Media Alert
March 19, 2008
Rosebud, Alberta

8 Landowners Reject Closure of Groundwater Cases: Demand Proper Study of Industrial Contamination

Eight landowners sent letters to the government today rejecting a decision by Alberta Environment to close or complete its groundwater investigation of about 15 contaminated water wells in central Alberta.

The landowners suspect their wells have been polluted with hydrocarbons or other contaminants from petroleum industry activities or facilities, older or poorly sealed hydrocarbon wells and or shallow coal bed methane drilling.

In separate letters that were mailed or delivered, Alberta Environment informed landowners that the government closed or completed its groundwater investigations on these cases and will stop delivering water to three landowners.

Alberta Environment wrote that their investigation of the Campbell well was complete even though the Alberta Research Council (ARC) confirmed contamination from a deep source and recommended further investigation.

Alberta Environment closed the Herle case despite data collected by industry indicating toxic contamination that exceeded Canadian Drinking Water Quality Guidelines.

Alberta Environment closed the Rosebud cases based on reviews by ARC that found that energy developments have "most likely not adversely affected the complainant water wells."

ARC's 2007 annual report clearly lists EnCana as a funder of its water program including studies on the impacts of coalbed methane development. (p.14)

In a January 28th letter to MLA David Swann, Karlis Muelenbachs and Barbara Tilley at the University of Alberta, two experts on fingerprinting the sources of gas contamination, criticized the ARC study as inadequate and called the government's conclusion "premature."

"By closing these cases Alberta Environment has failed to protect groundwater let alone monitor groundwater quality as mandated under the Water Act," says Jessica Ernst, an environmental scientist and landowner in Rosebud, Alberta.

Other landowners accuse Alberta Environment of neglect and incompetence:

Tim Herle (businessman): "The way that Alberta Environment is testing our water is not benefiting Albertans or our environment. The only persons benefiting from this is industry."

Debbie Singer (businesswoman): "I reject the closure of my case by Alberta Environment because of inadequacies, omissions and inaccuracies in the ARC report."

Peter and Fiona Lauridsen (farmers): "All data from all gas wells in every area

reviewed by the ARC must be made publicly available."

Ronalie and Shawn Campbell (ranchers): "The more dangerous oversight was the presence of sour gas in our water from test results in 2006 and 2007. The levels are several hundred times higher than the acceptable level for constant exposure to sour gas....We are appalled that the ARC and Alberta Environment did not pick up on this."

All eight landowners demand that Alberta Environment submit the ARC reports and all data collected by industry and Alberta Environment to a full peer review by independent scientists agreed upon by the complainants.

Alberta Environment and the Energy Resources Conservation Board share responsibility for groundwater protection. The ARC study noted that Alberta Environment "does not have a specific and documented response process" and that data gathering and evaluation decisions "are made somewhat subjectively."

In contrast the Texas Railroad Commission, that state's oil and gas regulator, annually reports cases to the Texas Groundwater Protection Committee. In 2006 the Commission recorded 351 cases of groundwater contamination due to oil and gas activity in 110 counties.
http://www.tceq.state.tx.us/assets/public/comm_exec/pubs/sfr/groundwater06/06-1.pdf

Landowner Contacts:

Jessica Ernst 403-677-2074
Tim and Sheri Herle 403-845-7094
Debbie Singer 403-677-2446
Peter and Fiona Lauridsen 403-677-2378
Shawn and Ronalie Campbell 403-783-8222

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March 19, 2008

Ms. Bev Yee,
Environmental Assurance, Canadian Council of Environmental Ministers &
Assistant Deputy Minister, Alberta Environment
10th Floor, Petroleum Plaza South Tower
9915-108 Street Edmonton, AB T5K 2G8

Sent by Fax to: 780-427-1014

Dear Ms. Yee,

Re: Water Contamination at SW20-38-8-W5M

We have not yet received a response from Alberta Environment in regards to any of the concerns or issues regarding our October 25, 2007 meeting.
We request an official response from Alberta Environment to the attached and we request official re-opening of our contamination case.

We reject Alberta Environment closure of our case, given that Conoco Phillips data indicates industrial contamination of our water.

