ALBERTA ENERGY AND UTILITIES BOARD
Calgary Alberta

HUSKY OIL OPERATIONS LIMITED
APPLICATIONS FOR WELL LICENCES
AND PIPELINE PERMITS **Examiner Report 2001-1**
PROVOST FIELD **Applications No. 1056355 and 1059607**

1 DECISION

Having carefully considered all of the evidence, the examiners conclude that Husky Oil Operations Limited (Husky; formerly Renaissance Energy Ltd.) has demonstrated a need for the applied-for wells and pipelines and has selected access road and pipeline routes that would minimize potential impacts. However, the examiners also find that while Husky has demonstrated that its various mitigative measures regarding the wells and related facilities would for the most part minimize potential adverse impacts at the proposed site, it has failed to establish that its choice of surface locations for all of the proposed wells would result in the least acceptable disturbance to the movement and sheltering of the intervener's cattle. The examiners therefore recommend approval for pipeline Application No. 1059607 and three of the proposed five wells in Application No. 1056355, namely, the three wells with bottomhole locations 12A, 5D, and 12B. The examiners recommend denial for the two remaining wells with bottomhole locations 6C and 11A.

2 APPLICATIONS AND HEARING

2.1 Applications

On January 13, 2000, Husky applied to the Alberta Energy and Utilities Board (EUB/Board), pursuant to Section 2.020 of the Oil and Gas Conservation Regulations, for licences to drill five level-1 noncritical sour oil wells. The wells would be drilled from a single pad at a surface location of Legal Subdivisions (LSDs) 11 and 12, Section 11, Township 36, Range 3, West of the 4th Meridian (the proposed pad site). The purpose of the proposed wells would be to produce sour oil from the Cummings Member.

On February 17, 2000, Husky applied to the EUB, in accordance with Part 4 of the Pipeline Act, for permits to construct and operate approximately 1.5 kilometres (km) of pipeline to transport products both to and from the proposed pad site. Specifically, Husky proposed to construct and operate one group pipeline and one test pipeline that would transport oil effluent from the proposed pad site to an existing pipeline located at an existing pad of wells at LSD 11, Section 11, Township 36, Range 3, West of the 4th Meridian (the 11-11 pad site). Husky also proposed to construct and operate one saltwater pipeline from an existing pipeline at LSD 14, Section 11, Township 36, Range 3, West of the 4th Meridian, to the proposed pad site and one fuel gas pipeline from an existing pipeline to the proposed pad site. When Husky was questioned about a discrepancy between the location of the proposed fuel gas pipeline, as submitted in the application, and a map submitted as an exhibit at the hearing, Husky stated that the fuel gas

pipeline would be located from the existing 11-11 pad site to the proposed pad site, according to the map presented at the hearing.

The attached map, prepared by the examiners, illustrates the location of the proposed wells and pipelines, along with other topographical and hydrogeological features.

2.2 Interventions

On March 15, 2000, the EUB received objections to the well and pipeline applications from Mr. B. Mouly, grazing lease holder of Crown land in the northwest, southwest, and southeast quarters of Section 11, Township 36, Range 3, West of the 4th Meridian, and northeast quarter of Section 10, Township 36, Range 3, West of the 4th Meridian. Mr. Mouly was opposed to the proposed wells and pipelines based on impacts to the native prairie, water contamination, air and surface pollution, noise, and disturbance to cattle and wildlife. Mr. Mouly had also earlier opposed certain oil and gas facilities on his lands, which was the subject of EUB *Decision 97-4*.

2.3 Hearing

A public hearing to consider the applications was originally scheduled for October 11, 2000. Mr. Mouly requested a postponement of the hearing to give his witnesses more time to prepare. The hearing was rescheduled and convened on December 6 and 7, 2000, in Coronation, Alberta, before examiners appointed by the Board. The examiner panel consisted of D. Larder, LL.B. (Chairman), R. Paulson, C.E.T., and M. Vandenbeld, C.E.T. The panel viewed the proposed pad site, pipeline rights-of-way, and surrounding area on October 11, 2000. Those who appeared at the hearing are listed in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Husky Oil Operations Limited (Husky)	J. Winton, P.Land
T. R. Owen	L. Uhrich, P.Eng.
S. A. Thomas	J. Wallace, P.Geol.
	B. Houchin
	C. Cloutier
	J. Dousett, P.Eng.
	B. Verner
	S. Parenteau
	R. Clissold, P.Geol., of Hydrogeological Consultants Ltd.
B. Mouly	B. Mouly

THOSE WHO APPEARED AT THE HEARING (continued)

Principals and Representatives (Abbreviations Used in Report)	Witnesses
E. Spencer T. Roberts	J. R. Korol, P.Eng., of Pro-EnviroCore Consulting Inc. M. L. Korchinski, of Pro-EnviroCore Consulting Inc.
J. Kloberdanz	
Special Areas Board (SAB) J. Hannah	
Alberta Energy and Utilities Board staff J. P. Mousseau, Board Counsel B. Austin, P.Geol. L. Roberts, M.Sc. G. McLean, C.E.T.	

3 ISSUES

The examiners consider the issues respecting this application to be the

- need for the wells and pipelines,
- location of the wells and pipelines,
- impacts of the wells and pipelines, and
- consultation.

4 NEED FOR THE WELLS AND PIPELINES

4.1 Views of the Applicant

Husky stated that it has a petroleum and natural gas (P&NG) lease that allows it to drill for and produce oil underlying Section 11, Township 36, Range 3, West of the 4th Meridian (Section 11). Husky submitted that the proposed wells would be targeting the Cummings S Pool (the S Pool) and provided evidence indicating that the bulk of the S Pool underlies Section 14 and the north half of Section 11. Husky stated that its seismic results indicated some favourable structure in the southwest quarter of Section 11 and therefore concluded that the proposed bottomhole locations were needed to verify its seismic interpretation. Husky estimated that each well may produce approximately 75 000 barrels of oil over a production life of about 10 years.

Husky stated that the oil effluent pipelines were needed to transport the oil produced from the proposed wells to the Eyehill Creek battery in Section 14. Husky explained that the saltwater pipeline would be needed to transport water from the Eyehill Creek battery to one of the proposed wells if it were to become a water injection well. Husky said that if one of the proposed wells did not produce economic volumes of oil, Husky could decide to use the well as a water injection well in order to support an ongoing enhanced oil recovery scheme in the S Pool. Husky testified that the saltwater pipeline may not be needed for at least a year; however, it made sense to install it at the same time as the other pipelines instead of digging a new ditch in the future, which would create additional impacts on the native prairie. Husky explained that it needed the fuel gas pipeline in order to operate a temporary pump jack and production tanks at the proposed pad site to verify production from the first well drilled. Subsequent wells would be tested at the Eyehill Creek battery via the proposed pipelines.

