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## **No. 12,162**

**EL 4392**

**SNOWTOWN**

**ANNUAL REPORT TO LICENCE EXPIRY/SURRENDER,  
FOR THE PERIOD 9/12/2009 TO 8/12/2010**

Submitted by  
Mulgundawa Salt  
2011

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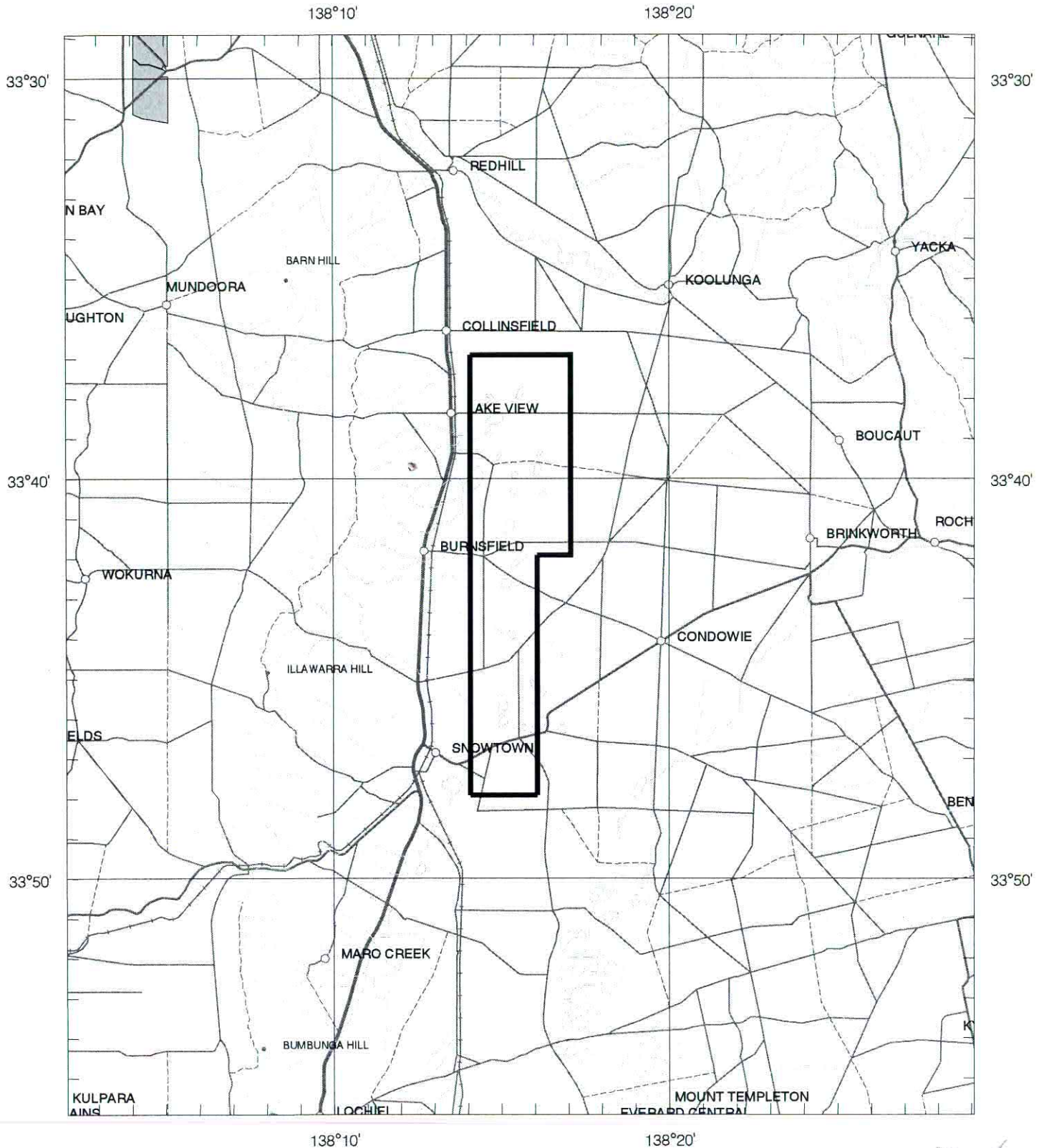
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**Government of South Australia**  
Department for Manufacturing,  
Innovation, Trade, Resources and Energy

