

**ALBERTA ENERGY AND UTILITIES BOARD**

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Calgary Alberta

**PROSPEX RESOURCES LTD.  
APPLICATION FOR A WELL LICENCE  
GARRINGTON FIELD**

**Decision 2006-039 Errata  
Application No. 1379164**

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An omission of certain map details occurred on Figure 1 of *Decision 2006-039* issued by the Alberta Energy and Utilities Board (EUB/Board) on May 2, 2006. The corrected map is attached to this errata and to the decision report that appears on the EUB Web site.

Dated in Calgary, Alberta, on May 10, 2006.

**ALBERTA ENERGY AND UTILITIES BOARD**

*<original signed by>*

T. M. McGee  
Presiding Member

*<original signed by>*

R. J. Willard, P.Eng.  
Acting Board Member

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D. D. Waisman, C.E.T.  
Acting Board Member

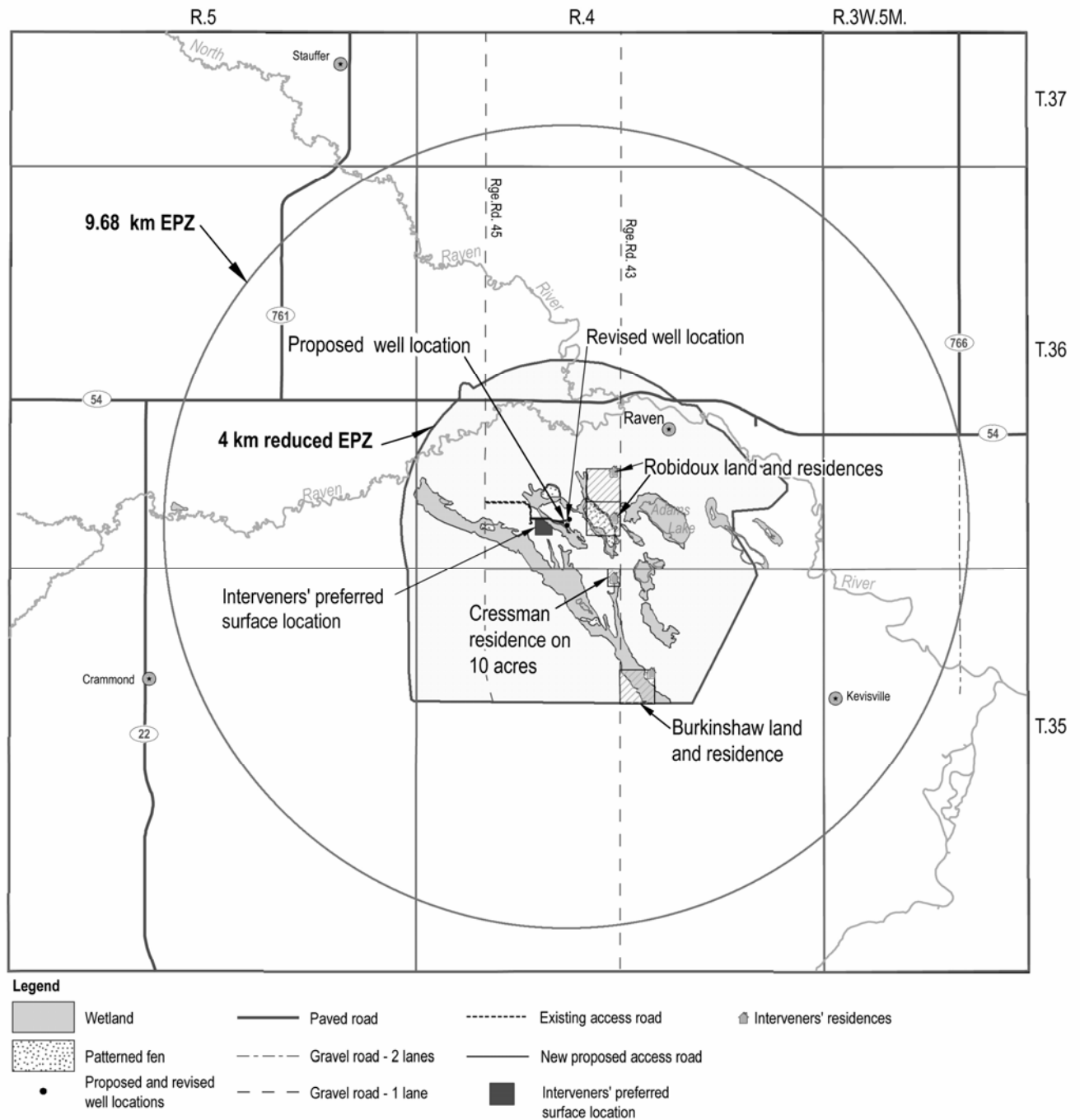


Figure 1. Project area



## Prospex Resources Ltd.

Application for a Well Licence  
Garrington Field

May 2, 2006

**ALBERTA ENERGY AND UTILITIES BOARD**

Decision 2006-039: Prosper Resources Ltd., Application for a Well Licence, Garrington Field

May 2, 2006

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# ALBERTA ENERGY AND UTILITIES BOARD

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Calgary Alberta

## PROSPEX RESOURCES LTD. APPLICATION FOR A WELL LICENCE GARRINGTON FIELD

Decision 2006-039  
Application No. 1379164

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### 1 DECISION

Having carefully considered all of the evidence, the Alberta Energy and Utilities Board (EUB/Board) hereby approves the applied-for well at the revised surface location.

### 2 INTRODUCTION

#### 2.1 Application No. 1379164

Prospex Resources Ltd. (Prospex) filed application 1379164 with the EUB on January 5, 2005, pursuant to Section 2.020 of the *Oil and Gas Conservation Regulations*, for a well licence to drill a directional sour gas well from a surface location in Legal Subdivision (LSD) 12, Section 4, Township 36, Range 4, West of the 5th Meridian (the proposed surface location). The proposed bottomhole location would be in LSD 6, Section 4, Township 36, Range 4, West of the 5th Meridian (the proposed 6-4 bottomhole location).

Following the hearing and at the request of the Board, Prospex submitted a survey plan on February 16, 2006, with a revised surface location in LSD 12-4 about 70 metres (m) north and slightly east of the originally applied for location (the revised surface location). When the Board accepted the new survey plan, which included amended coordinates and ground elevation, it recorded these pertinent details under Application No. 1449119.

Prospex indicated that the well licence application was filed principally for the purpose of obtaining sour gas production from the Swan Hills Formation. It also identified the Mannville Formation as an up-hole zone with potential for reservoir development if the well were to be drilled. The Mannville Formation would contain sweet gas. For purposes of drilling the well, the well would be a level-4 sour gas well, with a maximum hydrogen sulphide (H<sub>2</sub>S) content of 403.4 moles per kilomole (mol/kmol) (40.34 per cent) and an estimated potential drilling release rate of 8.28 cubic metres per second (m<sup>3</sup>/s). During the completion and servicing of the proposed well, the release rate would be 7.89 m<sup>3</sup>/s, and the suspended producing release rate would be 7.89 m<sup>3</sup>/s. The corresponding calculated emergency planning zones (EPZs) would be 9.68 kilometres (km) for the drilling release rate and 9.37 km for both the completion/servicing and suspended/producing release rates. Prospex received an interim approval from the EUB for a reduced EPZ of 4.0 km.

The attached figures show the proposed well location and access road, the revised well location and access road, the interveners' preferred surface location, the location of the interveners' residences and property, the 4 km reduced EPZ, and the wetland areas within the EPZ.

## 2.2 Interventions

On August 4, 2004, and November 9, 2004, Jim Cressman, owner and resident of a 10 acre parcel in the northeast quarter of Section 33-35-4W5, submitted letters to the EUB expressing his opposition to the proposed well. Mr. Cressman's residence is about 1.6 km from the proposed surface location, is within the reduced 4 km EPZ, and was incorporated into the site-specific emergency response plan (ERP) prepared by Prospex. In his letters, Mr. Cressman expressed concerns regarding groundwater and shallow water wells, health, safety, and the environment.