4.2 Views of the Interveners

Mr. Mouly did not challenge Husky's need to exploit its P&NG rights underlying Section 11 or the need to drill wells and install pipelines in order to produce the oil underlying Section 11. However, Mr. Mouly clearly requested that the Board deny the applications.

4.3 Views of the Examiners

The examiners note that while Mr. Mouly argued against the proposed wells and pipelines on the basis of impacts to the native prairie, water contamination, air and surface pollution, noise, and disturbance to cattle and wildlife, there was no dispute about Husky's right to exploit its P&NG rights under Section 11. The examiners accept Husky's right to exploit its P&NG rights under Section 11 and accept Husky's need to drill the wells and install pipelines in order to produce the oil underlying Section 11, provided the development can be carried out in an acceptable fashion. In the following sections the examiners consider whether the development can be carried out in an acceptable fashion.

5 LOCATION OF THE WELLS AND PIPELINES

5.1 Views of the Applicant

Husky submitted that it reviewed the area surrounding the proposed pad site and found a number of sites that were potentially acceptable. It stated that a number of factors influenced its choice of location for the proposed pad site, including drilling the best wells possible from a geological and engineering perspective, keeping disturbances to the native prairie to a minimum, proximity to the water dugouts, and the concerns of Mr. Mouly. Husky concluded that after considering all of these matters, the proposed location was optimum for the proposed pad.

Husky submitted that potential impacts of the wells would be reduced by the proposed pad site because all of the five bottomhole locations could be reached from a single pad site rather than from several smaller pad sites. Husky noted Mr. Mouly's suggestion that the pad site could possibly be located south of the proposed location but argued that the proposed northern bottomhole locations (12A, 12B, and 11A)

would become unreachable. Similarly, Husky argued that drilling the wells from the existing 11-11 pad site would not allow it to reach the two most southerly bottomhole locations (5D and 6C). Husky said that it could not move the proposed pad site more than about 20 metres (m) and still be able to reasonably directionally drill to the proposed bottomhole locations. Husky also argued that the proposed bottomhole locations could not be successfully drilled from a more remote location using horizontal drilling methods because that required better structural data than it had from existing well control data. Husky believed that given the existing uncertainty regarding structure and sand quality, it would be very difficult, if not impossible, for it to come up with a horizontal target and reasonably expect to stay within the producing zone. Husky stated that if the southerly proposed wells were successful, additional future drilling in the southwest quarter of Section 11 was possible.

Husky explained that it spaced the proposed wells far enough apart on the pad to allow for drilling one well at a time. It indicated that it would only have to strip and/or fill the required amount of land per well. It would drill one well and then reclaim the pad site; subsequently it would come back in to drill another well. The size of the stripped area would be sufficient to safely carry out a drilling operation and comply with EUB equipment spacing regulations. Husky stated that the 12A well would the first well drilled and that it would be tested before any additional wells were drilled. It explained that the existing well control, seismic information, and geologic interpretation showed that the 12A, because of its most northerly bottomhole location, would be its best opportunity for a successful well. Husky indicated that subsequent drilling would move west across the pad site to the 5D well and potentially the 12B well.

Husky submitted that the Special Areas Board (SAB) had inspected the proposed pad site and signed a consent indicating that it would not object to the EUB issuing the well licences or pipeline permits. SAB confirmed that it had given consent in principle because the proposed development generally met the development guidelines outlined in EUB *Informational Letter (IL) 96-9: Revised Guidelines for Minimizing Disturbance on Native Prairie Areas.* SAB stated that it generally accepts projects that create minimum disturbance on the public lands within the special areas, recognizing that zero disturbance from energy projects is generally not possible.

Husky provided evidence that Alberta Environment (AENV) reviewed the proposed pad site and did not have a problem with the location but indicated in its report that it would prefer the low area on the southeast portion of the proposed pad not be disturbed.

Husky acknowledged the location of a depressed area on the southeast portion of the proposed pad site. This area contained a large cluster of bushes and other vegetation and was unique in the quarter section because of its well-used cattle shelter. Husky stated that the proposed pad construction for the two wells on the east side of the pad site (6C and 11A) would necessitate the removal of the shelter vegetation. Husky understood Mr. Mouly's objection to the removal of this natural permanent shelter for his cattle but justified its clearing on the basis that all five wells would be drilled from only one pad site, thus minimizing overall negative impacts on the native prairie site and Mr. Mouly's cattle operations. Husky did not offer to move or alter the size or shape of the proposed pad site or relocate the well centres in order to avoid the removal of the animal shelter.

Husky acknowledged that Mr. Mouly indicated a preference for a pad site to be located on higher elevations rather than lower elevations in order to minimize concerns associated with both surface and groundwater. Husky argued that if it were to move the pad site any farther west, it would be too close to a dry creek bed and might interfere with its intermittent water flow and water gradient. Husky felt that the concerns raised over the potential impacts to the surface and groundwater at the proposed pad site did not warrant moving the site.

Husky submitted that the proposed pipelines and access road locations were chosen based on the use of existing pipeline rights-of-way where possible in an attempt to minimize the amount of disturbance to the native prairie. A portion of the saltwater pipeline would be installed in an existing pipeline right-of-way on the north side of the existing 11-11 pad site. The remaining portion of the saltwater pipeline, two oil well effluent pipelines, and a fuel gas pipeline would be installed in the proposed pipeline right-of-way to the south of the existing 11-11 pad site. The access road to the proposed pad site would run directly over and parallel to the proposed pipeline right-of-way.

5.2 Views of the Interveners

Mr. Mouly did not respond extensively to the geological evidence provided by Husky regarding the choice of the proposed bottomhole locations; however, he was concerned with the surface location of the proposed pad site for several reasons.

Mr. Mouly presented evidence indicating that the proposed pad site gradually sloped towards the southeast corner of the site. He described the southeast corner as a riparian area or pothole that collects standing water from spring runoff for a couple of months in most years. He also testified that the cattle shelter located in the southeast corner of the site was part of this wet area in the spring.

Mr. Mouly expressed concern that that the proposed pad construction for the two wells on the east side of the pad site (6C and 11A) would necessitate the removal of his animals' natural shelter and that there was little protective vegetation and bushes of similar quality for his cattle in other parts of the pasture. He dismissed the idea that a suitable man-made long-term replacement of the shelter was workable, noting that he would not be prepared to pay for the construction and upkeep of a structure or be prepared to work with Husky if it meant further intrusions on his land.

Mr. Mouly also rejected the location of the proposed pad site because of the spring flooding of the southeast portion of the site. He believed that flooding would cause contamination problems for both the groundwater and his two dugouts located near the proposed site. Mr. Mouly suggested that if the proposed site were approved, the site should be levelled so that the ground level is raised rather than lowered in an effort to try to prevent any flooding.