Sincerely,

Tim Herle
Sheri Herle

Jessica Ernst
Rosebud AB T0J 2T0

March 19, 2008

Ms. Bev Yee,
Environmental Assurance, Canadian Council of Environmental Ministers &
Assistant Deputy Minister, Alberta Environment
10th Floor, Petroleum Plaza South Tower
9915-108 Street Edmonton, AB T5K 2G8
Sent by Fax to: 780-427-1014

Dear Ms. Yee,

RE: AENV Incident No. 7894; Water Well Contamination at SE 13-07-22 W4M

First, I request the Alberta Research Council (ARC)'s point-by-point response to the January 23, 2008 comments by Karlis Muehlenbachs and Barb Tilley (copy attached) in their review of the ARC's summary report, dated January 16, 2008.

I received a January 16, 2008 letter from Mr. David McKenna, Business Unit Leader, Groundwater Policy Branch, regarding the closure of Investigation No.7894 based on a report by the ARC, dated December 31, 2007. My case number is the same as for other complainants. Is this an error?

I request that my case remain open and active until all the data collected, all missing data still to be collected and the reports by the ARC have been subject to peer review by independent scientists agreed upon by the complainants and that all issues brought forward by the complainants are appropriately addressed.

There are numerous errors and omissions in the ARC reports that require peer review and correction. One example, the ARC dismissed indicators of petroleum industry contamination in my water by reporting them at a concentration 1,000 times less than as on the lab report included in the appendices for my case.

Many critical data are not in the ARC reports. For example, the ARC concludes that the isotopic fingerprint values of the ethane in the water wells are similar to those in the CBM wells indicating "potential mixing" yet this important data is absent. As a CAEAL accredited Laboratory, the ARC has no justification for not releasing the raw data. What is the ARC trying to hide by not releasing all of the data with the reports?

Copies of the data from all gas and water wells in the areas of reported contamination and water loss, and all other data reviewed by the ARC and collected by Alberta Environment, Alberta Health, the ERCB (previously the EUB) and industry is required for peer review and to support the conclusions made. The data must also be made available to the complainants and the public.

EnCana proclaimed in public meetings here that the impervious zones between the company's CBM and our aquifers, as well as the aquifers themselves, would never be fractured so as to protect the community's drinking water. EnCana fractured our aquifers anyways. In my experience, fractured vessels leak. The ARC claims that EnCana's perforations were remedied by abandoning the gas well. My question is how does abandoning the gas well repair the fractures?

In 2003, the ARC reported that natural methane release in Alberta is rare because reservoirs are "tight" and that the nitrogen used in CBM recovery "increases diffusion rate of hydrocarbon gases from coal matrix into natural fractures". Despite knowing this, and admitting that EnCana fractured our aquifers with nitrogen gas and that this could have affected our water wells, the ARC did not assess:

· the hydrocarbon gases released by EnCana into our aquifers;

· the high concentrations of nitrogen gas in my water and EnCana's gas well that fractured our aquifers, even after flaring, and producing the gas well for months (the actual gas well data is contrary to HCL's "evaluation" and was not reviewed by the ARC); or

· potential multiple aquifer drawdown caused by EnCana.

Peer review is required to assess what the ARC did not, especially given the dramatic changes to so many water wells after EnCana fractured the aquifers that supply them, and the significant water loss in our wells after EnCana fractured these aquifers, and because Alberta Environment reported in 2006 that CBM "may cause water level decline & yield reduction in water wells" and "methane gas release, gas migration into shallow aquifers, basements, explosions etc."
The ARC summary report, dated January 16, 2008, states:

"Additional [energy] wells outside the 1.5 km radius were reviewed if they were specifically identified by a complainant"

Alberta Environment promised during an onsite tour (June 5, 2007) with myself and another complainant that the energy wells specifically identified by us would be included in the "comprehensive investigation" with isotopic fingerprinting completed for these, and promised in writing in March 2006 to provide isotopic fingerprinting by Dr. Karlis Muehlenbachs on the hydrocarbons in my water and the EnCana gas well that fractured our aquifers. This critical data is not included in the ARC reports, nor was there a review of it.

