



Canadian Natural Resources Limited

**Application for Special Oil Well Spacing
Lloydminster Field**

November 4, 2003

ALBERTA ENERGY AND UTILITIES BOARD
Decision 2003-081: Canadian Natural Resources Limited—Application for
Special Oil Well Spacing, Lloydminster Field

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

CANADIAN NATURAL RESOURCES LIMITED APPLICATION FOR SPECIAL OIL WELL SPACING LLOYDMINSTER FIELD

**Decision 2003-081
Application No. 1085114**

1 DECISION

The Alberta Energy and Utilities Board (EUB/Board) approves Application No. 1085114 for special oil well spacing and holdings for the area shown on the attached figure, subject to the following conditions. Within a holding, a producing well shall be at least 100 metres (m) from each other well producing from the same pool, a producing well shall be at least 50 m from the boundary of the holding, only one well may be produced per legal subdivision (LSD) from the same pool in the northeast quarter (NE/4) and southwest quarter (SW/4) of Section 8, Township 51, Range 1, West of the 4th Meridian (Section 8) and the north half (N/2) and SW/4 of Section 17, Township 51, Range 1, West of the 4th Meridian (Section 17), and only two wells may be produced per LSD from the same pool in Section 16, Township 51, Range 1, West of the 4th Meridian (Section 16).

2 INTRODUCTION

2.1 Application, Intervention, and Hearing

Canadian Natural Resources Limited (CNRL) applied to EUB pursuant to Section 5.190 of the Oil and Gas Conservation Regulations (OGCR) and Section 79(4) of the Oil and Gas Conservation Act (the Act) to establish holdings for the production of oil from the Mannville Formation in NE/4 and SW/4 of Section 8, Section 16, N/2 and SW/4 of Section 17. The applicant proposed that within the holding, a producing well would be at least 100 m from each other well producing from the same pool, a producing well would be at least 50 m from the boundary of the holding, only one well would be produced per LSD from the same pool in SW/4 and NE/4 of Section 8 and N/2 and SW/4 of Section 17, and only two wells would be produced per LSD from the same pool in Section 16.

Mr. and Mrs. Aplin (the Aplins), who are landowners in west half (W/2) and southeast quarter (SE/4) of Section 16 and south half of Section 17 filed objection. They are also residents and freehold mineral owners in SE/4 of Section 17-51-1W4.

Board Members J. Nichol, P.Eng., and G. J. Miller and Acting Board Member R. J. Willard, P.Eng., considered the application and intervention by way of a written proceeding that closed on September 17, 2003. Those who participated in the proceeding are list in Appendix 1.

2.2 Background

Presently, the NE/4 and SW/4 of Section 8 and N/2 and SW/4 of Section 17 are subject to one LSD drilling spacing unit (DSU) with target area SE/4 of LSD and 50 m from the boundary and within the sides of the quarter LSD. Section 16 is subject to one-half LSD DSU with E/2 and

W/2 orientation and target SE/4 or NW/4 of LSD and 50 m from the boundary and within the sides of the quarter LSD. The relevant provisions of Order SU 3028 are attached as Appendix 2.

The EUB initially issued the notice of Application in March 2001. At that time, the EUB received an objection to the application from the Aplins. Further processing of the application was deferred at the request of CNRL to permit an opportunity to resolve the concerns raised through the appropriate dispute resolution process and negotiations. However, the parties were unable to resolve their differences.

3 ISSUES

The Board considers the issues respecting the application to be

- the need for special reduced oil well spacing (holding), and
- potential impacts.

4 NEED FOR SPECIAL REDUCED OIL WELL SPACING (HOLDING)

4.1 Views of CNRL

CNRL submitted that special oil well spacing was needed both to improve recovery of heavy oil from the Mannville sands by drilling at optimal geologic locations and to increase flexibility in locating well sites to minimize or eliminate any adverse effect on the Aplins.

CNRL noted that the well located at 16-8-51-1W4 was drilled outside of its designated target area but was not subject to off-target penalties.

CNRL emphasized that Order SU 3028 permitted one well per LSD in Sections 8 and 17 and two wells per LSD in Section 16 for each producing target. It stated that it was not seeking any amendment to the existing DSU for the area and noted that the establishment of the holdings would not result in a greater number of wells being drilled than already permitted. CNRL submitted that the holdings provided more flexibility to drill wells at optimum locations and permitted it to directionally drill multiple wells from single pad. It further stated that the approval of holdings would allow for more flexibility in dealing with potential conflicts with the Aplins' surface operations.

