Potash deposits in the Devonian Prairie Evaporite, southwestern Manitoba

M.P.B. Nicolas

Potash Geology

1. Introduction

The Potash deposits in the southeastern part of the Precambrian craton are the leading contributors to Canada's potash production. They were discovered in the late 1940s and early 1950s through oil exploration. The deposits are located in the Prairie Evaporite Formation of Devonian age, which is a large-scale evaporite sequence that extends across the Canadian prairies.

2. Regional and Local Geology

The Potash deposits in southwestern Manitoba are part of the larger potash province of the Canadian prairies, which includes deposits in Saskatchewan, Alberta, and parts of the United States. The Prairie Evaporite Formation in this region is up to 2 km thick and is composed of a variety of evaporite minerals, including halite, anhydrite, and sylvite. The deposits are hosted by the Esterhazy Member, which is the most economic potash beds.

3. Esterhazy Member

The Esterhazy Member is known for its high-grade potash deposits, with grades ranging from 7% to 10% K₂O. The deposits are characterized by a halite-sylvite-silicate (HSS) assemblage, with sylvite being the dominant mineral. The Esterhazy Member is known for its high-grade potash deposits, with grades ranging from 7% to 10% K₂O. The deposits are characterized by a halite-sylvite-silicate (HSS) assemblage, with sylvite being the dominant mineral. The Esterhazy Member is the most economic potash beds of the Prairie Evaporite Formation. It is dominated by sylvite and is also known to contain halite, anhydrite, and other minerals.

4. Potash occurrences

The distribution of potash occurrences in Saskatchewan and Manitoba is shown in Figure 4. Potash occurrences are found in several areas, including the Russell-McAuley area, the Kilborn area, the St. Lazare area, and the Bellevue area. The Potash deposits in these areas are part of the larger potash province of the Canadian prairies, which includes deposits in Saskatchewan, Alberta, and parts of the United States. The Prairie Evaporite Formation in this region is up to 2 km thick and is composed of a variety of evaporite minerals, including halite, anhydrite, and sylvite. The deposits are hosted by the Esterhazy Member, which is the most economic potash beds.

5. Russell-McAuley Area

The deposits in the Russell-McAuley area are the largest deposits in the Prairie Evaporite Formation. They are part of the larger potash province of the Canadian prairies, which includes deposits in Saskatchewan, Alberta, and parts of the United States. The Prairie Evaporite Formation in this region is up to 2 km thick and is composed of a variety of evaporite minerals, including halite, anhydrite, and sylvite. The deposits are hosted by the Esterhazy Member, which is the most economic potash beds.

6. Potash Resource

Table 1: Mineral resource estimates for the Russell and McAuley areas in southwestern Manitoba.

<table>
<thead>
<tr>
<th>Year</th>
<th>Deposit</th>
<th>Company</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956-1966</td>
<td>Russell</td>
<td>MPC</td>
<td>29W1, 39W1, 49W1, 59W1, 69W1, 79W1</td>
</tr>
<tr>
<td>1964-1966</td>
<td>McAuley</td>
<td>MPC</td>
<td>39W1, 49W1, 59W1, 69W1, 79W1</td>
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<tr>
<td>1980-1985</td>
<td>Russell</td>
<td>BHP Billiton</td>
<td>29W1, 39W1, 49W1, 59W1, 69W1, 79W1</td>
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<tr>
<td>1996-1998</td>
<td>McAuley</td>
<td>BHP Billiton</td>
<td>29W1, 39W1, 49W1, 59W1, 69W1, 79W1</td>
</tr>
<tr>
<td>2001-2003</td>
<td>Russell</td>
<td>Micon</td>
<td>29W1, 39W1, 49W1, 59W1, 69W1, 79W1</td>
</tr>
<tr>
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<td>McAuley</td>
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<td>29W1, 39W1, 49W1, 59W1, 69W1, 79W1</td>
</tr>
</tbody>
</table>

Figure 10: Map of southwestern Manitoba showing the distribution of potash occurrences. The Potash deposits in the Russell-McAuley area are shown, as are the northern (Russell deposit) and the southern (McAuley deposit) blocks. The deposits are part of the larger potash province of the Canadian prairies, which includes deposits in Saskatchewan, Alberta, and parts of the United States. The Prairie Evaporite Formation in this region is up to 2 km thick and is composed of a variety of evaporite minerals, including halite, anhydrite, and sylvite. The deposits are hosted by the Esterhazy Member, which is the most economic potash beds.

7. Exploration History

The discovery of potash in Manitoba was in an oil well drilled in 1951 at 15-18-10-W2R39W1. This discovery was followed by a series of exploration activities between the 1950s and 1970s, primarily focused on the Russell-McAuley area. The discovery of potash in Saskatchewan was in an oil well drilled in 1956 at 19-21-2-W2R49W1. This discovery was followed by a series of exploration activities between the 1950s and 1970s, primarily focused on the Kilborn area.

References