In 2006, Alberta Environment promised sampling pre and post shock chlorination of our wells to mitigate the introduction of non-sterile testing and sampling equipment by Alberta Environment, and EnCana's use of untreated surface water in its activities. This has not yet taken place.

The ARC summarized that Alberta Environment's "data gathering and evaluation decisions are made somewhat subjectively" and that there is no protocol. We requested a protocol repeatedly. The investigation needs an objective protocol – like that used by the United States Geological Survey when it investigates petroleum industry gas migration into water wells. Closing our cases – especially given that the data indicates "potential mixing" of CBM in our water - is subjective and does not fulfill Alberta Environment's mandate to protect groundwater or Water for Life strategy.

In conclusion, I reject the interpretation by Alberta Environment that the ARC produced sufficient evidence or data to support the conclusion that CBM and other energy development projects had "no" impact on my water well.

I require that Alberta Environment honour the commitment made in the Alberta Legislature on Feb 28, 2006, by the Hon Guy Boutillier to supply safe water "now and into the future" for all affected families.

I request your response to my questions and concerns in my May 31, 2007 letter to Mr. Peter Watson regarding EnCana's use of "implied refusal" instead of fulfilling the requirements in the Baseline Testing Standard.

Lastly, I appreciate that the ARC was not in charge of the investigation, did not do the sampling, and did not witness the sampling on our water wells or the hydrocarbon wells here or the many discussions the complainants had with Alberta Environment. The reports indicate that Alberta Environment provided incorrect information and might have withheld critical information from the ARC. Providing the complainants with a complete copy of the data on their cases that Alberta Environment sent to the ARC is required to clarify this.

Given the complexity and technical natures of the reports I am continuing to review and may have additional questions and concerns in the future.
Sincerely,

Jessica Ernst
Attachments: letter by Karlis Muehlenbachs and Barb Tilley

Cc

Tim Herle, complainant

Sheri Herle, complainant

Peter Lauridsen, complainant

Fiona Lauridsen, complainant

Debbie Signer, complainant

Shawn Campbell, complainant

Ronalie Campbell, complainant

Dr. David Swann, Shadow Minister Environment

Mr. Joe Anglin, Green Party Shadow to the Minister of Energy

Dr. Henry Vaux, Chair of the Rosenberg International Forum on Water Policy

Mr. Robert Sandford, Chair United Nations Water for Life Decade

Mr. Peter Watson, Deputy Minister Energy (past Deputy Minister Environment)

Dr. Alex Blyth, Alberta Research Council

The Press

MLA for Strathmore-Brooks Mr. Arno Doerksen

Peter and Fiona Lauridsen
Rosebud, Alberta
T0J 2T0

March 19th, 2008

Ms. Bev Yee

Environmental Assurance, Canadian Council of Environmental Ministers &
Assistant Deputy Minister, Alberta Environment
10th Floor, Petroleum Plaza South Tower
9915-108 Street
Edmonton, AB T5K 2G8

Sent by Fax to: 780-427-1014

Dear Ms. Yee,

We are in receipt of a letter, dated Jan 16th, 2008 from Mr. David McKenna, Business Unit Leader, Groundwater Policy Branch regarding the closure of Investigation No.7894 based on the findings of a review conducted by the Alberta Research Council (ARC).

We request that Investigation No 7894 remain open and active until the review by the Alberta Research Council has been subject to peer review by other independent scientists mutually agreed upon by the complainants, and all issues brought forward by the complainants be addressed.

We reject the interpretation by Alberta Environment that the ARC produced sufficient evidence or data to support the conclusion that coalbed methane and other energy development projects had no impact on our water well. At no place was this stated in the ARC's reports.

There are numerous errors in the ARC reports that require correction. For example, in the ARC report on our well, instead of using actual data from our water well and the surrounding CBM wells, the ARC performed statistical analyses based on a data bank collected largely after CBM had already taken place. There are errors in the statistical conclusions drawn when compared to the data provided. Peer review is essential to correct these errors and the others. This peer review needs to determine whether or not the sources of hydrocarbon contamination can be excluded or identified by statistical analyses alone and whether or not the ethane in our water can be accurately fingerprinted.