# SCHEDULE A



APPLICANT : **MULGUNDAWA INVESTMENTS PTY LTD**

FILE REF : **147/09**

TYPE : **MINERAL ONLY**

AREA : **77 km<sup>2</sup> (approx.)**

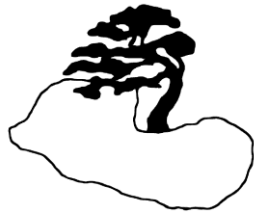
1:250000 MAPSHEETS : **BURRA**

LOCALITY : **SNOWTOWN AREA - Approximately 65 km WSW of Burra**

DATE GRANTED : **09-Dec-2009**

DATE EXPIRED : **08-Dec-2010**

EL NO : **4392**



# Mulgundawa Salt

## Technical Report Annual Report - EL4392



Tenement:	EL4392
Reporting period:	09/12/09 – 08/12/10
Tenement Holder:	Mulgundawa Investments P/L (trading as Mulgundawa Salt)
Contact/Author:	Michael McNamara (Project Manager)
Phone:	08 85358234
Email:	michael@mulgundawasalt.com.au
Site:	Burnsfield Area
Mineral:	Salt (Halite) by solar evaporation
Date:	Jun 2011

## TABLE OF CONTENTS

Summary of all Activities Conducted .....	3
Exploration Index Map.....	3
Introduction, History and Exploration Rationale .....	4
Geology / Hydrogeology.....	4
Geophysics .....	5
Remote Sensing Data .....	5
Surface Geochemistry .....	5
Drilling .....	5
Other Studies or Work.....	5
Environment.....	6
Reporting on Ore Reserves and Resources.....	6
Expenditure Statement .....	6
Conclusions .....	7
References .....	7
Appendices .....	7
Maps, Plans, Images and Cross-sections .....	7

