

**Canadian Institute of Resources Law
Institut canadien du droit des ressources**

Regulating Hydraulic Fracturing: Regulatory Recourse for Subsurface Communication

Kimberly Howard

CIRL Occasional Paper #51

September 2015

MFH 3353, Faculty of Law, University of Calgary, Calgary, Alberta, Canada T2N 1N4
Tel: (403) 220-3200 Fax: (403) 282-6182 E-mail: cirl@ucalgary.ca Web: www.cirl.ca

The Canadian Institute of Resources Law encourages the availability, dissemination and exchange of public information. You may copy, distribute, display, download and otherwise freely deal with this work on the following conditions:

- (1) You must acknowledge the source of this work,
- (2) You may not modify this work, and
- (3) You must not make commercial use of this work without the prior written permission of the author(s).

Copyright © 2015

Canadian Institute of Resources Law

The Canadian Institute of Resources Law was incorporated in 1979 with a mandate to examine the legal aspects of both renewable and non-renewable resources. Its work falls into three interrelated areas: research, education, and publication.

The Institute has engaged in a wide variety of research projects, including studies on oil and gas, mining, forestry, water, electricity, the environment, aboriginal rights, surface rights, and the trade of Canada's natural resources.

The education function of the Institute is pursued by sponsoring conferences and short courses on particular topical aspects of resources law, and through teaching in the Faculty of Law at the University of Calgary.

The major publication of the Institute is its ongoing looseleaf service, the *Canada Energy Law Service*, published in association with Carswell. The results of other Institute research are published as discussion papers.

The Institute is supported by the Alberta Law Foundation, the Government of Canada, and the private sector. The members of the Board of Directors are appointed by the Faculty of Law at the University of Calgary and the President of the University of Calgary.

All enquiries should be addressed to:

The Executive Director
Canadian Institute of Resources Law
Murray Fraser Hall, Room 3353 (MFH 3353)
Faculty of Law
University of Calgary
Calgary, Alberta, Canada T2N 1N4

Telephone: (403) 220-3200
Facsimile: (403) 282-6182
E-mail: cirl@ucalgary.ca
Website: www.cirl.ca

Institut canadien du droit des ressources

L'institut canadien du droit des ressources a été constitué en 1979 et a reçu pour mission d'étudier les aspects juridiques des ressources renouvelables et non renouvelables. Son travail porte sur trois domaines étroitement reliés entre eux, soit la recherche, l'enseignement et les publications.

L'institut a entrepris une vaste gamme de projets de recherche, notamment des études portant sur le pétrole et le gaz, l'exploitation des mines, l'exploitation forestière, les eaux, l'électricité, l'environnement, les droits des autochtones, les droits de surface et le commerce des ressources naturelles du Canada.

L'institut remplit ses fonctions éducatives en commanditant des conférences et des cours de courte durée sur des sujets d'actualité particuliers en droit des ressources et par le truchement de l'enseignement à la Faculté de droit de l'Université de Calgary.

La plus importante publication de l'institut est son service de publication continue à feuilles mobiles intitulé le *Canada Energy Law Service*, publié conjointement avec Carswell. L'institut publie les résultats d'autres recherches sous forme de documents d'étude.

L'institut reçoit des subventions de l'Alberta Law Foundation, du gouvernement du Canada et du secteur privé. Les membres du conseil d'administration sont nommés par la Faculté de droit de l'Université de Calgary et le recteur de l'Université de Calgary.

Toute demande de renseignement doit être adressée au:

Directeur exécutif
Institut canadien du droit des ressources
Murray Fraser Hall, pièce 3353
Faculté de droit
L'Université de Calgary
Calgary, Alberta, Canada T2N 1N4
Téléphone: (403) 220-3200
Télécopieur: (403) 282-6182
Courriel: cirl@ucalgary.ca
Site Web: www.cirl.ca

Table of Contents

<i>Abstract</i>	vii
<i>Acknowledgements</i>	ix
<i>List of Abbreviations</i>	xi
1.0 Introduction	1
1.1 Scope of Paper	5
2.0 What is Hydraulic Fracturing?	6
3.0 Regulation of Hydraulic Fracturing in Alberta	9
3.1 The Regulation of Oil and Gas Development in Alberta.....	11
3.2 AER Directives and the OGCR	13
3.3 Industry Standards	14
3.4 Government Policy and the Integrated Resource Management System.....	15
3.5 AER’s Proposed Framework for Unconventional Oil and Gas	16
3.6 AER Regulations Targeted at Subsurface Communication.....	18
4.0 Regulatory Recourse for Subsurface Communication Disputes	19
4.1 General Powers of the AER	19
4.2 Notice Requirements.....	21
4.3 Shut-in or Suspension of Production	23
4.3.1 AER’s Use of Section 44 of the OGCA.....	25
4.3.2 AER’s Use of Section 16 of the OGCA.....	30
4.3.3 Shut-in in Response to Conservation Concerns.....	33
4.3.4 Application of Shut-in Orders to Subsurface Communication Disputes.....	36
4.4 Production Sharing Agreements	37
4.5 Testing, Monitoring and Reporting Obligations.....	40
4.6 Commingling Orders	41
4.7 Subsurface Orders	43
5.0 Conclusion	44
<i>CIRL Publications</i>	47

Abstract

This paper provides an overview of the legal framework for the regulation of hydraulic fracturing in Alberta and examines the potential regulatory options and liability for subsurface communication caused by hydraulic fracturing activities. Specifically, this paper examines the jurisdiction of the Alberta Energy Regulator (AER) to: (i) order that operations be shut-in or suspended due to communication, (ii) impose obligations on industry to provide notification of hydraulic fracturing activities, including subsurface communication, (iii) order mandatory commingling orders, (iv) encourage production sharing agreements, and (v) impose testing, monitoring, production controls and reporting obligations.

With the widespread use of multistage horizontal hydraulic fracturing, disputes related to subsurface communication will continue to be raised with the AER and in the courts. Thus far the AER has taken a risk management approach through monitoring and testing requirements. Generally, the AER has permitted development to occur by endorsing an approach which relies on the known and inevitable consequences of mining and recovering the minerals. This approach has been justified by the AER on the basis that any production of another's minerals does not result in irreparable harm. The harm or damaged caused can be identified, quantified and compensation paid.

Acknowledgements

The Institute would like to thank the Alberta Law Foundation for their generous support in the development of this occasional paper.

List of Abbreviations

ABCA	Alberta Court of Appeal
AEUB	Alberta Energy Utilities Board
AEC	Alberta Energy Co.
AER	Alberta Energy Regulator
ALSA	<i>Alberta Land Stewardship Act</i>
CAPP	Canadian Association of Petroleum Producers
CNRL	Canadian Natural Resources Limited
EPEA	<i>Environmental Protection and Enhancement Act</i>
ERCB	Energy Resources Conservation Board
EUB	Energy Utilities Board
MMA	<i>Mines and Minerals Act</i>
OGCA	<i>Oil and Gas Conservation Act</i>
OGCR	<i>Oil and Gas Conservation Rules</i>
PSAC	Petroleum Services Association of Canada
REDA	<i>Responsible Energy Development Act</i>

1.0 Introduction

The Alberta Energy Regulator’s (AER or the Board) regulation of oil and gas is long established and its “experience and expertise are broadly accepted by the industry.”¹ Notwithstanding use of best practices and all of the current regulatory requirements, “there have been occurrences of intra-zone communication between wellbores that are being hydraulically fractured and adjacent wellbores, which are producing or being drilled, sometimes considerable distances away.”² In Alberta, disputes over mineral rights ownership have arisen from hydraulic fracturing, including one instance arising from an allegation that fractures would propagate into an adjacent reservoir.³

Focussing on communication between wells, formations or subsurface rights due to the propagation of fractures beyond intended boundaries, this paper provides an overview of the legal framework for the regulation of hydraulic fracturing in Alberta and examines the AER’s powers to respond to subsurface communication disputes between industry parties. As the principal regulator of oil and gas development in Alberta, the AER can address subsurface communication disputes through various means including the power to: (i) impose obligations for industry to provide notification of hydraulic fracturing activities, including subsurface communication, (ii) order the shut-in or suspend operations due to communication, (iii) order mandatory commingling, (iv) issue a subsurface order, (iv) encourage production sharing agreements, and (v) impose production controls and monitoring.

Communication issues can originate in many ways, including from fractures propagating beyond lease boundaries or into neighboring formations (above or below) causing new conduits for the migration of oil and gas between wells or reservoirs. Additionally, water and other fluids used in the fracturing process or used in conjunction

¹ Alastair R Lucas, Theresa Watson & Eric Kimmel, “Regulating Multistage Hydraulic Fracturing: Challenges in a Mature Oil and Gas Jurisdiction” in Donald N Zillman et al, eds, *The Law of Energy Underground: Understanding New Developments in Subsurface Production, Transmission, and Storage* (New York: Oxford University Press, 2014) at 128 (it was 1938 when the Petroleum and Natural Gas Conservation Board [one of precursors to the AER] was established at 128).

² Energy Resources Conservation Board (ERCB), *Unconventional Gas Regulatory Framework — Jurisdictional Review*, Report 2011-A (28 January 2011) at 5 [ERCB, Jurisdictional Review]; Nigel Banks, “Non-Conventional Oil and Gas Resources and the Legal Issues Associated with Hydraulic Fracturing in Canada”, *International Environmental and Resource Law Committee Newsletter* 15:4 (August 2013) 4 at 5 [Banks, “Legal Issues”] (the Board had recorded 21 instances of unintentional communication between the subject well (where hydraulic fracturing is being conducted) and offset wells (wells on contiguous/adjacent properties).

³ *Re Surge Energy Inc — Application for a Special Oil Well Spacing and a Review of Well Licences and Compliance of Production Restrictions — Valhalla Field*, ERCB Decision 2013 ABERCB 010 (10 June 2013) [*Re Surge Energy Inc*], online: AER <<http://www.aer.ca/documents/decisions/2013/2013-ABERCB-010.pdf>>.

with secondary or enhanced recovery⁴ can migrate and interfere with the oil and gas composition or cause drainage from outside lease boundaries or from an entirely different reservoir.

For example, if a fracture propagates into an adjacent reservoir containing sour gas with a positive pressure differential, the subsurface communication could potentially lead to the souring of gas, that otherwise did not contain hydrogen sulfide within the target reservoir.⁵ Subsurface communication can also occur between a wellbore being stimulated and an offset energy wellbore that penetrates the same formation.⁶

These subsurface communication issues can cause a number of adverse effects, including:⁷ (i) changes in reservoir pressure and resulting production, (ii) changes in oil and gas composition, (iii) drainage, (iv) the potential for waste or stranding of resources if there is a pressure differential between the involved reservoirs, and (v) the potential for hydrocarbons to be produced from outside the operator's legal entitlement (e.g. production from a neighboring formation or outside lease boundaries).⁸

Notwithstanding, its various regulatory tools, the tools available to the AER may fall short in resolving communication issues leaving participants to resolve disputes through legal proceedings drawing on common law causes of actions.⁹ Civil disputes regarding hydraulic fracturing have focussed on property, tort and contract law.¹⁰ The question of

⁴ *Oil and Gas Conservation Act*, RSA 2000, c O-6, s 1(1)(r) [OGCA] (“enhanced recovery” is defined as “... the increased recovery from a pool achieved by artificial means or by the application of energy extrinsic to the pool, which artificial means or application includes pressuring, cycling, pressure maintenance or injection to the pool of a substance or form of energy, but does not include the injection in a well of a substance or form of energy for the sole purpose of (i) aiding in the lifting of fluids in the well, or (ii) stimulation of the reservoir at or near the well by mechanical, chemical, thermal or explosive means;”). See also *Resources Applications for Oil and Gas Reservoirs*, AER Directive 065 (9 April 2014) [Directive 065] (“enhanced recovery (ER) improves hydrocarbon recovery by injecting fluid(s) into a hydrocarbon reservoir to [:] add to or maintain reservoir energy (pressure), displace hydrocarbons to productions wells, and/or alter the reservoir fluids so that hydrocarbon flow and recovery are improved at 2-1).

⁵ See e.g. *Re Surge Energy Inc*, *supra* note 3 (Exhibit 155.02, CNRL 19 March 2013 Round 3 Evidence Submission at 7) (at issue in this proceeding was, *inter alia*, ways to identify subsurface communication. One method that was raised was a compositional analysis in relation to past acid gas injection into one of the subject reservoirs).

⁶ AER, Bulletin, 2012-02, “Hydraulic Fracturing: Interwellbore Communication between Energy Wells” (23 January 2012), superseded by *Hydraulic Fracturing — Subsurface Integrity*, AER Directive 083 (21 May 2013) [Directive 083].

⁷ *Ibid.*

⁸ *Ibid.*

⁹ David E Pierce, “Developing a Common Law of Hydraulic Fracturing” (2010-2011) 72 U Pitt L Rev 685 at 686.

¹⁰ *Ibid.*; see generally Kaoru Suzuki, “The Role of Nuisance in the Developing Common Law of Hydraulic Fracturing” (2014) 41 Boston College Env'tl Aff L Rev 265; EM Bredin, “Legal Liability for Water Flooding in Petroleum Reservoirs in Alberta” (1955-1961) 1 Alta L Rev 516; Brian J Preston, “Unconventional Natural Gas in the Courts: An Overview” (2014) 32:4 J Energy & Nat Resources L 377;

which causes of action (regulatory or common law), and which forum (the court or the AER) will offer effective remedies for subsurface communication could have a significant impact on operations.

At one extreme position, David E. Pierce suggests that the imposition of heavy-handed liability for hydraulic fracturing could cause operators to abandon the process:

[b]ecause it is not possible to control the precise location of fissures created by the fracturing process, imposing liability for fissures that cross property boundaries would cause operators to limit their use of hydraulic fracturing and may, ultimately, cause them to abandon the process altogether — which would mean abandoning development of most shale formations.¹¹

Furthermore, unreasonably restricting the use of hydraulic fracturing could sterilize the unconventional resources or tight shale formations.¹²

On the other hand, permitting operators to produce oil and gas that originates outside of the geographical or geological boundaries contained within the lease defeats the purpose of the grant of exclusive mineral rights to a particular property.¹³ Such a rule (the rule of capture) encourages operators to intentionally push the permitted subsurface boundaries resulting in a race to produce which threatens overall hydrocarbon recovery.¹⁴

Such disputes raise both property and liability issues. Property issues deal with who owns the produced hydrocarbons; liability issues deal with the consequences of producing hydrocarbons that originate from another property. In addressing these issues, the rule of capture remains the default rule in Alberta.¹⁵ This rule “provides that in the event that A drills a well on his own land and produces oil or gas in a manner consistent with good industry practice, then if some of that oil and gas originates from under neighboring lands, A becomes the owner of the oil or gas so produced and is not liable to his or her neighbour.”¹⁶

P Donald Kennedy et al, “Tort Liability in Waterflood Operations” (1966-1967) 5 Alta L Rev 52; Terry D Ragsdale, “Hydraulic Fracturing: The Stealthy Subsurface Trespass” (1993) 28:3 Tulsa LJ 311; Barry Barton, “The Common Law of Subsurface Activity: General Principle and Current Problems” in Zillman et al, *supra* note 1.

¹¹ Pierce, *supra* note 9 at 686.

¹² *Ibid.*

¹³ *Cf Anderson v Amoco Canada Oil and Gas*, 2004 SCC 49, 241 DLR (4th) 193, [2004] 3 SCR 3 at para 39 [Anderson].

¹⁴ *Cf Anderson, ibid* at para 37.

¹⁵ Cecilia A Low, “The Rule of Capture: Its Current Status and Some Issues to Consider” (2009) 46 Alta L Rev 799 at 799-801; Nigel Bankes, “The rule of capture is not the only no liability rule in the oil and gas business”, ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (16 April 2010), online: ABlawg <http://ablawg.ca/wp-content/uploads/2010/04/blog_nb_hunt_abqb_april2010.pdf>.

¹⁶ Low, *ibid* at 799-800.

Canadian jurisprudence has established that legislation may vary the rule of capture¹⁷ recognizing that the *Oil and Gas Conservation Act* (OGCA), as conservation legislation, was enacted, in part, to change the old concept of the rule of capture in an attempt to prevent undue and wasteful extraction methods.¹⁸ Examples of statutory modifications to the application of the rule include: “spacing rules, target requirements, rules relating to good production practice and allowables, rateable take orders and the common orders (purchaser, carrier, and processor).”¹⁹

In the context of subsurface communication caused by hydraulic fracturing, will the rule of capture be applied as the default property and no liability rule? To date, this remains an unanswered question. How will the AER and the courts address communication caused by hydraulic fracturing? Is it simply a case of a licensee exercising its right “to work, dig and use all reasonable means to recover the minerals” where the use of hydraulic fracturing is necessary for tight shale formations.