4.2 Views of the Aplins

The Aplins did not comment on the need for reduced spacing. However, they submitted that the application should be denied or amended to ensure that the holdings as proposed would not create the possibility of reduced spacing. They stated that CNRL provided no evidence to support reduced spacing, such as additional wells being necessary to drain reserves at a reasonable rate or the DSUs in the area of application being in a pool where DSUs of such reduced size existed. They further added that if CNRL's purpose was to create flexibility in downhole targets, it should request an amendment to clauses 6(16) and 6(18) of Order SU 3028 to expand the target area.

The Aplins believed the purpose for the subject application was to effectively reduce the spacing, to avoid off-target penalties for CNRL's current off-target wells, and to ease the way for a future downspacing application.

4.3 Views of the Board

The Board acknowledges that the need for one LSD and one-half LSD DSUs, at least as these reduced DSU sizes are related to improved recovery from the Mannville Formation and associated pools, was addressed during the consideration of the application that resulted in the issuance of the existing SU Order. The Board did not find any evidence presented that would cause it to review the original need for reduced spacing, nor is the Board being asked to consider the need for any further reduction in the size of the DSUs beyond what is already approved. Therefore, the Board will restrict its review to the need for the holding as it relates to the need for increased flexibility to attain optimal subsurface (bottomhole) locations for the wells, while at the same time increasing CNRL's ability to address surface locations for future wells that may be drilled in accordance with the holding.

Having considered all of the evidence, the Board finds that the approval of the holding will provide increased flexibility in the location of wells from both a subsurface and a surface perspective and thus will allow CNRL much more opportunity to address the Aplins' concerns related to wells that may be drilled in accordance with the conditions of the holding. The approval of the holding would clearly remove any restrictions that would otherwise be associated with the specified target areas prescribed under the existing SU Order. The Board also notes that the conditions respecting interwell distance, the distance from the boundaries of the holding, and the number of wells/pool/LSD are consistent with other holdings approved for the Mannville Formation in the Lloydminster Field.

The Board wishes to make it very clear to all parties that the approval of the holding will not provide for or allow the drilling of any more wells than could have otherwise been permitted under the existing SU Order, nor will it result in the reduction of the spacing unit size beyond that already approved. The Board also emphasizes that approval of the applied-for holding does not alleviate the necessity for CNRL to submit well licence applications for any wells to be drilled within the proposed holding. CNRL would also be required to submit an application for any further reduction in the effective size of the DSUs. All of the aforementioned applications will be considered on their own merits and in full compliance with the EUB's procedures and practices respecting the handling and disposition of new applications.

5 POTENTIAL IMPACTS

5.1 Views of CNRL

CNRL submitted that the Aplins did not raise any concerns related to the establishment of holdings and stressed that any future wells on the Aplins' lands would be subject to the EUB's application requirements. It explained that approval of the holdings could result in fewer well sites on the Aplins' lands, as the holding would allow CNRL more flexibility to directionally drill multiple wells from one pad.

In response to the Aplins' suggestion that approval of the current application was a precursor to future reduced spacing applications, CNRL submitted that presently it had no intention to apply for further reduction in the sizes of DSUs. However, CNRL acknowledged that in the future if it desired to do so, it would be required to submit an application to the EUB pursuant to Section 4.040 of the OGCR, which would be subject to EUB's normal processes and decided on its own merits. CNRL also recognized that the Aplins would have the opportunity to object at that time.

CNRL maintained that Part 4 of the OGCR limited well density of one well per DSU per pool, not one well per the Mannville group, as suggested by the Aplins. It further argued that there was no provision in Part 4 of the OGCR or the Act that restricted the development of more than one pool underlying the same surface location at the same time.

CNRL recognized that the location of well sites could be critical to the Aplins. However, it argued that the Aplins' concerns about the impacts of well density and location on their water supply and farming operations could be addressed when CNRL submitted its application for well licences and well site locations. The applicant further added that it would continue to work with the Aplins to address their concerns. However, it concluded that these matters were not pertinent to the current application and therefore requested that the subject application be approved.

5.2 Views of the Aplins

The Aplins argued that the application should be denied for two reasons. First, if approved, it would create a potential for more surface locations, and second, it would create a foundation for easier future reduced spacing applications. The Aplins stated that increased well density on their lands could negatively affect their water wells and would make it impossible to use available and future farm equipment with GPS guidance systems.