Alberta Environment must make publicly available all data from the D35 wells including information on location, sample collection techniques, percentage composition as well as the identity and specifications of the equipment used to ascertain the isotope values for these samples. All data from all gas wells in every area reviewed by the Research Council must be made immediately publicly available.

Alberta Environment's mandate to protect groundwater and Water for Life strategy are sufficient reason to continue monitoring and investigating the many contamination and water loss cases. In our experience, fractured vessels are no longer impervious; EnCana fractured our aquifers. The ARC claims that EnCana's perforations into the aquifers were remedied by abandoning the well. Abandoning the well will not however repair EnCana's fractures. The ARC reports cite downward hydraulic gradient which would cause water from our wells to drain towards CBM wells if the zones of the water and CBM wells became connected: The zones were connected. Five other users in this aquifer have had their wells plug with sediment, go dry or bad. The reported drop in the static water levels in the Signer, Lauridsen and Ernst water wells should raise public concern as it supports the contention that CBM activities could be causing drawdown in the aquifer corresponding to increased exsolving of methane in the water table. Since these three wells have not been utilized for domestic use in two years, it would seem unlikely that overuse would be causing aquifer drawdown.

It is essential that Alberta Environment continue to honour the commitment made in the Alberta Legislature on Feb 28, 2006, by the Hon Guy Boutillier to supply safe water for all affected families now and into the future.

We will not be following Alberta Environment's suggestion to contact EnCana requesting the removal of the water tank used to uphold the commitment made to me by this company and the government of this province. We request that Alberta Environment take over this responsibility or instruct Encana to continue supplying water to our family as promised now and into the future.

Sincerely,

Peter and Fiona Lauridsen

Debbie Signer
Rosebud, Alberta
T0J 2T0

March 19, 2008

Ms. Bev Yee

Environmental Assurance, Canadian Council of Environmental Ministers &
Assistant Deputy Minister, Alberta Environment
10th Floor, Petroleum Plaza South Tower
9915-108 Street
Edmonton, AB T5K 2G8 Sent by Fax to: 780-427-1014

Dear Ms. Yee,
I am in receipt of a letter, dated Jan 16th, 2008 from a Mr. David McKenna, Business Unit Leader, Groundwater Policy Branch regarding the closure of Investigation No.7894 based on the findings of a review conducted by the Alberta Research Council (ARC). <>I request that Investigation No 7894 remain open and active until the review by the ARC has been subject to peer review by other independent scientists mutually agreed upon by the complainants and addresses all issues brought forward by the complainants.

I reject the closure of my case by Alberta Environment because of inadequacies, omissions and inaccuracies in the ARC report. For example, E. coli was detected in June 2006 sampling by Alberta Environment's Kevin Pilger but not in his sampling of my water one month previous. Why? Could the E. coli have something to do with Kevin Pilger introducing muddy equipment repeatedly into my well? Kevin Pilger himself admitted to the contamination. Did Alberta Environment disclose this to the ARC? Also, the source of Aeromonous hydrophylia was not investigated. This is a pond bacteria and could have come from EnCana using untreated surface water for their shallow activities. Poor casing of my well was blamed even though Alberta Environment provided a visual recording of my well showing the casing to be of good workmanship and in sound condition. Did Alberta Environment provide this recording to the ARC for their review?

In order to come to the conclusion that energy activities have not adversely impacted my well, all possibilities must be adequately considered in a balanced report. Furthermore, ARC dismissed over 50 hydrocarbon contaminants found in my well without speculating on the source.

Alberta Environment's mandate to protect groundwater and Water for Life strategy are reason alone to continue monitoring and investigating the many contamination and water loss cases. EnCana fractured our aquifers. The ARC claims that EnCana's perforations into the aquifers were remedied by abandoning the well, but this will not fix the fractures. In my experience, a hole in the bucket is still a hole in the bucket.

The following data should raise concern. Please explain the draw down of these water

wells when they have been out of use since 2006! Please note: the worst water level drop occurs at my residence (closest to Encana's multiple aquifer fractures) and graduates by approximately 1 metre going east toward at each subsequent residence. How can this be consistent with drought?