On November 27, 2003, August 13, 2004, and December 15, 2004, Phillip Burkinshaw and Lois Burkinshaw, owners and residents of the southwest quarter of Section 27-36-4W5, submitted letters to the EUB expressing their opposition to the proposed well. The Burkinshaws' land and residence is about 3.8 km from the proposed surface location, is within the reduced 4 km EPZ, and was incorporated into the ERP prepared by Prospex. In their letters, the Burkinshaws raised concerns about the health and safety of people and livestock and about the effect on the wetland, associated wildlife, and land value.

On August 7, 2004, Roland Robidoux and Theresa Robidoux, owners and residents of the southeast quarter of Section 9-36-4W5 and the northeast quarter of Section 4-36-4W5, submitted a letter to the EUB expressing their opposition to the proposed well. The Robidoux's land and residence is about 0.5 km from the proposed surface location, is within the reduced 4 km EPZ, and was incorporated into the ERP prepared by Prospex. In their letters, the Robidoux's raised concerns about the health and safety of people and livestock, their shallow water wells, tree conservation, and wildlife.

## 2.3 Hearing

A public hearing was held on November 23, 24, and 25, 2005, in Spruce View, Alberta. The panel consisted of Board Member T. M. McGee (Presiding Member) and Acting Board Members D. D. Waisman, C.E.T., and R. J. Willard, P.Eng. The Board panel and EUB staff conducted a site visit to the surface location of the proposed well and access road and the area in near proximity on November 22, 2005. Those who appeared at the hearing and abbreviations used in this report are listed in Appendix 1.

Following the hearing, on December 7, 2005, the Board panel wrote to the parties and Mr. Bruce Cressman, occupant of LSD 12, to solicit their views as to whether they took issue with the panel requesting Prospex to submit a new survey plan for a surface location about 100 m north of the proposed well site and to conduct further consultation with the surface occupants. The reasons for the request were that during the hearing the interveners took issue with the proposed surface location due to its proximity to the wetlands and potential impacts on the environment and the local water supply. Prospex identified at the hearing that it was prepared to move the proposed well site into the pasture to the north of the proposed surface, but the question of moving the proposed surface location was not fully canvassed at the hearing.

As the parties advised that they did not take issue, the panel directed that Prospex file a survey plan for the revised proposed site and a schedule was set for submissions of the parties. On February 16, 2006, Prospex filed a new survey plan indicating a revised surface location about 70 m north of the proposed surface location. Final submissions of the parties were received on February 24, 2006, which marked the official close of the evidentiary portion of the hearing.



### **3 ISSUES**

The Board considers the issues respecting the applications to be

- need for the proposed well,
- public safety, including emergency response planning,
- surface location of proposed well and potential environmental impacts, and
- other matters, including public consultation.

### **4 NEED FOR THE PROPOSED WELL**

#### **4.1 Views of the Applicant**

Prospex stated that the proposed well was needed to enable it to explore for and recover hydrocarbons that may be discovered in the Swan Hills Formation, as well as the potentially productive shallower Mannville Formation. Prospex explained that if approved, the well would be exploratory in nature for the primary targeted Swan Hills Formation. It stated the shallower Mannville Formation was expected to be productive based on an existing Mannville well located about one mile west of the proposed location.

Prospex stated that other wells may be required to develop the Swan Hills Formation, depending on the results of the proposed well. It provided evidence that the proposed 6-4 bottomhole location was chosen as it would be more or less centrally located on a trend identified by seismic and stated that if the well were successful, it would apply for delineation wells to test the northwest and southeast extent of the pool. Prospex estimated that the ultimate potential of the targeted Swan Hills Pool could be up to 300 billion cubic feet (Bcf) of gas equivalent and indicated that the most optimistic scenario could result in the need for up to 9 to 13 wells to effectively produce gas from the reservoir. It submitted that any subsequent development should be assessed as part of an overall development plan and would need to be the subject of future applications to be approved or rejected by the Board on the basis of their own merit. Prospex recognized that the local landowners and occupants would have the opportunity to address those specific issues at that time.

Prospex described that it anticipated that if the well were successful, the gas would be transported to existing gas processing facilities in the area through pipeline gathering systems already substantially in place. It stated that processing option for the gas would most likely be the Shell Caroline gas plant, with a tie-in point at 8-28-35-5W5, or the KeyEra Strachan gas plant, with a tie-in point at 3-36-35-5W5. Prospex stated that the final details of gas processing would be contingent on the flow rate and gas composition.

#### **4.2 Views of the Interveners**

The interveners stated that they were not philosophically opposed to oil and gas development and recognized its need for oil and gas development in general. They noted that while there had been other wells drilled in the area, most of that other development in the area had been sweet or had had relatively lower concentrations of H<sub>2</sub>S.

The interveners did not challenge Prospex's need to exploit its petroleum and natural gas (P&NG) rights underlying Section 4. However, they argued that Prospex had not clearly established the need for the well to be drilled from the proposed surface location. The interveners submitted that the Board must consider whether the project was in the public interest, having regard to the social, economic, and environmental effects of the project. They expressed concern about the well being the first well of a potentially major new sour gas development in the area.

### **4.3 Views of the Board**

The Board notes that while the interveners expressed concerns about sour gas drilling and a well at either the proposed surface location or the revised surface location, they did not dispute Prospex's right to exploit its mineral rights or its need to drill the well to produce the anticipated gas reserves. The Board finds that that the proposed well is necessary to exploit and produce the gas reserves, provided the development can be carried out in a manner that protects the safety of the public and the environment. In the following sections the Board examines whether the approval of the proposed well is in the public interest.

## **5 PUBLIC SAFETY, INCLUDING EMERGENCY RESPONSE PLANNING**

### **5.1 Views of the Applicant**

Prospex stated that the original calculated EPZ for the proposed well is 9.68 km, based on a maximum H<sub>2</sub>S release rate of 8.28 m<sup>3</sup>/s, and maintained that this release rate should be used to determine the calculated EPZ. Prospex explained that it applied for a 4.0 km reduced EPZ because of the large population within the calculated EPZ, about 300 residences. By comparison, there were 198 residences within the 8 km emergency awareness zone (EAZ). Prospex contended that the calculated EPZ would increase the complexity of the plan and would take resources away from the immediate proposed well site area, where the residents are most at risk. Prospex also argued that all of the interveners with concerns regarding the reduced EPZ were included within this EPZ and that there had been no objections from any member of the public who resided outside the reduced EPZ. Prospex explained that the final configuration of the reduced EPZ was modified to include residences where egress traversed the reduced EPZ and residences that bordered the 4 km EPZ boundary, as well as to extend the southern boundary to Township Road 354. These modifications resulted in a reduced EPZ ranging from 4 to 5.5 km.

Prospex argued that its application for a reduced EPZ met and exceeded the requirements of *Interim Directive (ID) 2001-05: Public Safety and Sour Gas Policy Implementation Recommendations 54, 60, and 61 Site-Specific Emergency Response Plans for Sour Operations, Emergency Planning Zones, and Reduced Planning Zones*. Prospex noted that a reduced ERP imposes additional requirements and, in this regard, submitted a commitment to ignite a sour gas release from the proposed well within 8 minutes of the release to perform ignition drills prior to entering the critical sour zone. It added that these drills had to demonstrate that a release could be ignited within 8 minutes.

In response to questions raised by the interveners regarding other possible reasons to reduce an EPZ, Prospex explained that the calculated EPZ did not contain terrain or topographical features that presented an issue for evacuating the calculated EPZ and that residents within the calculated EPZ would be able to access and egress the area. Prospex also provided dispersion modelling

conducted by itself and its predecessor in response to interveners' initial questions. Prospex explained that it did not rely on the dispersion modelling to support its application for a reduced EPZ and noted that dispersion modelling was not a requirement for an application for a reduced EPZ. Prospex argued that if the dispersion modelling filed were used to determine the EPZ size, consideration should be given to its view that a lower H<sub>2</sub>S release rate of 4.91 m<sup>3</sup>/s, based on geological, not geographical, assessment, may be more appropriate for the proposed well. Prospex added that a 4 km reduced EPZ was acceptable at the time under the Sunde Petroleum Operators Group (SPOG) best practices. Prospex clarified that it understood that SPOG did not hold regulatory authority and that the EUB would decide upon an appropriate EPZ size.

