NI 43-101 PRELIMINARY ECONOMIC ASSESSMENT REPORT for the HOMBRE MUERTO NORTE PROJECT SALTA PROVINCE, ARGENTINA

Prepared by:

Knight Piésold Ltd.

1400 - 750 W Pender St.
Vancouver, BC V6C 2T8

JDS Energy & Mining Inc..

Suite 900, 999 W Hastings St.

Vancouver, BC V6C 2W2

Prepared for:

NRG Metals Inc.

750 West Pender St., Suite 804

Vancouver, BC V6C 2T7

Qualified Persons	Company
Richard Goodwin, P.Eng.	JDS Energy and Mining Inc.
Alex Mezei, P.Eng.	Knight Piésold Ltd.
Ken Embree, P.Eng.	Knight Piésold Ltd.
Mike Rosko	Montgomery and Associates

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NOTICE

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1 Executive Summary

1.1 Introduction

This Technical Report presents the results of a Preliminary Economic Assessment (PEA) for the Hombre Muerto Norte Project in the northern part of the Salar del Hombre Muerto, in the vicinity of Salta and Catamarca provincial boundary and within in the Argentinean Puna geological environment.

It is based on resources previously defined and disclosed by Montgomery & Associates ("M&A", 6 October 2018) and an independent evaluation of the project's economics at a level of detail that is commensurate with a PEA.

1.2 Location and Description

The Project is located northern portion of the Salar del Hombre Muerto, at the boundary zone of the Catamarca and Salta provinces, 170 km southeast of the city of Salta. The Project area comprises a collection of properties or concessions acquired under purchase options from the existing owner. The properties are held as "minas" (full mining licenses not subject to further area reduction requirements) by Mr. Jorge Moreno, a private borate producer focused on the exploration, exploitation and marketing of ulexite. The Project comprises six properties distributed over the Salar for a total of 3,237 ha, as shown in Table 1-1. The area of the Property is not subject to any known environmental liabilities.

Table 1-1: Summary of Property Concessions for the Hombre Norte Project

Concession Identifier	Concession File Identifier	Area (ha)
Alba Sabrina	18.823	2,089
Tramo	18.993	383
Natalia Maria	18.83	115
Gaston Enrique	18.824	55
Norma Edith	18.829	285
Viamonte	13.408	310
	TOTAL	**3,237**

Source: M&A (2018)

1.3 Accessibility, Physiography, Climate, Local Resources and Infrastructure

The most common access is from Salta along national route RN-51 for 230 km, northwest to Cauchari, and then south along routes RP-27 and RP-17 for 170 km. The climate is characterized as a cold, high elevation, desert environment with very little precipitation and extreme evaporation rates. Main infrastructure includes a 600 megawatt/375 kilovolt (KV) power line between Salta and Mejillones, Chile passing about 160 km north of the Property. A natural gas pipeline, connecting mine operations in the Puna, passes 10 km from the Property area. A railroad is being reactivated between Salta and the Antofagasta seaport in Chile, passing 100 km north of the property. Currently, Salta province and private companies, such as Total Eren, are considering a new gas pipeline and power distribution project that would use 32% renewable energy. The project could be completed in 18 to 24 months. NRG is being considered as a potential future off-taker.

1.4 History

No significant past mining exploration on the Property has occurred, although One Borax has mined minor amounts of borates (ulexite). Since 1996, the Fenix Mine (FMC Lithium) in the Salar has been producing 10,000 t/a of Li_2CO_3. The Tincalayu borate mine initiated operations in 1954 and continues producing through Orocobre Ltd. In 1979, the Argentinean Government conducted exploration for lithium covering a number of salars in the Puna including the Salar del Hombre Muerto. More recently Galaxy Resources Limited (Galaxy) defined a lithium and potassium brine resource and reserve at their Sal de Vida project, adjacent to the Property.

1.5 Geological Setting

The Puna region has a complex geological history tracing back to the Precambrian. Starting in the Jurassic, the area became a new and active plate margin, with associated volcanic arc and basin development. By the Oligocene to Miocene (25 to 20 Ma), the region was consolidated as an uplifted terrain, with basin and range geomorphological positioning and endorheic drainages. Leaching of favorable lithologies and repeated seasonal precipitation and extreme evaporation rates in the closed basins resulted in large accumulations of lithium and potassium bearing brines.

Local geology at the Salar del Hombre Muerto includes a basement built up of Precambrian and Early Paleozoic intrusive sedimentary and metamorphic events, thick sequences of Ordovician marine sedimentary rocks topped by continental Mesozoic sedimentary units. These are overlain by Miocene to Pliocene volcanic developments, which are common characteristics of the salars within the sedimentary basins of the region.

1.6 Deposit Type

The lithium bearing brines are liquid mineral deposits accumulated at depth in the basins and defined by:

- the volume and transmissibility of the brine aquifer
- the effective porosity of the sediments
- the amenability for circulation brines to extraction wells as a mining method, and
- the salar geometry in lateral and vertical extensions.

Mineral resources and reserves have been estimated to a depth of 300 m at the neighboring Sal de Vida project (Galaxy Resources). The western part of the Salar del Hombre Muerto is host to FMC Lithium's Fenix Mine (approximately 20 km south of the Property), which has been producing lithium brine for over 20 years.

1.7 Exploration

Exploration completed in October 2016 and January 2017 at the Project includes surface geochemical sampling totaling 20 brine samples with anomalous high values of lithium and potassium. Sample results range from 48 to 1,064 mg/L lithium concentration and averaged 587 mg/L lithium concentration. Magnesium to lithium ratios range from 1.1:1 to 10.2:1, averaging 4.6:1. Averages for three areas of the Project are provided as follows.

Table 1-2: Averages of Surface Brine Sample Assays for the Hombre Muerto Norte Project

Sample Set	Li (mg/L)	K (mg/L)	Mg (mg/L)	Mg/Li
Tramo Group	655	4,791	2,337	3.9
Alba Sabrina Group	310	2,482	2,345	8.2
Salar Group[a]	741	6,788	1,224	1.6

Source: M&A (2018)

Notes: combined salar properties: Natalie Maria, Gaston Enrique, Norma Edit, and Viamonte

The third round of sampling was conducted by QP Michael Rosko on January 10, 2018, and included collection of seven samples, SHMN-001, -003, -004, -006, -007, -009, and -011 (not including duplicates); results are shown in Table 1-3.

Table 1-3: Summary of 2018 Geotechnical Results for Surface Brine Samples (3rd Round)

Sample	Location Name	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	B (mg/L)	Na (mg/L)	K (mg/L)	Density g/mL	Conductivity (mS/cm)	Mg/Li
SHMN_001	Tramo #1	1,120	978	3,594	255	91,495	8,554	1.163	189	3.21
SHMN_002	Tramo #2	792	940	2,392	277	86,552	6,049	1.151	181	3.02
SHMN_004	Tramo #3	1,011	1,105	2,378	396	96,202	9,236	1.169	192	2.35
SHMN_005	Tramo #3 Duplicate	1,008	1,104	2,379	395	96,393	9,539	1.169	193	2.36
SHMN_006	Tramo #4	1,216	1,381	3,718	177	98,220	10,368	1.175	193	3.06
SHMN_007	Alba Sabrina #5	353	737	2,674	244	80,373	3,059	1.134	171	7.58
SHMN_009	Natalia Maria #6	911	944	1,300	435	109,391	8,857	1.181	195	1.43
SHMN_010	Natalia Maria #6 Duplicate	913	943	1,297	432	109,943	8,861	1.181	195	1.42
SHMN_011	Natalia Maria #7	793	1,018	1,075	399	106,828	8,870	1.178	194	1.36

Source: M&A (2018)

A ten station CSAMT geophysical survey completed by GEC indicates a shallow, low resistivity anomaly along the “Tincalayu Gulf” on the Alba Sabrina property. The anomaly extends up to 250 m in vertical expression. Additionally, a well-defined low resistivity anomaly is developed over the Tramo and Natalia Maria properties, showing vertical extensions potentially up to 250 m or more over approximately 6 km. The low resistivity anomalies detected by the CSAMT survey are considered to be indicative of the presence of brine.

1.8 Metallurgical Testing

Baseline evaporation investigation was conducted at the Instituto de Beneficio de Minerales (INBEMI) at Universidad Nacional de Salta. The results to-date were used to validate the basic evaporation model based on solution analyses. Subsequently, a predictive model was established for the industrial process, consisting of pre-concentration evaporation to breaking point followed by liming and subsequent final concentration. The concentrated lithium brine is directed to hydrometallurgical processing to produce Li_2CO_3.

1.9 Mineral Resource Estimates

Results of the calculations for estimating the Measured and Indicated Resource for the Tramo concession are summarized in Table 1-4.

Table 1-4: Summary of Measured and Indicated Resource

Resource Category	Brine Volume (m^3)	Avg. Li (mg/L)	In situ Li (t)	Avg. K (mg/L)	In situ K (t)
Measured	119,862,077	797	95,556	7,039	843,671
Indicated	21,936,404	534	11,714	5,517	121,023
M+I	**141,798,481**	**756**	**107,270**	**6,803**	**964,694**

Source: M&A (2018)

Notes: Cutoff grade: 500 mg/L lithium – No laboratory results were less than 500 mg/L

The reader is cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability.

It is common in the lithium and potassium industries to report lithium and potassium metals as equivalents. Lithium carbonate (Li_2CO_3) is a commonly reported equivalent for lithium; potassium chloride (KCl) is a commonly reported equivalent for potassium. Equivalents for Li_2CO_3 and KCl are shown in Table 1-5.

Table 1-5: Summary of Li_2CO_3 and KCl Equivalents

Resource Category	In situ Li (t)	Li_2CO_3 Equivalent (t)	In situ K (t)	KCl Equivalent (t)
Measured	95,556	508,627	843,671	1,608,881
Indicated	11,714	62,351	121,023	230,791
M+I	**107,270**	**570,979**	**964,694**	**1,839,672**

Source: M&A (2018)

Notes: Cutoff grade: 500 mg/L lithium

The following averages and ratios have been computed as weighted averages using all depth-specific brine samples obtained and analyzed from core holes TH18-01 and TH18-02, and extrapolated values from the lower part of well TWW18-02 (based on completed drilling as of the effective date of the 2018 M&A report). Final drilling of TWW18-02 as documented in this report has no effect on the previous resource estimate.

MEASURED RESOURCE

- average lithium grade is approximately 797 mg/L as lithium
- average potassium grade is about 7,039 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.7
- average sulfate:lithium (SO_4/Li) ratio is about 11.0

MEASURED AND INDICATED RESOURCE COMBINED

- average lithium grade is approximately 756 mg/L as lithium
- average potassium grade is about 6,803 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.6

- average sulfate:lithium (SO_4/Li) ratio is about 11.7

1.10 Mining

Well holes with internal pumps will be used to transfer brine to one of three pre-concentration ponds located near the processing plant. At present there are two holes on the property that are drilled to 400 m depth and are suitable for production brine pumping. An estimated 100 L/s of brine will be required to feed the ponds and processing plant sufficiently to achieve the targeted production rate of 5,000 t/a of Li_2CO_3. Three well holes will be required to achieve this rate. An additional four holes will be drilled during the pre-production period, bringing the total to six and providing double the well requirement as a contingency.

1.11 Processing

The recovery method consists of classic lithium salar concentration and pre-purification through solar evaporation followed by advanced hydrometallurgical processing where the brine is further purified, and the lithium is recovered as a high-purity Li_2CO_3.

The process involves the following main steps:

- Brine production from wells
- Pre-concentration through solar evaporation in shallow ponds
- Bulk-impurity removal by liming
- Concentration through solar evaporation
- Chemical adjustment prior to boron removal
- Boron removal by solvent extraction
- Advanced impurity removal by polishing precipitation
- Li_2CO_3 precipitation by carbonation with sodium carbonate (Na_2CO_3)
- Li_2CO_3 purification by re-dissolution with carbon dioxide and re-precipitation by desorption
- Li_2CO_3 drying, conditioning and packaging.

It is envisaged that the precipitation by carbonation with sodium carbonate will generate a superior yet still technical grade product (99% Li_2CO_3), whereas the purification will target a battery-grade product (99.5% Li_2CO_3).

The process for lithium recovery is shown as Figure 1-1.

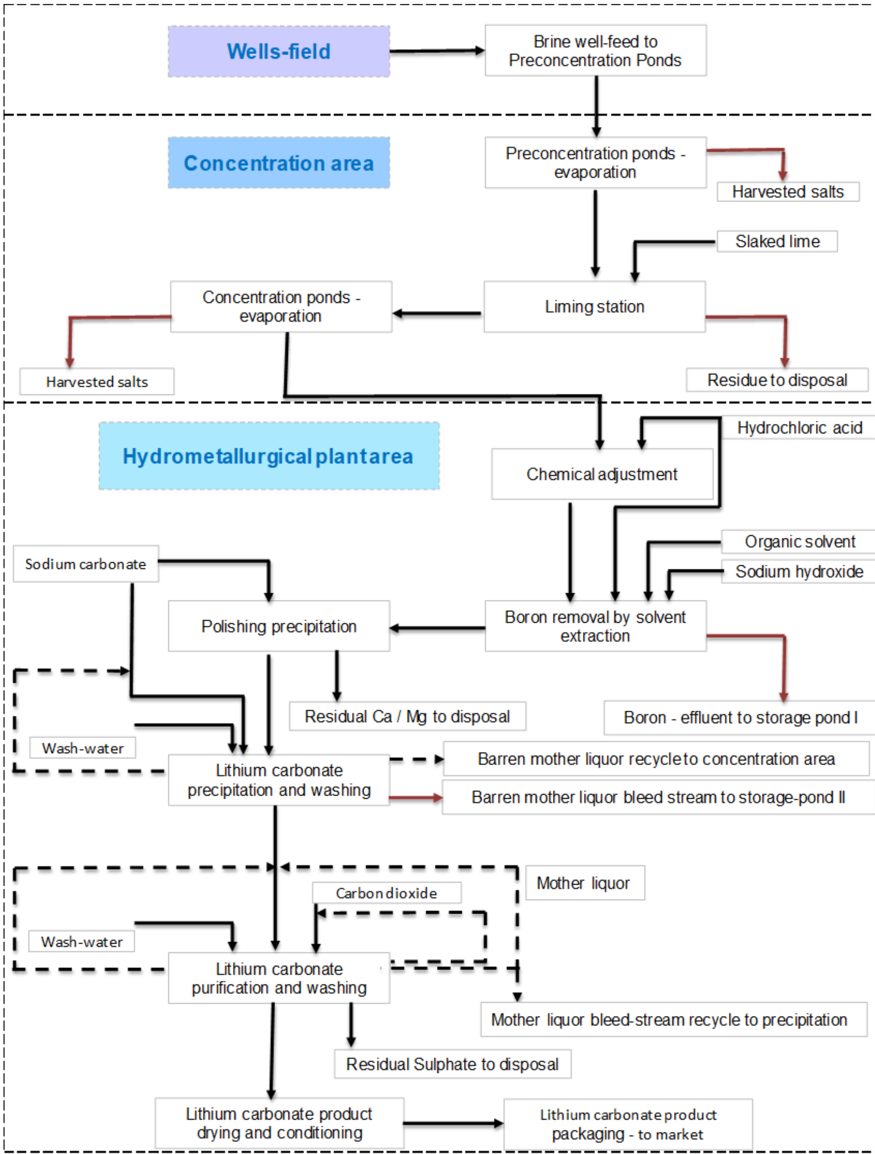


Figure 1-1: Process Block Diagram

(Source: KP/JDS 2019)

1.12 Infrastructure

The project consists of the following main components:

- Four Salar Brine Extraction Wells (as discussed in Section 1.10)
- Concentration ponds
- Combined Heat and Power Unit (CHP)
- Li_2CO_3 Processing Plant

- Camp Facility
- Fresh and Potable Water Supply

1.12.1 Concentration Ponds

Based on the climatic conditions of site, it was estimated that a total surface area of 179 ha of concentration ponds would be required to sustain the full production rate of 5 kt/a of Li_2CO_3.

Pumps will be used to transfer the brine between the successive concentration ponds.

The concentration ponds will be built on the Alba Sabrina property. The general arrangement of the ponds is shown in Figure 1-2.

The ponds will be lined with geomembrane and geotextile, to prevent leakage losses. Each will be supplied with an access road network, harvesting roads for salt removal operations, electrical lines for powering the pumps and water lines to transfer the brine.

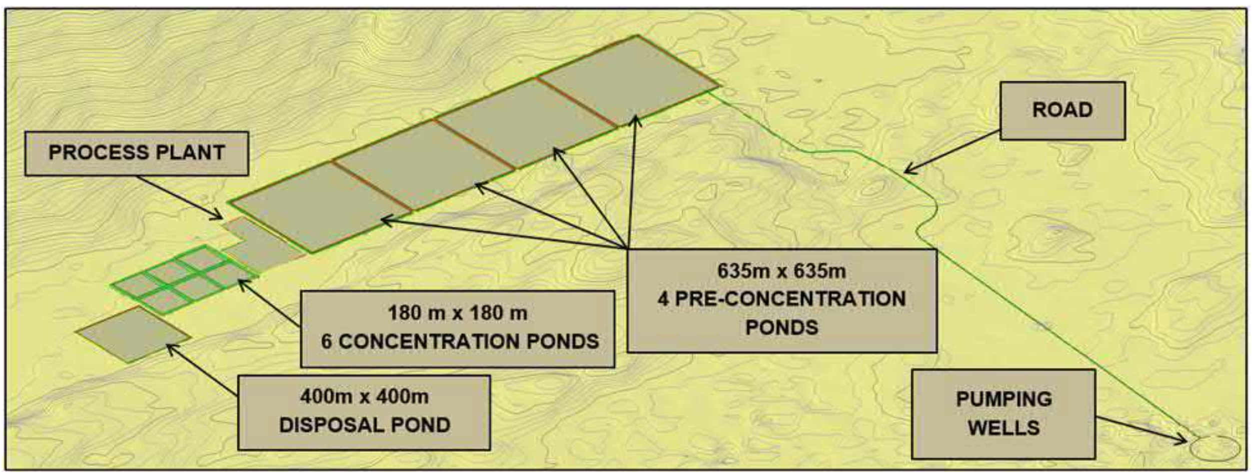


Figure 1-2: Pumping Wells and Concentration Ponds
(Source: KP/JDS 2019)

1.12.2 Combined Heat and Power Unit

The combined heat and power unit (CHP) will operate on natural gas. Power will be required for the following facilities:

- brine well extraction pumps
- evaporation pond pumps
- Li_2CO_3 plant
- camp

A total requirement of 6.5 MW is anticipated, 5 MW of which will be supplied by liquid natural gas (LNG) powered generators and 1.5 MW from a solar power plant.

Five C1000S Capstone electric generators are required, each with a generation capacity of 1 MW.

The combustion gases exhausted from the generators will be used to provide heat for the process to help the desired chemical reactions to develop.

1.12.3 Natural Gas Pipeline

The Project considers a virtual gas pipeline of truck haulage to site. The LNG will be provided by a company that provide this service in Argentina.

1.12.4 Lithium Carbonate Plant

The process plant will be located adjacent to the evaporation and concentration ponds. This building will include the following:

- Li_2CO_3 Plant Wet Area
- Product Building
- Laboratory
- Offices
- Medical Services
- Maintenance Workshop
- Spare Parts Warehouse
- Control Room
- Electrical Equipment Room
- Reagents Storage Room

1.12.5 Camp Facility

A 65-worker camp will be provided to house the workforce. It will be located within walking distance of the industrial complex to avoid transportation of workers to and from the camp.

1.12.6 Fresh and Potable Water Supply

Fresh water wells will be drilled and fitted with pumps to supply non-potable water to the mill and for other industrial uses. It will be located approximately 3 km from site and a pipeline will be installed.

Potable water will be brought in bottles for worker consumption in the offices and camp.

1.13 Environment and Permitting

1.13.1 Environmental

The authors are not aware of any environmental liability associated with the activities performed thus far on site.

NRG is intending to develop the project in a manner that complies with all government regulations and displays good stewardship with regard to the environment

1.13.2 Permitting

As of the date of this report, NRG has received a provisional permit for camp installation. Aside from this, NRG has not applied for any other permits.

An Environmental Impact Report (EIR) must be presented before the start of the activity following the guidelines indicated in Append III, of the Complementary Standard approved by COFEMIN, considering the exploitation stage started when the infrastructure works for mining production begin.

The EIR for this stage will contain description of the environment, description of the project, description of the environmental impacts, environmental management plan, action plan against environmental contingencies, methodology used, and standards consulted.

The Mine Closing activity should not be considered as another stage of the process but as part of it, and the environmental measurements planned and executed from the beginning of the activity must be considered in the EIR presented.

The Environmental Management Plan includes the actions related to the Monitoring Plan, cessation and abandonment of the operation and post-closure monitoring of operations.

The DIA (Environmental Impact Statement) is the administrative act based on the mining environmental regulations, approving an EIR, pronounced by the Application Authority and by means of which the specific conditions to which the owner company must adjust during all the stages of the project are established

In all initial proceedings, in the Province of Salta, the Environmental and Social Impact Report (EIR) must be submitted to the Mining Court where it is sent to the Ministry of Mining, as the enforcement authority in accordance with Provincial Decree No. 1342/97.

The Secretary of Environment, which is the Authority for Protected Areas and Hazardous Waste, is subsequently seen.

1.13.3 Social

The Project is not anticipated to have any significant impact on the current social setting of the region, although no social or community studies have been conducted yet. This will be required as the Project is developed.

1.13.4 Mine Closure

A conceptual closure plan and cost has been developed for the project. There are no specific laws in Argentina that specify mine closure requirements, and there is no bonding requirement. The closure plan for the Project has been developed in consideration of best industry practice. The closure plan was designed to accommodate the following objectives:

- Health and security of the public
- Protection of the environment
- Ensure physical and chemical stability of post-closure structures
- Ensure unrestricted and unimpacted natural surface water flow
- Prevent erosion of post-closure structures from wind or water
- Safe removal of impacted surface structures and buildings

Buildings and surface structures will be cleaned of residual fuels, lubricants, reagents, and wastes prior to being deconstructed and dismantled. Recyclable wastes will be reused wherever possible. All structures will be removed to ground level, with concrete slabs or other inert foundations covered with native material. Salt residues will be placed and contoured on the salar.

Closure costs have been estimated at $2.6 Million.

1.13.5 Summary Statement

Currently there are no known environmental or permitting issues that could materially impact the issuer's ability to extract the mineral resources or conduct additional work necessary to declare mineral reserves.

1.14 Economics

1.14.1 Capital Cost Estimate

The total estimated capital cost is shown in

Table 1-6.

The estimates are expressed in 2019 US dollars without escalation.

Working capital requirements are estimated to be US$ 2.6 million; in addition, sustaining capital expenditures total US$ 14.5 million over the 30-year period of the project. Disbursements of these expenditures start in Year 5.

The following items are excluded from this estimate:

- Sunk and legal costs.
- Special incentives and allowances.
- Escalation.
- Interest and financing costs.
- Exploration expenses.

Table 1-6: Capital Cost Estimate Summary (US$M)

Description	Total CAPEX US$000
Direct Costs	
Brine Production Wells	1,744
Evaporation and Concentration Ponds	22,780
Li_2CO_3 Plant	29,207
Infrastructure	14,495
Mobile Equipment Allowance	500
Total Direct Costs	**68,726**
Indirect Costs	
Freight and Customs Expenses	2,177
Crew Transportation	163
Engineering	2,688
Construction Supervision	1,624
Technical Inspections	900
Insurance (0.3% Prorated)	87
Vendor Assistance	623
Commissioning	1,000
Owner's Costs	644
Catering	760
Environ. and Gov't Permits and Studies	687
Total Indirect Costs	**11,352**
Subtotal (Directs + Indirects)	**80,078**
Contingency (17%)	**13,277**
Total Capex	**93,355**

(Source: KP/JDS 2019)

1.14.2 Operating Cost Estimate

The total estimate of operating cost for the Project is shown in Table 1-7.

The operating cost estimate was prepared with an accuracy level of +/- 30% for the production of 5,000 t/a of Li_2CO_3. Preliminary vendor quotations were used to estimate reagent costs based on projected consumptions, as discussed in Section 18.2.3. Salaries and wages have been estimated using experience with similar projects in the mining area. The LNG price was obtained through a budgetary quotation of Galileo Technologies. Transportation prices have been taken from the quotation of a specialized company that works mainly in the north of Argentina.

Table 1-7: Summary of Operating Cost Estimate ($USD)

Description	$/a	$/t Li_2CO_3
Direct Costs		
Chemical Reagents	8,740	1,748
Salt Removal and Transport	780	156
Energy (M$/a)	1,127	225
Manpower	2,167	433
Catering & Camp Services	359	72
Equipment Operation (allowance)	230	46
Maintenance	1,201	240
Transportation to Port	308	62
Direct Costs Subtotal	**14,912**	**2,982**
Indirect Costs		
General & Administration	700	140
Indirect Costs Subtotal	**700**	**140**
Production Li_2CO_3 Total Costs	**15,612**	**3,122**

(Source: KP/JDS 2019)

1.14.3 Economic Model

An economic model was developed to estimate annual cash flows and sensitivities of key parameters on the Project. Pre-tax estimates of project values were prepared for comparative purposes, while after-tax estimates were developed to approximate the true investment value. It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations.

This PEA is preliminary in nature and there is no certainty that the results of this PEA will be realized.

The economic model is based on a 30-year production forecast at a steady-state production rate of 5,000 t/a of Li_2CO_3, a total production of 148 kt, as discussed in Section 16.1.

*The project is projected to generate a **Pre-Tax NPV$_8$ of $335 M** and an **IRR of 32.6%** with a **pay-back period of 2.7 years**.*

*The **Post-Tax** result is an **NPV8 of $217 M** with an **IRR of 27.7%** with the **same payback period**.*

1.14.4 Sensitivities

A constant Li_2CO_3 price of $12,420 /t USD was assumed over the duration of the Project, determined using the historic three year trailing average price and the projected price for the next two years, as defined in Section 20.4. This selected price was varied by +/- 25% for this analysis, yielding a “high” price of $15,525 /t and a “low” price of $9,315/t. The pre-tax and post-tax economic results for this range of pricing is shown in Table 1-8.

Table 1-8: Pre-Tax and Post-Tax Economic Result for Range of Li_2CO_3 Prices

Price Scenario	Li_2CO_3 Price, $/t	Pre-Tax		Post-Tax	
		NPV_8	IRR	NPV_8	IRR
High	15,525	482	41.2%	313	34.8%
Medium	**12,420**	**335**	**32.6%**	**217**	**27.7%**
Low	9,315	188	23.1%	120	19.7%

Source: JDS (2019)

A univariate sensitivity analysis was performed to examine which factors most affect the project economics when acting independently of all other cost and revenue factors (see Figure 1-3). Each variable evaluated was tested using the same percentage range of variation, from -20% to +20%, although some variables may experience significantly larger or smaller percentage fluctuations over the LOM.

The Project is most sensitive to lithium price and/or grade (the curves are identical). A 25% increase in price yields a 44% increase in post-tax NPV.

The production rate is the next most sensitive variable, followed by the operating costs and pre-production capital costs.

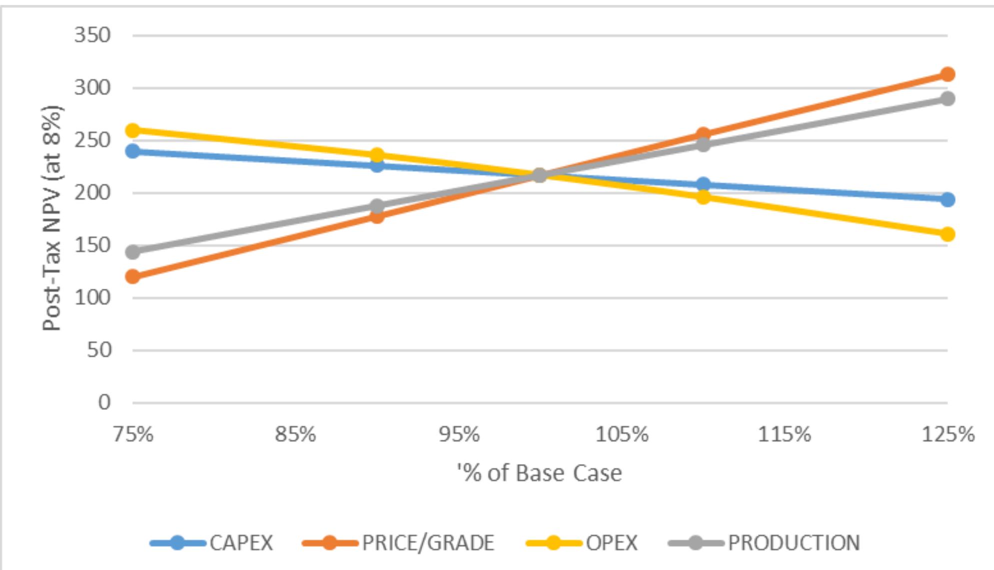


Figure 1-3: Sensitivity Analysis

(Source: KP/JDS 2019)

1.15 Conclusions

The geochemical sampling results for the Project reveal large concentrations of lithium when compared with other projects in the salars of the Puna region. The available geophysical data outlined large, deep resistivity target areas amenable to be drilled and tested for lithium-enriched brine; recent exploration drilling and testing on the Tramo concession confirmed this.

The PEA economic analysis shows that this Project has the potential to be economic subject to the assumptions used in the current economic model. This assertion should be supported by a bankable Feasibility Study before proceeding with construction, however.

1.16 Recommendations

The following section outlines specific recommendations for the advancement of this project towards production.

1.16.1 Process Testwork

It is recommended that the current process model be updated and validated with data generated by the recommended testwork package detailed in Section 13 of this Technical Report, including:

- Laboratory scale parametric studies including finalizing the evaporation testwork, extraction/strip isotherms, loadings, reagent regimes, residence times, actual response to precipitation and purification, separation unit areas and outputs for thickeners and filters, pulps-flow-response, etc.
- Pilot-level validation, aiming for the generation of the Pre-feasibility study-level data whilst validating the final integrated process flowsheet
- Parallel “opportunistic” investigation of the potential products that could be recovered from the evaporated salts, as well as from the partly evaporated boron effluent discharge, for possible future development consideration.

1.16.2 Numerical Groundwater Model

A numerical groundwater flow model should be prepared in the Tramo area to be able to upgrade the current Resource to an economic Reserve. To prepare a reliable groundwater flow model, additional information is needed for the basin boundaries and aquifer in that part of the basin. Because NRG has drilled several exploration wells in the Tramo concession, these will be able to function as calibration points for recommended geophysical surveys. When additional wells have been drilled and tested in the other concessions, the groundwater flow model would be modified to include other areas.

1.16.3 Fresh Water Supply

Further investigation is required to confirm the possibility of obtaining sufficient fresh water in reasonable proximity to the project for processing. Test drilling should be done on site to determine the most likely location of such a well and work should begin on securing those rights and/or permits.

1.16.4 Feasibility Study

It is recommended that NRG focus on the further assessment and development of the Tramo concession. Data collected from the testwork and the numerical model should be used to inform a pre-feasibility (PFS) or feasibility study (FS) that includes a more detailed estimation of capital and operating costs as well as more definition on the marketing of the final product.

1.16.5 Geotechnical Drilling and Analysis

In support of the Feasibility Study, geotechnical drilling and analyses should be performed to confirm the foundation requirements for all surface structures.

1.16.6 Permitting

The company should continue to advance its baseline environmental testwork and studies as well as social impact investigations to support future permit applications.

1.16.7 Costs

The total cost of the above recommended activities is summarized as follows:

Process testwork	$2.0 M
Numerical Groundwater Model	$0.2 M
Fresh Water Supply Drilling	$0.1 M
Feasibility Study	$2.0 M
Geotechnical Drilling and Analyses	$0.3 M
Permitting	$1.0 M
Total	**$5.6 M**

2 Introduction

2.1 Qualifications and Responsibilities

There are four Qualified Persons who contributed to and are responsible for the content of this Study, all of whom are “Qualified Persons” (QPs) as defined under Canadian national Instrument NI 43-101 and are independent of NRG Metals Inc.:

Richard Goodwin (RG), P.Eng., Project Manager for JDS Energy & Mining, Inc., Mr. Goodwin is a mining engineer and Study manager with over 30 years of experience managing mining operation and projects in various commodities such as base metals, precious metals, PGMs, and diamonds in various domestic and international locations. Richard is responsible for Sections 1.1, 1.10, 1.14 to 1.16, 2, 3, 15, 16, 19, 21, 22, 24, 25.13 to 25.2.2, 26.2 to 26.7, and 27 of this Technical Report.

Alex Mezei (AM), P.Eng, Consulting Process Engineer for Knight Piésold Ltd. Mr. Mezei has extensive experience in base, precious, rare and light metals, including lithium, cobalt, and graphite. Alex is responsible for Sections 1.8, 1.11, 13 and 17, 25.1.1, 25.1.2 and 26.1 of this Technical Report.

Ken Embree (KE), P.Eng, President of Knight Piésold Ltd. Mr. Embree is a geological engineer with over 28 years of experience providing engineering support to mining projects, focusing on tailings, waste and water management in domestic and international locations. Ken is responsible for Sections 1.12, 1.13, 18 and 20 of this Technical Report.

Mr. Michael Rosko (MR), P.G. through Montgomery & Associates (M&A) is a Registered member of Society for Mining, Metallurgy, and, Exploration (SME), and has many years of experience designing and evaluating lithium brine exploration and development projects. Michael is responsible for Sections 1.2 to 1.7, 1.9, 4 to 12, 14 and 23 of this Technical Report.

2.2 Site Visits

Mr. Goodwin visited the NRG property on 19 December 2018 with Fernando E. Villarroel of NRG Metals Inc. Both drill sites were visited as well as one optional site for location of the concentration ponds and processing facility. They were accompanied by Gonzalo Laciar of Knight Piésold’s Mendoza office. On 20 December 2018, Mr. Goodwin visited the Universidad Nacional de Salta and observed the ongoing evaporation testwork.

Mr. Rosko visited the NRG property on 7 July 2017, 10 January 2018, and 13 April 2018; previously, during the period from 2011 through 2013, Mr. Rosko had visited Salar de Hombre Muerto multiple times while working for Lithium One Inc. and Galaxy Resources Limited. In addition, a senior hydrogeologist working for Mr. Rosko visited the site near the beginning of the most recent drilling and testing program from 2-5 May 2018.

2.3 Units, Currency and Abbreviations

Unless specifically stated otherwise:

- All units in this report are metric
- All dollar values are expressed in 2019 $USD

A list of commonly used abbreviations and acronyms and definitions are included in Section 29.

2.4 Sources of Information

The following three reports were previously prepared for this Project, and much of what is in these reports has been modified or copied directly in this report:

- Rojas y Asociados, 2017. Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina. Technical report prepared for One Borax S.A., 102 p.
- Montgomery & Associates Consultores Limitada, 2017. Technical report for the Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina: October 9, 2017. Report for NI-43101 prepared on behalf of NRG Metals, Inc.
- Montgomery & Associates Consultores Limitada, 2018. Initial Measured Lithium and Potassium Resource Estimate, Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina: September 2018. Report for NI-43101 prepared on behalf of NRG Metals, Inc.

The current Report supersedes these three older reports.

In addition to the reports prepared directly for the project area, the following report was relied on because the Project area is adjacent and many of the conclusions from the report are relevant to the current Project.

- Montgomery & Associates, Inc., and Geochemical Applications International, Inc., 2012. Measured, indicated, and inferred lithium and potassium resource, Sal de Vida project, Salar del Hombre Muerto, Catamarca-Salta: March 7, 2012. Report for NI-43-101 prepared on behalf of Lithium One Inc.

A comprehensive list of other reference materials is included as Section 29.

3 Reliance on Other Experts

The following persons were relied on for the preparation of this report:

1. Jorge Enrique Moreno, President of One Borax S.A., and José Hector Isa, Counsel of One Borax, for control of the standing of property in the Salta Mining Court
2. The expertise of geologists Sergio Lopez and Pedro Ruiz, geologists engaged by One Borax to conduct brine sampling and geological mapping
3. The work completed by geophysicist Sascha Bolling (GEC), for performance of a CSAMT survey and interpretation of respective geophysical data, and
4. The opinion of lawyer Jorge Vargas of Vargas Galíndez Abogados on the mining rights covering partially the “zone of overlapping jurisdiction” between Salta and Catamarca provinces. *However, it should be noted that the resource estimation considered in this report is for the Tramo concession and it is 100% located within the jurisdiction into the Salta Province.* The full legal opinion is included as Appendix A.

4 Property Description and Location

4.1 Location

The Project is in the north part of the Salar del Hombre Muerto, close to the boundary of the Catamarca and Salta provinces, in northwest Argentina. The Project is in the Argentinean Puna, at an elevation of approximately 4,000 meters above sea level (masl) and lies approximately 1,400 km northwest of the capital of Buenos Aires. Straight-line distance from Salta's provincial capital is 170 km WSW; from the city of Catamarca, the Project is 380 km NNW; and from Antofagasta, Chile the Project is 390 km SE (see Figure 4.1).