Landowner	Water level drop
Signer	3.6 metres
Lauridsen	2.3 metres
Ernst	1.2 metres

I am unable to comply with your instruction to secure my water well because I still await Alberta Environment's promised funding to put my well back together again after department staff cut it to pieces on Nov. 2nd, 2006. Alberta Environment's March 30, 2007 letter states:

"The department will also pay for the cost of putting the well back into service following the post-chlorination sampling procedure to take place."

The chlorination and post-chlorination sampling of our wells have not yet taken place.

Regardless of Alberta Environment's responsibility to repair the damages they caused to my well, I demand that the ministry continue to honour the commitment made in the Alberta Legislature on Feb 28, 2006, by the Hon Guy Boutillier to supply safe water for all adversely affected families now and into the future.

Sincerely,

Debbie Signer

Shawn Campbell and Ronalie Campbell
Ponoka AB T4J 1R4

March 19, 2008

Bev Yee
Environmental Assurance, Council of Environmental Ministers &
Assistant Deputy Minister, Alberta Environment
10th Floor, Petroleum Plaza South Tower
9915- 108 Street
Edmonton AB T5K 2G8 Sent by Fax 10 780-427-1014

Dear Ms Yee,

RE: AENV Incident No. 220271
Water Well Contamination at SE 18-043-27 W4M

We received a letter from David McKenna, Business Unit Leader, Groundwater Policy Branch, on January 17th, 2008 along with the ARC (Alberta Research Council) report of our water contamination case called Incident 220271. His letter has left us with many concerns. We expected by now that someone would have contacted us with regards to carrying out the recommendations of the investigation, but after two months NOTHING has happened. We saw Mr. Touchette, ERCB supervisor from Red Deer office, at another meeting and asked if he knew when something was going to be done about our water and he told us that Brenda Austin of Calgary ERCB would be in contact with us, but that also has not happened.

On page 17 of the Campbell ARC report, the ARC conclusion was that "the Campbell Well 1 appears to be impacted by a deep gas source." The finding was not only "that the methane gas present in your water well is predominantly biogenic, indicating it was formed at a shallow depth," as stated in Mr McKenna's letter. In fact, the ARC summary also concludes " the Student T-tests statistically validate the observation that the carbon isotope value of the ethane in the Campbell Well 1 is the same as the ethane isotope signature of the energy wells and different than the surrounding water wells." If all the isotope data was compiled from the May 30th testing, it would conclusively prove that the impact is predominantly thermogenic. >From our observation, the more biogenic results occurred when the water well was not purged or purged for only a short period of time. When one compares the averaged results when the well was properly purged to the isotopes of the surrounding energy wells, it is possible to narrow down the match to existing energy sources.

There is data not included in the ARC report which is important to the investigation. The majority of the water wells that were used as comparatives to our water well were drilled by energy companies and sit on well sites next to operating energy wells that could be contaminating those water wells. Why were other domestic wells not used as

comparatives? We noticed that the ARC's knowledge of existing water wells on section 18 is not very accurate, and thus we would like to offer our other water wells as sources of further sampling. There are three more on this section and four others within a mile radius. Within the ARC report there is mention of the correlation to Pan Canadian Petroleum 1-89 water well, but the information in the ARC report is incomplete and may be confusing, since there are four water wells on this same EnCana location There are suspect energy wells that have not been included in the investigation and gas samples taken from multi comingled sources as comparatives to the gas in our water well. There are gas migration tests with TBA in the data, indicating that the test was completed but data was not provided before the ARC issued it's report and it's conclusions.

We ask that a peer review be undertaken, because of the lack of relevant data not included, that we have identified, as simply impacted landowners, and because we question AENV's negligence to collect another gas sample from our water for the University of Calgary to accurately fingerprint hydrocarbon isotopes, after their May sample had sat for several weeks before being sent for analysis. AENV also did not inquire of the findings of the independent who also took samples that day for analysis and sent water samples to the University of Alberta for their analysis.

We ask that the ARC recommendations be carried out, that further energy wells be investigated for cement integrity, gas composition and carbon isotopes. We also ask that additional energy wells be included that have been left out previously due to incorrect knowledge of their status or past history.

