



**TECHNICAL REPORT ON THE OCA PROSPECT  
COMUNA DE OLLAGUE, PROVINCE OF EL LOA  
REGION OF ANTOFAGASTA CHILE**

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## EXECUTIVE SUMMARY

First Lithium Minerals SpA ("First Lithium") asked the author to evaluate the technical merits of the lithium and potassium exploration in its OCA Prospect area ("Prospect"), located in Ollague, Carcote and Ascotán Salars, in the sector of the municipality of Ollague, El Loa Province, Antofagasta Region, Chile.

The Prospect is located within the Lithium Triangle of South America, which includes parts of the Andean Region of Chile, Bolivia and Argentina, where closed evaporate basins have allowed the development of a series of lithium and potassium brine deposits in the forms of dry salt lakes or terminal 'playas'.

The Prospect is located in the Antofagasta Region, Chile, approximately 200 kilometers northeast of the city of Calama, in the border area with Bolivia, in the municipality of Ollague, and about 360 kilometers from Tocopilla, the closest commercial port on the Pacific Ocean.

The access to the Prospect from the city of Calama is expeditious, through paved roads and highways, with small extensions of dirt roads passable throughout a year, which allow direct access to the sectors of interest. The travel time to access each of the three Salars of interest is approximately 2.5 hours by car from Calama. Calama is an active commercial and mining center with developed industrial, mining and commercial infrastructure.

Power and transportation infrastructure are present and well developed in the area. The Ferrocarril de Antofagasta a Bolivia railway that runs through Ollague, Chile, forms a major transportation corridor between the seaport city of Antofagasta, Chile and the capital of Bolivia, La Paz. Cerro Pabellon Geothermal Power Plant is located approximately 10km south of the southern boarder of the OCA Prospect area.

From the geological point of view, the OCA Prospect belongs to the domain of the Andean Salars, which main economic interest are sodium, potassium, lithium, magnesium and borax salts. (Sernageomin, 2014).

The OCA Prospect is composed of 40 mineral exploration concessions, covering a total area of 8,900 hectares.

The climate in the study area is arid, with rainfall of 60 - 85 mm per year. The evaporation in the area of the salars ranges from a median monthly between of 235 mm/month (Ollagüe) and 229 mm/month (Cebollar). The total annual evaporation varies between 2,823.4 mm (Ollagüe) and 2,748.6 mm (Cebollar).

The work done by the undersigned at the OCA Prospect includes geological mapping, sediment sampling, brine sampling and writing the Technical Report.

Tests of geochemical samples of soil sediments indicated an average of 83.23ppm of Li, 15,500ppm of K, 19,000ppm of Na, and 16,800ppm of Mg. The brine samples taken from the mineral exploration concessions indicated average results of 336.42 mg/l of Li, 309.99 mg/l of Ca, 3,883 mg/l of K, and 4,044 mg/l of Mg. Seven samples of brine were collected in total.

The author considers the OCA Prospect has merits and recommends continuing to explore the concessions using geophysics, specifically a TEM (Transient Electromagnetic) program, and subsequently a drilling program to test brine presence, chemistry of the brine, and physical structure of sedimentary materials in the applicable areas, once any required drilling permits have been obtained.



## 1. INTRODUCTION

First Lithium Minerals Inc., 77 King Street West, Suite 3000, Toronto, Ontario, M5K 1G8, asked the author to evaluate the technical merits of its mineral exploration properties located in the Region of Antofagasta called JENNA, which make up the OCA Prospect.

The mining properties are located in the Ollague, Carcote and Ascotán Salars, in the municipality of Ollague, province of El Loa, Antofagasta Region, in Chile. The area is part of the so-called Lithium Triangle of South America, which includes parts of Chile, Bolivia and Argentina.

The mineral exploration properties were historically under mining exploration concessions for Borates, Sodium Chloride (NaCl) and Potassium (K) and have been the subject of preliminary studies by State Services and Universities to evaluate the commercial production of borates as the primary mineral of interest.

The format and content of this Report are in accordance with the requirements of Canadian National Instrument 43-101 (Disclosure Standards for Mineral Prospects), including Form 43-101 F1 (Technical Report and Accompaniment Policy 43-101CP). The Best Practice Guidelines for Resource and Reserve Estimation for Lithium Brines from CIM were also utilized.

The exploration data used in this Report was obtained by the author and the data has been verified in the field by the author.

The report is based on information about the geological environment of the prospect available in the public domain and the data collected by First Lithium Minerals Inc.

This report was prepared by Aldo Moreno Salinas, Geologist of the University of Chile, and Qualified Person Registered with number 328, in the Qualifying Commission of Resources and Mining Reserves of Chile.



The author is independent of First Lithium Minerals SpA, according to the criteria established in the Canadian National Instrument 43-101, and has experience in geology, processing and development of lithium deposits in Chile. He is a member of the Qualifying Commission of Mining Resources and Reserves of Chile. His education, relevant work experience and certification by the Qualifying Commission, are the specified requirements to be a "Qualified Person" ("QP") for the purposes of the NI 43-101 report.

The author visited the Properties of the OCA Prospect between February 25 and March 15, 2018.

The objectives of the inspection were as follows:

- Review the design and scale of the OCA Prospect Mining Properties, including concession distribution within the Ollague, Carcote and Ascotán Salars, and evaluate rock outcrops, brine occurrences, evidence of mining work and other previous exploration activities.
- Collect some sediment and brine samples from the OCA Prospect concession areas.

The stated objectives with respect to the field review and inspection were fully achieved.





## **2. TRUST IN OTHER EXPERTS**

For the purposes of this Technical Report, the author relied on due diligence and review of the title process concerning exact location of the mineral exploration prospect used to develop the mineral exploration concessions that make up the OCA Prospect. This process was the responsibility of Mr. Juan Bedmar R., Mining Engineer and Surveyor, who is licensed by the National Service of Geology and Mining of Chile. The review of titles and contracts for First Lithium Minerals SpA, was carried out by Mr. Ignacio López, a lawyer who works for Chile Inc. law firm, Pedro de Villagra No 2351, Vitacura, Santiago, Chile.

### **3. LOCATIONS AND DESCRIPTION OF THE PROSPECT**

#### **3.1. LOCATIONS AND ACCESS OF THE PROSPECT**

The OCA Prospect is located in the Salars of Ollague, Carcote and Ascotán, commune of Ollague, province of El Loa, Antofagasta Region, Chile, 215 kilometers Northeast from the city of Calama (Fig. 1).

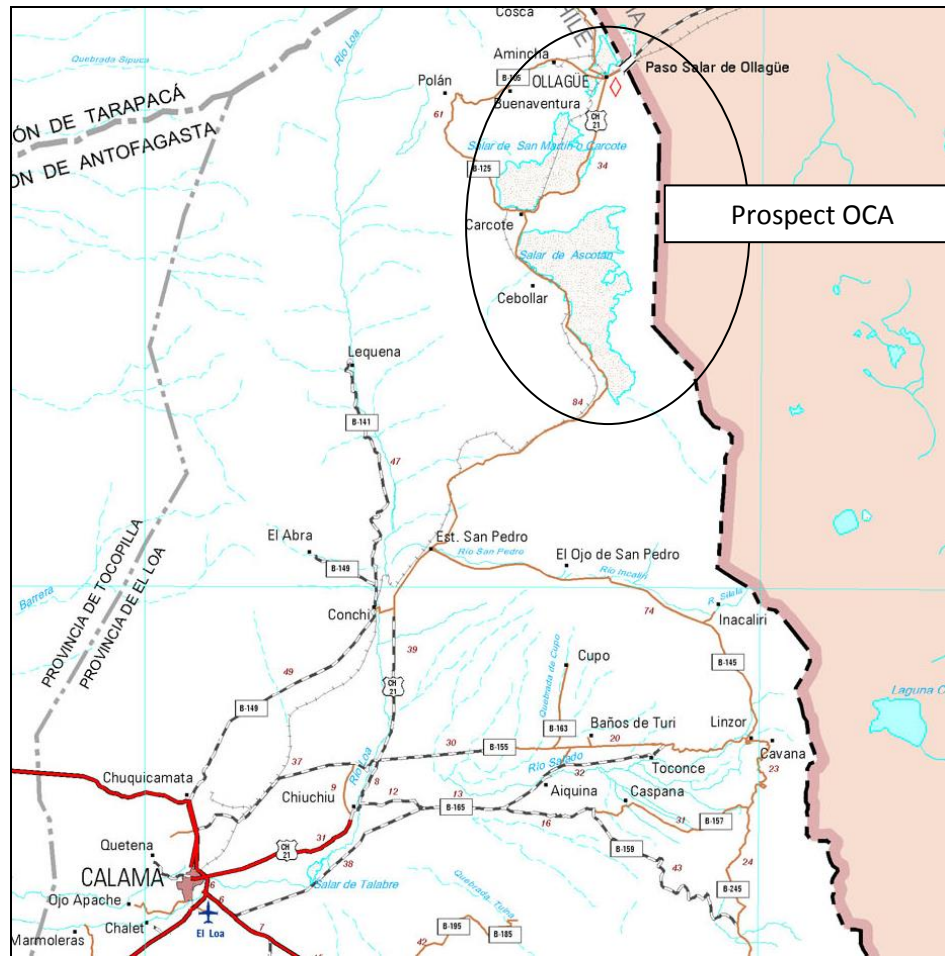
The mineral exploration concessions that form the OCA Prospect are located in the salars of Ollague, Carcote, Ascotan, within the cordilleran sector, bordering Bolivia.

The town of Ollague is at an elevation of 3,960 meters above sea level (“masl”) and is the closest to the OCA Prospect. This town is located 5 kilometers from the border with Bolivia and has a population of approximately 318 inhabitants. It is an altiplanic town that presents an isolated geography.

The town is surrounded by mountain ranges that are part of the Andes Mountain Range. Nearby are the abandoned remains of two old sulfur mines (Aucanquilcha and Ollague Volcano) and a railway station Yuma, which was formerly used when the sulfur mines were under operation.

The railway (The Ferrocarril de Antofagasta a Bolivia, “FCAB”) forms a major transportation corridor between the port city of Antofagasta, Chile and the capital city of Bolivia, La Paz. Historically, primary traffic on the railway has been minerals such as lead-zinc concentrates, nitrates and copper. The railway passes close to the border of all three salars and has a depot and station in the town of Ollague. The town of Ollague is the closest town to all the sectors studied.

The mining concessions for the OCA Prospect are located at an altitude of around 3,700 meters above sea level. The highest elevation is located in the Salar de Carcote (3,750 masl) and the lowest in the Salar de Ollague (3,620 masl).



**Fig. 1 Location of The OCA Prospect**

### 3.2 DESCRIPTION OF THE OCA PROSPECT

First Lithium Minerals SpA is a wholly owned Chilean subsidiary of First Lithium Minerals Inc., Chilean Tax ID N° 76.694.998-3, located at 2351 Pedro de Villagra Street, in the community of Vitacura, in Santiago, Chile.

First Lithium Minerals SpA is the registered owner of the following 40 mineral exploration concessions (Table 1., Fig. 5) : Jenna 7, Jenna 9, Jenna 10, Jenna 11, Jenna 12, Jenna 13, Jenna 14, Jenna 15, Jenna 17, Jenna 18, Jenna 20, Jenna 21, Jenna 22, Jenna 23, Jenna 24, Jenna 25, Jenna 26, Jenna 27, Jenna 28, Jenna 29, Jenna 30, Jenna 31, Jenna 32, Jenna 33, Jenna 36, Jenna 37, Jenna 38, Jenna 39, Jenna 40, Jenna 41, Jenna 42, Jenna 43, Jenna 44, Jenna 45, Jenna 46, Jenna 47, Jenna 48, Jenna 49, Jenna 50 and Jenna 51 (hereinafter, collectively, the “Jenna Concessions”), which jointly form the OCA Prospect. A legal opinion regarding these concessions has been prepared by Chilean legal firm Chile Inc.

The OCA Prospect has a total area of 8,900 hectares and is divided into three groups of concessions (Fig. 2-4):

Group 1: Jenna 7, Jenna 9, Jenna 43, Jenna 44 and Jenna 45, with a total of 1,100 hectares, are located in the Ollague Salar (3,733 meters masl).

Group 2: Jenna 10, Jenna 11, Jenna 12, Jenna 13, Jenna 14, Jenna 15, Jenna 36, Jenna 37 and Jenna 42, with a total of 2,300 hectares, are located in the Carcote Salar (3,700 masl).

Group 3: Jenna 17, Jenna 18, Jenna 20, Jenna 21, Jenna 22, Jenna 23, Jenna 24, Jenna 25, Jenna 26, Jenna 27, Jenna 28, Jenna 29, Jenna 30, Jenna 31, Jenna 32, Jenna 33, Jenna 38, Jenna 39, Jenna 40, Jenna 41, Jenna 46, Jenna 47, Jenna 48, Jenna 49, Jenna 50 and Jenna 51 with a total of 5,500 hectares, are located in the Ascotán Salar (3,735 masl).

The Jenna Concessions are fully constituted and have been awarded to First Lithium Minerals SpA. All concessions are valid and in good standing.

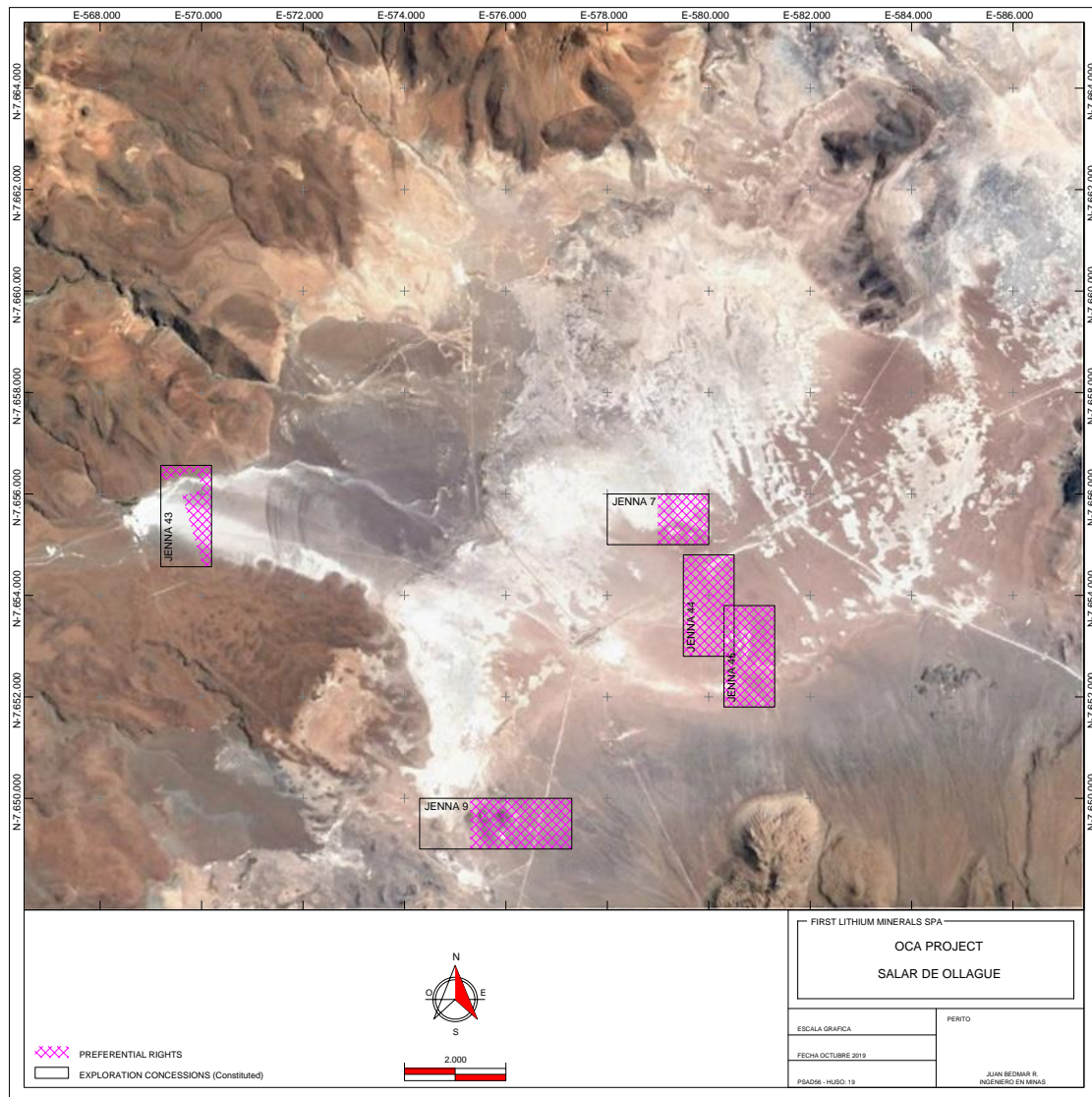
The Jenna Concessions have preferential rights over the area they cover, with the exception of concessions Jenna 7, Jenna 9, Jenna 10, Jenna 11, Jenna 12, Jenna 43, Jenna 46, Jenna 47, Jenna 49 and Jenna 50, which are partially overlapping third-party concessions. Sernageomin, the Chilean Service of Geology, has the authority to determine the validity of these concessions and only the parts that are not overlapping valid third-party concessions would be granted.