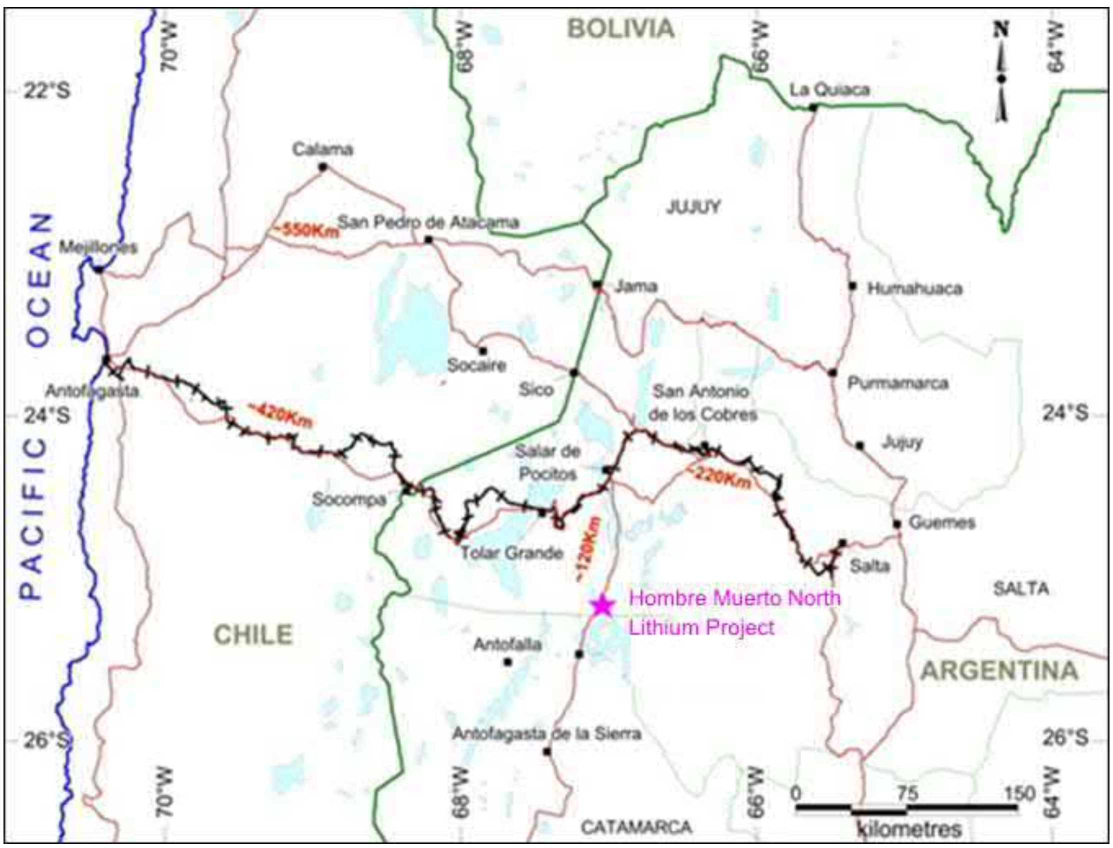


Figure 4-1 Location and Access to the Project, Salar del Hombre Muerto, Argentina

Source: M&A (2017)

4.2 Property Description and Ownership

The Hombre Muerto North Project (formerly the "New Brine Lithium Project") comprises six Exploitation Concessions (minas) totaling 3,237 ha registered by One Borax S.A. and distributed at the north part of the Salar del Hombre Muerto. One Borax S.A. is a private Argentinian company owned by Mr. Jorge Moreno of Salta, Argentina. The concessions are registered at Salta Mining Court as Alba Sabrina (File 18.823), Tramo (File 18.993), Natalia Maria (File 18.830), Gaston Enrique (File 18.824), Viamonte (File 13.408), and

Norma Edit (File 18.829). Location and coordinates of the properties are shown in Figure 4.2 and summarized in Tables 4.1 and 4.2.

On May 17, 2017, NRG Metals Inc. of Vancouver, British Columbia, Canada entered into a purchase option agreement to acquire the Project from Mr. Jorge Moreno, who is a private borate producer from Salta, Argentina. Terms of the agreement are itemized as follows:

1. US $50,000 on signing for a 90-day due diligence period and for the completion of a NI 43-101 Technical Report on the project. The due diligence period may be extended to 120 days, if necessary.
2. Upon acceptance of the NI 43-101 report by the TSX, NRG will pay Mr. Moreno US $100,000 and issue one million common shares of NRG common stock. At that time, Mr. Moreno will join the board of NRG Metals Inc.'s Argentine subsidiary.
3. At six months from Item 2, US $250,000 and one million common shares of NRG.
4. At 12 months from Item 2, US $250,000 and one million common shares of NRG.
5. At 18 months from Item 2, US $1,000,000 and one million common shares of NRG.
6. At 30 months from Item 2, US $1,000,000 and two million common shares of NRG.
7. At 42 months from Item 2, US $1,000,000 and two million common shares of NRG.
8. At 54 months from Item 2, US $2,000,000 and two million common shares of NRG.

The project will be subject to a 3% Net Production Royalty, of which 50% may be purchased for US$3,000,000 within 36 months of Item 2.

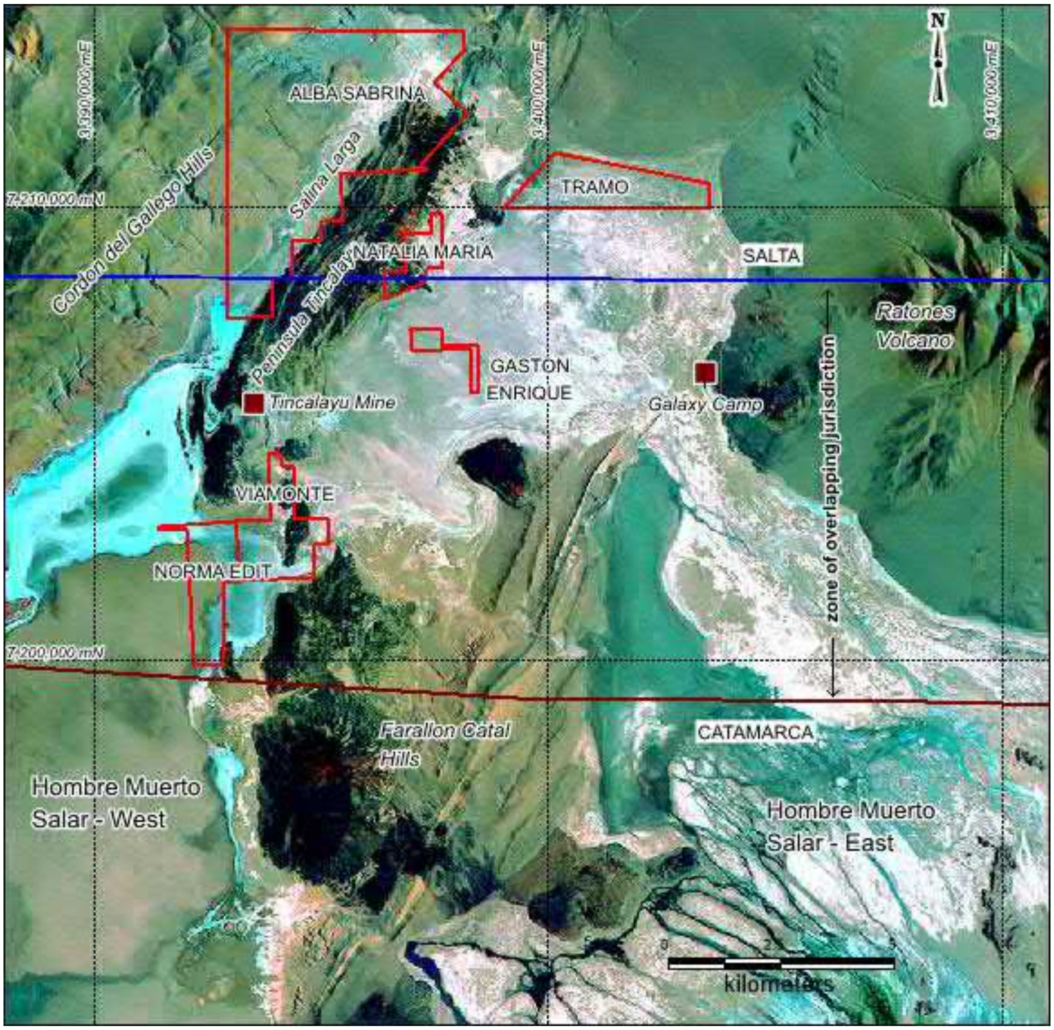


Figure 4-2: Location of the Project Property Areas

Source: M&A (2017)

Table 4-1: Gauss Kruger - Posgar Coordinates for the Project Properties

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Tramo	18.993	2007	383	3,400,153.49	7,211,193.41
				3,403,581.75	7,210,496.92
				3,403,582.30	7,209,935.26
				3,399,000.83	7,209,940.11
Alba Sabrina	18.823	2007	2.089	3,396,745.63	7,213,857.40
				3,398,151.06	7,213,830.65
				3,398,150.81	7,213,456.32
				3,397,478.55	7,212,728.84
				3,398,215.08	7,212,048.20
				3,397,204.42	7,210,940.69
				3,397,334.99	7,210,820.12
				3,395,420.09	7,210,685.04
				3,395,488.53	7,209,689.37
				3,394,990.70	7,209,655.15
				3,395,017.65	7,209,256.85
				3,394,319.62	7,209,210.33
				3,394,372.76	7,208,412.21
				3,393,873.83	7,208,379.09
				3,393,926.71	7,207,581.42
				3,392,926.74	7,207,514.94
				3,392,926.74	7,213,929.36
Natalia Maria	18.83	2007	115	3,396,365.98	7,208,544.74
				3,396,865.67	7,208,578.22
				3,396,812.76	7,209,376.47
				3,397,428.68	7,209,417.55
				3,397,401.69	7,209,822.28
				3,397,663.94	7,209,839.76
				3,397,663.91	7,208,655.67
				3,397,303.47	7,208,642.43
				3,397,242.42	7,208,295.88
				3,396,406.25	7,207,939.52
				3,396,392.58	7,208,145.31
Gaston Enrique	18.824	2007	55	3,396,950.52	7,207,289.71
				3,397,663.94	7,207,298.43
				3,397,663.94	7,206,923.60
				3,398,454.95	7,206,923.60
				3,398,454.95	7,205,885.50
				3,398,321.79	7,205,887.17

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
				3,398,304.10	7,206,195.77
				3,398,259.97	7,206,866.22
				3,396,984.09	7,206,781.87
Viamonte	13.408	1988	310	3,393,107.85	7,203,055.41
				3,393,207.30	7,201,730.86
				3,394,832.45	7,201,826.53
				3,394,788.32	7,202,557.72
				3,395,170.12	7,202,578.18
				3,395,150.66	7,203,102.78
				3,394,425.41	7,203,094.14
				3,394,411.39	7,204,270.76
				3,394,111.53	7,204,251.49
				3,394,091.79	7,204,550.80

Source: M&A (2018)

Table 4-2: Summary of Property Concession for the Hombre Muerto Norte Project

Concession Identifier	Concession File Identifier	Area (hectares)
Alba Sabrina	18.823	2,089
Tramo	18.993	383
Natalia Maria	18.83	115
Gaston Enrique	18.824	55
Norma Edith	18.829	285
Viamonte	13.408	310
	TOTAL	**3,237**

Source: M&A (2018)

4.3 Exploration and Mining Permitting

In Argentina, mineral resources belong to the provinces where the resource is located. The provinces control property mineral resources and have authority to grant mining rights to private applicant entities. Provinces have the authority to implement the National Mining Code and to regulate its procedural aspects and to organize each enforcement authority within its territory. There are two types of mineral tenure granted by provinces according to Argentina mining laws: Exploitation Concessions and Exploration Permits.

- Exploitation Concessions sometimes referred to as “Minas” or “Mining Permits” are licenses that allow the property holder to exploit the mineral resources of the property, providing environmental approval is obtained. These permits have no time limit as long as obligations in the National Mining Code are abided.
- Exploration Permits referred to as “Cateos” have time limits that allow the property holder to explore the property for a period of time that is related to the size of the property. Exploration Permits also require environmental permitting.

Depending on the province, Exploitation Concessions are granted by either a judicial or administrative decision. An Exploration Permit can be transformed into an Exploitation Concession any time before its expiration period by filing a report and paying a canon fee. The condition under which Exploitation Concessions are held is indefinite providing that annual payments are made.

Exploitation or Exploration cannot start without obtaining the environmental impact assessment (EIA) permit. In mining-friendly provinces of Argentina (which include Salta and Catamarca), the content and approval of EIA reporting is straightforward. Permitting for drilling in areas of both types of mineral tenure must specify the type of mineral the holder is seeking to explore and exploit. Claims cannot be over-staked by new claims specifying different minerals, however adding mineral species to a claim file is relatively straightforward (e.g., the owner of borate claims can add lithium to the claim).

The Exploitation Concessions of the Project are secured by NRG under a purchase option from Mr. Jorge Moreno (as described in Section 4.2), a private borate producer focused on the exploration, exploitation and marketing of ulexite, a sodium-calcium borate mineral mainly used for the production of boric acid. Ulexite is produced from shallow surface mining, not by extraction of brines. For future exploration drilling, an EIA will be required, as well as adding the mineral species lithium to the claim file.

There are no private owners of the surface rights in the area of the project, and the surface area is therefore owned by the province, in which each concession is located.

4.4 Provincial Jurisdiction

The mining claims listed on Table 4-1 are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. As indicated by Vargas (2017), in this area the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in. According to Vargas (2017) in the latest ruling of the Supreme Court of Justice of the Republic of Argentina ("Supreme Court"), in 2015, in the case "Catamarca, Provincia de c/ Salta, Provincia de p/ ordinario", the Supreme Court ruled that this dispute must be resolved by a law of the National Congress, pursuant to Article 75, Section 15 of the National Constitution.

As of the date of this legal opinion, both provincial governments are trying to resolve this issue in order to promote mineral development within the zone. Currently other companies are operating in the area.

4.5 Legal Title Opinion

NRG has requested a legal title regarding the concessions that comprise the Hombre Muerto North Project from Sr. Jorge Vargas Gei of the Vargas-Galíndez law firm of Mendoza, Argentina. A summary of the title opinion is as follows:

Some of the mining claims listed on Table 4-1 are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. In this area, the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in.

- The Tramo concession, on which the resource has been estimated and all economics of this PEA are applied, is located entirely within Salta province.

- The Gaston Enrique, Viamonte and Norma Edith concessions are located within a zone of overlapping jurisdiction between Salta and Catamarca.
- The Alba Sabrina and Natalia Maria concessions are located mainly in Salta and partially within the zone of overlapping jurisdiction.

Vargas (2017) concludes that:

- Mr. Jorge E. Moreno and Ms. Alba Silvia Sala have good and valid, legal and beneficial title to the mining claims listed on Table 4-1.
- The mining claims are in good standing and comply with applicable regulations.
- The mining claims are subject to the Moreno Option Agreement between NRG Metals Argentina S.A. and Mr. Moreno and Ms. Sala dated May 17, 2017. Other than the obligations arising out of the Moreno Option Agreement, the mining claims are free and clear from any liens, charges or encumbrances, recorded in the relevant registries.
- The mining “fees” (“canon”) of the mining claims listed are up to date.
- Upon exercise of the purchase option by NRG Metals Argentina S.A. under the Moreno Option Agreement, Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.

The full legal opinion is included as Appendix A.

4.6 Project Agreements

On 15 November 2017 NRG Metals and NRG Metals Argentina S.A. entered into a lithium off-take agreement with Chengdu Chemphys Chemical Industry Co., Ltd., People’s Republic of China (Chengdu). The off-take agreement gave Chengdu exclusive right of first offer (ROFO) to buy any or all production of lithium products from the Hombre Muerto Norte Project.

The Market Price would be determined independently by a major global accounting firm jointly appointed by and independent of each of Seller and Buyer and their respective Affiliates. The assessment of quality would be done by each company independently and an independent and mutually agreed-upon umpire would be used to resolve any and disagreement.

There was no obligation to achieve commercial production on the part of NRG.

This off-take agreement is still in effect but will expire on third anniversary date of its signing, 15 November 2020. It is unlikely that commercial production can be achieved at site prior to the expiration of this agreement.

4.7 Environmental Liabilities and Considerations

The area of the Property is not subject to any known environmental liabilities.

4.8 Property Risks

There are no known project risks known to the authors that are specific to the property.

5 Accessibility, Climate, Local Resources, Infrastructure, Physiography

5.1 Accessibility and Local Resources

The Project area straddles the provincial limits of Catamarca and Salta. The nearest large city is Salta (608,000 inhabitants), located 170 km to the northeast of the Project area. The closest town is Antofagasta de La Sierra, which is 100 km south in Catamarca province. It has a population of 1,200 inhabitants with services such as a hospital, lodging facilities, and a school. The town can be reached following the unpaved Provincial routes RP-17 (Salta) and RP-43 (Catamarca).

Local resources in the area are very basic. Most supplies are brought from Salta or San Antonio de los Cobres (210 km). Several mine camps and a small village are powered locally by diesel generators; fuel is transported to mine camps by truck. These centers are: Tincalayu Mine (borate mine owned by Orocobre); Fenix Mine (production of Li_2CO_3 from brine by FMC Lithium); Galaxy's Sal de Vida camp (with little current activity); El Martillo camp (a borate operation owned by Santa Rita SRL); and the Diablillos camp (a currently unused silver-gold exploration project). Ciénaga Redonda village has some 20 permanent residents dedicated to llama and sheep herding. The local population in the Project area is very limited, estimated to be 10 to 20 people, scattered over a 1,000 km^2 area. A 3-km long airstrip certified by the Argentina Air Force is located at the Fénix Mine camp. Workers employed at these existing mines are transported from the nearest towns (e.g., Antofagasta de La Sierra, San Antonio de Los Cobres and Salta).

The most common access to the Project area is from the city of Salta, along national route RN-51 for 230 km to Cauchari, passing through the towns of Campo Quijano and San Antonio de los Cobres. About 70% of Route 51 is paved and the remainder in fairly good condition. From Cauchari, RP-70 is a wide and well-maintained route leading south to Salar de Pocitos (50 km) and then RP-17, a gravel road leading to access road to the Tincalayu mine and the Alba Sabrina property. Access from the city of Antofagasta, Chile on the Pacific Coast is 330 km to the Sico Pass on the border between Chile and Argentina and then 220 km to the Project area (see Figure 4-1).

5.2 Physiography

The Altiplano (Bolivia) or Puna (Argentina) region is a high elevated plateau within the Central Andes (see Figure 5-1). The average elevation of the Puna is 3,700 masl and the Puna covers parts of the Argentinean provinces of Jujuy, Salta and Catamarca.

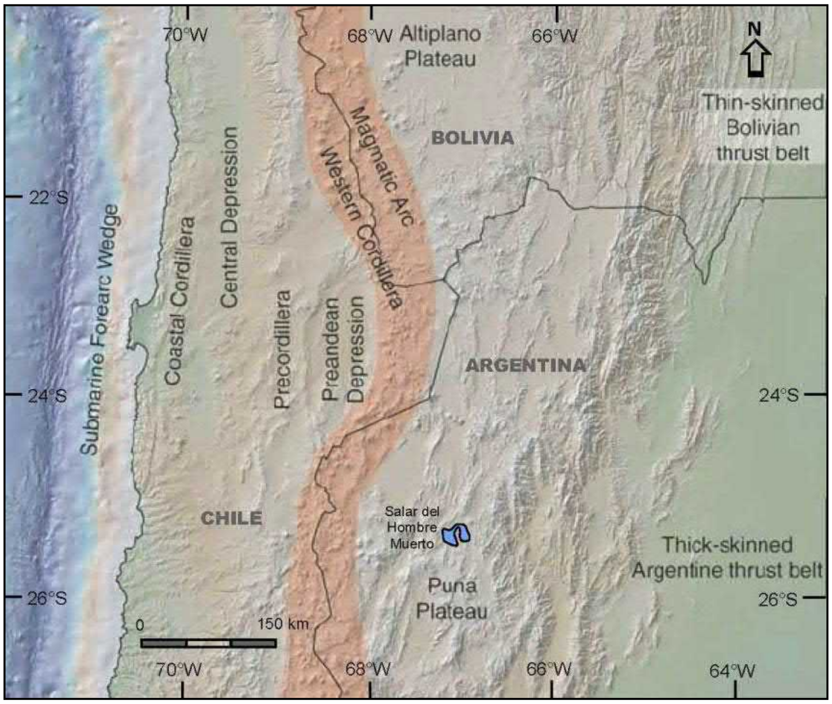


Figure 5-1: Physiographic and Morphotectonic Units of the Central Andes
Source: Houston and Jaacks (2010)

The Altiplano-Puna magmatic volcanic arc complex (commonly APVC in literature) is located between the Altiplano and Puna. It is associated with numerous stratovolcanoes and calderas. Recent studies have shown that the APVC is underlain by an extensive magma chamber at 4 to 8 km deep (de Silva et al., 2006) and potentially the ultimate source of anomalously high values of lithium in the region.

The physiography of the region is characterized by basins separated by mountain ranges, with marginal canyons cutting through the Western and Eastern Cordilleras and numerous volcanic centers, particularly in the Western Cordillera. Abundant dry salt lakes (salars) fill many basins (see Figure 5-2).

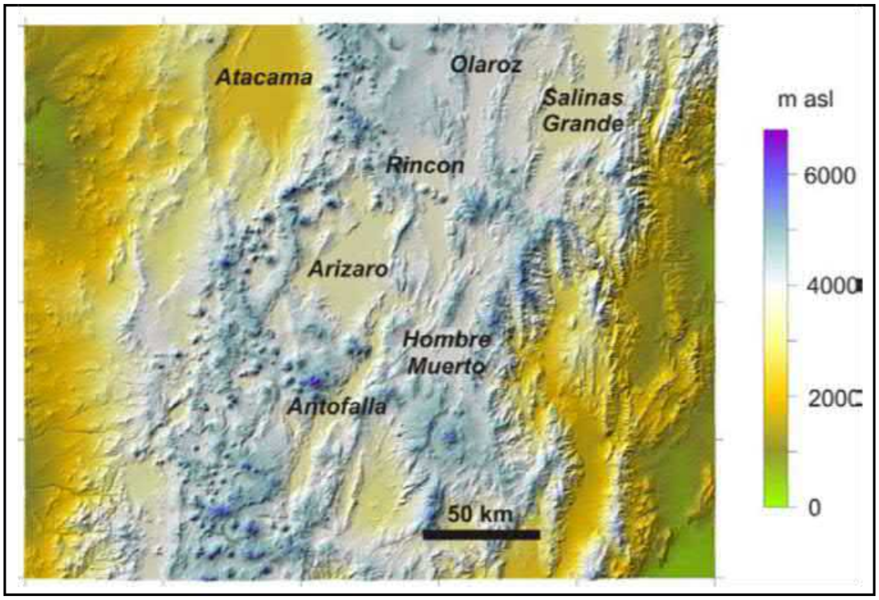


Figure 5-2: Digital Elevation Model of the Puna Showing Several Salar Locations

Source: Houston and Jaacks (2010)

The Project is located at the north part of the Salar del Hombre Muerto (see Figure 5-3). The elevation at the surface of the salar is approximately 4,000 masl. The highest point near the Project is the Ratones volcano, located east of the properties at an elevation is 5,252 masl. The salar is fairly flat, disrupted at its center by hills of the Farallon Catal volcano reaching an elevation of 4,350 masl, and the Tincalayu peninsula located at the northern border with an elevation of 4,035 masl. The salar is located within a closed basin, with internal (endorheic) surface water drainage. Surface water inflow to the salar is marked by seasonal precipitation events, mainly in summer, and surface water mostly drains through the Rio Trapiche and Rio Los Patos located in the south and southeast part of the salar. Alluvial fans are developed in the area where these streams flow into the salar. The total area of the Salar del Hombre Muerto basin is 3,929 km^2 (Houston and Jaacks, 2010). The drainage within the salar is towards the interior where two lagoons are formed: Laguna Catal and Laguna Verde (Houston and Jaacks, 2010).

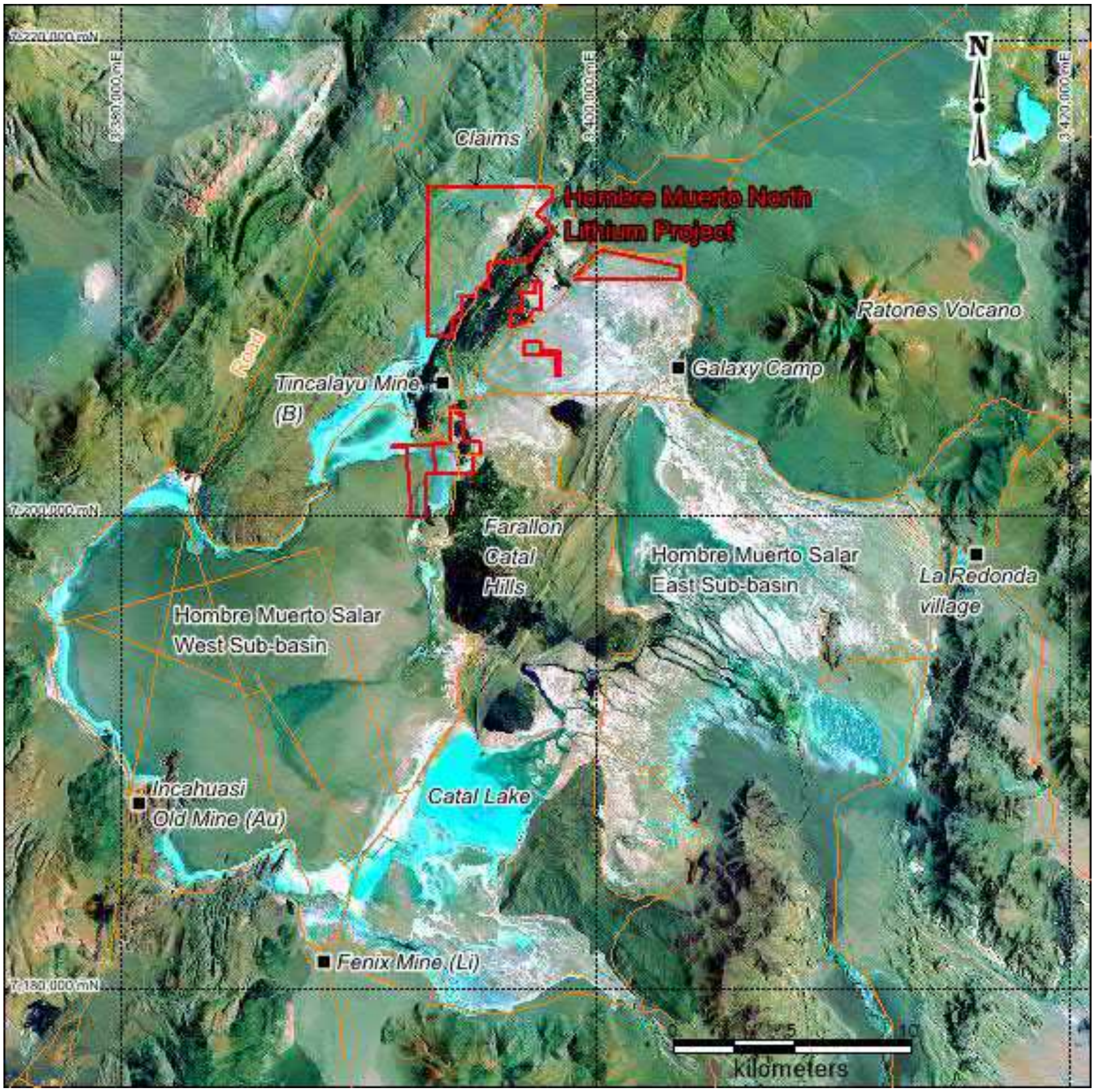


Figure 5-3: Salar del Hombre Muerto and the Project Properties

Source: M&A (2017)

5.3 Climate

The climate in the Project area is characterized as a cool high-altitude desert with sparse vegetation. Solar radiation is intense, particularly during the summer months of October through March, leading to extremely high evaporation rates. Strong winds are frequent in the Puna adding to the evaporation rates, reaching speeds of up to 80 km/hour during the dry season. During summer, warm to cool winds are generally pronounced after midday and winds are usually calm during the night. Based on data from the meteorological station located at the Fenix Mine Camp (Conhidro, 2001), the mean annual precipitation in the area is 77.4 mm for the period between 1992 and 2001. The main rainy season is between December through March, when 82% of the annual rainfall occurs. The period between April and November is typically dry. Annual temperature average is about 5°C (see Table 5-1).

Table 5-1: Mean Daily Temperatures - Fenix Mine Camp Meteorological Station

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1992	10.9	10.3	8.3	3.9	1.8	-0.6	-2.8	-.05	1.1	5.9	7.8	9.9	4.7
1993	11.5	9.1	9.2	5.6	1.9	0.9	-0.6	1.3	2.6	7.1	8.9	11.3	5.7
1994	12.1	10.7	8.7	5.8	2.9	0.7	0.1	1.7	5.7	5.7	8.5	12.4	6.3
1995	13.0	9.8	8.8	5.2	2.5	0.9	-1.0	2.7	5.1	6.7	9.9	8.9	6.0
1996	11.1	11.8	8.3	5.7	2.0	-1.2	-1.5	1.1	2.6	6.3	8.6	10.8	5.5
1997	13.6	12.1	7.9	6.6	0.6	-1.4	.02	1.6	4.7	4.5	8.2	9.4	5.7
1998	13.8	11.6	9.5	6.6	1.2	-0.4	-.09	-1.5	0.6	3.6	6.4	8.5	4.9
199	8.9	11.1	10.7	5.0	1.4	-3.0	-4.6	-1.0	1.6	5.0	4.6	7.5	3.9
2000	11.2	11.2	8.1	5.2	1.1	-2.0	-3.8	-1.8	0.2	4.4	4.4	9.0	3.9
2001	10.6	12.0	11.2	5.9	1.0	-1.6	-1.5	-0.3	2.8	4.8	7.0	8.6	5.0
Mean	**11.6**	**10.9**	**9.0**	**5.5**	**1.6**	**-0.8**	**-1.6**	**0.3**	**2.7**	**5.4**	**7.4**	**9.6**	**5.2**

Source: Conhidro (2001)

5.4 Vegetation

Due the extreme weather conditions in the region, the predominant vegetation is high-altitude xerophytic type plants, dominated by woody herbs of low height from 0.4 to 1.5 m, grasses, and cushion plants. Due to the high salinity on the salar surface, the core area of the salar is devoid of vegetation.

A study carried out in the project area by de la Fuente in 2008 identified three main vegetation zones, which he described as follows:

- High Soil Moisture Zone: Areas near flowing streams, lakes and springs where increased humidity favors plant growth and increased volume and number of plant species. Plant species detected in this zone include: añagua (Adesmia horridiuscula), tolilla (Fabiana densa), rica-rica (Acantholippia hastulata), suriyanta (Nardophyllum armatum) and grass-like “iro” or “paja iru” (Festuca orthopylla). Approximately 35% of the area in this zone is currently covered by vegetation.
- Salar Surface Zone: (currently being mined for ulexite). Areas contain sparse and sporadic occurrences of vegetation, including yaretilla (*Frankenia triand*ra). Approximately 0.5% of this area is covered by vegetation.
- Foothills Zone: (in the vicinity of current ulexite mining). Approximately 20% of the area in the Hombre Muerto and Farallon Catal area is covered by vegetation and consists of añagua (*Adesmia horridiuscula*) and tola (*Parastrephia phyliciformis*).

5.5 Fauna

The fauna of the Puna is characterized by adaptation to extreme living conditions as a result of the severe aridity, intense sunlight during the day and low temperatures at night. Many animals have nocturnal habits and live sheltered by rocks. Others live below the surface or acquire certain physiological behavior allowing them to withstand the harsh environment.

Cabrera and Willink (1980) describe the animal species in the Puneña biogeographic province. In the Salar del Hombre Muerto region, camelids exist such as vicuña (Vicugna vicugna) and llama (Lama glama), the latter domesticated. Fox (Dusicyon Lycalopex) representing a carnivorous species is also present in the area.

Among the rodent family common to the Project location is the mole, Oculto or Tuco-Tuco (Ctenomys opimus), which can contribute to desertification as it feeds on roots of local flora. Additionally, and the Puna mouse (Auliscomys sublimis) live in the region.

Birds found in the region include the Parina or Pink Flamingo (Andean flamingo), which live in moist and saline lagoons, and the Andean Goose, Guayata or Huallata (Chloephaga melanoptera). The queu or quevo (Tinamotis pentlandi) inhabits the highlands and is similar to a large partridge. The ñandú enano, comparable to the species Pterocnemia pennata (classification is questioned) and similar to the ostrich, inhabits the lower plains of the region. Small parrots, pigeons and owls exist as sporadic inhabitants.

The donkey (Equus africanus asinus) is a species introduced by inhabitants of the area. Although domesticated, it competes for food with llamas and vicuñas.

5.6 Infrastructure

5.6.1 Electrical Power

The 600-megawatt (MW), 375 kilovolt (Kv) power line between Salta and Mejillones in Chile passes about 160 km north of the Property. The line was built in the 1990s with the aim of transporting energy from Argentina to Chile, but it was out of service by 2009 due to difficulties with the energy policy of previous local governments. In February 2016, the line resumed operation and reportedly transmits 110 MW from Mejillones to the Argentinean Interconnected System. In the event that a power supply for mining operations is required, a special line must be constructed for service (Rojas, 2017). Currently, Salta province and private companies, such as Total Eren, are considering a new gas pipeline and power distribution project that would use 32% renewable energy. The project could be completed in 18 to 24 months. NRG is being considered as a potential future off-taker.

5.6.2 Natural Gas Pipeline

A natural gas line (Gasoducto de la Puna) passes through San Antonio de los Cobres and Estación Salar de Pocitos, and it is connected to Orocobre’s Tincalayu borate mine via a 5-inch diameter pipeline. This pipeline crosses over the Alba Sabrina property (see Figure 5-4).

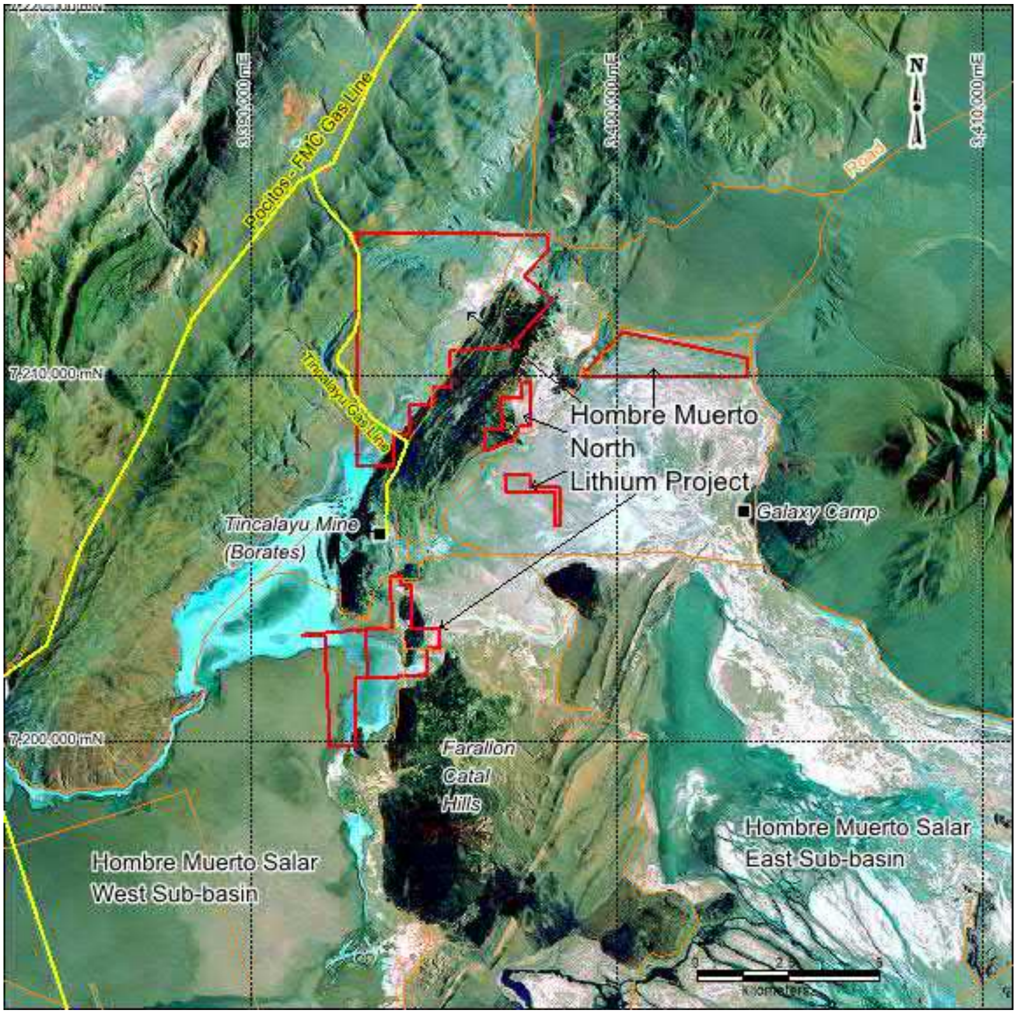


Figure 5-4: Gas Pipeline Connection to Tincalayu Mine in the Vicinity of the Project Properties
Source: SEGEMAR and REMSA (2018)

5.6.3 Railway Antofagasta-Salta

An existing railroad between Salta, Argentina and Antofagasta, Chile is administrated by two companies: the Chilean *Ferrocarril Antofagasta – Bolivia* (Chilean Luksic Group) and the Argentinean state owned *Ferrocarril General Belgrano* (Rojas, 2017). It consists of a narrow-gauge railway connecting Antofagasta, Chile on the Pacific coast to northern Argentina in addition to connections to Buenos Aires on the Atlantic coast (see Figure 4-1). The railway is currently being reactivated with agreements between the regional governments. The Chilean part has been used for hauling copper cathodes and providing general supplies for the Escondida and Zaldivar mines in Chile. More recently, it has worked intermittently transporting borates, fruit, cattle and grains between Salta and Antofagasta. Transportation costs to the Pacific coast and the port of Antofagasta using this link would undoubtedly benefit a lithium operation at the Project, as well as other projects in the Puna.

5.6.4 Road Connections

The Project is connected to Salta, Salar de Pocitos and San Antonio de los Cobres by a well maintained, paved and unpaved road network. Provincial Route 17, which is a gravel and dirt road, passes within 10 km of the Project.

5.6.5 General Services

Fresh water in the area near the Project is scarce. Water for human consumption is brought from Salta; water for general use and camp needs can be provided by a spring managed by Orocobre's Tincalayu operations, some 5 km north of the Project property areas. Fresh water for the process plant will be provided by a new well located approximately 3 km away.

There are no camp facilities on site at this time. As the Project evolves, a camp will be required to support basic needs for exploration activities. Communications by satellite phone are available in the area; communication and internet systems have been used by nearby camps.

6 History

There has been no past exploration or mining for lithium brines on the Project properties, although the nearby Fenix Mine (FMC Lithium) has been reportedly producing about 10,000 t/a of Li_2CO_3 since 1996 and the company is reportedly planning to increase output to 30,000 t/a in 2017.

In 1954, Rio Tinto through its subsidiary Boroquimica SAMICAF (more recently Borax Argentina S.A.) initiated industrial production of borates (tincal or borax) at the Tincalayu mine in Salar del Hombre Muerto. The Tincalayu mine is located approximately halfway between the Alba Sabrina and Viamonte concessions (see Figure 4-1). The mine is presently operated by Borax Argentina S.A., which is a local subsidiary of Orocobre Limited.

In 1979, the Dirección General de Fabricaciones Militares conducted an exploration program covering a number of salars in the Puna region, including Salar del Hombre Muerto East and Salar del Hombre Muerto West. The work included mapping and surface sampling, and collection of brine samples from the salar surface and from hand-dug pits.

