

2008 Annual Site Restoration Report

July 2009

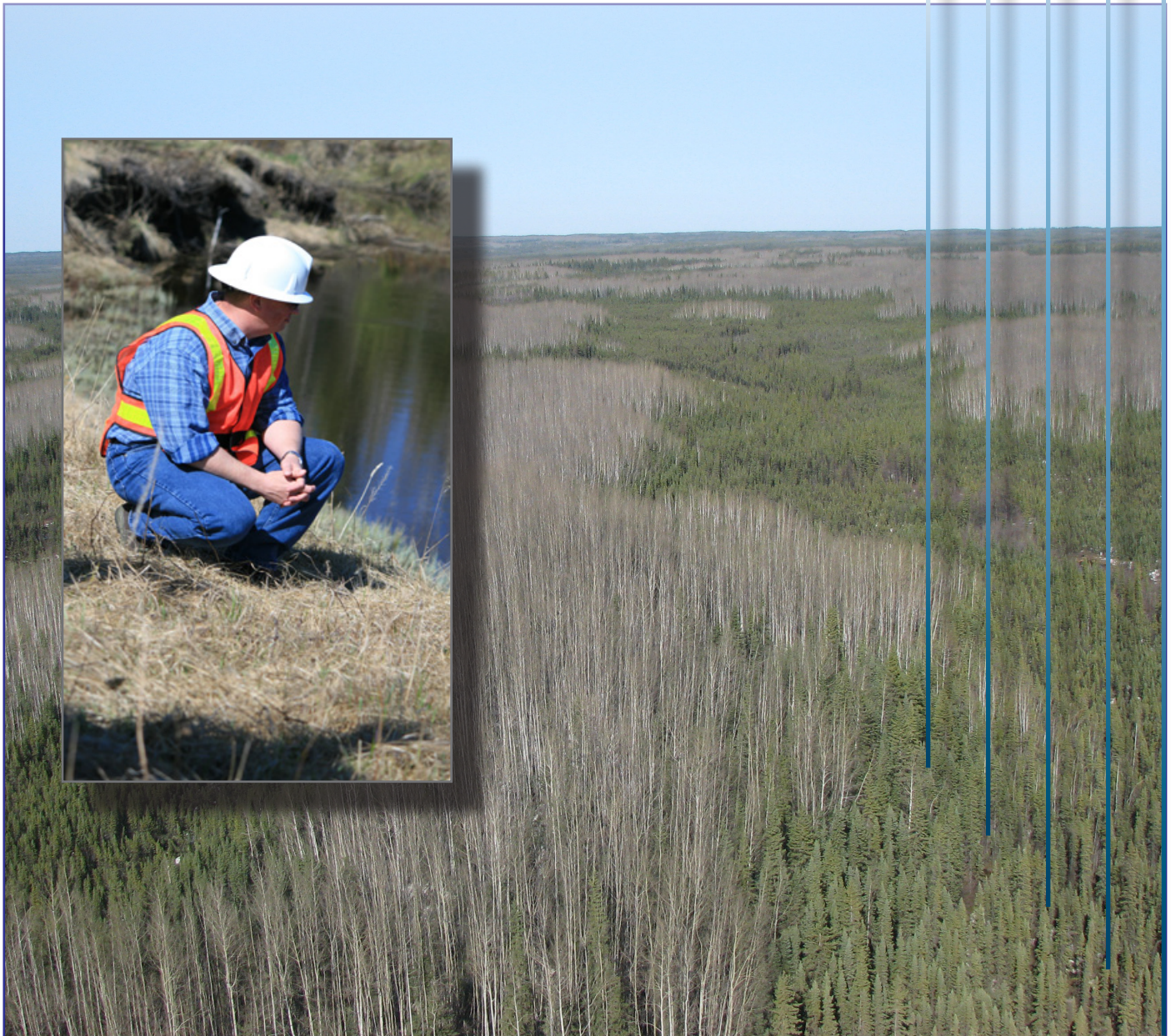


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Introduction

In British Columbia, oil and gas operators have primary responsibility for the management of contaminated sites. The BC Oil and Gas Commission's (Commission) regulatory role is to oversee the restoration process through the application of regulations and rules, compliance and enforcement, and as a last resort the management of the Orphan Site Reclamation Fund.