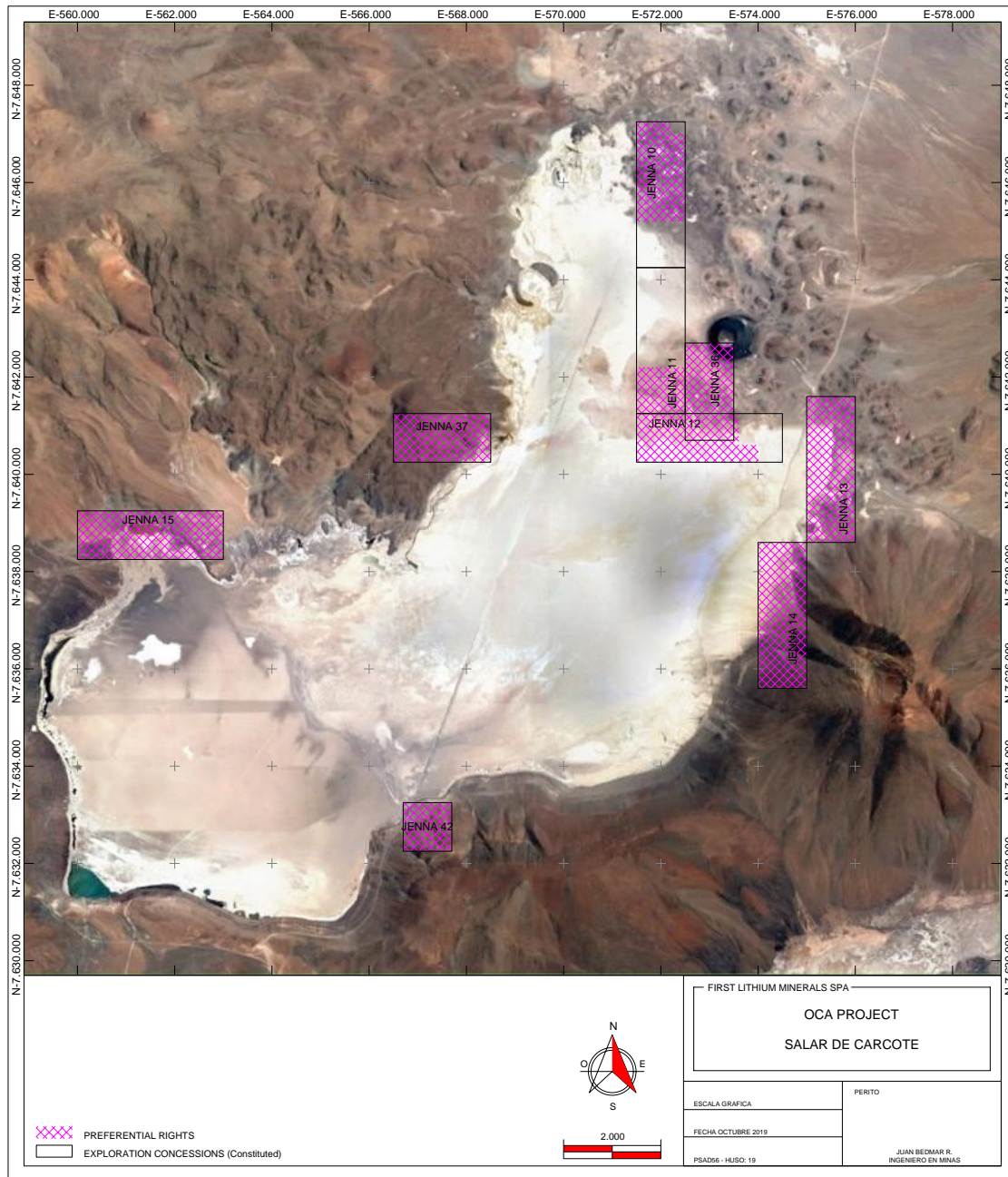
The Jenna Concessions shall be valid for a 2-year period since the date of the final award granted by the Court. Before that period expires, First Lithium Minerals SpA shall be able to: i) request their renewal for another 2-year period beginning with the expiration date of the first 2-year period but the stipulation that the concession area would be reduced by at least 50% of the area originally granted to obtain the renewal; or, ii) submit an application for conversion to an exploitation concession to exercise preferential right.

									REGISTRATION DETAILS						
	NAME	TYPE	SALAR	COMMUNE	NATIONAL ROLE	COURT FILE	COURT	STATUS	PAGE	NUMBER	YEAR	REGISTER	REGISTRAR	HA	PREFERENTIAL RIGHTS
1	JENNA 7	EXPLORATION	OLLAGÜE	OLLAGÜE	023021631-2	V-1656-2017	3ª CALAMA	CONSTITUTED	4733	3194	2018	DISCOVERIES	CALAMA	200	100
2	JENNA 9	EXPLORATION	OLLAGÜE	OLLAGÜE	023021599-5	V-1656-2017	2ª CALAMA	CONSTITUTED	4738	3196	2018	DISCOVERIES	CALAMA	300	200
3	JENNA 10	EXPLORATION	CARCOTE	OLLAGÜE	023021630-4	V-1657-2017	3ª CALAMA	CONSTITUTED	4740	3197	2018	DISCOVERIES	CALAMA	300	197,4
4	JENNA 11	EXPLORATION	CARCOTE	OLLAGÜE	023021624-K	V-1659-2017	1ª CALAMA	CONSTITUTED	4743	3198	2018	DISCOVERIES	CALAMA	300	45
5	JENNA 12	EXPLORATION	CARCOTE	OLLAGÜE	023021619-3	V-1660-2017	1ª CALAMA	CONSTITUTED	4745	3199	2018	DISCOVERIES	CALAMA	300	224
6	JENNA 13	EXPLORATION	CARCOTE	OLLAGÜE	023021603-7	V-1657-2017	2ª CALAMA	CONSTITUTED	4747	3200	2018	DISCOVERIES	CALAMA	300	300
7	JENNA 14	EXPLORATION	CARCOTE	OLLAGÜE	023021629-0	V-1658-2017	3ª CALAMA	CONSTITUTED	4749	3201	2018	DISCOVERIES	CALAMA	300	300
8	JENNA 15	EXPLORATION	CARCOTE	OLLAGÜE	023021598-7	V-1658-2017	2ª CALAMA	CONSTITUTED	4752	3202	2018	DISCOVERIES	CALAMA	300	300
9	JENNA 17	EXPLORATION	ASCOTAN	OLLAGÜE	023021623-1	V-1661-2017	1ª CALAMA	CONSTITUTED	4754	3203	2018	DISCOVERIES	CALAMA	200	200
10	JENNA 18	EXPLORATION	ASCOTAN	OLLAGÜE	023021602-9	V-1659-2017	2ª CALAMA	CONSTITUTED	4756	3204	2018	DISCOVERIES	CALAMA	300	300
11	JENNA 20	EXPLORATION	ASCOTAN	OLLAGÜE	023021651-7	V-60-2018	3ª CALAMA	CONSTITUTED	6457	4283	2018	DISCOVERIES	CALAMA	300	300
12	JENNA 21	EXPLORATION	ASCOTAN	OLLAGÜE	023021645-2	V-59-2018	1ª CALAMA	CONSTITUTED	4758	3205	2018	DISCOVERIES	CALAMA	300	300
13	JENNA 22	EXPLORATION	ASCOTAN	OLLAGÜE	023021646-0	V-59-2018	2ª CALAMA	CONSTITUTED	4760	3206	2018	DISCOVERIES	CALAMA	300	300
14	JENNA 23	EXPLORATION	ASCOTAN	OLLAGÜE	023021652-5	V-59-2018	3ª CALAMA	CONSTITUTED	6460	4284	2018	DISCOVERIES	CALAMA	300	300
15	JENNA 24	EXPLORATION	ASCOTAN	OLLAGÜE	023021642-8	V-58-2018	1ª CALAMA	CONSTITUTED	4762	3207	2018	DISCOVERIES	CALAMA	300	300
16	JENNA 25	EXPLORATION	ASCOTAN	OLLAGÜE	023021648-7	V-58-2018	2ª CALAMA	CONSTITUTED	4764	3208	2018	DISCOVERIES	CALAMA	300	300
17	JENNA 26	EXPLORATION	ASCOTAN	OLLAGÜE	023021650-9	V-57-2018	1ª CALAMA	CONSTITUTED	4766	3209	2018	DISCOVERIES	CALAMA	300	300
18	JENNA 27	EXPLORATION	ASCOTAN	OLLAGÜE	023021653-3	V-58-2018	3ª CALAMA	CONSTITUTED	6463	4285	2018	DISCOVERIES	CALAMA	300	300
19	JENNA 28	EXPLORATION	ASCOTAN	OLLAGÜE	023021644-4	V-66-2018	1ª CALAMA	CONSTITUTED	4768	3210	2018	DISCOVERIES	CALAMA	300	300
20	JENNA 29	EXPLORATION	ASCOTAN	OLLAGÜE	023021643-6	V-65-2018	1ª CALAMA	CONSTITUTED	4770	3211	2018	DISCOVERIES	CALAMA	300	300
21	JENNA 30	EXPLORATION	ASCOTAN	OLLAGÜE	023021647-9	V-65-2018	2ª CALAMA	CONSTITUTED	4772	3212	2018	DISCOVERIES	CALAMA	200	200
22	JENNA 31	EXPLORATION	ASCOTAN	OLLAGÜE	023021674-6	V-284-2018	3ª CALAMA	CONSTITUTED	6466	4286	2018	DISCOVERIES	CALAMA	300	300
23	JENNA 32	EXPLORATION	ASCOTAN	OLLAGÜE	023021668-1	V-282-2018	2ª CALAMA	CONSTITUTED	6469	4287	2018	DISCOVERIES	CALAMA	100	100
24	JENNA 33	EXPLORATION	ASCOTAN	OLLAGÜE	023021667-3	V-281-2018	1ª CALAMA	CONSTITUTED	6471	4288	2018	DISCOVERIES	CALAMA	100	100
25	JENNA 36	EXPLORATION	CARCOTE	OLLAGÜE	03021675-4	V-336-2018	1ª CALAMA	CONSTITUTED	6473	4289	2018	DISCOVERIES	CALAMA	200	200
26	JENNA 37	EXPLORATION	CARCOTE	OLLAGÜE	023021698-3	V-336-2018	3ª CALAMA	CONSTITUTED	1544	970	2019	DISCOVERIES	CALAMA	200	200
27	JENNA 38	EXPLORATION	ASCOTAN	OLLAGÜE	023021676-2	V-337-2018	2ª CALAMA	CONSTITUTED	6475	4290	2018	DISCOVERIES	CALAMA	100	100
28	JENNA 39	EXPLORATION	ASCOTAN	OLLAGÜE	023021699-1	V-337-2018	3ª CALAMA	CONSTITUTED	1995	1212	2019	DISCOVERIES	CALAMA	100	100
29	JENNA 40	EXPLORATION	ASCOTAN	OLLAGÜE	023021727-0	V-611-2018	2ª CALAMA	CONSTITUTED	1546	971	2019	DISCOVERIES	CALAMA	100	100
30	JENNA 41	EXPLORATION	ASCOTAN	OLLAGÜE	023021700-9	V-426-2018	3ª CALAMA	CONSTITUTED	1548	972	2019	DISCOVERIES	CALAMA	100	100
31	JENNA 42	EXPLORATION	CARCOTE	OLLAGÜE	023021701-7	V-557-2018	1ª CALAMA	CONSTITUTED	1550	973	2019	DISCOVERIES	CALAMA	100	100
32	JENNA 43	EXPLORATION	OLLAGÜE	OLLAGÜE	023021704-1	V-557-2018	2ª CALAMA	CONSTITUTED	1553	974	2019	DISCOVERIES	CALAMA	200	82,6
33	JENNA 44	EXPLORATION	OLLAGÜE	OLLAGÜE	023021702-5	V-556-2018	1ª CALAMA	CONSTITUTED	1555	975	2019	DISCOVERIES	CALAMA	200	200
34	JENNA 45	EXPLORATION	OLLAGÜE	OLLAGÜE	023021703-3	V-558-2018	3ª CALAMA	CONSTITUTED	3724	2296	2019	DISCOVERIES	CALAMA	200	200
35	JENNA 46	EXPLORATION	ASCOTAN	OLLAGÜE	023021725-4	V-578-2018	1ª CALAMA	CONSTITUTED	1557	976	2019	DISCOVERIES	CALAMA	100	10
36	JENNA 47	EXPLORATION	ASCOTAN	OLLAGÜE	023021732-7	V-579-2018	3ª CALAMA	CONSTITUTED	1997	1213	2019	DISCOVERIES	CALAMA	100	18,31
37	JENNA 48	EXPLORATION	ASCOTAN	OLLAGÜE	023021748-3	V-990-2018	1ª CALAMA	CONSTITUTED	3355	2103	2019	DISCOVERIES	CALAMA	100	100
38	JENNA 49	EXPLORATION	ASCOTAN	OLLAGÜE	023021726-2	V-577-2018	1ª CALAMA	CONSTITUTED	1559	977	2019	DISCOVERIES	CALAMA	100	69,3
39	JENNA 50	EXPLORATION	ASCOTAN	OLLAGÜE	023021742-4	V-725-2018	2ª CALAMA	CONSTITUTED	2000	1214	2019	DISCOVERIES	CALAMA	300	300
40	JENNA 51	EXPLORATION	ASCOTAN	OLLAGÜE	023021747-5	V-784-2018	1ª CALAMA	CONSTITUTED	2002	1215	2019	DISCOVERIES	CALAMA	200	118
TOTAL														8900	7864,61