One Borax S.A., a private company owned by Jorge Moreno of Salta, Argentina, has mined borates (ulexite) at the Project Tramo property area on the northeastern border since 2007.

7 Geological Setting and Mineralization

7.1 Regional Geology

The geological evolution of the Puna region includes a long history as summarized by Kasemann et al., 2004 (see Figure 7-1). For the purpose of this report, the geological evolution is presented from Jurassic to Recent, as this time span is considered the relevant period for discussion of the salar brine evolution in the Puna.

7.1.1 Jurassic and Cretaceous

The Andes have been part of a convergent plate margin since early Jurassic, and both the volcanic arc and the associated sedimentary basins developed as a result of subduction processes. An island arc formed up along the western coast of South America during all the Jurassic (195 to 130 Ma). During mid-Cretaceous (125 to 90 Ma), the magmatic arc moved eastward (Coira et al., 1982). An extensional regime persisted through the late Cretaceous generating back-arc rifting and grabens (Salfity and Marquillas, 1994). Marine sediments covering most of the Central Andean region indicate an extensive back-arc seaway with little land above sea level (Lamb et al., 1997; Scotese, 2002).

7.1.2 Paleogene

During the late Cretaceous to Eocene (78 to 37 Ma), the arc shifted farther east to the location of the current Precordillera (Allmendinger et al., 1997; Lamb et al., 1997). Significant shortening commenced during the Incaic Phase (44-37 Ma) mainly in the west, with associated uplift to perhaps 1,000 m (Gregory and Wodzicki, 2000) creating a major north-south watershed. Coarse clastic continental sediments eroded from the uplifted ridge indicate eastward transport in Chile and Argentina (Jordan and Alonso, 1987). The subsequent initiation of shortening and uplift in the Eastern Cordillera of Argentina (approximately 38 Ma), led to the development of a second north-south watershed with coarse continental sediment accumulating throughout the Puna (Allmendinger et al., 1997; Coutand et al., 2001).

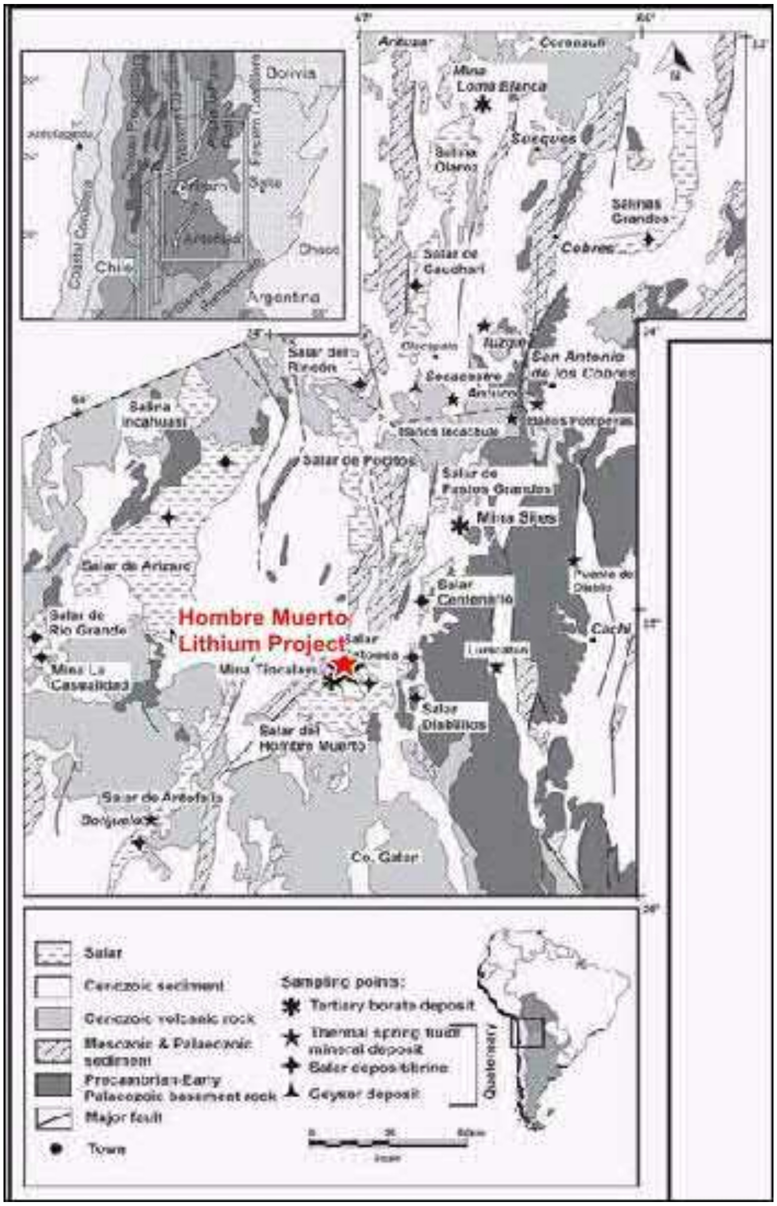


Figure 7-1: Geological Map of the Puna Plateau showing Boron-bearing Deposits and Salar Basins

Source: Kasemann et. al. (2004)

7.1.3 Neogene

By the late Oligocene to early Miocene (20 to 25 Ma), the volcanic arc switched to its current location in the Western Cordillera. At the same time, significant shortening across the Puna on reversed thrusts led to the initiation of separated depositional centers. Major uplift of the Altiplano-Puna plateau began during the middle to late Miocene (10 to 15 Ma), perhaps reaching 2,500 masl by 10 Ma, and 3,500 masl by 6 Ma (Garzione et al., 2006). The late Miocene volcanic flare-up (5 to 10 Ma), centered on the Altiplano-Puna magmatic volcanic arc complex (APVC) between 21º to 24º S latitude (de Silva, 1989), produced large concentrations of both caldera subsidence and associated extensive ignimbrite sheets, as well as andesitic-dacitic stratovolcanoes.

The Puna volcanic activity was frequently constrained by major NW-SE crustal megafractures (Chernicoff et al., 2002). During the early to middle Miocene, redbed sedimentation is found throughout the Puna, Altiplano and Chilean Pre-Andean Depression (Jordan and Alonso, 1987). As thrust faulting, uplift and volcanism intensified during the middle to late Miocene, the sedimentary basins became isolated, developing internal drainages, with major watersheds (the Cordilleras) bounding the Puna to the west and east. Sedimentation in these basins initiated with alluvial fans being shed from the uplifted ranges and continued with playa sand and mud-flat facies.

Northern Argentina has experienced a semi-arid to arid climate since at least 150 Ma as a result of its stable location relative to the Hadley circulation pattern, a global scale tropical atmospheric circulation that features air rising near the equator (Hartley et al., 2005), and the Andean uplift where all flow of moisture from Amazonia to the southwest has been blocked, leading to increased aridity since at least 10 to 15 Ma. The combination of internal drainage and hyper-arid climate led to the deposition of evaporite precipitates in many of the Puna and Altiplano basins.

7.1.4 Late Neogene and Quaternary

During the Pliocene to Pleistocene, deformation occurred as a result of shortening, and the once humid environment moved out of the Puna and into the Santa Barbara system (eastwards). The Santa Barbara system is a 400 km long segment of the Sub-Andean foreland thrust belt. At the same time, a fluctuating climate regime initiated with short periods of wetter conditions alternating with drier ones. As a result of both reduced tectonic activity and frequent aridity, a reduction in erosion and accommodation space meant that sediment accumulation in the isolated basins was limited. Nevertheless, solute dissolution of basin sediments continued, eventually concentrating brine in aquifers comprising salar centers where evaporative flux drives outflow from the basin. Evaporite minerals occur both disseminated within clastic sequences and as discrete beds. The earliest record of evaporite formation is middle Miocene, with frequency and magnitude tending to increase during the Late Neogene to Quaternary (Alonso et al., 1991; Vandervoort et al., 1995; Kraemer et al., 1999). The thick halite sequences in the Salares del Hombre Muerto and Atacama suggest that they have mostly formed since 100 Ka (Lowenstein, 2000; Lowenstein et al., 2001).

7.2 Geology of Salar del Hombre Muerto Basin

The oldest rocks cropping out at the Salar del Hombre Muerto basin envelope are schist and migmatites interbedded with metamorphic limestone and amphibolites (see Figure 7-2). This metamorphic sequence, which is Neoproterozoic in age, is known as the Pachamama Formation. Occurrences of these rocks stand along the east flank of the Hombre Muerto salar. Metasedimentary rocks assigned to the lower Paleozoic outcrop at the northwest border of the salar and are assigned to the Tolillar Formation. This formation, mainly volcaniclastic sandstone with subordinate sandstone beds, occurs over the northern border of the salar. Overlaying this clastic sequence is the Ordovician sedimentary sequence of the Falda Ciénaga Formation composed of greywacke, tuff and volcaniclastic sandstones. Rocks of this formation are widespread along the eastern flank of the salar. Conglomerates and red sandstones assigned to the middle Eocene lie unconformably over the Ordovician sediments. These rocks are assigned to the Geste Formation, which crops out in the northern limits of the salar. The Geste Formation is overlain by conglomerates, sandstone, and red clays with gypsum assigned to the Vizcachera Formation.

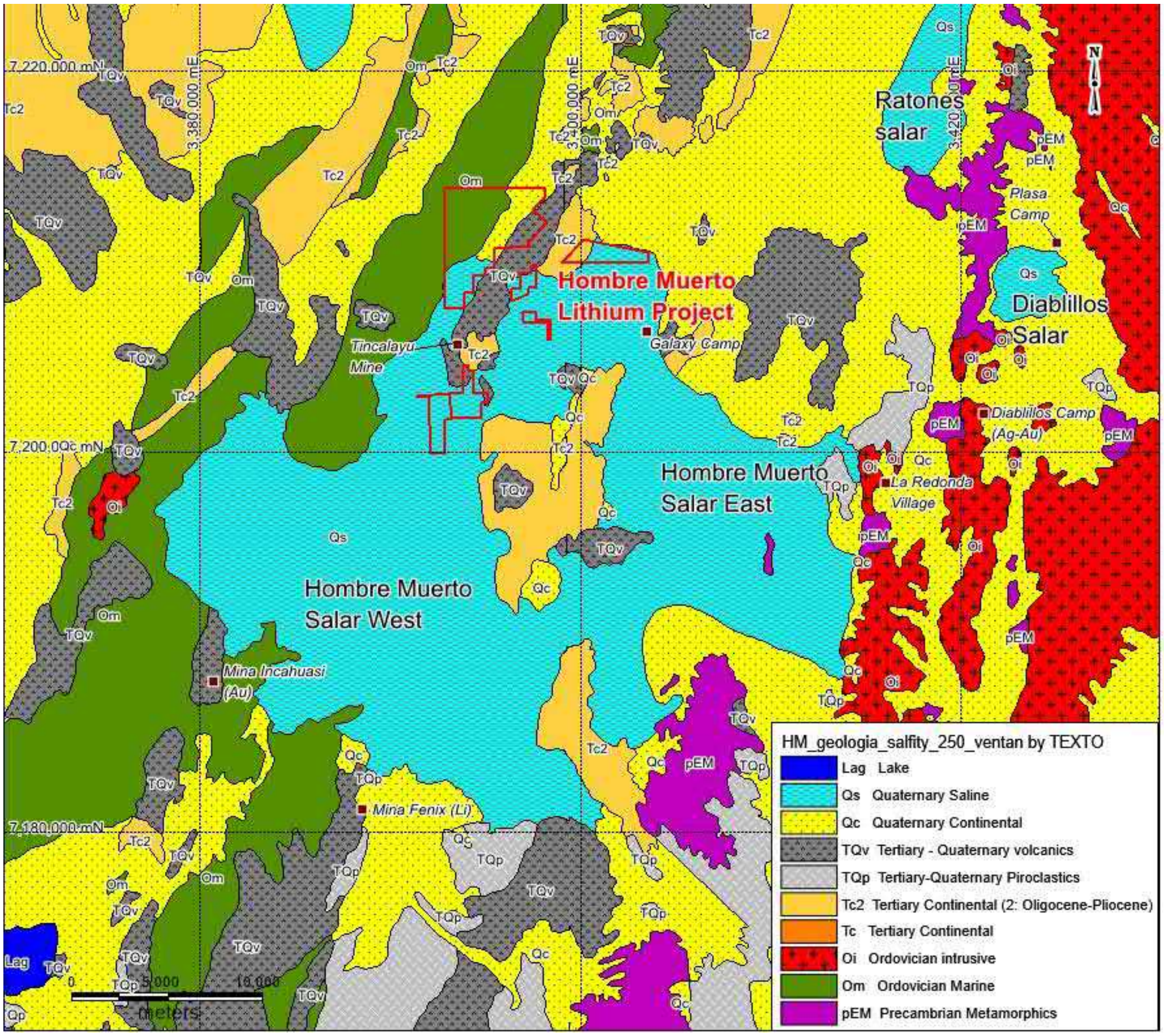


Figure 7-2: Generalized Geological Map Showing Salar del Hombre Muerto

Source: Salfity (2009)

The Catal Formation, conglomerates with sandstones interbedded with ignimbrite flows and volcaniclastic rocks, overly the Vizcachera Formation. This formation occurs in the central portion of the Salar and forms the Farallon Catal hills. Two age dates, one at the bottom and the other at the top of the Catal Formation show 15.0±0.2 Ma and 7.2±1.4 Ma respectively (Donato and Vergani, 1985; Hongn and Seggiaro, 2001).

The clastic sediments and evaporitic rocks of the Sijes Formation occur along the Peninsula de Tincalayu, located in the northern portion of the salar. The sequence contains the borate deposit currently being exploited in the Tincalayu Mine. The age of this sequence is reported at 5.86±0.14 Ma (Watson, in Alonso et al. 1984a).

Dacites and andesites of the Tebenquicho Formation crop out in the southern border of the salar, along the Hombre Muerto peninsula. The age of these rocks is reported as 14±5 and 11±1 Ma (Gonzales, 1983). The Ratones Andesite, which occurs in the northeast border of the basin, and constitutes the volcano of the same name, has been dated at 7.1±0.2 Ma (Gonzales, 1984). The dacitic ignimbrites assigned to the Cerro Galan Volcanic Complex, have a widespread occurrence in the area, and constitute the eastern border of the salar. A radiometric age date obtained by the K-Ar method is reported as 2.56±0.14 Ma, with an Rb-Sr isochrons reports at 2.03±0.07 Ma (Francis et al. 1983; Sparks et al. 1985). The Quaternary deposits are represented by clastic sediments, evaporites and basaltic lava flows with an age of 0.754±0.2 Ma (Alonso et al. 1984b).

The basement outcrop known as Farallon Catal (approximately 72 km^2), located at the central portion of the salar, divides the basin in two parts, locally named as *Subcuenca Occidental* (Western sub-basin) and the *Subcuenca Oriental* (Eastern sub-basin). The sub-basins differ in their sedimentology: the Eastern Sub-basin consists largely of clastic sediments, borate precipitates and limited halite, while the Western Sub-basin is dominated by halite with little clastic material.

Geophysics, drilling and trenching results carried out during the evaluation of the Fenix Lithium plant (FMC Lithium) confirm the asymmetric distribution of the minerals that occurs in the salar surface. Drilling results from the Western Sub-basin indicate that halite occurs throughout to depths of 30 to 50 m, with one well penetrating 90 m of halite. Gravity geophysics suggests that the core of the salt body could have a depth of up to 900 m in the Western Sub-basin.

7.3 Geology of the Project Area

The following describes the geological units cropping out in the Project property areas, listed from the oldest to youngest (see Figure 7-2 and Figure 7-3).

Cordon del Gallego Range: located in the western part of the Project, it consists of Ordovician marine sediments (shales and quartzites) assigned to the Falda Ciénaga Formation. This unit constitutes the basement in this region of the Puna. Bedding strikes NNE-SSW, appears folded and typically dips west.

Farallón Catal Range: located in the central part of the Salar, these rock outcrops are assigned to the middle Miocene Farallón Catal Formation, which is composed of a Lower Member (Tfc1) of pale brown sandstones with abundant muscovite, red claystones and intercalated gypsum beds, and an Upper Member (Tfc2) built up of a basal welded tuff and ignimbrite dating, 11.3 Ma (K/Ar method), followed by dominant conglomerate, sandstone and red clays dominating towards the top. This unit has a NNE-SSW strike and dips 40° to 50° east.

Peninsula Tincalayu: these rocks are assigned to the Sijes formation (TSi), 5.8Ma in age, and are sandstones, red and green argillites, tuffs, borates, gypsum and halite. The inferred thickness is over 300 m. This unit was described in detail at the Tincalayu borate mine; the beds are faulted and folded and have a general NNE-SSW strike.

At the western slope of Ratones Volcano, black to black-grey andesitic lava flows are outlined as Ratones Formation (Tva, 7 to 4 Ma). In the Tincalayu peninsula and in the western sector of the Farallón Catal Range, dark grey lava flows crop out and are assigned to the Carahuasi Formation with an estimated age of 1.0 to 0.1 Ma. In some salar areas, horizontal Quaternary terraces are evident with layers of argillite, sandstone and travertine.

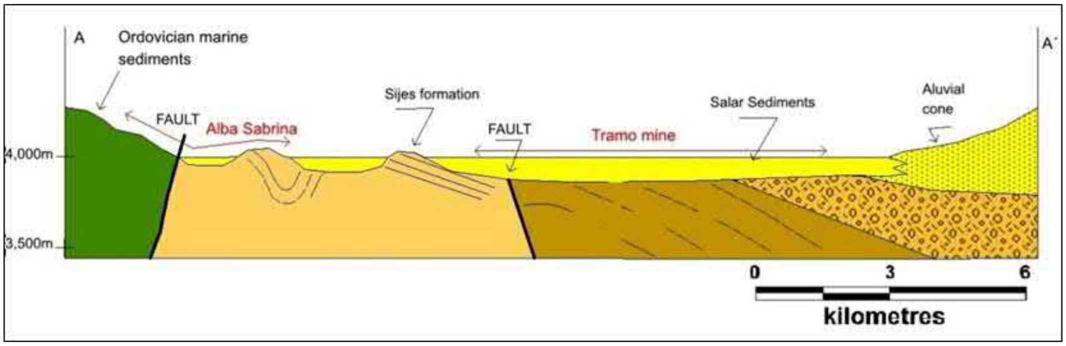


Figure 7-3: West-East Interpretive Section of the North Portion of the Project

Source: Rojas (2017)

Outside of the Salar del Hombre Muerto, extensive outcrops of unconsolidated gravel and sand correspond to alluvial fan sequences. Finally, unconsolidated sediments developed over the salar surface consisting of red, green and black clay (mixed with black organic matter), silt, fine red to brown sand with small crystals of gypsum, and borates (ulexite). Layers of ulexite occur as material up to 0.5 m thick or nodules several centimeters in diameter (locally referred to as “cotton balls”). Towards the edges of the salar, an extensive plateau of cream-colored travertine is present with more than 1.0 m thickness. To the south of the Tincalayu peninsula a saline crust crops out; however, it may be temporary as characteristics of the salar surface can change annually due to seasonal flooding.

8 Deposit Types

8.1 Conceptual Model of Salar Basins

The deposit type is a brine aquifer within a salar basin. The conceptual model for the Hombre Muerto basin, and for its brine aquifer, is based on exploration of similar salar basins in Chile, Argentina, and Bolivia. Salar basins are characterized by closed topography and interior drainage. The lowest exposed portions of these basins may contain salt encrusted playas, or “salars”. Typically, no significant groundwater discharges from these basins as underflow. All groundwater discharge that occurs within the basin is evaporated. All surface water that flows into the basin is either evaporated directly or enters the groundwater circulation system and is evaporated at a later time.

Salar basin locations and basin depths are typically structurally controlled but may be influenced by volcanism that may alter drainage patterns. Basin-fill deposits within salar basins typically contain thin to thickly bedded evaporite deposits in the deeper, low-energy portion of the basin, together with thin to thickly bedded low-permeability lacustrine clays. Coarser-grained, higher permeability deposits associated with active alluvial fans can typically be observed along the edges of the salar. Similar alluvial fan deposits, associated with ancient drainages, may occur buried within the basin-fill deposits. Other permeable basin-fill deposits which may occur within salar basins include pyroclastic deposits, ignimbrite flows, lava-flow rocks, and spring deposits.

8.2 Conceptual Model of Hombre Muerto Basin

Conceptual hydrogeologic sections were prepared incorporating results of exploration drilling at the Sal de Vida project (M&A and GAI, 2012). Location of sections are shown on Figure 8-1; sections are shown on Figure 8-2 and Figure 8-3.

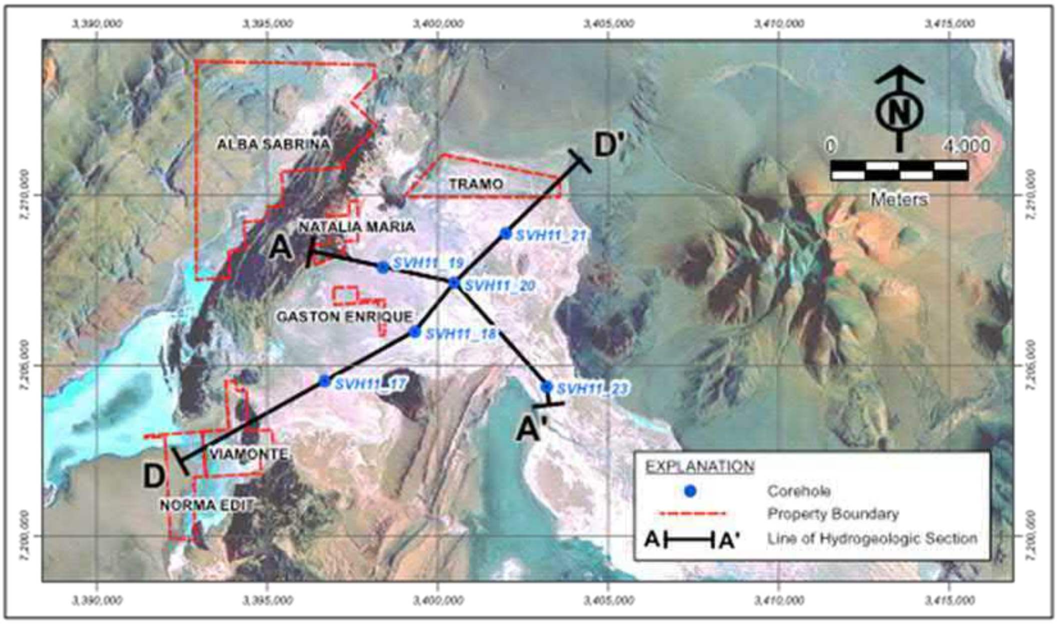


Figure 8-1: Map Showing Location of Hydrogeological Sections
Source: Modified from M&A and GAI (2012)

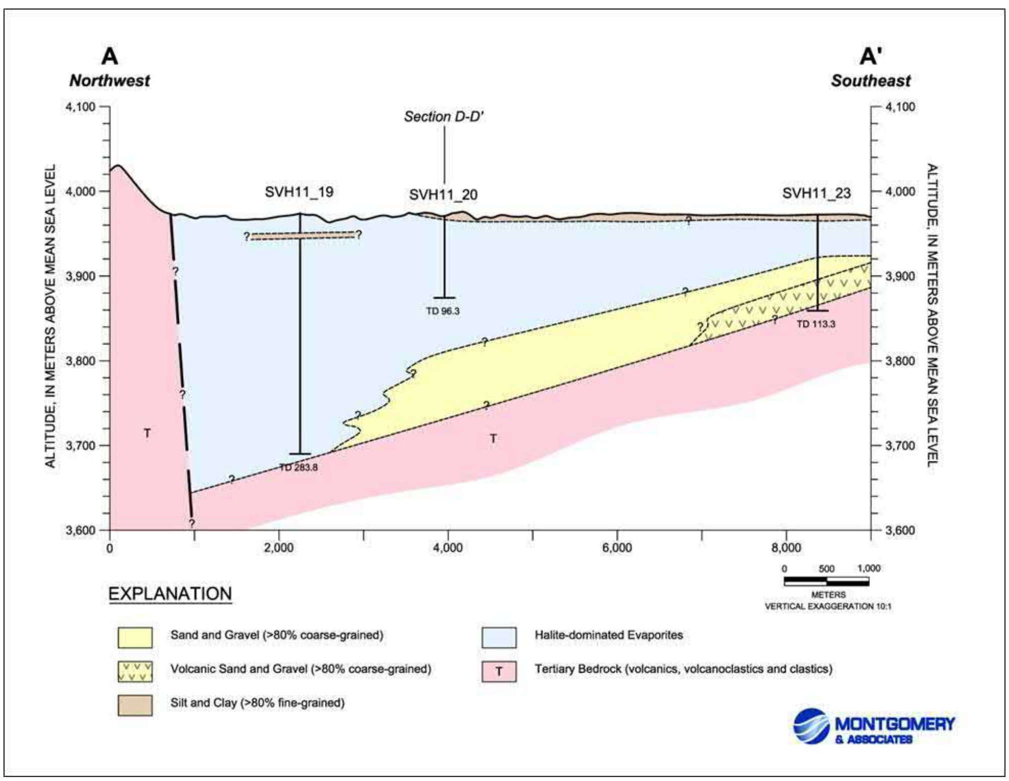


Figure 8-2: Hydrogeological Section A-A'
Source: M&A (2016)

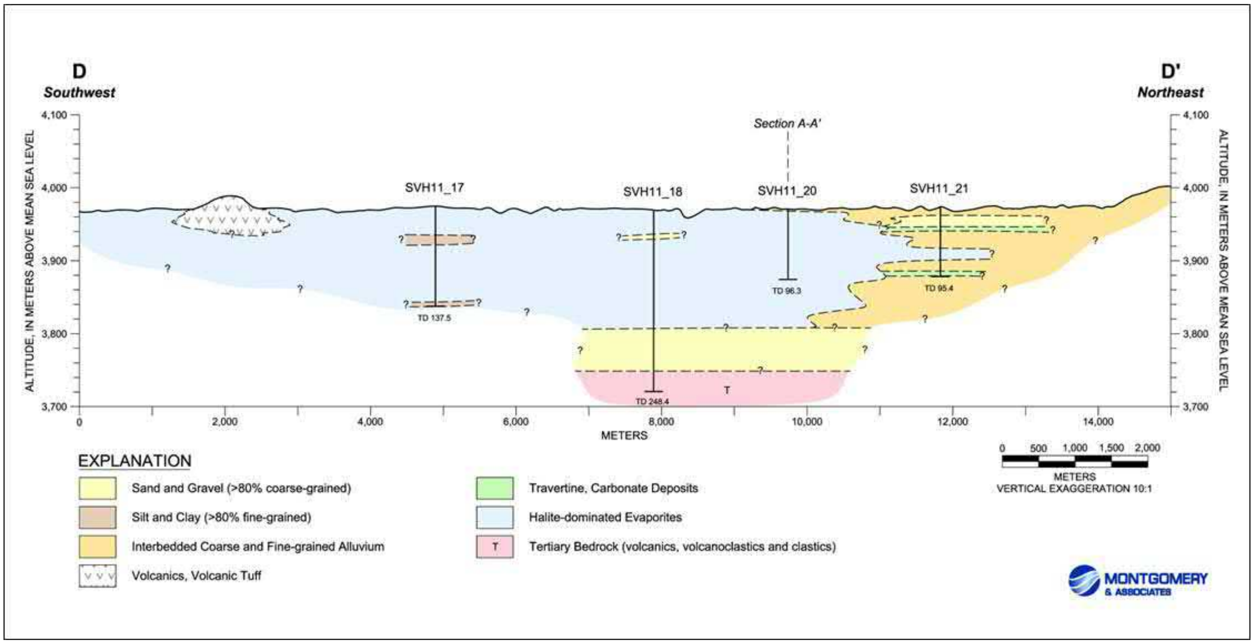


Figure 8-3: Hydrogeologic Section D-D'

Source: M&A and GAI (2012)

The Hombre Muerto basin has an evaporite core that is dominated by halite. Basin margins are steep and are interpreted to be fault controlled. The east basin margin is dominated by Precambrian metamorphic and crystalline rocks. Volcanic tuff and reworked tuffaceous sediments, together with tilted Tertiary rocks, are common along western and northern basin margins. In the Sal de Vida project area, dip angle of Tertiary sandstone is commonly about 45 degrees to the southeast. Porous travertine and associated calcareous sediments can occur in the subsurface and are flat lying. These sediments form a marker unit that is encountered in some locations. Five boreholes located near basin margins have completely penetrated the flat-lying basin-fill deposits. These boreholes, at their maximum depths, reach tilted Tertiary sandstone, volcanic tuff, or micaceous schist.

Metamorphic and crystalline bedrock along the east basin margin are expected to have low hydraulic conductivity and should approximate a "no-flow" groundwater boundary during extraction of brine from basin fill deposit aquifers by pumping wells. Tertiary sediments along the west and north basin boundaries exhibit drainable porosity, and conceptually approximate "low-flow" boundaries that are expected to contribute brine to the basin fill deposit aquifers.

Fine-grained lacustrine deposits are common throughout the exposed basin floor of Salar del Hombre Muerto. These deposits are interpreted to have low hydraulic conductivity. In many parts of the basin, this surface is believed to restrict downward flow of freshwater from the Rio de los Patos that enters the basin from the southeast and flows across the salar toward the north and west. In addition, hydraulic conductivity in the vertical direction of groundwater flow (Kz) is typically less than hydraulic conductivity in the horizontal direction (Kh). For layered sediments, such as occur in Salar del Hombre Muerto, the ratio Kz/Kh is commonly 0.01 or less (Freeze and Cherry, 1979, p. 34). The low vertical permeability of the salar sediments, combined with the density difference between surface water inflow and deep brine, restrict the vertical circulation of fresh water entering the salar from Rio de los Patos.

The principal sources of water entering the Hombre Muerto basin are the surface water inflows, and groundwater inflow from natural recharge along the mountain fronts via alluvial fans. Drill results, indications from vertical electrical soundings, and density relations interpreted in previous studies for the Sal de Vida project suggest restricted vertical circulation of lower density water entering the basin and diluting brine mineral resources.

8.3 Assignment of Hydrogeologic Units

Results of diamond drilling on the Tramo concession indicate that basin-fill deposits in the north part in Salar del Hombre Muerto can be divided into hydrogeologic units that are dominated by three lithologies, all of which have been sampled and analyzed for both drainable porosity and brine chemistry. Predominant lithologies, meters drilled, and number of analyzes are given Table 8-1.

Table 8-1: Sample Data for Hydrogeologic Units

Predominant Lithology of Hydrogeologic Units	Meters of Described Lithological Unit	# of Drainable Porosity Analyses	# of Brine Chemistry Analyses
Sand, silty sand and sandstone	274.1	14	18
Halite or other evaporite	108.5	1	3
Conglomerate, sand and gravel	245.2	5	14

Source: M&A (2018)

9 Exploration

Historically, exploration was carried out by Lithium One (Galaxy Resources) near the Tramo concession and is available in public reporting (M&A and GAI, 2012). This includes surface brine samples over some Project properties; however, these are not considered as part of this Report. Previous exploration work completed for the Project included 20 geochemical brine samples conducted during two sampling rounds in 2016 and 2017, and the completion of a 10-station CSAMT survey along two section lines, and previously reported by Montgomery & Associates (2017). A third surface sampling round conducted in 2018 was reported by NRG in a press release dated January 16, 2018 and previously reported by Montgomery & Associates (2018).

9.1 Geochemical Sampling – Years 2016 and 2017

Locations and geological descriptions for each of the samples collected on Project properties are shown in Figure 9-1 and Table 9-1. Geochemical results for main anions, density and conductivity values are given in Table 9-2: Summary of Geochemical Results. The locations of the lithium concentration results are shown on Figure 9-2. Analytical results from the laboratory are contained in Appendix B.

The first brine sampling round was completed on October 3 and 4, 2016, in dry salar conditions by Sergio Lopez a consulting geologist contracted by Jorge Moreno and Nivaldo Rojas, a consulting mining engineer and former QP contracted by Jorge Moreno. The first round of sampling comprised 10, 1-liter samples collected from pits excavated using shovel and manual auger drilling methods; samples NS_001, to NS_010 were obtained (see Table 9-1 and Table 9-2). These samples returned positive lithium results and led to a second round of sampling.

The second round of sampling was conducted by Pedro Ruiz on January 31 through February 2, 2017, during the rainy season, and included collection of 10 samples, NS_015 to NS_20 and NS_022 to NS_025 (see Table 9-1 and Table 9-2). Mr. Ruiz is a consulting geologist contracted by Jorge Moreno. The second round of sampling was only partially completed due the incidence of heavy rains flooding the salar area, which prevented sampling at the south properties (Gaston Enrique, Viamonte and Norma Edith).

