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COMBINED REPORT:
YEAR 1 ANNUAL & FINAL
18/09/2012 to 24/04/2013
LIME CREEK (EL 29281)
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Any information included in the report that has been originated or sourced from historical open file reports or other sources is listed in the “Exploration Studies - Historic” section within the document.

The Minister has authority to publish the copyrighted information accordingly.
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Summary

Section 94 of the *Mineral Titles Act* requires the submission of reports prepared by the titleholder for each Exploration Licence about the authorised activities conducted under the title and other matters relating to the title. The following report is a combined Year 1 Annual and Final Report for Exploration Licence (EL) 29281, known to NRE as its ‘Lime Creek Prospect’, prepared by Natural Resources Exploration (‘NRE’).

NRE’s exploration rationale and objectives for its Lime Creek Prospect considered the evaluation of potential phosphate, manganese and base metal mineralisation. Investigations were intended to locate any outcropping of mineralisation and any indicators of any sub-surface mineralisation within the tenement. NRE carried out a detailed geological assessment of EL29281 including considerable research and extensive office-based studies. Research included review and compilation of the data in the Northern Territory Geological Services’ (‘NTGS’) open file reports, air photo imagery and examination of the latest geological maps.

Based on the assessment of the activities conducted within EL29281 itself, NRE made application to the Department to completely surrender the entire title for EL29281 under section 103 of the *Mineral Titles Act*.

The purpose of the following combined Annual and Final Report for EL29281 is to provide a summary of the activities carried out over the entire area of EL29281 up to the time when the title ceased to be in force, including any results produced by those activities.

NRE believes that there is no rehabilitation required in relation to EL29281 as no field based activities have been undertaken within the tenure nor have any works involving land disturbance been carried out during the term of the licence.
1. **Introduction**

Natural Resources Exploration (‘NRE’) was granted EL 29281 on 18 September 2012, consisting of a total of 163 sub-blocks. EL29281 is located in the east of the Northern Territory, approximately 300 kilometres northeast of Alice Springs.

NRE’s exploration rationale and objectives for EL29281 considered the evaluation of phosphate, manganese and base metal mineralisation.

Based on the exploration activities conducted on EL29281, NRE made application to the Department to completely surrender the entire title for EL29281 under section 103 of the *Mineral Titles Act*. EL29281 was surrendered on 24 April 2013. During the entire term of its licence period, NRE was the sole titleholder and operator of EL29281.

NRE carried out a detailed geological assessment of EL29281 including considerable research and extensive office-based studies up until the title ceased to be in force over all of the title area. Research included review and compilation of the data in the Northern Territory Geological Services’ (‘NTGS’) open file reports, air photo imagery and examination of the latest geological maps.
2. **Tenure**

EL29281 was granted to NRE on 18 September 2012 consisting of 163 sub-blocks and covering an area of approximately 516.44 square kilometres.

*Table 1* lists the pertinent tenement details.

*Table 1. Tenement Details*

<table>
<thead>
<tr>
<th>Name</th>
<th>EL</th>
<th>Sub blocks</th>
<th>Sq. Km</th>
<th>Status</th>
<th>Grant Date</th>
<th>Surrender Date</th>
</tr>
</thead>
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<tr>
<td>Lime Creek</td>
<td>29281</td>
<td>163</td>
<td>516.44</td>
<td>Surrendered</td>
<td>18-Sep-2012</td>
<td>24-Apr-2013</td>
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</table>

Native Title and Recorded Sites

EL29281 has multiple recorded sacred sites, registered sacred sites and restricted work areas within the tenement boundaries.

Pastoral Leases

EL29281 overlies one (1) Pastoral Lease, namely, ‘Tarlton Downs’ NT Por 367 PPL 898. The location of the Pastoral Leases in relation to EL29281 is shown in *Figure 1* below.
2.1 Location and Access

Location and Access

EL29281 is located in the east of the Northern Territory, approximately 300 kilometres north east of Alice Springs. The tenement lies just to the north of the Plenty Highway and unpaved tracks cross the tenure. The location and access of the tenure is shown in Figure 2 below.
2.2 Topography and Drainage

The topography across the tenure is predominantly gently undulating, with elevation ranging between 375 meters and 267 metres above sea level. The minor creeks and streams found in the area predominantly run north-south with the watershed to the east and west.