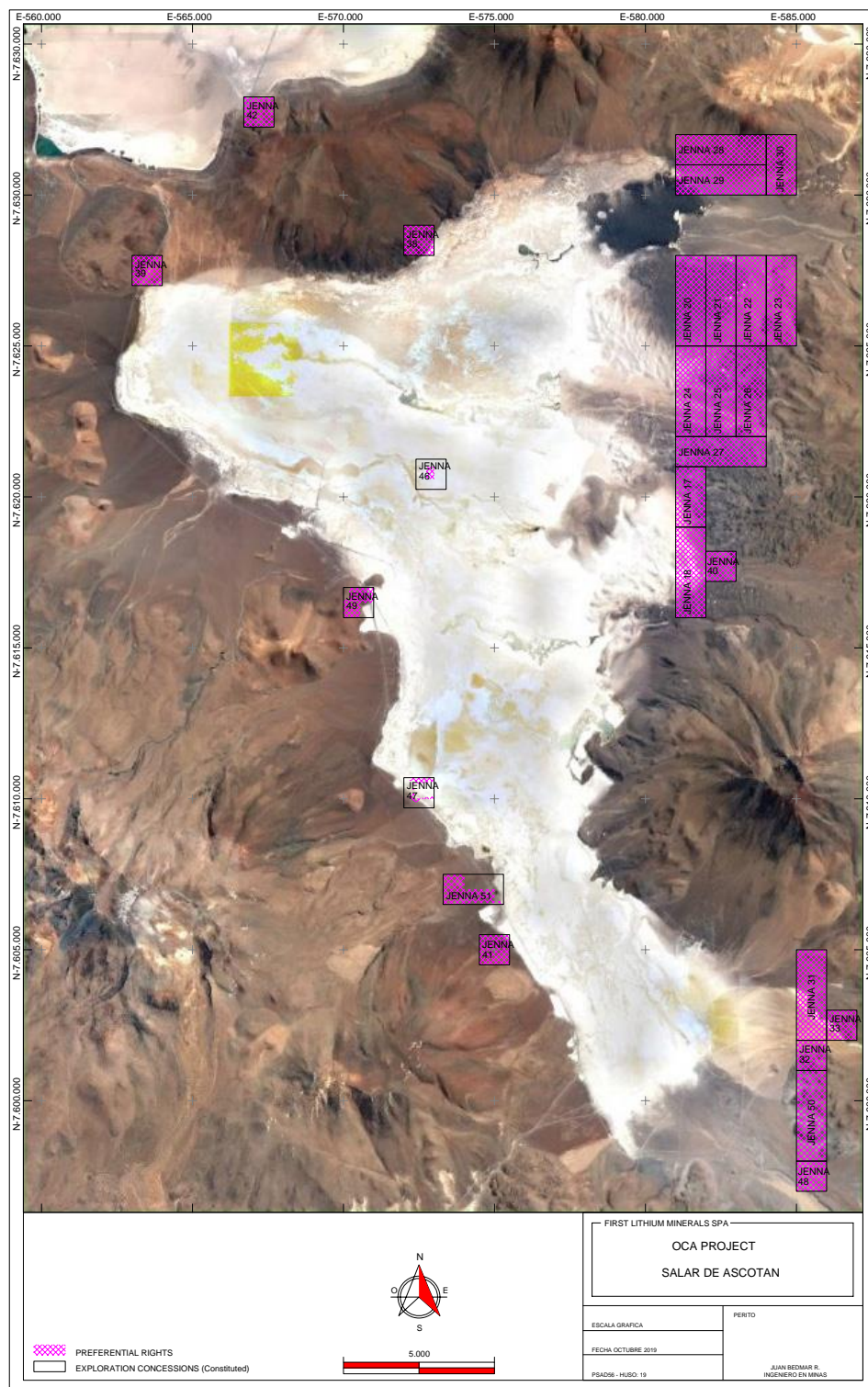
**Table 1. Mineral Exploration Concessions OCA Prospect**











**Fig. 4. Mineral Exploration Prospect Ascotán Salar**



**Photo 1. Ollague Salar** (Source: *First Lithium Minerals Inc.*)

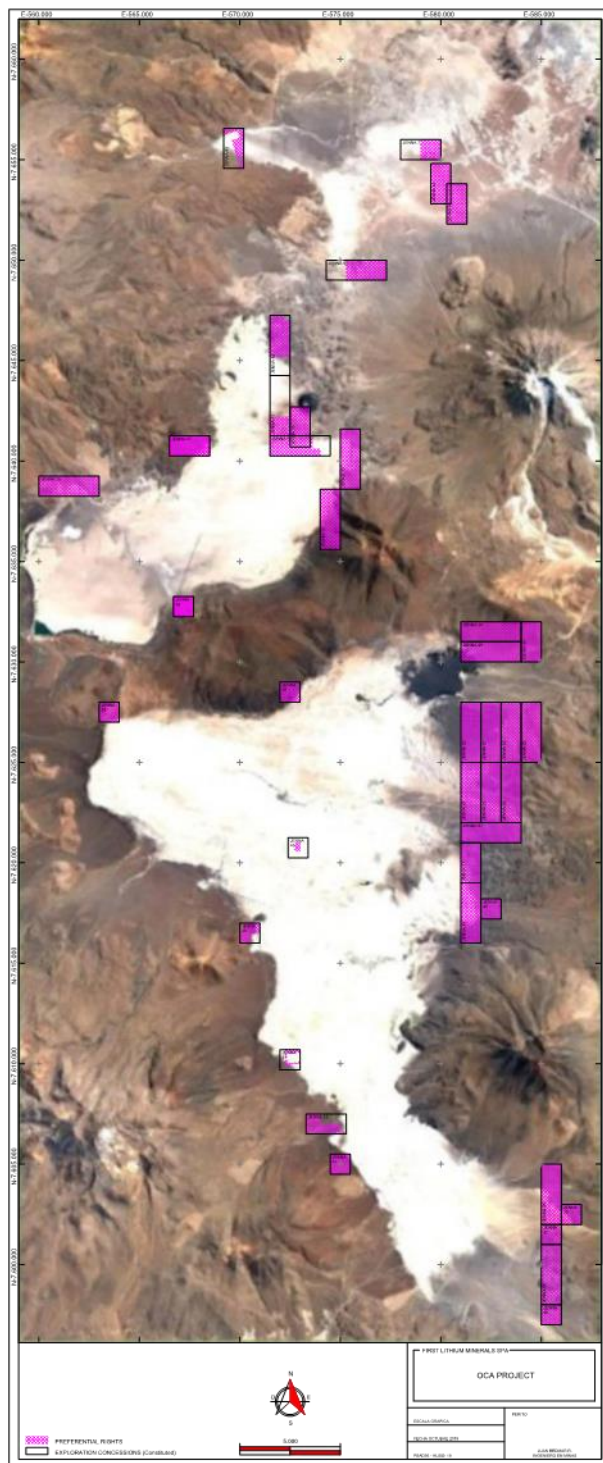


**Photo 2. Carcote Salar** (Source: *First Lithium Minerals Inc.*)



**Photo 3. Ascotán Salar** (Source: *First Lithium Minerals Inc.*)





**Fig. 5. Location of the Mineral Exploration Concessions of the OCA Prospect**

### **3.3 SURFACE RIGHTS, SURFACE ACCESS AND ENVIRONMENTAL LIABILITIES**

The surface rights of the prospect are held by the Chilean Government, through the Ministry of National Assets. As a result, there is no third party (private individual or Company) that owns the surface rights.

As such, from a legal standpoint, the Company should have unrestricted access to the properties. According to Chilean Mining Law, the owner of a mineral exploration concession shall have the exclusive right to explore its claim, without any limitation (with some exceptions not applicable in this case).

Regarding the obligations to permit the continued use of the properties, the Company needs to pay the corresponding annual license fees and complete the procedure for maintaining the mineral concessions.

To the extent known, there are no environmental liabilities affecting the mineral exploration properties. Protected species are known to be present in the salars and the current and future work will take into account the standard of care required concerning contractor access to the Property. Wetlands have special protection in the region and are managed according to the standards set by the government.

Applicable permits should be obtained prior to initiating exploration activities involving any use of drilling equipment. The Chilean environmental authority requires a 'Declaracion Impacto Ambiental' (DIA) or declaration of environmental impact, when more than 40 drilling platforms are planned for exploration.

To the extent known, there are no significant factors or risks that may affect access, title, or the right or ability to perform exploration work on the properties, as explained herein.

### **3.4 TYPES OF MINERAL OWNERSHIP RIGHTS**

Mineral concessions are granted to applicants by a judicial ruling in a civil court and are registered in the Public Mines Registry. There are two types of concessions, exploration concessions and exploitation concessions. It is not necessary to hold an exploration concession prior to an exploitation concession. Mineral concessions are legally considered property and are independent from property rights over surface tenements. The holder of exploration or exploitation concessions has exclusive rights to explore or exploit minerals within the limits of the concession. Mineral concessions are granted on a “first come, first served” basis.

Exploration concessions are granted for the initial two years and are subject to an annual fee. If exploration concessions are not converted into exploitation concessions, exploration concessions can be renewed for an additional two years, but are required to waive half of the surface area. Exploitation concessions are indefinite, provided that the holder pays an annual concession fee. Concession rights can be relinquished through a regulatory process or they can be revoked if the holder breaches formal requirements, such as the nonpayment of the annual fee.

## **4. CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **4.1 ACCESSIBILITY**

The OCA Prospect can be accessed from the town of Ollague, Chile via Highway 21 (CH-21) that connects Ollague with Calama (200km).

There are numerous surface roads to access most of the mineral exploration concessions in the area of salars including through the hard salt and sediment flat surface of the salars.

The railway Ferrocarril de Antofagasta a Bolivia (“FCAB”) forms a major transportation corridor between the seaport of Antofagasta, Chile and the capital of Bolivia, La Paz. The railway passes close to the border of salars Ollague and Ascotán and through Salar de Carcote and has a station and operating depot in Ollague.



**Fig. 6. Transport Infrastructure in OCA Prospect Area**

## 4.2 CLIMATE

The mineral exploration concessions are located in a desert environment, with little annual precipitation and rare winter fog occurrences (Camanchaca). Due to extreme aridity, there are no climatic restrictions to explore or work the OCA Prospect, except for the months of January and February when occasional precipitation and lightening storms could hinder certain operating activities for a couple of days.

The climate in the study area is arid, with rainfall of 60 - 85 mm per year across the area of the three salars. The evaporation in the area of the salars ranges from a median monthly between of 235 mm/month (Ollagüe weather station) and 229 mm/month (Cebollar weather station). The total annual evaporation varies between 2,823.4 mm (Ollagüe) and 2,748.6 mm (Cebollar).

The OCA Prospect is located in the eastern part of the Atacama Desert. There are several factors that contribute to extreme aridity in the area, among them the phenomenon generated by the Andean Mountain Barrier, the weather patterns of western South America and the drying effect of the Pacific Ocean Humboldt Current. The Humboldt Current flows in a northern direction from the Antarctic region along the Chilean coast, bringing cool waters which decrease the humidity of the predominant winds from the Southwest.

The northern region of Chile has been very arid from the beginning to the middle of the Tertiary era, possibly as a consequence of the expansion of the Pacific Ocean basin after the plate tectonic movement caused the splitting apart of Gondwana, an early continent, and the eventual establishment of an ice sheet in Antarctica during the Eocene / Oligocene era, 34 million years before present (Mya) (Zannazi et al (2007)).

These mid-tertiary events established or intensified cold ocean circulation off the west coast of South America.



The aridity maintained from at least 30 Mya has ensured that the supergene mineral processes characteristic of a hyper-arid climate was established and remained stable until the present (Mortimer and Saric (1973)).

### 4.3 SOURCES OF METEOROLOGICAL DATA

The municipality of Ollagüe and the salars in which OCA Prospect is located, have a marginal desert climate system with two climatic seasons during the year. The seasons are winter and summer. The temperature and evaporation data was developed from the 2004 Environmental Impact report by SQM for the salar de Carcote (Table 2.).

Cebollar Station (Near Salar Ascotan) Temperature Range (C)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	24.2	23.4	23.1	21.2	20.5	17.6	17.7	20.3	21.4	21.4	23.7	23.7
Min	-0.8	-2.1	-3.7	-5.9	-8.5	-8.8	-10.5	-9.6	-6.2	-6.9	-5.7	-2.9
Mean	12.1	11.3	10.9	8.5	7	5.2	4.5	5.6	8.3	8.3	10.2	11.1

**Table 2. OCA Prospect Area Average Temperatures**

*Source: Environmental Impact Study for the Mineral Extraction Project in the Salar de Carcote, SQM.S.A., November 2004. "Estudio de Impacto Ambiental del Proyecto "Extracción Minera en el Salar de Carcote" presentado por SQM S.A., November 2004"*

### 4.4 LOCAL RESOURCES AND INFRASTRUCTURE

There is no production of domestic or basic industrial goods near the OCA Prospect. Most of the supplies are brought from the city of Calama, Chile.

Ollague, Chile is closest town to the OCA Prospect and has basic infrastructure, including a domestic drinking water system, 220-volt power, first aid center with ambulance service, public school, restaurants, hostels, police station, mail, warehouses, municipality and railway station.



The city of Calama, with approximately 146,600 inhabitants, is located about 200 km southwest from the OCA Prospect. It is approximately 2.5 hours by car from Ollague. Calama is the capital of El Loa Province and is an active commercial and mining center with industrial and civil infrastructure, hotels, restaurants, major national airport, schools, universities, banks, developed industrial district, hospital, clinics, supermarkets and railway station.

Transportation of supplies and construction materials to the OCA Prospect could be facilitated by the existing transportation infrastructure. FCAB transports a variety of industrial equipment and minerals, and forms a major transportation corridor between the seaport city of Antofagasta, Chile and the capital of Bolivia, La Paz.

Cerro Pabellon Geothermal Power Plant, arguably South America's first and the only large geothermal power plant (48MW facility) is located approximately 10km south of the southern border of Salar de Ascotan.

Power lines from the coastal power generation facilities run to existing copper mines in the Calama area with the closest substation and power lines approx. 100-150km near the OCA prospect. Natural gas pipelines located in the same vicinity.

## **4.5 SOILS**

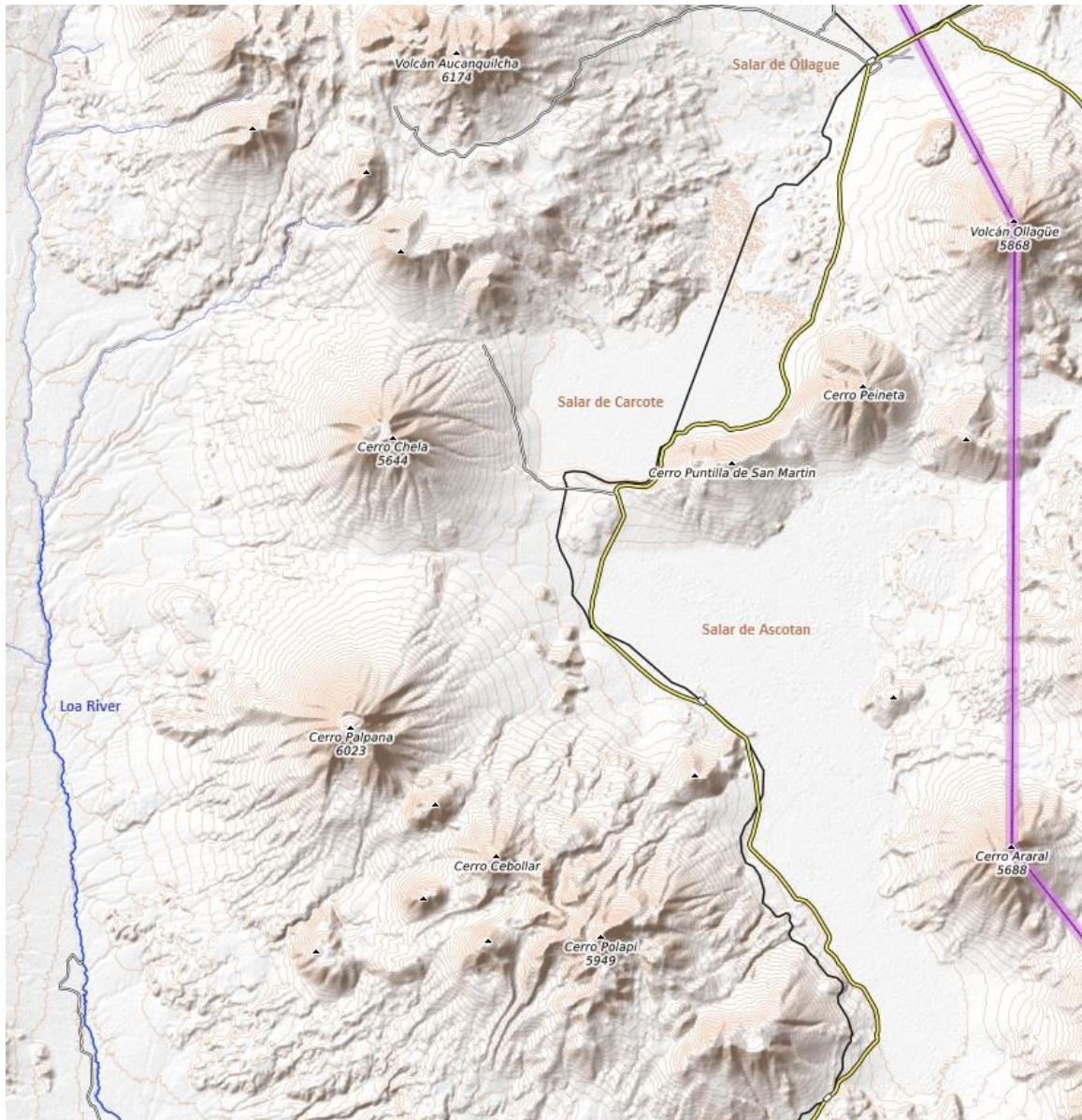
The soils in the OCA Prospect area are scarcely developed and are classified as skeletal soils of the Aridisol Order. These are soils of arid zones, of ochre color, with very low organic matter, low fertility and coarse texture.