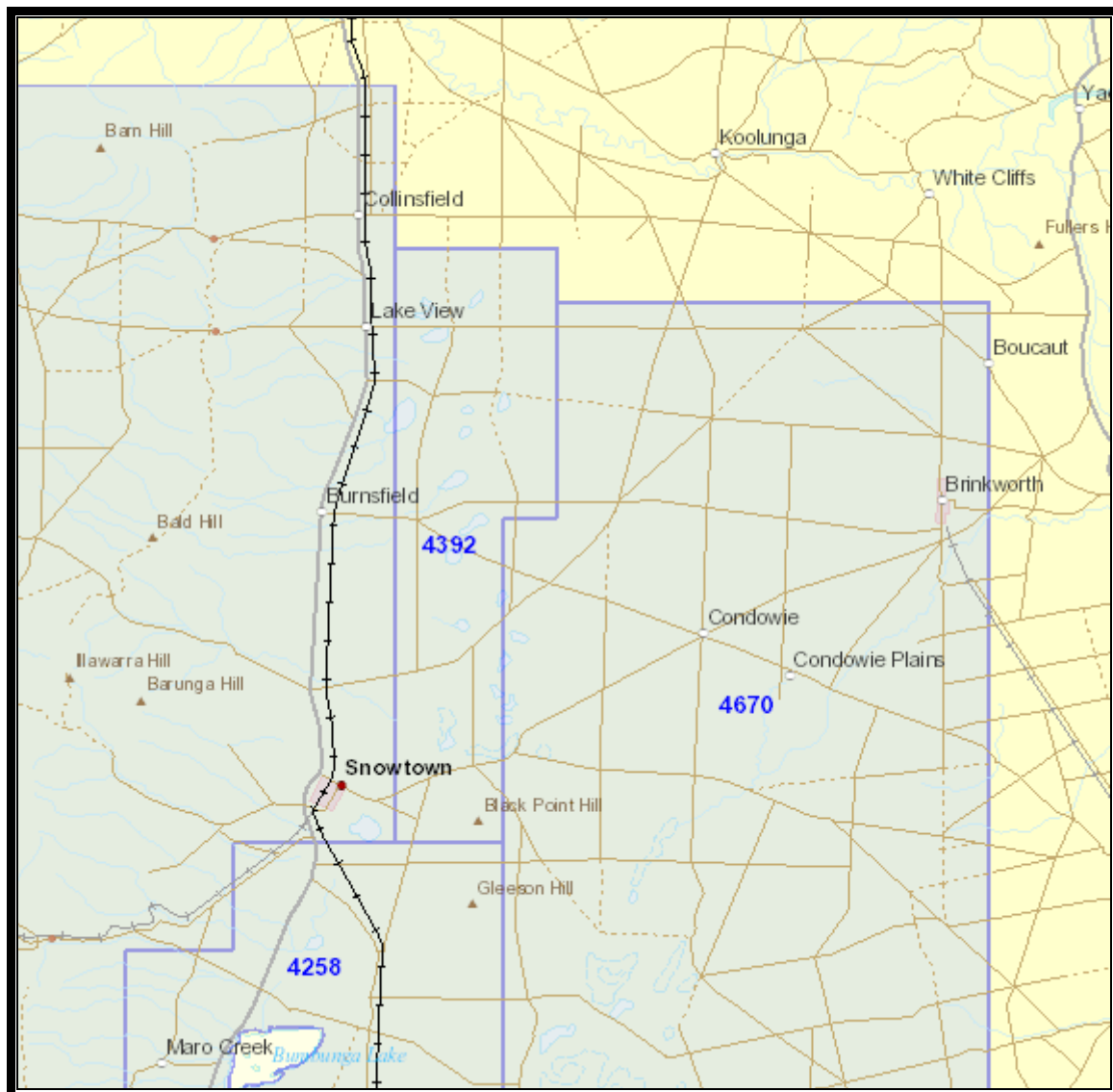


## SUMMARY OF ALL ACTIVITIES CONDUCTED

During the term of the exploration licence held by Mulgundawa Investments Pty Ltd, the company has evaluated the potential of a number of sites for solar salt production. The nature of exploration activity has resulted in an exploration program that has involved relatively minimal intrusive investigation techniques. The process has involved limited sampling of surface waters and salt deposits and has involved no drilling or geophysics.

The majority of the work performed has involved evaluation of the potential of sites within the exploration licence for economic production of salt.

## EXPLORATION INDEX MAP



## INTRODUCTION, HISTORY AND EXPLORATION RATIONALE

Mulgundawa Investments Pty Ltd has a range of salt interests in South Australia where it trades as Mulgundawa Salt. The company presently has operations on a number of lakes in the Brinkley area in the vicinity of Mulgundawa where natural and underground brines are used in the production of salt by solar evaporation. The company operates a manufacturing facility at the Mulgundawa site on PM38 where the unwashed crude salt, harvested from various regional lakes is processed into packaged salt products.

The business produces a range of packaged salt products that are sold domestically, primarily into the hide and skin, pool and stockfeed industries.

Mulgundawa Salt is a regional employer utilising a workforce of 20 personnel on a full time basis. The business also uses casual labour and a range of local contractors to undertake its activities.

Mulgundawa Salt is presently expanding its salt production capacity and is planning to develop a number of regional saline lakes in SA for the supply of salt or the supply of brine. The expansion will provide additional crude salt tonnage as feedstock to the manufacturing operations.

Key aspects of the exploration activity involve the evaluation of potential for salt harvesting operations on a lake at Burnsfield.