Mr. Mouly stated that he did not believe any alternative site was acceptable in terms of creating minimum disturbances on the native prairie. He submitted, though, that relocation of the site a couple of hundred metres south would position the pad on a small hill, which would alleviate some of the surface and groundwater concerns and would eliminate the need to destroy the cattle shelter. Such a location to a higher elevation, he argued, would also result in fewer problems with alkali.

Mr. Mouly submitted that Husky should have put more effort into an overall development plan for the area before an initial footprint was made. He did not want the development on his lands, but in the event that the project gained approval, he argued that it would make more sense for Husky to construct one drilling pad at a location that could exploit the reserves underlying both the northwest and southwest quarters of Section 11. Mr. Mouly submitted that several bottomhole locations could be reached from one strategically placed pad site using horizontal drilling techniques.

5.3 Views of the Examiners

In assessing the proposed locations of the wells and pipelines, the examiners believe that they must balance the benefits advanced by Husky with the potential negative impacts of such facilities in light of the present and future use of the lands by Mr. Mouly. As well, the effects on the immediate environment of the proposed site must be considered. An important factor in this analysis is the proposed mitigation of impacts on the lands and environment.

The examiners note that Husky chose the proposed pipeline routes and access road based on the use of existing pipeline rights-of-way where possible in an attempt to minimize the amount of disturbance to the native prairie. The examiners are satisfied that the routes chosen represent the least intrusive routes possible, given the existing energy developments in the area.

With respect to the bottomhole locations of the proposed wells, the examiners accept that Husky chose the locations based on seismic information and geological interpretations to identify optimum locations. The examiners also generally accept the proposition that the potential impacts of the wells would be reduced by the construction of one pad site to drill several bottomhole locations rather than constructing several smaller pad sites.

At the hearing, Mr. Mouly proposed that Husky utilize horizontal drilling from a less problematic site in order to reach its downhole locations and exploit the reserves underlying both the northwest and the southwest quarters of Section 11. Although the examiners appreciate that horizontal drilling methods result in an increase in cost and technical risk, horizontal wells are becoming commonplace in Alberta. The examiners offer the view that horizontal wells should not be immediately ruled out as a viable method of accessing reserves while at the same time mitigating potential surface impacts in the native prairie and other sensitive areas.

With respect to surface locations of the proposed wells, the examiners accept that the size of the stripped area for each well would need to be sufficiently large to safely carry out a drilling operation and comply with EUB equipment spacing regulations. The examiners note that Husky has committed to a sequential stripping of each well site, as opposed to the initial stripping of the entire lease. However, the examiners are not persuaded that the size, configuration, and location of the proposed lease has adequately or properly taken into account the destruction of the cattle shelter on the southeast corner of the site and the deleterious impact such removal will have on the maintenance and raising of Mr. Mouly's livestock. The examiners do not accept, for example, Husky's contention that the lease boundaries could not have been moved in a westerly direction because of the existence of a dry creek bed. This area did not appear as restrictive as

Husky suggested. Compliance with *IL 96-9* requires that a well site be configured in a way that avoids special or sensitive areas where possible.

The evidence before the examiners is that this quarter section is an integral part of Mr. Mouly's cattle operations and that such shelter areas for cattle are essential for their maintenance and protection during the varied climatic conditions experienced in Alberta. Mr. Mouly's evidence regarding the lack of similar sites on his pasture was uncontradicted, and the examiners accept his reasons for rejecting the feasibility of a man-made shelter. The natural shelter must be protected and not disturbed. As a result, the examiners recommend denial of the two proposed wells, namely 6C and 11A, whose location in the southeast part of the pad site has led Husky to advocate the clearing of the natural cattle shelter. The examiners believe that more effective communication between the parties prior to the hearing would have resulted in a better choice for the proposed pad site.

The examiners find that the location of wells 12A, 5D, and 12B on the proposed site are acceptable and approve the application in this respect. The impacts created by the three wells will be mitigated in a reasonable way, as more thoroughly outlined in the following sections of this report.

6 IMPACTS OF THE WELLS AND PIPELINES

6.1 Native Prairie

6.1.1 Views of the Applicant

Husky stated that it had prepared a predisturbance site assessment for the proposed pad site, consisting of a soil investigation on the lease and on the access road/pipeline right-of-way. It collected composite soil samples from each of the soil units and from two nearby dugouts and conducted salinity and hydrocarbon tests (on the dugout sediment samples only). Husky reported that, based on the Soil Quality Criteria for Agriculture published by Agriculture Canada, soils on the lease and right-of-way were not expected to present difficulties with respect to end land use after reclamation. Husky stated that its evidence indicated that hydrocarbon concentrations in the dugout sediments were not a concern. This is more fully discussed in Section 6.2.

Husky testified that its proposed operations would comply with Section 6.1 of *IL 96-9* with the exception that it would not be possible to locate the wells at the surface of the native prairie or at an alternative location without compromising the geological optimization of the wells. Similarly, Husky thought it impossible to locate the pipeline off the native prairie, due to the fact that the pad site was surrounded by native prairie.

Husky spoke to Section 6.3 of *IL 96-9* and its guidelines that discuss the drilling stage of operations. Husky explained that it would comply with the first six points listed in these guidelines but stated that it had not addressed the final bullet point in that section as it was not applicable. Husky then addressed Section 6.4 of the guidelines, entitled "Production." It indicated that its permanent facilities were located near permanent all-weather main roads and that no chemicals would be used to control noxious and restricted

weeds. Husky stated that it planned to use earthen dikes around storage tanks at the first well drilled and to line the dikes with plastic. The tanks would be placed on top of the plastic. It considered the use of cement dikes, encouraged in *IL 96-9*, to be insufficient in preventing vertical seepage into the ground. Husky committed to test and produce the remaining wells through the applied-for pipeline should the wells be drilled.

Husky provided testimony regarding the fourth bullet of Section 6.5 of the guidelines, entitled "Pipeline." It stated that it intended to use a two-lift stripping procedure rather than a three-lift, because it felt it would be less disruptive to the native prairie. It confirmed that it planned to use a "ditch-witch" to minimize disturbance during pipeline installation and that it intended to consult with a reclamation inspector regarding that particular method. Husky also stated that it planned to place the pipelines along existing access roads or pipeline routes in order to address the final bullet in Section 6.5.

As a point of clarification, Husky added that part of the pipeline would be constructed in the access road portion of the proposed project. In that situation, it said it would use a conventional hoe and would create a two-foot-wide trench. It believed that this method was justified given that the multiple lines to be installed in the area would not fit into an 8-inch-wide ditch created by the ditch-witch.

Husky stated that it planned to replace the stripped soil in accordance with *IL 96-9*. It recommended that topsoil be stripped and conserved from the site and that it would consider stripping and conserving at least 15 to 20 centimetres (cm) of the upper subsoil as second lift material. Husky also stated that it would be recontouring the well site to reflect the original topography before disturbance. It also committed to engage in such measures as subsoil ripping if compaction proved to be a problem. It believed, though, that the sandy texture of the soil of the area in question precluded any potential for compaction problems. Husky testified that the ideal timing of activities in order to minimize impact would be in a dry season, such as mid- to late-summer or early fall. This would minimize disturbance while at the same time allowing for more effective soil stripping, without having to rip the soil.