According to the soil map published by CIREN and by the National Institute of Agricultural Technology (INTA), the soils in the Ollague, Carcote and Ascotán Salars are the Paleargides type of the Aridisols Order. It is a type of azonal soil that consists mainly, or in part, of degraded rock fragments that are typically found on steep slopes and have no economic and agricultural value.

There is a narrow zone of soil on the outer edges of the Salars of Ollague, Carcote and Ascotán, however predominantly, the surface of the salars is covered by crusts of salt or saline sediments.

## **4.6 TOPOGRAPHY**

Topography is mainly formed by Loa River, volcanic chain, and endorheic basins of salars de Ascotán, Carcote and Ollague (Fig. 7). The upper basin of Loa River is flanked on both sides by two longitudinal mountain ranges; the western flank is constituted by the Sierra del Medio with an approximate altitude of 4,500 meters; on the eastern flank the continental divide formed by the Andes including: the Paruma de Portezuelo mountain (5,582 meters above sea level), the Ollagüe volcano (5,868 meters above sea level), the Ascotán mountain (5,187 meters above sea level) and the Toconce mountain (5,411 meters above sea level).



**Fig. 7. Topography of the OCA Prospect**

## **4.7 VEGETATION AND FAUNA**

### **4.7.1 VEGETATION**

Desert scrub and cactus species inhabit the area of the salars. Most are situated outside the brine areas due to the extreme conditions in a salt flat area.

There are shrubs of a low steppe type. The individual shrubs are isolated from each other as is typical of a dry climate with bare soil between them.

Cold nights, wind and lack of fresh water are some of the characteristics of the severe climatic condition that give rise to scarce regional vegetation. The most typical are low shrubs and cactus. Local plants which are characterized by tiny or non-existent leaves and the presence of thorns are also present in the area. Ninety percent (90%) of the area of the mineral exploration properties of the OCA Prospect has no vegetation, which is typical of the South American salars.

### **4.7.2 FAUNA**

The fauna present is characterized by adaptation to extreme living conditions as a result of high aridity, intense sunlight during the day and very low temperatures at night.

Many animals have nocturnal habits, and live protected under rocks or fractures in the rocks. Others live below the surface or acquire specific behaviours that allow them to endure the harsh environment.

In the area of Ollague, Carcote and Ascotán Salars, there are animals that are from the camel family such as the guanaco, the vicuña (Vicugna) and the llama (Lama glama), the latter domesticated. Foxes (Dusicyon, Lycalopex) and pumas (Concolor) represent carnivorous species in the area. Due to the presence of fresh water in some sections of the basin, the area provides a habitat for wildlife species, including birds, such as eagles, owls and condors. Rodents, rabbits, hares, and tuco-tuco (Ctenomys opimus) are also present in the area. Some of these animals,

including the mouse of the Puna (*Auliscomys sublimis*) and the Chinchilla (*Chinchilla brevicaudata*), contribute to the desertification of large areas as they feed on roots of local flora.

The salar areas have protected and endangered species that move freely as they forage or look for fresh water. Because of this, all work at the site has to be performed under the standard of necessary care and in conjunction with the Chilean environmental and endangered species regulations.

## 5. HISTORY

The founding of the town of Ollague and the construction of the railroad Antofagasta & Bolivia Railway Ltd., in 1888, are associated with the discovery and exploitation of sulfur minerals in the Ollague volcano (Santa Cecilia), the Aucanquilcha volcano, Buenaventura and Amincha.

The Aucanquilcha sulfur deposit was discovered in 1913 and was a producing sulfur mine, at one point employing 700 workers.

The mining of borax and boron compounds, in Ollague, Carcote and Ascotán, began in 1886; by the English company Borax Consolidated Limited, which extracted mainly Ulexite. The company worked until 1966 in the Salars de Carcote and Ascotán and used the railroad to transport borax to Bolivia and then to Uruguay and Brazil.

Around the same time, the British mining company in Collahuasi mined copper deposits in the area. The copper ore was transported to Ollague and by rail from Ollague to the seaport of Antofagasta.

Presently, Quiborax Company (Chile) mines several borax deposits in Salar de Ascotán, in the Cebollar area.



## **6. GEOLOGY**

### **6.1 REGIONAL GEOLOGY**

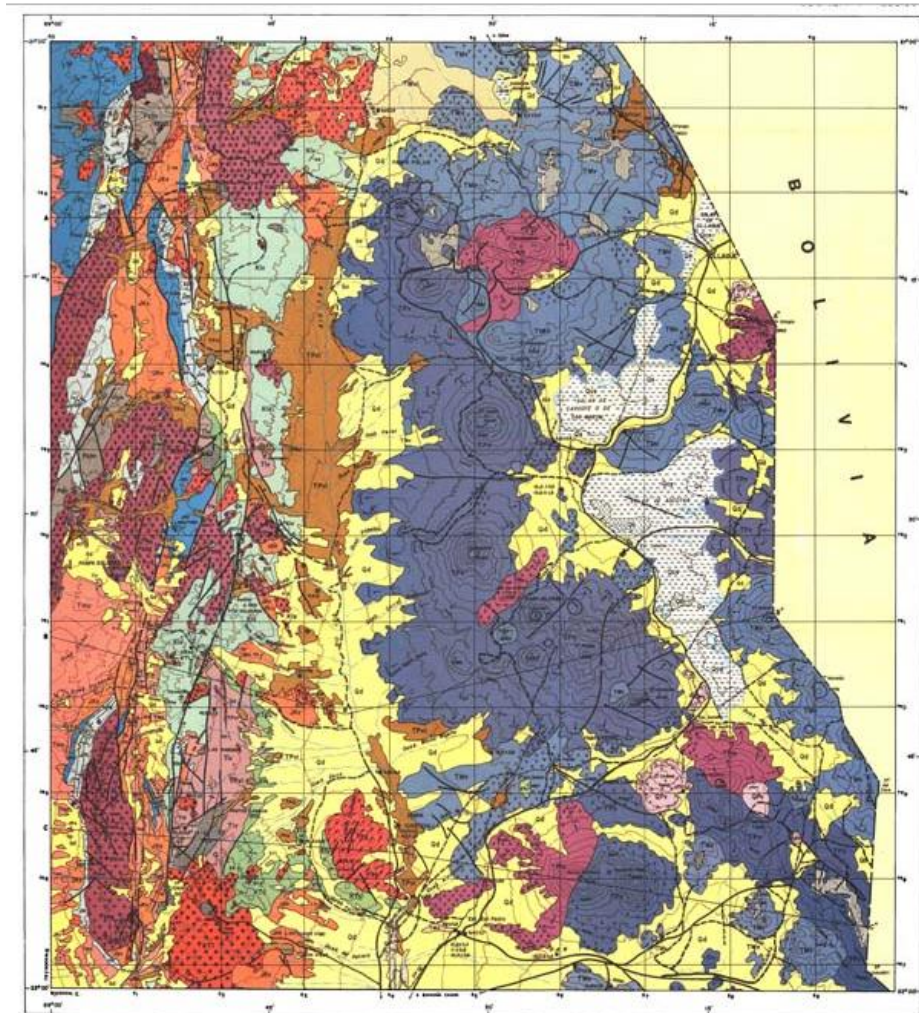
The salars of Ollague, Carcote and Ascotán correspond to continental saline deposits or salars with brines (Figure 8). The saline deposits are generated during a process in which high evaporation rates and low precipitation rates concentrate salts in the salars (terminal lakes). They are typically composed of salt crust, brine and clastic or sedimentary rock fractions, whose extensions and depth can vary widely. The deposits typically contain carbonate, sulphate, and chloride salt compounds, in different concentrations, both in the salt crust, sediments and brine.

Typically, salars, or terminal lakes, are formed when three main geologic and environmental parameters are present. The first, is the geologic material that feeds and leaches into salar, which can come from different sources, locally including rocks of volcanic origin, sedimentary rocks such as clays, and erosion and deposition of old salars. The second, is a presence of a closed basin where surface and groundwater that come into the basin as inflows fill the basin and have no outlet aside from evaporation or entrapment. A closed basin allows saline mineralization to concentrate through evaporation process into depositions and brine formations. The third, is the arid climate where the evaporation rate is much higher than the precipitation rate.

Mineralization in the OCA Prospect is primarily represented by three different fractions:

- Liquid, represented mainly by chloride and sulfate brines.
- Dendritic material, consisting of sand, silt and clay intercalated in the salar sediments.
- Various precipitated salt compounds resulting from salts reaching respective solubility and concentration limits.

The fractions' interrelationship creates a separation and zonation of carbonates, sulfates and chlorides. There is evidence that the general zonation in the prospect areas has been modified in its orientation by an outside influence, which is likely the differential movements in the last stage of the Andean mountain building or uplift.



**Fig. 8 Regional Geological Map**

(Hoja Ollague, National Geology and Mining Service, Chile)



#### 6.1.1 Metallic mineralization

There are a few large copper porphyry mineralization areas surrounding the city of Calama, represented by the Chuquicamata, Radomiro Tomic, Ministro Hales, El Abra, Gabriela active mines, among others, most of which are owned by the National Copper Corporation (CODELCO).

#### 6.1.2 Non-metallic mineralization

Boron, a non-metallic mineral, is currently actively exploited in the area and mined by the Chemical and Mining Company of Chile (SQM) in the Carcote Salar, and Quiborax in the Ascotán Salar. Sulfur deposits are present in the area; however, the deposits are not currently exploited.

#### 6.1.3 Lithium-Potassium brines

Mineralization areas of lithium-potassium brines are present in the region and currently being explored. There are at least five companies exploring lithium containing brines in Ollague, Carcote, Ascotan salars.

## 6.2 LOCAL GEOLOGY

The First Lithium's OCA Prospect area is part of the high-energy basin (composed of the Ollague, Carcote and Ascotán salars).

The main basin has evolved in the last 10-20 million years. The basin contains several compact saline horizons with interspersed porous salt and sediment layers, which have been favorable environments for the accumulation of brines.

The basin collects water from temporary streams in a catchment area of approximately 6,000 km<sup>2</sup>. Minerals such as lithium (Li), potash (K), boron (B), sodium (Na) and magnesium (Mg), among others, are leached and transported from rocks in the catchment, and then accumulated and concentrated by evaporation in the salar.

Much of the erosional activity was during the Holocene period starting about 11,000 years ago. The movement and deposition of young alluvial material from the margins of the basin have buried much of the older salt.

### 6.2.1 GEOLOGY OF SALAR DE OLLAGUE

The Salar de Ollague is located on the border between Chile and Bolivia. It is about 17 kilometers long by 11 kilometers wide and has an area of 187 km<sup>2</sup>, with the larger part located on the Bolivian side and a smaller part on the Chilean.

The Salar de Ollague basin, on the Chilean side, is located in the north of the Antofagasta Region. It borders to the south with the basin of Salar de Carcote, to the west with the volcanic chain and the basin of the Loa River, and to the east with Bolivia.

The main morphological and climatological characteristics are:

- Elevation 3,733 meters above sea level
- Area of the basin 187 km<sup>2</sup>

- Surface of the Salar in Chile 31 km<sup>2</sup>

*Reference: Military Institute of Geography of Chile Map Salar de Ollague, Instituto Geografico Militar Chile*

Refer to Fig. 9 below for sediment types and geologic structures, including salars' corresponding pliocene / pleistocene deposits composed of conglomerates, sandstones, siltstones and argillites; volcanic centers and sequences; and evaporate deposits of sulfates, chlorides, and carbonates with borax, potassium, sodium, magnesium and / or lithium.

### **6.2.2 GEOLOGY OF SALAR DE CARCOTE**

The Salar de Carcote basin is located in the north of the Antofagasta Region. The salar is implanted in the lower part of a depression in the basin flanked to the east and west by tertiary and quaternary volcanic chains of general north-south orientation. It borders to the south with the Salar de Ascotán basin, to the north with the Salar de Ollague, to the west with the volcanic chain and the basin of the Loa River, and to the east with the volcanic chain formed by Ollague volcano.

Salar de Carcote hydrogeology and geology has been investigated by Mardones (1977), and more recently by CODELCO-Chuquicamata, however all information remains private.

The main morphological and climatological characteristics are:

- Elevation 3,690 meters above sea level
- Area of the basin 561 Km<sup>2</sup>
- Surface of the Salar 108 Km<sup>2</sup>
- Surface of the lagoon 3-4 Km<sup>2</sup>

*Reference: Military Institute of Geography of Chile Map Salar de Carcote, Instituto Geografico Militar Chile*

Refer to Fig. 9 below for sediment types and geologic structures, including salars' corresponding pliocene / pleistocene deposits composed of conglomerates,

sandstones, siltstones and argillites; volcanic centers and sequences; and evaporate deposits of sulfates, chlorides, and carbonates with borax, potassium, sodium, magnesium and / or lithium.

### 6.2.3 GEOLOGY OF SALAR DE ASCOTÁN

Salar de Ascotán, is located in the north of the Antofagasta Region. The salar is located in the lower part of a depression in the basin flanked to the east and west by tertiary and quaternary volcanic chains of general north-south orientation. The salar borders the Salar de Carcote on the north, on the west by the volcanic chain and basin of the Loa River, to the east and south by volcanic chains.

The geology and hydrogeology of the basin were studied in detail by Mardones, 1977 and CODELCO Chuquicamata (1994, 1996). Mardones completed studies and drilled several wells to supply water to the El Abra copper mine.

Ascotán is a salar with sediments intermixed with salt compounds, undersurface brine, and a surface crust composed primarily of gypsum and halite. The groundwater with the characteristics of brine is observable a few meters below the surface.

The boron deposit where ulexite is exploited is located near the west-central boundary of the salar (Cebollar station). The salar has a complex system of elongated lagoons of east-west or southwest-northeast orientation probably derived from surface water sources in the surrounding hills. There are also smaller and less numerous lagoons located near the west side of the Salar.