Salt mining in the context of the Burnsfield salt lake:

- Salt is classified as mineral and solar salt production and harvesting is a mining operation in South Australia. The existing operations are managed under a plan of operations which has been in place since 2003.
- Whilst classified as mining, the solar salt production process is a very low impact mining activity, with deposit and removal of salt from a lake surface taking place in an annual cycle.
- No traditional underground or surface mining is necessary and minimal disturbance of lake surfaces, surrounding pasture or lake fringe vegetation is required.
- Salt is not a finite resource with groundwater and sea water being common sources of input into solar salt fields. The life of solar salt fields is typically not influenced by the availability of salt water.
- In this case the resource input is naturally fed saline shallow groundwater which reaches the lake surface through springs. The vast quantity in the region and level of recharge makes the resource effectively a renewable one.
- Salt harvesting has been a feature of this and other regions since European settlement and salt production in the Burnsfield area dates back to the late 1800's
- 

Exploration Licence EL4392 was granted to Mulgundawa Investments Pty Ltd on December 9<sup>th</sup> 2009.

## GEOLOGY / HYDROGEOLOGY

The region under investigation is characterised by salinised low lying areas within agricultural land. These areas are effectively terminal lakes with various hydroperiods both between the different locations and also across seasons. Shallow groundwater naturally inundates most of the regional lakes annually with resultant saline to hypersaline surface water covering these lakes through a large portion of the year. Many of these lakes crystallise salt on the lake surfaces and many have been harvested for more than 100 years.

The lake surface naturally interchanges brine with the shallow groundwater system. The evaporation and crystallisation process naturally 'pumps' groundwater to the surface as water evaporates, concentrating the



salts on and near to the surface. The lakes naturally have underlying highly saline to hypersaline brines as a result of this process.

The solar salt production process uses a saline groundwater input source to produce an annual crystalline salt deposit which is harvested. The mineral (halite) is therefore produced from a large regional groundwater source and is not a traditional mined solid ore or mineral.

In practice, the salt production process is not a typical mining operation in that it requires no underground or surface recovery of an ore. The salt production process involves depositing salt in a contained area on the existing land surface. The annual deposit which can be between 50mm and 150mm thick is then physically removed by a mechanical salt harvester. The brine from which the salt precipitates is carefully managed resulting in a higher proportion of sodium chloride. All of the deposit is recovered and leaves the mine site for washing and further processing.

## GEOPHYSICS

No airborne or ground based geophysics has been required or undertaken.

## REMOTE SENSING DATA

No remote sensing activity has been required or undertaken.

## SURFACE GEOCHEMISTRY

Limited sampling and chemical analysis has been undertaken in order to confirm that the chemical composition of ground water at each location approximates sea water composition. No data analysed or supplied

## DRILLING

No drilling has been required or undertaken.

## OTHER STUDIES OR WORK

The target sought in the exploration area is Halite. The resource is present and the exploration activity has mainly involved evaluation of the overall potential for utilising the saline groundwater resource for solar salt production.

The expenditure on the exploration licence has been modest. The majority of the expenditure relates to economic evaluation of the potential of sites within the exploration licence to be developed as solar salt field operations.

Areas within the exploration licence have been identified as viable for solar salt production and tenure applications have been progressed as follows:

MC 4279      Burnsville      Sec283S/Sec283N Barunga      ML Application made Jan11 - Draft MARP advertised Jun 11

## ENVIRONMENT

There are no environmental issues related to the exploration work.

- No drilling or seismic survey work or any other work was required that involved access by anything other than a passenger vehicle.
- There were therefore no clearances that needed to be made at any location within the licence area.
- There were no crossings or diversions of watercourses.
- There was no requirement for construction of any surface or underground structures, buildings or dumps.
- There was no disturbance of the land surface including construction of boreholes, costeans, bulk sample pits or shafts or sumps for drilling mud.
- There was no requirement for ancillary and associated facilities such as camps, water supply and storage, pipelines.

## REPORTING ON ORE RESERVES AND RESOURCES

The mineral sought is halite which is recovered from groundwater and not from an ore body. Ore reserves and resources have not been characterised as part of the exploration process.

## EXPENDITURE STATEMENT

Total expenditure for the period was \$40,657.