Husky stated that tackifiers would be used to prevent erosion of stockpiled soils as a result of stripping and that such a method was adequate. The applicant also stated that no leaching problems were anticipated with respect to the stockpiled soils, particularly with respect to salinity concerns. It pointed out that the physical characteristics of the soil core holes were individually logged to facilitate physical soil replacement during reclamation.

Husky argued that the intervener's concerns with respect to alkali in the soil were adequately addressed through its soil sampling and analysis. The applicant interpreted from its data that salinity levels in the soil were acceptable by agricultural standards and were considered as within the normal range for plant growth. With respect to questions regarding a failure to reclaim a pipeline that had previously been constructed, Husky stated that its reclamation process was delayed by the necessity of contacting Mr. Mouly to include him in the reclamation process and the difficulty in contacting him. When questioned about the lack of successful reclamation along the same pipeline right-of-way in cooperation with a different landowner, Husky stated that the two areas were not comparable.

Husky stated that its reclamation efforts would be in compliance with Section 6.6 of *IL 96-9* and its guidelines. It endorsed the view expressed in the guidelines that proper planning and use of seed mixes would enhance the re-establishment of native species. Husky submitted that while natural recovery of vegetation may be appropriate for pipeline reclamation, it was not appropriate in this situation due to the risk of erosion created by a large well-pad size. After seeding, Husky said that it intended to straw-crimp the location to protect the site from erosion due to wind or precipitation. Reclamation at the former well-pad location would also be fenced to limit activity across the seeded site, further minimizing erosion potential. Husky stated that the pipeline right-of-way was not scheduled to have fencing to encourage plant growth, because it did not believe that livestock compaction or selective grazing of young plants would inhibit reclamation success.

The applicant stated that it intended to consult with SAB, as well as the land occupant, prior to deciding on the seed mix to be used in revegetation. Husky stated that it was its practice to obtain a certificate of seed analysis from the seed supplier to ensure species compatibility and to identify any weed species present, as well as to clean the equipment and materials before use on the native prairie. These measures would reduce the transportation of restricted and noxious weed seeds, in accordance with the Weed Control Act. Husky agreed during the hearing to undertake to develop a protocol that operational people would use to monitor and control weeds growing on reclamation sites.

Husky stated that reclaimed sites are inspected twice a year, and in Special Areas where precipitation is a critical factor there may be as many as four visits by the company to the reclaimed sites within a year. These visits allow the company to determine the quality and success of reclamation and whether the site is ready to be considered for certification. Husky also acknowledged that it was aware of Alberta Agriculture and Rural Development's recent document entitled *Native Plant Revegetation Guidelines for Alberta* and stated that its reclamation plans attempted to meet the requirements of those guidelines in addition to the *IL 96-9* requirements. Husky further stated that it was not typically its practice to conduct a detailed predisturbance native vegetation assessment. It stated that it had enough understanding about the kinds of plants in an area based on similar areas and that the seed mixture approved by SAB and AENV endorsed that assumption.

In response to the intervener's concern about the disturbance of wildlife and their native grassland habitat, Husky stated that disturbance would be minimized, and it did not anticipate a direct effect on wildlife. It also stated that the seed mixture being used to revegetate the disturbed land was suitable for wildlife.

In response to questioning, Husky said that it was not aware of research into new technologies that could further minimize surface disturbance on native prairie. It explained that the no-strip method, used prior to drilling, for example, was unworkable because the resulting well site would not be level and would present a potential safety hazard to the workers operating at the site. The applicant admitted that native prairie is difficult at best to reclaim and that the process of re-establishing native grasses would likely take several years.

6.1.2 Views of the Intervener

Mr. Mouly believed that alkali present in the soil in the area of the proposed pad and pipeline would prevent successful re-establishment of vegetation through reclamation efforts. He stated that Husky's prior commitments to himself and the EUB regarding revegetation had not been met. He felt that Husky should be required to demonstrate its ability to re-establish vegetation in the presence of alkali before being granted further licences for well sites or pipelines. Mr. Mouly presented photographs of existing Husky facilities and rights-of-way, as well as of the areas of the proposed well pad and pipeline. He believed that several of the photographs depicted a failure on the part of the applicant to revegetate due to alkaline soil.

Mr. Mouly also indicated that the native grasses present on the proposed site were essential for wildlife habitat and that SAB had indicated to him previously that it intended to preserve the quarter of land in question for the purpose of wildlife habitat.

In general, Mr. Mouly felt that Husky was not prepared or able to follow the recommendations of *IL 96-9* and that this situation was reflected in the EUB *Examiner's Report 97-4* resulting from a previous application and hearing by Husky involving Mr. Mouly's lands.

Mr. Mouly had prepared an assessment of the impact of the proposed development of petroleum hydrocarbon facilities by Husky on soil quality with control and test soil samples collected from two sites. One site was located along the right-of-way near the pipeline at 14-11, and the other was located along the right-of-way near the pipeline at 16-10. The intervener noted evidence of soil disturbance, weed growth, and loss of organic matter along rights-of-way. Some of the affected areas lacked topsoil due to erosion and traffic as a result of industry activity, according to the intervener. He stated that through preliminary chemical characterization of the soil samples, it was determined that the sodic characteristics compared favourably to the Canadian Council for Ministries of the Environment guidelines for agricultural soils. Mr. Mouly pointed out that the main difference between the results from his samples and the samples taken at different locations by Husky was the presence of clay in the topsoil in the lower regions at the base of the proposed pad and in depressions along the proposed development found in his samples. The clays in the topsoil were said to be alkaline and sodic, while the sandy soils at most locations at the current leases and at the proposed development (sampled by Husky) were relatively low in salinity and alkalinity. However, Mr. Mouly would not make direct comparisons between his own and Husky's soil sampling because the soil samples were taken at different locations.

He believed that his sampling, although limited, indicated that the topsoil at or near the proposed development could be susceptible to structural damage or alkalinity problems when disturbed. He recommended that Husky exercise considerable care to avoid irreparable soil and, consequently, vegetation damage.

In closing argument, Mr. Mouly referred to both *IL 96-9* and its guidelines as well as the revisions to the guidelines currently being considered by the EUB, SAB, AENV, Agriculture, Food and Rural Development, and the Department of Resource Development. He expressed pessimism regarding Husky's ability and desire to adequately plan future facilities in order to minimize disturbance of native prairie.