The main morphological and climatological characteristics of the salar are:

- Elevation 3,716 m above the sea level
- Surface of the basin: 1,757 km<sup>2</sup>



- Surface of the salar: 243 km<sup>2</sup>
- Surface of the lagoons 18 km<sup>2</sup>

*Reference: Military Institute of Geography of Chile Map Salar de Ascotan, Instituto Geografico Militar Chile*

Refer to Fig. 9 below for sediment types and geologic structures, including salars' corresponding pliocene / pleistocene deposits composed of conglomerates, sandstones, siltstones and argillites; volcanic centers and sequences; and evaporate deposits of sulfates, chlorides, and carbonates with borax, potassium, sodium, magnesium and / or lithium.



*MQs Miocene-Quaternary: Evaporitic deposits: sulfates, chlorides, carbonates and fine detrital levels, locally with borax and / or lithium. In the Salar, regional I to III: Salares de Surire, Huasco, Copsa, Ollague, Carcote y Ascotán Salars, Bellavista, Grande, Atacama, Pedernales and Maricunga.*

*P3i: Pliocene Volcanic centers: lavas, domes and andesitic pyroclastic deposits to dacitic, pyroclastic cones and basaltic to andesitic - basaltic lavas. In the main mountain range, regional I to III: Laran Cagua volcanoes, Miño, white rocks and hidden lagoon; in the XI region: volcanic centers of the Taitao peninsula.*

*MS 3 i Upper Miocene: Volcanic center and sequence: lava, domes, and pyroclastic deposits, andesitic to dacitic, with alluvial intercalations, associated with epithermal deposits of Au-Ag. In the main mountain range regions. I to IV: Choquelimpie, Copiapo, Wheelwright and Ice Cows formation.*

### 6.3 THE EXPLORATION OBJECTIVE

The First Lithium's OCA Prospect area is composed of the Ollague, Carcote and Ascotán salars. Historical exploration by other entities (non 43-101 standards compliant or verifiable) shows salars contain lithium mineralization areas, which become the target for the First Lithium Minerals' exploration objective.

The exploration targets are the brine zones containing potential lithium and potassium mineralization areas. Future work to define the brine horizons will include:

- Geophysical electromagnetic (TEM) surveys to define the location and thickness of the brine at depth.
- Trenching to sample brines at shallow depth.
- Drilling with augers, diamond rigs, or reverse air drilling rigs, to sample brines at depth and confirm the geophysical results.
- Construction of small diameter wells in favourable horizons to develop pump tests that can be used to calculate hydraulic parameters.
- Other activities may include installation and testing of pilot scale evaporation ponds, studies of geochemical processes to support extraction method evaluation and evaluation of water requirements and sources.

## 7. TYPES OF DEPOSITS

The information in this section describes some of the most productive lithium brine deposits in the world and is not necessarily indicative of the mineralization in the Prospect that is the subject of the technical report.

The Salars of Ollague, Carcote and Ascotán are similar to salt flats in Nevada, USA, where the Silver Peak Lithium Mine currently operates. These types of deposits are characterized by the existence of restricted basins within deep structural depressions filled with different sediment materials such as clay, salt (halite), sands and interlaced gravels units.

Continental brine deposits are one of the main sources of lithium chemical compounds traditionally produced via a pond and solar evaporation approach. However, numerous new technologies, Flexar et al (2018) are being worked on that are less land intensive, recycle more water and deal with impurities in an improved manner.

First Lithium Minerals can investigate if new technologies would be more suitable and environmentally more sustainable for its OCA Prospect.

Bradley et al. (2013) noted "all lithium deposits in brine that are in production share a series of first order characteristics, as follows:

Primary characteristics of brine production require that the salar constitutes an evaporitic and depositional environment located within an isolated depression and with source rocks including metamorphic pre-Paleozoic, Paleozoic and Cenozoic crystalline basalts. Other critical characteristics include:

- High evaporation rates
- Closed basin
- Tectonically controlled basin where the basin floor is moving downward
- Igneous or geothermal associated activity
- Suitable mineral source rocks
- One or more aquifers



- Long period of a dry climatic regime

According to Gruber, economic brine deposits typically have Li concentrations in the range of 200 to 4,000 milligrams per liter (mg/l) (Gruber and others, 2011). The models of brine lithium deposits discussed by Houston et al. (2011), Bradley et al. (2013). Houston et al. (2011) classified salars in the Central Andes region of South America in terms of two final members, immature clastic or mature halite. This classification refers to:

- (1) The relative amount of clastic versus evaporitic material
- (2) Climatic and tectonic influences in relation to altitude and latitude
- (3) Basic hydrology, which controls the entry of fresh water

The immature clastic classification refers to the basins that generally occur at higher elevations. They contain clastic sedimentary sequences and alternate evaporites dominated by gypsum with recycled salts and have a low overall abundance of halite.

The term mature halite refers to salars in arid to hyper-arid climates, which occur in the lower elevations of the region, have saturation of halite, and have intercalated clay and silt and / or volcanic deposits.

An important point observed by Houston et al. (2011) is the relative permeability of the aquifer, controlled by the geological and geochemical composition of the aquifers. Immature salars may contain large volumes of easily extracted Li-rich brines as they are composed of a mixture of immature clastic and evaporitic aquifer materials that have a higher porosity and permeability. For example, the Salar de Atacama and the Salar de Maricunga could be classified as immature clastic salars; a similar situation occurs with the Ollague, Carcote and Ascotán Salars (OCA) where the OCA Prospect is located.

The development of the salars in the OCA Prospect area occurred as a result of a regional tectonic relaxation (sea floor spreading relaxed), causing the

development of regional basins. The first sediments to fill these regional basins were thicker, higher-energy sediments derived from the local steep terrain. These thicker sediments have larger pore spaces which increases the transmissivity and permeable features of the formation. As the basins fill with sediments and the local higher topographic areas erode, the sediments increase in finer materials with lower porosity.

As runoff and hydrothermal fluids concentrate in the regional basins, common salt (NaCl) tends to saturate, while lithium, boron, potassium and other elements become brine concentrated as fresh water evaporates on the surface and on the margins of the basin. Lithium brines, contained by aquifers of various geometries, typically become localized in the subsurface formations (*at Salar de Atacama, the brine is hosted in the porous, upper 30 meters of the salar's halite nucleus (Garrett, 2004).*

## **7.1 BASIC HYDROLOGY AND HYDROGEOLOGY**

### **7.1.1 Salar de Ollague**

In the Salar de Ollague, the brine is located at a depth of only a few meters. Only the waters that originate from the slopes of the Aucanquillcha volcano toward the west, southwest of the salar, are of good quality and suitable for domestic and agricultural use. The waters within the north, south and west edges of the salar are totally inadequate for any potable or agricultural use as the waters have high total dissolved solids and have been concentrated due to evaporation and salt precipitation.

The sediments that compose the surface of salar area include salts and gypsum. Third party exploration work showed brine presence in the upper 50-70 meters extending up to 250 meters.

Further work on hydrology and hydrogeology would be required.

### 7.1.2 Salar de Carcote

The sediments that compose the surface of salar area include salts and gypsum. Within the salar area a series of water bodies including lagoons and wetlands are observable on the surface. Some of these include Green Lake, Calixto, Leon Lake and Hot Eyes Lake. Surface water quality varies and includes dilute waters from springs in the upgradient part of the watershed up to 100 ppm total dissolved solids, medium salinity from springs in the north of the salar (700-1300 ppm), and the higher zone of salinity from springs in the south of the salar (7,000-25,000 ppm). Principal components in the water include sodium, calcium, chloride and sulphate ions. During periods of drought, the surface of these lagoons is reduced to 4% of the total surface area of the Salar de Carcote.

Further work on hydrology and hydrogeology would be required.

### 7.1.3 Salar de Ascotán

A complex system of elongated artificial lagoons with east - west or southwest - northeast orientation are observed. They are fed by brackish springs that emerge from the eastern bank of the salar (Risacher, F. et al, 1999) that have a flow up to 730 l/s. Precipitation in this area ranges from 52.2 (mm / yr) to 75.7 (mm/yr) (Mardones, L. 1999).

The Salar de Ascotán basin is characterized by the poor quality of its waters in relation to domestic or agriculture use. Only four sectors with water of acceptable quality for human consumption have been found, all located in northwest of the salar.

Under the surface brine of the Salar of Ascotán can be classified into two groups that are separated into two areas, the east and west. The east sector is characterized by brackish water of the Na- (Ca) / Cl type. The origin of these waters is unknown. The numerous slopes of the east sector are part of the watershed, have a very high total water inflow of 730 l/s and feed a system of lagoons that

produces brines of the Na- (Ca) / Cl type. The east sector, where some of the concessions of the Prospect OCA are located does not have acceptable quality water for domestic or agricultural use and is composed of saline brine.

The west sector is characterized by water with varied saline concentrations and compositions and with a high sulfate concentration (SO<sub>4</sub>). There is a clear trend as waters enter the salar area with a lower saline concentration and over time processes of evaporation and saturation generate different water types that occur in different areas. The inflow through this west sector is at 200 l/s, is much lower than that of the east sector. The water is the source of small lagoons adjacent to the salar's edge.

Further work on hydrology and hydrogeology would be required.

## **8. EXPLORATION**

### **8.1 INTERPRETATION OF PREVIOUS GEOCHEMICAL DATA**

The interpretation of the previous exploration data of the OCA Prospect has focused mainly on the activities reported by SQM in 2009 and 2010, which objectives were to evaluate the potential of lithium and borax mineralization in the Carcote and Ascotán salars, using brine samples. SQM collected samples of brine from shallow wells, which represented shallow zone surface brine waters. The SQM results were positive for the presence of lithium and showed between 390 mg/l and 468 mg/l of Li concentration.

### **8.2 GEOCHEMICAL SAMPLING CARRIED OUT IN THIS STUDY**

The work to date by First Lithium Minerals SpA in the OCA Prospect has consisted of:

- I. Geological reconnaissance of the surface of the Prospect in Salars Ollague, Carcote, Ascotán and surveying work, carried out by AMS Asesorías Geológicas Ltda., in March 2018. The independent QP, Aldo Moreno S carried out field visits.
- II. Extraction of soil sediments and brine samples on the prospect.
- III. Interpretation of the geochemical results obtained from sedimentary material and brine samples.

### **8.3 GEOCHEMICAL SOIL SAMPLES**

The sampling campaign was performed during the period of March 5<sup>th</sup> to 18<sup>th</sup>, of 2018. Twenty-six (26) sedimentary geochemical samples were collected over the area of the OCA prospect. The geochemical samples of the sediments were collected by excavating material to about 1.00 meter below surface and taking a sample of the material of approximately 10 kg. In some cases, the sample had high moisture content.

The sample results are shown below. Laboratory results are shown in appendix A and B.

	Geochemical Samples								
WGS Number 84	North	East	ID	CA (%)	K (%)	Li (ppm)	Mg (%)	Na (%)	
JENNA 1	7.660.178	576.509	6397	7.49	1.75	31.00	0.66	2.24	Salar Ollague
JENNA 2	7.659.206	576.872	6396	11.57	0.77	134.00	0.85	3.31	Salar Ollague
JENNA 3	7.657.495	576.870	6393	2.25	1.71	37.00	0.92	2.07	Salar Ollague
JENNA 4	7.657.500	577.500	6394	10.12	1.21	76.00	2.23	1.63	Salar Ollague
JENNA 5	7.656.718	578.200	6395	7.20	1.45	84.00	2.33	1.92	Salar Ollague
JENNA 6	7.655.500	577.000	6392	14.37	0.91	47.00	0.81	2.31	Salar Ollague
JENNA 7	7.655.602	578.278	6391	14.04	1.21	36.00	0.96	1.8	Salar Ollague
JENNA 8	7.652.000	574.800	6398	20.14	0.62	53.00	1.37	0.9	Salar Ollague
JENNA 9	7.649.854	574.747	6399	19.17	0.31	217.00	3.70	1.28	Salar Ollague
JENNA 10	7.644.412	571.690	6400	7.18	0.90	169.00	3.61	2.04	Salar de Carcote
JENNA 11	7.643.041	571.653	6401	11.56	0.56	300.00	4.56	2.79	Salar de Carcote
JENNA 12	7.640.413	573.926	6402	18.42	0.69	59.00	0.88	1.79	Salar de Carcote
JENNA 13	7.640.090	575.210	6403	8.38	1.21	101.00	1.30	2.76	Salar de Carcote
JENNA 14	7.638.080	574.159	6404	14.27	0.77	20.00	0.63	1.09	Salar de Carcote
JENNA 15	7.638.299	561.497	6405	11.70	0.94	17.00	0.62	1.27	Salar de Carcote
JENNA 17	7.619.049	581.159	6415	8.28	1.35	207.00	3.68	2.54	Salar Ascotan
JENNA 18	7.617.500	581.500	6416	7.77	1.37	188.00	3.31	2.76	Salar Ascotan
JENNA 20	7.627.388	581.104	6407	6.14	1.40	39.00	1.65	1.83	Salar Ascotan
JENNA 21	7.626.500	582.500	6408	3.67	1.64	65.00	1.61	1.95	Salar Ascotan
JENNA 22	7.626.500	583.500	6409	3.57	1.57	61.00	1.49	1.86	Salar Ascotan
JENNA 23	7.626.500	584.500	6410	3.56	1.57	65.00	1.46	2.18	Salar Ascotan
JENNA 24	7.623.500	581.500	6411	6.18	1.42	30.00	1.16	1.53	Salar Ascotan
JENNA 25	7.622.780	582.105	6412	7.25	1.25	28.00	0.96	1.28	Salar Ascotan
JENNA 26	7.623.500	583.500	6413	6.33	1.29	29.00	1.06	1.35	Salar Ascotan
JENNA 27	7.621.500	582.500	6414	16.64	0.65	18.00	0.64	0.69	Salar Ascotan
JENNA 30	7.631.000	584.500	6406	3.72	1.31	53.00	1.24	2.12	Salar Ascotan
Average:				9.65	1.15	83.23	1.68	1.90	

**Table 3. Soil Samples OCA Prospect**



## 8.4 BRINE SAMPLES

The brine was sampled using one (1.0) litre bottles, which were first, rinsed in brine from the sample wells and then submerged by hand to the depth of 0.50 meters to fill the bottles. The bottles were gradually submerged in the wells to eliminate possibility that sediment would enter the sample. The bottles were filled completely, so no air was present in the bottles. The bottles were then labeled and the lid was sealed with adhesive tape. The samples were then prepared for shipment and analysis. Seven (7) brine samples were collected in total.

The samples were put on ice and were hand delivered to the Activation Geological Laboratories SpA Laboratory, Avenida La Cantera 2270, Coquimbo, Chile. The laboratory has extensive experience in the handling and analysis of brine samples in Chile. There is no relationship between Activation Geological Laboratories SpA and the issuer AMS Asesorías Geológicas Ltda.

		Our Brine Samples								
WGS Number 84	Brine	North	East	ID	Ca (MG/L)	K (MG/L)	Li (MG/L)	Mg (MG/L)	Na (MG/L)	
JENNA 11	S 10	7.643.696	571.807	6401	60.44	18.46	0.96	21.44	312.77	Salar de Carcote
JENNA 14	S11	7.638.323	574.172	6404	125.69	4,888.28	186.75	2,472.50	128.07	Salar de Carcote
JENNA 15	S12	7.638.345	560.999	6405	174.07	19,205.62	607.28	7,222.70	39,921.28	Salar de Carcote
JENNA 21	S15	7.625.933	582.383	6408	334.10	844.88	451.32	5,000.41	41,104.74	Salar de Ascotan
JENNA 24	S16	7.623.779	581.145	6411	254.70	927.81	422.29	5,053.45	38,744.64	Salar de Ascotan
JENNA 25	S17	7.622.656	582.479	6412	928.88	715.04	355.23	4,416.84	417.40	Salar de Ascotan
JENNA 27	S20	7.621.431	581.147	6414	292.03	686.12	331.12	4,121.01	398.55	Salar de Ascotan
Average:					309.99	3,883.74	336.42	4,044.05	17,289.64	

**Table 4. Brine Samples OCA Prospect**

## **8.5 PREPARATION OF THE SAMPLE**

The samples from the wells were not filtered in the field and were not acidified before being sent to the laboratory. All collected samples contained some suspended sediment despite the caution taken to minimize it.