Alberta Environment must make publicly available the findings to protect the surrounding community members. We strongly object to the lack of concern that Alberta Environment shows for the citizens of this province, especially when they are impacted by development outside their control. There can be no doubt that because the gas in our water is coming from a deep source and has a sour component, that it is caused by industry (oil and gas) activity. It is absolutely unacceptable that we "should be put on hold" while the government comes up with another plan, warning us that we are responsible for the costs of venting the gas. The insistence on venting as a solution has already been proven unsafe in the Bruce Jack well which exploded after venting equipment had been installed. The current practice of venting the gas to atmosphere is also unsafe and contributes to GHG (green house gases) in the atmosphere. This is almost unbelievable instruction coming from the Department of Environment.
Mr McKenna went to great lengths to make us feel that methane is safe in our water, but he obviously avoided the health issues that are known when ethane, propane, butane, etc. are in the water. When these gases, including methane, are chlorinated, in particular, dangerous chemicals are formed. We already chlorinated twice on the advice of water experts in 2005 & 2006 when the gas was first detected, and thus have likely been exposed to dangerous chemicals from that.

The second and perhaps more dangerous oversight is the presence of sour gas (hydrogen sulphide) in our water from two different test results in 2006 and 2007. The levels are several hundred times higher than the acceptable level for constant exposure to sour gas.

Dr. Kaye Kilburn, a medical expert on health effects of exposure to sour gas has confirmed that just showering in our water would bring inhalation levels beyond the safe limit. We are appalled that the ARC and AENV experts did not pick up on this and that Alberta Environment has failed in its fiduciary responsibilities to protect our water and us from serious harm. We expect immediate action to provide us with safe alternate water until this investigation is completed, the source of the leaking hydrocarbon wells found, remediable clean up completed and our water made safe.

It is imperative that a hydrogeologist and a gas sampling expert (that we and the ARC mutually agree upon) test the domestic water well directly west of our impacted well. Our son and his wife and young daughter live there, and their water well is directly across the road from the identified energy well with leaking surface casing (14-07). Immediately after this information became known to AENV, the surrounding domestic water users should have been notified, and their water sampled and analyzed for gases, including sour gas, and other dangerous contaminants. A little over a mile from this contamination is an elementary school. Has the safety of its water and occupants been considered by AENV? AENV's lack of protocol is shameful. It's like seeing an approaching forest fire but not warning the residents to evacuate.

There are many more concerns to be addressed within the contents of the ARC report, but the above serious issues require immediate attention. Under the commitment of the previous Minister of Environment, Hon Guy Boutillier, on Feb. 28, 2006, we are asking Alberta Environment to supply safe water for all affected families now and into the future. Under the mandate to protect groundwater and the Water for Life Strategy, we ask that further water testing and community investigation be undertaken. We need to know immediately the actions that Alberta Environment is going to take, and the actions that ERCB will implement in regards to the leaking well and other suspect energy wells located on our property. The ERCB and AENV signed a Memorandum of Understanding on Dec. 16, 2007, to work together to protect Alberta's groundwater, and to protect Albertans. This was signed by the EUB chair, and Deputy Minister of Environment, and Deputy Minister of Energy. Let's now see that Memorandum transform from a paper promise into reality.

Sincerely,
Shawn and Ronalie Campbell

January 23, 2008

Dear Dr. Swann,

Here is our reply to your question to Dr. Muehlenbachs. After reading Dr. Blyth's report "An independent review of coalbed methane related water well complaints filed with Alberta Environment" January 16, 2008, and listening to Dr Blyth's appearance on the Dave Rutherford radio show, we have three basic and critical concerns regarding the validity of the study and the conclusions regarding the Rosebud area.

1. Use of the unqualified D35 well isotope database as the standard of water gas not impacted by CBM development

The report states "The composition and carbon isotope signature of free gas from the water wells was the primary data used to evaluate the well complaints. The gas composition and carbon isotope signature of the wells were evaluated using a series of plots and statistically compared to 105 to 145 nearby D35 wells from the AENV water well database collected under the AEUB Directive 35." Section 5.6, p.7.

