

Agricultural Pest Management on Upstream Oil and Gas Sites Alberta, Canada

Clubroot: A Case Study

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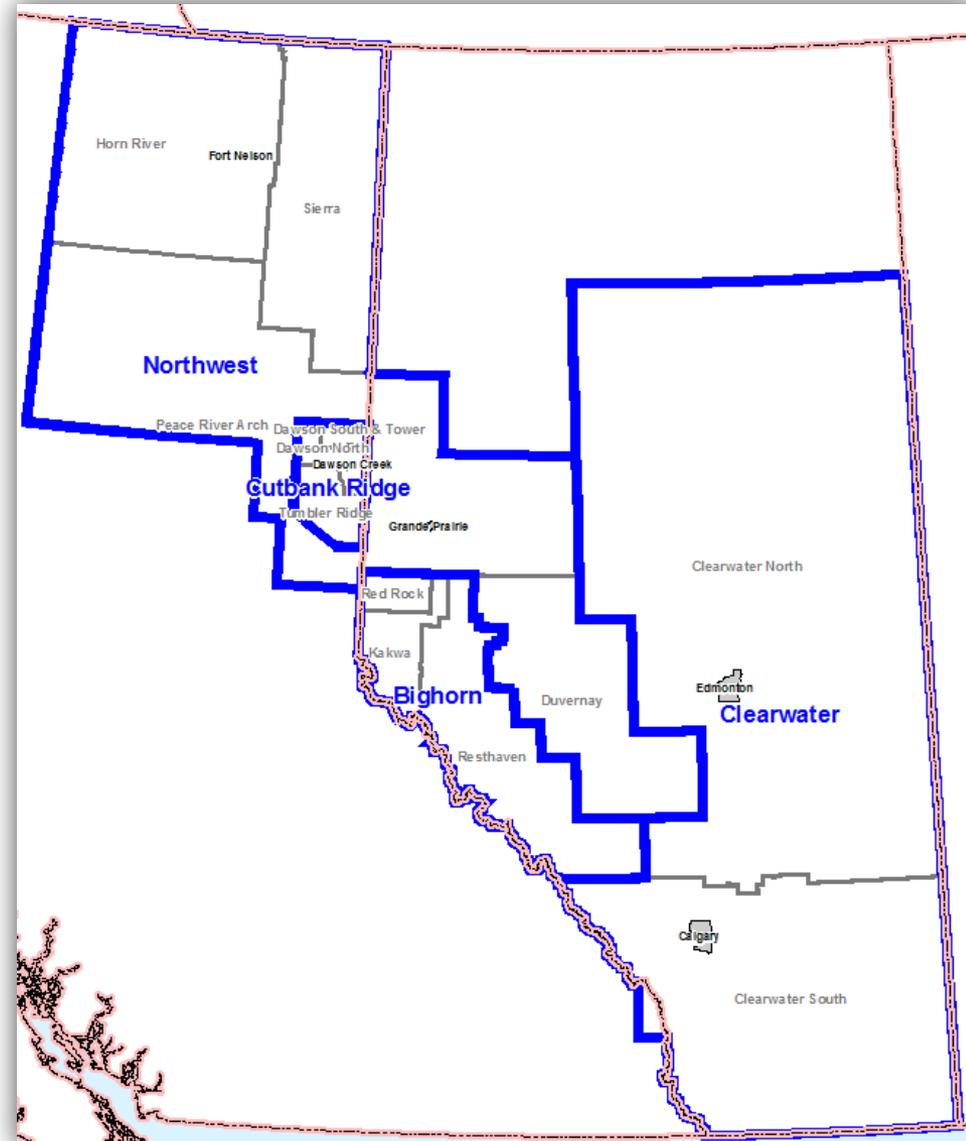
Introduction

- A little bit about me
- A little bit about Encana
- Clubroot Management
 - One Oil and Gas Perspective
 - Issue emergence
 - Issue review
 - Practice development
 - Practice execution
 - Verification
 - Practice refinement
- Closing