In 1974, the Province of British Columbia introduced a formalized process for reclamation of land utilized for oil and gas activity. Industry was given directive to apply for, and attain, a Certificate of Restoration (CoR) as mandated in the *Petroleum and Natural Gas Act* (PNGA) for lands no longer required in the extraction of hydrocarbons. The formalized restoration process promoted timely recovery of wellsite and facility locations and aided in managing associated surface footprint, limiting potential liabilities, and ensuring land is returned to a productive state.

Since then, restoration requirements have been refined and enhanced, most notably in the 1998 introduction (and 2004 revision) of the Contaminated Sites Regulation (CSR) under the *Environmental Management Act* (EMA). The Commission established the Waste Management and Reclamation Department to oversee increased regulatory responsibilities.

In April 2004, the Commission and the Agricultural Land Commission (ALC) penned a delegation agreement affectively outlining heightened surface reclamation requirements for oil and gas activities located within the Agricultural Land Reserve (ALR). For additional information regarding reclamation within the ALR, refer to:

www.alc.gov.bc.ca/commission/oil-gas_ALR.htm.

British Columbia's Certificate of Restoration Process

The CoR process ensures that land used for oil and gas development is restored to its pre-activity state. When an oil and gas site is no longer productive, the operator is required to re-claim the site to attain a CoR before they may cease payment on surface lease agreements or tenure payments.

Applications

The application for a CoR is a two-stage process. Part one requires the operator to complete a professional environmental assessment and, if necessary, address potential contamination issues. Part two requires professional assessment of the surface reclamation to ensure that site productivity has been adequately restored.

Each application is subject to review by Commission professional staff to ensure approvals are in the best interest of the province. If a site poses a high risk contamination, the Commission will require further investigation through the Site Profile process under the CSR, and will not issue a CoR until the operator has investigated and, if necessary, remediated the site to Ministry of Environment's satisfaction.

Professional Assurance

Every part of the application process is reviewed by professionals such as, Engineers and Agrologists. These field experts operate under provincial legislation and their respective organization's code of conduct, assuring application requirements have been met and all sites have been acceptably restored. The issuance of a CoR is made after all mitigating factors are taken into consideration.

Liability for Reclamation

Operators are responsible for all issues related to surface reclamation of a site. A CoR does not absolve an operator of the obligation to rectify any issues that rise post issuance.

Broad and retroactive provisions pertaining to responsibility of 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 the issues are rectified. Where no responsible party can be identified, the Commissioner may designate a site as an orphan site and use the Orphan Site Reclamation Fund to pay for any necessary work.

Landowners entering a surface lease under the PNGA allowing a lessee access to subsurface resources (per Section 30 of the CSR) cannot be held responsible for contamination resulting from oil and gas activities at the leased site. Exceptions to this are when the contamination was caused, or made worse, by the landowner’s own gross negligence or willful misconduct.

Performance Measures

Performance measures have been developed to guide and assist in the evaluation of restoration programs. Evaluations from this first annual site restoration report will establish baseline information for comparison to future report results.

Measure 1: Ratio of CoR’d Wells to Total Number of Plugged Wells.

Measure 1 compares the number oil and gas sites plugged against the number of sites that meet the criteria for restoration.

Measure 2: Percentage of CoR Part 1 Applications Received vs. Accepted.

Measure 2 depicts percentage of applications successfully reviewed without the Commission requiring further information. These numbers indicate the quality of information received in the first stages of a CoR application.

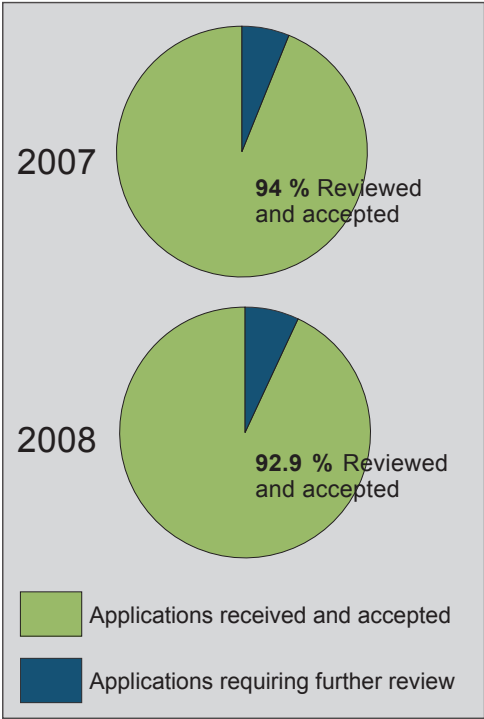


Figure 1. CoR applications (part 1) reviewed and accepted.