Prospex submitted that the ERP developed for this well met, and in some cases exceeded, the requirements set out in EUB *Directive 071: Emergency Preparedness and Response Requirements for the Upstream Petroleum Industry*. Prospex pointed to the response actions for the EAZ, which include notification of all the public within the 8 km EAZ at a level-2 emergency and complete evacuation, either voluntary or mandatory, if evacuation requirements are met, at a level-3 emergency. Prospex submitted that rovers would be available to provide residents with personal notification and evacuation assistance if needed. Prospex highlighted that the ERP included the use of two types of air monitoring: stationary and mobile. Four stationary air monitors would be situated throughout the reduced EPZ and one mobile air monitoring unit would be travelling throughout the reduced EPZ during normal sour operations. Also, during any level of emergency, two additional mobile monitors would be dispatched to the area to monitor for H<sub>2</sub>S and, should the well be ignited, sulphur dioxide. In discussions with representatives from the Town of Caroline, Prospex stated that it had also committed to establishing a stationary monitor within the town boundaries during critical sour operations.

In the event the ERP was to be implemented, Prospex committed to acquiring a large number of different resources, including 29 rovers, 13 roadblocks, 20 informational roadblocks, 8 evacuation buses, and 3 mobile monitors. Prospex confirmed that the availability of these resources was assessed and that during normal operations, the lead on-duty rover would be responsible for ensuring the availability of all resources on a daily basis. Prospex submitted that it also had an agreement in place with a safety company as the primary safety contractor and that simulation drills had been conducted to determine the estimated times of arrival for the resources. Prospex admitted that the names of the bus companies were omitted from the ERP telephone directory and that the ERP would be updated to include those.

In addition, Prospex noted that by working with Red Deer and Clearwater Counties, it had developed the ERP using a unified command structure. Prospex stated that this system would allow Prospex and all involved government agencies to develop strategies to achieve emergency goals, including information flow and improved coordination. Prospex pointed out that the David Thompson Health Region had endorsed the concept of unified command. Prospex added it had no plans to conduct an exercise of the unified command system; however, three ERP review meetings would be held prior to critical sour operations to ensure that all parties were aware of their responsibilities outlined in the ERP. Prospex stated that these meetings would be held at the well site, at the Red Deer County Emergency Operations Centre, and at Prospex's head office in Calgary.

Prospex also explained that during consultation some of the residents requested air monitors. It committed to providing personal handheld air monitors to all residents who requested them

during critical sour operations. Prospex stated that it would confirm which residents wanted a monitor and would provide it.

In response to the interveners' concerns about cell phone coverage, Prospex submitted that it had tested the radio communication throughout the EPZ and found that coverage existed except for one dead spot near some high-voltage lines. Prospex added that it had not tested the area at the trailer located on the Burkinshaws' land, as that would be trespassing. However, to address the interveners' concerns, Prospex stated that it would install a repeater tower in the area to overcome the problem and it committed to providing pagers or radios to residents in the EPZ during critical sour operations.

Prospex understood that it would have to update its ERP to ensure it was current and committed that the ERP would be updated immediately prior to operations. Prospex submitted that it had recently completed a new resident survey, but the data had yet to be incorporated into the ERP. During this survey, all of the residents within the 8 km EAZ had been consulted.

## 5.2 Views of the Intervenors

The intervenors expressed safety concerns about the reduced EPZ for themselves and for the area residents outside the reduced EPZ. However, Mr. Robidoux and Mr. Cressman clarified that they were unsure whether a larger EPZ would offer greater protection. They stated that a larger EPZ would not make the drilling of this well more acceptable to them. Mr. Robidoux added that Prospex would be responding to the residents closest to the well site during an emergency regardless of the size of the EPZ. However, Mrs. Burkinshaw contended that her neighbours to the south who were in the EAZ should be offered the same protection measures as those in the reduced EPZ, including evacuation at a level-2 emergency.

The intervenors' expert witness on dispersion modelling, Mr. Rudolph, testified regarding the reduced EPZ and contended that Prospex did not support its request for a reduced EPZ. He noted that about 1000 people resided in the calculated EPZ, with a density of three people/km<sup>2</sup>. He submitted that this population size and density did not justify a reduced EPZ and that there were no other reasons to warrant a reduction, such as topographical or geographic features that impeded access and egress from the EPZ. Mr. Rudolph argued that the Board should note EUB *Decision 2005-060: Compton Petroleum Corporation, Applications for Licences to Drill Six Critical Sour Natural Gas Wells, Reduced Emergency Planning Zone, Special Well Spacing, and Production Facilities, Okotoks Field (Southeast Calgary Area)* as the reference point for what constitutes a large population size and density.

In addition, Mr. Rudolph expressed the view that Prospex's EPZ calculation should have been based on the higher flow rate used in some of the dispersion modelling. He submitted that even the dispersion modelling conducted using an 8.28 m<sup>3</sup>/s release rate and a 15-minute ignition time did not support the use of a reduced EPZ. He noted Prospex's commitment of an 8-minute ignition time and did not believe that such an ignition time was feasible; in his opinion, a 15-minute ignition time was more reasonable. Mr. Rudolph stated that he was well aware that the EUB did not use dispersion modelling to calculate EPZs; however, he was of the opinion that the EUB should take the modelling results into consideration when determining an appropriate EPZ size. The intervenors submitted that the application for a reduced EPZ should be denied based on the dispersion modelling evidence and because the requirements of *ID 2001-05* were not met. The intervenors also submitted that very little weight should be placed on Prospex's H<sub>2</sub>S release

rate calculations, as it did not have in attendance during the hearing the person who prepared the reports.

The interveners expressed a number of concerns regarding their safety and the ERP. One resonating concern among all the interveners was the inadequacy of communication within the EPZ. Both Mrs. Burkinshaw and Mr. Cressman stated that cell phone and radio communication was not available at their residences, while Mr. Robidoux indicated that there was occasional communication coverage in his area. The interveners were not convinced that the radio and pagers offered by Prospex would work and therefore believed they would not provide them a greater level of protection. The Burkinshaws were particularly concerned about the trailer on their property, as it was where they held children's camps in the summer and where friends and family occasionally stayed. They explained that the trailer was separated from the main residence by 1300 feet of wetlands, muskeg, trees, forest, and bush and there was no phone or radio communication. The Burskinshaws agreed that it would be possible to reschedule any children's camps around the two-week period that Prospex expected to be drilling in the sour zone if they were given sufficient notice.

The interveners also raised transportation concerns. Mrs. Burkinshaw explained that her mother, who often resided with the Burkinshaws, had limited mobility and that their residence had only one vehicle, which might not be available should evacuation be necessary. Mr. Robidoux and Mr. Cressman stated that their wives did not drive and therefore would be unable to evacuate on their own. Mr. Cressman further stated that both he and his wife normally worked outside in their yard and would therefore not receive the notification via telephone in the event of an incident.

The interveners expressed concerns that they did not fully understand how the ERP would be implemented in the event of a release. Although Prospex had provided information on the ERP, they expressed concern about data overload.

### **5.3 Views of the Board**

The Board considered the calculated EPZ of 9.68 km for the proposed well based on the H<sub>2</sub>S release rate of 8.28 m<sup>3</sup>/s to be correct, having regard for geological and gas composition variables.

Consistent with EUB *Directive 071* and *ID 2001-05*, provision is available to reduce the EPZ with the addition of other safety considerations provided certain criteria are met. In this case, the submitted basis for reduction is the population size. The Board notes that the proposed configuration of the reduced EPZ ranges from 4 to 5.5 km, as it was modified to include residences whose egress traversed the reduced EPZ and an EAZ of 8 km. It is also noted that the revised surface location would not change the reduced EPZ.

The Board finds that the population density in this case exceeds normal levels used in this determination and notes that the Compton example has not reset provincial standards for density in this regard. A reduced EPZ would reduce the complexity and ensure appropriate allocation of resources to ensure the safety of immediate residents.

With respect to the dispersion modelling information, the Board noted that Prospex did not rely on it and that modelling information is not required by the EUB as part of an application for a

reduced EPZ. The Board did not consider this evidence as persuasive as to the size of the EPZ that the Board should adopt in this case.

A key component of any reduced EPZ is the ability to ignite the well quickly and activate early evacuation. In this regard, the Board notes that *Directive 071* requires a 15-minute ignition requirement and that Prospex has further committed to ignite a release from the proposed well within 8 minutes. The Board also recognizes Prospex's plan to notify residents within the EAZ at a level-2 emergency and offer evacuation at a level-3 emergency.