*Figure 3* shows the topography within EL29281.
3. Geology

3.1 Regional Geology

EL29281 overlies the Georgina Basin with the Aileron Province (Arunta Region) to the south west see Figure 4. The Georgina basin is a large intracratonic basin which is Neoproterozoic to Palaeozoic and was initiated as part of the Centralian Superbasin. It lies across the Queensland/Northern Territory border and occupies an area of approximately 325 000 km².

The Georgina Basin is aged between 850 Ma to 355 Ma and overlies the Aileron Province, Tennant Region, Murphy Inlier, McArthur and South Nicholson Basins and Lawn Hill Platform. The basin deepens towards the south along the margin with the Arunta Region and can be up 3.7 km thick.
The basin consists of mainly Cambrian to middle Ordovician marine sedimentary rocks. The Cambrian to early Ordovician rocks are essentially marine carbonate rocks with minor sandstone and siltstone. The middle Ordovician rocks are dominated by siltstone and sandstone. The early Palaeozoic Georgina Basin succession underlies the Silurian to Devonian freshwater sandstone and Permian boulder beds.

Deposits have been found of sedimentary phosphate including the Wonarah phosphate deposit. Several lead-zinc occurrences have also been located along the southern margin and oil is found throughout the basin. This basin is considered a major exploration target for sedimentary phosphate and there is also exploration for base metals, diamonds, manganese, oil and gas.

The Arunta Region includes the Aileron Province of Palaeoproterozoic age, the Warumpi Province of Palaeoproterozoic age and the Irindina Province of Neoproterozoic to Carboniferous age. The Aileron Province can be divided into two sequences: the Strangways Metamorphic Complex and the younger Oonagalabi Assemblage. The Irindina Province consists of the Harts Range Group.

The Strangways metamorphic complex can be split into three groups: the Lander Package, the Ongeva Package and the Cadney Package. The Lander package is aged between 1865 Ma and 1820 Ma and consists of: tubiditic pelites and psammites. The Ongeva Package is aged between 1810 Ma and 1790 Ma and consists of: metapelitic and metapsammitic rocks with subordinate calc-silicate, marble and felsic and mafic orthogneiss. The Cadney Package is aged between 1780 Ma and 1730 Ma and consists of: marbles and calc-silicates.

The Oonagalabi Assemblage contains one sequence called the Ledan Package. The Ledan package is aged between 1770 and 1730 Ma and includes pelitic and psammitic metasediments that unconformably overlie the Strangways Metamorphic Complex.

The Warumpi Province can be split into three groups: the Madderns Package, the Yaya Package and the Iwu'pataka Package. The Madderns Package is aged between 1690 to 1670
Ma and includes K calc-alkaline felsic magmatism. The Yaya Metamorphic Complex is aged between 1660 and 1640 Ma and contains mudstones, sandstone, calc-arenites and mafic extrusives/intrusives. The Iwuputaka Metamorphic Complex is aged between 1630 and 1610 Ma and contains schist and amphibolite.

Finally, the Irindina Province consists of the Harts Range Group. The Harts Range Group is aged between 850 Ma and 500 Ma and contains a complex assemblage of granite gneiss, marble, calc-silicate, amphibolite, psammites and pelites which has gone under metamorphism. The regional geology is shown below in Figure 4.

**Figure 4. Regional Geology Map**
3.2 Permit Geology

The permit geology of EL29281 is outlined below.

Unconsolidated Sediments

This unit is Cenozoic in age and is comprised of alluvium: sand, minor gravel, silt and clay, claypans, sheetwash: silt, clay, unconsolidated colluvial sand, minor silt, silcrete: laminated, brecciated.

Kelly Creek Formation

This unit is early Ordovician in age and is comprised of quartzose and dolomitic quartz sandstone, siltstone, dolostone, partially dolomitised limestone and minor conglomerate.

Carlo Sandstone

This unit is middle Ordovician (Darriwilian) in age and is composed of quartzose and minor feldspathic sandstone.

Undifferentiated Jurassic – Cretaceous

This unit is Mesozoic in age and is comprised of quartz sandstone, minor mudstone and conglomerate.

Nora Formation

This unit is early Ordovician in age and is composed of micaceous and glauconitic siltstone, claystone, minor dolostone and basal coquinite.

