively in a manner consistent with the rate at which wells are being plugged. A decrease in the ratio indicates that the Commission should consider taking steps to increase the number of restored wells through multiple means which may include active follow up with operators of plugged sites which have not received a CoR.

The LLM for 2008 and 2009 demonstrates that the overall liability is minimally changed. The LLM is relatively consistent indicating that restoration is keeping pace with plugging operations. The Commission is monitoring this and taking action to promote the timely restoration of sites.

Period	# of Plugged Wells	# Restored	Ratio
To December 2008	5,768	3,814	0.66
To December 2009	5,849	3,827	0.65

Table 2. Liability Management Measure

²Plugged wells are wells that have been permanently plugged and cemented in accordance with the Drilling and Production Regulation to ensure the safety and integrity of the wellbore.

4.2 Application Quality Measure (AQM)

The AQM is calculated as the number of Part I applications received which are successful upon first submission divided by the total number of applications for a given period (calendar year for this report). A high percentage indicates the applications being received are complete and provide sufficient detail to demonstrate a minimal risk to human health or

the environment, and the operator may proceed in seeking issuance of a CoR after the submission and successful review and acceptance of a Part II application to the Commission. A low percentage may indicate the submission of incomplete or inadequate applications.

Fiscal Year	Part-I Received	Part-I Accepted	Accepted/Received
2007	100	94	94.0%
2008	98	91	92.9%
2009	115	88	76.6%

Table 3. Application Quality Measure

There was a significant decline in the AQM for 2009. This decline can be accounted through clarification of the expectations for groundwater monitoring. The majority of applications not accepted as complete demonstrated acceptable soil quality, but lacked

sufficient site characterization to establish that groundwater had not been impacted. The revised MoE technical guidance for groundwater investigation and characterization provides clarification on this subject.

4.3 Commission Timeliness Measure (CTM)

The CTM is calculated as the average number of days taken by the Commission to review a CoR Part I application during a specified time period (the calendar year in this report).

The number of calendar days to assess a new application of CoR (Part 1) is dependent on multiple factors including:

- The completeness of the submission.
- The volume and timing of submissions.
- The Commission's capacity to manage applications.

The average number of calendar days to assess new applications in 2008 was 20.4 calendar days. The average number of calendar days in 2009 was 15.2.

The CTM result for 2009 indicates the Commission has sufficient capacity to adjudicate applications at the current staffing level.

4.4 Representative Sampling of Submissions Measure (RSSM)

Starting in 2010, the Commission introduced a compliance assurance audit of CoR submissions to assess the level of concurrence between the actual site condition and the information submitted within CoR applications. Under this program 10 per cent of sites are randomly selected to undergo site investigation by a third party consultant working under the direction of the Commission. The RSSM

will be calculated as the percentage of sites where all investigated parameters meet the prescribed standards or are within acceptable margins of error from the values reported in the application.

As this program is being commenced in 2010 there is no available data from which to calculate the RSSM for this reporting period.

4.5 Agricultural Pipeline Reclamation Measure (APRM)

Fiscal Year	ALR Pipelines operating for greater than 24 months	Schedule B Submitted	APRM
2008	608	97	0.159
2009	816	143	0.175

Table 4. Agricultural Pipeline Reclamation Measure

Site reclamation requirements for lands within the Agricultural Land Reserve (ALR) are detailed in Schedule “B” of the delegation agreement between the ALR and the Commission. These criteria are used to assess if the site has been appropriately reclaimed. Wellsites must be assessed prior to receiving a CoR and pipeline rights of way must be assessed within 24 months of construction.

The Commission has implemented a procedure to track those pipelines for which schedule B reports have not been submitted within the required 24 months of construction. In March 2010, operators were notified regarding sites for which the reporting had not been submitted.

The APRM is defined as the cumulative number of pipelines to submit schedule B assessments divided by the cumulative number of pipelines in the ALR that have been in operation for greater than 24 months. From April 4, 2004 to March 31, 2010 there were 816 pipeline segments approved in the ALR. Since April 4, 2004 the Commission has received 143 schedule B reports. The APRM calculated on March 31, 2010, is 0.175 compared to 0.159 as of March 31, 2009. This indicates that while schedule B reporting frequency is increasing there remains a significant number of pipelines for which the required Schedule B Reports have not been received. The Commission is actively pursuing those operators who have not submitted the required Schedule B reports in its efforts to ensure future compliance.

5.0 Orphan Site Reclamation

On rare occasions, oil and gas sites may be identified as requiring remedial work but no viable operator or responsible party can be identified. The Orphan Site Reclamation Fund (OSRF) was created for such situations. The OSRF is an industry funded mechanism administered by the Commission which provides financial resources for the restoration of orphan sites. This fund is unique to British Columbia whereby the upstream oil and gas industry pays a tax used to cover the liabilities incurred by other parties

within the industry. The cash balance of the Orphan Site Reclamation Fund as of March 31, 2010 was \$3,031,000 compared to \$2,242,000 as of March 31, 2009.

To date there have been two sites designated as Orphan Sites for which the fund has been used – WA 7465 at b-A95-D/94-G-7 and the Blackhawk Lake site in 93-P-1 (see map in 6.0 Appendix).