Plugging a Well: To fill up the borehole of a well with mud and cement to prevent the flow of water or oil from one strata to another or to the surface. In the industry’s early years, wells were often improperly plugged or left open. Modern practice requires that inactive wells be properly and securely plugged.

Period	# of Plugged Wells	# Restored (subset of plugged)	Ratio
Up to December 2008	5,768	3,814	0.66

Table 1. Ratio of wells restored to the total number of plugged wells.

Measure 3: Average CoR (Part-I) Application Processing Time.

Processing time can be used as a relative measure of Commission capacity to adjudicate on applications. For the 2008 calendar year it took an average of 20.4 calendar days to assess new CoR applications.

Historical Review of Regulatory Oversight

Prior to the establishment of the Oil and Gas Commission in 1998, regulatory oversight for the PNGA was the responsibility of government line ministries such as the Ministry of Energy, Mines and Petroleum Resources (MEMPR) and the former Ministry of Employment and Investment (MEI).

The CSR and the Commission were both established in 1998. These concurrent events resulted in higher standards with increased scrutiny of submissions and processing of CoR applications. From this, improved definitions were imposed for determining the presence of contamination.

Since the two part application process was initiated in October of 2006, the number of CoRs issued has diminished. As operators have adjusted to the new two part process, applications for part 1 CoRs have increased. It is expected that the issuance of a CoR will follow the part 1 application by approximately two years (the time to successfully establish vegetation during the site restoration process).

In 2008 the Oil and Gas Commission, Ministry of Environment, MEMPR, and Ministry of Agriculture and Lands signed a Memorandum of Understanding to remove any confusion regarding organizational responsibilities for the CoR application process to further improve the regulatory environment and decrease work duplication between the agencies.

Restoration Information and Statistics

From the start of regulated oil and gas exploration in 1948 up until December of 2008, a total of 5,768 wells have been plugged. Of the 5,768 plugged wells, 1,954 wells (34%) have not yet met the criteria to merit a CoR. The remaining 3,814 (66%) wells have either received a CoR or they were appropriately reclaimed in accordance with the regulations prior to the legislative requirement to obtain a CoR.

Figure 2 details the cumulative number of wells plugged and restored annually since the inception of the Commission in 1998.

Figure 3 details the number of CoRs issued annually by the Commission from 1998 to 2008.

Table 3 details the CoR applications adjudicated by the Commission during the past 3 years.

Year	Plugged Wells	Restored Wells (subset of plugged)
1998	4,253	3,381
1999	4,408	3,388
2000	4,584	3,442
2001	4,714	3,467
2002	4,875	3,483
2003	5,069	3,612
2004	5,201	3,649
2005	5,317	3,656
2006	5,467	3,739
2007	5,585	3,788
2008	5,768	3,814

Table 2. Accumulative number of plugged wells vs. restored wells.

Backlog CoR Applications

At the time the two part application process was introduced, there were 226 CoR applications made under the old application process that were awaiting evaluation and site inspection. Since that time, the Commission has issued 133 CoRs for these sites and is awaiting the submission of reclamation assessment reports by the operators for the remaining 93 sites.