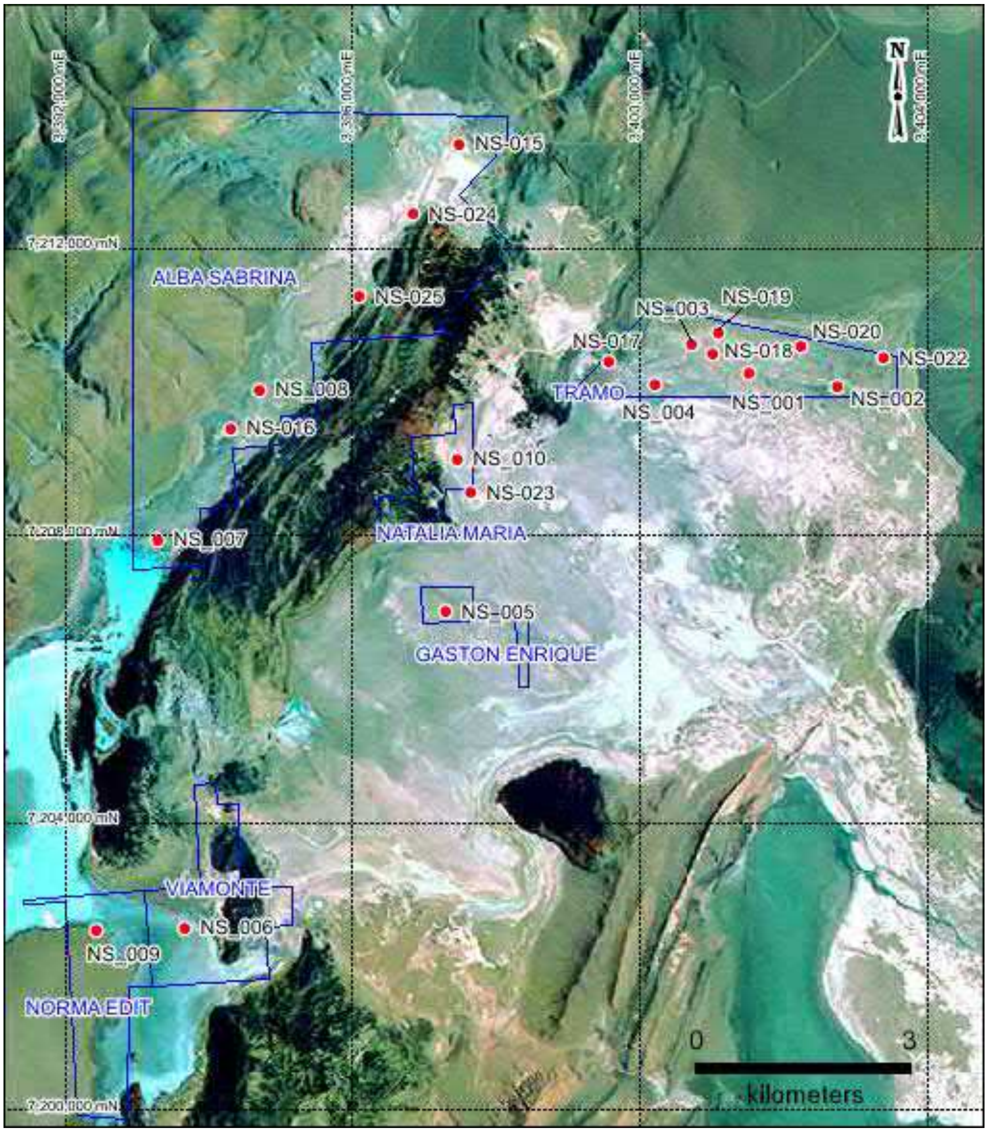


Figure 9-1: Location of Geochemical Brine Samples Collected on the Hombre Muerto Norte Project

Source: M&A (2017)

Table 9-1: Summary of Brine Samples Collected on Project Properties

Sample ID	Longitude wgs84	Latitude wgs84	Elevation (masl)	Depth to Water (m)	Brine Sample Description	Lithology	Claim Identifier
1st Round							
NS_001	-66.97728	-25.22792	3979	1.4	Brown, muddy	Clay; green-black; ab. organic matter	Tramo
NS_002	-66.96498	-25.22961	3979	1.35	Light grey	Clay, reddish on top & dark green at the bottom	Tramo
NS_003	-66.96498	-25.22414	3980	1.3	Light grey	Clay, reddish on top & dark green at the bottom	Tramo
NS_004	-66.99033	-25.22937	3974	0.6	Reddish	Sand, red, coarse to medium grain size "cotton balls of ulexite".	Tramo
NS_005	-67.01957	-25.25759	3973	1.25	Brown	Sand, red with minor ulexite "cotton" balls	Gaston Enrique
NS_006	-67.05588	-25.29700	3975	1.2	Brown	Sand with quartz grains, red color with halite crystals- gypsum.	Viamonte
NS_007	-67.05914	-25.24833	3978	1.1	Reddish	Sand, red, coarse grain; sand, red color, quartz.	Alba Sabrina
NS_008	-67.04492	-25.22953	3980	1.3	Reddish	Sand brown-reddish, quartz &lithic fragments.	Alba Sabrina
NS_009	-67.06819	-25.29725	3975	1.2	Brown	Red sand with gypsum rosettes, halite crystals.	Norma Edit
NS_010	-69.01777	-25.23841	3979	1.1	Light grey	red sand on top & dark grey to the bottom	Natalia María
2nd Round							
NS_015	-67.01702	-25.19892	3989	1.2	Brown, muddy	0-20 cm: brownish calcareous cap; 20-80 cm: green clay; 80-90cm: Black organic matter	Alba Sabrina
NS_016	-67.04891	-25.23439	3988	1	Brown, muddy	0-40: Brown-reddish medium grained sand; 40cm: green clay; 40-140 cm: brown, medium grained sand with halite crystals	Alba Sabrina
NS_017	-66.99666	-25.22627	3984	0.8	Brown, muddy	0-40 cm: medium grained sand; 40-120 cm: black sand	Tramo
NS_018	-66.98243	25.22543	3983	1.4	Dark grey, muddy	0-40 cm: brown-reddish, medium grained sand; 40-100 cm: greenish green clay and coarse grained sand; 100-190 cm: black clay with organic matter	Tramo
NS_019	-66.98152	-25.22284	3989	0.7	Brown, muddy	0-30 cm: brown, reddish, coarse grained sand; 30-80 cm: conglomerate cemented by carbonate	Tramo
NS_020	-66.96998	-25.22447	3990	0.8	Brown, muddy	0-30 cm: brown, reddish, coarse grained sand; 30-80 cm: conglomerate cemented by carbonate	Tramo
NS_22	-66.95884	-25.22614	3979	0.7	Brown, muddy	0 – 120 cm: brown reddish coarse grained sand; 120 - 140 cm: conglomerate tightly cemented by carbonate.	Tramo
NS_23	-67.01594	-25.24262	3981	1.1	Brown. muddy	0 - 80 cm: dark brown reddish coarse grained sand with a 5 cm ulexite layer on the top; 80 - 150 cm: dark brown coarse grained sand.	Natalia Maria
NS_24	-67.02355	-25.20761	3991	1.1	Brown, muddy	0 - 40 cm: brown reddish, coarse grained sand. 40 - 80 cm: pale grey, pale brown tightly cemented conglomerate; 80 - 110 cm: dark brown sand and conglomerate. 110- 130 cm: pale grey, pale brown strongly cemented conglomerate.	Alba Sabrina
NS_25	-67.03114	-25.21795	3991	2.4	Brown, muddy	0-240 cm pale grey, pale brown strongly cemented conglomerate; 240 - 270 cm brown reddish sand and clay.	Alba Sabrina

Source: M&A (2017)

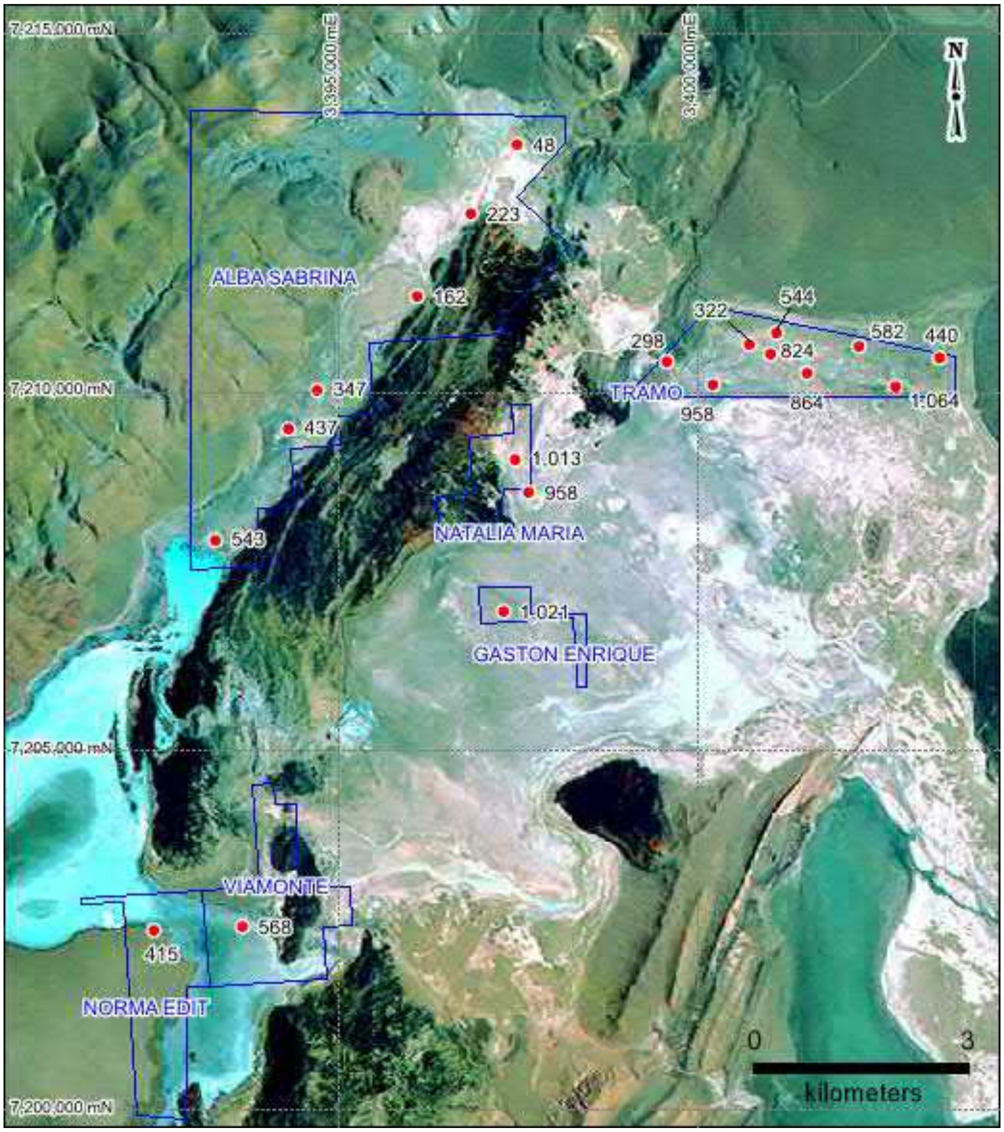


Figure 9-2: Distribution of Lithium Concentration Results (mg/L) for Project Properties

Source: M&A (2017)

Table 9-2: Summary of Geochemical Results

Sample	Type	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	B (mg/L)	Na (mg/L)	K (mg/L)	Density (g/mL)	Conductivity (mS/cm)	Mg/Li
1st Round										
NS_001	Brine	864	1,042	2,515	311	98,485	5,866	1.18	229	2.91
NS_002	Brine	1,064	2,594	4,385	216	92,559	6,727	1.18	237	4.12
NS_003	Brine	322	1,084	1,537	212	71,389	2,451	1.13	188	4.77
NS_004	Brine	958	986	2,038	589	106,339	7,314	1.2	227	2.13
NS_005	Brine	1,021	676	1,549	646	116,588	7,758	1.21	240	1.52
NS_006	Brine	568	778	1,112	503	124,940	4,912	1.22	242	1.96
NS_007	Brine	543	534	3,432	381	106,382	3,758	1.19	225	6.32
NS_008	Brine	347	569	3,087	248	88,023	2,559	1.16	208	8.9
NS_009	Brine	415	912	861	432	128,409	3,391	1.22	230	2.07
NS_010	Brine	1,013	897	1,155	438	113,437	8,593	1.2	193	1.14
2nd Round										
NS_015	Brine	48	407	490	14	10,846	427	1.03	40	10.21
NS_016	Brine	537	544	3,952	69	89,573	4,644	1.19	187	7.36
NS_017	Brine	298	1,636	2,008	97	83,817	1,486	1.17	184	6.74
NS_018	Brine	824	1,091	2,666	67	89,280	7,057	1.19	193	3.24
NS_019	Brine	544	1,008	1,856	67	77,486	4,276	1.16	176	3.41
NS_020	Brine	582	652	1,932	76	76,214	4,803	1.15	173	3.32
NS_021	Brine	575	661	1,841	75	74,326	4,481	1.15	174	3.20
NS_022	Brine	440	882	2,098	55	56,538	3,142	1.12	150	4.77
NS_023	Brine	958	686	1,441	129	106,491	9,288	1.21	184	1.5
NS_024	Brine	223	604	1,794	50	44,507	2,106	1.1	123	8.04
NS_25	Brine	162	411	1,317	38	32,423	1,400	1.08	97	8.13

Source: M&A (2017)

Table 9-1 and Table 9-2 support the thought that elevated concentrations of lithium are located in the brine, including brine at the surface of the salar. The Tramo, Gaston Enrique, and Natalia Maria areas contain the largest concentrations of lithium. These areas are located in the principal east sub-basin area (see Figure 9-1 and Figure 9-2).

As can be seen in Table 9-2 and on Figure 9-2, three samples, NS_015, NS_024 and NS_025, contain significantly lower values of lithium (48, 223 and 162 mg/l, respectively) compared to the other samples in the salar. As can be seen on Figure 9-2, all three samples are in the north part of the Alba Sabrina area and suggest that this area is more affected by shallow surface water associated with precipitation runoff. Near-surface brine samples at the edges of the salar (where fresh water enters the system and is believed to dilute the brine) may not be representative of deeper groundwater chemistry.

Finally, a comparison between samples obtained for the two different sampling rounds in the Tramo and Alba Sabrina areas suggests that near-surface samples obtained during the dry period have more dense brine and higher lithium concentrations than samples obtained during the rainy season. This is believed to be solely the result of near surface brine dilution from precipitation. Based on the author’s experience in salar basins, precipitation dilution does not extend deeper than several meters into the aquifer. Averages for each sampling round in these two areas are as follows:

TRAMO:

- Average Li content during dry season is 802 mg/l (4 samples, October 2016)
- Average Li content during rainy season is 538 mg/l (5 samples, January 2017)

ALBA SABRINA:

- Average Li content during dry season is 445 mg/l (2 samples, October 2016)
- Average Li content during rainy season is 242 mg/l (4 samples, January 2017)

9.2 Geochemical Sampling –Year 2018

Locations for each of the samples collected by on Project properties in year 2018 are shown in Figure 9-3. Geochemical results for main anions, density and conductivity values are given in Table 9-3**.** Analytical results from the laboratory are provided in Appendix B. The goal of this sampling round was to confirm previous sampling results, which were not consistent likely due to precipitation dilution in the near surface where the samples were obtained.

The third round of sampling was conducted by QP Michael Rosko on January 10, 2018, and included collection of seven samples, SHMN-001, -003, -004, -006, -007, -009, and -011 (not including duplicates, see Table 9-3).

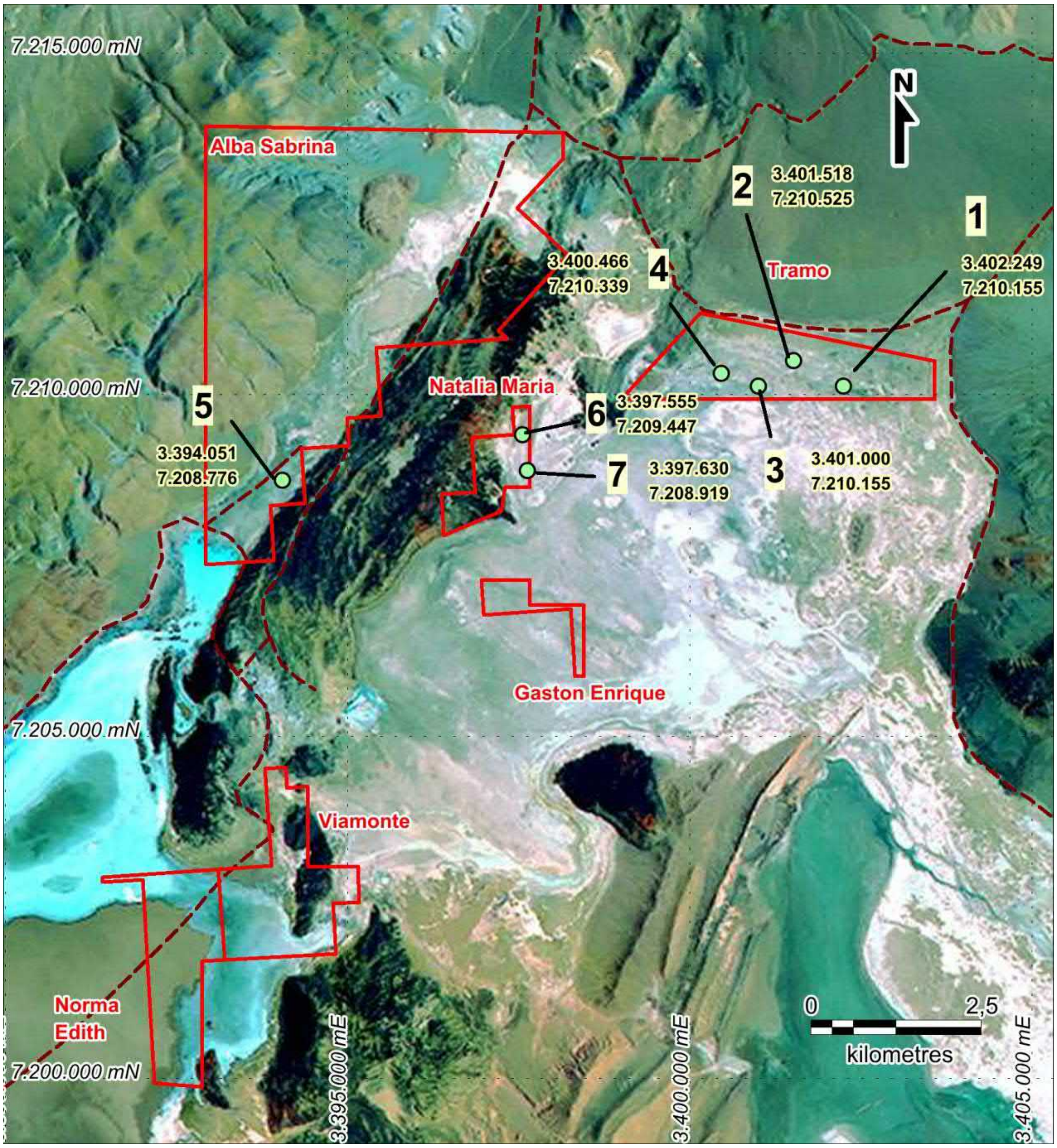


Figure 9-3: Location of Geochemical Brine Samples Collected on Project Properties, Jan 2018

Source: M&A (2018)

Table 9-3: Summary of Geochemical Results from January 2018

Sample	Location Name	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	B (mg/L)	Na (mg/L)	K (mg/L)	Density (g/mL)	Conductivity (mS/cm)	Mg/Li
3st Round										
SHMN_001	Tramo #1	1,120	978	3,594	255	91,495	8,554	1.163	189	3.21
SHMN_002	Tramo #2	792	940	2,392	277	86,552	6,049	1.151	181	3.02
SHMN_004	Tramo #3	1,011	1,105	2,378	396	96,202	9,236	1.169	192	2.35
SHMN_005	Tramo #3 Duplicate	1,008	1,104	2,379	395	96,393	9,539	1.169	193	2.36
SHMN_006	Tramo #4	1,216	1,381	3,718	177	98,220	10,368	1.175	193	3.06
SHMN_007	Alba Sabrina #5	353	737	2,674	244	80,373	3,059	1.134	171	7.58
SHMN_009	Natalia Maria #6	911	944	1,300	435	109,391	8,857	1.181	195	1.43
SHMN_010	Natalia Maria #6 Duplicate	913	943	1,297	432	109,943	8,861	1.181	195	1.42
SHMN_011	Natalia Maria #7	793	1,018	1,075	399	106,828	8,870	1.178	194	1.36

Source: M&A (2018)

Table 9-3 supports the thought that elevated concentrations of lithium are located in the surface brine. The Tramo and Natalia Maria areas contain the largest concentrations of lithium. These areas are in the principal east sub-basin area (see Figure 9-3). The duplicate samples are replicated with a high level of precision.

Finally, a comparison between samples obtained for the January 2018 sampling round suggests that there is a significant range in surface brine samples depending on the time of year and precipitation. Average lithium concentration in Tramo in January 2018 was 974 mg/L, versus 538 mg/l for the January 2017 sampling round. The difference is a direct result of abundant precipitation in 2017 versus 2018.

9.3 Geophysical Survey

A program to complete a CSAMT survey covering all of the properties of the Project was realized in early January 2017. The original plan included 14 CSAMT stations, of which 10 were surveyed in the field. The CSAMT survey was conducted by Geophysical and Exploration Consultants S.A., Mendoza, Argentina (GEC), under the supervision of Sascha Bolling, Senior Geophysicist and Managing Director of GEC. The survey defined two section lines (see Figure 9-4).

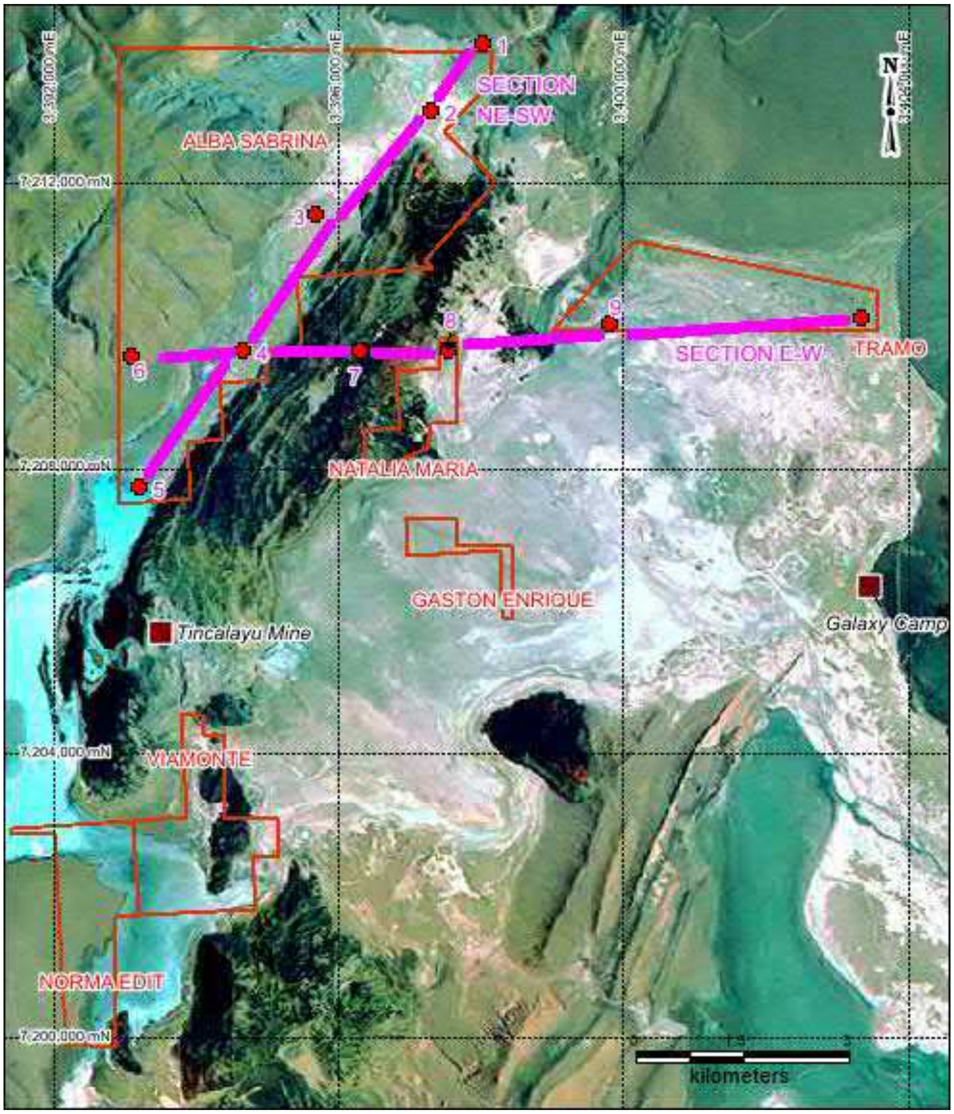


Figure 9-4: Distribution of CSAMT Stations

Source: M&A (2017)

9.3.1 CSAMT Section SHM1 – SHM5 (Alba Sabrina Property)

The Alba Sabrina CSAMT section line included stations SCM1 through SCM5 for a total length of approximately 7,800 m along a NE – SW orientation. For 6,000 m southwest along the "Gulf" a near-surface, highly conductive layer, up to 60 m thick in depth (with resistivity values of 0.01 to 10 Ω/m), is interpreted as a dominant, low-resistive brine close to surface. From this point to end of the section, the interpreted low-resistivity layer increases in thickness to approximately 150 to potentially 250 m. Some semi-resistive (10 to 70 Ω/m) layers are shown below the less-resistive layer over 40 to 200 m in depth. Stronger resistive horizons, interpreted as freshwater water or diluted brine, are seen in the northeast part of the section, which vary southwest to moderately less-resistive levels and then to clearly less-resistive layers (see Figure 9-5).

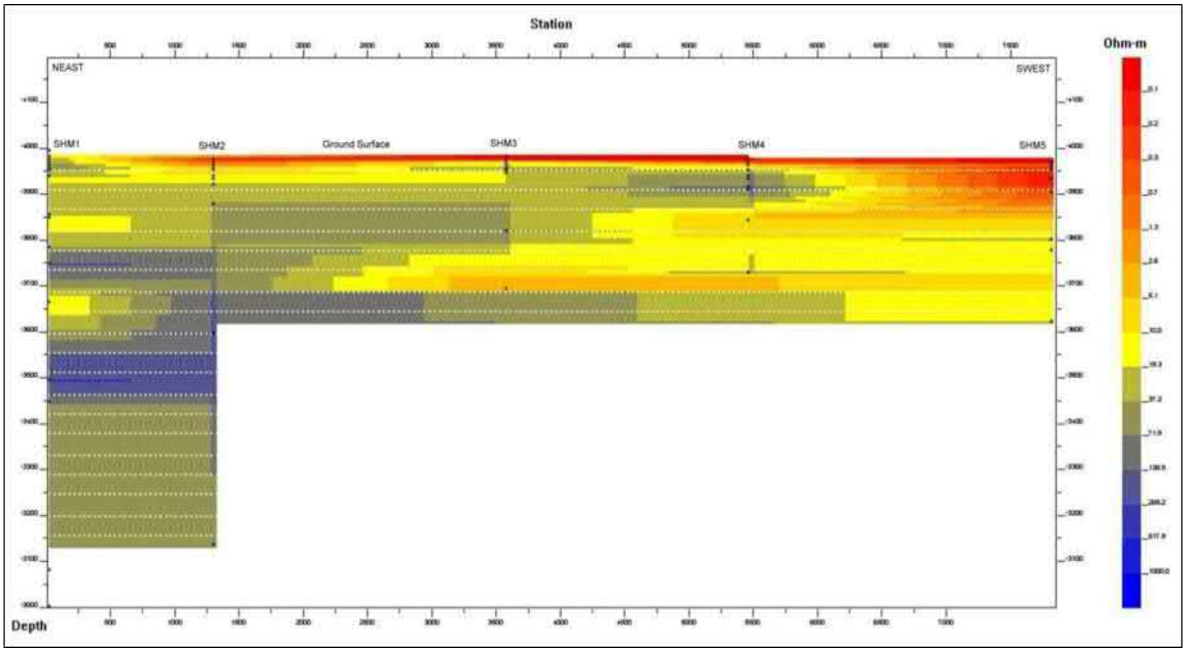


Figure 9-5: CSAMT Results for NE-SW Section from SHM1 to SHM5
Source: GEC (2017)

The near surface brine occurrence along the peninsula widens as brine from the salar is incorporated to the system. It is likely that the Sijes formation (an early evaporite facies within the evolution of the basin) remains active and is being selectively re-invaded by brines circulating through the Salar. The Ordovician shales and sandstones may represent the bottom of the system below 250 m. The anomaly is clearly open to the southwest and apparently to be open at depth.

9.3.2 Section SHM6 –SHM10 (Alba Sabrina-Natalia María-Tramo Properties)

This section shows CSAMT survey results over 9,600 m from west to east (see Figure 9-6). The section confirms the peninsula “Gulf” anomaly begins to define the Sijes Formation and clearly outlines the east part of the sedimentary brine-bearing basin. A long, low-resistive anomaly is seen along the Salar between SHM8 (Natalia Maria) to SHM10 (east border of Tramo) for about 6 km. A low-resistivity 60 to 70 m thick upper horizon, with resistivity values of 0.2 to 1.3 Ω/m, is interpreted over the length of 6,000 m. This continues to a depth of 250 m through the central sector at station SHM9 to the west and the border of the Tramo property. The anomaly remains open at depth in the central part of the section.

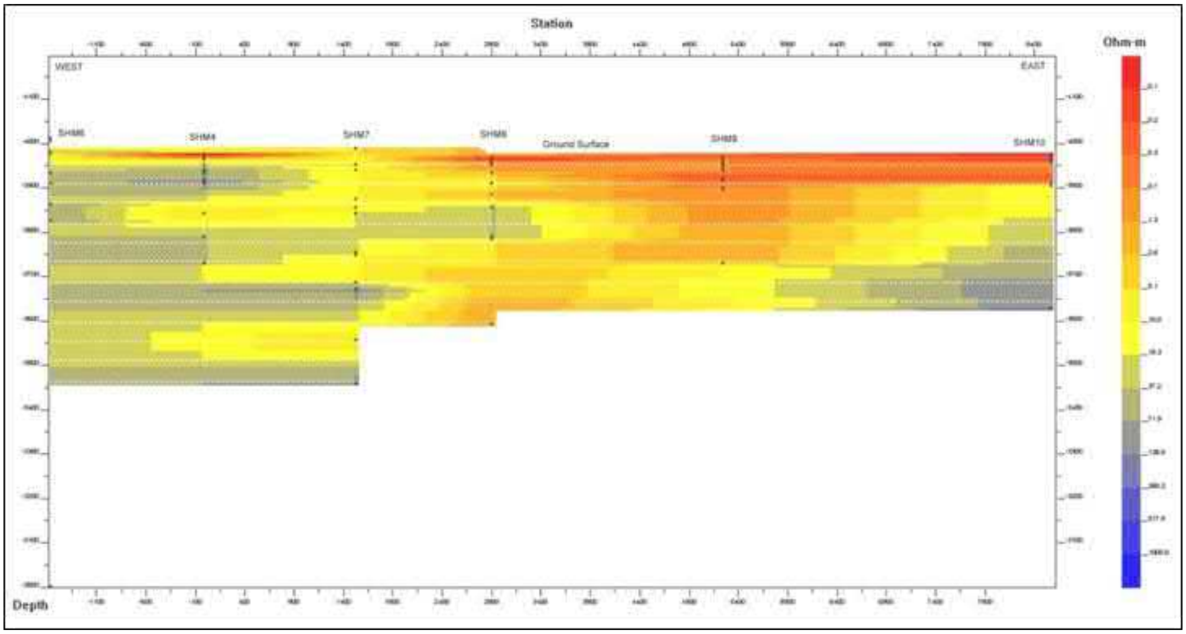


Figure 9-6: CSAMT Results for W-E Section from SHM6 to SHM10

Source: GEC (2017)

10 Drilling

Results of the exploration drilling and testing presented in this report are from field work completed as of June 2019. The drilling program included core drilling of two coreholes, TH18-01 and TH18-02, and construction of two exploration wells TWW18-01 and TWW18-02. A 72-hour pumping test was also conducted at well TWW18-02 using TH18-02 as an observation well. A 72-hour pumping test was conducted at well TWW18-01 using TH18-01 as an observation well. Locations for the wells are shown on Figure 10-1. The exploration program was designed to develop a resource estimate, and also to demonstrate that large amounts of brine can be pumped from the salar to eventually support development of a lithium brine extraction project.

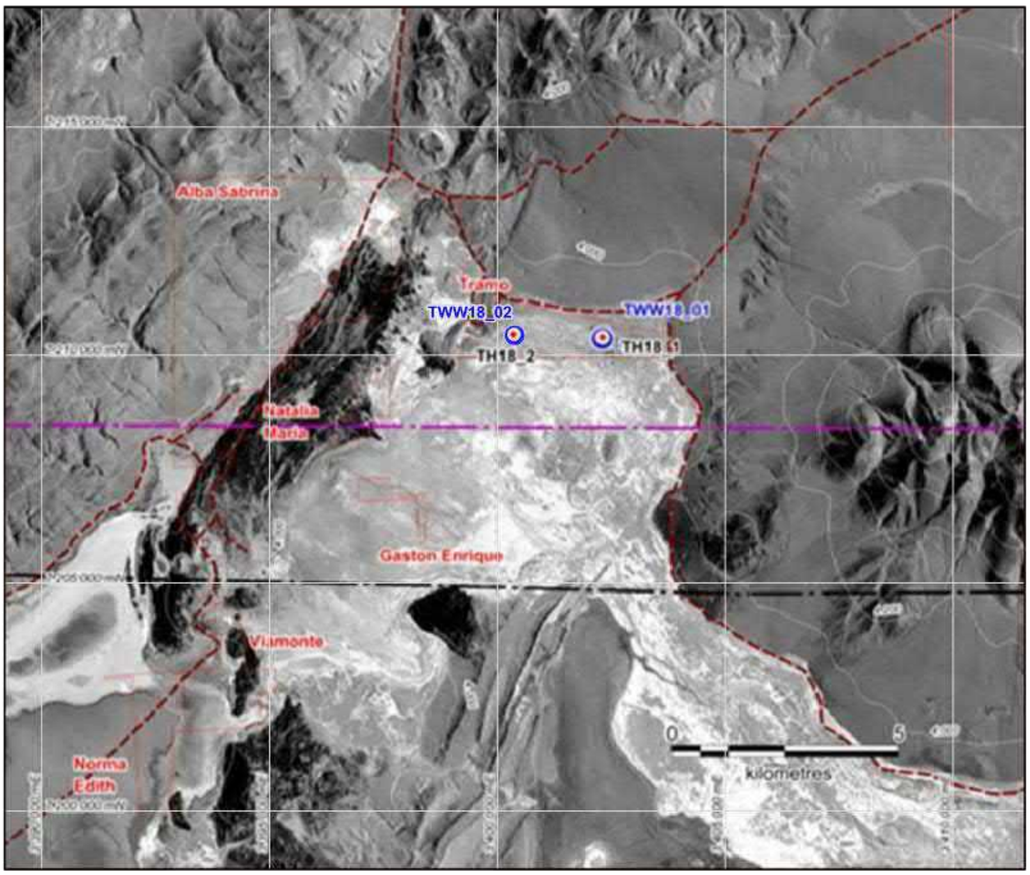


Figure 10-1: Location of Wells

Source: M&A (2018)

10.1 Diamond Drilling Program

The diamond drilling program included drilling two vertical core holes, TH18-01 and TH18-02, ranging in depth from 280 to 401 m See Figures C-1 and C-2 of Appendix C). Drilling was done during the period between April 24 and July 13, 2018, by AGV Falcon, based in Salta, Argentina.

The objectives of this diamond drilling program were to obtain the following:

- Continuous cores for mapping and characterization,
- Geologic samples for Brine Release Capacity Test, including Bulk Density, Total Porosity, Field Water Capacity, and Specific Yield and particle density
- Depth-specific brine samples for laboratory chemical analyses
- Information for the construction of observation wells for future sampling and monitoring.

The following represents a brief summary of the equipment and methods utilized.

- AGV Falcon used a HYDX-6 drill rig and supported equipment
- The holes were drilled using triple tube PQ and HQ drilling methods
- For each drill core, recovery percentage is recorded
- Core was described and stored in labeled core boxes
- Once drill was complete, 2-inch schedule 80 PVC, and 2-inch slotted PVC slot (0.75 mm slot size) was installed.
- The wells were completed with steel surface casing, a surface sanitary cement seal, and lockable cap

Location and sample information for the core holes is given in Table 10.1. Preliminary schematic diagrams for coreholes, together with depths for samples, and results of analyses, are shown on Figures C-1 and C-2 (Appendix C). Laboratory analytical results for the drainable porosity samples are given in Appendix B.

Table 10-1: Summary of Well Locations and Samples

Core Hole Identifier	Total Depth (m)	UTM Easting[1] (m, POSGAR 94)	UTM Northing[1] (m, POSGAR 94)	Number of drainable porosity samples collected	Number of drainable porosity samples analyzed	Number of depth-specific brine samples collected and analyzed
TH18-01	401	3,402,349	7,210,113	37	10	33
TH18-02	280.8	3,400,168	7,210,220	10	10	10
	Total = 681			**Total = 47**	**Total = 20**	**Total = 43**

Source: M&A (2018)

[1] UTM Easting and Northing from hand-held GPS.

Note: Includes duplicate brine samples

A substantial thickness of clastic sediments occur in the Tramo area to a depth of at least 401 m at location TH18-01 and a depth of 280.8 at location TH18-02. Comparison of the lithologic profile for these wells to the hydrogeologic section shows that considerably more clastic sediments occur in the Tramo concession than south and southwest in the sub-basin. This is consistent with our conceptualization that toward the edges of the basin, and especially in the area of large fans that bring sediments into the basin, clastic sediments tend to be more abundant than evaporites.

10.2 Brine Pumping Well TWW18-01

To date, one exploration/pumping test well, TWW18-01, has been drilled, constructed, and tested. A schematic diagram for well TWW18-01 is shown on Figure C-3 of Appendix C. The drilling contractor was Wichi Toledo S.R.L. based in Salta, Argentina. Location information for the exploration well is given in Table 10-2.

Table 10-2: Location and Depth for Pumping Well TWW18-01

Exploration Well Identifier	Total Depth (m)	Easting[1] (m, POSGAR 94)	Northing[1] (m, POSGAR 94)
TWW18-01	401	3,402,357	7,210,100

Source: M&A (2018)
1 Easting and Northing from a hand-held portable GPS

The following represents a brief summary of the equipment and methods utilized during construction of the well.

- Drilled using conventional circulation mud rotary. Drilling fluid was polymer mixed with brine.
- Drilled borehole diameter was 12¾ inch from land surface to 174 m depth. 8 inch from 174 m to 393 m. Once drilled to total depth the borehole was reamed in 1 passes using 17 inches and drilling was extended up to 401 m with 17 inches:
- Unwashed and washed drill cuttings were described and stored in labelled plastic cutting boxes.
- Once drilling was completed, 10-inch pvc casing and screen was installed from 0 to 174 m depth; 8-inch pvc casing and well screen was installed from 174 to 401 m depth (slot size 0.75 mm).
- Gravel pack was installed in the annular space surrounding the well screen.

After installation of casing, gravel pack, and fill materials, clean salty water was used to clean the well for 24-hours.

The pumping test at well TWW18-01 started on July 24, 2018 with an average flow rate of 25 L/s. Testing details are given in Table 10-3. Water level was measured in the pumped well with a graduated sounder. During the test, field parameters (pH, temperature (°C), electrical conductivity (EC) and density) were measured, using calibrated EC-meter and pH-meter. Density was measured with a hydrometer. pH values ranged from 6.06 to 6.11, EC from 201 – 214.5 and density from 1.21 – 1.215 g/cm^3. The pumping test stopped on July 30, 2018 after 72 hours of pumping and 72 hours of recovery measurements.

Table 10-3: Summary of the Pumping Test at Well TWW18-01

WELL IDENTIFIER	DATE PUMPING STARTED	PUMPING DURATION (hours)	PRE-PUMPING WATER LEVEL (mbls)[1]	AVERAGE PUMPING RATE (L/s)[2]	DRAWDOWN AFTER 24 HOURS OF PUMPING (m)	SPECIFIC CAPACITY (L/s/m)[3]
TWW18-01	24-Jul-2018	72	3.24	25	12.97	1.9

Source: M&A (2018)

[1] mbls = meters below land surface

[2] L/s = liters per second

[3] L/s/m = liters per second per meter of drawdown

Transmissivity is the rate at which water is transmitted through a unit width of aquifer under a unit hydraulic gradient and has unit of meters squared per day (m^2/d). For analysis, drawdown data were analyzed for aquifer transmissivity using the logarithmic graphical method developed by Theis (1935). Water level recovery measurements were analyzed using the Theis (1935) semi-logarithmic graphical recovery method. Both methods were analyzed using Aqtesolv software (HydroSOLVE, 2008) and verified manually.

Logarithmic drawdown and semi-logarithmic recovery graphs for the pumped well, and nearby observation well TH18-01, are given on Figures D-1 and D-2 (Appendix D), with computed aquifer transmissivity. Results are tabulated in Table 10-4.

Table 10-4: Summary of Computed Aquifer Parameter for Well TWW18-01

Pumped Well Identifier	Observation Well Identifier	Distance from Pumped Well (m)[1]	Average Pumping Rate (L/s)[2]	Theis (1935) Drawdown method Transmissivity (m^2d)[3]	Theis (1935) Recovery method Transmissivity (m^2d)
TWW18-01	---	0	25	Not analyzed	55
	TH18-01	6	---	61	Not analyzed

Source: M&A (2018)

[1] Measured with calibrated tape

[2] Liters per second

[3] Square meters per day

10.3 Brine Sample Results from Pumping Well TWW18-02

NRG has collected and received laboratory results for 15 composite brine samples collected from wells TWW18-01 obtained during the pumping tests at this well during the period July 17 through July 29, 2018. Results are summarized in Table 10-5.

Table 10-5: Lab Results for Well TWW18-01 Pumping Test Brine Samples

SAMPLE ID	Date	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
HMN-50	17/07/2018	793	2,061	7,829	544	2.60
HMN-51	17/07/2018	790	1,873	8,202	582	2.37
HMN-52	17/07/2018	790	1,814	8,365	600	2.30
HMN-53	17/07/2018	783	1,806	8,255	593	2.31
HMN-54	18/07/2018	784	1,818	8,239	594	2.32
HMN-55	18/07/2018	788	1,803	8,427	598	2.29
HMN-56	18/07/2018	774	1,802	7,965	594	2.33
HMN-57	18/07/2018	786	1,806	8,199	597	2.30
HMN-58	25/07/2018	784	1,823	8,113	594	2.33
HMN-59	25/07/2018	783	1,827	8,082	593	2.33
HMN-60	26/07/2018	787	1,806	8,129	599	2.29
HMN-62	27/07/2018	787	1,802	8,145	604	2.29
HMN-63	27/07/2018	792	1,806	8,210	602	2.28
HMN-64	29/07/2018	796	1,823	8,259	608	2.29
HMN-65	29/07/2018	788	1,801	8,199	597	2.29
AVERAGE		**787**	**1,831**	**8,175**	**593**	**2.33**

Source: M&A (2018)

10.4 Brine Pumping Well TWW18-02 – In Progress at Time of M&A Report

Exploration/pumping test well TWW18-02 has been drilled to a depth of 400 m and reamed and cased to a total depth of 372 m. The drilling contractor is Wichi Toledo S.R.L. based in Salta, Argentina. Location information for the exploration well is given in Table 10-6. TWW18-02 is located about 11 m from core hole TH18-02.