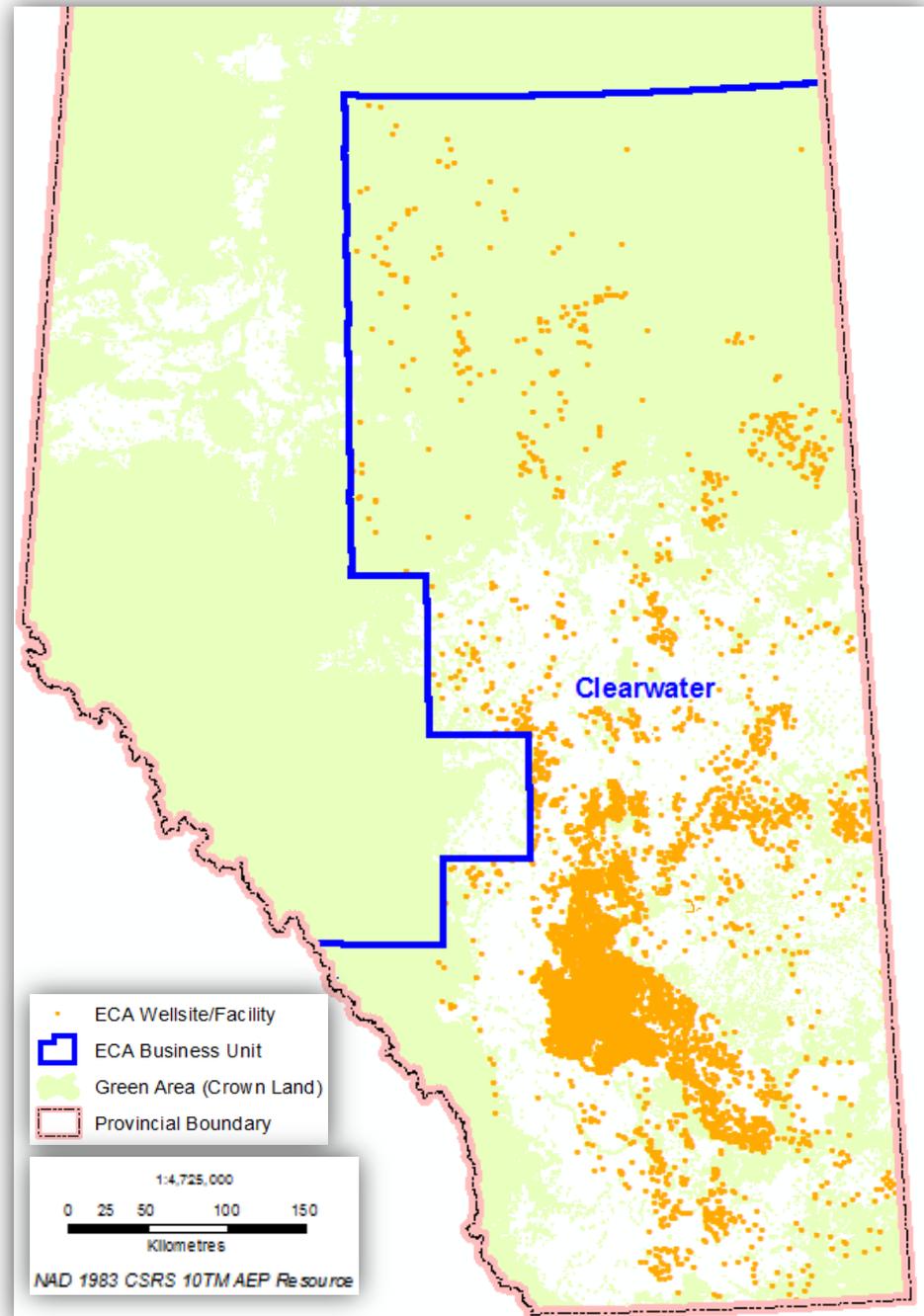
Encana Corporation

- Leading North American energy producer
- Focus on resource plays
 - Large scale, repeatable, innovative development programs
- Several resource plays across AB and BC
- Social license to operate is paramount
 - operator of choice
 - employer of choice
 - partner of choice