6.1.3 Views of the Examiners

The examiners believe that it is inevitable that the native prairie soils and vegetation on the pad site, road access, and pipeline rights-of-way will suffer some immediate degradation as a result of this project. There is no reasonable construction or production technique that will result in zero impacts. *IL 96-9* recognizes this reality and seeks to impose a set of guidelines that will minimize the disturbance in these sensitive areas. It is the examiners' view that a committed adherence to these guidelines will best ensure that the native prairie being disturbed by Husky's project will be brought back to its original productive state during or at the end of the life of the facility. The commitment required of Husky will be considerable, and although there is some history of a less than full effort in this regard on Mr. Mouly's lands, the examiners accept Husky's undertaking to diligently abide by *IL 96-9* and guidelines, and its commitments, with the exception that earthen berms may be used around temporary production tanks. As a result, the examiners find that the anticipated impacts to the native prairie, its soil, grasses, and other vegetation are acceptable provided the following conditions are met. These conditions will help ensure that the preventive and mitigative measures put in place during the planning and operational stage of the project are effective.

- First, although Husky plans to operate vehicles directly on native prairie, it did not anticipate excess disturbance to the prairie because it planned to drill its wells only during dry weather conditions. If dry conditions persist throughout the initial stages of the sequential drilling of the wells, the examiners anticipate a high volume of traffic along the access road. The examiners would therefore require a detailed mitigation plan for potential compaction and rutting of the access road for examiner approval prior to site preparation.

- Second, the alkali problem on the existing sites located on Mr. Mouly's lands merits concern. The examiners are not completely satisfied that Husky appreciates the potential for an alkali problem. The examiners would therefore require a more detailed description of the particular reclamation measures that will be put in place to minimize the potential for alkali to inhibit future native plant growth, as well as any potential time lags or complications that may affect long-term reclamation at the proposed site. The report shall be submitted to the examiners for approval prior to site preparation.

  The examiners note that while Husky made a commitment during the hearing to implement the reclamation practices contained in the report contained in Exhibit 3C, these are a minimum requirement for reclamation on native prairie.

- Third, Husky must develop a thorough protocol that operational personnel will use to enhance protection of the native prairie in two instances: site preparation and construction and the ongoing monitoring and control of weeds growing on reclamation sites. The site preparation and construction protocol will be completed prior to commencement of site preparation, and the weed inspection and control program will be submitted for approval prior to the commencement of seeding for reclamation purposes.

The examiners expect Husky to meet the conditions outlined above, follow through on its own commitments, and operate in a fashion that maintains the principles of *IL 96-9*. On this basis, the examiners

conclude that the adverse impacts on the native prairie will be minimized to the greatest degree possible and recommend that the pipeline application and the three wells described earlier be approved.

6.2 Water

6.2.1 Views of the Applicant

In November 2000, representatives of Husky and Mr. Mouly cooperated in gathering surface water and groundwater data in portions of Section 11. This involved drilling eight test holes, completing four as piezometers (groundwater monitoring wells), and sampling the water in both dugouts.

Although Husky participated in the investigation, it maintained that the dugouts and shallow groundwater were not at risk from its operations in the area. Husky stated that its operational procedures adequately protected these resources.

In Husky's interpretation of the site data, it noted that the proposed pad site was underlain by sandy material containing an unconfined (in communication with atmosphere) aquifer on the north side of the proposed pad location. It also noted that flow in this aquifer was to the northwest and rapid, due to a strong gradient created by the highlands to the south.

Husky explained that it was unlikely that the two dugouts directly connected to the shallow groundwater system, because finer sediment tends to seal the base of all dugouts over time. The applicant stated that if the dugouts were in direct communication with the shallow groundwater system, the elevations of the dugout ice and the water table in piezometer two (approximately 15 m west of the dugout) would be similar. It noted, however, that the ice level in the east dugout was significantly (0.73 m) lower than the level of the water table in piezometer two. Husky postulated that the dugouts were supplied mainly by rainfall but noted that even if the dugouts were completely supplied by groundwater, the east dugout could not be at risk from possible spills at the proposed pad. It explained that the east dugout did not receive groundwater from the area of the proposed pad; rather, groundwater flowed from the area of the dugout towards the area of the proposed pad.

Husky maintained that no impacts to the water in the dugouts had occurred as a result of existing wells. Husky noted that the hydrocarbons detected in the dugout sediments reflect the decay of organic material. However, at the hearing, Husky committed to ongoing monitoring of the shallow aquifer via the existing four piezometers and dugout water, plus the installation of two additional piezometers to confirm that its operations had not impacted groundwater.

Husky believed that installation of a liner at the proposed pad site was unnecessary. It maintained that its current operating procedures emphasized spill prevention and that groundwater contamination had not resulted from its operations in similar settings.

6.2.2 Views of the Intervener

Mr. Mouly believed that Husky could not ensure that future operations at the proposed pad would not have a potential negative impact on the water in the two dugouts used for cattle. He stated that the two dugouts were supplied by groundwater and that he believed that groundwater contamination from the proposed pad would threaten dugout water quality. He noted that any spilled material at the proposed pad site would not flow across the surface to be contained by site berms. This spilled material would immediately seep down through the sandy surficial material to the water table, and move rapidly with the natural groundwater flow into the dugouts. As well, he suggested that installing a liner at the pad site would retard movement of any spilled material into the groundwater. Mr. Mouly suggested that the hydrocarbons detected in the dugout sediment may be related to the petroleum industry.

Mr. Mouly agreed in general with Husky's interpretation of the groundwater data. However, he noted that the only sampling event had occurred in the fall and that the impact of spring runoff on groundwater flow directions was unknown. He suggested that during spring runoff groundwater could flow from the area of the proposed pad to the immediately adjacent east dugout. In addition, he believed that the north dugout, although more distant from the proposed pad site, was at risk due to the rapid groundwater flow in the area.

Mr. Mouly advocated ongoing sampling of the existing and proposed piezometers, as well as of the dugout water.

6.2.3 Views of the Examiners

The examiners agree that the area of the proposed pad site is underlain by a shallow, unconfined aquifer and that groundwater movement in this particular area is relatively rapid. The examiners also agree that there is some degree of interconnection between the groundwater system and the dugouts. Consequently, the examiners believe that the location of the proposed pad site with respect to the dugouts may present a risk to groundwater. Therefore, the examiners will require Husky to monitor the four existing and two new piezometers and the dugout water twice annually for water level, routine potability, BTEX (benzene, toluene, ethylbenzene, and xylene) and total petroleum hydrocarbons. Current analyses of dugout water do not indicate the presence of hydrocarbons. The hydrocarbons detected in the dugout sediment are characteristic of the decay of organic material.

As shown by groundwater, dugout water, and sediment testing, the existing facilities in this section have not adversely impacted groundwater. Therefore, the examiners do not believe that a clay or synthetic liner over the proposed site is necessary. The examiners hold that the concerns related to hydrocarbon storage at the proposed site are addressed by EUB *Guide 55: Storage Requirements for the Upstream Petroleum Industry*.