Taking a step back, Crown leases are three dimensional insofar as “[t]hey confer rights to explore for and produce hydrocarbons over a specified area and are either restricted in depth or are confined to stated geological horizons.”²⁰ The rule of capture has historically been applied to subsurface communication between wells within the same pools or geographical and geological boundaries or as described by the Privy Council, “within the same container”.²¹ In other words, the rule applies where there is an overlap in the legal entitlement, such as the right to work and recover different hydrocarbons from the same lands.²² Additionally, in limited circumstances, courts have permitted a licensee to drill below the base of the terminating formation to, among other things, accommodate the required over-hole for logging tools and casing.²³

A distinction can be drawn between naturally occurring subsurface communication and subsurface communication caused artificially by hydraulic fracturing. The rule of capture applied by the Privy Council in *Borys v Canadian Pacific Railway*, contemplated the migration of hydrocarbons within the same “container”.²⁴ Hydraulic fracturing operations have the potential to create conduits for cross-flow that did not otherwise exist within a “container” and between adjacent “containers”. On the other hand, hydraulic

¹⁷ *Imperial Oil Limited v Placid Oil*, [1963] SCR 333.

¹⁸ *Lickacz v Magna Petroleum Ltd* (1993), 160 AR 193 (Alta QB) at paras 49-50; Low, *supra* note 15 at 812-813.

¹⁹ Nigel Bankes, “Legal Issues Associated with the Adoption of Commercial Scale CCS Projects” (10 November 2008) at 8, online: The Pembina Institute <<https://www.pembina.org/reports/ccs-discuss-legal.pdf>>.

²⁰ *Alberta Energy Co v Goodwell Petroleum Corp*, 2003 ABCA 277, 22 Alta L Rev (4th) 4 at para 3 [Goodwell].

²¹ *Borys v Canadian Pacific Railway*, [1953] AC 217; [1953] 2 DLR 65 (PC) at 67-68 [Borys].

²² *Goodwell*, *supra* note 20 at para 80; Low, *supra* note 15 at 812-813.

²³ *Xerex Exploration Ltd v Petro-Canada*, 2003 ABQB 746, aff’d 2005 ABCA 224.

²⁴ *Borys*, *supra* note 21 at paras 6, 9, 22, 32, 34 & 54.

fracturing is necessary to produce the hydrocarbons from the tight unconventional formations and therefore the potential for fractures to extend beyond the intended boundaries can also be considered a necessarily incidental consequence. If the rule of capture applies and rogue fractures are simply a necessarily incidental consequence of developing the resource, does this suggest that the law should favour a policy that permits licensees to fracture into an adjacent formation?

In summary, it remains unanswered whether or not the rule of capture (with or without modification) applies to subsurface communication caused by hydraulic fracturing. It is within this context that this paper will review the regulatory tools and how they have been used by the AER and the courts.

This paper is organized into five sections. This first section provides an overview of the communication issues related to hydraulic fracturing, the limits to the scope of this paper and an outline of the organization of the paper. Section 2 provides a general overview of hydraulic fracturing and how it is used to enhance the extraction of oil and gas from tight or unconventional formations. Section 3 explores, with a focus on subsurface communication issues, the current and proposed regulatory regime in Alberta for the regulation of hydraulic fracturing. Next, Section 4, provides a discussion of some of the regulatory solutions available to the AER and industry to address subsurface communication disputes. Finally, Section 5 will discuss some of the limits to the AER's jurisdiction and how the AER may approach subsurface communication disputes in the future.

1.1 Scope of Paper

Generally, litigation and regulatory proceedings relating to hydraulic fracturing can be divided into five categories:²⁵

- (1) Litigation between landowners and oil and gas companies (industry);²⁶
- (2) Litigation between rival oil and gas companies;
- (3) Litigation between regulatory agencies and oil and gas companies, typically in the form of “judicial review proceedings to challenge decisions that relate to unconventional [oil and] gas projects or activities”;²⁷
- (4) Public interest litigation involving “environmental non-governmental organizations seeking judicial review of government decisions to grant leases or approvals for unconventional [oil and] gas exploration or approval”;²⁸ and
- (5) Litigation between landowners or industry and regulatory agencies, most recently seen in Alberta with respect to regulatory negligence.²⁹

²⁵ See Preston, *supra* note 10 at 381 (includes a discussion of four general types of litigation with respect to unconventional gas litigation).

²⁶ *Ibid.*

²⁷ See Preston, *supra* note 10 at 381.

²⁸ *Ibid.*

The focus of this paper will be the regulation of hydraulic fracturing in Alberta and regulatory liability for subsurface harm and communication caused by competing industry or historic operations. This paper does not address the remaining categories which may include any common law litigation associated with claims by landowners or public interest groups regarding water contamination, waste management, fugitive gas releases, offshore development, and seismic stability. Also outside the scope of this paper is the potential for claims to be made by surface owners who experience harms as a result of hydraulic fracturing operations³⁰ (e.g. storage of waste water or surface spills), as well as any contractual disputes between industry players.³¹

2.0 What is Hydraulic Fracturing?

In order to review the regulatory tools available to address subsurface communication caused by hydraulic fracturing, a basic understanding of what hydraulic fracturing is and why its use is necessary. This section of the paper provides a brief overview of hydraulic fracturing and its use in Alberta.

Hydraulic fracturing has been used by the oil and gas industry for decades.³² Its recent popularity is due, in part, to its widespread use to extract oil and gas from unconventional formations otherwise thought undevelopable.³³ In Alberta alone, since the 1950s approximately 171,000 wells have been drilled using some form of hydraulic fracturing.³⁴ According to the AER, “[s]ince 2008, approximately 5,000 horizontal wells have been drilled in Alberta using multi-stage hydraulic fracturing to enhance oil and gas recovery.”³⁵ While not new, the intensity of development and the new technology associated with the use of hydraulic fracturing for development of unconventional resources has created new challenges, including “growing public concerns about the real and, in some cases, perceived risk to human health and safety, and the potential environmental impacts, particularly on water resources.”³⁶

²⁹ See especially *Ernst v EnCana Corporation*, 2014 ABQB 672, 2014 ABQB 537, aff’d 2014 ABCA 285.

³⁰ Pierce, *supra* note 9 at 686.

³¹ *Ibid* at 697-698 (discussion of contractual issues associated with hydraulic fracturing).

³² Carl T Montgomery & Michael B Smith, “Hydraulic Fracturing: History of an Enduring Technology” (2010) 62:12 *Journal of Petroleum Technology* 26 at 27 as cited in Kevin Luft, Thomas O’Leary & Ian Laing, “Regulatory and Liability Issues in Horizontal Multistage Fracturing” (2012) 50:2 *Alta L Rev* 403 at 405.

³³ *Ibid* at 406; Canadian Association of Petroleum Producers (CAPP), “Shale Gas”, online: CAPP <<http://www.capp.ca/canadaindustry/naturalGas/ShaleGas/Pages/default.aspx>>.

³⁴ ERCB, News Release, “ERCB Seeking Feedback on Regulatory Approach for Unconventional Development” (17 December 2012), online: AER <<http://www.aer.ca/documents/news-releases/NR2012-13.pdf>>.

³⁵ *Ibid*.

³⁶ Lucas, Watson & Kimmel, *supra* note 1 at 128.

Generally, in Alberta, oil and gas development has been classified as either conventional or unconventional. The terms “conventional” and “unconventional” refer to how the resource is produced and the types of rocks in which the oil and gas is found; the chemical composition of the oil and gas is essentially the same.³⁷ After nearly a century of conventional oil and gas production, Alberta has recently seen a decline in conventional oil and gas reserves and increased investment by industry in unconventional oil and gas reserves.³⁸

According to the Energy Resources Conservation Board (ERCB, predecessor to the AER) *Unconventional Gas Regulatory Framework*, Report 2011A:

The geological and geochemical characteristics of each shale gas play are relatively unique. However, fundamental aspects of shale gas development common to other areas can be expected with shale gas development in Alberta, too. Shale gas plays cover potentially very large continuous areas, thousands to tens of thousands of square kilometres. Gas-in-place volumes are enormous, even for the smaller plays. Depths of prospective shale gas zones range from relatively shallow (less than 300 metres [m]) to quite deep (greater than 3000 m).

In Alberta, there is potential for both shallow and deep shale gas plays. Drilling long-reach horizontal wells is the preferred exploitation strategy for the deeper, thicker gas shales, whereas vertical wells may more typically be used to exploit shallower, thinner shales, such as those in eastern Alberta. Whether a well is horizontal or vertical, stimulation of the shale formation is necessary for economic production, and this is currently most commonly done by hydraulic fracturing.³⁹

Hydraulic fracturing is required because unconventional oil and gas is found in low-permeability rock or tight formations. In order to stimulate the oil and gas to flow up the wellbore for production, a pathway or “crack” in the rock must be created.

Hydraulic well fracturing (“fracking”) is the process of pumping fluid into a wellbore to create enough pressure to crack, or fracture, the rock layer. The fluid usually contains a “proppant,” like sand, that helps keep the fractures open to allow oil and gas to be produced to the well. To produce unconventional oil and natural gas, horizontal wells and multistage fracturing are used. These wells start by drilling vertically (straight down) and then turning the drill bit so that it drills horizontally through the formation.⁴⁰

As compared to conventional, unconventional oil and gas development uses new technology, or new advances of old technology, mainly the combination of horizontal directional drilling and hydraulic fracturing⁴¹ and requires a greater scale of development

³⁷ ERCB, *Regulating Unconventional Oil & Gas in Alberta*, Discussion Paper (Calgary: ERCB, 2012) at 2 [ERCB Discussion Paper].

³⁸ *Ibid* at 1.

³⁹ *Ibid*.

⁴⁰ AER, “What is Hydraulic Fracturing?” (27 March 2015) online: AER <<http://www.aer.ca/about-aer/spotlight-on/unconventional-regulatory-framework/what-is-hydraulic-fracturing>>.

⁴¹ Lucas, Watson & Kimmel, *supra* note 1 at 129-30.

and intensity of infrastructure to be economical.⁴² Included within the category of “unconventional” are shale oil and gas, coal bed methane and tight oil and gas.⁴³ Some authors include the oil sands within the category of unconventional; however, the regulatory framework for the oil sands is well-developed and established.⁴⁴

In addition to the potential for subsurface communication between wells, formations or other subsurface rights due to the propagation of fractures beyond intended boundaries,⁴⁵ hydraulic fracturing raises a broad range of social, environmental and legal issues, including:⁴⁶

- Potential impacts on surface and groundwater given the vast amounts of water required;⁴⁷
- Operational and technical guidelines, such as the proper construction and design of wells and specifically well casing and cementing to protect against water contamination and communication with other wells and formations;⁴⁸
- Waste management, including the handling, storage and disposal of fracking fluids, and the use of deep well injection schemes;⁴⁹
- Fugitive releases of hazardous gases such as methane as a by-product of its use;
- Monitoring and reporting of hydraulic fracturing practices, such as mandatory disclosure of fracture fluid compositions;⁵⁰
- Seismic stability and hydraulic fracturing’s relationship with increased seismicity;⁵¹ and
- Although not applicable in land-locked Alberta, the use of hydraulic fracturing for offshore development.⁵²

⁴² ERCB Discussion Paper, *supra* note 37 at 1.

⁴³ *Ibid* at 2.

⁴⁴ See e.g. *Oil Sands Conservation Act*, RSA 2000, c O-7; *Requirements for Inspection and Compliance of Oil Sands Mining and Processing Plant Operations in the Oil Sands Mining Area*, AER Directive 073 (17 December 2008); *Regulatory Application Process for Modifications to Commercial In Situ Oil Sands Projects*, AER Directive 078 (3 December 2010); *Water Disposal Limits and Reporting Requirements for Thermal In Situ Oil Sands Schemes*, AER Directive 081 (21 November 2012); *Operating Criteria: Resource Recovery Requirements for Oil Sands Mine and Processing Plant Operations*, AER Directive 082 (13 February 2012).

⁴⁵ *Ibid*; Bankes, “Legal Issues”, *supra* note 2 at 7-8.

⁴⁶ Nova Scotia, Department of Energy and Nova Scotia Environment, *Jurisdictional Review of Hydraulic Fracturing Regulation* (Halifax: Nova Scotia’s Hydraulic Fracturing Review Committee, 2012) at 7-9 [Nova Scotia, Jurisdictional Review].

⁴⁷ Nova Scotia, Jurisdictional Review, *ibid* at 7; Bankes, “Legal Issues”, *supra* note 2 at 6-8; Luft, O’Leary & Laing, *supra* note 32 at 409.

⁴⁸ Luft, O’Leary & Laing, *ibid* at 408; Nova Scotia, Jurisdictional Review, *ibid* at 7-8.

⁴⁹ Nova Scotia, Jurisdictional Review, *ibid* at 9.

⁵⁰ BC Oil and Gas Commission, Information Bulletin, INDB 2013-03, “Hydraulic Fracture Data” (4 April 2013).

⁵¹ Bankes, “Legal Issues”, *supra* note 2 at 6; British Columbia, BC Oil and Gas Commission, *Investigation of Observed Seismicity in the Horn River Basin* (Victoria: BC Oil and Gas Commission, 2012).

The effects of hydraulic fracturing occur deep underneath the surface, creating factual and evidentiary difficulties in establishing that subsurface communication issues were caused by hydraulic fracturing, and the extent and nature of any harm that may be caused. In addition, industry treats hydraulic fracturing techniques as confidential in order to maintain a competitive advantage in the marketplace; thus little information about these techniques is publicly available.⁵³ All of these factors make it difficult for the regulator to monitor and track hydraulic fracturing and also for industry to delineate the effects of hydraulic fracturing and the extent of the communication issues that have resulted. Moreover, the highly technical and scientific nature of hydraulic fracturing makes it more difficult to critically evaluate the regulatory measures in place.

3.0 Regulation of Hydraulic Fracturing in Alberta

This section of the paper briefly outlines the regulatory framework for hydraulic fracturing within Alberta.

Pursuant to section 92A(1) of the *Constitution Act, 1867*,⁵⁴ the regulation of the exploration, development, conservation and management of non-renewable resources falls within the exclusive jurisdiction of the province. The Province of Alberta has delegated the regulation of hydraulic fracturing to the AER under the following main statutes and the regulations: (i) the *Responsible Energy Development Act* (REDA),⁵⁵ (ii) the *Mines and Minerals Act* (MMA),⁵⁶ and (iii) the OGCA. Other key statutes include the *Environmental Protection and Enhancement Act* (EPEA),⁵⁷ the *Public Lands Act*,⁵⁸ the *Surface Rights Act*,⁵⁹ the *Water Act*,⁶⁰ and the *Alberta Land Stewardship Act* (ALSA).⁶¹

In Alberta, regulation of hydraulic fracturing for the purpose of producing oil and gas falls within the AER's mandate, which pursuant to section 2(1) of REDA, is:

- (a) to provide for the efficient, safe, orderly and environmentally responsible development of energy resources in Alberta through the Regulator's regulatory activities, and
- (b) in respect of energy resource activities, to regulate

...

⁵² Bankes, "Legal Issues", *ibid* at 4.

⁵³ ERCB, Jurisdictional Review, *supra* note 2 at 7.

⁵⁴ *Constitution Act, 1867*, 30 & 31 Vict, c 3.

⁵⁵ SA 2013, c R-17.3 [REDA].

⁵⁶ RSA 2000, c M-17.

⁵⁷ RSA 2000, c E-12.

⁵⁸ RSA 2000, c P-40.

⁵⁹ RSA 2000, c S-24.

⁶⁰ RSA 2000, c W-3.

⁶¹ SA 2009, c A-26.8 [ALSA].

- (ii) the protection of the environment, and
- (iii) the conservation and management of water, including the wise allocation and use of water,

in accordance with energy resource enactments and, pursuant to this Act and the regulations, in accordance with specified enactments.

Under REDA, the AER's authority extends (to the extent approvals under these acts relate to energy resource activities) to approvals under the *Public Lands Act*, the *Water Act* and EPEA.⁶² The AER is therefore a "single window" regulator providing all of the requisite approvals for energy resource development. The AER has jurisdiction to oversee both approvals under Part 8 of the MMA and the actual development, production, transportation and processing of oil and gas under the OGCA, the *Oil and Gas Conservation Rules* (OGCR)⁶³ and the various Directives and regulations.

The AER's regulatory regime "was designed for conventional oil and gas development and did not fully contemplate the unique nature of unconventional gas."⁶⁴ Recognizing the shift in Alberta's conventional oil and gas production and increased investment in the development of unconventional gas development (i.e. coal bed methane, shale gas and tight gas), the AER initiated a program to develop and implement a new regulatory framework for Alberta's unconventional resources (Unconventional Framework).⁶⁵ To address the challenges associated with unconventional development, the AER is piloting,

... a new regulatory approach that includes moving from well-by-well regulation to regulation focused on development within a defined area. This play-focused regulation would be performance-based to achieve specific outcomes in public safety, water protection, air quality, waste management, surface impacts, resource conservation, and orderly development.⁶⁶

In July 2014, the AER took a first step to implement the Unconventional Framework by unveiling a pilot project for use in the area of Duvernay shale play near Fox Creek, Alberta.⁶⁷ By regulating unconventional development using the concept of a "play", the AER aims to address the challenges and take a holistic approach to ensure all issues and impacts are being addressed including cumulative impacts. As described by one group of authors, unconventional resource development introduces unique challenges when compared to conventional development:

⁶² REDA, *supra* note 55, s 24.