Table 10-6: Location and Depth for Pumping Well TWW18-02

Exploration Well Identifier	Total Depth Drilled (m)	Easting[1] (m, POSGAR 94)	Northing[1] (m, POSGAR 94)
TWW18-02	400	3,400,175	7,210,208

Source: M&A (2018)

[1] Easting and Northing from a hand-held portable GPS

The following represents a brief summary of the equipment and methods utilized during drilling of the well:

- Drilled using conventional circulation mud rotary. Drilling fluid was polymer mixed with brine.
- Drilled borehole diameter of 12¾ inches from land surface to 190 m depth.
- Drilled borehole diameter of 8.5 inches from 190 to 400 m.
- The 12¾ and 8.5-inch diameter boreholes were then reamed to a final diameter of 17.5 inch to a depth of 372 m.

- Unwashed and washed drill cuttings were described and stored in labelled plastic cutting boxes.
- Once drilling was completed, 10-inch pvc blank casing and well screen were installed from 0 to 132 m depth; 8-inch pvc blank casing and well screen were installed from 132 to 372 m depth (slot size 0.75 mm).
- Gravel pack was installed in the annular space surrounding the well screen.

After installation of casing, gravel pack, and fill materials, clean salty water was used to clean the well 24-hours.

The pumping test at well TWW18-02 started on September 20, 2018 with an average flow rate of 20.1 L/s. Testing details are given in Table 10-7. Water level was measured in the pumped well with a graduated sounder. During the test, field parameters (pH, temperature (°C), electrical conductivity (EC) and density) were measured, using calibrated EC-meter and pH-meter.

Table 10-7: Summary of the Pumping Test at Well TWW18-02

WELL IDENTIFIER	DATE PUMPING STARTED	PUMPING DURATION (hours)	PRE-PUMPING WATER LEVEL (mbls)[1]	AVERAGE PUMPING RATE (L/s)[2]	DRAWDOWN AFTER 24 HOURS OF PUMPING (m)	SPECIFIC CAPACITY (L/s/m)[3]
TWW18-02	20-Sep-2018	72	1.83	20.1	35.79	0.6

[1] mbls = meters below land surface
[2] L/s = liters per second
[3] L/s/m = liters per second per meter of drawdown
Source: M&A (2019)

Logarithmic drawdown and semi-logarithmic recovery graphs for the pumped and observation wells were generated with computed aquifer transmissivity. Results are tabulated in Table 10-8.

Table 10-8: Summary of Computed Aquifer Parameter for Well TWW18-02

Pumped Well Identifier	Observation Well Identifier	Distance from Pumped Well (m)[1]	Average Pumping Rate (L/s)[2]	Theis (1935) or Cooper and Jacob (1946) drawdown method Transmissivity (m^2d)[3]	Theis (1935) Recovery method Transmissivity (m^2d)
TWW18-02	---	0	20.1	150	120
	TH18-02	11.14	---	100	Not analyzed

[1] Measured with calibrated tape
[2] Liters per second
[3] Square meters per day
Source: M&A (2019)

Based on the results from testing, the operative transmissivity for well TWW18-02 is considered to be about 120 m^2/d.

10.5 Brine Sample Results from Pumping Well TWW18-02

NRG Metals has collected and received laboratory results for seven composite brine samples collected from well TWW18-02 obtained during the pumping tests at this well during the period September 19 through September 23, 2018. Results are summarized in Table 10-9.

Table 10-9: Lab Results for Well TWW18-02 Pumping Test Brine Samples

SAMPLE ID	Date	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
HMN-67	19/09/2018	649	1,405	7,759	511	2.16
HMN-68	19/09/2018	665	1,422	7,754	517	2.14
HMN-70	19/09/2018	667	1,431	7,850	522	2.15
HMN-71	21/09/2018	672	1,425	7,839	519	2.12
HMN-72	21/09/2018	674	1,426	7,949	521	2.12
HMN-74	22/09/2018	676	1,418	7,974	518	2.10
HMN-75	23/09/2018	666	1,412	8,001	517	2.12
AVERAGE		**667**	**1,420**	**7,875**	**518**	**2.13**

Source: M&A (2019)

11 Sample Preparation, Analyses and Security

The following section applies to the initial surface sampling program, and also to the recent exploration drilling and testing program. Both brine samples and drill core samples were obtained for laboratory analyses. Brine samples were obtained from the following methods:

- depth-specific packer sampling during coring, and
- brine samples obtained during the pumping tests at the exploration well.

In addition to brine samples, core samples were also obtained during the program and submitted for drainable porosity laboratory testing.

Neither chemistry samples (brine) nor porosity samples (core) were subjected to any further preparation prior to shipment to participating laboratories. After the samples were sealed on site, they were processed at the NRG office in Salta, and then shipped in sealed containers to the laboratories for analysis.

11.1 Surface Sample Collection and Preparation

A surface brine sampling program covering the Project properties was conducted by consulting geologist Sergio Lopez and Nivaldo Rojas during the period October 3 and 4, 2016. A second sampling round was completed by consulting geologist Pedro Ruiz, in coordination with Rojas y Asociados (2017) during the period January 31 to February 2, 2017. A third round of surface sampling was conducted directly by QP Michael Rosko on January 10, 2018. Sampling was conducted by means of shallow, hand dug pits and manual auger drilling (Figure 11-1 and Figure 11-2).

Figure 11-1: Sample Pit/Auger Hole Excavated on the Salar at Tramo Property

Source: M&A (2016)

Figure 11-2: Hand-dug Pit Excavated on the Salar Surface; Note Shallow Depth to Brine
Source: M&A (2016)

For the three sampling programs, a total of 27 brine samples (not including duplicate samples) were collected and prepared according protocols for standard brine sample collection along with lithologic descriptions.

Brine samples were collected from hand dug pits using an auger to depths of 2 to 3 m. Samples correspond to natural brine encountered in the auger hole. At some locations, augering to 6 m depth did not encounter brine.

The brine samples were collected by means of plastic bottles weighted on the bottom and open at the top to allow filling of brine. The bottles were deployed and retrieved using a cord. Once at the surface, the brine in the bottle was poured into a clean collecting container and solids were allowed to settle. Typically, the operation was repeated four to five times for filling of the container. After settling, the brine was decanted into a 1-liter, clean plastic bottle using a funnel. The bottles were properly labeled at both the side and the cap. Samples were kept within controlled temperature containers with a maximum of 12 bottles. Sample containers were stored in secure places while in the field and transported to the assay laboratory by the project geologists.

11.2 Depth-Specific Packer Sample Collection and Preparation

During the 2018 drilling program, brine samples were obtained via depth-specific packer sampling during core drilling at core holes TH18-01 and TH18-02 (M&A 2018). Packer sample were obtained during drilling. Samples were considered acceptable and representative of the interval being sampled when minimal to no traces of drilling mud from the core hole were observed in the sample obtained from the packer. Temperature, electrical conductivity, pH, and density were recorded on internal field sheets. Samples were stored in a cooler until they arrived at the lab. NRG's employees were responsible for delivering them to the lab. Chain of custody forms were used until samples arrived at the laboratory.

11.3 Aquifer Test Brine Sample Collection and Preparation

Brine samples were collected directly from the discharge pipe at regular intervals during the aquifer tests at wells TWW18-01 and TWW18-02. The samples were sent to Alex Stewart in sealed plastic bottles with sample numbers clearly identified. Temperature, electrical conductivity, pH, and density were recorded on internal field sheets. Samples were stored in a cooler until they arrived at the lab. NRG's employees were responsible for delivering them to the lab. Chain of custody forms were used until samples arrived at the laboratory.

11.4 Drainable Porosity Core Sample Collection and Preparation

Porosity samples were collected from intact HQ-3 and PQ-3 core. After core retrieval using a wireline system, the core was inspected, and relatively undisturbed samples were taken from the core at selected intervals. Full diameter core with no visible fractures was selected and submitted for laboratory analyses. The selected sleeved core samples were capped with plastic caps, sealed with tape, weighed, and stored for shipment. Typical length of sample is 15 to 40 centimeters (cm). Samples were submitted to GeoSystems Analysis Inc. (GSA) in Tucson, Arizona, USA for Relative Brine Release Capacity, bulk density, total porosity, field water capacity, specific yield, and particle density.

11.5 Brine Analysis

ASA was the primary laboratory for analysis of brine samples. ASA (Jujuy, Argentina) has their main offices in Mendoza, Argentina and corporate offices in Great Britain. ASA has extensive experience analyzing lithium-bearing brines. The ASA laboratories are ISO 9001 accredited and operate according to Alex Stewart Group international standards, consistent with ISO 17025 standards. Samples were analyzed for metals at the ASA laboratory using the Inductively Coupled Plasma (ICP) spectrometry analytical method and other methods given in Figure 11-1. Details on laboratory methods are included in the laboratory reports (Appendix B).

Table 11-1: Laboratory Methods for Brine Samples

Na	ICP	LMMT03
K	ICP	LMMT03
Ba	ICP	LMMT03
Sr	ICP	LMMT03
Fe	ICP	LMMT03
Mn	ICP	LMMT03
Nitrates	UV-vis	LMC100
Cl^-	Argentometric	LMC101
SO_4^{2-}	Gravimetric	LMC122
Alkalinity	Volumetric	LMFQ15
CO_3^{2-}	Volumetric	LMFQ16
HCO_3^-	Volumetric	LMFQ17
Density	Pycnometer	LMFQ19
TDS	Gravimetric	LMFQ08

Source: M&A (2018)

Samples were handled with care by geologists until the lab received them. On site, only geologists filled and stored samples and they were stored in a cooler until they arrived at the lab. To prepare for transport, remaining space in sample coolers was filled with paper, plastic and other cushioned packing materials to ensure no damage occurred in transit. NRG's employees picked up all samples in person and drove them to the lab or lab's office personally. Chain of custody for these samples was always in the hands of NRG personnel until arrival at the lab.

11.6 Drainable Porosity Analyses

Porosity analyses on selected core sample were conducted by GSA, Tucson, Arizona; GSA has worked on many Argentina brine projects during the last several years. Laboratory reports are given in Appendix B.

11.7 Quality Control – 2016 and 2017 Surface Sampling

The laboratory performance was controlled by means of duplicate, blank, and a sample of known chemistry. All control samples were assayed in the ASA's Norlab Laboratory (Jujuy). These control samples include:

- one field duplicate sample collected from a known surface pool at the Salar de Pocitos (NS_11)
- one laboratory self-control duplicate run by (ASA DUPNS_10)
- one blank lithium sample inserted by the consulting geologist
- one field duplicate of the samples being assayed inserted by geologists
- one laboratory duplicate inserted as self-control by ASA

- one lithium blank sample

These control samples confirm expected lithium, potassium, magnesium, calcium, boron, sodium as well as other cations, fluid density, and conductivity. Results are given in Table 11-2 and show that similar results were obtained between the original sample and the duplicate.

Table 11-2: Results of Control Samples from 2016 and 2017 Sampling Rounds

Sample	Li mg/L	Ca mg/L	Mg mg/L	B mg/L	Na mg/L	K mg/L	Density	Conductivity (mS/cm)	Observations
NS_ 010	1013	897	1155	438	11343	8593	1.201	193	Original
DUPNS_010	1010	891	1099	442	11370	8710	1.201	194	NS_10 Duplicate run by ASA
NS_011	80	466	883	200	131626	2325	1.219	228	Field control of known pool
NS_012	< 1	44	25	1	20751	10	1.042	72	Blank prepared by geos
NS_20	**582**	**652**	**1932**	**76**	**76214**	**4803**	**1.15**	**173**	**Original**
NS_21	575	661	1841	75	74328	4481	1.151	174	NS_20 Dup by One Borax
NS_24	**223**	**604**	**1794**	**50**	**44507**	**2106**	**1.101**	**123**	**Original**
DUP_NS24	221	597	1805	48	44525	2096	1.1	124	NS_24 Duplicate run by ASA
NS26	< 1	47	14	<1	4416	6	1.014	16	Blank ordered by One Borax

Source: M&A (2018)

11.8 Quality Control – 2018 Drilling and Testing

The QA/QC documented herein addresses brine samples collected during drilling and during pumping. The quality control program included insertion of duplicate samples and field blanks. The laboratory results were compiled by NRG staff for confirmation of the accuracy and precision of the analysis and reviewed by Montgomery & Associates.

11.8.1 Duplicate Brine Samples for 2018 Exploration Program

Duplicate brine samples were submitted to confirm laboratory repeatability. During the 2018 exploration program, a total of 10 duplicate samples were obtained from the two exploration core holes (TH18-01 and TH18-02) and during the pumping tests at wells TWW18-01 and TWW18-02. Laboratory results for the samples and their duplicates are given in Table 11-3. A statistical comparison of the duplicate samples is given in Table 11-4.

Table 11-3: Summary of Duplicate Laboratory Analyses, 2018 Exploration

	Li (mg/L)[1]		Mg (mg/L)		SO_4 (mg/L)		K (mg/L)	
SAMPLE NUMBERS (ORIGINAL AND DUPLICATE)	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE
TH18_01								
HMN-4/HMN-56	942.3	911.4	3026.9	3072.4	9828.7	9752.3	7298.5	6940.8
HMN-8/HMN-9	878.9	880.8	2367.1	2377.7	9227.8	9178.1	7772.4	7787.3
HMN-12/HMN-13	934.8	931.2	3054.9	3054.2	9096.1	9046.2	7323.1	7267.8
HMN-16/HMN-17	917.9	917.0	2837.8	2859.4	9586.5	NA[2]	7089.9	7410.6
HMN-20/HMN-21	879.0	849.6	2535.1	2434.7	9977.2	NA	7939.2	7793.8
HMN-28/HMN-29	865.6	898.6	2551.9	2667.7	10048.1	NA	7889.8	8178.0
TH18_02								
HMN-41/HMN-42	785.0	786.9	1,704.0	1,687.0	9457.8	NA	9181.2	9071.4
TWW18_01								
HMN-52/HMN-53	790.0	783.0	1814.0	1806.0	NA[2]	NA[2]	8365.0	8255.0
HMN-56/HMN-57	774.0	786.0	1802.0	1806.0	NA[2]	NA[2]	7965.0	8199.0
HMN-64/HMN-65	796.0	788.0	1823.0	1801.0	NA2	NA2	8259.0	8199.0
TWW18_02								
HMN-72/HMN-73	674	673	1,426	1,420	NA[2]	9,477	7,853	7,974

Source: M&A (2018)
[1] mg/L = milligrams per liter
[2]NA = not analyzed

Comparison of the duplicate samples suggests that the samples are being analyzed similarly; large differences between the results for the duplicate samples do not occur. Average error for the lab results for the duplicate samples is given in Table 11-4.

Table 11-4: Percent Difference Between Original and Duplicate Samples for Years 2017 and 2018

Average lithium value for 10 original samples (mg/L)	Average lithium value for 10 duplicate samples (mg/L)	Percent average difference between original and duplicate for lithium	Average potassium value for 10 original samples (mg/L)	Average potassium value for 10 duplicate samples (mg/L)	Percent average difference between original and duplicate for potassium
839.8	836.9	-0.35%	7903.3	7916.1	0.16%

Source: M&A (2018)

11.8.2 Field Blanks

During the 2018 exploration drilling and testing program, a total of four blank samples were submitted to the laboratories for chemical analyses. The blank samples consisted of fresh water. The laboratory did not detect any lithium in the samples.

11.8.3 QA/QC Conclusions and Recommendations

The field sampling of brines from the pumping tests was done in accordance with generally accepted industry standards. The quality control data based upon the insertion of field blanks and analysis of duplicates indicate that the analytical data are accurate and repeatable. As a result, the author is confident that the reported results are representative of the brine chemistry in the aquifer.

11.9 Sample Security

All samples were labeled with permanent marker, sealed with tape and stored at a secure site, both in the field, and in Salta, Argentina, until transported to the laboratory for analysis. Samples were packed into secured boxes with chain of custody forms and then shipped to the laboratory.

12 Data Verification

Michael Rosko (independent QP) conducted the following forms of data verification:

- Visits to the Project site, obtaining independent samples, and approving drill hole locations.
- Inspection of original laboratory results;
- Review of publicly available information from adjacent properties in Salar de Hombre Muerto.

Michael Rosko and Montgomery & Associates employees have been to site to verify field operations, have reviewed core and cuttings descriptions, were on-site during commencement of drilling operations, and have checked summary chemistry tables against original laboratory reports.

The following data management devices and activities were employed:

- Field_notes: The field geologists and hydrogeologists record field notes concurrently with the recorded observation.
- Physical parameters: At the time of sampling, field physical parameters are measured and recorded for all fluid samples.
- Lithological description: Drill core and drill cuttings are described by NRG geologists using standard forms and checked by a Montgomery & Associates hydrogeologist.
- Sample description and Chain of Custody (COC): Sediment and brine samples are described before shipping and are submitted to laboratories using COC documentation.
- Project Database: Lithologic data are entered into the project database designed and maintained by NRG. All sample data for both porosity and brine samples are entered into the same database.
- Daily activity logs: NRG geologists in the field prepare and summarize the field activities at each work site on a daily basis. This is kept in the main computer and backup in an external hard drive. Daily activity logs are sent to Project personnel and consultants as needed.

13 Mineral Processing and Metallurgical Testing

The review summarized herein was conducted according to the CIM's (Canadian Institute of Mining, Metallurgy and Petroleum) Best Practice Guidelines for Mineral Processing (BPGMP). That document supplements the Principles of Process Support for Mineral Resources/Mineral Reserves Estimation for the purposes of the NI 43-101 Technical Report (""NI 43-101 TR").

13.1 Metallurgical Testwork

Baseline evaporation investigation was conducted at the Instituto de Beneficio de Minerales (INBEMI) at University of Salta under the direction of Mr. Fernando Villarroel of Door to Design, Inc. (D2D).

The aim of the work was to determine evaporation profiles in solution under conditions mimicking forced evaporation under controlled-temperature resembling site-ambient conditions (20-25°C). The tests were conducted according to a matrix involving the investigation of "as retrieved" and "limed" samples collected from Hombre Muerto Norte deposit of composition shown in Table 13.1. The test procedure made provisions for interim-solid and liquid-sample retrievals at pre-determined evaporation levels. The precipitated salts were separated after each sample retrieval. The results were evaluated based on material balances and analyses in solutions. The results allowed for the generation of an initial data-package reflective of the evaporation response of the brine-solution sample under the tested conditions.

D2D used proprietary software that it developed to model the underlying ionic balance of the evaporation process on Matlab software. The tests were accompanied by simulation using D2D's proprietary methodology. Lab test were performed at pre-determined levels of evaporation, as defined by the simulation, reporting the actual results to D2D. The results were then used to calibrate and validate the model, as illustrated in Figure 13.1 and Figure 13.2, for, the "as is" and limed brine samples, respectively.

Table 13-1: Hombre Muerto Norte Testwork Sample Chemical Composition

Sample ID	Density kg/m^3	Chemical analyses, mg/L							
		Li^+	Na^+	K^+	Mg^{2+}	Ca^{2+}	Cl^-	SO_4^{2-}	Total B
HMN test-sample	1206	798	110682	8213	1830	732	180203	10183	104

Source: U of S (2019)

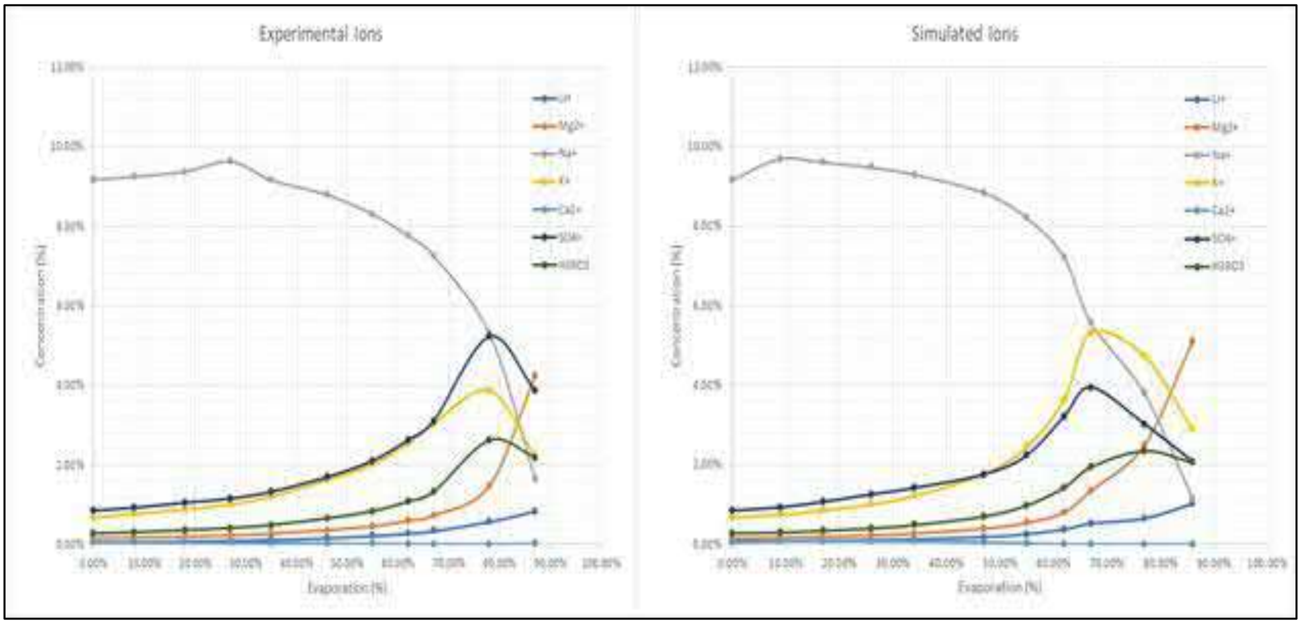


Figure 13-1: Experimental Validation of the Evaporation Model – "As Is" Sample
Source: U of S (2019)

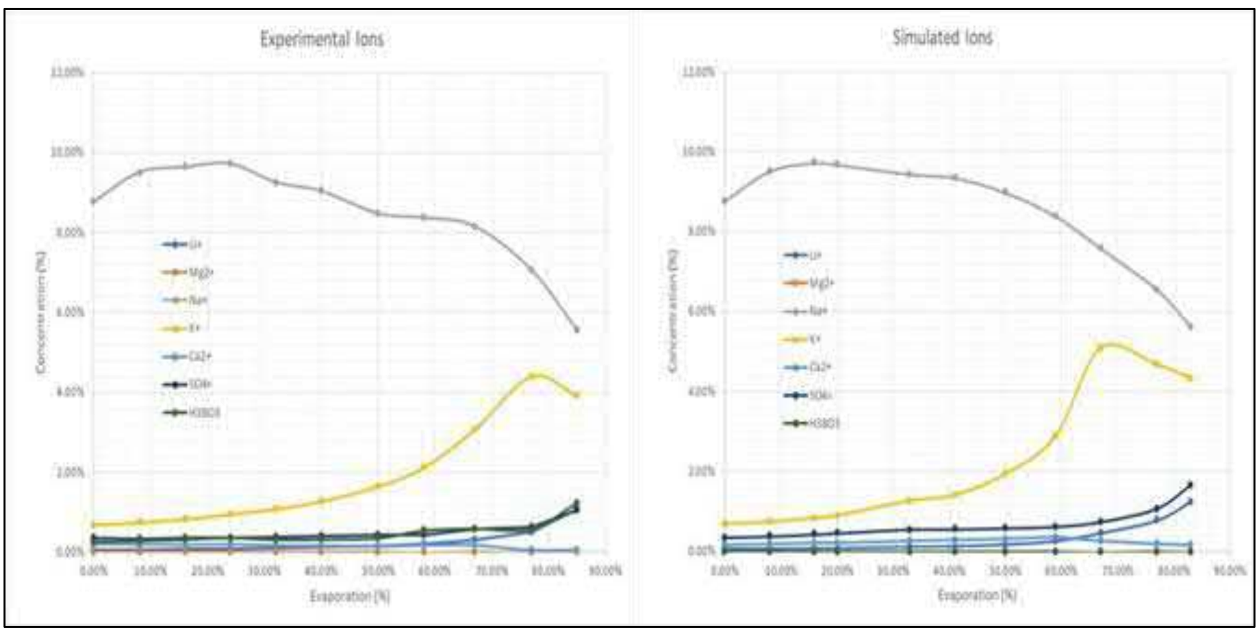


Figure 13-2: Experimental Validation of Evaporation Model – Limited Sample
Source: U of S (2019)

13.2 Metallurgical Assumptions

13.2.1 Premises

Based on the progress results and subsequent validation, D2D established a predictive model for the industrial process as envisaged, consisting of pre-concentration evaporation to breaking-point liming followed by concentration.

The resulting evaporative concentration discharge flowrate and composition constituted the feed to the hydrometallurgical process.

The model output was used to establish the inputs for the process flowsheet described in Section 0.

13.2.2 Key Process Assumptions

13.2.2.1 Conceptual Outline

Lithium recovery from salar brines as a saleable / commercial Li_2CO_3 product is a multi-step process, generally involving a feed-brine-concentration stage by evaporation, which essentially increases the lithium content of the brine. During the concentration process, species such as Na, K, Cl, etc. also increase their concentrations beyond their solubility limit, being forced to "salt-out" and/or precipitate. This process is often referred to as "bulk impurity removal". For example, halite (NaCl) tends to salt-out during the initial evaporation stages (pre-concentration), whereas sylvinite (KCl) salts-out primarily during the more advanced evaporation stages (concentration). Calcium hydroxide (lime) is added to the pre-concentrated brine to remove mainly sulphate as gypsum which is then physically separated into a disposable solid residue and a brine-solution directed to the actual concentration, also known as "lithium concentration". The final-evaporated-concentrated solution is stored in lithium-surge-concentration ponds, where the lithium content is adjusted within certain well-defined levels. The concentrated lithium brine-solution is directed to hydrometallurgical processing aiming to purify the concentrated brine and recover the final product.

The applicable process assumptions underlying the flowsheet development are detailed in the following sub-sections.

13.2.2.2 Concentration and Pre-purification

Consistent with the above considerations, and in conjunction with the testwork and simulation results to date, the brine concentration and simultaneous bulk impurity removal will take three phases:

1. Preconcentration by natural evaporation in shallow ponds, along with partial rejection of predominantly sodium as halite (NaCl), minor sylvinite (KCl), as well as some other sulphate, potassium, magnesium, boron compounds. The thermodynamically-predicted compositions of the precipitated salts include:
    - $KB_5O_8{\cdot}4H_2O$, $K_2SO_4{\cdot}MgSO_4{\cdot}2CaSO_4{\cdot}2H_2O$, $CaSO_4{\cdot}2H_2O$, $Na_4B_{10}O_{17}{\cdot}7H_2O$, KCl (sylvinite), etc.
2. Liming of the preconcentrated solution, realized by addition of hydrated (slaked) lime, which enables sulphate precipitation, primarily as gypsum ($CaSO_4{\cdot}2H_2O$), along with halite, as well as görgeyite ($K_2SO_4{\cdot}5CaSO_4{\cdot}H_2O$), sylvinite (KCl) and hexahydroborite ($CaB_2O_4{\cdot}6H_2O$), etc. Of note, the process is conducted with excess of lime, leading to the presence of calcium hydroxide ($Ca(OH)_2$), both in the limed-residue, and, to a certain degree, in the discharge limed-brine.

3. Concentration of the limed-brine, during which additional quantities of precipitated salts are formed while the lithium reaches its target level for advanced processing in the hydrometallurgical plant.

The precipitated salts from the concertation liming sequences retain some lithium-bearing brine, reducing lithium recovery. This is accounted for in the process flowsheet design.

It was deemed that the quality of the hydrometallurgical plant concentrated feed brine was superior in terms of key impurity to lithium ratios. For this reason, stages such as bulk sulphate polishing (using calcium or barium chloride) were excluded from the process. The need for scavenging precipitation for magnesium using caustic soda was also deemed unnecessary at this time. Instead, a purification circuit was included to ensure adequate purity of the final product, targeted as battery-grade lithium carbonate (99.5% Li_2CO_3).

13.2.2.3 Li_2CO_3 Production

The production of Li_2CO_3 involves the following steps:

- Boron removal using solvent extraction. The solvent extraction circuit feed is subjected to a pH-adjustment using hydrochloric acid, then filtered and contacted with a specifically designed organic solvent-diluent blend. After several stages of counter-current contacting, the boron accumulates into the organic phase then stripped with a sodium hydroxide solution;
- Polishing of the boron-free raffinate is performed in order to remove impurities such as residual calcium and magnesium, among others. It is conducted optimally using sodium carbonate (soda ash) solution, Na_2CO_3, at temperatures not exceeding 40°C to ensure proper balance between maximizing divalent ion precipitation while minimizing lithium co-precipitation (see Equation 13.1). When necessary, minor amounts of sodium hydroxide can be added to ensure rapid stabilization of the pH;
- Li_2CO_3 precipitation ("carbonation") is conducted using sodium carbonate solution, Na_2CO_3, at about 90°C (see Equation 13.2) to favor lithium precipitation, given its reverse-solubility curve. The precipitate is washed on a filter to maximize the removal of soluble species such as sodium, potassium, etc. The sulphate is generally difficult to wash, particularly if present as gypsum. For this reason, a purification stage is conducted by redissolution with carbon dioxide (CO_2) in deionized water ("adsorption") followed by filtration and subsequent re-crystallization by CO_2 desorption (see Equation 13.3). The final filtered-washed-dried product target purity is 99.5% Li_2CO_3, generally considered as "battery grade".

Equation 13-1: Calcium polishing: $CaCl_2(a) + Na_2CO_3(ia) = CaCO_3 + 2NaCl(a)$, $\Delta G@40°C = -10.947$ *kcal*

Equation 13-2: Lithium carbonation: $2LiCl(a) + Na_2CO_3(ia) = Li_2CO_3 + 2NaCl(a)$, $\Delta G@90°C = -8.292$ *kcal*

Equation 13-3: Lithium carbonate purification: $Li_2CO_3 + CO_2(g) + H2O = Li_2CO_3$, *with free enthalpy variations of:*

$\Delta G@20°C = -1.227$ *kcal for redissolution, and,*

$\Delta G@90°C = 1.248$ *kcal for desorption.*

14 Mineral Resource Estimate

An initial resource calculation for Salar del Hombre Muerto Norte Project was previously presented by M&A (2018) and is presented here without changes to the values or methodology.

The key parameters of brine mineral grade and drainable porosity were used to compute the estimated resource. The method consisted of constructing polygonal blocks surrounding each core hole, bounded by the property concession boundary, and divided into horizontal layers by hydrogeologic units. Only laboratory results from depth-specific samples were used (i.e. drainable porosity values from core, and brine chemistry from packer samples). Although important for demonstrating that the brine can be pumped, composite brine samples obtained during the pumping tests were not used in the resource calculation.

Additional lithium and potassium resources are likely to occur at the other concessions of the Project (see Figure 4-2) but are not documented here because exploration drilling has not yet been done at these concessions. For example, the Enrique Gaston concession occurs within a Measured resource polygon reported by Galaxy (M&A and GAI, 2012), and supports the logical argument that if drilled, a Measured lithium and potassium resource would also occur at this concession.

14.1 Definition of Polygons Blocks

Total area of the two polygon blocks used in resource calculation is 3.87 km^2, as shown on Figure 14-1. The eastern polygon contains core hole TH18-01 and pumping well TWW18-01; the west polygon contains core hole TH18-02 and in progess well TWW18-02. The boundary between the two polygons is equidistant from the diamond drill holes.

The deeper unit encountered at well TWW18-02 allowed for additional Indicated Resource to be added to the TH18-02 polygon. The initial Measured Resource for the polygon was based on a maximum-drilled depth of 280.8 m; the pilot borehole at TWW18-02 was drilled to a maximum depth of 400 m, for an extra 119.2 m of Indicated Resource. The estimated resource in the polygon for TH18-01 is considered by the QP to be Measured. Reasonably good stratigraphic correlation is observed between core holes TH18-01 and TH18-02, although more evaporite deposits are observed at core hole TH18-02.

14.2 Definition of Hydrogeologic Units

Results of diamond drilling indicate that basin-fill deposits in Salar del Hombre Muerto can be divided into hydrogeologic units that are dominated by three lithologies, all of which have been sampled and analyzed for drainable porosity and brine chemistry. The length (meters) described and number of samples obtained for each unit is given in Table 14-1. Predominant lithology, number of analyses and statistical parameters for drainable porosity of these units are given in Table 14-2. Locations for porosity and brine samples in each corehole are shown on Figures C-1 and C-2 in Appendix C.

Table 14-1: Meters Described and Number of Samples

Predominant Lithology of Conceptual Hydrogeologic Unit	Meters of Core Described	Number of Drainable Porosity Values	Number of Brine Chemistry Values
Unit 1: Sand and silty sand	204.5	8	13
Unit 2: Interbedded halite, sand, and silty sand	177.8	7	8
Unit 3: Sandy conglomerate	245.2	5	14

Source: M&A (2018)

Table 14-2: Summary of Drainable Porosity Values

Predominant Lithology of Conceptual Hydrogeologic Unit	Number of Analyses	Mean Drainable Porosity	Median Drainable Porosity	Standard Deviation
Unit 1: Sand and silty sand	8	0.108	0.084	0.06
Unit 2: Interbedded halite, sand, and silty sand	7	0.083	0.083	0.038
Unit 3: Sandy conglomerate	5	0.087	0.063	0.05

Source: M&A (2018)

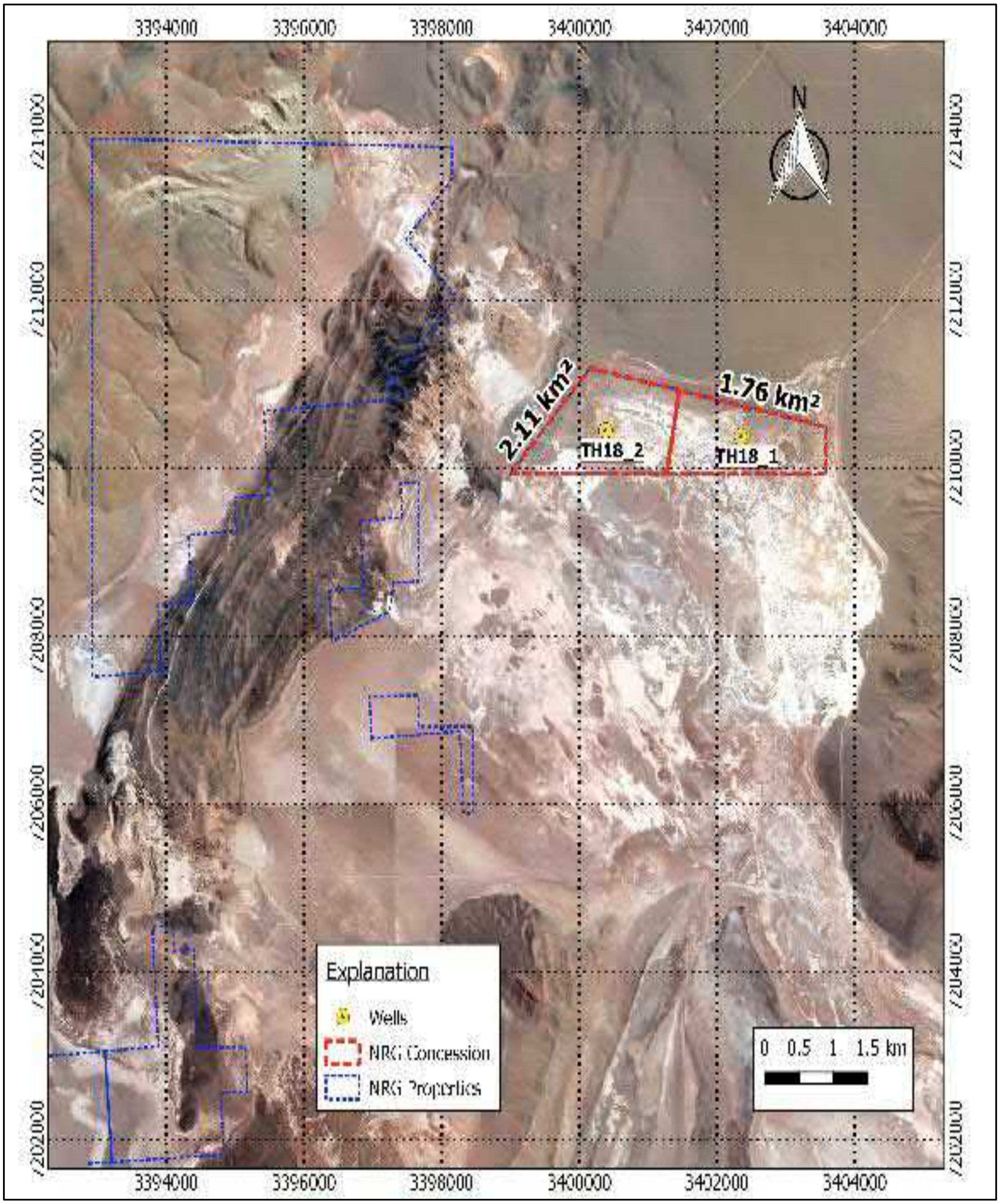


Figure 14-1: Polygons Used for Resource Estimations

Source: M&A (2018)

14.3 Total Resource Estimation

Each core hole was divided into hydrogeologic units using the three predominant lithologies given above. Drainable porosity values for each hydrogeologic unit within a single polygon were computed by averaging the available drainable porosity data from within the hydrogeologic unit at the polygon core hole. Laboratory analyses for drainable porosity and brine chemistry were used for each of the hydrogeologic units used to estimate the Resource.

Drainable porosity and lithium content are weighted by hydrogeologic unit thickness. Hydrogeologic units are shown for each well on Figures C-1 and C-2 (Appendix C). Thickness of the lowermost hydrogeologic unit is limited by total depth of the core hole, or the adjacent exploration water well. The TH18-02 estimated resource includes the deeper unit observed at adjacent well TWW18-02. It is assumed that the properties at the core hole for hydrogeologic unit thickness, drainable porosity, lithium, and potassium extend continuously throughout the entire polygon. The resource computed for each polygon is independent of the other polygon. The computed resource for each polygon was the sum of the products of saturated hydrogeologic unit thickness, polygon area, drainable porosity, and lithium and potassium content.

14.3.1 Support for Measured and Indicated Status

Reasonably good correlation of lithologic units exists between the east and west sides of the Tramo concession. The conceptual model of the hydrogeologic nature of northern Salar del Hombre Muerto and observed results are consistent with anticipated stratigraphic and hydrogeologic conditions associated with mature, closed-basin, high altitude salar systems. The relative lack of halite units in the Tramo concession is consistent with the un-faulted basin edges where clastic sediments tend to me more dominant.