The Aplins argued that the existing spacing orders restricted drilling such that there could not be more than one well in the subsurface vertically beneath each LSD in Sections 8 and 17 or one well for the entire Mannville Group located vertically beneath each LSD in Sections 8 and 17. They further added that approving the application and suspending the requirements of Part 4 of the OGCR would allow CNRL to drill more than one well per LSD. They argued that depending on the price of oil, CNRL would be tempted to develop two or more wells simultaneously to exploit two pools simultaneously. They further argued that if approval of the application created the possibility of greater well density, they expected that there would be more than one well per LSD in Sections 8 and 17 and more than two wells per LSD in Section 16.

The Aplins agreed with CNRL that concerns related to well site location should be addressed when the well licence applications were filed. However, they stated that concerns related to well density must be addressed in the current application. They argued that the current application would definitely create the potential of increased well density and that their concerns must be addressed now.

The Aplins concluded that the current application should be amended to prevent inadvertent increased well density or, alternatively, that the application should be denied on the grounds that CNRL presented no evidence to justify an increase in well density. Finally, the Aplins requested EUB to provide clarification on the following issues:

- Is it possible to have more than one well per LSD in Sections 8 and 17 under the current Order SU 3028?
- Is it possible to have more than two wells per LSD in Section 16 under the current Order SU 3028?
- Does the suspension of Part 4 of OGCR as provided by Clause 8 of Order SU 3028 resulting from the establishment of holdings make it possible for CNRL to operate more than one well per LSD in Sections 8 and 17 simultaneously?
- Does the suspension of Part 4 of OGCR as provided by Clause 8 of Order SU 3028 resulting from the establishment of holdings make it possible for CNRL to operate more than two wells per LSD in Section 16 simultaneously?

5.3 Views of the Board

The Board notes that the establishment of the applied-for holdings with the proposed conditions would not change the number of wells that CNRL is permitted to produce per pool per DSU. The Board also notes that the holdings will provide the flexibility to choose optimum subsurface and surface locations, which, in the opinion of the Board, is in the best interests of both.

With respect to the Aplins' concern that the approval of the subject application will lead to further reduction in spacing and make it easier for CNRL to obtain approval for any future reduced spacing applications, the Board emphasizes that any further reduction in spacing for the area of application will require a separate application pursuant to Section 4.040 of the OGCR. A new application would be subject to EUB's normal processes and decided on its own merits. Also, if a further reduced spacing application for the area is filed by CNRL, the Aplins will have the opportunity to have any questions and concerns addressed by CNRL and, if necessary, the opportunity to file a formal objection with the Board.

The Board believes that the impact concerns raised by the Aplins are directly related to the physical location and drilling of the wells that could be drilled under the terms and conditions of the holding should CNRL's application be approved. Given that the number of wells that could be permitted under the holding is the same as the number of wells permitted under the existing SU Order and that the approval of the holding would, in fact, increase CNRL's ability to respond to any surface or subsurface concerns, the Board is satisfied that the appropriate occasion to address these concerns is at the well-licensing stage.

The existing DSU size for the area of application is governed by Order SU 3028, which stipulates one well per LSD for Section 8 and 17 and two wells per LSD for Section 16 for the Mannville Formation, with defined target areas as specified in the order. While the SU Order is silent with respect to the number of wells that can be produced per pool within the Mannville Formation, the Board wishes to make it very clear that Part 4 of the OGCR regulates the well density to one producing well per DSU per pool, with the bottomhole location of that well to be located within the defined target area for the DSU. This regulation does not limit the number of wells that can be drilled as interpreted by the Aplins. The Board notes the Aplins' discomfort that multiple pools have the potential to require multiple wells to be drilled. However, normal operating practices include investigation of alternatives both to limit surface impacts and to

manage capital investments. Where applicable, wells may dually produce segregated production from more than one pool or commingle multiple pools in the same wellbore. In other cases, individual pools may be produced sequentially over an extended time or additional wells drilled to replace poor or damaged wells.

The Board is satisfied that the terms and conditions applied for by CNRL for the proposed holding would permit exactly the same number of wells to be drilled as under the existing SU Order if all of the DSUs were drilled out to their full potential. This position is confirmed by the fact the size of the effective DSUs will not change under the proposed holding and the condition that stipulates that no more than one well per pool per DSU can be drilled within the application area.