In other words, the conclusions of the report are based primarily on a comparison of the isotope ratios of complainant water well gases to those of gases in the baseline water study initiated in May 2006. The report assumes that water gases included in the baseline water study come from waters that have had no impact from CBM development. However, based on samples analyzed in our laboratory, as illustrated in the area immediately surrounding Rosebud (Figure 1), seven of the thirteen D35 wells in this small sample area lie within less than ½ mile from a CBM well already developed prior to May 2006. These water wells that lie in such close proximity to CBM wells could have been impacted by CBM activity, but have been included without qualification in this report as representative of pre-CBM development. Due to the abundant CBM activity before initiation of the D35 project, it is not valid to use the D35 database as a standard against which to compare water wells, without first evaluating each D35 well for proximity to and possible impact by CBM development.

2. Disregard of ethane isotope data and its diagnostic potential

The report concludes "The ethane carbon isotope values for the CBM wells fall within the normal range of ethane values for all D35 wells in the area". This range for ethane is shown in Figure 5 of the report to be -58 to -40 per mil, a very broad range. We suggest that given the above problems with the D35 baseline data, the less negative ethane values in the D35 database may indicate that a number of supposedly baseline waters have, in fact, been impacted by previous CBM activity. Certainly, the quoted statement is not a valid reason to totally ignore the ethane isotopic data that we have found to be highly diagnostic as illustrated in Table 1 and in the following discussion. In Table 1, for example, the Ernst and the Signer waters have the same isotopic ratio for methane, but have significantly different isotopic ratios for ethane (Table 1). This ethane difference may indicate that the gas in each of these waters is sourced from different depths within the Lower Horseshoe Canyon or the underlying Belly River Formations.

Table 1. Reproducibility of Carbon Isotope Analyses of Methane and Ethane in Water Wells from the Hamlet of Rosebud (Sept 2006 – Oct 2007)

Landowner	Number of Gas Samples	Number of Sampling Periods	Average Methane Isotope Ratio	Average Ethane Isotope Ratio
Ernst	10	5	-67.9 +/- 0.5	-45.0 +/- 0.9
Lauridsen	7	3	-63.7 +/- 0.2	-41.6 +/- 0.3
Signer	4	2	-67.8 +/- 1.0	-40.9 +/- 0.2
Pearl	3	1	-66.7 +/- 0.3	-43.2 +/- 0.1

3. Lack of isotope data for coal gas from zones of water well completion and CBM production

"In the Rosebud/Redland area , local water wells appear to be predominantly producing water from the Carbon Thompson and Weaver coals of the (Middle) Horseshoe Canyon Formation", whereas CBM production in this area is from the Lower Horseshoe Canyon Formation ie., a different coal zone. The report concludes "The carbon isotope value of the ethane in the CBM wells is the same as the ethane isotope value of the complainant and surrounding D35 water wells. The similarity between ethane isotope values is not unexpected as both the CBM wells and the water wells are completed in the same formation (but different coal members)." The key factor here is that although the water reservoir coal and CBM coal are within the same formation, they are different coal members at different depths. There is no documented isotope data in this report to show that gases from these two coal zones are isotopically the same. In fact, our study of coals in a region about 50 miles north of Rosebud, shows that carbon isotope ratios for ethane in the middle Horseshoe Canyon water reservoir coals (-47.5 +/- 0.3 per mil) are significantly different from carbon isotopes ratios for ethane in the lower Horseshoe Canyon CBM coals (-40.9 +/- 1.2 per mil). In other words, gases from the two coals zones can be distinguished by their ethane isotopic ratios. As quoted above, the carbon isotope values of ethane in the complainant waters are similar to that of the CBM wells, and therefore, are not similar to *in situ* gas from the water reservoir coal. This indicates that the source of the gas is not purely the *in situ* gas from within the completed zone of the water well. Instead, there must be a contribution of gas from the CBM coals of the lower Horseshoe Canyon Formation or from the underlying Belly River Formation.

In summary, given the unqualified nature of the D35 well database, the disregard of diagnostic ethane isotope ratios and the lack of coal gas isotope data, we find the overall conclusion of Dr. Blyth's report "An independent review of coalbed methane related water well complaints filed with Alberta Environment" January 16, 2008, to be premature.