Given the conditions imposed on Husky and its adherence to existing EUB-sanctioned guidelines and operating procedures, the examiners believe that the risk to groundwater from the proposed operation has been appropriately addressed and mitigated.

6.3 Pollution

6.3.1 Views of the Applicant

Husky stated that there was some potential for sour gas to be contained in the formations to be drilled. It testified that the wells would be drilled using overbalanced techniques and that it had never previously experienced gas kicks, blowouts, or uncontrolled gas releases from the formations that would be drilled into. Husky said that the hydrogen sulphide (H_2S) content of the solution gas produced with the fluids from the Cummings Member was tested at the free-water knockout and treater units at the Eyehill Creek battery. The results of those tests indicated an H_2S content of 7000 parts per million, or 0.7 per cent H_2S, in the gas.

Husky stated that the first well would be tested over a 60-day period using a temporary pump jack and production tanks at the proposed pad site to verify production from the well. Gas from the production tanks during the testing period would be flared on site. Husky rejected the notion of in-line testing the initial well at the Eyehill Creek battery because if the initial well were found to be unproductive, the pipelines would no longer be required.

Husky stated that following the initial production testing and provided the first well was productive, all of the produced fluid, including any solution gas produced from the wells, would be pipelined to the Eyehill Creek battery. Husky stated that the fibreglass pipelines to be installed to transport the oil well effluent to the Eyehill Creek battery would be resistant to corrosion. It also stated that it would backfill the pipeline ditches with the same material that was excavated and that the operators would be instructed to remove any large rocks that could cause any impact damage to the pipelines when backfilling.

At the battery, the gas would be collected, compressed, and sent via pipeline to a gas processing plant in Monitor. Husky acknowledged Mr. Mouly's complaints of recent odour in the area but provided little in the way of explanation and suggested that the odour could be originating from other companies' operations in the area.

Husky acknowledged that three oil spills had been reported on Section 11 since oilfield activity began in the area around 1989. Husky provided little detail on the spills but said that it was its understanding that the spills were cleaned up and inspected by AENV and that there were no remaining adverse effects from the spills.

Husky stated that a preconstruction meeting would be held with employees to ensure that all garbage generated during the drilling and pipelining operations would be placed within canisters on location and later removed at the end of those operations. Husky acknowledged that Mr. Mouly had complained about garbage on two occasion but maintained that the garbage was cleaned up and that its employees were instructed not to leave any garbage at the facilities.

6.3.2 Views of the Intervener

Mr. Mouly submitted that he had complained about odours from Husky's operations in the past but that the odours had persisted. He expressed concern that the oil well effluent would contain sour gas and speculated that the sour gas caused the odours. He also expressed concern that the sour gas in the oil well effluent could cause corrosion in the pipelines and potentially lead to a pipeline failure; however, he conceded that he had never witnessed a pipeline break or failure.

Mr. Mouly made several references to three reported incidents of oil spills at existing wells on Sections 10 and 11 and stated that it was a constant worry for him. He suggested that previous cattle deaths could be attributable to the previous oil spills; however, he recognized that this could not be proven, as autopsies had not been performed on the cattle. Mr. Mouly did recognize that Husky had taken various measures to clean up the spills, but he expressed concern that additional oil spills could occur at the proposed wells.

Mr. Mouly referred to and provided photographs of garbage at existing well sites. He expressed his opinion that even though garbage canisters were in place for use by employees during various operations, inevitably there would be garbage found in the area.

6.3.3 Views of the Examiners

The examiners believe that Husky has committed to prudent measures to mitigate most of the concerns regarding emissions, spills, and garbage on site. The examiners further direct that all gas produced from the first well during the testing period shall be flared using a temporary flare stack as opposed to venting.

The examiners note that there was a lack of evidence provided by the applicant with respect to the intervener's concerns about various hydrocarbon odours or measure that Husky would take to ensure that the release of any future odours is mitigated. The examiners believe that it is incumbent upon the proponent of a development to anticipate and assess the impacts of its operations on others, seek input from those affected, and address the issues appropriately. The examiners believe that Husky could have made a more substantive effort to identify and address concerns raised by Mr. Mouly regarding odours and encourage Husky to do so in the future. The examiners note that the matter of fugitive odours will also be investigated by the EUB's field centre staff if a complaint is received.

6.4 Noise

6.4.1 Views of the Applicant

Husky stated that the gas-powered engines used for the initial production test on the first well would meet the EUB noise guidelines. Husky stated that following the initial testing, it would electrify the pad and install submersible screw pumps on the wells, ensuring that noise levels generated from the wells would be well below the EUB limits in its guidelines. Husky described the noise as being low level and constant and felt that the noise levels would not disturb the nearest resident, who lives about three and a half miles away, or Mr. Mouly's cattle.

6.4.2 Views of the Intervener

Mr. Mouly expressed concern that the noise from Husky's operations had destroyed the once peaceful nature of the prairie. He maintained that the noise had an adverse effect on his cattle but did not provide any specific effects.

6.4.3 Views of the Examiners

The examiners note that there was a lack of scientific evidence provided by either the applicant or the intervener with respect to noise levels. However, the examiners believe that while the intervener would prefer no further increase in noise level, the applicant has taken measures to reduce noise levels where possible. The examiners note that any future concerns raised with regard to noise could be dealt with as outlined in EUB *Interim Directive (ID) 99-8: Noise Control Directive.*

6.5 Cattle and Wildlife

6.5.1 Views of the Applicant

Husky stated that it believed the drilling, pipelining, and production operations for the proposed facilities would have minimal impacts on Mr. Mouly's cattle or wildlife habitat. It said that cattle and wildlife movements would only be affected during the drilling phase of the wells and committed to fence the proposed pad site if drilling operations were to take place while cattle were being grazed in order to prevent the cattle from entering the site. Husky felt that if the wells were drilled in the winter months and no cattle were being grazed, a fence would not be required. Husky testified that the access road and pipeline rights-of-way would not be fenced off, which would allow cattle and wildlife to freely move about those locations.

Husky said that the reduction of grazing grasses and wildlife habitat would be minimal because of its efforts to minimize the impacts on the native prairie. It recognized that the bushy area on the southeast portion of the proposed pad site was used by the cattle as a natural shelter but contended that it would be necessary to remove the shelter in order to drill the five wells from one pad site.

6.5.2 Views of the Intervener

Mr. Mouly stated that he used the land on Sections 10 and 11 to raise approximately 50 head of cattle. He explained that the cattle are pastured on the land through the summer and part of the winter and that on occasion the cattle are left there over the winter until calving in the spring. Mr. Mouly believed that if the proposed pad site were developed, it would affect the movement of cattle. He explained that the cattle moved between the two dugouts using a path that ran through the proposed pad site and that the cattle used the bushy area on the southeast portion of the proposed pad site as a natural shelter. Mr. Mouly speculated that if the proposed pad site were approved, the cattle would be forced to choose a path around the pad site, resulting in a deep path being created by the cattle on the outer perimeter of the pad site. He expressed concern that the amount of land that would be disturbed by the proposed development would equate to a loss of pasture for his cattle. He also expressed concern over the possible effects the

proposed development could have on the health of his cattle. Mr. Mouly stated that he suspected that the existing facilities and associated contamination problems had contributed to deaths and stillbirths in the past; however, he conceded that no autopsies of the dead cattle had been performed to prove his suspicions.