Exploration activities during the period included:

- Assessment of potential of salt lakes for solar salt production.
- Assessment of potential of saline groundwater for feedstock for solar salt production.
- Peg Mineral Claims over additional prospective sites for salt production.
- Applications lodged for mining leases in a number of areas in the exploration area.
- Baseline evaluation of environmental and cultural issues likely to affect salt production.
- Design and development of salt field operations.
- Design and planning of conceptual salt field layouts.
- Development of MARP for new operations
- Continued economic assessment of solar salt production.

This summary includes all expenditure to date related to the exploration licence.

Expenditure Detail:

Labour:

Contractors	\$ 5,585
Tenement	\$ 313
Design & Management	\$27,800
LTO searches	\$ 36
Field supplies	\$ 75
Fuel	\$ 140
Vehicle costs	\$ 1404
Overheads	\$ 5304
<b>Total</b>	<b>\$40,657</b>



## CONCLUSIONS

A viable area within the EL has been identified as suitable for solar salt production and applications have been made to secure tenure over these areas.

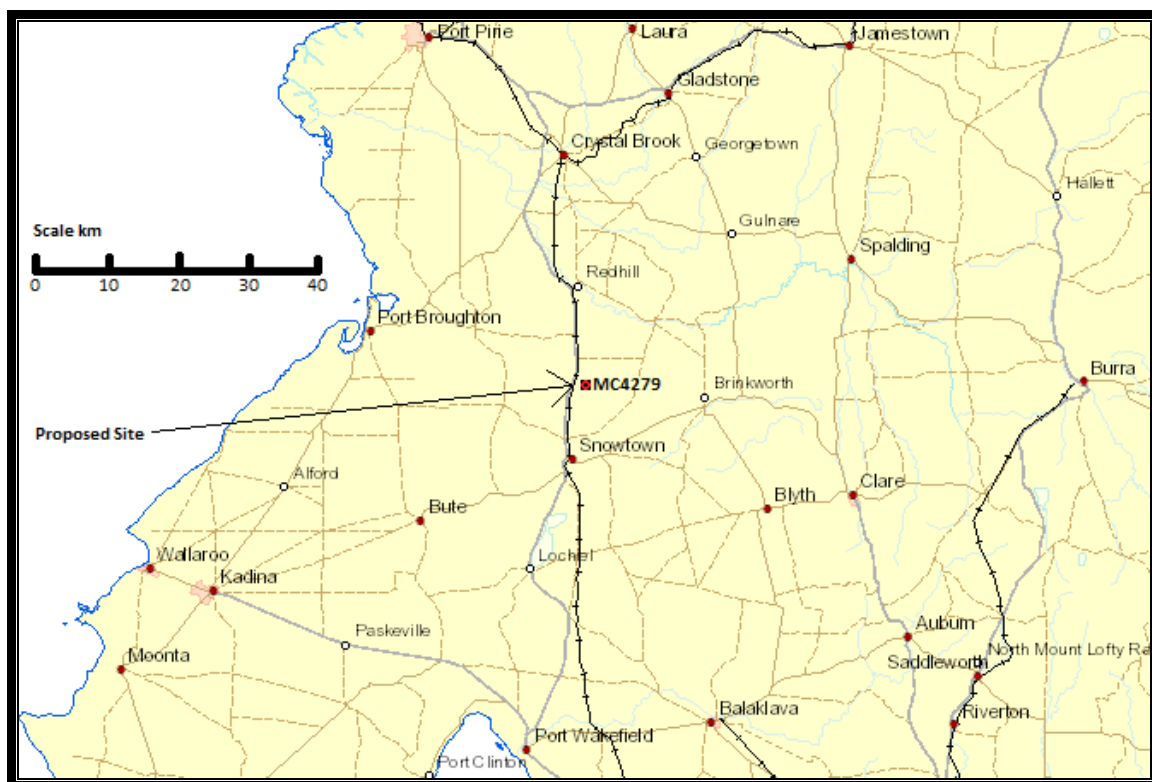
## REFERENCES

N/A

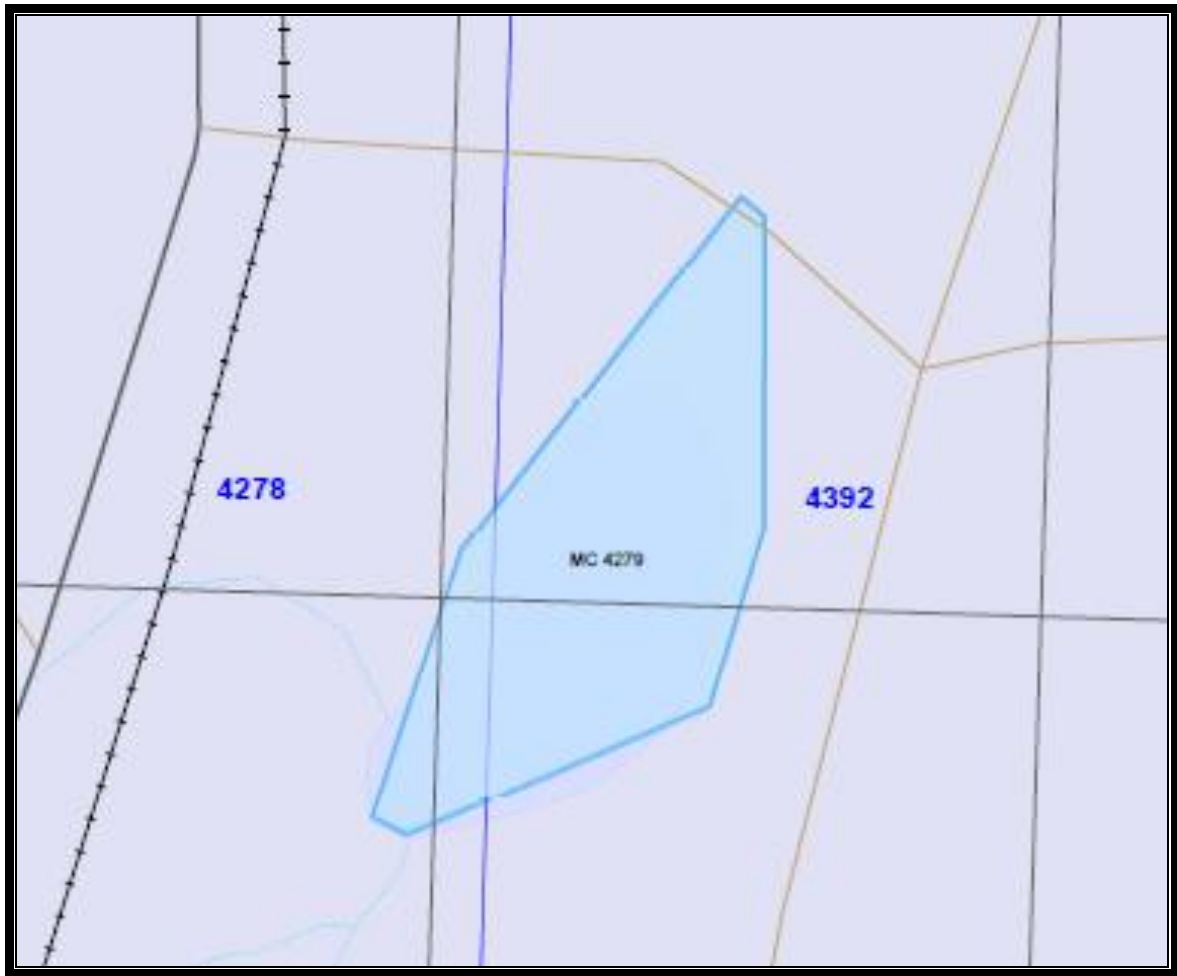
## APPENDICES

Summary Report on EL4392 for six months ending 8/6/10  
Summary Report on EL4378 for six months ending 8/12/10

## MAPS, PLANS, IMAGES AND CROSS-SECTIONS



***Proposed Mining Lease Area as MC4279***



*Mineral Claim Area MC4279*