All of the estimated Resource defined by the coreholes TH18-01 and TH18-02 were assigned as Measured. This is consistent with recommendations by Houston et al. (2011) where they suggest that well spacing required to estimate a Measured Resource be no further than 3 to 4 kilometers apart from each other. Given the relatively small size of the Tramo concession, the relatively good stratigraphic understanding of the hydrogeologic units, and the relative uniformity of the brine chemistry, a Measured category is justified.

In addition, based on deeper drilling at well TWW18-02, we have assigned the lower part of TWW18-02 as an Indicated resource because it is consistent with sediments observed in the Tramo concession at that depth that demonstrated good drainable porosity and brine chemistry values (Figure C-1, Appendix C) even though depth-specific core and brine samples were not obtained or analyzed at a laboratory. The interval from 228.5 to 370m consists of interbedded halite and sand and appears to be very similar to the zone in corehole TH18-02 from 166.5 to 228.5 meters (Figure C-2 in Appendix C). From a depth of 370 to 400m in well TWW18-02, the lithology consists of a clayey unit with interbedded fine sand with some halite. This unit is described similarly to the unit observed at corehole TH18-01 from 107-155.8m (Figure C-1 in Appendix C).

In addition, based on completed drilling to date, the lower part of TWW18-02 was assigned as an Indicated resource because it is consistent with sediments observed in the Tramo concession at that depth that demonstrated good drainable porosity and brine chemistry values even though depth specific core and brine samples were not obtained or analyzed at a laboratory. The interval from 228.5 to 370 m consists of interbedded halite and sand and appears to be very similar to the zone in core hole TH18-02 from 166.5 to 228.5 m. From a depth of 370 to 400 m in well TWW18-02, the lithology consists of a clayey unit with interbedded fine sand with some halite. This unit is described similarly to the unit observed at core hole TH18-01 from 107-155.8 m.

14.3.2 Summary of Measured and Indicated Resource

The location map with resource polygons is shown on Figure 14.1. Results of the calculations for estimating the Measured and Indicated Resource for the Tramo concession are summarized in Table 14-3.

Table 14-3: Summary of Measured and Indicated Resources

Resource	Brine Volume (m^3)	Avg. Li (mg/L)	In situ Li (tonnes)	Avg. K (mg/L)	In situ K (tonnes)
Measured	119,862,077	797	95,556	7,039	843,671
Indicated	21,936,404	534	11,714	5,517	121,023
M+I	141,798,481	756	107,270	6,803	964,694

Source: M&A (2018)
Cutoff grade: 500 mg/L lithium – No laboratory results were less than 500 mg/L
The reader is cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability.

14.3.3 Resource Average Grade and Ratios

All of the estimated drainable volume of brine within the polygons (Table 14.3) contains lithium concentration exceeding 500 mg/L. The following averages and ratios have been computed as weighted averages using all depth-specific brine samples obtained and analyzed from core holes TH18-01 and TH18-02, and extrapolated values from the lower part of well TWW18-02.

MEASURED RESOURCE

- average lithium grade is approximately 797 mg/L as lithium
- average potassium grade is about 7,039 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.7
- average sulfate:lithium (SO_4/Li) ratio is about 11.0

MEASURED AND INDICATED RESOURCE COMBINED

- average lithium grade is approximately 756 mg/L as lithium
- average potassium grade is about 6,803 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.6
- average sulfate:lithium (SO_4/Li) ratio is about 11.7

14.3.4 Conversion of Li and K to Equivalents

It is common in the lithium and potassium industries to report lithium and potassium metals as equivalents. Li_2CO_3 is a commonly reported equivalent for lithium; potassium chloride (KCl) is a commonly reported equivalent for potassium. The conversion used to calculate the equivalents from their metal ions is based on the molar weight for the elements added to generate the equivalent. The equations are as follows:

Li x 5.3228 = lithium carbonate equivalent
K x 1.907 = potassium chloride equivalent

Results of the breakdown for lithium and potassium equivalents resources in each category are summarized in Table 14-4.

Table 14-4: Summary of Li_2CO_3 and KCl Equivalents

Resource Category	In Situ Li (t)	Li_2CO_3 Equivalent (t)	In Situ K (t)	KCl Equivalent (t)
Measured	95,556	508,627	843,671	1,608,881
Indicated	11,714	62,351	121,023	230,791
M + I	**107,270**	**570,979**	**964,694**	**1,839,672**

Source: M&A (2018)
Cut-off grade: 500 mg/L lithium

15 Mineral Reserve Estimate

No mineral reserves have been estimated at this early stage of the Project.

16 Mining Methods

This section includes all facilities and activities associated with collecting brine in well holes and pumping it to the concentration ponds near the processing plant.

16.1 Production Rate and Forecast

A production rate of 5,000 t/a of Li_2CO_3 has been targeted for the project. This rate was selected as a reasonable starting level of production, with the potential for expansion once commercial production and/or payback has been achieved.

The resource estimate includes a measured plus indicated total of 107 kt of Li, or an equivalent of 571 kt of Li_2CO_3.

A 30-year production forecast was assumed for the Project. A production rate of 3,750 t/a was assumed for the first operating year (75% of full production) and a rate of 4,500 t/a was assumed for the second year of operations (90% of full production). All remaining years were scheduled at the full production rate.

The production forecast therefore contemplates a total extraction of 148 kt of Li_2CO_3 equivalent, approximately 56% of the resource.

16.1.1 Pumping and Piping Configuration

Access to the extraction wells is provided by a 4.5 km road, built with compacted granular fill. Existing and future roads have a nominal width of 4.75 m and a nominal height of 1 m high.

Wellfield piping will be installed alongside this road. The pipes will be of HDPE, 200 mm in diameter, and will extend from the three brine wells to the concentration ponds.

16.2 Pumping Wells

16.2.1 Existing General Arrangement

Well holes with internal pumps will be used to transfer brine to one of three pre-concentration ponds located near the processing plant.

Two well holes (TWW 18-01 and TWW 18-02) were drilled near each core hole by Wichi Toledo S.R.L., based in Salta, Argentina. The specifications regarding the two well holes are shown in Table 16-1 and pictures of the well holes and core holes are shown as Photo 1. Both existing well holes will be used during production to supply brine to the pre-concentration ponds.

Table 16-1: Well Hole Specifications

Well Name	Depth m	Hole Dia mm	UTM Easting m	UTM Northing m	Casing		Pumping Test
					254 mm PVC	203 mm PVC	
TWW18-01	401	432	3,402,357	7,210,100	0 to 174 m	174 to 401 m	Yes
TWW18-02	400	432	3,400,175	7,210,208			Yes

Source: M&A (2018)

Photo 1: Two Core Holes and Two Well Holes on the Salar
(Source: KP/JDS 2019)

16.2.2 Well Production Capacity and Requirement

A pumping test was carried out on well hole TWW18-01 on 24 July 2018. Brine was pumped from the hole at an average rate of 25 L/s for a duration of 72 hours. A drawdown of 12.97 m was observed after 24 hours of pumping. Recovery of the brine level in the well was then measured over the next 72 hours. This test determined that the specific capacity of the well is 1.9 L/s/m (25 L/s ÷ 12.97 m).

The required pumping rate is estimated from the following assumptions and calculations:

- Production requirement — 5,000 t/a of Li_2CO_3 equivalent or 1,029 t/a Li
- Overall process recovery — 46% (at 99.5% purity)
- Average grade — 756 mg/L
- Overall daily pumped volume — 8.4 Million liters
- Operating days per year — 360 days
- Pump utilization and availability — 95%
- Pumping rate — 100 L/s

It is assumed that each well will have an operating life of 10 years after which time it will be replaced.

17 Process Description and Recovery Methods

17.1 Process Description

The recovery method consists of classic lithium-salar concentration and pre-purification through solar evaporation followed by advanced hydrometallurgical processing where the brine is further purified, and the lithium is recovered as a high-purity lithium carbonate (Li_2CO_3).

17.1.1 Process Overview

The process involves the following main steps:

- Brine production from wells
- Pre-concentration through solar evaporation in shallow ponds
- Bulk-impurity removal by liming
- Concentration through solar evaporation
- Chemical adjustment prior to boron removal
- Boron removal by solvent extraction
- Advanced impurity removal by polishing precipitation
- Li_2CO_3 precipitation by carbonation with sodium carbonate (Na_2CO_3)
- Li_2CO_3 purification by re-dissolution with carbon dioxide and re-precipitation by desorption
- Li_2CO_3 drying, conditioning and packaging.

It is envisaged that the precipitation by carbonation with sodium carbonate will generate a superior yet still technical grade product (99% Li_2CO_3), whereas the purification will target a battery-grade product (99.5% Li_2CO_3).

17.1.2 Process Block Diagram

The process flow diagram is illustrated in Figure 17-1, showing the main process areas, processing circuits and process-streams.

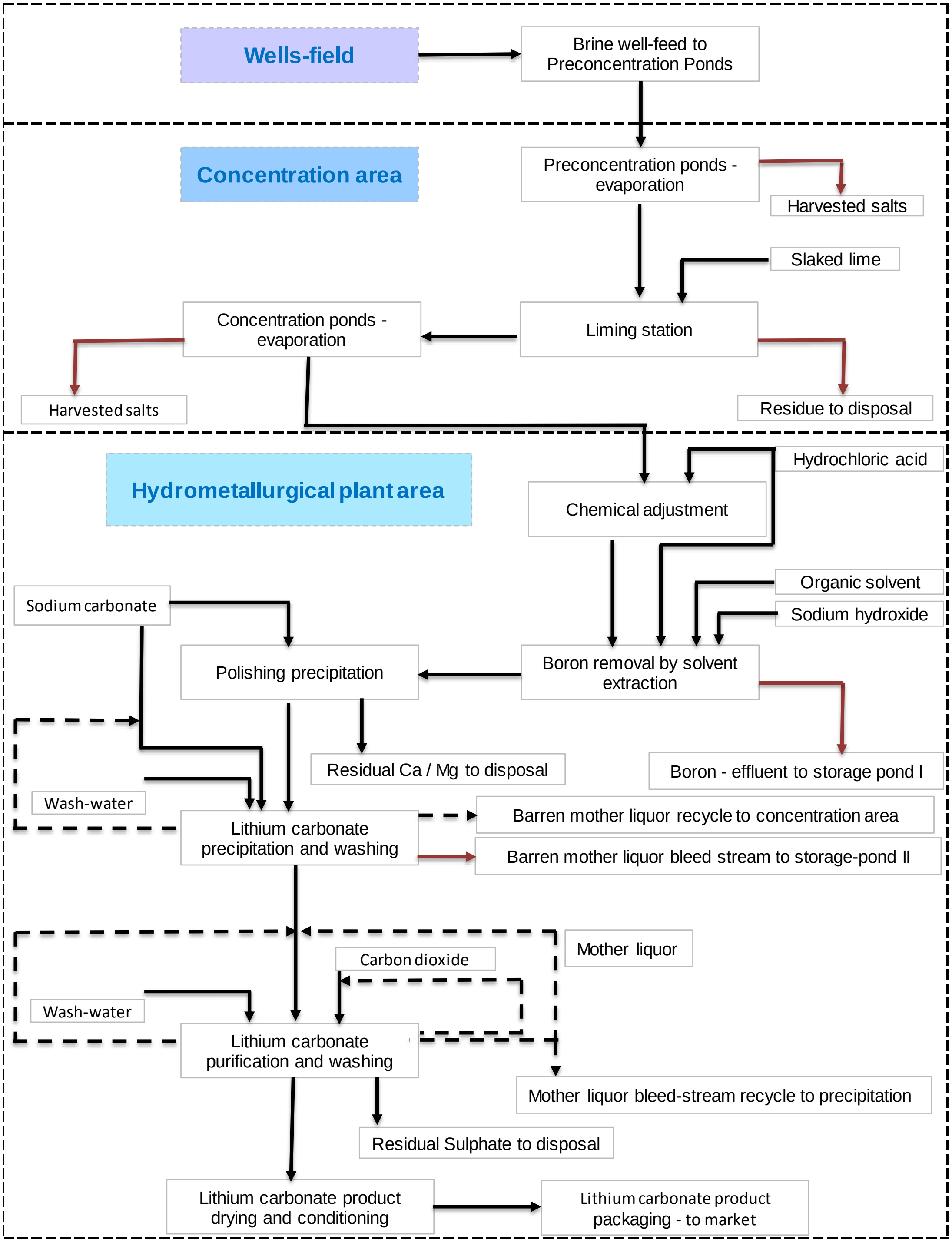


Figure 17-1: Process Block Diagram

(Source: KP/JDS 2019)

17.2 Plant Design Criteria

17.2.1 Methodology

A detailed initial flowsheet was provided by D2D a technology provider associated with NRG. D2D employed proprietary information in conjunction with test-data, as well as modeling and simulation tools in order to predict a preliminary design criteria package for the brine production, evaporation, liming and concentration stages, also referred to as “upstream” or “front-end” process stages. These criteria included evaporation rates, flowrates and detailed solution-analysis in all relevant feed and discharge streams. Furthermore, metallurgical predictions were derived for the performance of the Li_2CO_3 production plant, also referred to as the “downstream” or “back-end” process.

The resulting upstream design criteria package was reviewed and adapted for the purpose of the PEA, as these relied upon specific proprietary information and methods, as well as local meteorological data pertaining to evaporation rates.

The downstream hydrometallurgical criteria were further developed into a process flowsheet model based upon generally accepted hydrometallurgical process design practices. As such, a detailed process stream definition was performed, along with corresponding mass and volume flowrates. The flowrates and the predicted concentrations of key elements were used to calculate their mass rates in each individual stream. This allowed for the estimation of the stage by stage and overall recoveries for lithium, as well as rejection efficiencies for the main impurities.

Key model input process parameters including reagent additions, residence times, surge-times, separation unit areas, etc. were assumed based on prior experience with similar processes. The model output consisted of a preliminary design criteria package for size reduction equipment, reaction tanks, holding tanks, pumps, pipes, thickeners, filters, bulk handling equipment, as well as energy requirements.

The design data package derived information was used for the estimation of the required capital and operating expenditures in all relevant details.

17.2.2 Details on Metallurgical Modelling

Using the methodology above, the concentration area and hydrometallurgical plant were modelled as follows.

Concentration Area:

- Pumping the brine from the salar well holes into the preconcentration ponds and subsequent inter-pond transfer within the preconcentration ponds system
- Preconcentrating the brine through solar evaporation until the lithium concentration reaches the breaking point
- Predicting the discharge brine analytical values for lithium and main impurities
- Pumping of the preconcentrated brine to the liming station where the bulk of the impurities such as calcium, magnesium and sulphate are precipitated using quick-lime (calcium hydroxide) produced on site from calcined or “burnt-lime” and water
- Filtering the limed slurry in order to produce a residue for disposal and a pre-purified brine that is further directed to the concentration ponds

- Predicting the liming discharge brine analytical values for lithium and the main impurities
- Pumping of the limed solution to the concentration ponds
- Concentrating the brine in concentration ponds through solar evaporation in order to maximize its lithium content whilst minimizing the impurities to the maximum degree allowed by natural (solar) evaporation
- Predicting the concentration discharge brine analytical values for lithium and main impurities.

Hydrometallurgical Plant Area:

- Transferring the concentrated brine to the hydrometallurgical processing plant where it is subjected to a chemical adjustment to a pH value of about 4, using concentrated hydrochloric acid
- Passing the chemical adjustment discharge slurry with low suspended solids content through an online micron filter and directing it to the boron solvent extraction circuit
- Operating the boron solvent extraction using a well-defined organic solvent blend, with pH control using diluted hydrochloric acid solution followed by boron stripping using diluted sodium hydroxide solution
- Recovering and scrubbing the organic solvent, and directing it to the storage tank where the loss is completed as/when needed using fresh solvent before being recycled into the process
- Directing the boron containing strip solution from the solvent extraction circuit to the dedicated storage pond
- Preheating the solvent extraction raffinate solution in a dedicated holding tank fitted with temperature control then directing it to the continuous polishing precipitation reaction tanks where sodium carbonate solution is added under controlled conditions in order to precipitate the residual calcium, magnesium, etc.
- Subjecting the polishing discharge slurry to liquid solid separation, disposing of the solid residue and directing the purified solution to the Li_2CO_3 precipitation holding tanks fitted with temperature-controlled heating circuit
- Conducting the Li_2CO_3 precipitation by adding sodium carbonate solution under controlled conditions
- Subjecting the Li_2CO_3 precipitation discharge slurry to liquid solid separation, followed by counter-current washing on belt-filter, recycling the blend of first filtrate and wash-solution into the concentration area
- Subjecting the washed Li_2CO_3 filter cake to purification by re-dissolution with carbon dioxide and re-precipitation by desorption
- Subjecting the final high-grade Li_2CO_3 precipitate discharge slurry to direct filtration, followed by counter-current washing on belt filter, recycling most of the blend of first filtrate and wash solution into the purification process, and a relatively small bleed-stream to precipitation
- Drying, conditioning and packaging of the Li_2CO_3
- Splitting the process streams between recycle and bleed streams as required by their chemical compositions and flowrates, while avoiding reliance upon ion-exchange at this time.

It is envisaged that the precipitation by carbonation with sodium carbonate will generate a superior grade technical product (99% Li_2CO_3), whereas the purification will target a battery-grade product (99.5% Li_2CO_3).

The outcome of the process model is summarized in the "Plant Overall Process Summary" section.

17.2.3 Overall Process Summary

The model-predicted overall process summary is summarized in Table 17-1. Key analytical targets are summarized in Table 17-2.

Table 17-1: Overall Process Summary

Description	Unit	Value	Comment
Ponds and liming for concentration and preliminary purification			
Well-brine feed,	metric tons / year	2,957,033	Throughput at 80% plant utilization
Average well-brine-flow, L/s	L/s	100	Maximum number of wells: 3
Preconcentration ponds total area	ha	125	Active ponds: 3
Preconcentration ponds evaporation rate	mm/day	5.7	Based on specific data
Preconcentration precipitated salts	metric tons / year	667,654	Harvesting ponds: 1
Preconcentration discharge brine	metric tons / year	398,609	To liming
Calcine consumption	metric tons / year	23,059	Active: 80% CaO content
Liming Discharge Residue	metric tons / year	186,621	To disposal
Liming Discharge Brine	metric tons / year	331,438	To concentration
Concentration ponds total area	ha	10	Active ponds: 3
Concentration ponds evaporation rate	mm/day	4.8	Based on local meteo-data
Concentration precipitated salts	metric tons / year	170,748	Harvesting ponds: 3
Concentration discharge brine	metric tons / year	113,946	Feed to Lithium carbonate plant
Lithium recovery in ponds and liming	%	53	Versus Li in well-brine-feed
Hydrometallurgical plant for lithium carbonate production			
Feed lithium concentration	% Li	1.056	From the last concentration pond
Hydrochloric acid consumption	metric tons / year	980	Concentrated ~ 36% wt.
Dry caustic soda consumption	metric tons / year	634	Technical grade 99.5% equivalent
Dry soda ash consumption	metric tons / year	9,233	Technical grade 99.8%
Process water consumption	metric tons / year	131,832	Partly recycled
Deionized water consumption	metric tons / year	14,275	Partly recycled
Sulphuric acid consumption	metric tons / year	247	Technical grade 96%
Organic solvent consumption	metric tons / year	233	Blend
Lithium recovery in carbonate plant	%	81	Versus Li in plant-feed
Overall lithium recovery	%	46	Product vs. well-brine feed+recycle
LCE - Lithium carbonate production	metric tons / year	5000	At 80% overall plant utilization
Product target purity ~ 99.5% Li_2CO_3	% Li_2CO_3	99.50	Based on Lithium and main impurities

Source: KP/JDS (2019)

Table 17-2: Key Analytical Targets

Streams / Species	Li^+	Na^+	K^+	Mg^{2+}	Ca^{2+}	Cl^-	SO_4^{2-}	CO_3^{2-}	Total B
Feed well-brine to ponds, mg/L	803	90,969	7,128	2,576	803	152,336	10,086	0	327
Feed to lithium carbonate plant, ppm	12,391	75,154	49,587	428	107	200,342	32,288	0	2,162
Lithium carbonate product, ppm	186,934	493	78.3	3.8	100.4	316	50.0	808,066	0.18

Source: KP/JDS (2019)

17.3 Preliminary Plant Design Basis

The detailed plant design is in its preliminary stage but is adequate for a Preliminary Economic Assessment study.

17.3.1 Concentration Area

The concentration area is subdivided into:

- Preconcentration ponds
- Liming station
- Concentration ponds.

The evaporation rates were established D2D, based upon local-specific and proprietary data. Brine evaporation rates of 5.7 mm/day, and, 4.8 mm/day were adopted and factored for the concentration ponds and for the pre-concentration ponds, respectively. By comparison, measured evaporation rates in comparable climate-operations ranged from 5.6 mm/day through 7.4 mm/day, the latter being from the closest geographic area.

Based on the evaporation rates, the harvesting pond surface requirements in order to achieve the full rate (Table 17.1) were determined.

The necessary equipment required for operations were sized for pumping (including inter-pond transfer), salt-harvesting and solids-handling. Inter-pond impurity control will be conducted by adequate frequency sampling and analysis using the on-site laboratory.

17.3.2 Hydrometallurgical Area

The hydrometallurgical area comprises the following circuits:

- Chemical adjustment prior to boron removal
- Boron removal by solvent extraction
- Final impurity removal by polishing precipitation
- Li_2CO_3 precipitation by carbonation
- Li_2CO_3 purification by re-dissolution with carbon dioxide and re-precipitation by desorption
- Li_2CO_3 drying, conditioning and packaging.

The following industrial equipment was commonly available: the agitated mixing tanks, holding tanks, pumps, pipes, thickeners, filters, automation and various ancillaries. While the plant will operate in continuous mode, adequate holding capacity was allowed to meet normal surge-requirements. This includes the pre-heating of the polishing and precipitation pre-heating / holding tanks.

Provisions for adequate quality fresh and deionized water required in various process stages were included.

Provisions for the removal and transfer of the liquid effluent stream were included.

Provisions for descaling equipment and reagent (sulphuric acid) were included for both the liming station and hydrometallurgical plant areas.

17.3.3 Reagents

The following technical grade reagents will be used in the operation:

- Calcined lime (also known as “Burnt-lime”)
- Hydrochloric acid (also known as “Muriatic acid”)
- Sodium hydroxide bulk (also known as “Caustic soda)
- Sodium carbonate (also known as “Soda-ash”)
- Sulphuric acid (also known as “Vitriol”)
- Organic solvent in the from a pre-made blend of commercially available selective extractant for Boron
- Fresh and recycled process water as permitted by the individual unit operation
- Deionized water for the precipitation-washing unit-operations, as well as for the entire purification circuit.

Details:

- The required calcined lime grade and purity were specified
- Provisions for handling the bulk solid reagents (calcined lime, caustic soda, soda ash) were included
- Potential alternatives for using sodium hydroxide solution instead of bulk reagent have been considered for the eventual situations when the cost would prove favorable, once handling and freight are factored-in
- Flexibility for the concentration of momentarily available technical grade hydrochloric and sulphuric acids was included
- Adequate reagent dilution and distribution systems were included
- Organic regeneration, storage and dosing provisions were included. The process loss will be completed continuously or on an as-needed basis
- The clean fresh and deionized water requirements for product washing as well as several reaction and dilution streams were conservatively estimated
- Specific consumptions for all reagents were conservatively estimated and used to calculate the annual consumptions for full production.

17.3.4 Disposal of Salts

The harvested salts and liming residue from the pre-concentration and concentration ponds will be disposed separately by hauling from the ponds and dumping onto their respective designated disposal areas, where they will be spread across the salar. The residues generated by the purification circuit will be disposed in the same area with the concentration harvested salts because of their similar chemical-compositions. The purification residue will occupy a negligible fraction of the concentration-harvest disposal site.

18 Project Infrastructure and Services

The project consists of the following main components:

- Salar Brine Extraction Wells
- Concentration ponds
- Li_2CO_3 Plant

18.1 Salar Brine Extraction Wells

The design includes four wells in Tramo property, three productions wells and one as a backup. Two of these wells are existing and two will be drilled as part of the pre-production activities and costs. Locations for the two new well holes have not been set at this time. Submersible electric pumps are considered that will send the brine to concentration ponds. See Figure 10-1 for the well locations.

18.2 Combined Heat and Power Unit

The combined heat and power unit (CHP) will operate on natural gas. Power will be required for the following facilities:

- brine well extraction pumps
- evaporation pond pumps
- Li_2CO_3 plant
- camp

A total requirement of 6.5 MW is anticipated, 5 MW of which will be supplied by liquid natural gas (LNG) powered generators and 1.5 MW from a solar power plant.

Five C1000S Capstone electric generators are required, each with a generation capacity of 1 MW.

The combustion gases exhausted from the generators will be used to provide heat for the process to help the desired chemical reactions to develop.

18.3 Concentration ponds

Based on the climatic conditions of site, it was estimated that a total surface area of 179 ha of concentration ponds would be required to sustain the full production rate of 5 kt/a of Li_2CO_3.

Pumps will be used to transfer the brine between the successive concentration ponds.

The concentration ponds will be built on the Alba Sabrina property. The general arrangement of the ponds is shown in Figure 18-1.

The ponds will be lined with geomembrane and geotextile, to prevent leakage losses. Each will be supplied with an access road network, harvesting roads for salts removal operations, electrical lines for powering the pumps and water lines to transfer the brine.

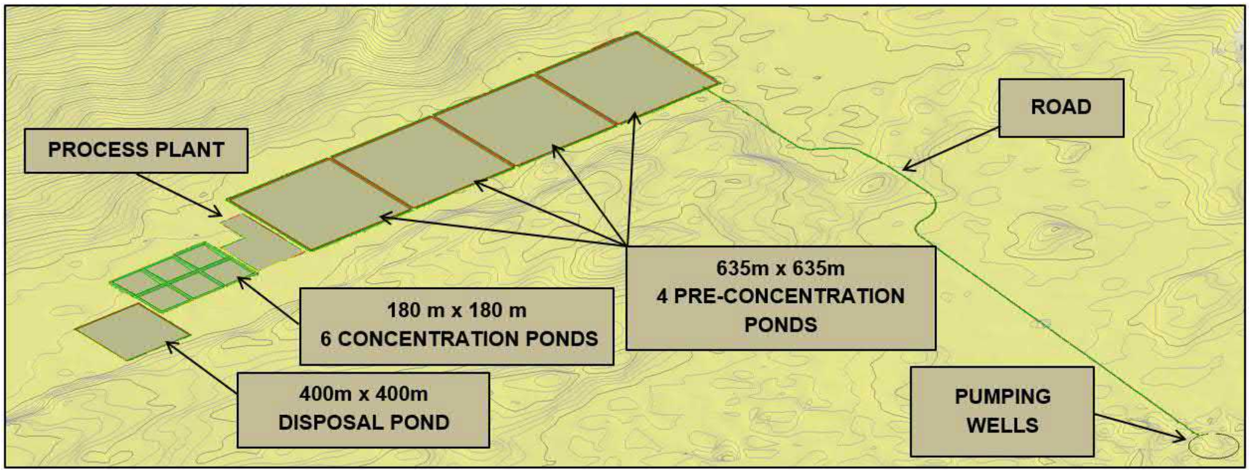


Figure 18-1: Wells and Ponds
Source: KP/JDS (2019)

18.4 Natural Gas Pipeline

The Project considers a virtual gas pipeline of truck haulage to site. The LNG will be provided by a company that provide this service in Argentina.

18.5 Lithium Carbonate Plant

The process plant will be located adjacent to the evaporation and concentration ponds. This building will include the following:

- Wet Area
- Product Building
- Laboratory
- Offices
- Medical Services
- Maintenance Workshop
- Spare Parts Warehouse
- Control Room
- Electrical Equipment Room
- Reagents Storage Room

18.6 Camp Facility

A 65-worker camp will be provided to house the workforce. It will be located within walking distance of the industrial complex to avoid transportation of workers to and from the camp.

18.7 Fresh and Potable Water Supply

Fresh water wells will be drilled and fitted with pumps to supply non-potable water to the mill and for other industrial uses. It will be located approximately 3 km from site and a pipeline will be installed.

Potable water will be brought in bottles for worker consumption in the offices and camp.

19 Market Studies and Contracts

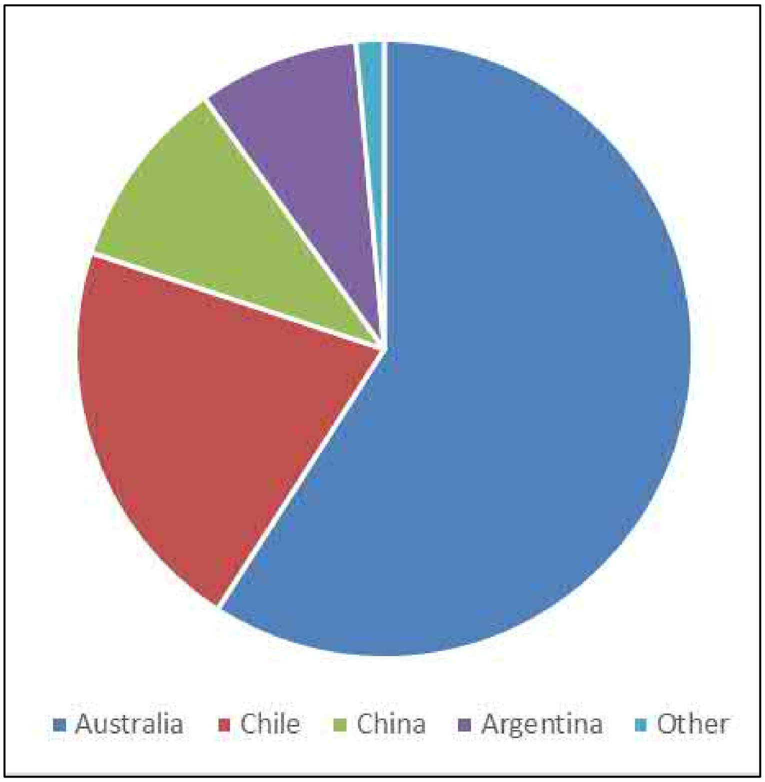
19.1 Market Studies

Lithium is a silver white metal and belongs to the alkali metal group of chemical elements. It is the least dense and lightest solid element, highly reactive and appears only in the form of compounds such as lithium chloride (LiCl) in brines, or lithium oxide (Li_2O) in hardrock / spodumene.

The two main products derived from the two raw lithium sources are lithium carbonate and lithium hydroxide. Lithium carbonate is produced from concentrated brines mainly in Chile and Argentina. It is also produced from lithium spodumene conversion in China. Its primary use is as the cathode in rechargeable lithium ion batteries. It is also used as a raw material to produce lithium hydroxide and other derivatives. Lithium hydroxide is produced in Chile and in the U.S. from lithium carbonate. In addition, it is produced from concentrated lithium solutions in China. Primarily utilized as a lubricant, it is now gaining use in batteries. Lithium concentrate is produced from spodumene which is a hard rock mineral mined in Australia and China. It is processed into two grades, technical and chemical. Technical grade is used in glass and ceramics where the chemical is used to produce other lithium chemical compounds in China.

The USGS in 2018 reported total world lithium reserves at 14 Mtons, and world mine production of at 85,000 tons (excluding US production). Lithium production by country of significance is illustrated in Figure 19-1. In 2018 the USGS deemed lithium a critical element and stated that "Lithium supply security has become a top priority for technology companies in the United States and Asia ".

Figure 19-1: World Lithium Production by Country (2017)



Source: USGS (2017)

19.2 Demand

The development of lithium ion batteries for use in electric vehicles and grid storage batteries has created attention on this industrial mineral. With high electrochemical potential and low atomic mass, lithium is widely used. The three main segments of the global battery industry include electric vehicles, mobile devices and energy storage systems.

High profile companies such as Tesla Inc., the manufacturer of well known electric vehicles (EV) and the power wall, garner much attention in the financial media. Global sales for EV plug in vehicles exceeded 2.1 million units in 2018 (EVVolumes.com) a 64% increase from 2017. China, the largest auto market and key proponent of electric vehicles, accounted for 56% of world EV plug in vehicle sales in 2018. Lithium requirement by electric vehicle varies with the battery size. A Tesla Model S requires 51 kg of lithium carbonate equivalent (LCE), where other brands such as the Renault Zoe uses 31 kg LCE. All the major vehicle manufacturers including Ford, GM, Tesla, Daimler, Volvo, Honda, BMW, Toyota, Honda and Nissan have announced their commitment to electric vehicles. To compliment this trend, several countries have announced an internal combustion engine (ICE) ban, which includes a sales ban in Norway by 2025, and Ireland and the Netherlands by 2030. Local jurisdictions are also incorporating this trend by restricting diesel access and include Paris and Rome by 2024, and Madrid and Mexico City by 2025. With societal change and rapid EV growth, battery makers must secure raw materials for high end batteries, such as lithium.

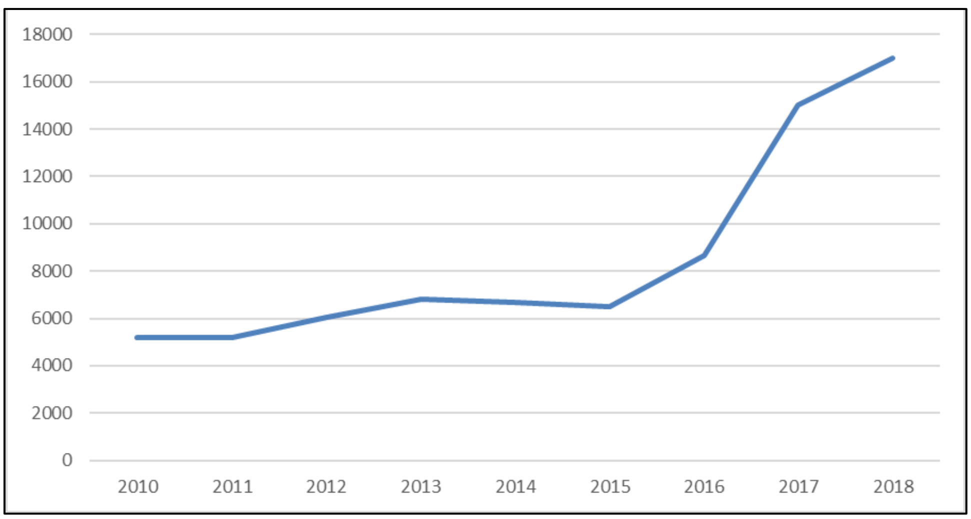
In addition to electric vehicles, lithium-ion batteries are seeing increasing use in grid storage solutions for utility companies and in residential micro-grids coupled with solar photo-voltaic systems. As a trend example, Los Angeles County (USA) recently announced a retrofit of the Grayson Gas Power Plant with 75mw/300 mwh battery storage and a combination of solar and geothermal power. These applications will supplement the expected lithium demand growth, which is expected to average 20% compound annual growth for the next few decades. Also, traditional electric power tools are now converting over to lithium ion battery power sources.

19.3 Pricing

Lithium pricing is based on supply and demand but commercial strategies play a significant role. Over the past ten years, prices have fluctuated significantly. Between 2010 and 2015 the price of lithium carbonate fluctuated between $5,180 and $6,500 per ton. In 2016 the price spiked to $8,650 then rising to $15,000 in 2017 and $17,000 in 2018 (see Figure 19-2). Previous supply predictions had proven to be inaccurate. Actual production in 2017 barely reached half of the 2012 prediction. The surge in EV adoption contributed much to the lithium boom.

New demand can only be met with new supply. To develop a lithium project takes many years. Long permitting timelines, extensive exploration requirements, high capital expenditures and access to capital all greatly affect the ability of a developer to complete new production. Within the past three years, 50 lithium projects have been initiated in Argentina alone (USGS). However, the majority of these projects are in the early prospecting stage and many if not most will never reach production.

Figure 19-2: Ten-Year Lithium Carbonate Battery Grade Pricing ($/t)



Source: Statista (2019)

Most lithium sales are by contractual arrangements between producers and processors or end users. This is the trend in the marketplace as evidenced by the recently announced ten-year lithium purchase agreement between Volkswagen and Gangfeng Lithium. Most producing companies have off-take agreements in place for their lithium. In turn, lithium developers rely on off-take agreements as part of a project financing strategy.

Several projects have now moved to the stage of either economic assessment or feasibility. In order to gauge peer sentiment, NRG Metals has reviewed five publicly available reports that have price forecast studies from May of 2017 to January of 2019. All relied upon independent market studies to arrive at a forward lithium price for battery grade lithium carbonate. The reports are:

1. May 2019 Preliminary Feasibility Study Neo Lithium 3Q Project Catamarca Argentina / study by Benchmark Minerals Intelligence ($11,882)
2. January 2019, LSC Lithium Corporation Preliminary Economic Assessment Pozuelos – Pastos Grandes Project Argentina, Summary of Five Peers ($12,000)
3. August 2018 Lithium Americas Pre-Feasibility Study Thacker Pass Project, Humboldt County Nevada U.S.A. Global Lithium L.L.C. ($12,000)
4. February 2018 Millennial Lithium Preliminary Economic Assessment Pastos Grandes Project Salta Argentina by signumBox ($13,862)
5. May 2017 Lithium Americas Updated Feasibility Study Cauchari- Olaroz Salars, JuJuy Province, Argentina study by Global Lithium L.L.C. ($12,000)

Prices ranged from a low of $10,000 to a high of $17,000. NRG has chosen to average base case lithium price values used in the five reports to arrive at a value of $12,420 per ton.

19.4 Contracts

On 15 November 2017 NRG Metals and NRG Metals Argentina S.A. entered into a lithium off-take agreement with Chengdu Chemphys Chemical Industry Co., Ltd., People's Republic of China (Chengdu). The off-take agreement gave Chengdu exclusive right of first offer (ROFO) to buy any or all production of lithium products from the Hombre Muerto Norte Project.

The Market Price would be determined independently by a major global accounting firm jointly appointed by and independent of each of Seller and Buyer and their respective Affiliates. The assessment of quality would be done by each company independently and an independent and mutually agreed-upon umpire would be used to resolve any and disagreement.

There was no obligation to achieve commercial production on the part of NRG.

This off-take agreement is still in effect but will expire on third anniversary date of its signing, 15 November 2020. It is unlikely that commercial production can be achieved at site prior to the expiration of this agreement.

19.5 Royalties

The property is subject to a 3% royalty payable to Mr. Jorge Moreno of Salta, Argentina, as part of the purchase agreement, as described in Section 4.2.