Mr. Mouly stated that he believed the proposed development by Husky would create additional disturbances to wildlife. He explained that he had attempted to purchase the land through a tax recovery program initiated by the government before any energy development had occurred but was refused because AENV wanted to save those portions of Sections 10 and 11 for wildlife protection. Mr. Mouly stated that the habitat was to be saved specifically for the sharp-tailed grouse but said that after the energy developments in the area occurred, the sharp-tailed grouse disappeared from the area. He expressed frustration over the fact that his offer to purchase the land was refused, yet the oil companies were allowed to develop the area despite the same concerns about wildlife habitat.

6.5.3 Views of the Examiners

The examiners note Mr. Mouly's concerns regarding the potential impacts on cattle and wildlife habitat and conclude that generally the impacts are not serious and can be managed appropriately. Evidence was received to the effect that the movement of the cattle between the two dugouts would not be impeded by the pad site, as the cattle would simply walk around the site to access the water. The examiners accept this evidence. However, as described in Section 5.3 of this report, the examiners hold that the removal of the cattle shelter on the southeast corner of the proposed pad site would eliminate an important natural protective area used by the cattle. The examiners are therefore not prepared to approve the two wells, namely 6C and 11A, whose existence depend on the clearing away of the shelter.

7 CONSULTATION

7.1 Views of the Applicant

Husky submitted that it contacted or attempted to contact Mr. Mouly on 22 occasions during the period from November 1997 to October 2000 regarding the application and commitments arising from EUB *Decision 97-4*. The contacts consisted of mailing letters and material, talking to Mr. Mouly on the phone, leaving messages on his answering machine and with others at his residence, and meeting directly with him. Husky expressed frustration over Mr. Mouly's unavailability during that period. It viewed his behaviour as obstreperous, because he would not respond to Husky's correspondence or telephone messages in a timely or cooperative manner. Husky testified that it was therefore unable to meaningfully discuss the nature of its proposed facilities and its proposed mitigative efforts regarding the impacts that it knew were of concern to Mr. Mouly.

It pointed out, as an illustration, that in *Decision 97-4* it had undertaken to conduct annual water samples of the two dugouts with notice to Mr. Mouly so he would be present at the sampling. Husky confirmed that no tests were taken in 1998 and 1999 because Mr. Mouly would not make himself available at the time proposed by Husky and would not provide alternative dates. Husky complained that it experienced a similar lack of cooperation regarding the reseeding of pipeline rights-of-way.

Husky acknowledged that Mr. Mouly's many work commitments made it difficult for him to find the time to discuss matters but maintained that its efforts at consultation since 1997 were reasonable. It noted that three out of the four water samples collected in 2000 were taken in Mr. Mouly's absence because he had agreed that sampling could occur in his absence. Husky undertook at the hearing to provide Mr. Mouly with a minimum of two weeks' written notice of its proposed drilling schedule and other significant operations.

7.2 Views of the Intervener

Mr. Mouly submitted that Husky's consultation efforts since 1997 had been inadequate, unsatisfactory, and less than genuine. He rejected the notion that a message left on his answering machine stating that a certain activity would be conducted at a certain time constituted meaningful discussion. Many times, he said, Husky's employee would be on the way to the site when the information was conveyed. On other occasions, Mr. Mouly stated that he was unable to contact Husky at the toll-free number provided to him or Husky would, on short notice, change the time that it originally had scheduled for a discussion with him. He stated emphatically that he wanted to provide input on the dugout water testing and reseeding of rights-of-way matters but was consistently denied this opportunity because Husky did not provide sufficient time for him to review the particular matter and schedule a mutually agreeable time to discuss it.

Mr. Mouly conceded that he was difficult to contact because of his farming and other work commitments but stated that his busy schedule should not be an excuse for Husky to exclude his participation in water sampling, reseeding, and other relevant issues of concern.

7.3 Views of the Examiners

It is evident that the relationship between Husky and Mr. Mouly is characterized by mutual distrust and frustration. To a significant degree, this state of affairs arises from the poor communication between the two and the reluctance of both parties to recognize and accept the legitimate rights and interests held by the other. Such recognition also requires a genuine commitment to accommodate the other when time and resources are constrained. Both Husky and Mr. Mouly must make a greater effort to actually meet and talk about the many issues important to each in connection with the project. Mr. Mouly has continually expressed an interest in groundwater quality and the revegetation of disturbed areas. Husky must provide a real opportunity to participate in decisions respecting these matters.

Husky, like all companies, must be able to plan and schedule its operations in an efficient and timely way. Mr. Mouly has an obligation to make himself available for discussion, notwithstanding his many work commitments and unpredictable schedule. The examiners are encouraged by Husky's undertaking that it will provide Mr. Mouly with written notice, including pertinent material, at least two weeks in advance of its intended operation (drilling schedule, revegetation plans, water testing, or other major activities). This step allows Husky to schedule its operations with some certainty and gives Mr. Mouly the time to consider the matter and discuss it with Husky within the two-week period. Consultation will only be effective when goodwill accompanies the process.

8 SUMMARY

The examiners confirm that taking into account the evidence they have heard regarding the issues raised by the two applications and considering the public interest responsibility that the Board must exercise, they recommend that pipeline Application No. 1059607 and wells 12A, 5D, and 12B of Application No. 1056355 be approved, as more particularly set forth within this examiner report. The examiners recommend that wells 6C and 11A be denied. The commitments and conditions regarding the wells recommended for approval are summarized in the appendix.

Dated at Calgary, Alberta, on February 13, 2001.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

D. Larder, LL.B.

<original signed by>

R. Paulson, C.E.T.*

<original signed by>

M. Vandenbeld, C.E.T.

* R. Paulson was not available to sign but concurred with the report and decision.

APPENDIX—SUMMARY OF HUSKY'S COMMITMENTS AND CONDITIONS

Commitments

The examiners note that throughout the hearing, Husky had 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 they are summarized below. It is the examiners' view that when a company makes a commitment of this nature, it has satisfied itself that the activity will benefit both the project and the public, and the examiners take these commitments into account when arriving at their decision. Having made the commitment, the examiners expect the applicant to fully carry out the undertaking or advise the examiners if, for whatever reason, it cannot fulfill the commitment. It is at that time that the examiners will assess whether the circumstances of the failed commitment may be sufficient to trigger a review of the original approval. Affected parties also have the right to ask the examiners to review an approval if certain commitments made by an applicant remain unfulfilled.