Considering the above, the Board finds that Prospex has met the requirements outlined in *ID 2001-5* and agrees that the modified 4 km reduced EPZ is appropriate for this proposed well, providing an equivalent or better level of protection.

With regard to Prospex's ERP, the Board notes that Prospex plans to employ a large number of resources during the drilling of the sour zones, including the use of numerous rovers and a number of stationary and mobile air monitors. The Board is of the view that Prospex has fully addressed the coordination and availability of these resources, including extensive coordination efforts with the Red Deer and Clearwater Counties that resulted in the development of the unified command system, along with the endorsement of this system by the David Thompson Health Region. The Board is of the view that the coordination of local authorities and communication among them are an important facet of an ERP to ensure the protection of the residents should the need to implement the ERP arise.

The Board considered the interveners' concerns about their safety during a potential emergency at the proposed well related to the availability of reliable communications in the area. The Board noted that Prospex has conducted radio communication tests throughout the EPZ and committed to installing a repeater tower and providing radios and pagers to residents who request them. In addition to this, Prospex will have rovers on duty to conduct physical notifications to residents during an incident, should radio or telephone communication become unreliable. This would include additional attention to the Burkinshaws' trailer. These rovers will also be able to provide evacuation assistance should any residents require it.

The Board finds that Prospex's plans properly address communication needs to implement the ERP. The Board does, however, ask that Prospex give notice to the Burkinshaws as to its proposed spudding date for the well and an estimate as when it will enter the critical sour zone if the well is drilled during the summer months, so that the Burkinshaws can plan summer camp activities.

The Board also noted that Prospex has committed to holding a meeting with the residents prior to operations to fully explain the components of the ERP and the public protection measures that could be implemented during an incident, including notification, evacuation, sheltering, and ignition. The Board encourages all residents to participate in the meeting.

The Board noted that Prospex is required to update all information and acquire EUB approval prior to drilling the proposed well. These include the updated resident information, any required updates due to the revised surface location, contact numbers for evacuation buses, strategies for notification of individuals staying at the Burkinshaws' trailer, and any other information that may require updating.

For all the above reasons, the Board finds that the well may be drilled safely and the measures outlined in the ERP are proper and protective of the safety of the public.

## **6 SURFACE LOCATION OF PROPOSED WELL AND POTENTIAL ENVIRONMENTAL IMPACTS**

### **6.1 Views of the Applicant**

Prospex stated that it had selected its proposed surface location for the well and access road in consultation with the surface occupant. Prospex said that during the negotiations with the surface occupant on the siting of the well, a more northern location was discussed but that he preferred not to have disturbance on the pasture land. Prospex added that a lease at its proposed location was signed by the surface occupant.

Prospex indicated that its proposed location was also chosen having regard for technical considerations, taking into account the proposed bottomhole targets. It indicated that the northwest quarter of Section 4 was chosen to keep the surface location away from the muskeg and at the occupant's request to minimize impact on pasture lands. Prospex explained that its proposed location would allow it to reach its preferred bottomhole location in the Swan Hills Formation underlying LSD 6 of Section 4, as well as the shallower Mannville Formation.

During the course of the hearing, Prospex noted that the interveners indicated that if the well had to be in the area, they would prefer that the surface location be moved to LSD 9 of Section 5 in order to move it away from the wet areas. Prospex argued that if it were to move the surface location to the interveners' preferred location, it could not drill for the Swan Hills Formation target and successfully penetrate the shallower Mannville Formation with the same wellbore. It stated that drilling for the Swan Hills Formation target from the interveners' preferred location would necessitate the drilling of a second well in order to hit the Mannville Formation.

Prospex indicated that its proposed location would first be accessed by an existing high-grade gravel road that accessed the BP Canada well site in LSD 10, Section 5, Township 36, Range 4, West of the 5th Meridian (BP Canada 10-5 site). The new access road for the proposed well would start just north of the existing BP Canada 10-5 site and would be constructed with the use of fill that would need to be hauled in from a different location. The access road would be built up to bring it up above the wetlands. Culverts would be installed to allow water to pass underneath the road.

Prospex indicated that its plan for drilling and production at the originally proposed surface location would protect surface water and groundwater. It planned to construct the lease and associated 1 m high berm with impermeable clay to prevent any material from leaving the lease and entering the wetland. In addition, drilling fluid would be contained in tanks, removing the need for in-ground sumps. As well, Prospex committed to berm the site during production operations as an extra measure of protection for the wetlands. It also noted that tanks or vessels for chemical or fluid storage that may be located on the site would have additional containment.

Prospex indicated that the surficial deposits in the area of the proposed location are expected to be less than 10 m thick and may be hydraulically connected to the surrounding wetland areas. Groundwater flow in the surficial deposits was estimated to flow from northwest to southeast,

similar to surface water flows. Regional flow in the underlying bedrock was determined to be from southwest to northeast. Prospex noted this difference in groundwater flow directions in the surficial deposits and the bedrock in response to intervenor questions.

Prospex stated that the proposed surface location was in a groundwater discharge area, meaning that groundwater was moving upward from the surficial deposits and feeding the wetlands. Prospex determined the wetlands were discharge features because the elevation of the water level in an area water well completed in the surficial deposits was above the elevation of the wetlands, indicative of upward groundwater flow. It was Prospex's view that material spilled at surface would not be able to enter the groundwater system and could be cleaned up without affecting a large area of the wetland.

Prospex maintained that the greatest threat to the wetland from drilling the well was poorly cemented casing, which could allow downward drainage of the aquifer that feeds the wetland, removing the source of water and nutrients that sustain wetland health in the area of the proposed well site. Prospex stated it would install 20 m of cemented conductor pipe to isolate the surficial deposits prior to drilling surface hole. As there was a potential for lost circulation to occur while drilling through the surface deposits, Prospex stated it would control a lost circulation event quickly, and circulation would be regained prior to installing and cementing casing to ensure the cemented casing segregated aquifers. The conductor pipe would isolate and protect the surficial deposits during drilling of the surface hole and setting surface casing. Prospex proposed to set surface casing to a depth of about 540 m.

Prospex noted that water wells in the area were completed in both the surficial deposits and the bedrock. The deepest water well was 121.9 m, which would be behind surface casing in the proposed well. Prospex did not believe its operations would affect area water wells, but it committed to offer to test water wells within a 1.6 km radius. Prospex also committed to monitor the unused water well northwest of the proposed location if it was in a suitable condition and the landowner gave permission to do so.

Prospex submitted that the proposed location was not in an environmentally sensitive area and was on pasture and crop land. Prospex further explained that it based its conclusion on Alberta Environment's R&R/03-2: *Siting an Upstream Oil and Gas Site in an Environmentally Sensitive Area on Private Land* and on advice from the construction foreman. It stated that a predisturbance site assessment had been completed but that no formal vegetation or wildlife surveys had been completed as part of that assessment. It noted that the selected site was located primarily in a forested area that also included lesser amounts of muskeg (fen wetland) and cleared pasture. The cleared pasture immediately to the north was avoided at the request of the landowner. Prospex indicated that the increment of tree removal would be small compared to existing disturbances in the area.

Prospex argued that the obligation to satisfy R&R/03-2 was at the preconstruction stage, not the regulatory approval stage. Prospex submitted that the requirement was that environmentally sensitive lands be avoided if possible or that there be an appropriate level of mitigation, and it noted that wetlands were not included in the definition of an environmentally sensitive site.

With respect to flaring and emissions, Prospex submitted that it had filed the well test flare permit application for the September to November time frame with the EUB prior to the hearing and that it had included dispersion modelling information using Red Deer meteorological data in



support of the application. Prospex indicated that the proposed flaring would occur intermittently within a two-month window but committed to restrict flaring to 48 to 72 hours during the testing of the well. The maximum volume of gas to be flared would be 200 thousand m<sup>3</sup>. Prospex stated that its predecessor had conducted dispersion modelling in 2004 in support of a well test flare permit application that used meteorological data from the Shell Caroline sour gas plant. Prospex recognized that this dispersion modelling assessment required a more substantial flare management plan and it committed to use meteorological data from Red Deer and from the Shell Caroline gas plant when performing dispersion modelling in support of its updated well test application. Prospex stated that ambient air monitoring, which was part of the ERP, would be used during well test flaring. Prospex stated that the proposed flaring would meet EUB requirements and that any potential ambient air quality exceedances would be mitigated by a flare management plan that required the addition of propane, which would aid in plume dispersion.