⁶³ Alta Reg 151/1971 [OGCR].

⁶⁴ ERCB, Jurisdictional Review, *supra* note 2 at 1.

⁶⁵ *Ibid.*

⁶⁶ ERCB, *supra* note 34.

⁶⁷ AER, News Release, AERNR2014-16, "Alberta Energy Regulator pilots play-based regulation project" (2 July 2014) online: AER <<http://www.aer.ca/about-aer/media-centre/news-releases/news-release-2014-07-02>>.

Unconventional resource development introduces unique risk characteristics and challenges which may not fit neatly within a traditional ‘command and control’, activities-based regulatory regime. Relative to conventional resource development:

- a. the scale and intensity of development is large and more intrusive, the technology is more advanced and more complex, and reservoir management is more nuanced,
- b. capital investment is large and the market conditions more volatile,
- c. greater water consumption is required
- d. development activities are more visible and are of longer duration,
- e. there is a large inventory of offsetting subsurface infrastructure,
- f. development often occurs proximal to populated urban and rural centers,
- g. there are a large number of heterogeneous industry players with varying capabilities,
- h. there is an emerging class of educated, politically astute, and media savvy global population that has reservations about the government’s and industry’s capability to manage and balance the risks to social and environmental values.⁶⁸

Although the proposed Unconventional Framework is not yet applicable beyond the pilot project, it is relevant to this discussion of the regulation of hydraulic fracturing as the regulatory approach is relevant to the AER’s general approach to unconventional resource development.

3.1 The Regulation of Oil and Gas Development in Alberta

The AER has broad powers regarding the development of energy resources (conventional and unconventional) and oversees the entire life cycle of energy resource projects. These broad powers are illustrated in section 10 of the OGCA which affords the AER the power to make rules about:⁶⁹

- How wells are drilled and completed, including the minimum specifications, monitoring, materials and other minimum requirements;⁷⁰
- The kind and specification of tools, casing, equipment and materials that may be used for drilling, construction, alteration or use of any works, fittings, machinery, plant or appliances used by industry in connection with the development, production, transmission, supply, distribution, measurement, consumption or handling of any gas or oil;⁷¹
- The strategies used by industry to confine any fluids injected underground within formations;⁷²
- Conservation and the prevention of waste “and to do any other matter reasonably incidental to the development and drilling of any oil or gas wells, the operation of them and the production from them;”⁷³

⁶⁸ Lucas, Watson & Kimmel, *supra* note 1 at 135.

⁶⁹ OGCA, *supra* note 4, s 1(1)(vv.1) (the term “regulator” is defined as the AER).

⁷⁰ *Ibid*, s 10(1)(o).

⁷¹ *Ibid*, s 10(1)(u).

⁷² *Ibid*, s 10(1)(w).

- “The location of wells and the methods of operation to be observed during drilling and in the subsequent management and conduct of any well for any purpose including, ... (i) the protection of life, property and wildlife, (ii) the prevention and extinguishment of fires, and (iii) the prevention of wells blowing out of control”;⁷⁴ and
- Required tests, analyses, surveys, monitoring or other logs.⁷⁵

Although this list is not exhaustive, it clearly demonstrates that the AER has broad powers to regulate oil and gas activities, including the licencing of wells. Pursuant to Part 6 of the OGCA, a licence is required from the AER to construct and operate petroleum industry developments, including wells.⁷⁶ The completion of a well using hydraulic fracturing does not require a separate license but is subject to reporting requirements under the OGCR and the Directives enacted thereunder.⁷⁷ In summary, no person can drill a well or undertake preparatory and incidental activities without the requisite licence from the AER⁷⁸ which may be subject to any conditions, restrictions or stipulations that the AER considers appropriate.⁷⁹

In determining what conditions, restrictions or stipulations may be appropriate, the AER also has the power to issue subsurface orders under section 11.104 of the OGCR.⁸⁰ These newly adopted subsurface orders will be discussed below as one of the regulatory tools available to address subsurface communication disputes. Section 11.104 of the OGCR and the resulting subsurface orders are targeted at the development of tight oil and gas resources and intended to permit the AER to tailor regulatory requirements for specific geological zones over specified areas to better suit the resource being developed.⁸¹

⁷³ *Ibid*, s 10(1)(aaa).

⁷⁴ *Ibid*, s 10(1)(aa).

⁷⁵ *Ibid*, s 10(1)(gg).

⁷⁶ *Ibid*, Part 6.

⁷⁷ Nova Scotia, Jurisdictional Review, *supra* note 46 at 10.

⁷⁸ OGCA, *supra* note 4, s 11.

⁷⁹ *Ibid*, s 18.

⁸⁰ AER, Bulletin, 2015-05, “Oil and Gas Conservation Rules Change Introducing Subsurface Orders” (10 February 2015) [AER Bulletin 2015-05].

⁸¹ AER Bulletin 2015-05, *ibid* (AER has indicated that these orders “will only address resource regulatory matters that are under the AER’s jurisdiction. Where the orders allow increased well density, these orders will not in any way predetermine regulatory approval of wells, pipelines, other production facilities, access roads and other surface disturbances associated with energy development of the geological zones defined in the order”); See e.g. AER, *Subsurface Order No 1* (13 February 2015) (now updated to *Subsurface Order No 1A* (23 July 2015); AER, *Subsurface Order No 2* (19 February 2015); AER, *Subsurface Order No 3* (17 March 2015).

3.2 AER Directives and the OGCR

While its governing legislation grants broad powers to regulate the use of hydraulic fracturing as a method or technique of completing a well and stimulating production, the AER prescribes the actual details, operational and engineering constraints in its series of Directives. Directives are developed with the assistance of “a wide range of technical experts — geologist, engineers, environmental scientists and other specialized technical staff ...”⁸² and are generally incorporated into the OGCR. Operators and licensees are required pursuant to the OGCA and the OGCR, to comply with the terms and conditions of the AER’s Directives.⁸³ For example, pursuant to section 3.062 of the OGCR, licensees must comply with *Directive 083: Hydraulic Fracturing — Subsurface Integrity* (Directive 083)⁸⁴ for all hydraulic fracturing operations.

Although the completion of a well using hydraulic fracturing does not require a separate license, hydraulic fracturing is subject to certain technical and reporting obligations set out in AER Directives.⁸⁵ These include:⁸⁶

- Reporting requirements regarding the amounts and sources of water and chemicals used in every hydraulic fracturing operation;⁸⁷
- Hydraulic fracturing fluids used above the base of groundwater protection must be nontoxic and the operator must reveal the contents of the fluids to the AER upon request;⁸⁸
- The type and volume of all additives used in fracturing fluids must be recorded in the daily record of operations for any well;⁸⁹ and

⁸² AER, “How will the AER Ensure this Activity is Safe?” [AER, “Activity is Safe”], online: AER <<http://www.aer.ca/about-aer/spotlight-on/unconventional-regulatory-framework/how-will-the-aer-ensure-this-activity-is-safe>>.

⁸³ See e.g. OGCR, *supra* note 63, ss 1.200, 2.010, 3.013, 3.050, 3.061, 3.062, 5.150 & 6.070.

⁸⁴ Directive 083, *supra* note 6.

⁸⁵ See e.g. *Surface Casing Depth Requirements*, AER Directive 008 (9 December 2013) [Directive 008]; *Casing Cementing Minimum Requirements*, AER Directive 009 (1 July 1990) [Directive 009]; *Minimum Casing Design Requirements*, AER Directive 010 (22 December 2009) [Directive 010]; *Compliance Assurance*, AER Directive 019 (1 September 2010) [Directive 019]; *Injection and Disposal Wells — Well Classifications, Completions, Logging, and Testing Requirements*, AER Directive 051 (1 March 1994); *Storage Requirements for the Upstream Petroleum Industry*, AER Directive 055 (1 December 2001); *Energy Development Applications and Schedules*, AER Directive 056 (1 May 2014) [Directive 056]; *Oilfield Waste Management Requirements for the Upstream Petroleum Industry*, AER Directive 058 (23 December 2008); *Well Drilling and Completion Data Filing Requirements*, AER Directive 059 (19 December 2012) [Directive 059]; *Upstream Petroleum Industry Flaring, Incinerating, and Venting*, AER Directive 060 (1 May 2014); *Emergency Preparedness and Response Requirements for the Petroleum Industry*, AER Directive 071 (24 November 2009).

⁸⁶ AER, “Activity is Safe”, *supra* note 82.

⁸⁷ *Baseline Water Well Testing Requirements for Coalbed Methane Wells Completed above the Base of Groundwater Protection*, AER Directive 035 (8 May 2006).

⁸⁸ AER, “What is Hydraulic Fracturing?”, *supra* note 40; Directive 008, *supra* note 85.

- To prevent the fluids used in connection with hydraulic fracturing from mixing or entering groundwater or surface water, the AER requires that industry use steel casing and full cementing of the wellbore to prevent mixing in the water formations through which the wellbore may pass.⁹⁰

3.3 Industry Standards

Industry has also developed its own best practices and codes of conduct. The AER has acknowledged industry practices as a means to achieve its desired regulatory outcomes.⁹¹ Industry standards, although often misunderstood by the public, are a key regulatory tool as they complement the performance based regulations. In the highly technical, commercially sensitive world of new technologies, industry's input is critical to practical and effective regulations and standards.

The Canadian Association of Petroleum Producers (CAPP) recommends the *Guiding Principles and Operating Practices for Hydraulic Fracturing* (CAPP Guiding Principles)⁹² for observance by operators employing fracturing techniques. These Principles and Practices require operators to commit to a number of principles regarding the: (i) safeguarding of surface and groundwater, (ii) measurement and disclosure of water use, (iii) development of fluid additives with the least environmental risks, (iv) disclosure of fracturing fluid additives, and (v) continued advancement, collaboration and communication of best practices to reduce environmental risks.⁹³

CAPP has also asked its members to voluntarily disclose additives used in fracking operations and supports efforts by provincial governments to make disclosure mandatory.⁹⁴ While the CAPP Guiding Principles are not legally binding, they have become industry standard, are generally followed and complied with and have been recognized by the AER for consideration in the development of the proposed Unconventional Framework.

A second example of industry practices, albeit less formal or prescriptive, is the Petroleum Services Association of Canada's (PSAC) *Hydraulic Fracturing Code of Conduct*⁹⁵ which was collaboratively developed by eleven companies that perform

⁸⁹ Directive 059, *supra* note 85; AER "What is Hydraulic Fracturing?", *ibid*.

⁹⁰ Directive 008, *supra* note 85; Directive 009, *supra* note 85; Directive 010, *supra* note 85; AER "What is Hydraulic Fracturing?", *ibid*.

⁹¹ ERCB Discussion Paper, *supra* note 37 at 11.

⁹² CAPP, *Guiding Principles for Hydraulic Fracturing* (Calgary: CAPP, 2011).

⁹³ *Ibid*.

⁹⁴ CAPP, News Release, "Industry establishes Canada-wide operating practices for shale, tight natural gas hydraulic fracturing" (30 January 2012) online: CAPP <<http://www.capp.ca/media/news-releases/industry-establishes-canada-wide-operating-practices-for-shale-tight-natural-gas-hydraulic-fracturing>>.

⁹⁵ PSAC, "Hydraulic Fracturing Code of Conduct" (2013) [PSAC Code], online: PSAC <<http://www.oilandgasinfo.ca/working-energy-commitment/hydraulic-fracturing-code-of-conduct/>>.

hydraulic fracturing operations in Canada.⁹⁶ The eleven companies have committed to focus their efforts to collectively achieve the goal of “ensur[ing] operational excellence, while delivering long-term social benefits in a manner that supports the interests of all stakeholders”⁹⁷ on five key areas: (i) water and the environment, (ii) fracturing fluid disclosure, (iii) technology development, (iv) health and safety training, and (v) community engagement.⁹⁸ While not arguably industry standard yet, this second industry initiative is an example of performance outcomes industry is willing to commit to.

In summary, the development by industry of best practices could play a significant role in ensuring “orderly and responsible development.”⁹⁹ In a highly technical and confidential industry, such standards play a crucial role in determining benchmarks for industry to achieve and in considering the elements of common law causes of action, such as the standard of care in negligence.¹⁰⁰

3.4 Government Policy and the Integrated Resource Management System

The introduction of REDA and the creation of the AER as the single regulatory body for the regulation of oil, gas, oil sands and coal development, was just one of the Government of Alberta’s steps toward implementing its policy of an integrated resource management system or management based approach to regulatory intervention.¹⁰¹ Other examples of the Government of Alberta’s integrated resource management policy include Alberta’s *Water for Life Strategy*,¹⁰² and the *Land Use Framework*.¹⁰³ The Government of Alberta has also set outcomes that resource activities much comply with for air, land and water.¹⁰⁴

The play-based pilot project for unconventional development is one way the AER is attempting to “manage the cumulative effects of development on air, land and water.”¹⁰⁵

⁹⁶ PSAC Code, *ibid* at 2 (Participating companies: Baker Hughes Canada, Calfrac Well Services, Canton Technical Services, Element Technical Services, Gasfrac Energy Services, Halliburton Group Canada, Iron Horse Services, Millennium Stimulation Services, Sanjel Corporation, Schlumberger Canada and Trican Well Services).

⁹⁷ PSAC Code, *ibid* at 1.

⁹⁸ *Ibid*.

⁹⁹ Alberta, AER, *Play-Based Regulation Pilot Application Guide*, Manual 009 (Edmonton: AER, 3 September 2014) at 1 [Pilot Application Guide].

¹⁰⁰ Lucas, Watson & Kimmel, *supra* note 1 at 137.

¹⁰¹ *Pilot Application Guide*, *supra* note 99 at 1.

¹⁰² Alberta, *Water for Life, A Renewal* (Edmonton: Government of Alberta 2008).

¹⁰³ Alberta, *Land-Use Framework* (Edmonton, Government of Alberta, 2008); ALSA, *supra* note 61.

¹⁰⁴ Pilot Application Guide, *supra* note 99 at 4. See also the *Lower Athabasca Regional Plan* and the *South Saskatchewan Regional Plans* approved pursuant to ALSA, *ibid*.

¹⁰⁵ Pilot Application Guide, *ibid* at 5.

As acknowledged by the AER, some of the Government of Alberta's policy outcomes and objectives have not been fully developed and any changes will be implemented and added to the AER's proposed Unconventional Framework as it is finalized¹⁰⁶ and considered in the evaluation of the AER's new pilot project. Another example is the AER's new subsurface orders, which provide regulatory requirements for specific geological zones over specified areas to better suit the resource being developed.¹⁰⁷

3.5 AER's Proposed Framework for Unconventional Oil and Gas

As discussed above, the AER has recognized that the existing framework for conventional oil and gas development requires changes to respond to the "unique issues, risks and opportunities and challenges posed by unconventional resource development" created by the proposed the Unconventional Framework.¹⁰⁸ Since the release of the Unconventional Framework, the AER has unveiled a pilot project in a defined area of the Province.

The AER's Discussion Paper set out a framework and lofty policy goals to be achieved under this new regulatory regime. Using the principles of risk-based and play-focussed regulation,¹⁰⁹ the Discussion Paper sets the following goals for the new framework:¹¹⁰

- To clearly identify and mitigate potential risks to public safety, the environment and the resource;
- To ensure orderly development; and,
- To avoid imposing unnecessary regulatory burden on industry.

As compared to the current regime for conventional oil and gas, which is based upon well-by-well development or each individual activity, the proposed framework and the new pilot project use the concept of a "play":

¹⁰⁶ *Ibid* at 3.

¹⁰⁷ AER Bulletin 2015-05, *supra* note 80 (AER has indicated that these orders "will only address resource regulatory matters that are under the AER's jurisdiction. Where the orders allow increased well density, these orders will not in any way predetermine regulatory approval of wells, pipelines, other production facilities, access roads and other surface disturbances associated with energy development of the geological zones defined in the order"); See e.g. *Subsurface Order No 1*, *supra* note 81; AER, *Subsurface Order No 2*, *supra* note 81; *Subsurface Order No 3*, *supra* note 81.

¹⁰⁸ ERCB Discussion Paper, *supra* note 37 at 2.

¹⁰⁹ ERCB Discussion Paper, *ibid* at 2 (ERCB defined "risk-based regulations" as regulatory responses that are proportional to the level of risk posed by energy development and "play-focussed regulation" as regulatory solutions that are tailored to an entire "play" to achieve specific environmental, economic and social outcomes).

¹¹⁰ *Ibid* at 2.