Historical Commission Statistics

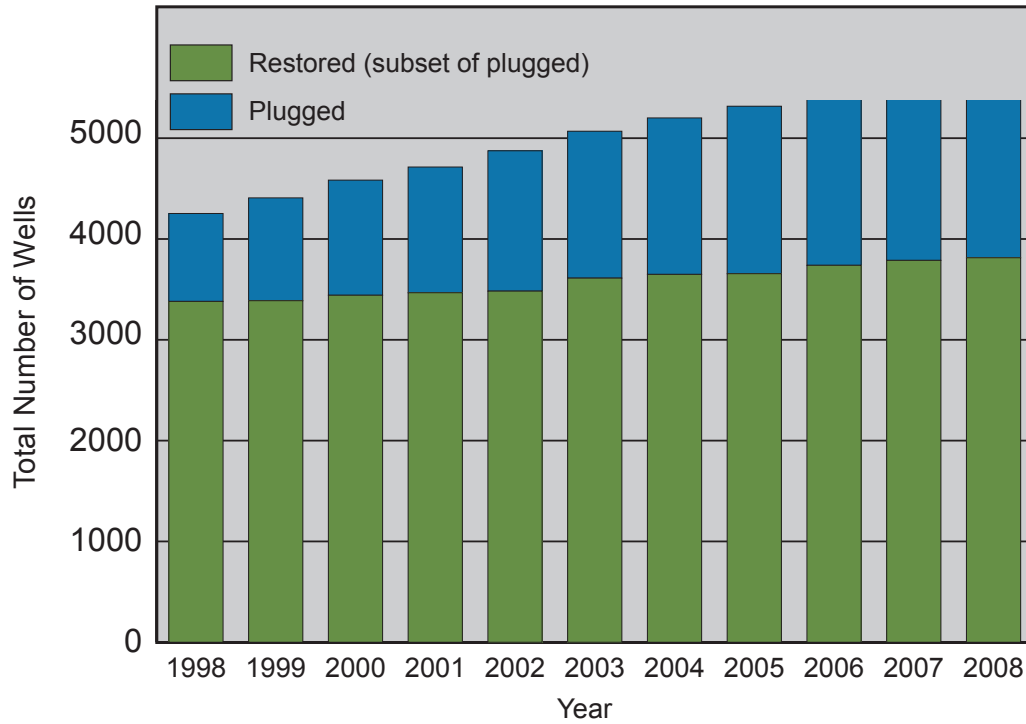


Figure 2.
Cumulative
number of
wells
plugged and
restored

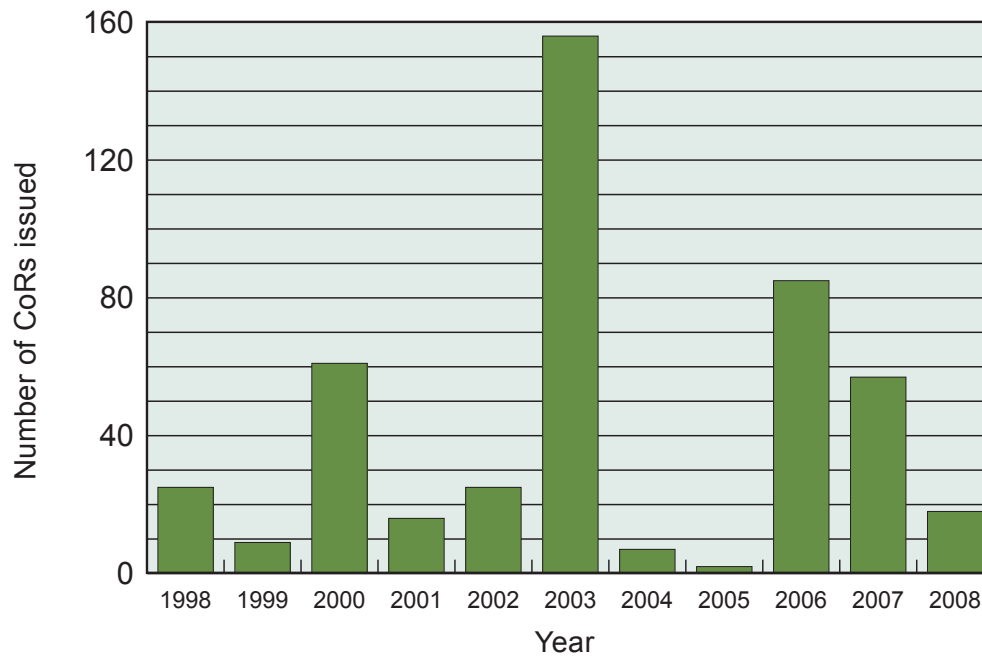


Figure 3.
CoRs issued
annually by
the Commission

Year	Part-I Received	Part-I Accepted	Part-II Received	Part-II Received (CoR issued)	Backlog CoR issued	Total CoRs
2006	16	15	0	0	85	85
2007	100	94	11	11	46	57
2008	98	91	16	16	2	18

Table 3. Number of CoR applications reviewed by year.