Hydrovac unit in operation near Blackhawk Lake (2008).



Hydrovac line exposure and excavation of contaminated material near Blackhawk Lake (2008).

In 2003, prior to the establishment of the OSRF, the Ministry of Energy, Mines and Petroleum Resources obtained government funds to perform site restoration and to provide landowner compensation for a number

of sites requiring additional remediation (Table 5). The abandonment and restoration of these sites is overseen by the Commission on behalf of MEMPR.

WA #	Location	Status
2564	GNP Horizon Sunrise 11-09-079-16 W6M	CoR Issued
2878	GNP Sunrise A11-06-079-16 W6M	Planned Site Remediation 2010
2772	GNPM Sunrise 07-12-079-16 W6M	CoR Issued
2560	GNPM Sunrise 11-06-079-16 W6M	Planned Site Remediation 2010
2569	GNP Horizon Sunrise 11-04-079-16 W6M	CoR Application Part I Complete
2538	GNP Horizon Sunrise 10-08-079-16 W6M	CoR Application Part I Complete
2559	GNP Horizon Sunrise 11-05-079-16 W6M	CoR Issued
2983	GNPM Horizon Sunrise 06-07-079-16 W6M	CoR Application Part I Complete
2998	GNP Horizon Sunrise 10-05-079-16 W6M	CoR Application Part I Complete
3360	GNPM Arlington Sunrise 11-02-079-17 W6M	CoR Application Part I Complete
2062	Kent-Noremco Wolf d-14-G/94-A-15	CoR Application Part I Complete
6870	Sunarctic East Rigel b-28-K/94-A-09	Planned Site Remediation 2010

Table 5. Sites specified for abandonment and restoration by MEMPR funding (Prior to Establishment of the OSRF)

All of the subject wells have been plugged, cut and capped. Certificates of restoration have been issued for WA 2559, 2564, and 2772. Restoration activity has been completed at WA 2569, 2538, 2983, 2998, 3360, and 2062 which are all on private land and CoRs should be issued once adequate vegetation is established. Restoration activity commenced at WA 2560 and 2878 (also on private land) during the summer of 2009 and is expected to be complete by fall of 2011. Environmental investigation was

completed at WA 6870 (crown land) and restoration activities have commenced at this site.

The funding provided by MEMPR for the restoration of these sites totaled \$2.4 million dollars. These funds will be fully depleted by ongoing remedial work in 2010.

Funding for the remaining work required for remediation of these sites (estimated at \$300,000) will be obtained through the OSRF.

6.0 Conclusion

Going forward, the Commission will continue to proactively manage abandoned and orphan sites. This second annual Site Restoration Report provides

comparisons and benchmarks to improve the Commission's reporting procedures and increase efficiency in oil and gas site restoration.

7.0 Appendix

The two Orphan Well Sites for which the fund has been used – WA 7465 at b-A95-D/94-G-7 and the Blackhawk Lake site in 93-P-1.



8.0 Glossary

Agricultural Land Commission (ALC)

The ALC is an independent Crown agency whose mandate is to preserve agricultural land.

Agricultural Land Reserve (ALR)

The ALR is a provincial zone where agriculture is recognized as the priority use and farming is encouraged and where non-farm uses are regulated; agricultural lands are designated under the Agricultural Land Commission Act.

ALC OGC Delegation Agreement

An agreement between the ALC and the Commission to further one window regulation of the oil and gas industry and to seek ways to streamline and improve the review and approval process for applications for oil and gas activities and pipelines on ALR lands while preserving agricultural lands and encouraging the farming of agricultural lands. Under the agreement, the Commission is able to exercise the powers of the ALC to decide applications for oil and gas activities and pipelines on ALR lands.

Certificate of Restoration (CoR)

A document issued by the Commission certifying that a wellsite has been restored to meet regulatory requirements. Reclamation is the process of restoring the surface environment to acceptable pre-existing conditions. Wellsites and facilities no longer used for oil and gas production must be reclaimed in order to receive Certificate of Restoration. Reclamation on ALR land means returning the land to an equivalent agricultural capability to what existed prior to the oil and gas development.

Contaminated Sites Regulation (CSR)

The Land Remediation Section of the Ministry of Environment is charged with the regulatory role related to all contaminated sites under the CSR. This Section facilitates the remediation of sites and provides operational and procedural guidance. The full CSR can be viewed at: www.env.gov.bc.ca/epd/remediation/leg_regs/csr.htm.

Environmental Management Act (EMA)

The Land Remediation Section of the Ministry of Environment administers the provisions for the investigation and remediation of contaminated sites in British Columbia under the EMA. The EMA can be viewed at: www.bclaws.ca.

Petroleum and Natural Gas Act (PNGA)

The PNGA regulates the steps and approvals throughout the stages of oil and gas development. The PNGA can be viewed in its entirety at: www.bclaws.ca.

Plugged Well

A well where the borehole has been filled with mud and cement to prevent the flow of water or oil from one strata to another or to the surface.

Suspended Well

A well that was previously completed but is now no longer being produced.