... an area of oil and gas development that is determined mainly by geology, geographic area, the properties of the resource, and the technology required to develop that resource. Surface impacts are also considered where different land uses may be affected to a greater or lesser degree by unconventional development. The play concept differs from the current regulatory model where development generally occurs on a well-by-well basis. Under the new framework, the ERCB will formally declare plays based on their unique qualities and the level of risk that development of the play could pose.¹¹¹

The AER requires development plans for each “play” and will require industry to develop development plans to address the key challenges: water management, surface infrastructure development, subsurface reservoir management, stakeholder engagement and life-cycle wellbore integrity.

Using a performance-based regulatory approach rather than prescribing exactly how the regulatory outcome must be achieved,¹¹² the AER is placing a heavy onus and reliance on industry developed multi-operator development plans. These plans must address the key challenges of unconventional development.¹¹³ The current regulatory regime requires approval for each project activity,¹¹⁴ and cooperation and collaboration among operators within a play has not been the norm. Accordingly, to ease the transition, the AER’s pilot has been calling for a project plan to be developed by individual lease holders. These development plans must address the same key challenges as the play development plans.¹¹⁵ Further, while not explicitly stated in all of the AER’s communication, these play-based plans will need to incorporate any restrictions, terms or objectives imposed by any applicable regional plans under the ALSA.

In addition to play-based plans and cooperation among lease holders, the Unconventional Framework attempts to address one of the challenges related to unconventional development and the need for a higher density of wells than is permitted under the conventional framework. Unlike unconventional oil and gas development, multiple wells can be drilled at one well pad with each well extending deep underneath the surface horizontally in multiple directions to access the oil and gas in the tight formations.¹¹⁶ Typical conventional reservoirs are permitted one well per section for gas reservoirs and one well per quarter section for oil.¹¹⁷

The final key feature of the proposed Unconventional Framework is the important role of compliance and outcome assurance within the play-focussed regulatory

¹¹¹ *Ibid.*

¹¹² *Ibid* at 3.

¹¹³ *Ibid.*

¹¹⁴ Pilot Application Guide, *supra* note 99 at 2.

¹¹⁵ ERCB Discussion Paper, *supra* note 37 at 3.

¹¹⁶ *Ibid* at 4 (“multiwell pads — where multiple horizontal wells are drilled from a single site instead of from numerous locations — reduce the surface footprint of infrastructure and, therefore, the environmental impacts of development”).

¹¹⁷ Lucas, Watson & Kimmel, *supra* note 1 at 129.

program.¹¹⁸ Compliance assurance will be critical to ensuring that the performance based regulatory approach is working and achieving the desired outcomes.

3.6 AER Regulations Targeted at Subsurface Communication

The AER has flagged issues relating to wells stimulated with hydraulic fracturing including subsurface communication and has acknowledged that “[s]ome of these matters may require additional research and field work:

Include[ing]

- potential cross flow of fluids from one subsurface geological formation to another,
- wellbore completion design and operations to prevent unintended pressure communication to offset energy wells penetrating the same geological formation,
- chemical use during hydraulic fracturing operations,
- fluids and waste management, and
- prolonged venting and flaring.¹¹⁹

Although not explicitly in response to the Unconventional Framework, the AER has taken steps to address these issues. Two examples of steps taken are Directive 083 introduced in 2013 and its new power under section 11.140 of the OGCR to issue subsurface orders.

Directive 083 includes as a regulatory objective “to reduce the likelihood of unintentional interwellbore communication between a subject well and an offset well [and to] manage well control at an offset well in the event of interwellbore communication with a subject well.”¹²⁰ Second and as will be discussed in detail below, the AER now has the power to issue subsurface orders which are intended to impose specific subsurface regulatory requirements for specific zones to better suit the challenges associated with the development of tight oil and gas resources.¹²¹

In summary, the AER’s regulation of subsurface communication has focussed on seismic monitoring in response to concerns over seismic events¹²² and requirements aimed at reducing the likelihood of unintentional interwellbore communication.¹²³ Further, the AER’s recent developments have been aimed at tailoring the regulatory requirements to the unique challenges of unconventional development, as seen in the play-based approach and its use of subsurface orders.

¹¹⁸ ERCB Discussion Paper, *supra* note 37 at 4-5.

¹¹⁹ *Ibid* at 8.

¹²⁰ Directive 083, *supra* note 6, s 3.2.

¹²¹ AER Bulletin 2015-05, *supra* note 80.

¹²² AER, *Subsurface Order No 2*, *infra* note 234.

¹²³ Directive 083, *supra* note 6, s 3.2.

4.0 Regulatory Recourse for Subsurface Communication Disputes

So what can the AER do when approached by industry with a subsurface communication dispute? What regulatory options does a licensee have if it is affected by subsurface communication? This section will first briefly outline the AER's general powers and then some of the specific regulatory tools.

4.1 General Powers of the AER

The AER has broad powers to regulate activities surrounding the development of conventional and unconventional oil and natural gas in Alberta. For the purpose of this paper, these general powers can be classified as procedural and substantive. The procedural powers relevant to this analysis are those that provide both the AER and competing industry with the requisite notice and procedure by which concerns and objections can be raised and addressed. The substantive powers are those that permit the AER to impose requirements, directions and approve activities.

Substantively, in addition to its power to make rules under section 10 of the OGCA, the AER has the power to make any and all orders necessary to carry out the purposes of its governing legislation,¹²⁴ including “to provide for the efficient, safe, orderly and environmentally responsible development of energy resources in Alberta through the Regulator’s regulatory activities ...”¹²⁵

Pursuant to section 94 of the OGCA, “the [AER] has exclusive jurisdiction to examine, inquire into, hear and determine all matters and questions arising under the [OGCA].” This broad mandate includes the exclusive and comprehensive jurisdiction over issues respecting conservation and prevention of waste, including the power to postpone, curtail or prevent production.¹²⁶ The AER can rely on these powers to intervene if one operator’s unconventional development results in rogue fractures propagating outside the boundaries of its lease causing the draining or depleting of the reservoir pressure of another formation such that oil and gas could be left stranded. In fact, the AER’s mandate over conservation and the prevention of waste¹²⁷ is complemented by

¹²⁴ REDA, *supra* note 55, s 14.

¹²⁵ REDA, *ibid*, s 2(1).

¹²⁶ *Giant Grosmont Petroleums Ltd v Gulf Canada Resources Ltd*, 2001 ABCA 174 at para 42 [*Giant Grosmont*].

¹²⁷ OGCA, *supra* note 4, ss 1(1)(ccc)-(ddd) (section 1(1)(ccc) defines “waste” as “in addition to its ordinary meaning, means wasteful operations;” and section 1(1)(ddd) defines “wasteful operations” as “(i) the locating, spacing, drilling, equipping, completing, operating or producing of a well in a manner that results or tends to result in reducing the quantity of oil or gas ultimately recoverable from a pool under sound engineering and economic principles, (ii) the locating, drilling, equipping, completing, operating or producing of a well in a manner that causes or tends to cause excessive surface loss or destruction of oil or

various section of the OGCA including section 107 which provides that “any person who commits waste is guilty of an offence.”¹²⁸ Furthermore section 38 of the OGCA, permits the AER, with the approval of the Lieutenant Governor in Council to require enhanced recovery operations and require gas injection for underground storage. Enhanced recovery schemes (e.g. water flooding) are often required for the efficient recovery of tight oil and gas.¹²⁹

Procedurally, the AER is obligated to assess objections to applications and has the power to reconsider its own decisions, either on its own accord or as part of a request by an “eligible person”¹³⁰ for a regulatory appeal. These powers are the statutory triggers for a reconsideration of approvals and where appropriate to impose additional conditions, reject an application or to rescind or confirm an existing authorization.

Section 43 of REDA grants the AER the ability to reconsider its decisions, including to confirm, vary, suspend or revoke a licence. In addition, under section 36 of REDA, industry parties can request a regulatory appeal of a decision (i.e. issuance of a licence under OGCA) made without a hearing.¹³¹ Therefore, competing industry concerned about subsurface communication could bring an application to the Board to review a licence and request that the Board vary, suspend or revoke the licence.¹³²

gas, (iii) the inefficient, excessive or improper use or dissipation of reservoir energy however caused, (iv) the failure to use suitable enhanced recovery operations in a pool when it appears probable on the basis of available information that those methods would result in increasing the quantity of oil or gas ultimately recoverable from the pool under sound engineering and economic principles, (v) the escape or the flaring of gas, if it is estimated that, in the public interest and under sound engineering principles and in the light of economics and the risk factor involved, the gas could be gathered, processed if necessary, and it or the products from it marketed, stored for future marketing, or beneficially injected into an underground reservoir, (vi) the inefficient storing of oil or gas, whether on the surface or underground, or (vii) the production of oil or gas in excess of proper storage facilities or of transportation and marketing facilities or of market demand for it;”).

¹²⁸ OGCA, *ibid*, ss 110 (pursuant to section 110 of the OGCA, “[a] person who is guilty of an offence ... is liable (a) in the case of a corporation, to a fine of not more than \$500,000, and (b) in the case of an individual, to a fine of not more than \$50,000.” Such liability extends for each day or part thereof that the offence is committed or continued); see also Directive 019, *supra* note 85.

¹²⁹ B Todd Hoffman, “Modeling Examines Gas Injection Results For Improving Bakken Recovery”, *American Oil & Gas Reporter* (June 2012), online: American Oil & Gas Reporter <<http://www.aogr.com/magazine/cover-story/modeling-examines-gas-injection-results-for-improving-bakken-recovery>>.

¹³⁰ REDA, *supra* note 55, s 36 (to request a regulatory appeal, a party must qualify as an “eligible person” which includes “a person who is directly and adversely affected” by an “appealable decision”).

¹³¹ REDA, *ibid*, Division 3, ss 36-41.

¹³² See REDA, *ibid*, s 36 (to request a regulatory appeal, a party must qualify as an “eligible person” which includes “a person who is directly and adversely affected” by an “appealable decision”. Further, a request for a regulatory appeal must be completed in accordance with REDA and the applicable regulations and specifically in accordance with the *Alberta Energy Regulator Rules of Practice*, Alta Reg 99/2013 [*AER Rules of Practice*]).

Where a license or approval is still in the application stage, a party who believes that it is directly affected¹³³ by subsurface communication or the potential for subsurface communication, can object to the application by filing a statement of concern¹³⁴ with the AER.

Assuming the industry party can pass the AER's test for standing,¹³⁵ both the filing of a statement of concern or a request for a regulatory appeal, will trigger the AER's processes, including alternative dispute resolution¹³⁶ or even a full hearing. Both avenues provide the platform for the AER and industry parties to use the applicable regulatory tools to address the subsurface communication.

In summary, under the umbrella of the AER's procedural and substantive powers, the AER has a number of options to address subsurface communication disputes between industry parties. The next section of this paper will discuss these tools and specifically, the AER's ability to: (i) impose obligations for industry to provide notification of hydraulic fracturing activities, including subsurface communication,¹³⁷ (ii) shut-in or suspend operations,¹³⁸ (iii) order mandatory commingling orders,¹³⁹ (iv) encourage production sharing agreements,¹⁴⁰ and (v) impose production controls and monitoring.¹⁴¹

4.2 Notice Requirements

This section will start with the notice requirements as these trigger the attention of competing industry and the AER. A licensee is required prior to applying for the requisite licence to satisfy notification and consultation requirements.¹⁴² Industry is required to develop an effective participant involvement program that includes consulting with and providing notice to parties (for example: neighbouring industry, landowners and other

¹³³ Shaun Fluker, "Public Participation at the Alberta Energy Resources Conservation Board" (2011) 111 Resources: Canadian Institute of Resources Law 1; See also Nigel Bankes, "Directly and Adversely Affected: The Actual Practice of the Alberta Energy Regulator", ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (3 June 2014), online: ABlawg <http://ablawg.ca/wp-content/uploads/2014/06/Blog_NB_AER_June-2014.pdf>.

¹³⁴ REDA, *supra* note 55, s 32 ("a person who believes that the person may be directly and adversely affected by an application may file a statement of concern with the Regulator in accordance with the rules"); and *AER Rules of Practice*, *supra* note 132, ss 5.3, 6-7.

¹³⁵ Fluker, *supra* note 133 at 3-5 (note this article discussed the test under the repealed *Energy Resources Conservation Act*, RSA 2000, c E-10 [repealed or spent] however the principles are illustrative).

¹³⁶ See also *Responsible Energy Development Act General Regulation*, Alta Reg 90/2013, s 4.

¹³⁷ See e.g. OGCA, *supra* note 4, ss 10, 18; OGCR, *supra* note 63, Part 2.

¹³⁸ See e.g. OGCA, *ibid*, ss 16 & 44.

¹³⁹ See e.g. OGCA, *ibid*, ss 10, 18; OGCR, *supra* note 63, s 3.050.

¹⁴⁰ See e.g. REDA, *supra* note 55, s 14.

¹⁴¹ See e.g. OGCA, *supra* note 4, ss 10, 18; OGCR, *supra* note 63.

¹⁴² Directive 056, *supra* note 85.

government departments) whose rights may be directly and adversely affected by the nature and extent of the proposed drilling and hydraulic fracturing activities.¹⁴³

Specifically, Directive 056 sets out the consultation and notification requirements for the various energy developments. For example, Table 7.1 sets out the requirements for various multi-pad wells.¹⁴⁴ While the specific provisions within Directive 083 (discussed above) are intended to manage subsurface integrity and, among other things, to “reduce the likelihood of unintentional interwellbore communication between a subject well and an offset well, ... [and] manage well control at an offset well in the event of interwellbore communication with a subject well,” Directive 056 requires general notification for all applications. As stated in Directive 056:

[t]hese tables provide industry with a starting point for developing a participant involvement program and, as such, should not be viewed as the maximum. It is industry’s responsibility to assess the area beyond the specified distance to determine if the radius recommended by Directive 056 should be expanded. It may be necessary to increase the radius to include public interest groups or others who have expressed an interest in development in the area.¹⁴⁵

In determining who must be notified of the intended operations, “[t]he applicant must also include those people that it is aware of who have concerns regardless of whether they are inside or outside the radius of personal consultation and notification indicated in Tables 5.1, 6.1, 6.2, and 7.1.”¹⁴⁶

Therefore, if the potential for communication exists or communication has been identified, the impacted offset wells and current industry parties who may be impacted must be notified. Failure to provide such notification can result in compliance measures being taken by the AER pursuant to *Directive 019: Compliance Assurance*¹⁴⁷ which could include the shut-in of production until notification and a resolution of the issues has been completed.

This mandatory notification can become a powerful tool for competing industry parties with concerns over fracturing activities. An operator concerned about communication with its mineral rights, can monitor for development applications by the neighbouring operators and if communication is a concern, file a statement of concern with the AER alleging that it may be affected by the application with the intention of gaining standing to object to the proposed project.¹⁴⁸ Once a statement of concern has been filed the applicant licensee has arguably been put on notice and the neighbouring operator can continue to file statements of concern to all subsequent applications within

¹⁴³ *Ibid* at s 2.1.

¹⁴⁴ *Ibid* at 7-4.

¹⁴⁵ *Ibid*.

¹⁴⁶ Directive 056, *supra* note 85, s 2.2.1(4).

¹⁴⁷ Directive 019, *supra* note 85.

¹⁴⁸ REDA, *supra* note 55, s 32; *AER Rules of Practice*, *supra* note 132, Part 1, ss 5.3-7.5.

the area. This concerned party is entitled to notice of any subsequent development application within the area regardless of whether it was initially included within the enumerated class of parties to which notification or consultation is required under the specific tables.¹⁴⁹

Further, the filing of a statement of concern results in a non-routine and can trigger the AER's hearing and alternative dispute resolution processes.¹⁵⁰ These notification requirements have the potential to be a powerful negotiation tool and a way to block and delay competing industry. They can also serve as an incentive for parties to enter into production sharing agreements where communication is alleged or occurring. In addition, the regulatory processes triggered as a result serve as an avenue for the concerned party to press for the inclusion of appropriate conditions in any licence in order to protect its interests. It may also lead to settlement negotiations between the parties.

4.3 Shut-in or Suspension of Production

The AER can order that a well be shut-in or suspended: (i) where a licensee, approval holder, contractor or operator has contravened the OGCA,¹⁵¹ (ii) where a person lacks the necessary licence for recovery of oil, gas or bitumen from specific geographical and geological boundaries,¹⁵² and (iii) for conservation and the prevention of waste.¹⁵³ This section of the paper will explore the AER's power to shut-in or suspend production, including examples of its application and how this power may be applied to subsurface communication disputes caused by hydraulic fracturing.

Section 44 of the OGCA gives the AER the authority to shut-in production where “a licensee, approval holder, contractor or operator of a well or facility” has contravened or failed to comply with the OGCA or any of its regulations or a method or practice employed or any equipment or installation at a well or facility is improper, hazardous, inadequate or defective.¹⁵⁴

44 Where the Regulator or its authorized representative determines that a licensee, approval holder, contractor or operator of a well or facility has contravened or failed to comply with this Act, the regulations or rules or an order of the Regulator, or that a method or practice employed at a well or facility or any equipment or installation at a well or facility is improper, hazardous, inadequate or defective,

(a) the Regulator or its authorized representative may order the well or facility to be shut down or closed,

¹⁴⁹ Directive 056, *supra* note 85 at 2-2.