Reclamation Activities within the Agricultural Land Reserve

The Agricultural Land Commission (ALC) has delegated authority to the Commission to allow the non-farm use of agricultural land for specified oil and gas activities under the terms of the Delegation Agreement (Agreement).

Site reclamation requirements for lands within the ALR are detailed in Schedule “B” of the Agreement. These criteria are used to assess whether or not the development site has been appropriately reclaimed. Wellsites must be assessed prior to receiving a CoR and pipeline right of ways must be assessed within 24 months of construction of a pipeline.

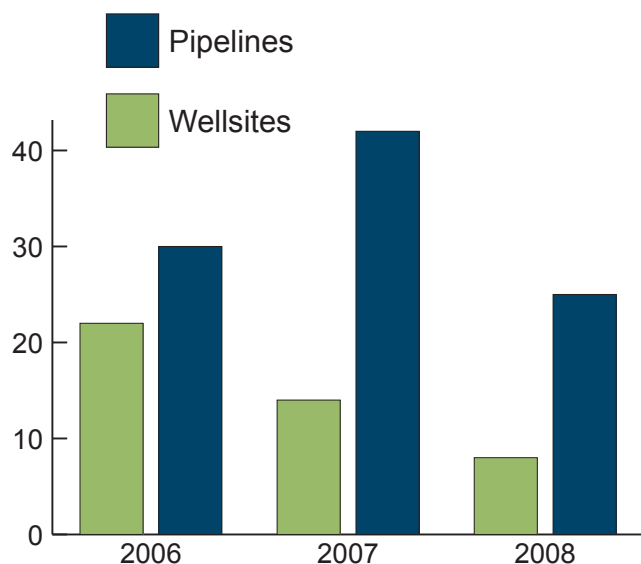


Figure 4. Schedule ‘B’ reports reviewed for wellsites and pipelines within the ALR

Year	Wellsites	Pipelines
2006	22	30
2007	14	42
2008	8	25

Table 4. Schedule ‘B’ reports reviewed for wellsites and pipelines within the ALR

In 2008, an audit was conducted by the Forest Practices Board on the Commission’s performance under the Agreement with the ALC. Based on the audit results, the Commission is implementing a mechanism to track those pipelines for which schedule B reports have not been submitted within the required 24 months of construction.

Orphan Site Reclamation Activities

The Orphan Site Reclamation Fund (Fund) is administered by the Commission and allows the Commissioner to designate an oil and gas site as ‘orphan’ in order to pay for restoration work that is deemed necessary. This is an industry funded mechanism established to provide financial resources for the restoration of sites that no longer have a viable operator and to compensate affected landowners.

The Fund is unique in British Columbia; the upstream oil and gas industry is the only industry in which operators pay a tax that is set aside to cover liabilities resulting from other members of that industry.

To date only two sites have been designated as orphan 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.

In 2003, prior to the establishment of the Fund, MEMPR obtained government funds to address site restoration and landowner compensation for a number of specified locations (Table 5.). The downhole plugging and restoration of these sites is being overseen by the Commission on behalf of MEMPR.

All of the subject wells have been plugged, cut and capped and site investigation and restoration activities are ongoing.

A CoR has been issued for WA 2559. Restoration activity has been completed at WA 2564, 2772, 2569, 2538, 2983, 2998, 3360, and 2062 which are all on private land and CoRs are expected once vegetation is established. Restoration is planned for WA 2560 and 2878 (also on private land) during the summer of 2009. WA 4229 and 6870 are on Crown land and have been assigned lower priority than the private land sites due to the nature of the sites (drilled and abandoned wells) and the distance from residents.