Prospex indicated that once the well was on production, there would not be any continuous flaring from the proposed well at this site. Flaring would only occur in the event of a process upset or emergency shutdown. Prospex stated that it would maintain its commitments made to local residents and to the Raven Community Group to address their concerns about the impacts of air emissions.

Prospex submitted information on the revised surface location as an alternative location, noting that it did increase separation distances between the muskeg and the well, providing further protection. Prospex explained that the landowner would accept this alternative location if there were environmental reasons to warrant a move onto pasture lands. All other mitigative and protective commitments would apply to the revised location.

## **6.2 Views of the Interveners**

The interveners submitted that the site selection process undertaken by Prospex was completely inadequate. They argued that the predisturbance environmental site assessment was of very little substance but that it should have given Prospex at least a general indication that the site might be in an environmentally sensitive area. The interveners argued that little was done with the report and that Prospex showed a lack of diligence. The interveners pointed to R&R/03-2 and argued that this document stated that if a proposed well site was in an environmentally sensitive area, the applicant had to mitigate impacts or, more important, try to avoid an environmentally sensitive area all together.

The interveners maintained that the entire area was environmentally sensitive and if it were up to them, the proposed well would be located 20 miles away. They were concerned about the original and revised surface locations for several reasons. They explained that the lease for the original surface location abutted against the low wet area and necessitated Prospex to construct an access road through a wetland area to the proposed well site. They said that although the revised location would be an improvement over the original one, moving the well totally out of the area would be a better option. The interveners preferred their proposed location, as it would be farther away from the wetlands and could be accessed by the existing BP Canada 10-5 site and access road without crossing any wetland. Also, the interveners said that their location appeared to be flatter, making it easier to contain any surface spills that may occur. Their second choice would be the revised location, because it was farther from the wet area, but the revised

location would still not eliminate the need to cross the wetland to access the site and would still be in a groundwater recharge area which fed the wetland.

The interveners believed that Prospex's mitigation measures were inadequate to protect the wetland complex. They stated that they were concerned that the proposed well could affect surface water and groundwater feeding the wetland complex and their water wells.

The interveners agreed with the applicant that the shallow groundwater and the surface water were quite closely connected. They described the proposed location as a localized high within a wetland complex. They noted that water would be recharging in the permeable high areas, making its way down and forming local discharge areas along the sides of the wetlands. In this respect they did not agree with Prospex that discharge conditions were present across the entire area.

The interveners presented evidence to illustrate that the water movement in the wetland was complex. They explained that as the topography was relatively flat, surface water moved in several directions, so that there was a high degree of interconnectedness between the area wetlands, providing travel corridors for wildlife. The interveners expressed concern that the access road to the proposed well site could interfere with these complex water movements. They also pointed out that the corner of the proposed location was within a few metres of the wetland, and they were concerned that any spill into the wetland could be carried significant distances by the natural water flow, potentially entering Crooked Creek or Adams Lake.

The interveners acknowledged that ensuring good cement across the surficial aquifers, a lease constructed from clay and surrounded with an impermanent berm, and liners under chemical or fluid vessels on the site would protect the wetland. Additionally, there was some acknowledgement that moving the well site north to the revised location would reduce the impact of a potential spill on the wetland area, especially if the underlying material was fine grained, impeding infiltration of spilled material. However, they believed that moving the proposed well site out of the wetland complex was the only way to completely guarantee its protection, as the revised location still required an access road across the wetlands and was still located in the recharge area for the wetlands. They suggested that a location in the northeast quarter of Section 5 would be preferable, as it would be on relatively flat, cultivated land, making spill containment easier.

The interveners noted that their shallow water wells were completed into the surficial sediments interpreted to be in communication with the wetlands. They were concerned that the proposed well could have an impact on their shallow water wells, which were historically a reliable water supply, even when other shallow wells in the area went dry due to drought conditions. The interveners also noted that soap holes and springs were present in the area and that some of the springs appeared to go back underground some distance from the source. Based on this, there was concern that contaminants introduced into surface water could reach groundwater. The interveners' experts noted that it was unlikely that drilling at the proposed location would affect shallow wells in Section 4.

The interveners also raised issues about the environmental sensitivity of the area around the proposed well site due to the diversity of wildlife, particularly birds that had been noted in the area and the proximity to the fen wetlands. Mrs. Burkinshaw indicated that she had observed 200 bird species in the area and had noticed a decrease in bird abundance over time. This observation

was supported by Mr. Cressman, who indicated that small mammal abundance had also decreased. Mrs. Burkinshaw indicated that the fen wetland fed Crooked Creek and Adams Lake, which was an important waterfowl staging area. Mr. Robidoux indicated that Sandhill cranes, a species classified as sensitive in Alberta, often used the fen wetland during migrations.

The interveners provided expert testimony of Ms. Holcroft-Weerstra, of Biota Consultants, in support of their position. Ms. Holcroft-Weerstra testified that she prepared a report that indicated that there was evidence that the region supported a diverse fauna as a result of its location in Alberta near the junction of four natural subregions. In addition, several species that potentially occurred in the area would be near the edge of their geographic range and so could be important genetically. Biota indicated that the environmental sensitivity of the site resulted from the proximity of upland and fen habitats.

Ms. Holcroft-Weerstra expressed the opinion that requirements of R&R/03-2 had not been satisfied. Specifically, she stated that the presence of rare plants or use by rare or sensitive wildlife had not been adequately evaluated through appropriate surveys and that studies should be done prior to well licence approval in order to provide an appropriate level of environmental protection. She further indicated that a predisturbance site assessment could not be used to determine the presence of rare or sensitive species.

With respect to flaring and emissions, Mrs. Burkinshaw explained that she and her mother were severe asthmatics. The Burkinshaws added that their residence was located in a valley downwind of the prevailing winds in the area. Therefore, they were concerned about emissions and the impact that a sour gas plume could have on them.

The interveners expressed concern that increased levels of pollution from flaring at nearby facilities were contributing to the poor condition of trees and the decreased insect, bird, and animal population on their property and in the area. The interveners were concerned about releases and fugitive emissions from the well site contributing to poor air quality if the well were put into production. They were also concerned about emissions from flaring during completions and testing. The interveners maintained that when Prospex conducted dispersion modelling again for well test flaring, it should use both the Red Deer and Shell Caroline gas plant, due to the more restrictive flare management plan required when using the Shell Caroline gas plant meteorological data, as shown in a previous well test flaring assessment done by Prospex's predecessor, Esprit Exploration.

### **6.3 Views of the Board**

The Board considered Prospex's proposed surface location, the revised surface location, and the interveners' preferred site. The issues affecting site selection are the potential for impact on water from either the wellbore or surface operations, the ability to mitigate impacts, and land stewardship related to current and proposed use and the potential impact from more than one well.

The Board accepted Prospex's submission that a well at the interveners' preferred location could not target the Swan Hills Formation and successfully penetrate the shallower Mannville Formation with the same wellbore. The possibility of two wells to target the different zones is not acceptable to the Board, due to the additional potential surface impacts two wells would represent. The Board has concluded that there is insufficient evidence before it on the

interveners' preferred location for the Board to make a determination on the suitability or feasibility of such a location.

The Board found that the information on surface water and groundwater presented by the interveners and applicant was complementary. All parties agreed that interconnection between surface water and shallow groundwater was present. Although the interpretation of this connectivity was somewhat different, all parties agreed that the surface water/groundwater regime in the area was complex.

The Board accepts that upward flow of groundwater (discharge) appears to be occurring in the wetland complex to some extent, as evidenced by the water level in the shallow well being above the level of the adjacent wetland, the presence of soap holes and springs, and the evidence presented that the interveners' shallow water wells provided a reliable source of water when a neighbour's well went dry during droughts. This evidence suggests that these wells are fed by groundwater, rather than by recharge of the water table by precipitation.