¹⁵⁰ Directive 056, *ibid* at 2-6.

¹⁵¹ OGCA, *supra* note 4, s 44.

¹⁵² *Ibid*, s 16.

¹⁵³ *Gas over Bitumen Decisions*, *infra* note 201.

¹⁵⁴ OGCA, *supra* note 4, s 44.

- (b) the Regulator or its authorized representative may require that approved methods be adopted and that remedial measures be taken before any operation proceeds at the well or facility, or
- (c) the Regulator may hold an inquiry into the matter.

In addition, pursuant to section 16 of the OGCA, the AER can suspend or shut-in production where a person lacks the requisite licence. Generally, the production of hydrocarbons from a reservoir for which a person does not hold a production rights may result in the AER cancelling or suspending the licence on any terms and conditions it deems appropriate. Specifically, section 16 reads as follows:

16(1) No person shall apply for or hold a licence for a well

- (a) for the recovery of oil, gas or crude bitumen, or
- (b) for any other authorized purpose unless that person is a working interest participant and is entitled to the right to produce the oil, gas or crude bitumen from the well or to the right to drill or operate the well for the other authorized purpose, as the case may be.

(2) If, after 30 days from the mailing of a notice by the Regulator to a licensee at the licensee's last known address, the licensee fails to prove entitlement under subsection (1) to the satisfaction of the Regulator, the Regulator may cancel the licence or suspend the licence on any terms and conditions that it may specify.

In addition to sections 16 and 44 of the OGCA, the AER can also shut-in, suspend or restrict production to prevent waste and carry out its conservation mandate.¹⁵⁵ If the communication issues result in the stranding of any resources or wasteful operations,¹⁵⁶ the AER, acting in the public interest, may shut-in or restrict production. As stated above, committing an act of waste is an offence pursuant to section 107 of the OGCA. Further, pursuant to section 108 of the OGCA, a finding of non-compliance with sections 44 and

¹⁵⁵ *Goodwell*, *supra* note 20 at para 9; OGCA, *ibid*, s 4(a).

¹⁵⁶ OGCA, *ibid*, s 1(1)(ddd) (“wasteful operations” means (i) the locating, spacing, drilling, equipping, completing, operating or producing of a well in a manner that results or tends to result in reducing the quantity of oil or gas ultimately recoverable from a pool under sound engineering and economic principles, (ii) the locating, drilling, equipping, completing, operating or producing of a well in a manner that causes or tends to cause excessive surface loss or destruction of oil or gas, (iii) the inefficient, excessive or improper use or dissipation of reservoir energy however caused, (iv) the failure to use suitable enhanced recovery operations in a pool when it appears probable on the basis of available information that those methods would result in increasing the quantity of oil or gas ultimately recoverable from the pool under sound engineering and economic principles, (v) the escape or the flaring of gas, if it is estimated that, in the public interest and under sound engineering principles and in the light of economics and the risk factor involved, the gas could be gathered, processed if necessary, and it or the products from it marketed, stored for future marketing, or beneficially injected into an underground reservoir; (vi) the inefficient storing of oil or gas, whether on the surface or underground, or (vii) the production of oil or gas in excess of proper storage facilities or of transportation and marketing facilities or of market demand for it;).

16 of the OGCA could potentially constitute an offence.¹⁵⁷

4.3.1 AER's Use of Section 44 of the OGCA

Section 44 of the OGCA has only been considered by the AER within the context of hydraulic fracturing in a few hearings. Recently, the AER considered possible communication in *Re Kallisto Energy Corp*¹⁵⁸ between a proposed conventional oil and gas well and an existing gas storage scheme. Kallisto Energy Corp. (Kallisto) applied for a licence to drill a vertical well for the purpose of obtaining crude oil production from the Basal Quartz Formation. CrossAlta Gas Storage & Services Ltd., BP Canada Energy, BP Canada Energy Company and TransCanada Pipelines Limited (collectively, CrossAlta) own and operate a gas storage scheme using the depleted Crossfield East Elkton A and D pools (the Elkton Storage Reservoir). CrossAlta objected to Kallisto's well licence application on the basis that it was concerned as to the possibility of communication between its stored gas and the wellbore of the proposed Kallisto well.

The evidence presented at the hearing showed that there was some communication between the Elkton Storage Reservoir and the Basal Quartz Formation.¹⁵⁹ Kallisto acknowledged that it had no right to produce CrossAlta's storage gas.¹⁶⁰ After reviewing the evidence and position of the parties the ERCB approved Kallisto's well licence application subject to the following conditions:

- (1) Kallisto should submit stabilized initial pressure data as soon as possible, (2) Kallisto must not use fracture simulation exceeding 40 tonnes without the consent of the Board, and (3) Kallisto must submit stabilized pre- and post-fracture pressure data.¹⁶¹

In relation to communication issues and hydraulic fracturing, the Board assessed the risk of communication as low and determined that the risk could be managed.¹⁶² Rather

¹⁵⁷ OGCA, *ibid*, ss 108 & 110 (pursuant to section 110 of the OGCA, “[a] person who is guilty of an offence ... is liable (a) in the case of a corporation, to a fine of not more than \$500,000, and (b) in the case of an individual, to a fine of not more than \$50,000.” Such liability extends for each day or part thereof that the offence is committed or continued. Further, for violations of s 16, an administrative penalty may also be imposed under REDA, *supra* note 55, Division 2 and the *Responsible Energy Development Act General Regulation*, *supra* note 136, ss 8.1-8.3); See also Directive 019, *supra* note 85.

¹⁵⁸ ERCB, *Re Kallisto Energy Corp — Application for a Well Licence — Crossfield East Field*, Decision 2012 ABERCB 005 (24 February 2012) [*Kallisto #1*], online: AER <<http://www.aer.ca/applications-and-notice/decision-reports/2012>>.

¹⁵⁹ *Kallisto #1*, *ibid* at para 38.

¹⁶⁰ *Ibid* at para 59.

¹⁶¹ Nigel Bankes, “Competing uses of geological space: resolving conflicts between production and natural gas storage interests”, ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (29 February 2012), online: ABlawg <<http://ablawg.ca/2012/02/29/competing-uses-of-geological-space-resolving-conflicts-between-production-and-natural-gas-storage-interests/>>.

¹⁶² *Ibid*; and *Kallisto #1*, *supra* note 158 at paras 78-82.

than deny approval of the well, the ERCB conditioned the well license.¹⁶³ Significantly, and in support of the availability of a shut-in order where there is communication, the Board found that it would order a shut-in without fracture treatment if it turned out that the well was a gas well and its pressure tests indicated communication with the Elkton Storage Unit.¹⁶⁴ The AER's willingness to shut-in production if fracking activities resulted in the production of storage gas suggests that in this case the Board did not consider that Kallisto had the right to produce storage gas especially if that stored gas could be produced as a result of communication created by Kallisto's fracking activities.

Finally, in the absence of clear technical information as to the existence of communication, the Board balances the risks by conditioning the approvals with mandatory monitoring and testing. In doing so, it clearly favours the incumbent operation (which in this case happened to be a storage operation). Whether this decision has broader implications depends upon what analogies can be drawn. Arguably subsurface communication with an approved storage gas scheme is unique and this decision can be distinguished on that basis.

To date, the only judicial decision considering section 44 of the OGCA is *Alberta Energy Co v Goodwell Petroleum Corp*¹⁶⁵ which involved a dispute between Alberta Energy Co. (AEC) and Goodwell Petroleum Corp. (Goodwell) regarding the production of crude bitumen and the initial gas-cap gas. AEC and Goodwell held split-title Crown leases to the resources. AEC held the bitumen leases and Goodwell held the natural gas leases.¹⁶⁶ Goodwell sought an order from the Alberta Energy Utilities Board (AEUB, predecessor to the AER) to shut-in AEC's production on the grounds that AEC's wells were producing at an exceptionally high gas-oil ratio, meaning it was producing significant portions of the overlying natural gas or the gas cap, for which Goodwell held the mineral rights. Specifically, Goodwell applied to the AEUB to shut-in AEC's 16 horizontal bitumen wells, on the grounds that AEC had been producing large volumes of Goodwell's initial gas-cap gas.¹⁶⁷

Goodwell and AEC participated in negotiations for compensation for past natural gas production and a sharing agreement for future production, but when the talks broke down, Goodwell, concurrently with seeking an order from the AEUB, commenced an

¹⁶³ *Ibid*, Appendix 1.

¹⁶⁴ *Ibid* at para 53.

¹⁶⁵ *Goodwell*, *supra* note 20.

¹⁶⁶ *Ibid* at para 4 (“[t]he separation of oil sands and natural gas rights in the same land area and geological horizon is sometimes referred to as “split title.” The title status is not of concern when a gas or an oil sands accumulation is found by itself in the formation. However, accumulations of natural gas sometimes directly overlie oil sands or are in pressure communication with them through a connecting water zone in the same geological strata. These natural gas accumulations are known as “gas-caps,” and the gas in them as “initial gas-cap gas”).

¹⁶⁷ *Ibid* at para 8.

action in the Alberta Court of Queen's Bench for compensation for past natural gas production and a production sharing agreement for all future natural gas production.¹⁶⁸

In *Goodwell*, the Alberta Court of Appeal (ABCA) considered AEUB Decision 2000-21,¹⁶⁹ wherein the AEUB had shut-in four of AEC's wells whose performance possibly indicated they were producing significant volumes of initial gas-cap gas on the basis that production from these wells could have a negative impact on overall bitumen recovery and because it found that AEC did not have any right, under its oil sands leases, to produce initial gas-cap gas.¹⁷⁰

Two years following Decision 2000-21, AEC applied to the AEUB to review and vary its decision. In denying this request, the Board confirmed that it had no further concerns about conservation issues for the four shut-in wells but maintained its position that AEC was not entitled to produce the initial gas-cap gas incidental to the recovery of bitumen.¹⁷¹ On appeal the ABCA held that "AEC's express right to win, work, recover and remove bitumen under its oil sands leases entitled it to produce initial gas-cap gas incidental to bitumen recovery, subject to the rights that *Goodwell* may have for compensation for the initial gas-cap gas produced."¹⁷²

The ABCA summarized the reasons the ERCB gave in shutting-in four of the bitumen wells that exhibited high gas-oil ratio as follows:

In Decision 2000-21, dated March 31, 2000, the Board shut in four wells ... for two reasons.

The first related to conservation of energy resources. The Board expressed concern that the disproportionately high gas-to-oil ratio seen in the wells might have a negative impact of bitumen recovery was addressed, depletion plans were approved and other conditions were fulfilled. AEC did not challenge this portion of the decision and has since complied with these requirements.

The Board also shut in the wells because, in its opinion, AEC did not have any right, under its oil sands leases, to produce initial gas-cap gas from the four wells. AEC, relying on *Borys*, supra, had argued "it was entitled to produce that quantity of gas-cap gas required to exploit its bitumen resource without consideration for the gas mineral lease owner" provided it used good production practices and reasonable, proper and accepted industry extraction techniques AEC

¹⁶⁸ *Goodwell*, supra note 20 at paras 7-8. See also Nigel Bankes, ed, *Canadian Oil and Gas*, 2nd ed (Markham: LexisNexis, 1993) (loose-leaf) at Dig 497 (consulted on 14 March 2015).

¹⁶⁹ Alberta Energy Utilities Board (AEUB), *Re Goodwell Petroleum Corporation Ltd — Request to Shut In Bitumen Wells Wabiskaw-McMurray Oil Sands Deposit Athabasca Area — Brintnell Sector*, Decision 2000-21 (31 March 2000) [Decision 2000-21], online: AER <<http://www.aer.ca/documents/decisions/2000/2000-21.pdf>>.

¹⁷⁰ *Ibid* at 26.

¹⁷¹ AEUB, *Addendum to Decision 2000-21 and Review and Variance Decision* (26 August 2002); *Goodwell*, supra note 20 at para 16.

¹⁷² *Goodwell*, *ibid* at para 104.

acknowledged Goodwell's interest in the gas-cap and indicated it was prepared to compensate Goodwell, once the volume of produced initial gas-cap gas was determined¹⁷³

The conservation related reasons were found to be a valid exercise of the ERCB's jurisdiction with respect to shut-in, as the statutory framework gave the ERCB the discretion to shut-in a well on the premise that continued production may negatively affect ultimate resource recovery efforts.

But AEC's appeal related to the ERCB's decision to shut-in the wells on the premise that AEC did not have the right to produce initial gas-cap gas incidental to its bitumen production. In canvassing previous decisions on rights associated with grants of mineral rights, the ABCA found the ERCB's second reason (that AEC did not hold the requisite rights to produce the initial gas-cap gas) to be in error.

The ABCA noted that a shut-in of a well on the grounds that the licensee did not hold the rights for a substance incidentally produced was at odds with established Canadian oil and gas law. This finding was based, in part, on the judgment in *Borys* which states:

Inherently the reservation of a substance, which is of no advantage unless a right to work it is added, makes the reservation useless unless that right follow the grant. The true view is that such a reservation necessarily implies the existence of power to recover it and the right of working

Even if it be conceded that the respective rights of the two parties are to work for and recover each his own property (i.e., in the case of the respondents, the petroleum, and in the case of the appellant, the gas), it does not follow that neither can act without the consent of the other and that only by mutual agreement can they work at all.¹⁷⁴

Borys was confirmed by the SCC in *Anderson v Amoco Canada Oil and Gas*,¹⁷⁵ wherein the SCC summarized the effect of the *Borys* decision as follows:

In my opinion the courts below were correct to find that *Borys* decided the reservation of petroleum included all hydrocarbons which were in liquid phase in the ground at the time of the transaction. The Alberta courts' answer to the preliminary questions posed by Moore C.J. was:

- a) The petroleum owner is entitled to all hydrocarbons which were in liquid phase at initial pool conditions, regardless of the phase they are in when recovered.
- b) The non-petroleum owner is entitled to all hydrocarbons which were in gas phase at initial pool conditions, regardless of the phase they are in at time of recovery.

This division will apply to hydrocarbons which migrate from under other lands, subject of course to any regulatory mitigation of the rule of capture. The only hydrocarbons in the well which this decision does not deal with are those which are dissolved in the connate water at initial conditions.

¹⁷³ *Goodwell*, *ibid* at paras 9-11 [footnotes omitted].

¹⁷⁴ *Borys*, *supra* note 21 at paras 38 & 46 [citations omitted].

¹⁷⁵ *Anderson*, *supra* note 13 at para 19 (the dispute in *Borys* was about entitlement to all natural gas in the pool, while the dispute in *Anderson* was about evolved gas).

...

In the Split Title Lands at issue in this appeal, the reservation of petroleum divided the ownership interest in oil and gas on the basis of the phase the hydrocarbon was in under initial conditions at the time of the contract for the sale of the property. Any phase changes which occur after the well is drilled into a pool does not alter the ratio of ownership created by the reservation. This applies between the parties to the original contract and to those who derive their interest from these parties.¹⁷⁶

In finding that AEC's right to recover bitumen gives it the corollary right to produce initial gas-cap gas, the court offered the following guidance which could be applied to communication issues caused by hydraulic fracturing:

A profit à prendre is a right to come on to an estate and capture or take a resource It carries with it "the right of entry and the right to remove and take from the land the [...] profit and also includes the right to use such of the surface, as is necessary and convenient for the exercise of the profit". Implied in this right is the ability or licence to do whatever is necessary to search for and win the substances ...

In summary, a number of principles can be distilled from these cases:

1. A right to mines and minerals includes the right to work, dig and use all reasonable means to recover the minerals.
2. If mining and recovering the minerals results in a known and inevitable consequence, that consequence is construed to be an implied term, and holders of lands or other mineral rights affected by that consequence cannot enjoin mining and recovery of the minerals.
3. These principles apply to reservations of mineral title, as well as grants and leases, including crown leases. Otherwise, the mineral right would be useless, and, as a general rule, deeds should not be construed to be without effect if other equally defensible interpretations are available.
4. While a bare right to a mineral conveys a right to win, work and carry away the mineral, that power can be expanded or restricted by express wording in the deed.

There is also a fifth rule:

5. Relevant statutes, including conservation rules arising from statutes, may modify these principles.

...