## **8.6 SAMPLE ANALYSIS**

The samples were transported to Coquimbo, Chile under the custody of AMS Asesorías Geológicas Limitada and delivered to Activation Geological Laboratories SpA. Avenida La Cantera 2270 - Coquimbo – Chile. This laboratory has its main offices in Chile, in the city of Coquimbo and international headquarters in Ancaster, Ontario, Canada.

The Activation Geological Laboratories SpA laboratory has extensive experience in lithium analysis and is ISO 9001 accredited and operates in accordance with ISO 17025 methods.

Activation Geological Laboratories SpA provided certificates of analysis and digital analysis reports to First Lithium Minerals SpA. A copy of the test certificates is provided in the Appendix A & B of this report.

Certified standards prepared by Activation Geological Laboratories SpA were used as part of the QA / QC program, which serves as a Quality Control of the laboratory analysis program.

## **9. DRILLING**

To date, no drilling campaign has been completed in the OCA Prospect.

## **10. PREPARATIONS, ANALYSIS AND SECURITY OF THE SAMPLE**

### **10.1 SPECIMEN COLLECTION, PREPARATION AND SHIPPING**

Samples of soils and brines from the OCA Prospect were collected and prepared according to the protocols for the standard collection of sediment and brine samples described in Section 9.

The sample containers were transported by AMS Asesorías Geológicas Ltda., and then sent to the Activation Geological Laboratories SpA Laboratory of Coquimbo.

### **10.2 LABORATORY USED IN SAMPLE ANALYSIS**

The laboratory Activation Geological Laboratories SPA is located in Coquimbo and has its main Chilean offices in Santiago and international headquarters in Canada.

The laboratory used by First Lithium Minerals Inc. was Activation Geological Laboratories SpA in Coquimbo, has extensive experience in the analysis of lithium samples. It is accredited by ISO 9001 and operates according to standards, consistent with ISO 17025 methods.

Activation Geological Laboratories SpA provided certificates of analysis and digital analysis reports to First Lithium Minerals SpA.

### **10.3 DUPLICATE AND BLANK TESTS**

Laboratory standards for cation and anion analysis were performed and reported. Split samples and blanks were also included in the analysis as part of the quality control procedures.

The meaning of the abbreviations for the quality control samples in the brine in Appendix A & B is as follows:



<b>QCS-CATION meas:</b>	measured value of laboratory standard for cations
<b>QCS-CATION cert:</b>	certified value of laboratory standard for cations
<b>QCS-A2 meas:</b>	measured value of laboratory standard for anions
<b>QCS-A2 cert:</b>	certified values of laboratory standard for anions
<b>S-10 original:</b>	one half of a sample called the original that is compared to the analysis of the other half. These are called splits in laboratory nomenclature
<b>S-10 duplicate:</b>	the second half of the original sample or the half of the split sample
<b>Bk:</b>	a blank or pure water sampled prepared in the laboratory using class 1 water (ultra pure) to be analyzed in a batch with the other samples. Since it is ultra pure water it should have no elements detected

## 11. DATA VERIFICATION

A review of the data was performed by the author. Based on the results of the quality control of samples collection and interpretation, the author believes the concentrations of Lithium in soils and brine samples were accurately analyzed and reported. Some other constituents including metals in soils have greater differences in the case of duplicate samples.

## 12. MINERAL PROCESSING AND METALLURGICAL TESTS

At this stage, no mineral or metallurgical processing test has been completed.

## 13. MINERAL RESOURCE ESTIMATES

No mineral resources have been estimated.

#### **14. MINERAL RESERVE ESTIMATES**

No mineral reserves have been estimated.

#### **15. MINING METHODS**

No mining methods have been estimated.

#### **16. RECOVERY METHODS**

No recovery methods have been estimated.

#### **17. PROJECT INFRASTRUCTURE**

No infrastructure exists at this time.

#### **18. MARKET STUDIES AND CONTRACTS**

No market studies have been conducted.

#### **19. ENVIRONMENTAL STUDIES, PERMIT AND SOCIAL IMPACT**

The report contains publicly available information on environmental issues and permits. More specific information will be developed as field studies progress.

#### **20. CAPITAL AND OPERATING COSTS**

No costs estimates have been analyzed.

## **21. ECONOMIC ANALYSIS**

No economic analysis has been performed.

## **22. ADJACENT PROPERTIES**

The properties of OCA Prospect have adjacent mining properties leased by different individuals and companies. Mineral exploration concessions covering essentially nitrate and lithium deposits in these properties are present. The author does not know if there are properties that have a risk of having diatomaceous earth minerals that may contain asbestos in any of the surrounding properties.

## **23. OTHER RELEVANT INFORMATION AND INFORMATION**

No additional information other than that described in this report has been received or generated in the Prospect since the development of this Technical Report.



## 24. INTERPRETATION AND CONCLUSIONS

The basins of Ollague, Carcote and Ascotán have developed in the last 20 million years, evolving from a large basin and with sub-basins of deposition (saline lakes) controlled by a pair of structural master systems oriented in a north- north-east and south- south-west fashion. During the Quaternary (<2.0 million years ago), the lowest part of the basin, represented by a salt flat, was probably located in the southern portion of the Ollague, Carcote and Ascotán Salars area. During the last 10,000 years, surface and underground water that was captured by the salar systems over the area of the watershed, leached minerals including metals and other anomalous elements. The surface water eroded sediments, flooded the salars, and evaporated during the dry season. The intensive volcanism that was present in the watershed areas served as a source of mineralized material in the region.

The rocks with a high content of alkaline minerals, and containing lithium, in the areas surrounding the Ollague, Carcote and Ascotán Salars derive their mineralization from:

- I. Leucogranites with pegmatite dams, which generally contain lithium minerals such as lepidolite and spodumene, mainly on the eastern flanks of the basin.
- II. Ignimbrites, tuffs and volcanic material erupted during the formation of volcanic complexes that are typically high in lithium and have geochemical rock assays of up to 80 ppm Li.
- III. Thermal springs and hydrothermally altered areas controlled by structures at the edges of the salars.

The high rate of evaporation favored the development of highly saturated brines and the formation of halite crusts with increasing concentrations of lithium,

potassium, sodium and magnesium. This process could have contributed to potentially higher mineral grades in the brine, as the density increases in deeper parts of the basin. The successive deposition of sediments (mainly sand/conglomerates along the borders of salars, and clay, silt and halite in the central part of salars) has formed over time a great paleo salar in the area of Ollague, Carcote and Ascotán salars.

The hydrogeological system of the Ollague, Carcote and Ascotán salars is composed in part of brines that accumulate over time, mixing with the annual flow of fresh water at the surface and deeper, underground waters in the areas of alluvial fan deposits. Additional mineral contributions to the brine in the basins can be associated with hydrothermal fluids associated with the north northeast and northwest oriented structures along the margins of the basin and possibly also with fluids related to the recent development of basaltic volcanism in the Ollague, Carcote and Ascotán salars.

The near surface sediment samples are considered a preliminary sampling effort and may not necessarily represent what can be found in any deeper and older salar.

One abnormal value of low lithium grade of 0.96 mg/l was collected at site Jenna 11 in the southeast limit of Salar de Ascotán is interpreted as a mixture of saline solution with fresh surface water. This sample was used to determine an average for the seven samples and results in an average of 336 milligrams per liter (mg/l). However, if this sample is removed, a more representative average of 392 mg/l is calculated.

The combination of the industrially acceptable lithium concentrations obtained, the exploration potential and the easy access to existing infrastructure indicate a potential economic project supporting the continuing exploration and study of the project.

## **25. RECOMMENDATIONS**

Develop additional exploration activities to expand evaluation of the OCA Prospect (Table 5.). The author considers the initial exploration results on the Prospect to merit additional investigation and recommends a set of objectives be developed under a two-phase exploration program.

### **25.1 EXPLORATION PHASE ONE**

Through further hydrogeology research of the prospect area, additional surface mapping and brine sampling, determine the potential areas of brine concentration within the prospect for conducting a detailed geophysical survey.

Geophysical survey of the prospect area should be evaluated by various applicable methods including electro-magnetic techniques such as TEM. The results of the TEM surveys that indicate positive anomalies would be used to develop a drilling program.

### **25.2 EXPLORATION PHASE TWO**

The drilling program could use augur, a diamond core, or optionally vibratory drilling technology for brine sample recovery. This may include drilling the upper section a short distance using a tricone bit in the upper non-mineralized units and then switching to the primary sampling method. Some options include installing casing or cementation during deeper drilling to avoid the mixing of fluids from different parts of the conductive horizon.

The drilling samples would be used to determine the presence of brine fluids in the formation and the effective porosity. Sampling would occur in diamond drilling using a packer to isolate the sample zone in the case of brines and the sampling and would be done over short intervals and continuously till the final

targeted depth. The sample drilling should ideally penetrate the entire high conductive horizon identified in the geophysical program. At each lithological change, or in favourable zones, additional brine sampling should be considered.

In the case of holes with concentrated brines with a high lithium content, identified during sampling, the drill hole can be reamed out to a diameter of 6 "to 8" with well casing and screen installed to develop a permanent pumping well where longer terms tests can be performed.

Program Component	Number of holes / stations	Average depth (ft)	Total Footage
Electromagnetic survey (TEM)	60	na	na
Shallow exploration	40	20	800
Deep exploration	5	1,000	5,000

**Table 5. Summary of Recommended Exploration Programs**

#### Additional Activities

- Determine the options to establish an office in Calama to facilitate the management of governmental, legal, environmental and community relation's matters, as well as logistical support.
- Extend surface geophysical coverage if the initial drilling is successful. The total coverage of the most attractive areas of the properties will be important.
- Continue to monitor the development of novel lithium extraction technologies for brines.

### 25.3 ESTIMATED COST OF THE TECHNICAL PROGRAM

The preliminary budget of a two-phase exploration program for the evaluation of possible lithium, potassium, and other elements mineralization of the OCA Prospect (Table 6.).

Exploration / Activity	Estimate (\$ USD)
<b>Phase I</b>	
Electromagnetic survey (TEM)	\$150,000
Shallow brine sampling	\$150,000
Logistics and site prep	\$50,000
Lab and technical analysis	<u>\$25,000</u>
<b>Total Phase I:</b>	<b>\$375,000</b>
<b>Phase II</b>	
Shallow drilling	\$300,000
Deep drilling and coring	\$1,000,000
Lab analysis sediment	\$25,000
Lab analysis brine	\$25,000
Well completion	\$50,000
Pumping testing	\$70,000
Supervision and reporting	\$150,000
<b>Total Phase II:</b>	<b>\$1,620,000</b>
Contingency on PI and PII (25%)	\$498,750
<b>Total:</b>	<b>\$2,493,750</b>

**Table 6. Exploration Program Budget**

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## 27. ABBREVIATIONS

### Meaning of the abbreviation

Ag	Silver
Au	Gold
Ar	Argon
B	Boron
° C	Celsius degrees (Celcius)
Ca	Calcium
CO <sub>3</sub>	Carbonate
Cm <sup>3</sup>	Cubic Centimeter
cm	Centimeter
Cu	Copper
CSMAT	Controlled Source Audio-Magnetotellurics
DDH	Diamond drill hole
DTH	Down the Hole
DP	Discovery Point
DAY	Environmental Impact Statement
Fe	Iron
gr	gram
g / l	gram per liter
has	hectares
ICP	Plasma induced
IOCG	Copper Ore Gold Iron Ore Deposit
K	Potassium
km	kilometer
km <sup>2</sup>	square kilometer
LOI	Letter of intention
l	Liter

m	meter
masl	meters above sea level
Mg	Magnesium
mg / l	milligrams per liter
mm	millimetre
CaCl	Sodium Chloride (Salt)
NGO	Non-Governmental Organization
N	North
Na	Sodium
NI 43-101	Canadian National Instrument 43-101
Ohm / m	Ohm per meter
OSC	Securities Commission of the OSC Ontario
%	percent
Pb	lead
ppm	parts per million
QA / QC	Quality Assurance / Quality Control
Qh	Quaternary Halter
QP	Qualified person
Qp1 / Qp2	Quaternary pyroclastic rock
Qs	Quaternary sediments
Qv	Quaternary volcanic rock
Qw	Quaternary wetlands
RoM	Run-of-Mine
Rb	Rubidium
Sec	Second
S	South
SPA	Society by actions
SiO <sub>2</sub>	Silica
SO <sub>4</sub>	Sulfuric acid



Sr.	Strontium
TQv	Tertiary-Quaternary volcanic rock
Ts	Tertiary Sedimentary Rock
U	Uranium
Zn	Zinc

## 28. CERTIFICATE OF GOOD STANDING

[Translation from Spanish – All logotypes, as well as the stamp and signature, have been copied from the source document at the client's request, with translations provided in square brackets.]



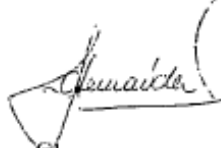
[Competence Qualification Commission of Mineral Resource and Reserve Estimators]

### CERTIFICATE OF GOOD STANDING

The Competence Qualification Commission of Mineral Resource and Reserve Estimators<sup>1</sup> hereby certifies that Aldo Moreno Salinas, geologist, Chilean identification card and taxpayer No.: 7.366.833-6, has been registered in the Chilean Public Records of Competent Qualified Persons since December of 2016, under No. 0328, in the field of Mining Resources and Reserves, "Geology" specialty, and that his skills and experience as a Competent Person are presently valid to inform and report on matters within his specialty.

At the interested party's request, this certificate is issued for preparing a section or the entirety of the technical report entitled:

"Technical Report on the OCA Prospect, located in the Ollague borough, El Loa province, Antofagasta Region, Chile".



Gladys Hernández  
Executive Secretary

Santiago, December 10, 2019  
CM-860 12 - 2019



[CERTIFICATION OF COMPETENT PERSONS, Competence Qualification Commission of Mineral Resource and Reserve Estimators]

#### Information:

- The Certificate of Good Standing accredits the validity of the interested party's competences to inform and report as provided in Code CH 20.235 ("Code for the Certification of Mining Exploration Prospects, and Mineral Resources and Reserves"), on any specific matters or subjects according to the Competent Person's registered skills and experience.
- Law No. 20.235, Article 18: [translated quote] "In preparing technical or public reports, Competent Persons in Mineral Resources and Reserves must strictly abide by the standards, rules, criteria and procedures provided in the Code, as well as any regulations of a technical nature that the Chilean Mining Commission may issue within its legal authority."
- The interested party shall be solely responsible for applying Code CH 20.235 and using this certificate according to the technical criteria and ethical standards provided in Law No. 20.235.
- For all legal purposes, the Certificate of Good Standing shall only be valid for the process for which it has been requested.

<sup>1</sup> The Competence Qualification Commission of Mineral Resource and Reserve Estimators (Law of the Republic of Chile No. 20.235) is a member of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), gathering the following organizations: Australia (JORC), Brazil (CIBR), Canada (CIM / NI 43-101), Colombia (CCRSM), Chile (Comisión Minera CI(20235), USA (SME), Europe (PERC), Indonesia (ICMI), Kazakhstan (KAZRC), Mongolia (MPGIM), Russia (OIRN), South Africa (SAMCODES) and Turkey (UNIREK), which follow a common international regulation to inform and report on mining exploration prospects and mineral resources and reserves.