WA #	Location
2564	GNP Horizon Sunrise 11-09-079-16 W6M
2878	GNP Sunrise A11-06-079-16 W6M
2772	GNPM Sunrise 07-12-079-16 W6M
2560	GNPM Sunrise 11-06-079-16 W6M
2569	GNP Horizon Sunrise 11-04-079-16 W6M
2538	GNP Horizon Sunrise 10-08-079-16 W6M
2559	GNP Horizon Sunrise 11-05-079-16 W6M
2983	GNPM Horizon Sunrise 06-07-079-16 W6M
2998	GNP Horizon Sunrise 10-05-079-16 W6M
3360	GNPM Arlington Sunrise 11-02-079-17 W6M
2062	Kent-Noremco Wolf d-14-G/94-A-15
4229	Regency Turbo Klua a-87-B/94-J-09
6870	Sunarctic East Rigel b-28-K/94-A-09

Table 5. Sites specified for abandonment and restoration by MEMPR funding

Contingent Liability Review

CoRs are issued after the permit holder has demonstrated that the established remediation criteria in effect at the time of application review have been met. These criteria may change over time as detection and remediation technology advances and as the global understanding of contaminant behaviours continues to expand. As such, there is the possibility that additional future remediation efforts may be required after issuance of a CoR if new contamination issues related to the use of the site for oil and gas activities are discovered. The permit holder is responsible for completing any future remediation. In rare cases, it may be impossible to identify the responsible party. The Orphan Well Fund was created to provide funds for remediation under these circumstances.

To estimate the financial implications of additional remediation at sites where no responsible party can be identified, the Commission has reviewed all of the sites that have been issued CoR or which are exempt from the requirement. This population has been analyzed to determine the

number and nature of sites that cannot be linked to a responsible party, should remedial work be necessary.

There are currently 3,814 sites that have received a CoR or are exempt from the requirement – 541 of these are on freehold (private) land. Of the 3,814 sites, 3,415 (89.5%) are linked to companies that have active operations in BC and that the Commission does not believe pose a significant risk based on asset/liability assessment. Of the remaining 399 wells, the responsibility for 306 of them can be traced to one or more active companies that have operations in British Columbia, or other have continued operations in other jurisdictions. Liable parties for the remaining 93 wells have not yet been identified.

Of these 93 wells, 37 are on freehold land. Of these 37 wells, 33 were drilled and plugged, 2 were cased/completed without any production, 1 was a producing oil well and 1 was a producing gas well. Of the 56 sites on Crown land, 51 were

drilled and plugged, 1 was a completed gas well that never produced, 3 were producing oil wells, and 2 were producing gas wells – one of which was investigated and issued a CoR by the Commission as part of the Orphan well project funded by MEMPR prior to the establishment of the Fund.

In total, only 7 of the 93 wells for which responsible owners cannot be identified were ever placed into production. Of these 7 sites, one was investigated under Commission oversight and was issued a CoR in 2006. No remediation of the site was required.

Given the small number of sites where a responsible party cannot be identified, the Commission believes that the contingent liabilities associated with possible remediation under the Fund are well within the capacity of the Fund.

Not included in the above analysis are historical wells that were drilled prior to any provincial legislation. There are 22 known historical wells drilled in southeast British Columbia during the early 1900's and the Commission is currently trying to locate and assess the need for any work at these sites. Many of these sites were drilled at or in the vicinity of natural oil seeps so the risk of contamination is not expected to be any greater than that presented by the natural environment.