Husky committed to the following:

- Place earthen berms around tanks associated with the first well drilled. The berms and the bermed area will be plastic lined.

- Produce all wells through the applied-for pipelines, including test production from the second and third wells.

- Recontour the pad site to reflect the original topography, including ripping the subsoil if compaction proves to be a problem.

- Hold a preconstruction meeting with employees to ensure that all garbage generated during drilling and pipelining operations is placed in canisters and later removed at the end of those operations.

- Provide Mr. Mouly with a minimum of two weeks' written notice of its proposed drilling schedule and other significant operations.

- Use "ditch-witch" to minimize disturbance during pipeline construction on existing pipeline right-of-way (see map).

Conditions

The conditions imposed in the present approval are summarized below. Conditions, generally speaking, are requirements in addition to or otherwise expanding upon existing regulations and guidelines. Conditions must be complied with by an applicant or it is in breach of its approval and subject to enforcement action of the EUB. Enforcement of an approval includes enforcement of the conditions attached to that approval. Sanctions imposed for breach of such conditions may include the suspension of the approval, resulting in the shut-in of a facility.

Husky is required to fulfill the following conditions:

- Follow the guidelines detailed in *IL 96-9*, excepting the use of portable concrete dikes.

- Submit to the EUB for approval a detailed mitigation plan for potential compaction and rutting of the access road prior to site preparation.

- Submit to the EUB for approval a detailed description of the reclamation measures planned to minimize the potential for alkali to inhibit future plant growth. This submission should include a description of potential time lags or complications that could affect long-term reclamation.

- Develop for approval protocols for its operational personnel that will enhance protection of the native prairie during site preparation and construction prior to the commencement of site preparation.

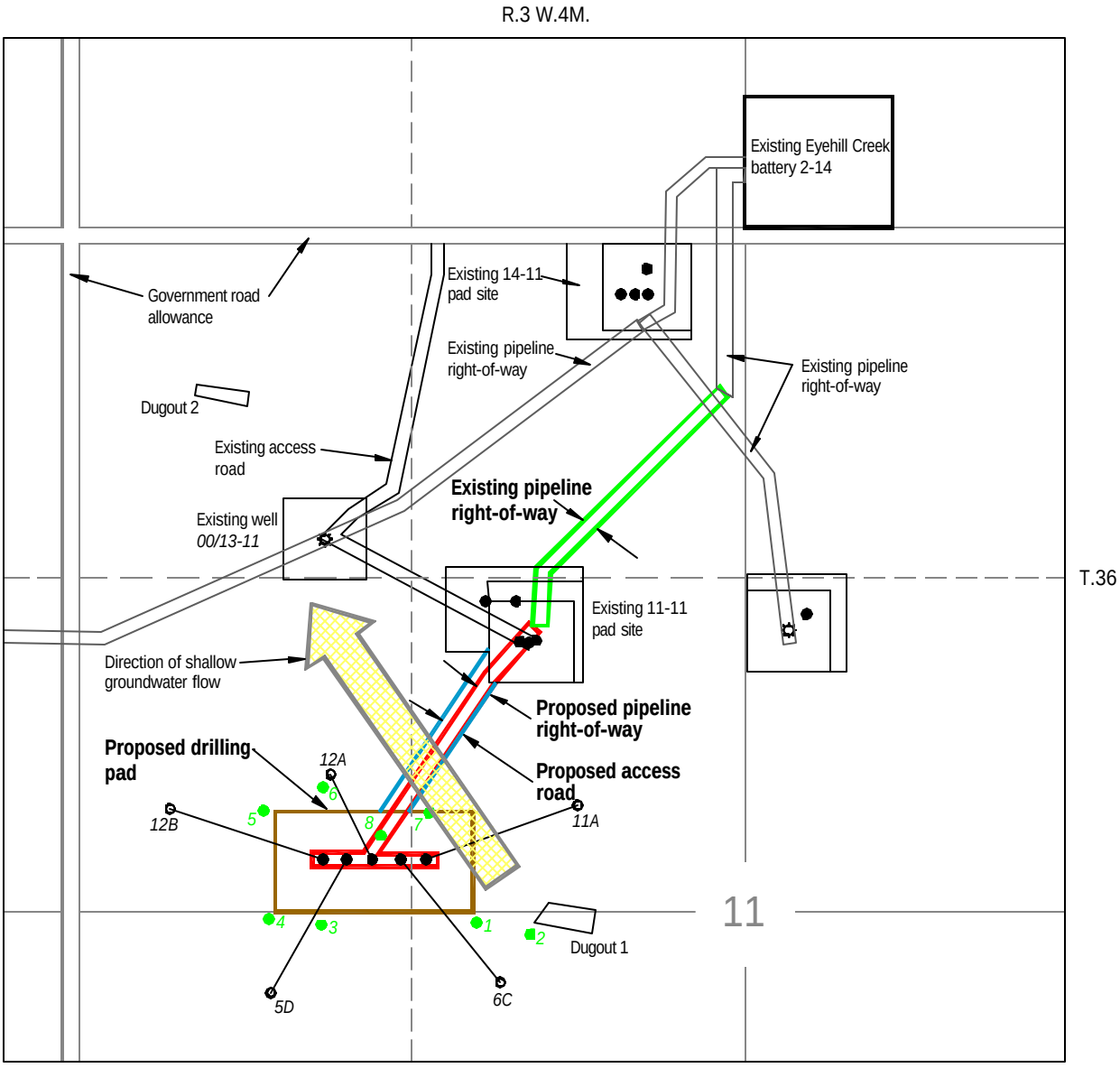
- Develop protocols for its staff to monitor and control weeds on reclamation sites prior to the commencement of seeding for reclamation purposes.

- Install two new piezometers optimally located to monitor the water table.

- Properly abandon any of the four existing piezometers that might be damaged or destroyed during pad construction and replace these piezometers after pad construction.

- Monitor twice annually the four existing piezometers, two new piezometers, and dugout water for water level, routine potability (including major ions), BTEX (benzene, toluene, ethylbenzene, and xylene), and total petroleum hydrocarbons. On an annual basis the interpreted results shall be presented to and discussed with Mr. Mouly.

- Testing of the first well shall not exceed 60 days. A temporary flare stack must be used to flare the gas. All requirements of *Guide G 60* must be adhered to.



Legend

- Oil well
- Gas well
- Bottomhole location
- Piezometer/boreholes
- Direction of shallow groundwater flow

Pipelines to be installed in existing pipeline right-of-way:
1 saltwater pipeline

Pipelines to be installed in proposed pipeline right-of-way:
1 saltwater pipeline
1 fuel gas pipeline
1 group oil well effluent pipeline
1 test oil well effluent pipeline

Proposed Pad Site and Associated Pipelines

Applications No. 1056355 and 1059607
Husky Oil Operations Limited

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