Mineral extraction is an invasive business, likely to interfere with someone's property rights. Nevertheless, courts grant generous rights to exploit resources, even if the operations inevitably divert percolating waters, cause mines in higher strata to collapse and produce initial gas-cap gas. In fact, the only prohibition seems to be against operations that completely destroy the surface of the land, a right that is said to be fundamental to property ownership, and even that prohibition is not absolute. The production of initial gas-cap gas incidental to bitumen recovery is inevitable, but

¹⁷⁶ *Anderson, ibid* at paras 42, 44.

does not result in the destruction of anything. The gas can be measured and compensation can be paid.¹⁷⁷

As in *Goodwell*, the production of oil or gas from an adjacent formation or through subsurface communication caused by rogue fractures does not result in the destruction of anything. The hydrocarbons produced can be measured and adequate compensation can be determined by the parties or through the courts. Statutory support for the proposition that a well should not be shut-in solely on the basis of an ownership dispute was also discussed with reference to section 86 of the OGCA in *Goodwell*.¹⁷⁸

Section 86(1) of the OGCA deals with disputes over entitlement to production in a tract and it requires the operator to sell the disputed production, pay cost and expenses out of the proceeds of sale, and pay the balance to the Minister to be held in trust pending a court order or settlement by the parties.¹⁷⁹

Section 86(1) of the OGCA, as interpreted in *Goodwell*, is evidence that inequitable production scenarios were indeed considered by the legislative drafters, and the authority to shut-in due to a production dispute is not included as part of the legislative remedy offered in the statute. This is further supported by the fact that the provisions authorizing shut-in within the OGCA do not address equity issues, but rather address instances where there is an unsafe condition or a breach of a statutory requirement under the OGCA or a breach of a licence, order or direction given by the Board.

Goodwell can be distinguished from cases involving subsurface communication caused by hydraulic fracturing on the basis that it does not necessarily entail split-title; however, it does demonstrate the regulator's and the court's acknowledgment of the appropriateness of compensation for any incidental production. Further, because hydraulic fracturing enhances resource extraction, there is an argument in favour of hydraulic fracturing as a necessary method to avoid wasteful operations. Therefore, the potential for the fractures to propagate outside of legal boundaries is a known and inevitable consequence and therefore an implied term of the applicable lease and licence. Subject to some important limitations, this line of argument appears to be favoured in a recent line of decisions which will be discussed next.

4.3.2 AER's Use of Section 16 of the OGCA

The relevant jurisprudence reveals some general principles regarding the AER's power to suspend or cancel licences pursuant to section 16 of the OGCA. Each of these principles is set out briefly below. As noted in *Goodwell*:

¹⁷⁷ *Goodwell*, *supra* note 20 at paras 63-64, 83.

¹⁷⁸ *Ibid* at paras 98-99 [footnotes omitted].

¹⁷⁹ *Ibid* at endnote 42.

[t]hese sections will be contravened if the person who holds the well licence does not possess the right to produce the hydrocarbon authorized by the well licence. The right to produce could be acquired by agreement, reservation, grant or, as in this case, crown lease. Again, the application of the sections depends on the interpretation of the instrument that grants the rights. The sections themselves do not further restrict the oil sands lessee's rights.¹⁸⁰

In *Re Desoto Resources Ltd*¹⁸¹ the ERCB confirmed its jurisdiction to consider whether a lease is still in force to support an entitlement to hold the well licence. The Board set out a two-stage test to determine whether to suspend or cancel a licence under section 16 of the OGCA:

It is clear to the Board that it has the jurisdiction and in this case must exercise it to determine whether Desoto has entitlement to produce from this well and, if not, what should be done with the well. The well has already been drilled and Desoto appears eager to produce it. EnCana has asked the Board to cancel the licence and suspend operations pending judicial determination of entitlement.

The Board finds that it has jurisdiction to determine whether an applicant under Section 16 of the OGCA “is entitled to the right to produce oil, gas or crude bitumen from the well ...” for the purpose of granting a licence, notwithstanding that there is a bona fide ownership, proprietary, or other legal dispute over an applicant's entitlement.¹⁸²

The ABCA's decision in *Re Bearspaw Petroleum Ltd*¹⁸³ confirmed a key limit to the AER's jurisdiction. This decision involved a dispute between, among others, EnCana Corporation (EnCana), Devon Canada Corporation (Devon) and Bearspaw Petroleum Ltd. (Bearspaw) over the ownership of coal bed methane in split-titles between coal (EnCana) and natural gas owners (Devon and Bearspaw). The ABCA considered the Board's (the Energy Utilities Board (EUB)) conclusion that “the natural gas owners rather than the coal owners had coal bed methane development rights”¹⁸⁴ and confirmed that the Board did “not have the authority to determine ownership or proprietary disputes in a conclusive way like a court” but could make the determination for the purpose of considering section 16 of the OGCA.¹⁸⁵

¹⁸⁰ *Goodwell*, *ibid* at para 93.

¹⁸¹ AEUB, *Re Desoto Resources Ltd — Section 40 Review of Well Licence No. 0365128 — Joffre Field*, Decision 2008-047 (18 June 2008) [*Re Desoto*], online: AER <<http://www.aer.ca/documents/decisions/2008/2008-047.pdf>> (involved a dispute over whether Desoto's leases were valid and whether or not Desoto could comply with section 16 of the OGCA).

¹⁸² *Re Desoto*, *ibid* at paras 17-18 [footnotes omitted].

¹⁸³ *Re Bearspaw Petroleum Ltd*, 2007 ABCA 343 [*Re Bearspaw*].

¹⁸⁴ *Ibid* at para 7.

¹⁸⁵ AEUB, *Re Bearspaw Petroleum Ltd, Devon Canada Corporation and Fairborne Energy Ltd — Part 2 of Proceeding No 1457147 — Review of Certain Well Licences and Compulsory Pooling and Special Well Spacing (Holding) Orders in the Clive, Ewing, Settler, and Windborne Fields*, Decision 2007-024 (28 March 2007) at 23, online: AER <<http://www.aer.ca/documents/decisions/2007/2007-024.pdf>>.

Finally, it appears that the operator has the onus to establish that it owns the oil and gas rights in the target formation¹⁸⁶ “to the satisfaction of the Board”¹⁸⁷ and on a balance of probabilities.¹⁸⁸

In 2013, the AER had the opportunity to revisit the application of section 16 of the OGCA in relation to hydraulic fracturing activities in *Re Kallisto Energy Corp (Kallisto #2)*.¹⁸⁹ In *Kallisto #2*, Kallisto applied for another well licence for the purpose of producing crude oil from the Elkton Formation. CrossAlta Gas Storage & Services Ltd., TransCanada Pipelines Limited and TransCanada Energy (collectively, CrossAlta) own and operate a commercial natural gas storage scheme in an Elkton Reservoir, with the nearest portion of Kallisto’s well to CrossAlta’s storage unit being about 290 metres.¹⁹⁰ One difference between this application and *Kallisto #1* was that although the second proposed well was also outside the boundaries of CrossAlta’s storage unit, Kallisto was proposing to produce crude oil from the Elkton Formation, the same formation which CrossAlta uses for storage.¹⁹¹ Another difference, was that Kallisto agreed not to use hydraulic fracturing to stimulate production from the subject well.¹⁹² Therefore, although this decision involved potential subsurface communication that communication was not due to fractures propagating into the storage reservoir but simply proximity within the same formation.

In considering section 16, the Board addressed CrossAlta’s argument that Kallisto’s lease did not give it the right to explore for oil in the Elkton Formation or to produce storage gas by stating that:

¹⁸⁶ ERCB, *Re CrossAlta Gas Storage Services Ltd — Application for the Permanent Shut-in and Abandonment of the Crossfield East Basal Quartz — A Pool Crossfield East Field*, Decision 2009-068 (17 November 2009), as cited in Lucas, Watson & Kimmel, *supra* note 1 at 134.

¹⁸⁷ *Re Bearspaw*, *supra* note 183 at para 21.

¹⁸⁸ *Carbon Development Partnership v Alberta (Energy and Utilities Board)*, 2007 ABCA 343 at para 21. (The ABCA was considering an application for leave to appeal of [*Bearspaw Decision*]. The court accepted the appeal in part, but expressly addressed a number of points that they stated may not be argued in the appeal. Among these points was the Board’s decision regarding the standard of proof required under section 16(2) of the OGCA. Carbon Development Partnership submitted that the Board had erred in deciding the appropriate standard was the balance of probabilities.)

¹⁸⁹ AER, *Re Kallisto Energy Corp — Application for a Well Licence — Crossfield East Field*, Decision 2013 ABAER 013 (23 July 2013) [*Kallisto #2*], online: AER <<http://www.aer.ca/documents/decisions/2013/2013-ABAER-013.pdf>>.

¹⁹⁰ *Ibid* at 1-2.

¹⁹¹ Nigel Bankes, “Kallisto #2. Competing Uses of Geological Space: Resolving Conflicts Between Oil Production and Natural Gas Storage Interests”, ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (1 August 2013) [Bankes, “Kallisto #2”], online: ABlawg <<http://ablawg.ca/2013/08/01/kallisto-2-competing-uses-of-geological-space-resolving-conflicts-between-oil-production-and-natural-gas-storage-interests/>>.

¹⁹² *Kallisto #2*, *supra* note 189 at para 91.

The AER has the jurisdiction to consider whether the applicant's rights satisfy the AER's regulatory requirements. In *Decision 2007-024: Bearspaw Petroleum Ltd., Devon Canada Corporation and Fairborne Energy Ltd.*, the Energy Utilities Board (predecessor to the ERCB) stated the following:

It is important to note that the Board is not making final or conclusive decisions that bind the parties for all purposes when it finds that an applicant is the owner or otherwise entitled to produce the resource. That ultimate authority belongs to the courts. The Board is, rather, deciding that an applicant has demonstrated entitlement to the Board's satisfaction for the purpose of issuing well licences or similar requirements under the compulsory pooling and special well spacing (holding) provisions of the OGCA and the OGCR.¹⁹³

In approving Kallisto's application, the AER attached a number of conditions "relating to the manner of drilling and completing the well, abandonment of the well, measurements to be taken, the disclosure of certain confidential information about the well to both CrossAlta and neighbouring mineral owners and production reporting requirements."¹⁹⁴ In concluding that section 16 of the OGCA had been satisfied by Kallisto, the Board found that CrossAlta's applicable approval and "storage agreement with the Crown did not restrict exploration and production of hydrocarbons outside the boundaries of the approved gas storage unit, even if the Elkton Formation or the Crossfield East Elkton Reservoir extend outside these same boundaries."¹⁹⁵

On the issue of whether the AER had jurisdiction to issue the well licence to Kallisto if it expects to produce storage gas, the Board held in favour of Kallisto in finding that it may be permissible to interfere with property rights and any damage could be the subject of compensation which is beyond the jurisdiction of the AER.¹⁹⁶ With respect to CrossAlta's claims of potential trespass and conversion, the AER properly noted that "any remedy for tortious action would be within the jurisdiction of the courts."¹⁹⁷ Therefore, the Board in *Kallisto #2*, relying on *Goodwell*, acknowledges that Kallisto might incidentally produce storage gas.

4.3.3 Shut-in in Response to Conservation Concerns

The AER's authority to shut-in production for conservation and the prevention of waste arises from a number of provisions within its governing legislation. Section 4(a) of OGCA provides that one of the purposes of the Act is "to effect the conservation of, and to prevent the waste of oil and gas resources of Alberta." Section 14(1) of REDA provides that the AER, "in the carrying out of duties and functions imposed on it by this

¹⁹³ *Kallisto #2, ibid* at para 25.

¹⁹⁴ Bankes, "Kallisto #2", *supra* note 191.

¹⁹⁵ *Kallisto #2, supra* note 189 at para 30.

¹⁹⁶ *Ibid* at para 33.

¹⁹⁷ *Kallisto #2, ibid* at para 33.

Act or any other enactment, may do all things that are necessary for or incidental to the carrying out of any of those duties or functions.” Finally, section 10(1)(aaa) of the OGCA permits the AER to make rules “generally to conserve oil and gas, and to prevent waste or improvident disposition of oil or gas, and to do any other matter reasonably incidental to the development and drilling of any oil or gas wells, the operation of them and the production from them.” Read together, these statutory provisions grant the AER broad authority to do all things necessary to prevent the waste of and to effect the conservation of oil and gas.¹⁹⁸ The ABCA confirmed this authority in *Giant Grosmont Petroleums Ltd v Gulf Canada Resources Ltd*.

The importance of the protection of the public interest in the preservation of energy resources should be reiterated. It is not only the interests of the Appellants and Respondents that are at stake; the Board also owes a duty to the people in the Province of Alberta to safeguard their interests. It should be remembered that the Board has been entrusted with these responsibilities because it has the necessary expertise and experience to do so. As such, the Board is in the best position to balance the interests of all concerned and to make the decisions necessary to conserve the energy resources of this province.¹⁹⁹

The EUB had multiple occasions to consider and confirm its ability to shut-in production in the name of conservation and prevention of waste in the series of decisions connected to its 1998 inquiry²⁰⁰ following a request by oil sands leaseholders that the Board restrict the production of associated gas production from oil sands deposits.²⁰¹ In these decisions, the Board restricted or shut-in the production of associated gas in the oil

¹⁹⁸ AEUB, *Re Phase 3 Proceedings Under Bitumen Conservation Requirements and Applications for Approval to Produce Gas in the Athabasca Wabiskaw-McMurray Area*, Decision 2004-045 (31 May 2004) at 2-3.

¹⁹⁹ *Giant Grosmont*, *supra* note 126 at para 45.

²⁰⁰ AEUB Inquiry, *Gas/Bitumen Production in Oil Sands Areas* (March 1998) as cited in Allan E Ingelson, ed, *Canada Energy Law Service (Alberta)* (Toronto: Carswell, a Thomson Reuters business, 1990) (loose-leaf) at §448a (consulted on 7 April 2015).

²⁰¹ See e.g. AEUB, *Re Goodwell Petroleum Corporation Ltd. — Request to shut-in bitumen wells*, Decision 2000-21 (31 March 2000) at 6 [*Re Goodwell*], online: AER <<http://www.aer.ca/documents/decisions/2000/2000-21.pdf>>; AEUB, *Re Gulf Canada Resources Limited Request for the Shut-in of Associated Gas Surmont Area*, Decision 2000-22 (30 March 2000) at 4, online: AER <<http://www.aer.ca/documents/decisions/2000/2000-22.pdf>>; AEUB, *Re Petro-Canada Oil and Gas Interim Shut-in of Gas Production, Chard Area*, Decision 2001-63 (1 August 2001) at 3-5 [*Re Petro-Canada*], online: AER <<http://www.aer.ca/documents/decisions/2001/2001-63.pdf>>; AEUB, *Re Applications for the Production and Shut-in of Gas — Chard Area and Leismer Field*, Decision 2003-023 (18 March 2003), online: AER <<http://www.aer.ca/documents/decisions/2003/2003-023.pdf>>; AEUB, *Phase 3 Proceedings under Bitumen Conservation Requirements and Applications for Approval to Produce Gas in the Athabasca Wabiskaw-McMurray Area*, Decision 2004-045 (31 May 2004) at 2-3, online: AER <<http://www.aer.ca/documents/decisions/2004/2004-045.pdf>>; AEUB, *Re Franco-Nevada Mining Corporation Interim Shut-in of Gas — Liege Field, Athabasca Oil Sands Area*, Decision 2001-64 (2 August 2001) at 2 [*Gas over Bitumen Decisions*], online: <<http://www.aer.ca/documents/decisions/2001/2001-64.pdf>>.

sands areas in favour of bitumen recovery. It did so on the basis that production of gas had an adverse effect on the overall recovery of bitumen.²⁰²

In addition to confirming its authority to shut-in for conservation purposes, the Board, subject to some jurisdictional restrictions, confirmed its authority to issue interim shut-in orders, akin to a common law injunction. While confirming that it did not have the authority to compel the applicant for an interim order to provide an undertaking for damages (as would be the case in most civil interim injunction applications),²⁰³ the Board set out the test for an interim shut-in order:

With respect to the appropriate test on an interim shut-in application, it is the Board's view that while the tripartite test utilized in civil litigation may offer some general guidance to the Board's deliberations, its strict application does not provide the appropriate basis upon which an interim shut-in application should be considered. The issue from the Board's perspective is one of conservation of energy resources in the public interest and, specifically, the impact of producing gas wells on the conservation of bitumen pending the outcome of the main hearing. The conservation issue will be moot at the main hearing if, for example, the ongoing pressure decline of the overlying gas zone leading up to the main hearing significantly reduces or sterilizes the ultimate recovery of the bitumen resource.

An interim shut-in application does not require irreparable harm to be established conclusively or that the Board conduct an analysis of the balance of convenience between the parties regarding the shut-in of gas. Where it appears to the Board that bitumen recovery may be affected by gas production, the Board may take such conservation action that it deems necessary. This is not to say that on an interim basis the nature of the potential competing harm to the parties is not a relevant consideration, only that the Board is not bound to apply the strict tripartite test in determining whether to grant an interim shut-in order. The Board's focus is centred on the potential for the significant waste of bitumen resources during the period required to consider the main shut-in application.²⁰⁴

Albeit for the purposes of the conservation of bitumen, which is afforded priority pursuant to the *Oil Sands Conservation Regulation*,²⁰⁵ the AER's test and consideration of its conservation and prevention of waste is illustrative for the purposes of subsurface communication disputes caused by hydraulic fracturing. It shows that the EUB\AER not only has the power to shut-in but also to issue interim shut-in orders pending resolution of the dispute.

²⁰² See e.g. *Re Goodwell*, *supra* note 201 as cited in *Canada Energy Law Service (Alberta)*, *supra* note 200 at §448a.