The Board agrees that isolation of shallow aquifers by cemented casing is essential to prevent drainage of the aquifer supplying the wetland in the area of the well site. The Board notes that Prospex is proposing to follow standard EUB requirements for setting conductor casing. Additionally, if cement returns are not maintained at surface during cementing of surface casing, Prospex would contact the EUB's Operations Group immediately with a proposed remedial program prior to further drilling. The proposed casing and cementing program will include two strings of cemented casing across the surficial deposits and that surface casing extends 400 m below the deepest area water well. The Board finds that the proposed drilling and completion program would ensure that water is protected.

Relative to surface leaks or spills impacting water, the EUB's standard requirements are to locate a well with a minimum of 100 m between the well centre and a body of water and stringent site preparation where concerns exist. The proposed well would meet the surface setback. Prospex proposes to adopt several site preparation and operation standards to protect the wetland complex, including the following:

- construct the lease from clay,
- maintain an impermeable berm during drilling and production operations,
- use a sumpless drilling system,
- place synthetic liners under all chemical/fluid storage vessels,
- ensure adequate culverts on the access road,
- control lost circulation quickly and regain circulation prior to cementing casing,
- pressure cement 20 m of conductor casing across surficial deposits,
- cement 540 m of surface casing full length, and
- monitor the water level in the nearby unused water well if that well is of suitable depth and condition.

An access road, if not properly located and constructed, can also have a significant potential impact on water, how it flows, and potential impacts on surrounding land. In this regard, Prospex

proposes to construct a raised road across an arm of the muskeg complex, using culverts to ensure continued water flow.

The Board finds that the proposed surface well location and road access meet the normal requirements for protecting water. However, the Board believes that all reasonable steps should be taken to mitigate potential impacts. In this case, an alternative surface well location slightly to the north offers an alternative. The Board finds this location would provide a further separation distance and higher, flatter terrain to construct a site. Based on the evidence, the revised site is viewed as superior and would provide an important further mitigative measure. This need to provide additional environmental protection warrants the use of a surface site that is not the first choice of the land occupant.

As the revised surface location continues to be in general proximity to the wetland complex, the Board would require the continued application of the proposed site preparation and operational controls.

The Board has reviewed the interveners' preferred location. While it would remove the need for a new access road, it raises the likelihood of the mineral owner needing two well sites to access its minerals. Accordingly, the Board finds no evidence to suggest that the interveners' preferred location would be superior and concludes that the revised location is appropriate.

The Board notes that both the EUB and Alberta Environment expect industry to take appropriate care to avoid or mitigate impacts on environmentally sensitive lands. In this case, neither party presented strong evidence to show whether or not the proposed surface location, being in a wooded edge of the wetland complex, was environmentally sensitive.

The Board is of the view that moving the well site to the revised location, farther away from the wetland and out of uncleared forest and onto pasture land, will significantly minimize the potential for disturbing rare plants or sensitive wildlife and minimize incremental habitat loss.

With respect to the well test flaring permit, the Board notes that a new application is required.

The Board considered Prospex's commitment to use both Red Deer and Caroline data when refiling the flare permit application. The Board suggests that meteorological data most representative of the area should be used. The Board also acknowledges that Prospex will use ambient air monitoring that is part of the ERP during flare testing. The Board recommends that Prospex incorporate the ambient air monitoring into the flare management plan in order to minimize propane use and meet the requirements of EUB *Directive 060: Upstream Petroleum Industry Flaring Guide*.

The Board further noted that if the proposed well were to be placed on production, no continuous flaring would take place at the site. The Board expects Prospex to follow all applicable best management practices and guidelines in order to minimize flaring and fugitive emissions if the well is placed on production. It is the Board's view that emissions from the proposed well and from operations associated with the proposed well will be intermittent and short term and will meet EUB requirements. Therefore, the Board finds that the proposed well will not cause a deterioration of air quality in the area.

## **7 OTHER MATTERS, INCLUDING PUBLIC CONSULTATION**

### **7.1 Views of the Applicant**

Prospex submitted that its public consultation efforts were extensive and explained that its predecessor, Esprit Exploration, engaged in a participant involvement process for over two years beginning in November 2003. Prospex stated that it worked very hard to ensure that the public was informed and that stakeholders had real and meaningful input into the application. The consultation process included personal visits and distribution of information packages to more than 200 families, agricultural operations, businesses, and recreational and community facilities within an 8 km radius of the proposed well. The consultations also included personal contact with municipal police and emergency response and health officials. Prospex estimated that the public consultation process involved almost 1000 people in all. Four public meetings were held in the community beginning in February 2004 to provide information and identify, address, and try to resolve concerns. During the consultation process, Esprit and later Prospex received input from residents and made a number of commitments to residents and the Raven Community Group. The commitments made by Prospex are listed in Appendix 2.

Of the 200 families consulted, Esprit identified 22 families that had concerns. Numerous one-on-one consultation meetings were held with all of the concerned parties and four appropriate dispute resolution meetings were held with some of the concerned parties. Prospex submitted that it was able to resolve all of the concerns raised for all the parties with the exception of the interveners. It contended that there was no great public outcry and that given the number of people involved in the consultation process, the process was considered adequate and appropriate by the vast and overwhelming majority of the stakeholders in the community.

Prospex explained that its and its predecessor's tardiness in sharing compliance records to reply to questions was in part because they believed they were entitled to hold those records as confidential and private. They further argued that compliance records were not made publicly available by the EUB and just because the compliance records were asked for, there was no automatic right or entitlement to receive those records.

Prospex's public consultation consultant stated that his mandate was to work with residents in the community to give them strategic advice on the process and to work out the conditions under which the well might be drilled in an acceptable fashion. The consultant also stated that another one of his roles was to report back to Prospex on what would be needed to build a relationship with the community.

Prospex recognized that the interveners clearly believed that it, as well as its predecessor, Esprit, had dealt with them inappropriately. Prospex stated that it was disappointed that it was unable to satisfy the particular concerns of the interveners who attended the hearing. Prospex pointed out that it encountered difficulties while trying to find solutions with the intervening parties because those parties were adamant that the well not be located in the area, which did not leave much room for negotiating solutions to the concerns. Prospex submitted that it intended to continue to work with the interveners, as well as all of the stakeholders in the community, to resolve whatever remaining concerns they had.

Prospex recognized that traffic and road dust were a significant concern to the interveners and in particular to Mrs. Burkinshaw and her mother, who suffer from asthma. Prospex argued,

however, that the increased local traffic associated with the drilling and production of the proposed well would not cause a safety or health concern to the interveners. They explained that to access the well site vehicles would use Range Road 45, which is two miles to the west of Range Road 43 and is used by the interveners to access their residences.

Prospex committed to establish appropriate site, road, and vehicle signage and coordinate rig moves and other traffic around school bus times.

## **7.2 Views of the Intervenors**

The intervenors contended that they had concerns with Prospex's public consultation process, which led them to become increasingly uneasy about Prospex and the proposed well. They said that they had lost trust in Prospex because it was not open and frank about the Prospex/Esprit compliance history and that the role of Prospex's public consultation consultant was not made clear.

The Burkinshaws explained that when they were first approached in November 2003 by Esprit, they requested the compliance information for Esprit for the previous five years. The Burkinshaws said they were not provided with a report until June 2004, during a meeting with Prospex, and that the report contained only one year of compliance history and was not an EUB report. The Burkinshaws argued that the report provided was created by Esprit, as opposed to actual records from the EUB. They described the report as being only numbers, with no explanations. The Burkinshaws felt that the report it received was insufficient and not what they had requested. They said that Prospex told them at the June 2004 meeting that compliance records were hard to come by and the Burkinshaws felt they were being stonewalled. The Burkinshaws again asked Prospex for the EUB compliance history for five years. The Burkinshaws stated that after several conversations and letters asking for the report, they finally received another report in September 2004, during a meeting with Esprit. The Burkinshaws felt this report was also incomplete, as there were pages missing and few explanations. The Burkinshaws made several phone calls to Prospex about the inadequacies of the report and received sporadic responses from Prospex. After losing patience with Prospex, the Burkinshaws wrote another letter to Prospex and the EUB in December 2004, indicating that they felt that they had been misled, ignored, and then sometimes pressured by Esprit. They stated that they could not feel confident that the project would be handled as promised by Esprit, as they did not have a comfort level about the integrity of its representatives. The Burkinshaws stated that they finally received a complete five-year compliance report from Prospex on January 28, 2005, a full 14 months after their original request.