The Board understands that the Aplins may have been confused as to the number of wells that could be drilled under the existing SU Order. However, the Board wishes to make it clear that that the number of possible wells will not change as a result of the approval of the holding application.

The Board is satisfied that the Aplins' concerns respecting the potential for an increased number of wells being drilled will be addressed by the well stipulation condition that CNRL has proposed for inclusion in the holding approval. The Board will include this condition in the approval. The Board finds that removal of the defined target areas and the flexibility in locating wells with respect to surface and subsurface locations that this generates support the approval of the holding. In that regard, the Board is satisfied that the approval of the holding will enhance CNRL's ability to address the Aplins' subsurface and surface concerns related to the location and drilling of any future wells. This should also enhance CNRL's ability, for example, to drill multiple wells from appropriately located pad sites. CNRL may also be able to drill a single favorable geological location instead of two offset locations.

Dated at Calgary, Alberta, on November 4, 2003.

ALBERTA ENERGY AND UTILITIES BOARD

<Original Signed By>

J. Nichol, P.Eng.
Presiding Board Member

<Original Signed By>

G. J. Miller
Board Member

<Original Signed By>

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

APPENDIX 1 THOSE WHO PARTICIPATED IN THE PROCEEDING

Principals and Representatives
(Abbreviations used in report)

Witnesses

Canadian Natural Resources Limited (CNRL)

T. R. Davis

J. and C. Aplin (the Aplins)

T. Weiss

Alberta Energy and Utilities Board staff

J. P. Mousseau, Board Counsel

K. Fisher

S. Mangat

APPENDIX 2

THE PROVINCE OF ALBERTA
OIL AND GAS CONSERVATION ACT
ALBERTA ENERGY AND UTILITIES BOARD
ORDER NO. SU 3028

An order prescribing drilling spacing units in the
Lloydminster Area

The Alberta Energy and Utilities Board, pursuant to the Oil and Gas Conservation Act, being chapter O-5 of the Revised Statutes of Alberta, 1980, hereby orders as follows:

1. This order designates special drilling spacing units (DSUs) for each well for the production of oil or gas from specified geological formations, members or zones in the Lloydminster Area.
2. The areas subject to special DSUs and their target areas are set out in clause 4 and are shown on the appendices hereto attached.
3. For the purposes of this order, a legal subdivision (Lsd) shall be divided into quarters by lines drawn as follows: the East-West line shall be parallel to and 200 metres (m) North of the South boundary of each Lsd in the section and each North-South line shall be parallel to and 200 m West of the East boundary of each Lsd in the section.
4. For the purpose of the clauses applicable the target area shall have sides 50 m within the sides of the quarter Lsd in which it is located and parallel to them.
5. The DSU, its orientation where applicable, its target area in accordance with an applicable section of the Oil and Gas Conservation Regulations, appendix reference number (REF.NO.), the formation (FM), member or zone it applies to, whether it pertains to oil or gas and special provisions are in accordance with the following format.