Tomahawk Formation

This unit is early Ordovician and is comprised of quartzose and glauconitic sandstone, minor dolostone, limestone, dolomitic quartz sandstone and conglomerate; interbedded limestone or dolostone and marl at top.

The permit geology for all tenures is illustrated in Figure 5 below.
4. NRE’s Exploration Activities during the Reporting Period

NRE’s exploration program for the first term of EL29281 consisted of an extensive review of the tenement in order to delineate potential phosphate, manganese and base metal surface targets within the area. NRE has been unable to identify any subsurface mineralisation within EL29281 in respect of phosphate, manganese and base metals. NRE believes that no further exploration is warranted within EL29281 at this time.

During the reporting period, NRE made application to the Department to completely surrender the entire title for EL29281 under section 103 of the Mineral Titles Act. EL29281 was surrendered on 24 April 2013.

Figure 5. Permit Geology Map
4.1 Previous Exploration Studies & Assessment

NRE has conducted an extensive review of historic exploration over EL29281. There has been relatively minor historic exploration across the tenement EL29281 in the past. However, geological reconnaissance including: soil sampling, rock chip sampling and stream sediment sampling has been conducted in the surrounding area. The historical exploration across the tenement is outlined below.

Historic

**Normandy Poseidon**

This tenement predominantly extended to the west of EL29281 but did cover small sections of the licence area. Exploration was for base metals and they conducted an EM survey to the west of the Lime Creek tenement. Soil sampling traverses were conducted over magnetically high or geologically interesting areas to the south west of the licence area in May 1990.

**Elkedra Diamonds NL**

EL22529 overlapped most of the tenement and covered vast areas to the north as well. The tenement was explored for base metals and manganese. Elkedra Diamonds NL reprocessed aeromagnetic data (1999 and 1983) for anomaly targets. They also conducted an aerial photography analysis in order to delineate targets. This was followed by a surface sampling program (rock chip, soil and stream sediment) with heavy mineral and geochemical analysis of the samples collected.

Previous exploration has been summarised in Table 2 and location of historic tenements is shown in Figure 6.

**Table 2. Historic Tenures**

<table>
<thead>
<tr>
<th>Tenure</th>
<th>Period</th>
<th>Company Reports</th>
<th>Company</th>
</tr>
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<tbody>
<tr>
<td>EL 23306</td>
<td>2002-2004</td>
<td>CR2004-0611</td>
<td>Elkedra Diamonds</td>
</tr>
<tr>
<td>Tenement</td>
<td>Dates</td>
<td>Report Numbers</td>
<td>Exploration Company</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>EL 22529</td>
<td>2002-2004</td>
<td>CR2004-0609</td>
<td>Elkedra Diamonds</td>
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<tr>
<td>EL 3263</td>
<td>1982-1988</td>
<td>CR1983-0047</td>
<td>Unknown</td>
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<tr>
<td>EL 4527</td>
<td>1984-1990</td>
<td>CR1985-0066</td>
<td>BHP Minerals</td>
</tr>
<tr>
<td>AP 3161</td>
<td>1971-1972</td>
<td>CR1972-0016</td>
<td>Petrocarb Exploration</td>
</tr>
<tr>
<td>EL 1229</td>
<td>1976-1977</td>
<td>CR1977-0102</td>
<td>Carpentaria Exploration Company</td>
</tr>
</tbody>
</table>

Figure 6. Historic tenements over EL29281

5. Reports lodged during the reporting period

NRE believes that no other reports were required to be lodged during this reporting period.

6. Conclusions

Natural Resources Exploration’s (‘NRE’) exploration activities have been focused on delineating surface targets within EL29281. NRE has conducted extensive reviews in
relation to EL29281 and assessment of aeromagnetic, gravity and radiometric data indicates there is no strong anomalism indicative of potential sub-surface mineralisation within the tenure.

NRE believes that this tenure holds low mineral prospectivity and no further exploration is warranted at this time. NRE made application to the Department to completely surrender the entire title for EL29281 under section 103 of the Mineral Titles Act. EL29281 was surrendered on 24 April 2013.

NRE believes that there is no rehabilitation required in relation to EL29281 as no field based activities have been undertaken within the tenure nor have any works involving land disturbance been carried out during the term of the licence.
7. Bibliography