The intervenors argued that Prospex's public consultation consultant was not being a neutral facilitator but in fact was giving advice both to area residents and to Prospex. They argued that the consultant was giving advice to Prospex on how to avoid unreasonable delay, how to avoid risk to reputation in the community, and how to avoid an EUB hearing. They contended that it would be impossible for the consultant to be considered a neutral, independent third-party mediator when he was giving Prospex this kind of advice.

While the intervenors acknowledged that they were provided some information regarding the ERP during the public consultation, they felt that too much information was presented at one time. They contended that there was too much documentation and the answers to their questions

were too complicated for them to gain a clear understanding of the project. The interveners stated that they eventually gave up trying to comprehend all of the information being presented.

The interveners expressed concern that the increased traffic on Range Road 45 due to the proposed well and other oil and gas developments would cause a safety risk and a health risk due to increased dust. They explained this traffic increase would be on top of the increasing use of roads due to growing population and other users. They recognized that the increased use of Range Road 45 to access the proposed well might not directly affect them on a daily basis because they did use Range Road 43 to access their residences. However, they argued that the proposed well could be the first of several wells to be drilled in the area and that the use of Range Road 43 would be inevitable. This increased development would necessitate new access roads, increased truck traffic, and increased dust caused by the traffic.

### **7.3 Views of the Board**

The Board notes that Prospex has met the specific requirements of consultation and notification in *Directive 056: Energy Development Applications and Schedules* for the proposed well and this appears to have satisfied many of the local residents. However, the Board notes that full participant involvement requires attention to the local needs and a flexible use of a range of tools. In this regard, the Board is interested in situations where parties believe a lack of trust developed during the consultation process.

The Board is of the view that Prospex should have provided its compliance records in a timely fashion and taken the opportunity to discuss and explain the nature of the noncompliance and any process changes that resulted from compliance issues in the past or knowledge gained. In the Board's experience, this is part of building relationship and trust between parties that is one of the keys to the success of a consultation process. The Board therefore strongly encourages Prospex to continue to seek ways to improve communication and to build trust within the community.

With regard to consultants, the Board is of the view that employing a consultant to represent both the company and the residents presents challenges that must be transparent and addressed up front by the parties. To some participants, the appearance of conflict could not be overcome and resulted in the interveners' concerns about how the same person could represent opposing interests. The Board encourages Prospex to strive for ongoing communication with the interveners and other area residents having regard for the views expressed.

The Board notes that Prospex has committed to establish appropriate site, road, and vehicle signage and coordinate rig moves and other traffic around school bus times. The Board encourages Prospex to work with the county and other area operators and residents to address the issue.

The Board also notes Prospex's reference to project planning for the potential larger development should the proposed well be successful. In this regard, the Board notes there were communication, safety, water, and environmental issues raised in this proceeding that should be part of future planning.



## CONCLUSIONS

For the reasons set out above, the Board is of the view that the proposed well is in the public interest, as the ERP is protective of public safety and potential environmental impacts are mitigated by the measures discussed in this report and potentially large gas reserves may be found. The Board is therefore prepared to approve the well licence at the revised surface location noted on the survey plan filed with the Board on February 16, 2006.

Dated in Calgary, Alberta, on May 2, 2006.

## ALBERTA ENERGY AND UTILITIES BOARD

*<original signed by>*

T. M. McGee  
Presiding Member

*<original signed by>*

R. J. Willard, P.Eng.  
Acting Board Member

*<original signed by>*

D. D. Waisman, C.E.T.  
Acting Board Member

## APPENDIX 1 HEARING PARTICIPANTS

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### Principals and Representatives (Abbreviations used in report)

### Witnesses

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Prospex Resources Ltd.

A. L. McLarty, Q.C.

K. L. Johnston

J. Rossall, P.Eng.

R. Clissold, of

Hydrogeological Consultants Ltd.

P. Connors, P.Eng., of

Esprit Energy Group

D. Bissett, of

Bissett Resource Consultants Ltd.

R. Brown, of

Bissett Resource Consultants Ltd.

F. Dabbs, of

National Public Relations Inc.

N. Papanikolaou, P.Eng., Ph.D., of

RWDI Air Inc.

P. Burkinshaw and L. Burkinshaw

P. Burkinshaw

L. Burkinshaw

J. Cressman and Y. Cressman

J. Cressman

R. Robidoux and T. Robidoux

R. Robidoux

G. S. Fitch

J. T. Freeman, of

Matrix Solutions Inc.

R. Rudolph, of

AMEC Earth & Environment Limited

A. Holcroft-Weerstra, M.E.Des., P.Biol., of

Biota Consultants

Alberta Energy and Utilities Board staff

G. Bentivegna, Board Counsel

G. McLean, C.E.T.

D. McCluskey

K. Siriunas, P.Eng.

B. Greenfield, P.Biol.

B. Austin, P.Geol.

T. Bushell

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## APPENDIX 2 SUMMARY OF COMMITMENTS

The Board notes throughout the decision report that Prospex has undertaken to conduct certain activities in connection with its operations that are not strictly required by the EUB's regulations or guidelines. These undertakings are described as commitments and are summarized below. It is the Board's view that when a company makes commitments of this nature, it has satisfied itself that these activities will benefit both the project and the public, and the Board takes these commitments into account when arriving at its decision. The Board expects the applicant, having made the commitments, to fully carry out the undertaking or advise the EUB if, for whatever reasons, it cannot fulfill a commitment. The EUB would then assess whether the circumstances regarding the failed commitment warrant a review of the original approval. The Board also notes that the affected parties have the right to request a review of the original approval if commitments made by the applicant remain unfulfilled.

### COMMITMENTS BY PROSPEX

- Renew blowout and well control insurance.
- Ignite any release of gas during drilling within 8 minutes. Perform drills prior to entering the critical zone to demonstrate that the well can be ignited within 8 minutes. The Swan Hills Formation will not be drilled into until an 8-minute ignition is demonstrated.
- Provide the Burkinshaws and any other resident who requests it a personal hand-held air monitoring device that gives them an alarm if H<sub>2</sub>S is detected.
- Install a stationary Internet-accessible air monitoring unit in Caroline.
- Notify residents in the community prior to all stages of drilling and testing.
- Continue to consult with the Sundre Petroleum Operators Group.
- Notify residents in the community of changes in schedules and of details of future development.
- Provide pagers and/or radios to residents in the EPZ during critical operations as an alternative to unreliable cell phones. Install a repeater tower for communication purposes.
- Hold a pre-spud meeting with the community.
- Facilitate well site tours prior to entering the critical zone.
- Restrict flaring to 48 to 72 hours during the testing of the well.
- Provide alternative accommodation during critical zone operations for those with health sensitivity to air emissions.
- Evaluate alternatives to flare testing for the future development of the pool.
- Eliminate venting from the well site and pipeline gathering facilities during the life of the pool.

- Recover and dispose of rather than flare pipeline corrosion inhibitors.
- Contain on site and dispose of liquids during drilling and testing operations.
- Meet the requirements of EUB *Directive 038: Noise Control Directive User Guide* and *Interim Directive (ID) 99-08: Noise Control Directive* with respect to noise suppression and noise complaints during drilling.
- Conduct third-party laboratory tests on fruit, soil, and cattle prior to drilling the well in order to establish benchmarks in assessing future potential impacts.
- Investigate and respond to complaints promptly.
- Conduct dispersion modelling for flaring using Shell Caroline plant meteorological data, as well as Red Deer weather station data.
- Conduct continuous monitoring during testing operations.
- Keep up to date on Parkland Air Monitoring Zone monitoring networks data so that potential air quality impacts from C Pool development are noted and understood.
- Provide a list of animal transportation companies in the area in order to assist in an animal evacuation, should it be required.
- Consult residents in the community on options for gas processing.
- Continue with the Raven Community Group as a permanent participant involvement tool during the life of the C Pool.
- Coordinate rig moves and other traffic around school bus times.
- Establish appropriate site, road, and vehicle signage.
- To protect the wetlands, the well site and access road will be constructed and the well will be drilled as follows:
  - Construct the lease from clay.
  - Maintain an impermeable berm during drilling and production operations.
  - Use a sumpless drilling system.
  - Place synthetic liners under all chemical/fluid storage vessels.
  - Ensure that there are adequate culverts on the access road.
  - Control lost circulation quickly and regain circulation prior to cementing casing.
  - Pressure cement 20 m of conductor casing across surficial deposits.
  - Cement full 540 m of surface casing length.
  - Monitor the water level in the nearby unused water well if that well is of suitable depth and condition.