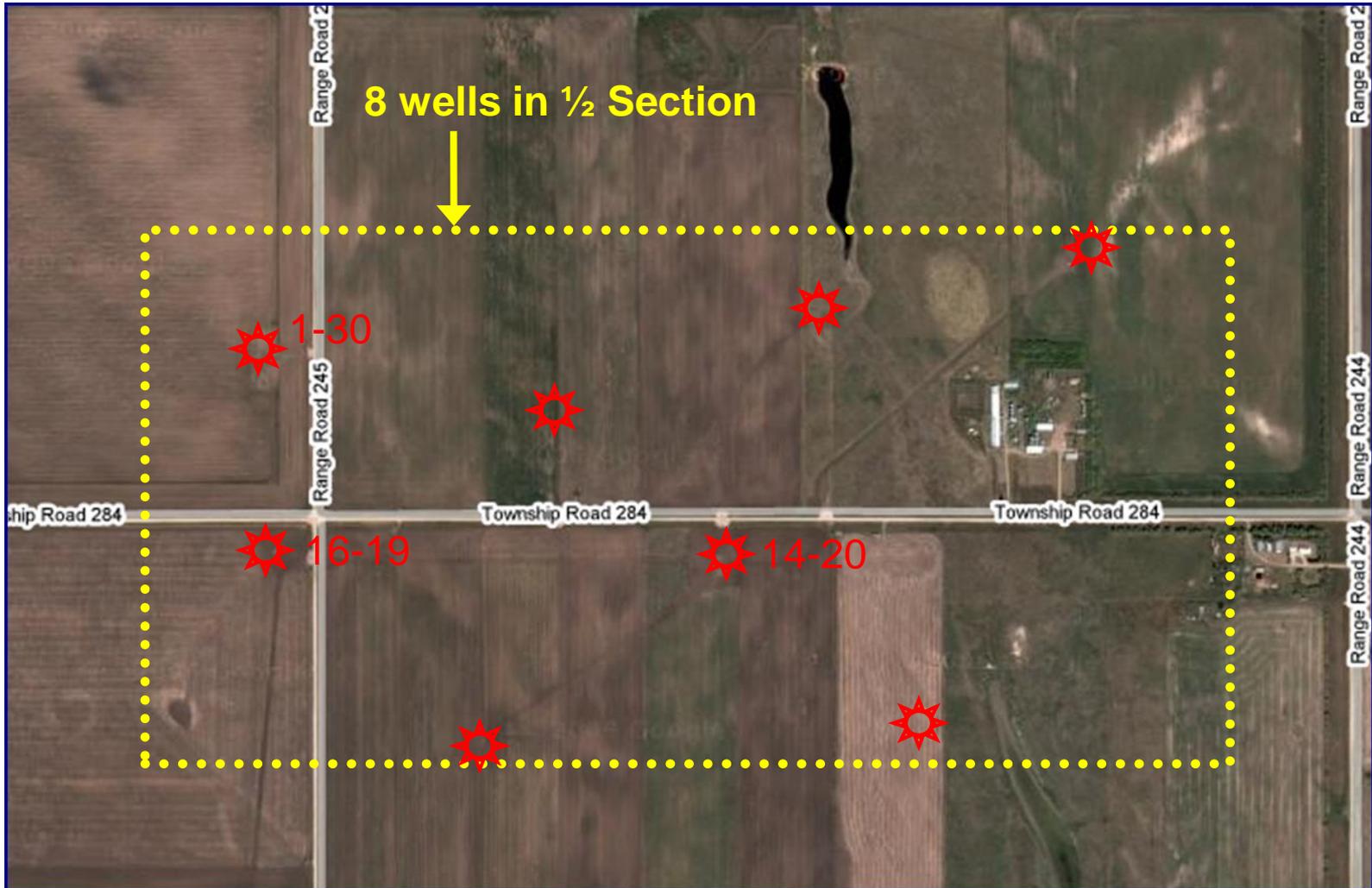


Encana Corporation Clearwater BU

- Coal Bed Methane (CBM) resource play is major play in Clearwater BU
- Focus on Horseshoe Canyon (HSE) development
- HSC primarily found in agricultural areas
- More than 19,000 active/suspended CBM Wells
- More than 11,000 km pipeline
- Wellsites have small footprint
- Minimal disturbance



Pop-Quiz: How many wells are there?