Drs. Barbara Tilley and Karlis Muehlenbachs

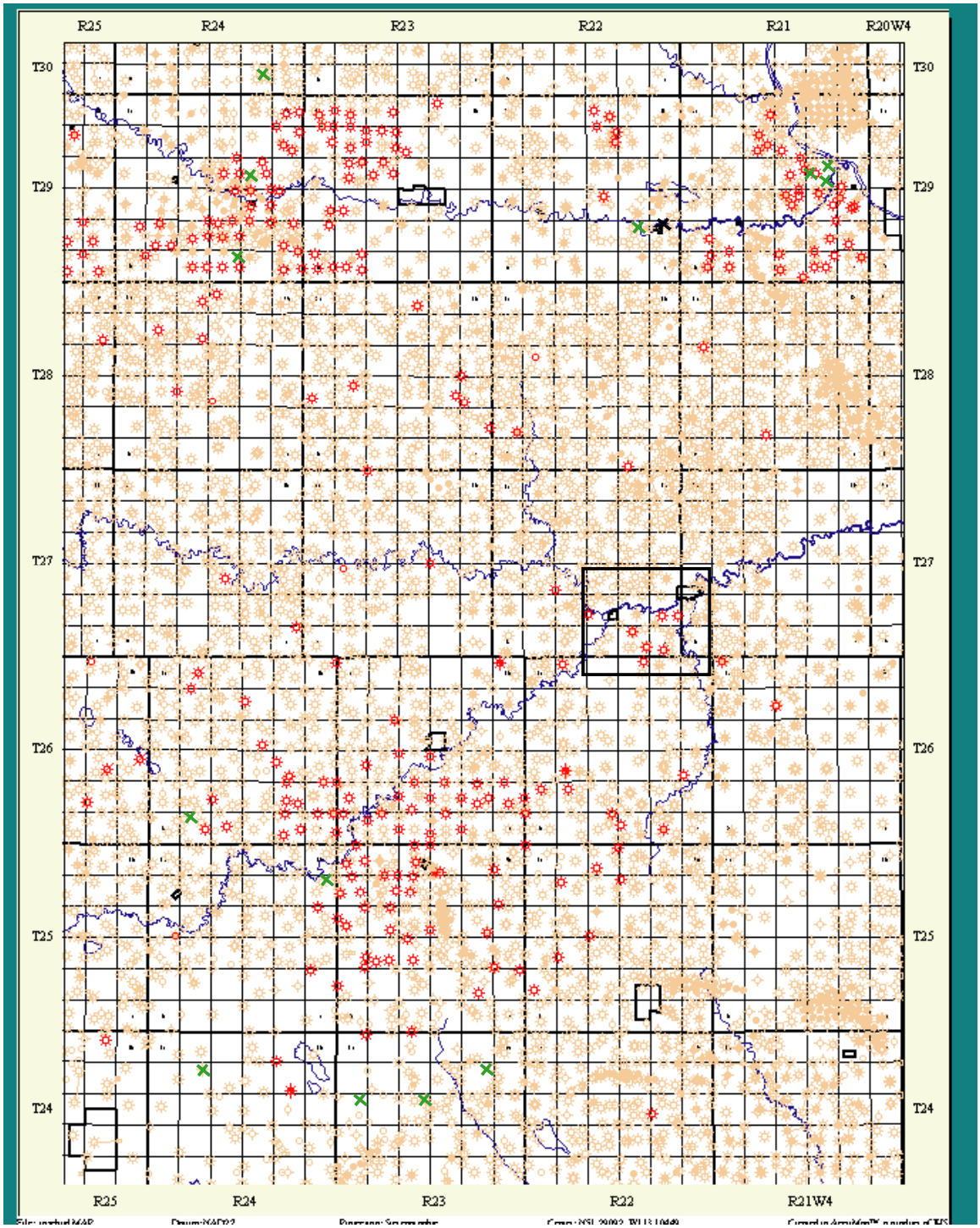

Figure 1. Proximity of D35 water wells (green x's) to already existing CBM wells (pre-May 1, 2006, red well symbols) in the region around and including the Hamlet of Rosebud.