[Chilean Professional Association of Geologists]



[Professional Mining Society of Chile - SOAMI, 135 years]



[Logotype of the Chilean Institute of Mining Engineers]



[Mining Council]



[Chilean Professional Association of Engineers]

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## 29. STATEMENT OF COMPETENCE

[Translation from Spanish]

### STATEMENT OF COMPETENCE

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**REPORT ENTITLED: Technical Report on the OCA Prospect, located in the Ollague borough, El Loa province, Antofagasta Region, Chile**

Chapters under the undersigned geologist's responsibility:

1. Introduction
2. Support from Other Experts
3. Description and Location of the Properties
4. Climate, Local Resources, Infrastructure
5. History and Previous Works
6. Geological Context and Mineralization
7. Type of Mineral Deposit
8. Exploration Work
9. Drilling
10. Sample Preparation for Analysis and Security Procedures
11. Data Verification
12. Mineral Processing and Metallurgical Testing
13. Mineral Resource Estimation
14. Mineral Reserve Estimation
15. Mining Methods
16. Recovery Methods
17. Project Infrastructure
18. Market Surveys and Agreements
19. Environmental Studies, Permits and Social or Community Impact
20. Capital and Operating Expenditure
21. Economic Analyses
22. Adjoining Properties
23. Other Relevant Data and Information
24. Interpretation and Conclusions
25. Recommendations
26. References
27. Abbreviations
28. Date and Signature

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[Translation from Spanish]

I, Aldo Moreno Salinas, hereby state under oath:

1. That I am a partner at *AMS Asesorías Geológicas Ltda.* and hold the position of Legal Representative thereof;
2. That I have a degree in geology from *Universidad de Chile*;
3. That I am registered in the Public Records of Competent Persons under No. 328;
4. That I am also a member of the Chilean Professional Association of Geologists, No. 437;
5. That my registration in the Public Records of Competent Qualified Persons is valid until December of 2019;
6. That I have read the definition of "Competent Qualified Persons" of the Competence Qualification Commission of Mineral Resource and Reserve Estimators, as provided in Code CH 20,235, Chapter IV, No. 11, and my qualifications for signing the afore identified Report are as follows: I have 37 years of experience assessing metallic and non-metallic minerals, and have previously worked evaluating lithium and potassium prospects;
7. That I am responsible for preparing the document identified at the beginning of this statement, and have visited the mining claims comprised in the OCA Prospect;
8. That I have not had any prior relationship or association with the mining business owned by *First Lithium Chile SpA.*;
9. That, to the best of my knowledge, no distorted data has been used in this report that could make its contents deceptive;
10. That I have written the report as an independent professional in respect of *First Lithium Chile SpA.*;
11. That I have read the rules of the Chilean Mining Commission governing the Assessment of Mineral Resources and Reserves, and
12. That I hereby give my consent to *First Lithium Chile SpA.*, so that it may submit the Report for any purposes that it may deem convenient.

[Signature]

Aldo Moreno Salinas

Coquimbo, November 27, 2019

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## APPENDIX A. - BRINE SAMPLES

### *Activation Labs*

#### INFORME DE ANALISIS

CL18-2437 rev 1

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CLIENTE:	<b>AMS ASESORIAS GEOLOGICAS LIMITADA</b> La Fragua 1247 Coquimbo
NOMBRE LOTE:	S/N
SOLICITADO POR:	Aldo Moreno
FECHA DE RECEPCIÓN:	martes, 20 de marzo de 2018
TIPO DE MUESTRA(S):	Salmuera
CANTIDAD DE MUESTRA(S):	7
FECHA DE REPORTE:	miércoles, 18 de abril de 2018
INSTRUCCIONES DE ANALISIS:	Code 6 MB Marine Water
FACTURAR A:	<b>AMS ASESORIAS GEOLOGICAS LIMITADA</b> La Fragua 1247 Coquimbo
TOTAL DE PAGINAS: 17 (Incluida esta)	

Observacion: Este informe anula y reemplaza, al informe CL18-2437 emitido el 18-04-2018



Andrea Maluenda  
Gerente Técnico Laboratorio Ambiental

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ACTIVATION LABORATORIOS

INFORME DE ANALISIS CL18-2437 rev 1

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RESULTADOS

	Analyte Method Type Units Limit	Na	Li	Be	Mg	Al	Si	K	Ca
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		5	0.001	0.1	1	2	200	30	700
1	S-10	312772	963.525	< 0.1	21438	< 2	9081	18456	60437
2	S-11	128071	186754.656	3.5	2472500	< 2	5712	4888278	125692
3	S-12	39921280	607281.438	18.2	7222703	< 2	308	19205624	174074
4	S-15	41104744	451324.781	3.3	5000411	23	2352	844878	334096
5	S-16	38744644	422287.625	2.6	5053446	< 2	2559	827809	254703
6	S-17	417398	355233.375	2.0	4416842	184	4512	715035	928884
7	S-20	398548	331115.313	1.8	4121012	12	3546	686119	292034

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RESULTADOS

Analyte		Sc	Ti	V	Cr	Mn	Fe	Co	Ni
Method Type		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit		1	0.1	0.1	0.5	0.1	10	0.005	0.3
1	S-10	48	34.6	130.3	12.9	10.7	329	0.155	< 0.3
2	S-11	24	108.5	< 0.1	< 0.5	70.5	196	5.498	612.6
3	S-12	< 1	338.3	< 0.1	< 0.5	57.5	< 10	123.437	952.4
4	S-15	5	342.7	< 0.1	< 0.5	71.7	178	45.830	1246.5
5	S-16	4	226.7	< 0.1	< 0.5	35.2	< 10	32.787	873.6
6	S-17	12	317.3	< 0.1	< 0.5	70.9	< 10	20.974	700.1
7	S-20	6	162.1	< 0.1	< 0.5	53.7	< 10	17.348	570.4

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RESULTADOS

	Analyte Method Type Units Limit	Cu	Zn	Ga	Ge	As	Se	Rb	Sr
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.2	0.5	0.01	0.01	0.03	0.2	0.005	0.04
1	S-10	1.7	4.4	0.17	< 0.01	215.89	< 0.2	106.048	1152.92
2	S-11	51.2	57.0	0.48	< 0.01	822.75	< 0.2	18987.197	5360.17
3	S-12	75.1	71.5	2.45	< 0.01	1566.90	< 0.2	125902.063	24147.61
4	S-15	98.7	125.3	1.70	< 0.01	1741.15	< 0.2	64244.613	15013.21
5	S-16	79.1	98.6	1.18	< 0.01	1692.61	< 0.2	56516.477	12268.66
6	S-17	80.5	99.0	1.75	< 0.01	1561.85	< 0.2	44828.027	11984.11
7	S-20	82.2	104.5	0.93	< 0.01	1331.71	< 0.2	40837.945	10740.15

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ACTIVATION LABORATORIOS

INFORME DE ANALISIS CL18-2437 rev 1

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RESULTADOS

	Analyte Method Type Units Limit	Y	Zr	Nb	Mo	Ag	Cd	In	Sn
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.003	0.01	0.005	0.1	0.2	0.01	0.001	0.1
1	S-10	< 0.003	< 0.01	0.055	5.6	< 0.2	0.17	0.003	< 0.1
2	S-11	0.143	0.14	0.202	2538.5	0.6	6.21	0.096	0.4
3	S-12	0.970	0.58	1.739	11748.1	2.1	29.64	0.947	1.8
4	S-15	0.900	0.81	0.956	7119.3	1.7	18.22	0.466	1.1
5	S-16	0.420	0.36	0.563	6585.6	1.1	17.46	0.395	0.2
6	S-17	2.297	3.00	1.208	5421.9	1.0	14.94	0.347	0.3
7	S-20	0.607	0.38	0.400	5117.0	1.2	15.36	0.350	0.3

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RESULTADOS

	Analyte Method Type Units Limit	Sb	Te	Cs	Ba	La	Ce	Pr	Nd
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.01	0.1	0.001	0.1	0.001	0.001	0.001	0.001
1	S-10	0.39	0.5	78.052	1.3	< 0.001	< 0.001	< 0.001	< 0.001
2	S-11	63.22	4.3	13719.113	4.2	0.042	< 0.001	0.040	0.550
3	S-12	196.94	45.9	116147.391	18.7	0.850	0.456	0.289	3.030
4	S-15	139.29	16.8	55369.840	42.9	1.111	2.405	0.310	1.911
5	S-16	131.39	13.0	47009.707	9.8	0.238	0.173	0.106	1.124
6	S-17	110.11	10.4	35482.785	42.3	2.739	6.105	0.816	4.096
7	S-20	105.82	10.1	32584.910	32.7	0.531	1.017	0.167	1.435

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ACTIVATION LABORATORIOS

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RESULTADOS

	Analyte Method Type Units Limit	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1	S-10	< 0.001	0.008	0.019	< 0.001	0.010	0.002	0.008	0.004
2	S-11	0.376	0.107	0.300	0.052	0.209	0.065	0.167	0.055
3	S-12	1.938	0.646	1.901	0.336	1.283	0.386	0.820	0.321
4	S-15	1.004	0.314	0.976	0.166	0.611	0.272	0.479	0.130
5	S-16	0.840	0.281	0.804	0.118	0.463	0.189	0.353	0.114
6	S-17	1.509	0.323	1.141	0.211	0.840	0.225	0.546	0.131
7	S-20	0.775	0.216	0.621	0.115	0.465	0.152	0.302	0.112

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ACTIVATION LABORATORIOS

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RESULTADOS

	Analyte Method Type Units Limit	Yb	Lu	Hf	Ta	W	Hg	Tl	Pb
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.001	0.001	0.001	0.001	0.02	0.2	0.001	0.01
1	S-10	0.018	0.004	0.007	0.009	0.25	< 0.2	< 0.001	< 0.01
2	S-11	0.288	0.055	0.130	0.135	6.01	3.3	4.943	< 0.01
3	S-12	1.595	0.406	0.709	0.581	31.58	17.8	42.113	< 0.01
4	S-15	0.658	0.166	0.333	0.278	18.72	7.8	20.164	< 0.01
5	S-16	0.695	0.149	0.313	0.264	15.94	7.8	17.300	< 0.01
6	S-17	0.747	0.155	0.360	0.202	13.52	6.0	13.231	< 0.01
7	S-20	0.504	0.124	0.278	0.181	12.89	6.3	12.727	< 0.01

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ACTIVATION LABORATORIOS

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RESULTADOS

	Analyte Method Type Units Limit	Bi	Th	U	B
		MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
		µg/L	µg/L	µg/L	µg/L
		0.3	0.001	0.001	3
1	S-10	< 0.3	< 0.001	0.116	17345
2	S-11	< 0.3	0.142	12.136	1561921
3	S-12	0.7	0.766	102.743	5022545
4	S-15	0.3	0.533	44.205	3257584
5	S-16	< 0.3	0.287	38.068	3098899
6	S-17	< 0.3	1.412	29.568	2728748
7	S-20	< 0.3	0.363	26.650	2587710

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ACTIVATION LABORATORIOS

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Q.C.

Analyte	Na	Li	Be	Mg	Al	Si	K	Ca
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	5	0.001	0.1	1	2	200	30	700
QCS-CATION meas	27239			20998			21366	19914
QCS-CATION cert	30000			20000			20000	20000
QCS-A2 meas	4637	2640.701	104.6	4941	4380		4466	5347
QCS-A2 cert	5000	2500.000	100.0	5000	5000		5000	5000
S-10 original	317717	963.475	< 0.1	21500	< 2	9093	18555	60474
S-10 pulp duplicate	307827	963.575	< 0.1	21376	< 2	9070	18357	60400
bk	< 5	< 0.001	< 0.1	< 1	< 2	< 200	< 30	< 700

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Q.C.

Analyte	Sc	Ti	V	Cr	Mn	Fe	Co	Ni
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	1	0.1	0.1	0.5	0.1	10	0.005	0.3
QCS-CATION meas						10286		
QCS-CATION cert						10000		
QCS-A2 meas			94.6	85.6	206.5	4315	51.873	180.8
QCS-A2 cert			100.0	100.0	200.0	5000	50.000	200.0
S-10 original	48	35.0	131.0	12.0	10.6	309	0.152	< 0.3
S-10 pulp duplicate	47	34.2	129.5	13.9	10.8	350	0.157	< 0.3
bk	< 1	< 0.1	< 0.1	< 0.5	< 0.1	< 10	< 0.005	< 0.3

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Q.C.

Analyte	Cu	Zn	Ga	Ge	As	Se	Rb	Sr
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	0.2	0.5	0.01	0.01	0.03	0.2	0.005	0.04
QCS-CATION meas								
QCS-CATION cert								
QCS-A2 meas	174.5	1971.0			100.57	20.7		
QCS-A2 cert	200.0	2000.0			100.00	20.0		
S-10 original	1.7	4.3	0.16	< 0.01	215.73	< 0.2	106.307	1151.88
S-10 pulp duplicate	1.7	4.4	0.18	< 0.01	216.05	< 0.2	105.789	1153.96
bk	< 0.2	< 0.5	< 0.01	< 0.01	< 0.03	< 0.2	< 0.005	< 0.04

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Q.C.

Analyte	Y	Zr	Nb	Mo	Ag	Cd	In	Sn
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	0.003	0.01	0.005	0.1	0.2	0.01	0.001	0.1
QCS-CATION meas								
QCS-CATION cert								
QCS-A2 meas				10.1	187.5	9.33		
QCS-A2 cert				10.0	200.0	10.00		
S-10 original	< 0.003	< 0.01	0.053	5.6	< 0.2	0.16	0.003	< 0.1
S-10 pulp duplicate	< 0.003	< 0.01	0.056	5.6	< 0.2	0.17	0.004	< 0.1
bk	< 0.003	< 0.01	< 0.005	< 0.1	< 0.2	< 0.01	< 0.001	< 0.1

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Q.C.

Analyte	Sb	Te	Cs	Ba	La	Ce	Pr	Nd
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	0.01	0.1	0.001	0.1	0.001	0.001	0.001	0.001
QCS-CATION meas								
QCS-CATION cert								
QCS-A2 meas				4006.3				
QCS-A2 cert				4000.0				
S-10 original	0.36	0.5	78.369	1.3	< 0.001	< 0.001	< 0.001	< 0.001
S-10 pulp duplicate	0.42	0.4	77.736	1.3	< 0.001	< 0.001	< 0.001	< 0.001
bk	< 0.01	< 0.1	< 0.001	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001

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Q.C.

Analyte	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
QCS-CATION meas								
QCS-CATION cert								
QCS-A2 meas								
QCS-A2 cert								
S-10 original	0.003	0.005	0.016	< 0.001	0.006	0.002	0.008	0.003
S-10 pulp duplicate	< 0.001	0.010	0.022	0.002	0.013	0.002	0.008	0.005
bk	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

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Q.C.

Analyte	Yb	Lu	Hf	Ta	W	Hg	Tl	Pb
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit	0.001	0.001	0.001	0.001	0.02	0.2	0.001	0.01
QCS-CATION meas								
QCS-CATION cert								
QCS-A2 meas						1.0		
QCS-A2 cert						1.0		
S-10 original	0.017	0.003	0.004	0.008	0.25	< 0.2	< 0.001	< 0.01
S-10 pulp duplicate	0.020	0.004	0.010	0.010	0.26	< 0.2	< 0.001	< 0.01
bk	< 0.001	< 0.001	< 0.001	< 0.001	< 0.02	< 0.2	< 0.001	< 0.01

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Q.C.