²⁰³ *Re Petro-Canada*, *supra* note 201 at 4, as cited in *Canadian Energy Law Service (Alberta)*, *ibid* at §448a.

²⁰⁴ *Re Petro-Canada*, *ibid* at 4.

²⁰⁵ *Oil Sands Conservation Regulation*, Alta Reg 76/1998, s 3(5) (section 3(5) states that "[w]here it appears to the Regulator that the ultimate recovery of crude bitumen in the oil sands strata may be affected by gas production, the Regulator may, on its own initiative or on application by an affected party, make any order or directive it considers necessary to effect the conservation of the crude bitumen in any particular case).

4.3.4 Application of Shut-in Orders to Subsurface Communication Disputes

It remains uncertain whether the propagation of fractures beyond the boundaries of a licensee's lease in such a way as to create communication where none previously existed and where this causes damage or a risk of damage to the owner or working interest owner of adjacent minerals can be the basis of an application to the AER for a shut-in order. Alternatively, will the licensee be able to argue that the propagation of fractures outside its lease area is necessarily incidental to the proper working of shale deposits? Guidance can be found within the split-title and the gas over bitumen decisions regarding how the AER will approach production disputes from subsurface communication. From these examples, it seems possible to say the following:

- In the case of subsurface communication with an existing storage scheme, if it is found that storage gas is being produced, the AER will shut-in production.²⁰⁶ In *Kallisto #1*, the AER held that if the well in question was found to be in communication with the storage reservoir, it would shut-in this well without any fracture stimulation to prevent harm of communication or conversion of the storage gas.²⁰⁷ Although the Board did not expressly rely on section 16 of the OGCA, one can extrapolate that the production of storage gas could constitute production contrary to this section.
- The AER will assess the risk of subsurface communication and will seek to manage such risks through ongoing testing, monitoring and reporting.²⁰⁸
- There is an argument that hydraulic fracturing is a necessary method for the production of tight oil and gas. On this basis, the potential for the fractures to result in the production of hydrocarbons that originate outside the leased area is not contrary to section 16 of the OGCA. Instead it is a known and inevitable consequence and therefore an implied term of the applicable lease.²⁰⁹
- Regardless of entitlement pursuant to the lease, the AER has the authority to shut-in or restrict production on the basis of conservation and to prevent waste.²¹⁰
- The AER's practice is to encourage production sharing agreements through the conditions it attaches to approvals. This practice indicates a preference for parties to determine the apportionment and value of any hydrocarbons produced. Further, the fact that the AER indicates that the hydrocarbons can be measured and damages subsequently determined in the courts, implies that the rule of capture may not apply. In other words, if the rule of capture applied to these situations, there would be no need to account for the cross-flow hydrocarbons to the other party.

²⁰⁶ *Kallisto #1*, *supra* note 158 at para 53.

²⁰⁷ *Ibid* at para 53.

²⁰⁸ *Ibid*.

²⁰⁹ *Goodwell*, *supra* note 20 at 63-64 & 83.

²¹⁰ *Giant Grosmont*, *supra* note 126 at para 45.

While the threat of shut-in order provides motivation to a licensee to endeavour to ensure fractures remain within the intended zones, it is only a temporary fix. Shutting-in production may not deal with the public interest to ensure the orderly development, conservation and prevention of waste. Further, as stated by the courts in dicta, equitable considerations or the production of oil or gas to which another party holds the interest can typically be quantified and compensation provided in the form of monetary damages.²¹¹ As a result, the shut-in should arguably be temporary until the AER addresses the issue, such as by mandating pressure monitoring and testing, issuing a commingling order or encouraging a production sharing agreement.

While the AER's power to shut-in, suspend or restrict production seems like a powerful incentive for industry to ensure fractures remain within the intended zones, the usefulness of this regulatory tool depends upon the ability to prove that a fracture actually crossed the permitted boundary or that the integrity of the well completion was the cause of the communication issues. In order to prove such events, key technical information is required, including with respect to historical practices, gas composition, reservoir pressures, the geology, fracture propagation modelling and the current and historical development within the area including abandoned and suspended wells. Therefore, the AER's power to compel disclosure, monitor production and operational matters and impose conditions on licenses becomes critical in setting the stage for determining communication or cross-flow issues and how they can be resolved.

4.4 Production Sharing Agreements

While there is no statutory authority for mandatory production sharing agreements, the jurisprudence recognizes that the AER has a practice of encouraging them.²¹² Further, one can also speculate that the absence of a significant number of decisions by the AER addressing communication issues is due, in part, to parties settling prior to the hearing and decision by the Board. As discussed above, the Board's conditioning of Kallisto's approvals in *Kallisto #1* and *Kallisto #2* supports the proposition that the Board will continue its practice of encouraging settlements by imposing conditions dealing with monitoring and testing as a part of its approvals.

²¹¹ See also, *Anderson v Amoco Canada Oil and Gas*, 2011 ABCA 268; Nigel Bankes, "Accounting issues left unresolved in split title litigation", ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (14 October 2011) [Bankes, "Accounting issues"], online: ABlawg <http://ablawg.ca/wp-content/uploads/2011/10/blog_nb_anderson_oct2011.pdf>. (The *Anderson* saga came to an end pursuant to Rule 244.1, *Alberta Rules of Court*, Alta Reg 390/1968 [repealed] by virtue of no steps being taken by the Plaintiff to materially advance the action. This left many questions unanswered, including: (i) whether the petroleum owners owe a duty of care to account for the gas produced; (ii) whether the gas owners have an action in tort; (iii) what costs should be included within an accounting claim; (iv) whether the petroleum owner(s) (and its lessees) have a duty not to flare the gas owner's gas (where flaring can be reasonably avoided); and (v) how the onus of proof issues should be dealt with).

²¹² *Goodwell*, *supra* note 20 at para 99.

While it may be the preference of the Board that parties resolve subsurface communication issues through private agreements, the failure to reach such an agreement does not prevent a party from seeking recourse from the AER or the courts. As discussed above with respect to *Goodwell*:

Production-sharing agreements define the basis on which parties contribute to well costs and receive compensation for produced hydrocarbons. Such agreements are obviously desirable when mineral rights overlap, as they permit interested parties to negotiate and structure their economic arrangements without third-party involvement. However, it is one thing to recognize the desirability of and encourage parties to sign a production-sharing agreement; it is another to conclude that a lessee has no right to produce without one. Disagreements about production frequently occur and are even recognized in the energy legislation. Parties are entitled to come to court to resolve difficult disputes. Failure to reach a negotiated production-sharing agreement does not extinguish anyone's rights.

The Board's practice of requesting a production-sharing agreement in split title situations does not support the conclusion that the oil sands lessee has no right to produce initial gas-cap gas incidental to bitumen recovery without the natural gas lessee's consent. Such a restriction should either be plainly stated in the oil sands leases and echoed in the permits and well licences, or in an amendment to the Alberta energy legislation.²¹³

This decision may be applied to subsurface communication and the incidental production of oil and gas as between licensees within the same reservoir or neighbouring reservoirs. While the AER can strongly encourage such agreements to resolve communication issues, it cannot without legislative amendments, require such an agreement.

The primary reason for encouraging settlement appears to be the underlying concept that any produced oil or gas can be measured and monetary compensation can be paid for the hydrocarbons produced.²¹⁴ That the harm caused by the production of another's resource can be quantified and financially compensated for was also confirmed in the ABCA. In *Nexstep Resources Ltd v Talisman Energy Inc*²¹⁵ the ABCA denied, among other things, an application by Nexstep Resources Ltd. (Nexstep) for summary judgment and an injunction requiring Talisman Energy Inc. (Talisman) to shut-in a vertical well due to a dispute over whether the rights to the well and the formation it was producing from were included within the parties' purchase and sale agreement. Although this case was about confusion over the assets included within a purchase and sale agreement and not subsurface communication, it is instructive because the court denied the injunction application on the basis that there was no irreparable harm.²¹⁶ In other words, if Talisman was in fact producing Nexstep's gas, the harm to Nexstep could be quantified and

²¹³ *Goodwell*, *ibid* at paras 98-99 [footnotes omitted].

²¹⁴ *Ibid*.

²¹⁵ 2007 ABQB 788, *aff'd* 2008 ABCA 246 [*Nexstep*].

²¹⁶ *Nexstep*, *ibid* at para 37.

compensated for by monetary damages.²¹⁷ Therefore, in the context of communication issues, any damages or harm could be quantified and compensated for. However, this process, as stated above, falls outside the jurisdiction of the AER which is limited to remedies such as requiring monitoring, testing, reporting and disclosure of the operational and technical results in an effort to encourage settlement and to provide the requisite evidence upon which the courts can adjudicate.

Therefore, while it is open to the parties to negotiate a settlement or production sharing agreement where communication issues arise, reaching such an agreement will, from a practical perspective, require a common understanding regarding the existence of communication, its causes and the composition, quantity and ownership of the oil and gas being produced. The information necessary to reach such an understanding may not be readily available to the parties, notwithstanding the AER's willingness to impose conditions requiring monitoring and testing of well and reservoir conditions and the disclosure of the results. These practical realities make negotiating the commercial terms of a production sharing agreement in any given circumstance challenging.

One commentator provides the following summary of the AER's preference within the context of *Kallisto #2*:

The parties expressed very divergent views on how to deal with the possibility that Kallisto's well might produce storage gas. In crafting its response the AER recognized that it faced some jurisdictional constraints in terms of any solution that it might impose. Consequently, the AER focused on imposing a set of requirements that would provide the parties with an information base that would help them reach a voluntary agreement, or, alternatively, provide a basis for resolving any remaining issues through litigation. To that end, the AER imposed a set of conditions including a requirement to conduct an initial pressure test, and a set of measurement and reporting requirements the effect of which the AER summarized as follows (at para 107):

The panel also finds that measurement conditions placed on the licence will ensure that the parties have the information they need to identify the nature of fluid produced at the 16-26 well and reach an arrangement, either voluntarily or through the courts, that reflects the rights and interests of each party.

While the AER indicated that Kallisto had a duty to return to CrossAlta any storage gas that it might produce (at para 97), it declined to impose a specific condition to that effect or indicate a particular mechanism for effecting such a return. It did however comment on Kallisto's proposals finding them "reasonable" and noting in particular (at para 99) "that if Kallisto presupplied gas to CrossAlta's gas storage unit in quantities greater than or equal to the heating value of the gas produced, the gas produced from the 16-26 well could be considered its own and not that of any other gas owner." The AER however did not believe that it had the jurisdiction to impose such a solution and offered detailed reasons for that conclusion, examining a number of different possible sources of authority under the *Oil and Gas Conservation Act*, RSA 2000, c O-6 (OGCA).²¹⁸

²¹⁷ *Ibid.*

²¹⁸ Bankes, "Kallisto #2", *supra* note 191.

The issue of whether subsurface communication is occurring and its cause is highly technical and the AER, as a highly specialized expert tribunal, is in a better position than the courts to adjudicate whether or not communication issues exist and whether hydraulic fracturing caused them. However, as acknowledged in the jurisprudence, the issue of compensation and ultimate ownership over the produced substances can only be addressed through the courts. This leaves industry with the burden of pursuing parallel proceedings with the AER and through the common law to achieve a full solution. This bifurcated process is a strong motivator for settlement as between industry and encourages the negotiation of production sharing or other forms of compensation agreements. However, where the parties cannot reach an agreement, the limits of the AER's jurisdiction make for complicated regulatory and court processes. These limits of the AER's jurisdiction may be one reason behind the play-based approach proposed within the Unconventional Framework.

4.5 Testing, Monitoring and Reporting Obligations

As stated above, a well cannot be drilled and preparatory and incidental activities cannot be undertaken without the requisite licence from the AER²¹⁹ which may be subject to any conditions, restrictions or stipulations that the AER considers appropriate.²²⁰ In addition, pursuant to section 10 of the OGCA the AER can, among other things, make rules “prescribing rules for the calculation of allowables, maximum production rates, penalty factors, penalties and overproduction status”²²¹ and generally “to do any other matter reasonably incidental to the development and drilling of any oil or gas wells, the operation of them and the production from them.”²²²

All of the regulatory tools discussed in this paper require sufficient technical data regarding the subsurface communication, its causes and the composition and origin of the produced hydrocarbons. Compelling operational controls and the provision of operational data are powerful tools for resolving subsurface communication disputes, both for the AER and as between parties. As between industry parties, information regarding production can be confidential and without the regulatory process, such information may not be shared as between the disputing parties. For the industry parties, the sharing of subsurface communication data, is extremely relevant for the purpose of a production sharing agreement or other settlement.

For example, in *Re Kallisto #1*, the ERCB assessed the risk of communication between Kallisto's proposed well and CrossAlta's gas storage facility and attempted to mitigate the risk of communication by imposing conditions to the approval. Specifically,

²¹⁹ OGCA, *supra* note 4, s 11.

²²⁰ *Ibid*, s 18.

²²¹ *Ibid*, s 10(1)(ii).

²²² *Ibid*, s 10(1)(aaa).

the Board imposed a requirement for pressure testing to be completed, the results of which would form the basis of how the parties would proceed. If the well was a dry hole, the well would be abandoned and there would be no harm to CrossAlta.²²³ If it was not a dry hole, the Board imposed pressure testing to establish the reservoir pressures and to determine whether such pressure data would indicate existing communication. If the pressure testing data demonstrated the existence of communication, the Board was prepared to shut-in the well without any fracture treatment. In the event the reservoir pressure was found to be virgin reservoir pressure, the Board would allow Kallisto to perform fracture treatment provided such treatment was limited to 40 tonnes or less.²²⁴

Another example is *Kallisto #2*, where the AER imposed measurement conditions on the licence with the intention of ensuring the parties have the information they need to identify the nature of the fluid produced to reach a production sharing agreement.

By attaching conditions to its approvals and licences dealing with such matters as, gas composition testing, micro seismic testing or proppant tracer studies (for vertical wells), the AER can build its library of information, including information regarding each play, practices of operators, the composition of gas from various reservoirs, fracking fluid compositions and any potential well integrity issues. This appears to be the intention behind the play development plans under the Unconventional Framework which require industry to cooperate and share information.

This relates back to the AER's assessment of risk and the default position appears to be to allow the production of the resources and when there is a potential for communication, to ensure adequate production controls and monitoring are in place to set the foundation for either voluntary or court ordered agreements for compensation.

4.6 Commingling Orders

The AER defines “comingled production” as “production of oil and gas from more than one pool or zone through a common wellbore without separate measurement of the production from each pool or zone.”²²⁵ Commingled production is regulated in accordance with sections 3.050 and 3.060 of the OCGR which are as follows:

3.050(1) The Regulator may, by order, approve two or more pools in a field as pools from which production may be taken or to which injection may be made without segregation in the well bore, and may, where in its opinion exceptional circumstances so require, limit the application of the order to production or injection in wells named in the order.

3.060 A well shall not be completed or operated with casing perforated or left open in more than one pool unless

²²³ *Kallisto #1*, *supra* note 158 at para 50.

²²⁴ *Ibid* at paras 78-82.

²²⁵ AER, “Commingling”, online: AER <<http://www.aer.ca/rules-and-regulations/by-topic/commingling>>.

- (a) such completion or operation occurs in accordance with the requirements of section 3.040 or 3.050, or
- (b) the commingling is in compliance with section 3.051.

(2) An application for an order under this section must be made in accordance with Directive 065 and must include any other information that the Regulator requires.

According to AER *Directive 065: Resources Applications for Oil and Gas Reservoirs*²²⁶ commingling or the segregation of production in the wellbore is regulated to, among other things, avoid wellbore or reservoir conditions that may adversely affect recovery, ensure operational safety and gather data for resource evaluation and reservoir management.²²⁷

A commingling order was requested by Canadian Natural Resources Limited (CNRL) and ConocoPhillips Canada Operations Ltd. (Conoco) in the proceedings leading up to ERCB Decision 2013 ABERCB 010, *Re Surge Energy Inc.*²²⁸ In this case, CNRL and Conoco objected to Surge Energy Inc.'s (Surge) application to suspend drilling spacing units and target areas and establish holdings for the production of oil from the Doig Formation. In its evidence, CNRL submitted that if Surge's wells drilled in the Doig Formation were completed with multiple fractures those fractures would propagate into the Halfway formation (to which it and Conoco held rights) and create a direct path or cross flow of gas.²²⁹ In addition to requesting monitoring and production controls (including conditions attached to fracture procedures), CNRL requested that the Board deny Surge's holding application and deny the applied for well licence until a commingling order was approved under a gas return agreement between the owners.²³⁰ Unfortunately, the Board did not consider how a commingling order might address these potential communication issues because the parties reached a settlement and CNRL and Conoco withdrew their objections.²³¹

Requesting a commingling order could be another regulatory tool used by industry if faced with harm from potential communication caused by hydraulic fracturing. While there's no question given sections 3.050 and 3.060 and Directive 065 that the AER has the authority to issue commingling orders, the availability of a commingling order will be limited to those factual circumstances meeting the statutory requirements or where the casing perforations are located in more than one pool or zone.