19.6 Metal Prices

Lithium prices were based on an average of three years historic pricing and two years forward projections for battery grade lithium. The three-year historic price (to April 2019) is $11,770 /t. Contemporary publicly available reports have published a range of forward pricing that varies between $10,700 to $14,750 /t for the next two years. The median price of $13,400 /t was selected as the forward projected price for each of the next two years. This resulted in a project price assumption of $12,420 /t, which was used as the basis of the study. A range of +/- 20% was evaluated to test the project's sensitivity to price assumptions.

20 Environmental Studies, Permitting and Social or Community Impacts

20.1 Environmental

The authors are not aware of any environmental liability associated with the activities performed thus far on site.

NRG is intending to develop the project in a manner that complies with all government regulations and displays good stewardship with regard to the environment.

20.2 Legal Framework

The Argentina National Constitution of 1994 establishes the right of all inhabitants to enjoy a healthy, balanced environment, suitable for human development and for productive activities to meet present needs without compromising those of future generations.

The primary legal framework for mine development in Argentina consists of:

- National Law No. 24,585 on Mining Environmental Protection and its Regulations;
- Provincial Laws and Decrees designating the Application Authority and regulatory procedures; and
- Several national, provincial and local Resolutions.

An approved Environmental Impact Report (EIR) is required in order to initiate construction and operations. The contains a description of the environment, description of the project, analysis of the environmental impacts, environmental management plan, contingency planning, methodology used, and standards consulted. Upon approval of the EIR, the Ministry of Mining issues an Impact Assessment Declaration, which is the Project Authorization.

20.3 Permitting

As of the date of this report, NRG has received a provisional permit for camp installation. Aside from this, NRG has not applied for any other permits.

20.4 Baseline Studies

The area is characterized as Árido Puneño Climate. It is described as a high-altitude desert, with average annual rainfall of 77 mm.

The average annual temperature in the study area is low, with an average of 5ºC, however daily variation of +/-20ºC is common. Evaporation rates are very high (approximately 1300 mm/year), which contributes to a net water deficit for the region.

The vegetation is characterized by low shrubs and stepped high-desert morphology. Wildlife is composed primarily of various bird species, along with rodents and some predator species.

20.5 Social and Community Requirements

The Project is located in the Los Andes Department, whose capital is San Antonio de los Cobres, located approximately 210 km north from the Project. The Municipality of San Antonio de los Cobres had a population of 5,814 inhabitants in the 2010 census, 85% of whom live in the town itself. The rural population is very sparse and disbursed, comprised of families living in adobe buildings, who raise livestock such as goats, sheep, and llamas. The authors are not aware of any property holding or land use that impedes the development of the Project.

20.6 Mine Closure

A conceptual closure plan and cost has been developed for the project. There are no specific laws in Argentina that specify mine closure requirements, and there is no bonding requirement. The closure plan for the Project has been developed in consideration of best industry practice. The closure plan was designed to accommodate the following objectives:

- Health and security of the public
- Protection of the environment
- Ensure physical and chemical stability of post-closure structures
- Ensure unrestricted and unimpacted natural surface water flow
- Prevent erosion of post-closure structures from wind or water
- Safe removal of impacted surface structures and buildings

Buildings and surface structures will be cleaned of residual fuels, lubricants, reagents, and wastes prior to being deconstructed and dismantled. Recyclable wastes will be reused wherever possible. All structures will be removed to ground level, with concrete slabs or other inert foundations covered with native material. Salt residues will be placed and contoured on the salar.

Closure costs have been estimated at $ 2.6 M.

20.7 Conclusion

Currently there are no known environmental or permitting issues that could materially impact the issuer's ability to extract the mineral resources or conduct additional work necessary to declare mineral reserves.

21 Capital and Operating Cost Estimates

21.1 Capital

21.1.1 Summary

Capital expenditures are based on an operating capacity of 5.000 t/a of Li_2CO_3, while design capacity is 5.360 t/a. Capital equipment costs have been taken from in-house data and solicited budget price information.

The estimates are expressed in fourth quarter 2018 US dollars. No provision has been included to offset future cost escalation since expenses, as well as revenue, are expressed in constant dollars.

The capital costs include direct and indirect costs for:

- Salar brine extraction wells.
- Ponds.
- Li_2CO_3 plant.
- Supporting services such as air and water premises, power plant, maintenance shops and a laboratory.
- Administration and medical buildings.
- Lighting, roads and warehouses.

The capital investment for the Hombre Muerto Norte Lithium Project, including equipment, materials, indirect costs and contingencies during the construction period is estimated to be US$ 93.4 million. This total excludes interest expenses that might be capitalized during the same period. Working capital requirements are estimated to be US$ 2.6 million; in addition, sustaining capital expenditures total US$ 14.5 million over the 30-year evaluation period of the project. Disbursements of these expenditures start in year 5.

Total capital expenditures are summarized in Table 21-1

Table 21-1: Capital Cost Estimates Summary ($USD)

Description	Total CAPEX US$000
Direct Costs	
Brine Production Wells	1,744
Evaporation and Concentration Ponds	22,780
Li_2CO_3 Plant	29,207
Infrastructure	14,495
Mobile Equipment Allowance	500
Total Direct Costs	**68,726**
Indirect Costs	
Freight and Customs Expenses	2,177
Crew Transportation	163
Engineering	2,688
Construction Supervision	1,624
Technical Inspections	900
Insurance (0.3% Prorated)	87
Vendor Assistance	623
Commissioning	1,000
Owner's Costs	644
Catering	760
Environ. and Govt Permits and Studies	687
Total Indirect Costs	**11,352**
Subtotal (Directs + Indirects)	**80,078**
Contingency (17%)	**13,277**
Total Capex	**93,355**

Source: KP/JDS (2019)

21.1.2 Salar Brine Extraction Wells

Four production wells have been assumed for the capital estimate and ongoing operations, providing one spare well. The capital requirement for the wells, pumps, and pipeline is shown in Table 21-2.

Table 21-2: Salar Brine Extraction Wells Capital Cost Estimate ($USD)

Description	Unit Price US$000	Total Price US$000
Direct Costs		
Drilling and Completion of Brine Production Wells (4 units)	305	1,220
Special Drilling Fluids & Replacement of Tools (10% Wells Value)		122
Pumps (3 units + 1 spare)	26	104
Piping (1 pipeline)	282	282
Electrical (for 4 pumping units)	16	16
TOTAL		**1,744**

Source: KP/JDS (2019)

21.1.3 Concentration Ponds

Based on evaporation expectations and projected plant efficiency, a total of 169 ha has been estimated as the surface requirement for the concentration ponds to sustain full production. This area includes a total of ten ponds for pre-concentration, concentration, and harvesting, as shown in Table 21-3 and Table 21-4

Capital cost for the ponds includes the earth movement costs required for road building.

Table 21-3: Concentration ponds Area

Ponds	Number	Pond area (m^2)	Total area (m^2)
Pre-concentration	3	400,000	1,200,000
Concentration	3	31,666	94,998
Harvest pre-concentration	1	400,000	400,000
Harvest concentration	3	31,666	94,998

Source: KP/JDS (2019)

Table 21-4: Concentration ponds Capital Cost Estimate ($USD)

Description	Total Price
DIRECT COSTS	
Construction of pre-concentration and concentration ponds.	22,780
Earth movements for disposal ponds I and II.	
Includes earthworks, roads, coating, pumps, pipes, valves and electrical distribution.	
TOTAL	**22,780**

Source: KP/JDS (2019)

21.1.4 Mobile Equipment

The estimate mobile equipment that will be needed at the project is detailed in Table 21-5. An allowance of $500,000 has been included in the capital estimate for these units.

Table 21-5: Mobile Equipment

Equipment	Number
Pickup Trucks	5
Forklift	2
Flatbed Truck	1
Boom Truck	1
Manlift	1

Source: KP/JDS (2019)

21.1.5 Lithium Carbonate Plant

The capital cost estimate for construction of the 5,000 t/a Li_2CO_3 plant is shown in Table 21-6. This was derived primarily using a database acquired from prior similar projects for the equipment required for the main plant equipment.

Table 21-6: Li_2CO_3 Plant Capital Cost Estimate ($USD)

Description	Total Price Supply	Total Price Labor	Total Projected Budget
DIRECT COSTS			
Li_2CO_3 Plant			
Brine Storage and Distribution	118	48	166
SX Boron Plant	520	627	1,147
Purification Stage (Ca and Mg Polishing-precipitation)	1,750	672	2,422
Li_2CO_3 Precipitation	2,578	547	3,125
Liming Plant	3,969	511	4,479
Bulk Reagents Make-Up Circuit	855	682	1,537
Li_2CO_3 purification stage	1,200	800	2,000
Li_2CO_3 conditioning System (filtering, sizing and compacting)	1,180	586	1,766
Li_2CO_3 Bagging System	527	129	656
Water Supply, Storage and Distribution	702	152	853
Electric Supply and Distribution	1,734	996	2,730
Air for Plant Instrumentation	153	60	213
Fuel Supply and Distribution	43	64	106
Thermic Unit	6	2	7
Fire Protection System (SX)	225	194	418
Offices and Laboratory	422	-	422
Maintenance Workshop	228	126	354
Products Warehouse	450	405	855

Description	Total Price Supply	Total Price Labor	Total Projected Budget
Weighing Steelyard	115	33	148
General (Plant warehouse, sewerage, Water, Earthworks, Control System and Piping)	2,525	2,386	4,910
Spare Parts	890	-	890
DIRECT COSTS SUBTOTAL	**20,189**	**9,018**	**29,207**

Source: KP/JDS (2019)

21.1.6 Infrastructure

The capital cost estimate for infrastructure considers the necessary installations for power and heating, the foundation of the gas supply and storage facility, water supply and the worker camp.

Most of the power required for the project will be provided by a 5 MW LNG-fueled generator plant. A 1.5 MW solar power plant will be installed as a supplemental power supplier.

The LNG will be provided by a subcontractor, who also provide tankage to store the gas on site. As such, only the foundation and the piping connection with the gensets are included in the capital estimate.

Capital expenditures for this infrastructure are presented in Table 21-7.

Table 21-7: Infrastructure Capital Cost Estimate ($USD)

Description	Total Price
DIRECT COSTS	
Power and heating	11,671
LNG storage tank foundation	335
Water Supply	448
Mining Camp	2,042
TOTAL	**14,495**

Source: KP/JDS (2019)

21.1.7 Exclusions

The following items are excluded from this estimate:

- Sunk and legal costs.
- Special incentives and allowances.
- Escalation.
- Interest and financing costs.
- Exploration expenses.

21.2 Operating Cost Estimate

21.2.1 Summary

The total estimate of operating cost for the Project is shown in Table 21-8.

The operating cost estimate was prepared with an accuracy level of +/- 30 for the production of 5.000 t/a of Li_2CO_3. Preliminary vendor quotations were used to estimate reagent costs based on projected consumptions, as discussed in Section 17.3.3. Salaries and wages have been estimated using experience with similar projects in the mining area. The LNG price was obtained through a budgetary quotation of Galileo Technologies. Transportation prices have been taken from the quotation of a specialized company that works mainly in the north of Argentina.

Table 21-8: Summary of Operating Cost Estimate ($USD)

Description	$/a	$/t Li_2CO_3
Direct Costs:		
Chemical Reagents	8,740	1,748
Salt Removal and Transport	780	156
Energy (M$/a)	1,127	225
Manpower	2,167	433
Catering & Camp Services	359	72
Equipment Operation (allowance)	230	46
Maintenance	1,201	240
Transportation to Port	308	62
Direct Costs Subtotal	**14,912**	**2,982**
Indirect Costs		
General & Administration	700	140
Indirect Costs Subtotal	**700**	**140**
Production Li_2CO_3 Total Costs	**15,612**	**3,122**

Source: KP/JDS (2019)

21.2.2 Ponds and Plants Reagents

Due the volume of lime consumption, companies with provisioning capacity were searched. One of them in San Juan province. The cost of transportation from the factory to the plant has been included in the costs.

Chemical consumption at the Li_2CO_3 plant corresponds mainly to Na_2CO_3 usage for carbonating the brine. Small quantities of sulfuric acid are also required for its periodic cleaning.

The boron removal section included in the Li_2CO_3 plant also requires small quantities of other chemical agents.

The Li_2CO_3 is purified in the process using carbon dioxide targeting 99.5% product.

21.2.3 Energy

The total consumption of the Project was estimated at 12.720 MWh/a, as shown in Table 21-9. This consumption includes wells, ponds, Li_2CO_3 plant, camp, offices and lighting. This represents an average active load of 1.5 MW over the operating year, 22% of the total site power generation potential.

After a preliminary trade-off, the use of a virtual gas pipeline was chosen for the feeding the 5 MW LNG power generation plant rather than the construction of a new pipeline to site. These generators are complemented by solar panels with a generation capacity of 1.5 MW, 30% of on-site LNG generator's capacity.

Budgetary quotes were obtained for LNG supply. The cost of the solar panels was estimated using a database of similar projects in Argentina.

Table 21-9: Summary of Energy Cost Estimate ($USD)

Description	Unit	Total
Production requirement	MWh/a	12,720
Solar panels recovered energy	MWh/a	(3,600)
Gas Price	US$ / MMBTU	12.0
BSFC (LHV)	MMBTU/ MWh	10,300
Electricity Cost	US$ / MWh	123.60
TOTAL ENERGY PRICE	**M$/a**	**1,127,25**

Source: KP/JDS (2019)

21.2.4 Maintenance

The annual maintenance cost was obtained by applying a percentage to the direct costs of the wells, plant and infrastructure, as shown in Table 21-10.

Table 21-10: Maintenance Cost Estimate ($USD)

Description	Total Projected Budget	Maintenance (%)	Maintenance ($/a)
Brine Production Wells	1,744	2.0%	35
Li_2CO_3 Plant	29,207	3.0%	876
Infrastructure	14,495	2.0%	290
Subtotal, Well, Plants & Infrastructure	**45,446**		**1.201**

Source: KP/JDS (2019)

21.2.5 Manpower, Catering and Camp Services

Manpower levels and costs are shown in Table 21-11. A 4-day x 3-day shift with ten-hour workdays was used for staff and supervisory positions. A 2-week on x 2-week off shift with12-hour workdays was assumed for the operators. Wages were based on experience with similar projects in Argentina. Management positions will be based in Salta.

Catering cost is estimated at $7 per meal (x 4 per day), including catering staff, resulting in an annual catering cost estimate of $359K. Additional rooms and catering costs have been included in the operating costs for visitors including occasional visits from Salta staff or outside consultants.

Table 21-11: Manpower Cost Estimate – Manpower and Operations

Description Area - Position	Shifts/day	Work Shift	Total Payroll	Total ($/mo)
MANAGEMENT (G&A)				
General Manager	1	4d x 3d	1	10,206
Finance & Acct. Manager	1	4d x 3d	1	6,237
Commercial Manager	1	4d x 3d	1	4,860
Secretaries	1	4d x 3d	1	1,863
Accountant	1	4d x 3d	1	2,997
Treasurer	1	4d x 3d	1	2,997
Clerks	1	4d x 3d	1	1,863
MANAGEMENT (Table 21-12**)**	**7**		**7**	**31,023**
OPERATIONS MANPOWER				
Operations Management				
Operations Manager	1	4d x 3d	1	7,290
Secretary	1	4d x 3d	1	1,863
Subtotal Operations Management	**2**		**2**	**9,153**
Hydrogeology				
Chief	1	4d x 3d	1	3,159
Well Operators	1	2w x 2w	4	8,910
Subtotal Hydrogeology	**2**		**5**	**12,069**
Administration				
Chief	1	4d x 3d	1	3,791
Secretary	1	4d x 3d	1	1,863
Statistics	1	4d x 3d	1	2,430
Safety Supervisor	2	2w x 2w	2	6,318
Security Personal	2	2w x 2w	4	6,804
Logistics Supervisor	1	4d x 3d	1	3,321
Logistics Assistants	1	4d x 3d	1	2,041
Warehouse Supervisor	1	4d x 3d	1	3,321
Warehouse Assistants	2	2w x 2w	4	8,165
Subtotal Administration	**12**		**16**	**38,054**
Carbonate Plant				
Chief	1	4d x 3d	1	3,791
Shift Leaders	2	2w x 2w	4	11,664
Control Room Operator	2	2w x 2w	4	8,424
Pond Operators	2	2w x 2w	4	8,424
Lime Plant & Reagents Make-Up Operators	2	2w x 2w	4	8,424
SX Boron Plant & Purification Operators	2	2w x 2w	4	8,424
Drying, Packaging and Warehouse Operators	2	2w x 2w	4	8,424

Description Area - Position	Shifts/day	Work Shift	Total Payroll	Total ($/mo)
Power and Auxiliaries Services Operators	2	2w x 2w	4	8,424
Crane Operators	2	2w x 2w	4	8,424
Subtotal Carbonate Plant	**17**		**33**	**74,423**
Laboratory				
Chief	1	4d x 3d	1	2,916
Analysts	1	4d x 3d	1	1,620
Assistants	2	2w x 2w	4	6,156
Subtotal Laboratory	**4**		**6**	**10,692**
Engineering and Maintenance				
Chief	1	4d x 3d	1	3,475
Mechanics Chief	1	4d x 3d	2	5,832
Mechanical	2	2w x 2w	4	8,424
Electrics and Instrumentation Chief	1	4d x 3d	1	2,916
Electrical and Instrumentation	1	2w x 2w	2	4,212
Subtotal Engineering and Maintenance	**6**		**10**	**24,859**
Camp Services				
Chief	1	4d x 3d	1	-
Service Leader	1	4d x 3d	1	-
Cooks	2	2w x 2w	8	-
Housekeeping	2	2w x 2w	8	-
Camp Maintenance Chief	1	4d x 3d	1	2,916
Camp Maintenance Staff	2	2w x 2w	4	8,424
Subtotal Camp Services	**9**		**23**	**11,340**
OPERATIONS MANPOWER (Table 21-8**)**	**52**		**95**	**180,590**

Source: KP/JDS (2019)

21.2.6 General and Administration Costs

General and Administration costs are shown in Table 21-12. An office will be maintained in Salta for management, accounting, and administrative purposes.

Table 21-12: General and Administration Costs ($ USD/a)

Description	Cost $K/a
Management (see Table 21-10)	372
Office rental	12
Insurance (0.1% Annual of CAPEX)	93
Transportation	162
PPE, Office supplies & sundries	60
Local G & A Total Costs	**700**

Source: KP/JDS (2019)

22 Economic Analysis

22.1 Economic Results

An economic model was developed to estimate annual cash flows and to sensitivities of key parameters on the project. Pre-tax estimates of project values were prepared for comparative purposes, while after-tax estimates were developed to approximate the true investment value. It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations.

This PEA is preliminary in nature and there is no certainty that the results of this PEA will be realized.

The economic model is based on a 30-year production forecast at a steady-state production rate of 5,000 t/a of Li2CO3, a total production of 148,000 tonnes as discussed in Section 16.1.

*The project is projected to generate a **Pre-Tax NPV$_8$ of $335 M** and an **IRR of 32.6%** with a **pay-back period of 2.7 years**.*

*The **Post-Tax** result is an **NPV8 of $217 M** with an **IRR of 27.7%** with the **same payback period**.*

The pre-tax cash flow is shown graphically in Figure 22-1.

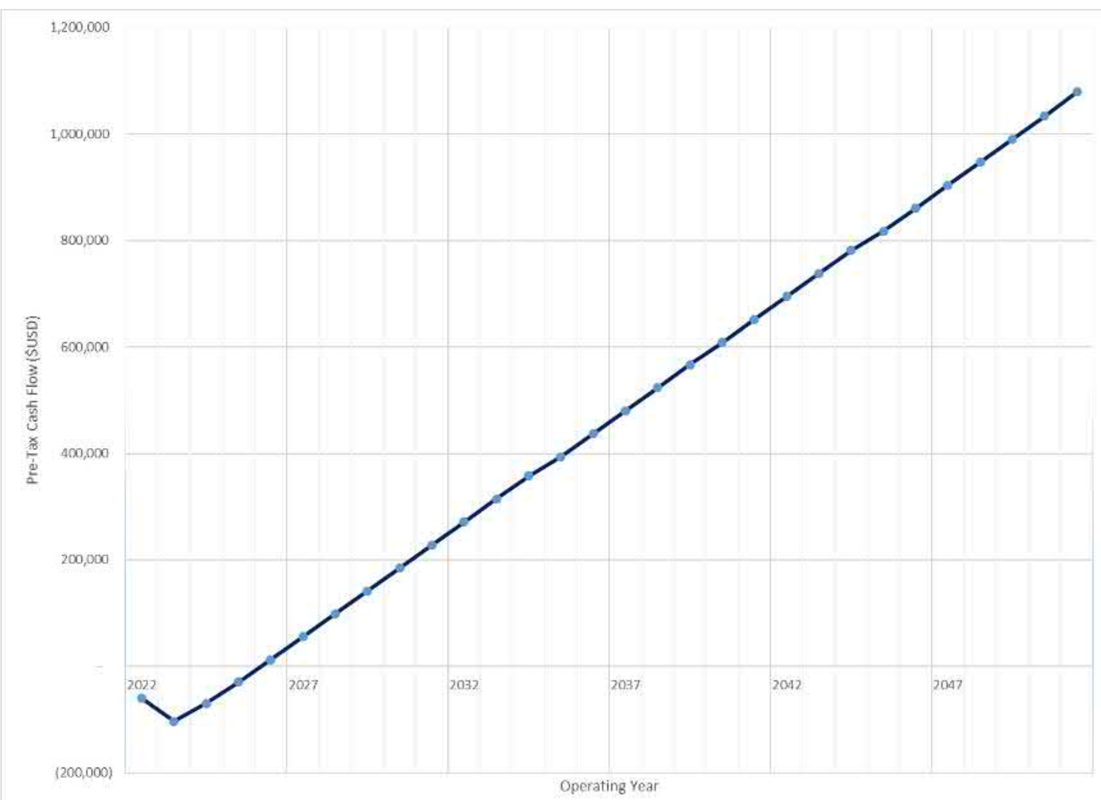


Figure 22-1: Pre-Tax Cash Flow for 30-Year Production Schedule
Source: KP/JDS (2019)

22.2 Sensitivity Analysis

A constant Li_2CO_3 price of $12,420 /t USD was assumed over the duration of the Project, determined using the historic three year trailing average price and the projected price for the next two years, as defined in Section 19.6. This selected price was varied by +/- 25% for this analysis, yielding a "high" price of $15,525 /t and a "low" price of $9,315 /t. The pre-tax and post-tax economic results for this range of pricing is shown in Table 22-1.

Table 22-1: Pre-Tax and Post-Tax Economic Result for Range of Li_2CO_3 Prices

Price Scenario	Li_2CO_3 Price ($/t)	Pre-Tax		Post-Tax	
		NPV_8	IRR	NPV_8	IRR
High	15,525	482	41.2%	313	34.8%
Medium	**12,420**	**335**	**32.6%**	**217**	**27.7%**
Low	9,315	188	23.1%	120	19.7%

Source: JDS (2019)

A univariate sensitivity analysis was performed to examine which factors most affect the project economics when acting independently of all other cost and revenue factors (see Figure 22-2). Each variable evaluated was tested using the same percentage range of variation, from -20% to +20%, although some variables may experience significantly larger or smaller percentage fluctuations over the Life of Mine (LOM).

The Project is most sensitive to lithium price and/or grade (the curves are identical). A 25% increase in price yields a 44% increase in post-tax NPV.

The production rate is the next most sensitive variable, followed by the operating costs and pre-production capital costs.

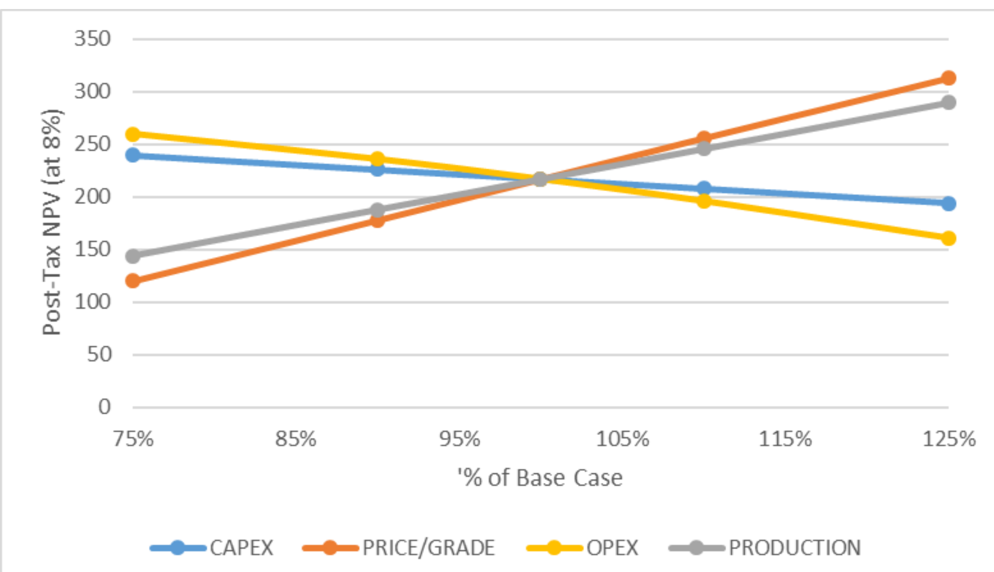


Figure 22-2: Sensitivity Analysis

Source: KP/JDS (2019)

23 Adjacent Properties

Properties adjacent to the Hombre Muerto North Lithium Project include the following:

- Galaxy Resources Ltd. holds large tenements in both Catamarca and Salta provinces (Sal de Vida Project). These areas are mainly south and southeast of the Project properties.
- Orocobre Ltd. conducts borate mining operations at Tincalayu mine, between the Alba Sabrina and Viamonte properties.
- Santa Rita and Maktub operate ulexite production for borates south of the Project properties.
- FMC Lithium Corp. operates lithium brine production and processing southwest of Project properties at the Fenix mine.

Despite the proximity of these projects to the Hombre Muerto North Project, the size and other characteristics of the Project, which is at an early stage, are different, and there is no assurance that the Project will be similar economically.

23.1 Galaxy Resources Sal de Vida Project

Galaxy Resources' Sal de Vida Project covers approximately 38,500 hectares over most of the eastern part of the Salar del Hombre Muerto in Catamarca and Salta provinces. The Sal de Vida brines average about 780 mg/L lithium and 8,700 mg/L potassium. Regarding impurities, magnesium (Mg:Li ratio of 2.2) and sulfate (SO4:Li ratio of 11.5) are considered low by industry standards.

In April 2013, Galaxy prepared a Definitive Feasibility Study (DFS) for the Sal de Vida Project. According to the DFS, Galaxy estimates a pre-tax net present value of US$645 Million (US$380 Million post tax) at 10% discount rate. Sal de Vida reportedly has the potential to generate total annual revenues in the region of US$215 million and operating cash flow before interest and tax of US$118 Million per annum at full production rates. The DFS supports the development of Sal de Vida, which when completed will include concentration ponds, a battery grade Li_2CO_3 plant and a potash plant.

A maiden JORC-compliant Reserve estimate of 1.1 Million tonnes of retrievable Li_2CO_3 equivalent and 4.2 million tonnes of potassium chloride (potash or KCl) equivalent supports total annual production over a 40-year period (see Table 23-1 and Table 23-2).

Table 23-1: Sal de Vida Project Mineral Resource Estimate (2012)

Phase II Resource Category	Brine Volume (m^3)	Avg. Li (mg/L)	KCl Equivalent (tonnes)	Li_2CO_3 Equivalent (tonnes)	Avg. K (mg/l)	In situ K (tonnes)	KCl Equivalent (tonnes)
Measured	7.2×10^8	787	565,000	3,005,000	8,695	6,241,000	11,902,000
Indicated	2.6×10^8	768	197,000	1,048,000	8,534	2,186,000	4,169,000
Measured + Indicated	9.8×10^8	782	762,000	4,053,000	8,653	8,427,000	16,071,000
Inferred	8.3×10^8	718	597,000	3,180,000	8,051	6,692,000	12,762,000
Total	$\mathbf{18.1 \times 10^8}$	**753**	**1,359,000**	**7,233,000**	**8,377**	**15,119,000**	**28,833,000**

Note: assumes cutoff grade of 500 mg/L Lithium
Source: (M&A and GAI, 2012)

Total tonnages for the economic reserve values account for anticipated leakage and process losses of lithium and potassium and provide Proven and Probable Reserve estimates from Southwest and East brine production wellfields. With percent estimated processing losses factored in, the average brine extraction rate is assumed to be on the order of 30,000 m^3/d.

Table 23-2: Sal de Vida Project Reserve Statement (April 2013)

Reserve Category	Time Period (Years)	Tonnes Li Total Mass	Tonnes Equivalent Li_2CO_3	Tonnes Equivalent KCl	Tonnes K Total Mass
Proven	1 - 6	34,000	181,000	633,000	322,000
Probable	7 - 40	180,000	985,000	3,564,000	1,869,000
Total	40 years total	214,000	1,139,000	4,197,000	2,201,000

Note: assumes cutoff grade of 500 mg/L Lithium
Source: (M&A and GAI, 2012)

23.2 Tincalayu Orocobre Borate Operation

Tincalayu is an uplifted and structurally folded borate deposit, where mineralization is predominantly hosted in sandy units that were deposited in a Miocene Salt Lake formed approximately 6 million years before present. Borate mineralization is predominantly hosted within the middle member of the Sijes Formation. The principal borate mineral at Tincalayu is Tincal (Borax), with lesser amounts of ulexite and kernite.

Exploration includes 462 diamond holes drilled at the deposit with an average of 75 m at hole spacing of approximately 42 m. Table 23-3 shows ore resources (Brooker, 2014).

Table 23-3: Tincalayu Resource estimate (31 Dec 2014)

	Current production 30 Ktpa			Expanded Production 100 Ktpa		
	Cut-off	Tonnes (Mt)	Soluble B2O3 (%)	Cut-off	Tonnes (Mt)	Soluble B2O3 (%)
Global Resource (not limited to a pit shell) - with Marginal Cut-off						
Indicated	5.6	6.9	13.9	2.8	6.9	13.8
Inferred	5.6	9.9	10.2	2.8	13.8	8.5
Indicated + Inferred	5.6	16.8	11.7	2.8	20.7	10.3
Maximum DCF In-pit Resource - with Marginal Cut-off						
Indicated	5.6	5.1	14.7	2.8	6.8	13.8
Inferred	5.6	1.4	11.0	2.8	11.0	9.3
Indicated + Inferred	5.6	6.5	13.9	2.8	17.8	11.0

Source: Orocobre Ltd., from Brooker (2014)

23.3 Maktub-Santa Rita Venture

South of the Sal de Vida property, several mining concessions in the Salar del Hombre Muerto have been producing borates for the Maktub-Minera Santa Rita venture. Santa Rita is a local company from Salta dedicated to borax mining and boric and sulfuric acid production.

23.4 FMC Lithium Fenix Mine

The western part of the Salar del Hombre Muerto is occupied by large concessions on lithium-potash resources held by FMC Lithium's Fenix Mine. This operation has been producing lithium from brine since from 1997. According to the FMC Lithium website, the lithium brine deposit has a mine life over 75 years.

Lithium production in Argentina significantly increased in 2016, reaching 5,700 metric tonnes, an increase from 3,600 metric tonnes in 2015 (USGS, 2017). The USGS notes that the increase was largely due to a new brine operations and increased production at the Fenix Mine.

24 Other Relevant Data and Information

No other relevant information or data is known to exist that would be relevant to this PEA Study.

25 Interpretations and Conclusions

The PEA demonstrates a positive economic result for the production scenario modelled, as described herein. However, this PEA is preliminary in nature and there is no certainty that the results of this PEA will be realized.

There are risks associated with the Project and Study result, but also opportunities that should be considered.

25.1 Risks

25.1.1 Processing

There has been limited process testwork performed to-date. Most assumptions used in the preparation of this PEA are based upon commercially applied unit operations and equipment.

Overall, the process represented in this PEA does not carry uncommon technical risks and it does not contain fatal flaws on its own when referenced against existing or proposed comparable projects. Conceptually, the process-flowsheet includes slight differences compared to other comparable projects. These differences are attributable in part to the composition of the well-brine, and, its response to the concentration-purification sequence based on the test results to date, and in conjunction with derived assumptions and predictions.

In general, the preliminary process model and subsequent design criteria have been adequately established and applied in order to establish reasonably detailed capital, operating and sustaining cost estimates as basis for the Preliminary Economic Assessment.

However, additional testwork is required to confirm the assumptions used for the preparation of this PEA and to confirm the reasonableness of the current economic model.

The concentration area preliminary process model and subsequent design criteria were based on a blend of simulated output and actual test data that need further validation.

The hydrometallurgical area preliminary process model and subsequent design criteria were based upon experience-derived assumptions which also need confirmation through testwork.

25.1.2 Lithium Grade

Prices for this PEA have been estimated based on battery grade Li_2CO_3 (99.5%). If this grade cannot be achieved, the Li_2CO_3 could be sold, but at technical grade prices, which are less than 90% of battery grade.

The production of the battery-grade product is important for the lithium projects in general, and, for Hombre Muerto in particular, given its relatively low-throughput yet favorable lithium to impurity ratios. These characteristics render the necessity of producing the highest-possible quality product critical in order to ensure a stable level of market-desirability as well as flexibility for situations of market over-supply and/or temporarily increased inventories.

This PEA includes baseline and advanced purification sequences with the objective of removing both soluble and insoluble components to ensure that battery grade lithium is produced. The underlying metallurgical model takes into consideration not only the actual Li_2CO_3 content, but also specifies critical impurity levels in order to meet the battery-grade specifications.

However, without confirmation testwork of the metallurgical model, there remains a risk that battery grade lithium will not be produced. The following quotation from Benchmark Mineral Intelligence addresses this concern: *"While many will argue this is just a matter of upgrading processing, few (even among the majors) have historically been able to resolve these issues quickly, and if they are resolved, the question becomes at what cost."*

25.1.3 Lithium Prices

The approach taken to set lithium prices for this PEA, the average of the three-year trailing and two-year forward pricing is a reasonable and standard methodology for assigning pricing to most mining commodities in mining studies. Having said that, the lithium markets have demonstrated considerable volatility over the past three years from a low of \$62.79 to a high of \$156.80 /kg for battery grade Li_2CO_3 (see Figure 25-1). Further, the lithium price has been on a downward trend since early 2018.

As demonstrated in Section 22.2, lithium pricing is the most sensitive variable in determining the economic results of this PEA.

The break-even price of lithium for this project is estimated to be \$5,609/t.

Figure 25-1: Lithium Prices over the Past Three Years
Source: Tradingeconomics.com

25.1.4 Permitting

No significant risks have been identified for permitting this Project.

25.2 Opportunities

While the project has risks associated with it, there are also opportunities worthy of consideration.

25.2.1 Expansion

Although this PEA demonstrates a profitable model, the resource is vast in comparison to the annual depletion. Accordingly, it is worth considering an expansion of the processing capability of the plant. This could be done on initial build or as a future upgrade to the facility, perhaps twinning all facilities to achieve a production rate of 10,000 t/a Li_2CO_3.

25.2.2 Recovery and Sale of Other Minerals

It may be possible at marginal incremental capital and operating cost increases to recover and sell other mineral products from the salar, notably potassium chloride (KCl) and Boron compounds. This option should be considered in future studies.

26 Recommendations

The following section outlines specific recommendations for the advancement of this project towards production.

26.1 Process Testwork

It is recommended that the current process model be updated and validated with data generated by the recommended testwork package detailed in Section 13 of this Technical Report, including:

- Laboratory scale parametric studies including finalizing the evaporation testwork, extraction/strip isotherms, loadings, reagent regimes, residence times, actual response to precipitation and purification, separation unit areas and outputs for thickeners and filters, pulps-flow-response, etc.
- Pilot-level validation, aiming for the generation of the Pre-feasibility study-level data whilst validating the final integrated process flowsheet
- Parallel "opportunistic" investigation of the potential products that could be recovered from the evaporated salts, as well as from the partly-evaporated boron effluent discharge, for possible future development consideration.

26.2 Numerical Groundwater Model

A numerical groundwater flow model should be prepared in the Tramo area to be able to upgrade the current Resource to an economic Reserve. To prepare a reliable groundwater flow model, additional information is needed for the basin boundaries and aquifer in that part of the basin. Because NRG has drilled several exploration wells in the Tramo concession, these will be able to function as calibration points for recommended geophysical surveys. When additional wells have been drilled and tested in the other concessions, the groundwater flow model would be modified to include other areas.

26.3 Fresh Water Supply

Further investigation is required to confirm the possibility of obtaining sufficient fresh water in reasonable proximity to the project for processing. Test drilling should be done on site to determine the most likely location of such a well and work should begin on securing those rights and/or permits.

26.4 Feasibility Study

It is recommended that NRG focus on the further assessment and development of the Tramo concession. Data collected from the testwork and the numerical model should be used to inform a pre-feasibility (PFS) or feasibility study (FS) that includes a more detailed estimation of capital and operating costs as well as more definition on the marketing of the final product.

26.5 Geotechnical Drilling and Analysis

In support of the Feasibility Study, geotechnical drilling and analyses should be performed to confirm the foundation requirements for all surface structures.

26.6 Permitting

The company should continue to advance its baseline environmental testwork and studies as well as social impact investigations to support future permit applications.

26.7 Costs

The total cost of the above recommended activities is summarized as follows:

Process testwork	$2.0 M
Numerical Groundwater Model	$0.2 M
Fresh Water Supply Drilling	$0.1 M
Feasibility Study	$2.0 M
Geotechnical Drilling and Analyses	$0.3 M
Permitting	$1.0 M
Total	**$5.6 M**

27 References

The following three reports were previously prepared for this Project, and much of what is in these reports has been modified or copied directly in this report:

- Rojas y Asociados, 2017. Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina. Technical report prepared for One Borax S.A., 102 p.
- Montgomery & Associates Consultores Limitada, 2017. Technical report for the Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina: October 9, 2017. Report for NI-43101 prepared on behalf of NRG Metals, Inc.
- Montgomery & Associates Consultores Limitada. Initial Measured Lithium and Potassium Resource Estimate, Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina: September 2018. Report for NI-43101 prepared on behalf of NRG Metals, Inc.

The current Report supersedes these three older reports.

In addition to the reports prepared directly for the project area, the following report was relied on because the Project area is adjacent and many of the conclusions from the report are relevant to the current Project.

- Montgomery & Associates, Inc., and Geochemical Applications International, Inc., 2012. Measured, indicated, and inferred lithium and potassium resource, Sal de Vida project, Salar del Hombre Muerto, Catamarca-Salta: March 7, 2012. Report for NI-43-101 prepared on behalf of Lithium One Inc.