CBM Well and Pipeline Examples



Clubroot Management One Oil and Gas Perspective

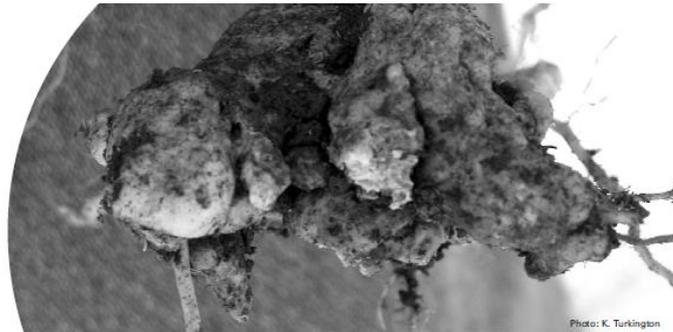


Photo: K. Turkington

Alberta Clubroot Management Plan

Developed by:
Alberta Clubroot Management Committee
Revised February 2008

Alberta

AGDEX 140/638-2

- Increasing concern surrounding farm Bio-Security
- Discovery of Clubroot in AB galvanized landowners
- Existing and potential landowners asking for mitigations
- Potential for objection to new development
- Rapid response to address landowner concerns, regulatory requirements and development team expectations



Clubroot Management

One Oil and Gas Perspective

- Change requires education, motivation and planning
- This is what we learned:
 - Clubroot is a serious pest of canola which is a common crop in the areas within which we operate
 - It spreads through soil movement; vehicles/equipment are a significant vector of dispersion
 - Due to the nature of our developments we could potentially contribute to spread
 - By the end of 2007
 - More that 50% of landowners were asking what Clubroot mitigations we had in place
 - Up to 25% were demanding washing and disinfection
 - In other words ... it was a crucial concern for our neighbours

Clubroot Management

One Oil and Gas Perspective

- Learnings continued:
 - Encana's land base in Alberta covers parts of counties that account for approximately 3 million acres or 102 million bushels of Canola production
 - This accounts for 75% of the Alberta total acreage
 - Encana's land base in BC covers parts of counties that account for approximately 58,000 acres or 1.7 million bushels of Canola production
 - This accounts for 90% of the BC total acreage.
 - Based on this Encana is exposed to 25% of the National Canola production
 - If Canola is selling for around \$14 per bushel our exposure could impact over a billion dollars in canola production

Clubroot Management

One Oil and Gas Perspective

- Learnings continued:
 - The cost of washing and disinfection of equipment for the construction of one CBM well was estimated at \$43,000 per well and would use 112,000 L of water in 2008
 - Clearwater planned for 300 drills in 2008
 - Approximately \$12 million and 33 million L of water
 - Clearwater planned for 443 miles of pipeline in 2008
 - If Encana washed and disinfected from field to field during pipeline construction, cost was estimated at approximately \$7 million and would have used 26 million L of water
 - Total of \$19 million and 59 million L of water
 - Additional costs and water use would make the play unsustainable
 - But it didn't make the issue any less important ...

Clubroot Management

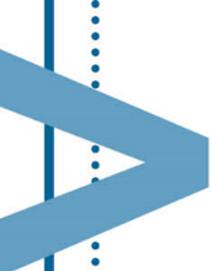
One Oil and Gas Perspective

- Solution: Build a Practice that was reasonable, achievable, and secure
- Worked with CAPP in the development of their practice
- Developed internal Clubroot Practice which has evolved to a Pest Practice
- Key conditions:
 - We clean by hand from field to field
 - Washing is part of regular maintenance (document)
 - Vehicles/equipment that arrive dirty are sent back at suppliers expense
 - We follow provincial and county/MD regulations and by-laws
 - If our operations occur on lands with Clubroot, we will work with and abide by site specific mitigation plans set out by Agricultural Fieldmen and the landowner

Closing

- Encana strives to be the neighbour of choice
- Pest management is a very complex issue
- We are continuously encountering new issues, learning and refining our practices
- We are very grateful for our collaboration with Alberta Agriculture and specifically Ron Howard !





Questions?



encana.com