Analyte	Bi	Th	U	B
Method Type	MB-ICPMS	MB-ICPMS	MB-ICPMS	MB-ICPMS
Units	µg/L	µg/L	µg/L	µg/L
Limit	0.3	0.001	0.001	3
QCS-CATION meas				
QCS-CATION cert				
QCS-A2 meas				808
QCS-A2 cert				750
S-10 original	< 0.3	< 0.001	0.114	17204
S-10 pulp duplicate	< 0.3	< 0.001	0.118	17487
bk	< 0.3	< 0.001	< 0.001	< 3

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## APPENDIX B – SOIL SAMPLES

# Activation Labs

## INFORME DE ANALISIS

CL18-2436

CLIENTE:	<b>AMS ASESORIAS GEOLOGICAS LIMITADA</b> La Fragua 1247 Coquimbo
NOMBRE LOTE:	S/N
SOLICITADO POR:	Aldo Moreno
FECHA DE RECEPCIÓN:	martes, 20 de marzo de 2018
TIPO DE MUESTRA(S):	Aire Reverso
CANTIDAD DE MUESTRA(S):	26
FECHA DE REPORTE:	lunes, 16 de abril de 2018
INSTRUCCIONES DE ANALISIS:	Code 1F2 Total Digestion ICP-OES
FACTURAR A:	<b>AMS ASESORIAS GEOLOGICAS LIMITADA</b> La Fragua 1247 Coquimbo
TOTAL DE PAGINAS: 11 (Incluida esta)	



Alex Caniguante  
Gerente Técnico Laboratorio Minerales

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ACTIVATION LABORATORIOS

INFORME DE ANALISIS CL18-2436

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RESULTADOS

	Analyte Method Type Units Limit	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
		ppm	%	ppm	ppm	ppm	ppm	%	ppm
		0.3	0.01	3	7	1	2	0.01	0.3
1	6391	< 0.3	4.71	21	614	1	< 2	14.04	0.7
2	6392	0.5	2.81	86	24	< 1	< 2	14.37	< 0.3
3	6393	0.4	6.50	14	388	1	6	2.25	< 0.3
4	6394	< 0.3	3.98	64	52	< 1	< 2	10.12	< 0.3
5	6395	0.6	4.78	69	252	1	3	7.20	< 0.3
6	6396	< 0.3	1.87	76	264	< 1	< 2	11.57	2.2
7	6397	0.4	6.13	46	730	1	< 2	7.49	0.9
8	6398	< 0.3	2.05	251	426	< 1	< 2	20.14	< 0.3
9	6399	< 0.3	0.72	88	196	< 1	< 2	19.17	< 0.3
10	6400	< 0.3	3.02	585	132	< 1	< 2	7.18	< 0.3
11	6401	< 0.3	1.01	548	110	< 1	< 2	11.56	< 0.3
12	6402	< 0.3	2.17	81	146	< 1	< 2	18.42	8.1
13	6403	< 0.3	4.41	47	216	1	< 2	8.38	4.5
14	6404	< 0.3	3.70	42	31	< 1	< 2	14.27	0.6
15	6405	0.7	4.34	45	31	< 1	3	11.70	< 0.3
16	6406	0.8	6.99	35	628	2	< 2	3.72	5.7
17	6407	0.6	5.56	119	83	2	4	6.14	2.3
18	6408	< 0.3	6.53	50	637	2	< 2	3.67	1.6
19	6409	0.3	6.13	63	617	2	< 2	3.57	1.6
20	6410	0.5	5.26	69	> 1000	2	5	3.56	1.3
21	6411	0.5	5.66	80	41	2	4	6.18	1.1
22	6412	0.4	5.15	96	26	2	3	7.25	0.5
23	6413	< 0.3	5.35	88	31	2	< 2	6.33	0.9
24	6414	0.3	2.10	267	27	< 1	< 2	16.64	< 0.3
25	6415	0.3	3.75	513	33	< 1	2	8.28	< 0.3
26	6416	0.3	4.15	430	28	< 1	< 2	7.77	< 0.3

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## RESULTADOS

Analyte Method Type Units Limit	Co		Cr		Cu		Fe		Ga		Hg		K		Li	
	ICP-OES		ICP-OES		ICP-OES		ICP-OES		ICP-OES		ICP-OES		ICP-OES		ICP-OES	
	ppm		ppm		ppm		%		ppm		ppm		%		ppm	
	1		1		1		0.01		1		1		0.01		1	
1 6391		7		26		36		2.31		7		< 1		1.21		36
2 6392		4		15		33		1.52		2		< 1		0.91		47
3 6393		13		44		49		4.11		18		< 1		1.71		37
4 6394		6		17		28		1.95		7		< 1		1.21		76
5 6395		7		21		27		2.22		8		< 1		1.45		84
6 6396		3		11		30		1.12		1		< 1		0.77		134
7 6397		9		22		38		2.72		11		< 1		1.75		31
8 6398		3		12		17		1.06		< 1		< 1		0.62		53
9 6399		< 1		5		11		0.50		< 1		< 1		0.31		217
10 6400		5		27		27		1.74		6		< 1		0.90		169
11 6401		2		10		14		0.61		< 1		< 1		0.56		300
12 6402		4		13		27		1.14		< 1		< 1		0.69		59
13 6403		7		35		35		2.03		8		< 1		1.21		101
14 6404		8		15		29		2.15		5		< 1		0.77		20
15 6405		8		23		30		2.58		6		< 1		0.94		17
16 6406		17		23		38		4.96		13		< 1		1.31		53
17 6407		14		46		19		4.18		12		< 1		1.40		39
18 6408		15		52		26		4.20		14		< 1		1.64		65
19 6409		13		46		25		3.93		14		< 1		1.57		61
20 6410		14		59		26		3.92		15		< 1		1.57		65
21 6411		12		55		26		3.34		10		< 1		1.42		30
22 6412		10		42		25		3.05		9		< 1		1.25		28
23 6413		11		43		27		3.28		12		< 1		1.29		29
24 6414		5		27		14		1.72		2		< 1		0.65		18
25 6415		8		24		55		2.30		5		< 1		1.35		207
26 6416		8		25		60		2.49		6		< 1		1.37		188

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ACTIVATION LABORATORIOS

INFORME DE ANALISIS CL18-2436

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RESULTADOS

	Analyte Method Type Units Limit	Mg	Mn	Mo	Na	Ni	P	Pb	Sb
		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
		%	ppm	ppm	%	ppm	%	ppm	ppm
		0.01	1	1	0.01	1	0.001	3	5
1	6391	0.96	417	< 1	1.80	12	0.047	25	< 5
2	6392	0.81	159	2	2.31	7	0.028	15	< 5
3	6393	0.92	310	3	2.07	13	0.064	25	< 5
4	6394	2.23	235	< 1	1.63	8	0.047	10	< 5
5	6395	2.33	270	< 1	1.92	8	0.051	10	< 5
6	6396	0.85	228	< 1	3.31	10	0.027	13	< 5
7	6397	0.66	515	1	2.24	11	0.040	17	< 5
8	6398	1.37	198	< 1	0.90	5	0.030	17	< 5
9	6399	3.70	1050	3	1.28	3	0.028	7	< 5
10	6400	3.61	250	< 1	2.04	2	0.084	14	< 5
11	6401	4.56	956	6	2.79	4	0.034	12	< 5
12	6402	0.88	321	< 1	1.79	10	0.038	11	< 5
13	6403	1.30	287	1	2.76	13	0.058	15	< 5
14	6404	0.63	243	< 1	1.09	10	0.056	8	< 5
15	6405	0.62	193	< 1	1.27	14	0.064	11	< 5
16	6406	1.24	676	< 1	2.12	15	0.073	14	< 5
17	6407	1.65	525	< 1	1.83	21	0.068	14	< 5
18	6408	1.61	559	< 1	1.95	23	0.054	30	< 5
19	6409	1.49	506	< 1	1.86	21	0.053	22	< 5
20	6410	1.46	520	1	2.18	13	0.052	24	< 5
21	6411	1.16	381	1	1.53	19	0.062	18	< 5
22	6412	0.96	286	< 1	1.28	19	0.060	23	< 5
23	6413	1.06	332	< 1	1.35	21	0.062	21	< 5
24	6414	0.64	177	< 1	0.69	13	0.028	9	< 5
25	6415	3.68	263	2	2.54	12	0.056	11	< 5
26	6416	3.31	272	2	2.76	14	0.058	8	< 5

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RESULTADOS

Analyte Method Type Units Limit		S	Sc	Sr	Te	Ti	Ti	U	V
		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
		%	ppm	ppm	ppm	%	ppm	ppm	ppm
		0.01	4	1	2	0.01	5	10	2
1	6391	0.23	7	784	< 2	0.31	< 5	< 10	65
2	6392	9.06	4	1295	< 2	0.23	< 5	< 10	47
3	6393	0.579	12	562	3	0.59	< 5	< 10	140
4	6394	3.16	6	716	< 2	0.29	< 5	< 10	70
5	6395	0.60	7	638	< 2	0.36	6	< 10	80
6	6396	0.67	< 4	695	< 2	0.13	< 5	< 10	36
7	6397	0.20	8	609	< 2	0.34	< 5	< 10	70
8	6398	0.43	< 4	926	< 2	0.13	< 5	< 10	37
9	6399	0.24	< 4	2710	< 2	0.04	< 5	< 10	11
10	6400	1.27	5	616	< 2	0.23	< 5	< 10	115
11	6401	0.23	< 4	523	< 2	0.08	< 5	< 10	56
12	6402	1.03	4	934	< 2	0.17	< 5	< 10	36
13	6403	0.678	9	594	4	0.35	< 5	< 10	70
14	6404	6.91	7	595	< 2	0.33	< 5	< 10	69
15	6405	5.22	9	547	3	0.40	< 5	< 10	87
16	6406	0.23	14	520	4	0.35	< 5	< 10	102
17	6407	1.20	13	482	7	0.51	< 5	< 10	133
18	6408	0.22	14	462	9	0.31	< 5	< 10	99
19	6409	0.21	13	449	2	0.41	< 5	< 10	113
20	6410	0.20	10	443	14	0.48	< 5	< 10	127
21	6411	2.39	12	591	< 2	0.45	< 5	< 10	104
22	6412	3.37	11	588	3	0.41	< 5	< 10	94
23	6413	2.67	12	562	< 2	0.43	< 5	< 10	102
24	6414	10.2	5	1627	< 2	0.19	< 5	< 10	53
25	6415	3.59	7	1689	< 2	0.27	< 5	< 10	84
26	6416	3.50	7	1315	< 2	0.30	< 5	< 10	87

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RESULTADOS

	Analyte Method Type Units Limit	W	Y	Zn	Zr
		ICP-OES	ICP-OES	ICP-OES	ICP-OES
		ppm	ppm	ppm	ppm
		5	1	1	5
1	6391	< 5	8	46	57
2	6392	< 5	4	30	38
3	6393	< 5	13	67	96
4	6394	< 5	6	37	52
5	6395	< 5	8	42	68
6	6396	< 5	4	23	30
7	6397	< 5	10	51	59
8	6398	< 5	4	24	20
9	6399	< 5	1	10	9
10	6400	< 5	6	52	40
11	6401	< 5	2	16	13
12	6402	< 5	5	38	31
13	6403	< 5	10	59	72
14	6404	< 5	8	39	68
15	6405	< 5	10	36	80
16	6406	< 5	17	119	95
17	6407	< 5	15	90	96
18	6408	< 5	15	102	62
19	6409	< 5	14	96	79
20	6410	< 5	10	89	80
21	6411	< 5	15	65	102
22	6412	< 5	14	55	93
23	6413	< 5	15	59	97
24	6414	< 5	6	29	36
25	6415	< 5	8	56	50
26	6416	< 5	8	62	55

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Q.C.

Analyte	Ag	Al	As	Ba	Be	Bi	Ca	Cd
Method Type	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
Units	ppm	%	ppm	ppm	ppm	ppm	%	ppm
Limit	0.3	0.01	3	7	1	2	0.01	0.3
OREAS 13b meas	0.6	6.80	40	264	2	3	5.39	1.1
OREAS 13b cert	0.9		57					
DNC-1a meas	0.4	8.22	< 3	164	< 1	6	7.87	0.6
DNC-1a cert				118				
6403 original	0.6	4.47	49	201	1	< 2	8.45	4.5
6403 pulp duplicate	< 0.3	4.35	45	231	1	< 2	8.31	4.4
6413 original	0.4	5.43	90	29	2	< 2	6.40	0.9
6413 pulp duplicate	< 0.3	5.28	86	32	2	3	6.27	0.9
bk	< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3

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Q.C.

Analyte	Co	Cr	Cu	Fe	Ga	Hg	K	Li
Method Type	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
Units	ppm	ppm	ppm	%	ppm	ppm	%	ppm
Limit	1	1	1	0.01	1	1	0.01	1
OREAS 13b meas	83	7495	2255	8.42	13	< 1	2.06	17
OREAS 13b cert	75	8650	2300					
DNC-1a meas	61	124	105	7.18	14	< 1	0.20	6
DNC-1a cert	57	270	100					5
6403 original	7	16	35	2.05	8	< 1	1.22	102
6403 pulp duplicate	7	54	34	2.01	8	< 1	1.20	100
6413 original	11	43	28	3.33	14	< 1	1.31	29
6413 pulp duplicate	11	43	26	3.24	10	< 1	1.28	28
bk	< 1	< 1	< 1	< 0.01	< 1	< 1	< 0.01	< 1

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Q.C.

Analyte	Mg	Mn	Mo	Na	Ni	P	Pb	Sb
Method Type	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
Units	%	ppm	ppm	%	ppm	%	ppm	ppm
Limit	0.01	1	1	0.01	1	0.001	3	5
OREAS 13b meas	2.84	1032	8	1.59	2549	0.162	33	< 5
OREAS 13b cert			9		2247	0.189		
DNC-1a meas	5.96	954	< 1	1.39	299	0.026	11	< 5
DNC-1a cert					247			1
6403 original	1.31	290	1	2.78	13	0.059	14	< 5
6403 pulp duplicate	1.29	283	1	2.74	14	0.058	16	< 5
6413 original	1.08	334	1	1.36	21	0.063	23	< 5
6413 pulp duplicate	1.05	331	< 1	1.33	21	0.061	19	< 5
bk	< 0.01	< 1	< 1	< 0.01	< 1	< 0.001	< 3	< 5

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Q.C.

Analyte	S	Sc	Sr	Te	Ti	Tl	U	V
Method Type	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
Units	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Limit	0.01	4	1	2	0.01	5	10	2
OREAS 13b meas	0.905	28	486	13	0.81	< 5	< 10	337
OREAS 13b cert	1.20							
DNC-1a meas	0.049	35	141	< 2	0.34	< 5	< 10	157
DNC-1a cert		31	144					148
6403 original	0.69	9	602	5	0.35	< 5	< 10	70
6403 pulp duplicate	0.664	9	585	3	0.34	< 5	< 10	70
6413 original	2.70	12	570	< 2	0.44	< 5	< 10	104
6413 pulp duplicate	2.63	12	554	5	0.43	< 5	< 10	101
bk	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2

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**Q.C.**

Analyte	W	Y	Zn	Zr
Method Type	ICP-OES	ICP-OES	ICP-OES	ICP-OES
Units	ppm	ppm	ppm	ppm
Limit	5	1	1	5
OREAS 13b meas	5	22	118	67
OREAS 13b cert			133	
DNC-1a meas	< 5	17	63	31
DNC-1a cert		18	70	38
6403 original	< 5	11	59	73
6403 pulp duplicate	< 5	10	59	71
6413 original	< 5	15	60	99
6413 pulp duplicate	< 5	14	59	96
bk	< 5	< 1	< 1	< 5

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