²²⁶ Directive 065, *supra* note 4, s 3.1.

²²⁷ *Ibid*, s 3.1.1.

²²⁸ *Re Surge Energy Inc*, *supra* note 3 (Exhibit 104.01, CNRL 10 December 2012 Evidence Submission at para 1.7).

²²⁹ *Re Surge Energy Inc*, *ibid* at para 1.6.

²³⁰ *Ibid* at paras 1.6-1.9.

²³¹ *Ibid* at para 12.

4.7 Subsurface Orders

As briefly discussed above, the AER also has the power²³² to designate subsurface orders under section 11.104 of the OGCR.²³³ Section 11.104 of the OGCR is targeted at the development of tight oil and gas resources and intended to permit the AER to tailor regulatory requirements for specific geological zones over specified areas to better suit the resource being developed.²³⁴

11.104 Notwithstanding sections 3.050, 3.051, 3.060, 4.021, 4.030, 4.040, 7.025, 10.060, 11.010, 11.102 and 11.145, if the Regulator is satisfied that it is appropriate to do so, the Regulator may, on its own motion, issue a subsurface order that:

- (a) designates a zone in a specific geographic area, and
- (b) prescribes requirements pertaining to spacing, target areas, multi-zone wells, allowables, production rates and other subsurface matters within that zone,

in which case if there is a conflict or inconsistency between the subsurface order and any of the sections referred to above, the subsurface order prevails to the extent of the conflict or inconsistency.²³⁵

These subsurface orders can be used to prescribe requirements related to completion operations including the use of hydraulic fracking. In determining whether it is appropriate to issue a subsurface order, the AER will “include an evaluation of risk to resource recovery and reservoir equity.” This broad language indicates that subsurface orders could be used to impose conditions to manage subsurface communication (i.e. through measures such as allowables, production rates and to permit multi-zone wells) and are likely an intended complement to the AER’s recent “experimentation with a play-based approach” for the development of unconventional resources.²³⁶

As of the date of this paper, the AER has issued three subsurface orders.²³⁷ Generally, these orders provide variances to the standard requirements for operational parameters

²³² OGCA, *supra* note 4, ss 7 & 9.

²³³ AER Bulletin 2015-05, *supra* note 80.

²³⁴ *Ibid* (AER has indicated that these orders “will only address resource regulatory matters that are under the AER’s jurisdiction. Where the orders allow increased well density, these orders will not in any way predetermine regulatory approval of wells, pipelines, other production facilities, access roads and other surface disturbances associated with energy development of the geological zones defined in the order”); see e.g. *Subsurface Order No 1*, *supra* note 81; *Subsurface Order No 2*, *supra* note 81; *Subsurface Order No 3*, *supra* note 81.

²³⁵ OGCR, *supra* note 63, s 11.104.

²³⁶ Nigel Bankes, “The AER and the Values of Efficiency, Flexibility, Transparency and Participation: Best in Class?”, ABlawg: University of Calgary Faculty of Law Blog on Developments in Alberta Law (12 February 2015), online: ABlawg <http://ablawg.ca/wp-content/uploads/2015/02/Blog_NB_AER_Feb_2015.pdf>.

²³⁷ *Subsurface Order No 1*, *supra* note 81; *Subsurface Order No 2*, *supra* note 81; *Subsurface Order No 3*, *supra* note 81.

such as well density restrictions, target areas for wells, and reporting and testing requirements. These variances appear to provide greater flexibility and discretion to the operators in the area.²³⁸ With respect to hydraulic fracturing, *Subsurface Order No 2*²³⁹ imposed a number of requirements for the use of hydraulic fracturing in the Duvernay Zone intended to detect and monitor against potential seismic events caused by or resulting from hydraulic fracturing within the area.²⁴⁰

With respect to disputes between competing industry parties, a subsurface order could be used to impose restrictions applicable to all parties and future applications within the specified geological zone and area. Perhaps, these subsurface orders could be a tool to assist in resolving disputes and could be agreed upon by industry as part of the resolution process or could originate as a result of a hearing or negotiations on a particular development application.

5.0 Conclusion

The current regulatory framework affords the AER and industry with procedural steps to access the regulatory tools to resolve subsurface communication disputes. First, industry can monitor applications by other operators that could affect their operations and participate in the application process by filing a statement of concern. Where communication is suspected and the applications have already been approved, industry can file an application for the AER to review and vary the applicable approval(s). In addition, the AER has a process for receiving and investigating complaints, which could also be used to trigger an investigation by the AER.²⁴¹

When faced with these concerns and objections by industry, the AER then has the following options (to the extent that each may be applicable), to shut-in or suspend operations, order mandatory testing, monitoring and reporting, implement a commingling or subsurface order or deny development application.

How these tools will be used by the AER, including the conditioning of approvals and the potential shut-in of production depends upon the classification of the cause of the communication and whether fractures propagating beyond legal boundaries are necessarily incidental to the production of the resource in question.

²³⁸ See e.g. *Subsurface Order No 1*, *ibid*, ss 2(a)-(b) (this section provide that there are no well density restrictions, giving licensees the freedom to drill where they would like without the burden of multiple well applications to the AER).

²³⁹ *Subsurface Order No 2*, *supra* note 81, s 2.

²⁴⁰ *Ibid*.

²⁴¹ REDA, *supra* note 55, s 69; AER, “File a Complaint” (12 April 2015), online: AER <<http://www.aer.ca/applications-and-notices/file-a-complaint>>.

Although the AER cannot impose production sharing agreements under its governing legislation, the AER's practice is to encourage them through the conditions it attaches to approvals. This practice indicates a preference for parties to determine the apportionment and value of any hydrocarbons produced. The fact that the AER indicates that the hydrocarbons can be measured and damages subsequently determined in the courts, implies that the rule of capture may not apply. In other words, if the rule of capture applied to these situations, there would be no need to account for the cross-flow hydrocarbons to the other party.²⁴² Further, whether or not the rule of capture applies will likely depend upon the specific facts, but as stated in connection with *Borys and Anderson*, communication between reservoirs or containers is very different than communication within the same container where the rule of capture traditionally applies.

Even with these potential solutions, when it comes to determining communication issues, there are some areas that fall outside of the AER's jurisdiction and that will require disputing parties to seek recourse through the courts (actions in tort, negligence, contract, strict liability) or alternative dispute resolution.²⁴³ The following are examples of powers that fall outside the AER's statutory jurisdiction:

- While the AER may determine whether cross-flow between wells, formations or reservoirs (water or oil and gas) is in fact occurring, the determination of how much compensation ought to be paid is a matter for the courts.
- While the AER may recognize the desirability of and encourage parties to sign a production-sharing agreement, it cannot, where the failure to reach such an agreement would effectively extinguish one party's rights, require such an agreement.²⁴⁴ The question remains whether the play-based development plans could in effect be used to implement production-sharing agreements depending upon the scope of the risk management plan and whether any existing communication issues exist with respect to the play.

Regardless of whether the dispute is being settled privately, by the AER or the courts, a further challenge is the information gap or the heavy burden of establishing that communication is occurring and hydraulic fracturing was the cause. Hydraulic fracturing occurs far below the surface, "where only equipment under the control of the operator can observe it."²⁴⁵ This has been described as information asymmetry, in that the private parties have better access to information than the regulator and the level of expertise as

²⁴² See Bankes, "Accounting issues", *supra* note 211 (it is the difference between the right to work and ownership).

²⁴³ In addition to the contractual alternative dispute resolution processes that may be agreed upon by contracting parties, the AER has a formal alternative dispute resolution process. See AER, *Alternative Dispute Resolution Program and Guidelines for Energy Industry Disputes*, Manual 004 (July 2014).

²⁴⁴ *Goodwell*, *supra* note 20 at para 98.

²⁴⁵ Sheila Olmstead & Nathan Richardson, "Managing the Risks of Shale Gas Development Using Innovative Legal and Regulatory Approaches" (2014) 39:1 Wm & Mary Envtl L & Pol'y Rev 177 at 181-182.

between operators can vary greatly.²⁴⁶ This adds to the technical challenges in proving that hydraulic fracturing causes the communication issues and that communication or cross-flow is in fact occurring.

In conclusion, it is anticipated, given the widespread use of multistage horizontal hydraulic fracturing, that issues related to subsurface communication will continue to be raised with the AER and in the courts. With respect to how these issues will be resolved, so far the AER has attempted to manage risk through monitoring and testing. Generally the AER has permitted development to occur by endorsing an approach which relies on the implicit rights attached to known and inevitable consequences to mining and recovering the minerals. This approach has been justified on the basis that any production of another's minerals does not result in irreparable harm but instead damages that can be identified and quantified.

²⁴⁶ *Ibid* at 184.

CIRL Publications

Occasional Papers

- Regulating Hydraulic Fracturing: Regulatory Recourse for Subsurface Communication**
Kimberly Howard **\$20.00 sc**
(Free online) 2015 46 pp.
Occasional Paper #51
- Linking Emissions Trading Schemes: Analysis and Recommendations for EU-Australia and Quebec-California Linkages**
Rolandas Vaiciulis **\$25.00 sc**
(Free online) 2015 62 pp.
Occasional Paper #50
- Calibrating Liquefied Natural Gas Export Life Cycle Assessment: Accounting for Legal Boundaries and Post-Export Markets**
Prof. James Coleman, Dr. Adebola S. Kasumu, Jeanne Liendo, Vivian Li and Dr. Sarah M. Jordaan **\$20.00 sc**
(Free online) 2015 36 pp.
Occasional Paper #49
- Biodiversity and Conservation Offsets: A Guide for Albertans**
David W. Poulton **\$15.00 sc**
(Free online) 2015 29 pp.
Occasional Paper #48
- Environmental Sentencing Policy in Alberta: A Critical Review**
Chilanye Nwapi **\$15.00 sc**
(Free online) 2015 32 pp.
Occasional Paper #46

For a complete list of Occasional papers, see CIRL's website: www.cirl.ca

Canadian Wildlife Law Project Papers

- Wildlife Management Beyond Wildlife Laws**
Arlene J. Kwasniak **\$10.00 sc**
(Free online) 2006 27 pp.
Wildlife Law Paper #7
- Wildlife Stewardship**
Arlene J. Kwasniak **\$10.00 sc**
(Free online) 2006 19 pp.
Wildlife Law Paper #6
- Legal and Economic Tools and Other Incentives to Achieve Wildlife Goals**
Arlene J. Kwasniak **\$10.00 sc**
(Free online) 2006 25 pp.
Wildlife Law Paper #5

For a complete list of Canadian Wildlife Law Project papers, see CIRL's website: www.cirl.ca

Human Rights and Resource Development Project Papers

- Public Access to Information in the Oil and Gas Development Process**
Linda McKay-Panos **\$20.00 sc**
(Free online) 2007 118 pp.
Human Rights Paper #6
- The Potential Application of Human Rights Law to Oil and Gas Development in Alberta: A Synopsis**
Nickie Vlavianos **\$20.00 sc**
(Free online) 2006 70 pp.
Human Rights Paper #5
- Protecting Environmental and Health Rights in Africa: Mechanisms for Enforcement**
Ibironke Odumosu **\$20.00 sc**
(Free online) 2006 78 pp.
Human Rights Paper #4

For a complete list of Human Rights and Resource Development Project papers, see CIRL's website: www.cirl.ca

Books and Reports

The Special Areas Act: Alberta's Dust Bowl in a Changing Climate
Dr. William N. Holden

\$35.00 sc
2015 91 pp.
ISBN 978-0-919269-51-4

Environmental Agreements in Canada: Aboriginal Participation, EIA
Follow-Up and Environmental Management of Major Projects
Ciaran O'Faircheallaigh

\$35.00 sc
2006 217 pp.
ISBN 978-0-919269-50-7

A Guide to Impact and Benefits Agreements
Steven A. Kennett

\$35.00 sc
1999 120 pp.
ISBN 978-0-919269-48-4

Forest Management in Canada
Monique Ross

\$20.00 sc
1995 388 pp.
ISBN 978-0-919269-42-2

The Framework of Water Rights Legislation in Canada
David R. Percy

\$20.00 sc
1988 103 pp.
ISBN 978-0-919269-21-7

Aboriginal Water Rights in Canada: A Study of Aboriginal Title to Water
and Indian Water Rights
Richard H. Bartlett

\$30.00 sc
1988 237 pp.
ISBN 978-0-919269-23-1

For a complete list of Books and Reports, see CIRL's website: www.cirl.ca

Conference Proceedings

**Resource Development and the Mackenzie Valley Resource Management
Act:** The New Regime
John Donihee (Contributing Editor), Jeff Gilmour and Doug Burch

\$20.00 sc
2000 281 pp.
ISBN-13 978-0-919269-49-1

Mineral Exploration and Mine Development in Nunavut: Working with
the New Regulatory Regime
Michael J. Hardin and John Donihee, eds.

\$15.00 sc
1998 160 pp.
ISBN-13 978-0-919269-46-0

For a complete list of Conference Proceedings, see CIRL's website:
www.cirl.ca

Environment in the Courtroom Symposium Papers

Environment in the Courtroom (IV): Evidentiary Issues in Environmental
Prosecutions and Hearings

(Free online) March 2015
14 papers English/French

Environment in the Courtroom (III): Sentencing and Environmental
Offences

(Free online) February 2014
12 papers English/French

Environment in the Courtroom (II): Environmental Prosecutions

(Free online) March 2013
10 papers English/French

Environment in the Courtroom (I): Key Environmental Concepts and
the Unique Nature of Environmental Damage

(Free online) March 2012
14 papers English/French

For a complete list of Symposium Papers in English and French, see CIRL's
website: www.cirl.ca/symposium

Other Publications

Resources: A publication of the Canadian Institute of Resources Law

Free online
ISSN 0714-6918

Annual Report

Free online

Available from Carswell

Canada Energy Law Services

Canada Energy Law Service (Federal) · 2 vols. · 0-88820-409-4 (Publication #20154)
Canada Energy Law Service (Alberta) · 1 vol. · 0-88820-410-8 (Publication #20162)
Canada Energy Law Service (Full Service) · 3 vols. · (Publication #20146)

Order from:

Carswell, a Thomson Reuters business
One Corporate Plaza
2075 Kennedy Road
Toronto, Ontario M1T 3V4
Canada

For more information, call Customer Relations:

(Toll Free Canada & US) 1.800.387.5164
(Toronto & Int'l) 416.609.3800
(Toll Free Canada) Fax: 1.877.750.9041
Fax: 416.298.5082

Customer Relations: customerrelations@carswell.com

Website: www.carswell.com

Website Inquiries: comments@carswell.com

CIRL Order Information

All book order enquiries should be directed to:

Canadian Institute of Resources Law
Murray Fraser Hall, Room 3353 (MFH 3353)
University of Calgary
Calgary, Alberta, Canada T2N 1N4
Tel 403.220.3200; Fax 403.282.6182
E-mail cirl@ucalgary.ca Website www.cirl.ca

Business Hours

0830 to 1630 (MST except MDT March-November)

Discount Policy for Bookstores and Book Wholesalers

20% on 1 to 4 books

40% on 5 or more books

GST/HST

All Canadian orders are subject to the Goods and Services Tax (GST) or the Harmonized Sales Tax (HST) for participating provinces. If GST exempt, please indicate in writing. CIRL's GST Registration No. 11883 3508 RT.

Payment Terms

Net 60 days.

- Payment or numbered, authorized purchase order must accompany all orders.
- MasterCard or Visa account number with expiry date will be accepted.

Shipping

Please allow two to four weeks for delivery.

Return Policy

(Applies ONLY to bookstores and book wholesalers.)

All books may be returned for credit within one year of the invoice date, provided that they are in a clean and resaleable condition. Please write for permission to return books and supply original invoice numbers and discounts. Returns must be shipped prepaid. Defective books are replaceable at no charge.

Please note:

- All books are softcover unless otherwise noted
- All prices are subject to change without notice
- Make cheque or money order payable to the *University of Calgary*

CIRL Order Form

Method of Payment

Payment or purchase order must accompany order.
Please make cheques payable to **University of Calgary**

- Cheque Money Order
 Visa MasterCard

Please return completed order form to:

Canadian Institute of Resources Law
MFH 3353, Faculty of Law
University of Calgary
Calgary, Alberta, Canada T2N 1N4
Tel 403.220-3200; Fax 403.282.6182
E-mail cirl@ucalgary.ca;
Website www.cirl.ca

Credit Card Number _____
Expiry Date _____
Cardholder Name _____
Daytime Telephone _____
Name _____
Company Name _____
Address _____
City _____ Province/State _____
Postal/Zip Code _____ Country _____

Please send me the following books

Title	Quantity	Price	Subtotal
Subtotal			
Add Shipping and Handling*			
Add GST/HST for orders placed in Canada (CIRL GST No. 11883 3508 RT)			
Total (All prices subject to change without notice)			

*Add Shipping and Handling

Within Canada: first book \$5.00; each additional book \$2.00

Outside Canada: first book \$10.00; each additional book \$4.00

September 2015