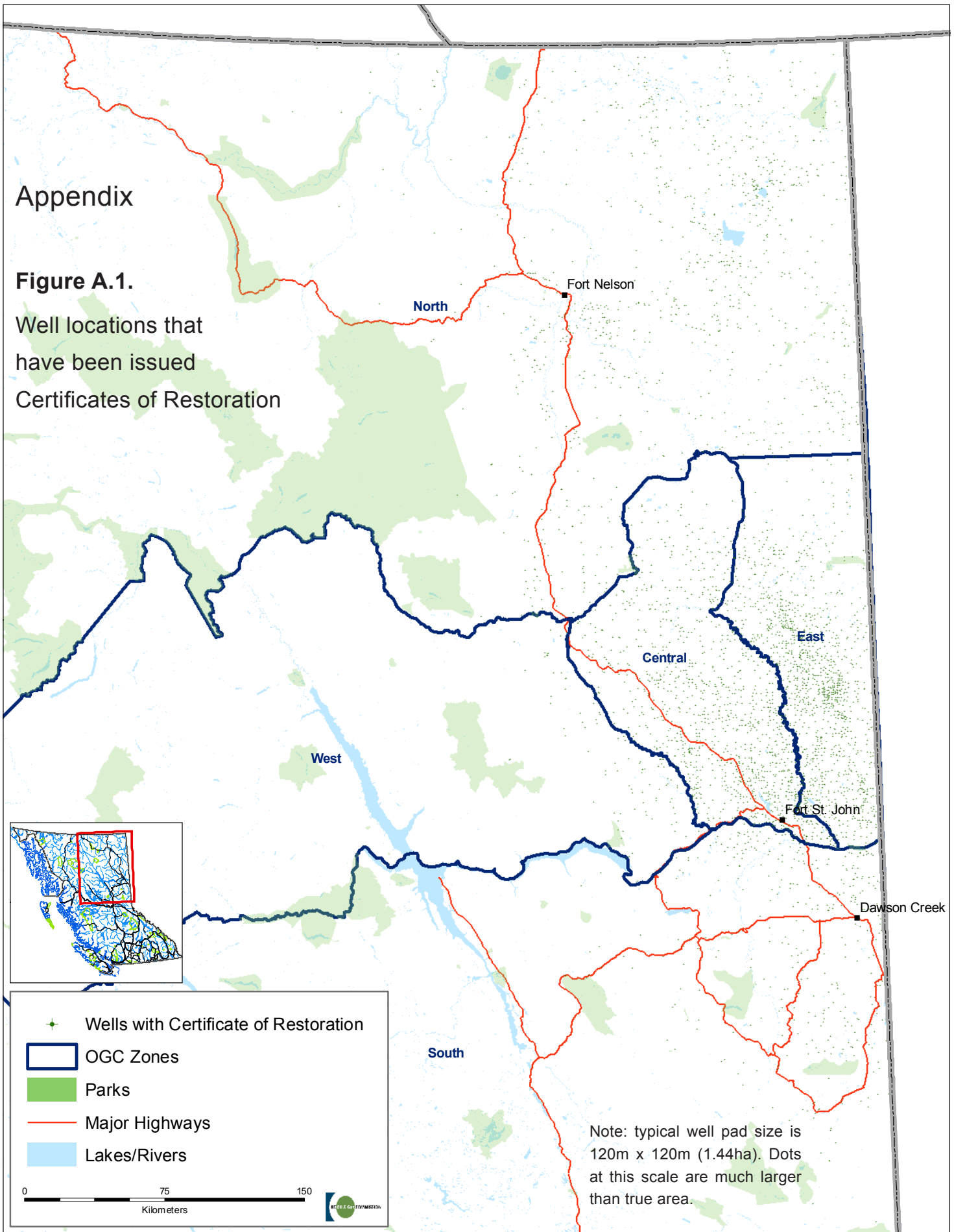
Conclusion

British Columbia's CoR Program ensures that the 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 Commission is responsible for overseeing restoration activity ensuring that all applications approved are in the interest of the public and environment. The Commission is committed to working with First Nations, other government agencies, industry, landowners, and other stakeholders to appropriately manage site restoration activities.

Appendix

Figure A.1.

Well locations that
have been issued
Certificates of Restoration



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 OGC 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 Oil and Gas Commission is able to exercise the powers of the ALC to decide applications for oil and gas activities and pipelines on ALR lands.

Backlog CoR Application

A CoR application submitted by the operator (prior to the implementation of the new CoR process) where the site is awaiting final inspection of surface reclamation by the Commission. The Commission will issue a CoR if the operator submits a final reclamation inspection report from a Qualified Reclamation Specialist in lieu of awaiting the Commission inspection of the site.

Certificate of Restoration (CoR)

A document issued by the Oil and Gas 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: http://www.env.gov.bc.ca/epd/remediation/leg_regs/csr.htm

Crown Land Restoration Branch (CLRB)

A branch of the Ministry of Agriculture and Lands responsible for the management of provincial contaminated sites. The CLRB was established in 2003 to assume a lead role for government to take actions toward creating a provincial strategy that reflects stronger leadership and public accountability with respect to the management of contaminated sites for which the province is responsible. More information on the CLRB can be viewed at: <http://www.agf.gov.bc.ca/clad/ccs/index.html>

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: <http://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: <http://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.