DSU
(ORIENTATION)
TARGET AREA
REGULATION

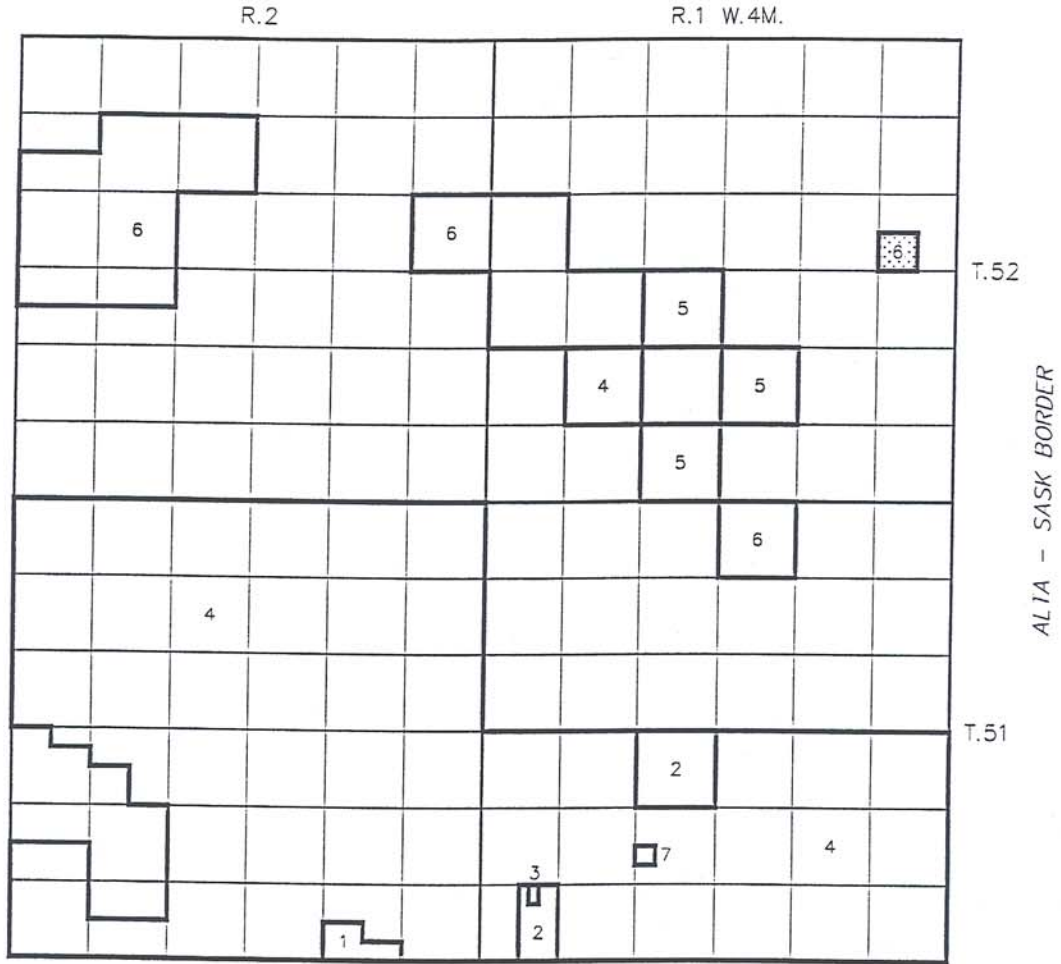
APPENDIX - REF. NO.
FM., MEMBER OR ZONE
OIL OR GAS
SPECIAL PROVISIONS

6. The DSUs in the Lloydminster Area shall be designated as follows:

(1) One quarter Lsd
Central area
Clause 4 hereof

A 1-1
Mannville
Oil

- | | | |
|------|---|---------------------------|
| (12) | One Lsd
South-east quadrant
Clause 4 hereof | A 2-4
Mannville
Oil |
| (13) | One Lsd
North-east quadrant
Clause 4 hereof | A 2-5
Mannville
Oil |
| (14) | One Lsd
South-west quadrant
Clause 4 hereof | A 2-6
Mannville
Oil |
| (15) | One quarter Lsd
Central area
Clause 4 hereof | A 3-1
Mannville
Oil |
| (16) | One half Lsd
(East/West half of Lsd)
South-east or North-west quadrant
Clause 4 hereof | A 3-2
Mannville
Oil |
| (17) | One half Lsd
(East half of Lsd)
South-east quadrant
Lsd 15 | A 3-3
Mannville
Oil |
| (18) | One Lsd
South-east quadrant
Clause 4 hereof | A 3-4
Mannville
Oil |
| (19) | One Lsd
North-west quadrant
Section 4.030(2)(e) | A 3-5
Mannville
Oil |
| (20) | One Lsd
Central area
Section 4.030(1)(c) | A 3-6
Mannville
Oil |
| (21) | One Lsd
South-east quadrant
Lsd 5 | A 3-7
Mannville
Oil |
| (22) | One quarter Lsd
Central area
Clause 4 hereof | A 4-1
Mannville
Oil |