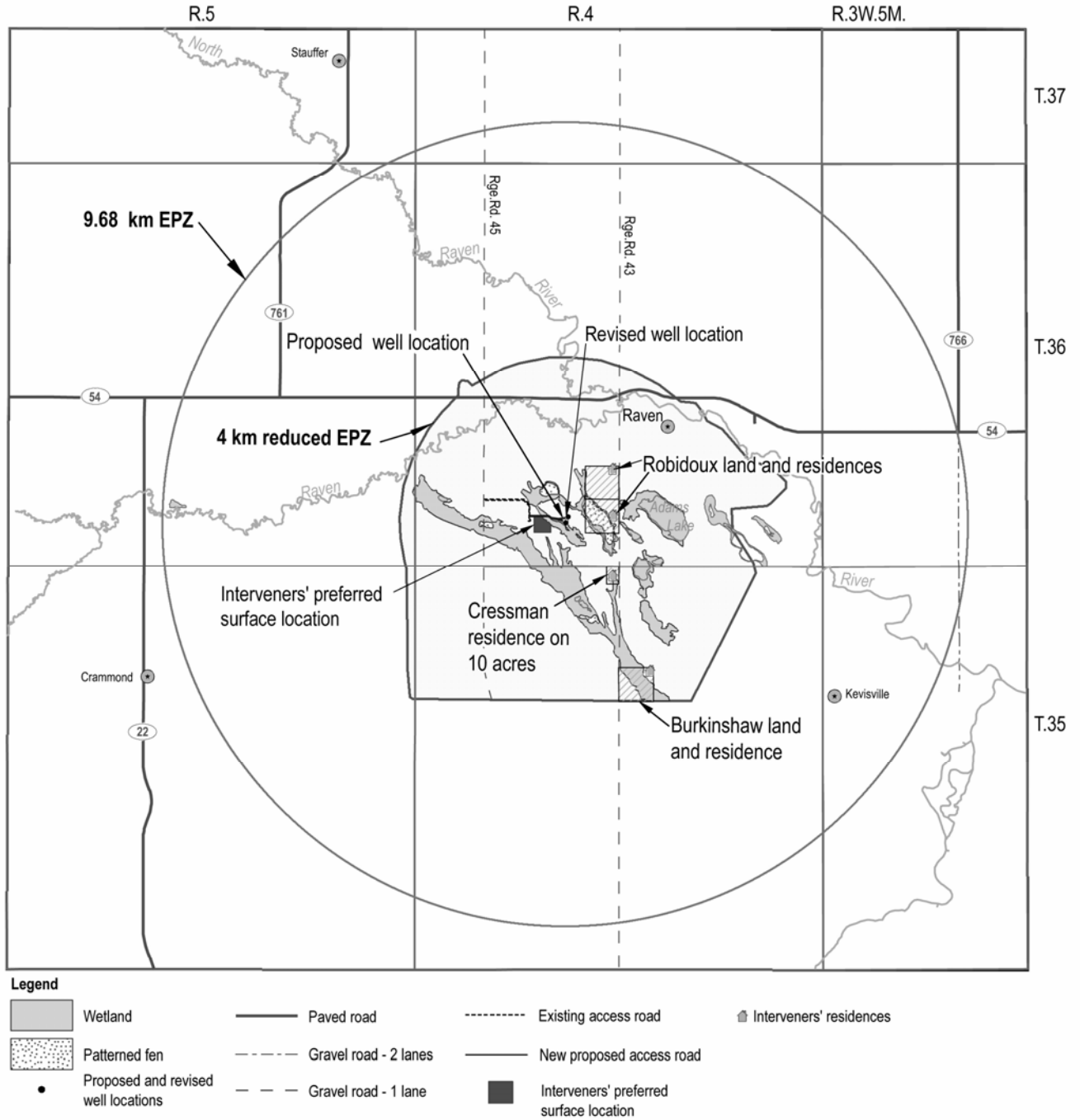


Figure 1. Project area

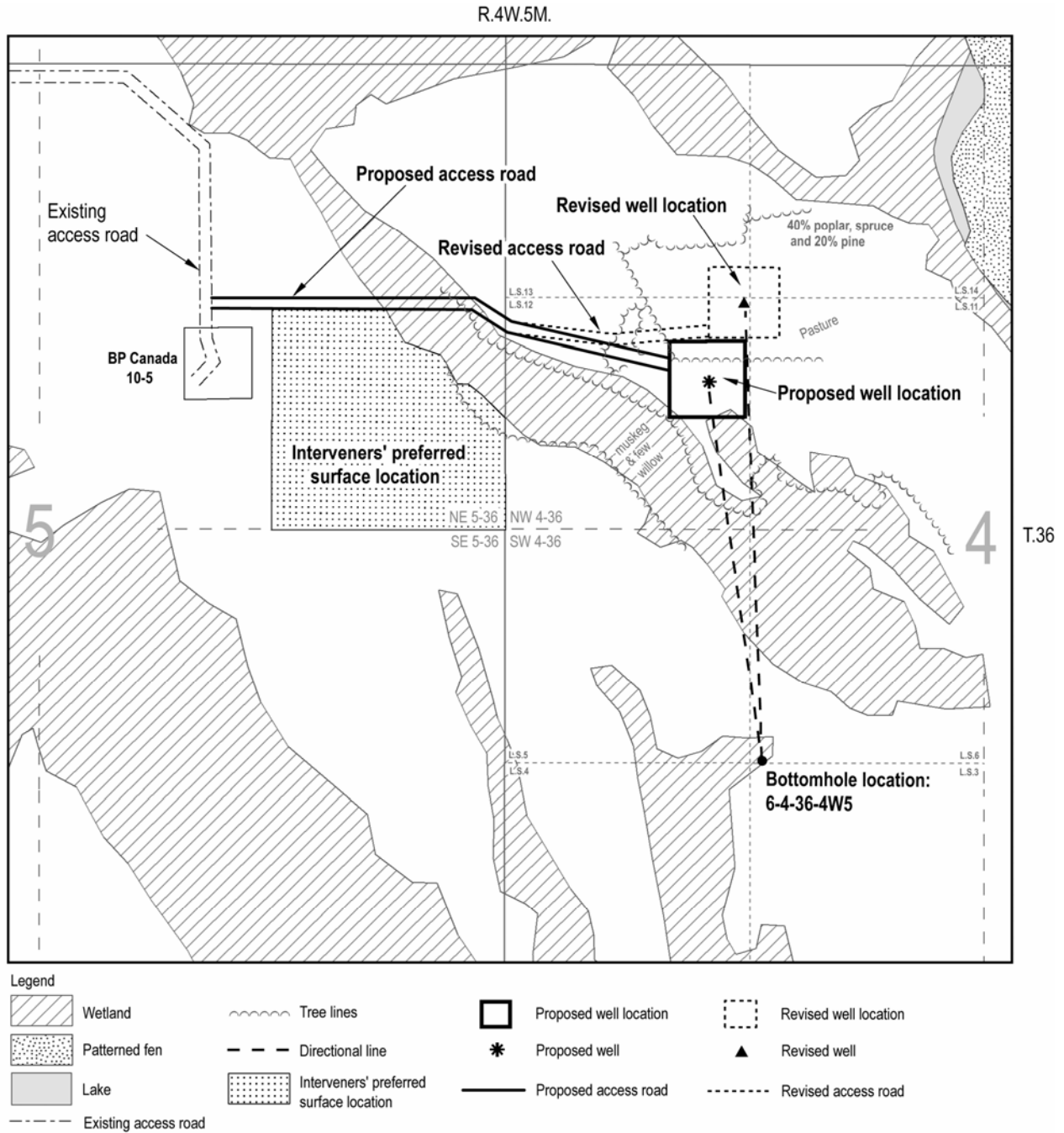


Figure 2. Close-up view of project area