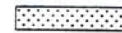


LLOYDMINSTER AREA



APPENDIX A3 TO ORDER NO. SU 3028

AS AMENDED BY ORDER NO. SU 3028E AREA OF CHANGE

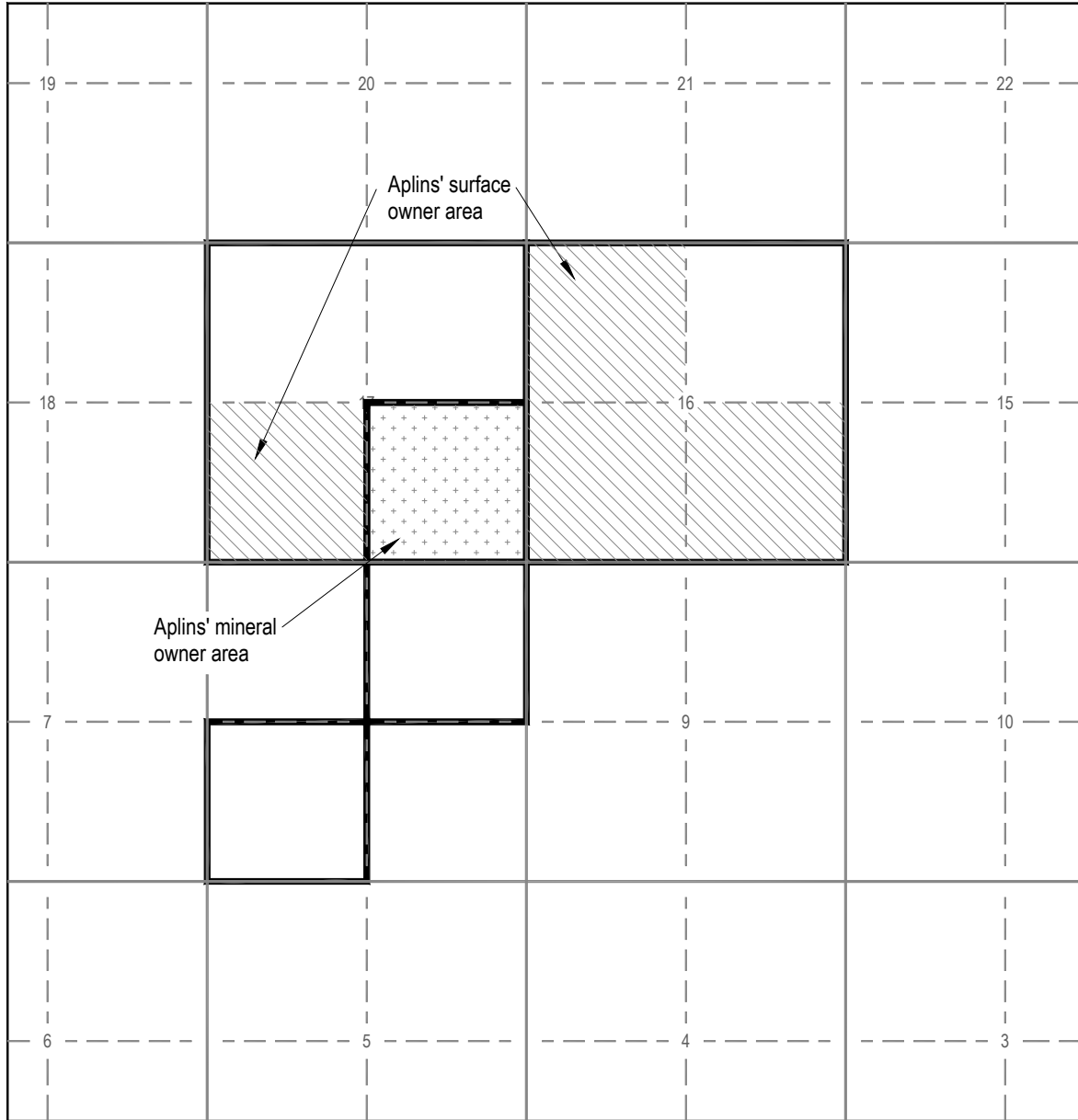


PREVIOUS ORDER NO. SU 2956

REFERENCE:




1. ONE QUARTER LEGAL SUBDIVISION-MANNVILLE-OIL-TARGET: CENTRAL CLAUSE 4
2. ONE HALF LEGAL SUBDIVISION-E1/2,W1/2-MANNVILLE-OIL-TARGET: SE OR NW1/4 CLAUSE 4
3. ONE HALF LEGAL SUBDIVISION-E1/2-MANNVILLE-OIL-TARGET: SE1/4 LSD 15
4. ONE LEGAL SUBDIVISION-MANNVILLE-OIL-TARGET: SE1/4 CLAUSE 4
5. ONE LEGAL SUBDIVISION-MANNVILLE-OIL-TARGET: NW1/4 4.030(2)(e)
6. ONE LEGAL SUBDIVISION-MANNVILLE-OIL-TARGET: CENTRAL 4.030(1)(c)
7. ONE LEGAL SUBDIVISION-MANNVILLE-OIL-TARGET: SE1/4 LSD 5

R.1W.4M.



T.51

Legend

-  Application boundary (excludes Aplins' mineral owner area)
-  Aplins' surface owner area
-  Aplins' mineral owner area

Proposed holdings area