The following references were also used in the preparation of this Study:

- University of Salta, Experimental Validation of the Simulation Model used for the Design of the Evaporation Process of the Brine from Hombre Muerto Norte Project (HMN), on behalf of D2D and NRG Metals, March, 2019
- NRG Metals Inc., NI 43 – 101 Technical Report, "Initial Measured Lithium and Potassium Resource Estimate for Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina", September 7th, 2018.
- Lithium Americas, NI 43 – 101 Technical Report, "Updated Feasibility Study, Reserve Estimation and Lithium Carbonate Production at the Cauchari-Olaroz Salars, Jujuy Province, Argentina", January 15th, 2018.
- Millennial Lithium, NI 43 – 101 Technical Report, "Preliminary Economic Assessment of The Pastos Grandes Project, Salta Province, Argentina", February 23rd, 2018.
- NEO Lithium Corporation, NI 43 – 101 Technical Report, "Preliminary Economic Assessment (PEA) 3Q Project, Catamarca, Argentina", Revision 0, December 2017.
- Lithium X Energy Corporation, NI 43 – 101 Technical Report, "Technical Report", Resource Estimate for Lithium & Potassium Sal de los Angeles Project", February 24th, 2017.

28 Author Certificates

I, Richard Goodwin, P. Eng., do hereby certify that:

1. This certificate applies to the technical report (Report) entitled "NI 43-101 Preliminary Economic Assessment Report for the Hombre Muerto Norte Project, Salta Province, Argentina" prepared for NRG Metals Inc. with an effective date of 3 June 2019.
2. I am a Principal of JDS Energy & Mining Inc. with an office at Suite 900 – 999 West Hastings St., Vancouver, B.C. V6C 2W2, Canada.
3. I am a Registered Professional Mining Engineer in good standing with APEGBC (BC), Engineers Yukon, and NAPEG (NWT). I am a graduate of the University of B.C. with a Bachelor of Applied Science degree in Mining Engineering, 1984. I have practiced my profession continuously since 1984. Relevant experience includes project engineering, project management, study management, operations management, and executive management for mineral related properties, mines and companies.
4. I have read the definition of "Qualified Person" set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association, and past relevant experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I completed a personal inspection of the Hombre Muerto Norte project site on 19 December 2018.
6. I am responsible for Sections 1.1, 1.7, 1.9, 1.11, 1.12, 2, 3, 16,19, 21, 22, and 24 to 27 of this Technical Report.
7. I am independent of the issuer, NRG Metals inc., as defined in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the Hombre Muerto Norte Project.
9. I have read the NI 43-101 and confirm that the sections of the Report for which I am responsible, have been prepared in compliance of NI 43-101 and Form 43-101F1.
10. As of the effective date of the Report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Effective Date: June 3, 2019
Signing Date: August 8, 2019

*[Original signed and sealed) "**Richard Goodwin**, P. Eng."]*

Richard Goodwin, P. Eng.
Principal, JDS Energy & Mining Inc.

I, Ken Embree, P. Eng., do hereby certify that:

1. This certificate applies to the technical report (Report) entitled "NI 43-101 Preliminary Economic Assessment Report for the Hombre Muerto Norte Project, Salta Province, Argentina" prepared for NRG Metals Inc. with an effective date of 3 June 2019.
2. I am president of Knight Piésold Ltd. (Canada), with an office at Suite 1400 – 750 West Pender St., Vancouver, B.C. V6C 2T8, Canada.
3. I am a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia (No. 17,439). I graduated from the University of Saskatchewan with a Degree (B.A.Sc.) in Geological Engineering, in 1986. I have practiced professionally since 1986. In that time I have been directly involved in the generation of, and review of, risk analyses, preliminary economic assessment, pre-feasibility, and feasibility studies, and due diligence studies in North and South America, Europe, Africa, and Russia.
4. I have read the definition of "Qualified Person" set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association, and past relevant experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the Hombre Muerto Norte project site.
6. I am responsible for Sections 1.12, 1.13, 18 and 20, of this Technical Report.
7. I am independent of the issuer, NRG Metals inc., as defined in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the Hombre Muerto Norte Project.
9. I have read the NI 43-101 and confirm that the sections of the Report for which I am responsible, have been prepared in compliance of NI 43-101 and Form 43-101F1.
10. As of the effective date of the Report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Effective Date: June 3, 2019
Signing Date: August 8, 2019

*[Original signed and sealed) "**Ken Embree**, P. Eng."]*

Ken Embree, P. Eng.
President, Knight Piésold Ltd.

I, Alex Mezei, P. Eng., do hereby certify that:

1. This certificate applies to the technical report (Report) entitled "NI 43-101 Preliminary Economic Assessment Report for the Hombre Muerto Norte Project, Salta Province, Argentina" prepared for NRG Metals Inc. with an effective date of 3 June 2019**.**
2. I am employed as Independent Metallurgical Consultant, under contract with Knight Piésold Ltd. with an office at Suite 1400 - 750 West Pender Street, Vancouver, British Columbia, V6C 2T8, Canada.
3. I am a graduate of the Polytechnical Institute of Timisoara, Romania, M.Sc. Chemical Engineering, 1981. I have practiced my profession continuously since 1981. My experience includes Extractive Metallurgy and Chemical Processing: flowsheet development, process engineering, due diligence, management and operations.
4. I am a Registered Professional Engineer in good standing with Professional Engineers Ontario, licence number 90402769. I am a good standing member of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM").
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I did not visit the site of the project.
7. I am responsible for Sections 1.8, 1.11, 13,17, 25.1.1, 25.1.2 and 26.1 of this Technical Report.
8. I am independent of the issuer, NRG Metals inc., as defined in Section 1.5 of NI 43-101.
9. I have had no prior involvement with the Hombre Muerto Norte Project.
10. I have read the NI 43-101 and confirm that the sections of the Report for which I am responsible, have been prepared in compliance of NI 43-101 and Form 43-101F1.
11. As of the effective date of the Report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Effective Date: June 3, 2019
Signing Date: August 8, 2019

*[Original signed and sealed) "**Alex Mezei**, P. Eng."]*

Alex Mezei, P. Eng.
Independent Metallurgical Consultant

I, Michael Rosko, P. Eng., do hereby certify that:

1. This certificate applies to the technical report (Report) entitled "NI 43-101 Preliminary Economic Assessment Report for the Hombre Muerto Norte Project, Salta Province, Argentina" prepared for NRG Metals Inc. with an effective date of 3 June 2019.
2. I am a principal hydrogeologist and general manager with Montgomery & Associates, Consultores, Ltda., Avenida Vitacura 2771, Of. 404, Las Condes, Santiago de Chile.
3. I graduated with a Bachelor of Science degree in Geology from University of Illinois in 1983, graduated with a Master of Science in Geology (Sedimentary Petrology focus) from University of Arizona in 1986, am a registered professional geologist in the states of Arizona (25065), California (5236), and Texas (6359), and I am a registered member of Society for Mining, Metallurgy, and Exploration (#4064687), and a member of the National Ground Water Association, Arizona Hydrological Society, and International Association of Hydrogeologists. I have practiced hydrogeology for more than 30 years, with much of this time working in salar basins in Chile and Argentina similar to the Project.
4. I have read the definition of "Qualified Person" set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association, and past relevant experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have visited the Hombre Muerto Norte project site several times, the most recent being 13 April 2018 and 10 January 2018.
6. I am responsible for Sections 1.2 to 1.4, 1.6, 4 to 12, and 22 of this Technical Report.
7. I am independent of the issuer, NRG Metals inc., as defined in Section 1.5 of NI 43-101.
8. I have had extensive prior involvement with the project area during the period from 2009 to present, including functioning as the Qualified Person for Lithium One, Galaxy Resources, and Posco Argentia, whose concessions have surrounded or currently surround the NRG concessions.
9. I have read the NI 43-101 and confirm that the sections of the Report for which I am responsible, have been prepared in compliance of NI 43-101 and Form 43-101F1.
10. As of the effective date of the Report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Effective Date: June 3, 2019
Signing Date: August 8, 2019

*[Original signed and sealed) "**Michael Rosko**, P. G."]*

Michael Rosko, P. G.
Principal Geologist, Montgomery & Associates Consultores Ltda

29 Units of Measure, Abbreviations and Acronyms

Symbol / Abbreviation	Description
Ω/m	Ohms per meter resistivity
°C	degrees Celsius
a	annum (year)
APVC	Altiplano-Puna magmatic volcanic
BTU	British thermal unit
CHP	combined heat and power plant
cm	centimetre
CSAMT	Controlled Source Audio-frequency Magnetotelluric
EIA	environmental impact assessment
FS	Feasibility Study
g	gram
G&A	general and administrative
g/ml	grams per milliliter (density)
h	hour
ha	hectare (10,000 m^2)
INBEMI	Instituto de Beneficio de Minerales at Universidad Nacional de Salta
IRR	internal rate of return
JDS	JDS Energy & Mining Inc.
K	potassium
k	kilo (thousand)
kg	kilogram
km	kilometre
km^2	square kilometre
kWh	kilowatt hour
Kh	Hydraulic conductivity (horizontal)
Kz	Hydraulic conductivity (vertical)
L	litre
Li	lithium
Li_2CO_3	lithium carbonate
L/S	liters per second flow rate
m	metre
M	million
masl	Elevation, expressed in meters above sea level
mbls	Meters below land surface
m^2	square metre

Symbol / Abbreviation	Description
m^3	cubic metre
Ma	million years
mg	milligram
mg/L	milligrams per litre
mL	millilitre
mS	milliseconds
Mt	million metric tonnes
MW	megawatt
NI 43-101	National Instrument 43-101
p.	page number
P.Eng.	Professional Engineer
PFS	Pre-feasibility Study
P.Geo.	Professional Geoscientist
PEA	preliminary economic assessment
POSGAR 94	geocentric coordinate system for Argentina
QP	Qualified Person
SO_4	sulphate
t	metric tonne (1,000 kg)
t/a	tonnes per annum
US	united states
$USD or $US	United States dollars
WGS84	world geodetic system 1984

Appendix A: Legal Opinion by Vargas (2017)

Mendoza, June 28, 2017

BY E-MAIL ONLY

NRG Metals Inc.
Att.: Mr. Adrian Hobkirk

Re: Title opinion of mining claims of Hombre Muerto Norte project.

Dear Sirs:

We have been asked to provide a title opinion regarding good standing of the mining claims optioned from Mr. Jorge Moreno and Ms. Alba Silvia Sala, listed on Exhibit A, named Hombre Muerto Norte project.

We are attorneys duly licensed to practice law in Argentina. Our opinion contained herein is limited to the laws of Argentina, and we are expressing no opinion as to the effect of the laws of any other jurisdiction.

We have based our analysis of the legal status of the mining claims on the following documents:

- Original Dossier #18.993, mining claim "Tramo" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.830, mining claim "Natalia María" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.824, mining claim "Gastón Enrique" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.829, mining claim "Norma Edit" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).

- Original Dossier #18.823, mining claim "Alba Sabrina" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #13.408, mining claim "Viamonte" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #13.849, Easement of Camp in favor of mining claim "Viamonte" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).

Background on Tenure

There are two types of tenure under Argentine mining regulations; *Cateos* (Exploration Claims) and *Minas* (Mining Claims). Exploration Claims are licenses which allow the property holder to explore the property for a period of time following grant that is proportional to the size of the property. The basis of the timeframe is that an Exploration Claim for 1 unit (500 hectares) has a period of 150 days. For each additional unit (500 hectares) the period is extended by 50 days. The largest Claim is 20 units (10,000 hectares) and has a period of 1,100 days. The period starts 30 days after the grant of the claim. The canon rent payable is AR$3,200 per 100 hectares starting three years after grant.

Mining Claims are licenses which allow the holder to exploit the property subject to regulatory environmental approval. Only the Exploration Claim holder may apply for a Mining Claim as a consequence of a discovery made within an Exploration Claim area but anyone can apply for a Mining Claim over vacant ground. New mining claims may also be awarded for mines that were abandoned or for which their original mining claims were declared to have expired. In such cases, the first person claiming an interest in the property will have priority. If more than one person claims at the same time for such claim, the provincial mining authority has to grant it by a drawing.

Mining Claims are unlimited in duration so long as the holder meets its obligations under the Mining Code ("MC") which includes paying the annual canon payments, completing the survey and submitting a mining investment plan (which is equal to 300 times the annual canon payment spent over a period of five years payable within five years of the filing of a capital investment plan). The canon varies according to mineral occurrence.

The type of mineral the holder is seeking to explore and exploit must be specified for both types of tenure. Claims cannot be over-staked by new applications specifying different minerals, but adding mineral species to a claim file is relatively straightforward.

It is worth mentioning that under the *MC* anyone is allowed to explore, even if an exploration right is not granted. The main condition to explore is to have an environmental impact report ("EIR") approved. Approval of the EIR is not a condition to maintain the claim title in good standing but is a pre-requisite to carrying out activities on the properties. An EIR must be submitted for every type of mining activity (prospecting, exploration, exploitation, development, extraction, etc.) and must be updated every two years. In addition, specific registrations and authorizations must be applied for depending on the activities to be carried out on the claims (for example, water usage and waste disposal).

Surface Access

Pursuant to Argentina legislation, except for a few minerals that belong to the surface owner, most minerals belong to the Provinces which grant exploration and exploitation claims to the applicants.

Due to the likely coexistence of two different rights within the same area, and in order to solve likely problems between the surface owner and the owner of an exploration or exploitation claim, article 13 of the MC states that *"the exploitation of mines, their exploration, concession and other consequent acts, have the nature of public benefit"*. Based on this principle, the Exploration and Mining Claims have primacy over the surface rights provided certain legal requirements are met, basically consisting of due compensation for damages or the posting of a bond when the amount of the compensation is not agreed with the surface owner or when the works to be done are urgent.

The owner of an Exploration Claim has the right to explore and therefore to access the area from the moment that the Exploration Permit has been granted subject to approval of an Environment Impact report. The Exploration Claim guarantees its owner the access and exclusivity of the area that has been granted even to the extent of obligating the police to enforce the miner's rights[1].

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[1] Pigretti, Eduardo, "Codigo de Mineria y Legislación de Hidrocarburos", ed la ley, pag 46). Date??

Similarly, the owner of a Mining Claim has the right to start works and to access the mining property from the moment that the mining concession has been granted.

Regarding surface owners, they have the right to require either from the licensor due compensation for the damages caused by the exploration and mining activities and the occupation of the land or request to the Mining Judge that the licensor post a bond guarantying that likely damages will be compensated. None of these claims or requirements could stop the exploration or exploitation works if the licensor agrees to pay the compensation or damages claimed by the surface owner or, if there is no agreement, if the explorer/miner posts a bond with the mining authorities.

Zone of Overlapping Jurisdiction

The mining claims listed on Exhibit A are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. In this area, the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in.

In the latest ruling of the Supreme Court of Justice of the Republic of Argentina ("Supreme Court"), in 2015, in the case "Catamarca, Provincia de c/ Salta, Provincia de p/ ordinario", the Supreme Court ruled that this dispute must be resolved by a law of the National Congress, pursuant to Article 75, Section 15 of the National Constitution.

As of the date of this legal opinion, both provincial governments are trying to resolve this issue in order to promote mineral development within the zone. Currently other companies are operating in the area.

In consideration of the aforementioned we can conclude that:

a) Mr. Jorge E. Moreno and Ms. Alba Silvia Sala have good and valid, legal and beneficial title to the mining claims listed on Exhibit A.

b) The mining claims listed on Exhibit A are in good standing and comply with applicable regulations. Property coordinates (corners) are found on Exhibit A.

c) The mining claims listed on Exhibit A are subject to the Moreno Option Agreement between NRG Metals Argentina S.A. and Mr. Moreno and Ms.

Sala dated May 17, 2017 (Exhibit B). Other than the obligations arising out of the Moreno Option Agreement, the mining claims listed on Exhibit A are free and clear from any liens, charges or encumbrances, recorded in the relevant registries.

d) The mining “fees” (*“canon”)* of the mining claims listed on Exhibit A are up to date.

e) Upon exercise of the purchase option by NRG Metals Argentina S.A. under the Moreno Option Agreement*,* Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.

Please do not hesitate to contact us should you require any further information.

Regards,

JORGE VARGAS GEI
ABOGADO
MAT. 5448
MAT. FED. Tº 77 Fº 612

Jorge Vargas Gei
Vargas Galíndez Abogados

Exhibit A

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Alba Sabrina	18.823	2007	2.089	3396745.63	7213857.40
				3398151.06	7213830.65
				3398150.81	7213456.32
				3397478.55	7212728.84
				3398215.08	7212048.20
				3397204.42	7210940.69
				3397334.99	7210820.12
				3395420.09	7210685.04
				3395488.53	7209689.37
				3394990.70	7209655.15
				3395017.65	7209256.85
				3394319.62	7209210.33
				3394372.76	7208412.21
				3393873.83	7208379.09
				3393926.71	7207581.42
				3392926.74	7207514.94
				3392926.74	7213929.36
Tramo	18.993	2007	383	3400153.49	7211193.41
				3403581.75	7210496.92
				3403582.30	7209935.26
				3399000.83	7209940.11
Natalia Maria	18.830	2007	115	3396365.98	7208544.74
				3396865.67	7208578.22
				3396812.76	7209376.47
				3397428.68	7209417.55
				3397401.69	7209822.28
				3397663.94	7209839.76
				3397663.91	7208655.67
				3397303.47	7208642.43
				3397242.42	7208295.88
				3396406.25	7207939.52
				3396392.58	7208145.31
Gastón Enrique	18.824	2007	55	3396950.52	7207289.71
				3397663.94	7207298.43
				3397663.94	7206923.60
				3398454.95	7206923.60
				3398454.95	7205885.50
				3398321.79	7205887.17
				3398304.10	7206195.77
				3398259.97	7206866.22
				3396984.09	7206781.87
Viamonte	13.408	1988	310	3393107.85	7203055.41
				3393207.30	7201730.86
				3394832.45	7201826.53
				3394788.32	7202557.72
				3395170.12	7202578.18
				3395150.66	7203102.78
				3394425.41	7203094.14
				3394411.39	7204270.76
				3394111.53	7204251.49
				3394091.79	7204550.80

				3393792.46	7204531.16
				3393886.00	7203108.57
Norma Edit	18.829	2007	285	3391416.63	7202939.87
				3393107.85	7203055.41
				3393207.11	7201733.38
				3392874.00	7201718.00
				3392869.78	7199877.59
				3392174.46	7199930.59
				3392004.94	7202910.55
				3391421.20	7202872.27

Exhibit B

Main terms of the Moreno Option Agreement

- The Moreno Option Agreement was entered into on May 17, 2017, between Mr. Jorge Enrique Moreno, Ms. Alba Silvia Sala and NRG Metals Argentina S.A.
- NRG Metals Argentina S.A. has the exclusive right to explore on the mining claims.
- The Moreno Option Agreement has the following payment schedule. In addition, NRG Metals Inc. will issue shares according to the following schedule:

	Cash payments	Shares issued
On signing	US$ 50,000	nil
On approval of NI 43-101 by TSX-V	US$100,000	1,000,000
6 months after approval of NI 43-101	US$250,000	1,000,000
12 months after approval of NI 43-101	US$250,000	1,000,000
18 months after approval of NI 43-101	US$1,000,000	1,000,000
30 months after approval of NI 43-101	US$1,000,000	2,000,000
42 months after approval of NI 43-101	US$1,000,000	2,000,000
54 months after approval of NI 43-101	US$2,000,000	2,000,000
Total cash payments and shares issued	US$5,650,000	10,000,000

- On completion of payment schedule by NRG Metals Argentina S.A., Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.
- Mr. Moreno and Ms. Sala retain a 3% royalty on the production of lithium carbonate. Fifty percent (50%) of this royalty can be purchased by NRG Metals Argentina S.A. for the amount of USD3,000,000 for a period of six months after approval of NI 43-101 by TSX Venture Exchange.
- Upon the first issuance of shares, Mr. Moreno will be appointed to the board of directors of NRG Metals Argentina S.A.
- Upon approval of NI 43-101 by TSX Venture Exchange, NRG Metals Argentina S.A. has a priority in the negotiation of all the mining claims that Mr. Moreno and Ms. Sala currently own, or may own in the future, in the province of Jujuy, Argentina.

Appendix B: Laboratory Results

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: NOA168633

ANALISIS: 0002NLMCI28_NOA LMFQ19_NOA LMFQ01_NOA LMFQ16_NOA LMMT03_NOA DFR_NOA 0002NLMCI01_NOA

CLIENTE:	JORGE MORENO	**Nº DE COTIZACION:**	QE-449-1	**FECHA RECEPCION DE MUESTRAS:**	
DIRECCION:	RUTA 68 KM 173 CERRILLOS SALTA	**TOTAL DE MUESTRAS:**	12	**FECHA RECEPCION DE INSTRUCCIONES:**	
SOLICITANTE:	JORGE MORENO	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	
PROYECTO:	Nueva Sal			**FECHA EMISION DE INFORME:**	
Nº DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarteo	STD: Standard	Pun: puntual	Tri: Triplicado	BIS: Nuevo informe	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificación superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
				TECNICA	ICP	ICP	ICP	ICP	ICP	ICP	ICP
				LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01
345652	NS001	Salmuera (líq.)	Ambiental		864	1042	2515	311	98485	5866	<0,2
345653	NS002	Salmuera (líq.)	Ambiental		1064	2594	4385	216	92559	6727	<0,2
345654	NS003	Salmuera (líq.)	Ambiental		322	1084	1537	212	71389	2451	<0,2
345655	NS004	Salmuera (líq.)	Ambiental		958	986	2038	589	106339	7314	<0,2
345656	NS005	Salmuera (líq.)	Ambiental		1021	676	1549	646	116588	7758	<0,2
345657	NS006	Salmuera (líq.)	Ambiental		568	778	1112	503	124940	4912	<0,2
345658	NS007	Salmuera (líq.)	Ambiental		543	534	3432	381	106382	3758	<0,2
345659	NS008	Salmuera (líq.)	Ambiental		347	569	3087	248	88023	2559	<0,2
345660	NS009	Salmuera (líq.)	Ambiental		415	912	861	432	128409	3391	<0,2
345661	NS010	Salmuera (líq.)	Ambiental		1013	897	1155	438	113437	8593	<0,2
345662	NS011	Salmuera (líq.)	Ambiental		80	466	883	200	131626	2325	<0,2
345663	NS012	Salmuera (líq.)	Ambiental		< 1	44	25	1	20751	10	<0,2

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	UpH	g/mL
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMFQ16	LMCI28	LMFQ19
				TECNICA	ICP	ICP	ICP	Argentometria	Volumetria	Potenciómetria	Picnometria
				LD	0.005	0.01	0.05	250	10		
345652	NS001	Salmuera (líq.)	Ambiental		27	0.33	3.2	159545	N.D.	6.73	1.180
345653	NS002	Salmuera (líq.)	Ambiental		40	0.28	1.7	169427	N.D.	6.33	1.183
345654	NS003	Salmuera (líq.)	Ambiental		26	0.32	6.5	114574	N.D.	7.16	1.134
345655	NS004	Salmuera (líq.)	Ambiental		26	0.28	<1,0	173723	N.D.	7.55	1.196
345656	NS005	Salmuera (líq.)	Ambiental		15	0.27	<1,0	190194	N.D.	7.51	1.211
345657	NS006	Salmuera (líq.)	Ambiental		18	0.31	<1,0	195636	N.D.	7.36	1.216
345658	NS007	Salmuera (líq.)	Ambiental		21	0.34	<1,0	164128	N.D.	7.35	1.194
345659	NS008	Salmuera (líq.)	Ambiental		22	0.33	<1,0	136057	N.D.	7.40	1.163
345660	NS009	Salmuera (líq.)	Ambiental		26	0.32	<1,0	192199	N.D.	7.75	1.216
345661	NS010	Salmuera (líq.)	Ambiental		29	0.27	3.8	180311	N.D.	7.79	1.201
345662	NS011	Salmuera (líq.)	Ambiental		13	<0,2	<1,0	190050	N.D.	7.63	1.219
345663	NS012	Salmuera (líq.)	Ambiental		5	<0,2	<1,0	34802	N.D.	7.56	1.042

SECCION RESULTADOS

				DETERMINACION	Conductividad
				UNIDAD	mS/cm
				COD. DE ANALISIS	LMFQ01
				TECNICA	Potenciómetria
				LD	
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna		
345652	NS001	Salmuera (líq.)	Ambiental		229
345653	NS002	Salmuera (líq.)	Ambiental		237
345654	NS003	Salmuera (líq.)	Ambiental		188
345655	NS004	Salmuera (líq.)	Ambiental		227
345656	NS005	Salmuera (líq.)	Ambiental		240
345657	NS006	Salmuera (líq.)	Ambiental		242
345658	NS007	Salmuera (líq.)	Ambiental		225
345659	NS008	Salmuera (líq.)	Ambiental		208
345660	NS009	Salmuera (líq.)	Ambiental		230
345661	NS010	Salmuera (líq.)	Ambiental		193
345662	NS011	Salmuera (líq.)	Ambiental		228
345663	NS012	Salmuera (líq.)	Ambiental		72

SOC

SECCION QA - QC

		DETERMINACION	Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
		UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	UpH	g/mL
		COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMC01	LMFQ16	LMC08	LMFQ19
		TECNICA	ICP	ICP	ICP	Argentometria	Volumetria	Potenciometria	Picnometria
		LD	0.005	0.01	0.05	250	10		
Preparación	Identificación	RESULTADO							
DUP-NS010	NS010		28	0.27	3.6	180890	N.D.	7.7	1.2012

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP	ICP	ICP	ICP	ICP	ICP	ICP
LD		0.05	0.025	0.05	0.05	0.1	0.25	0.01
Prefijo usu	Identificación	RESULTADO						
DUP-NS010	NS010	1010	891	1099	420	113700	8710	<0.2

SECCION QA - QC

DETERMINACION		Conductividad
UNIDAD		mS/cm
COD. DE ANALISIS		LMFQ01
TECNICA		Potenciometría
LD		
Prefijo usu	Identificación	
DUP-NS010	NS010	194

Alex Stewart Argentina S.A.
Official ASIC Member

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: NOA179224

ANALISIS: DFR-17_NOA	LMFQ10_NOA	LMFQ01_NOA	LMCI13_NOA	LMMT03_NOA	LMFQ20_NOA	LMFQ38_NOA	0002NLMC01_NOA	LMCI22_NOA

CLIENTE:	Ore Borax S.A.	**Nº DE COTIZACION:**	QE-607-1	**FECHA RECEPCION DE MUESTRAS:**	06/02/2017
DIRECCION:	Ruta Nacional 68, Km 173, Cerrillos (CP-4403) Salta	**TOTAL DE MUESTRAS:**	12	**FECHA RECEPCION DE INSTRUCCIONES:**	09/02/2017
SOLICITANTE:	Jorge Moreno	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	09/02/2017
PROYECTO:	s/n			**FECHA EMISION DE INFORME:**	24/02/2017
Nº DE ENVIO:	salar del hombre muerto				

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de Reactivo [illegible]	STD: Standard	Pul: pulpa	Trip: Triplicado	N.D.: No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificación superior	COD: Código
BK P: Blanco de [illegible]	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo el cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que afecte al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina.
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escape a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de Informe quedan reemplazados por el presente Informe analítico final.
- Se procede a informar solamente los resultados que están enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

Ing. María de las Mercedes Olazo
Directora Técnica
Alex Stewart NOA

CCN
Resource Labs. Ltd.
mmta

SECCION RESULTADOS

			DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
			UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
			TECNICA	ICP	ICP	ICP	ICP	ICP	ICP	ICP
			LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna							
345652	NS001	Salmuera (líq.)	Ambiental	864	1042	2515	311	98485	5866	<0,2
345653	NS002	Salmuera (líq.)	Ambiental	1064	2594	4385	216	92559	6727	<0,2
345654	NS003	Salmuera (líq.)	Ambiental	322	1084	1537	212	71389	2451	<0,2
345655	NS004	Salmuera (líq.)	Ambiental	958	986	2038	589	106339	7314	<0,2
345656	NS005	Salmuera (líq.)	Ambiental	1021	676	1549	646	116588	7758	<0,2
345657	NS006	Salmuera (líq.)	Ambiental	568	778	1112	503	124940	4912	<0,2
345658	NS007	Salmuera (líq.)	Ambiental	543	534	3432	381	106382	3758	<0,2
345659	NS008	Salmuera (líq.)	Ambiental	347	569	3087	248	88023	2559	<0,2
345660	NS009	Salmuera (líq.)	Ambiental	415	912	861	432	128409	3391	<0,2
345661	NS010	Salmuera (líq.)	Ambiental	1013	897	1155	438	113437	8593	<0,2
345662	NS011	Salmuera (líq.)	Ambiental	80	466	883	200	131626	2325	<0,2
345663	NS012	Salmuera (líq.)	Ambiental	< 1	44	25	1	20751	10	<0,2

SECCION RESULTADOS

			DETERMINACION	Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
			UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	UpH	g/mL
			COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMFQ16	LMCI28	LMFQ19
			TECNICA	ICP	ICP	ICP	Argentometria	Volumetría	Potenciómetria	Picnometria
			LD	0.005	0.01	0.05	250	10		
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna							
345652	NS001	Salmuera (líq.)	Ambiental	27	0.33	3.2	159545	N.D.	6.73	1.180
345653	NS002	Salmuera (líq.)	Ambiental	40	0.28	1.7	169427	N.D.	6.33	1.183
345654	NS003	Salmuera (líq.)	Ambiental	26	0.32	6.5	114574	N.D.	7.16	1.134
345655	NS004	Salmuera (líq.)	Ambiental	26	0.28	<1,0	173723	N.D.	7.55	1.196
345656	NS005	Salmuera (líq.)	Ambiental	15	0.27	<1,0	190194	N.D.	7.51	1.211
345657	NS006	Salmuera (líq.)	Ambiental	18	0.31	<1,0	195636	N.D.	7.36	1.216
345658	NS007	Salmuera (líq.)	Ambiental	21	0.34	<1,0	164128	N.D.	7.35	1.194
345659	NS008	Salmuera (líq.)	Ambiental	22	0.33	<1,0	136057	N.D.	7.40	1.163
345660	NS009	Salmuera (líq.)	Ambiental	26	0.32	<1,0	192199	N.D.	7.75	1.216
345661	NS010	Salmuera (líq.)	Ambiental	29	0.27	3.8	180311	N.D.	7.79	1.201
345662	NS011	Salmuera (líq.)	Ambiental	13	<0,2	<1,0	190050	N.D.	7.63	1.219
345663	NS012	Salmuera (líq.)	Ambiental	5	<0,2	<1,0	34802	N.D.	7.56	1.042

SECCION RESULTADOS

DETERMINACION	Conductividad
UNIDAD	mS/cm
COD. DE ANALISIS	LMFQ01
TECNICA	Potenciómetria
LD	

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Conductividad mS/cm
345652	NS001	Salmuera (líq.)	Ambiental	229
345653	NS002	Salmuera (líq.)	Ambiental	237
345654	NS003	Salmuera (líq.)	Ambiental	188
345655	NS004	Salmuera (líq.)	Ambiental	227
345656	NS005	Salmuera (líq.)	Ambiental	240
345657	NS006	Salmuera (líq.)	Ambiental	242
345658	NS007	Salmuera (líq.)	Ambiental	225
345659	NS008	Salmuera (líq.)	Ambiental	208
345660	NS009	Salmuera (líq.)	Ambiental	230
345661	NS010	Salmuera (líq.)	Ambiental	193
345662	NS011	Salmuera (líq.)	Ambiental	228
345663	NS012	Salmuera (líq.)	Ambiental	72

DOS

SECCION QA-QC

DETERMINACION		Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	UpH	g/mL
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMC01	LMFQ15	LMC08	LMFQ19
TECNICA		ICP	ICP	ICP	Argentometría	Volumetría	Potenciometría	Picnometría
LD		0.005	0.01	0.05	250	10		
Preparación	Identificación	RESULTADO						
DUP-NS010	NS010	28	0.27	3.8	180880	N.D.	7.7	1.2012

SECCION QA - QC

DETERMINACION			Li	Ca	Mg	B	Na	K	Ba
UNIDAD			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS			LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA			ICP	ICP	ICP	ICP	ICP	ICP	ICP
LD			0.05	0.025	0.05	0.05	0.1	0.25	0.01
Prefijo [illegible]	Identificación		RESULTADO						
DUP-NS010	NS010		1010	891	1099	420	113700	8710	<0.2

Alex Stewart
Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1811058**

ANALISIS: 0002NLMCI28_NOA LMFQ19_NOA LMFQ01_NOA LMFQ15_NOA LMFQ16_NOA LMFQ17_NOA LMMT03_NOA LMFQ08_NOA 0002NLMCI01_NOA LMCI22_NOA LMFQ09_NOA DFR-17_NOA LMIS01_NOA

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-631-1	**FECHA RECEPCION DE MUESTRAS:**	12/01/2018
DIRECCION:	San Martin 924 - 3º piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	11	**FECHA RECEPCION DE INSTRUCCIONES:**	12/01/2018
SOLICITANTE:	Sergio Lopez	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	12/01/2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	23/01/2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	N.D : No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

Ing. María de las Mercedes Otaiza
Directora Técnica
Alex Stewart NOA

SECCION RESULTADOS

DETERMINACION					Li	Ca	Mg	B	Na	K	Ba
UNIDAD					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS					LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA					ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD					0,05	0,025	0,05	0,05	0,1	0,25	0,01
LCS					--------	--------	--------	--------	--------	--------	--------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna								
434753	SHMN-001	Salmuera (líq.)	Ambiental	RESULTADOS	1120	978	3594	255	91495	8554	<0,20
434754	SHMN-002	Salmuera (líq.)	Ambiental		792	940	2392	277	86552	6049	<0,20
434755	SHMN-003	Salmuera (líq.)	Ambiental		<0,50	28	13	1	28	3	<0,20
434756	SHMN-004	Salmuera (líq.)	Ambiental		1011	1105	2378	396	96202	9236	<0,20
434757	SHMN-005	Salmuera (líq.)	Ambiental		1008	1104	2379	395	96393	9539	<0,20
434758	SHMN-006	Salmuera (líq.)	Ambiental		1216	1381	3718	177	98220	10368	<0,20
434759	SHMN-007	Salmuera (líq.)	Ambiental		353	737	2674	244	80373	3059	<0,20
434760	SHMN-008	Salmuera (líq.)	Ambiental		<0,50	27	12	1	29	3	<0,20
434761	SHMN-009	Salmuera (líq.)	Ambiental		911	944	1300	435	109391	8857	<0,20
434762	SHMN-010	Salmuera (líq.)	Ambiental		913	943	1297	432	109943	8861	<0,20
434763	SHMN-011	Salmuera (líq.)	Ambiental		793	1018	1075	399	106828	8870	<0,20

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Sr	Fe	Mn	Cl-	SO4=	Alcalinidad	CO3=
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ15	LMFQ16
				TECNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Volumetría
				LD	0,005	0,01	0,05	250	10	20	10
				LCS	--------	--------	--------	--------	--------	--------	--------
434753	SHMN-001	Salmuera (líq.)	Ambiental	RESULTADOS	26,34	5,88	1,83	158304	9158	217	N.D
434754	SHMN-002	Salmuera (líq.)	Ambiental		25,96	1,39	3,91	142784	9627	173	N.D
434755	SHMN-003	Salmuera (líq.)	Ambiental		0,31	<0,20	<1,00	<250	<100	155	N.D
434756	SHMN-004	Salmuera (líq.)	Ambiental		22,90	2,21	<1,00	165711	7441	256	N.D
434757	SHMN-005	Salmuera (líq.)	Ambiental		23,00	1,97	<1,00	169874	7236	259	N.D
434758	SHMN-006	Salmuera (líq.)	Ambiental		32,62	1,87	<1,00	176505	5316	111	N.D
434759	SHMN-007	Salmuera (líq.)	Ambiental		21,13	1,85	<1,00	130791	10388	413	N.D
434760	SHMN-008	Salmuera (líq.)	Ambiental		0,30	<0,20	<1,00	<250	<100	156	N.D
434761	SHMN-009	Salmuera (líq.)	Ambiental		23,75	1,08	<1,00	179468	8528	410	N.D
434762	SHMN-010	Salmuera (líq.)	Ambiental		23,72	1,09	<1,00	179750	8524	410	N.D
434763	SHMN-011	Salmuera (líq.)	Ambiental		26,35	0,86	<1,00	179468	7985	477	N.D

SECCION RESULTADOS

			DETERMINACION	HCO3-	pH	Densidad	Conductividad	STD (180°)
			UNIDAD	mg/L	UpH	g/mL	mS/cm	mg/L
			COD. DE ANALISIS	LMFQ17	LMCI28	LMFQ19	LMFQ01	LMFQ08
			TECNICA	Volumetría	Potenciometría	Picnometría	Potenciometría	Gravimetría
			LD	10	--------	--------	--------	2500
			LCS	--------	--------	--------	--------	--------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna					
434753	SHMN-001	Salmuera (líq.)	Ambiental	265	6,40	1,163	189	296500
434754	SHMN-002	Salmuera (líq.)	Ambiental	211	6,64	1,151	181	266500
434755	SHMN-003	Salmuera (líq.)	Ambiental	184	8,17	0,987	0,35	3900
434756	SHMN-004	Salmuera (líq.)	Ambiental	312	6,44	1,169	192	299700
434757	SHMN-005	Salmuera (líq.)	Ambiental	316	6,46	1,169	193	300300
434758	SHMN-006	Salmuera (líq.)	Ambiental	135	6,76	1,175	193	317700
434759	SHMN-007	Salmuera (líq.)	Ambiental	504	6,83	1,134	171	240000
434760	SHMN-008	Salmuera (líq.)	Ambiental	187	8,28	0,987	0,39	3900
434761	SHMN-009	Salmuera (líq.)	Ambiental	500	7,23	1,181	195	318000
434762	SHMN-010	Salmuera (líq.)	Ambiental	500	7,24	1,181	195	317800
434763	SHMN-011	Salmuera (líq.)	Ambiental	582	7,40	1,178	194	315600

RESULTADOS

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0,05	0,025	0,05	0,05	0,1	0,25	0,01	0,005
LCS		--------	--------	--------	--------	--------	--------	--------	--------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	SHMN-010	906	942	1295	435	110416	8889	<0,20	23,67

SECCION QA - QC

DETERMINACION		Fe	Mn	Cl-	SO4=	Alcalinidad	CO3=	HCO3-	pH
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	UpH
COD. DE ANALISIS		LMMT03	LMMT03	LMCI01	LMCI22	LMFQ15	LMFQ16	LMFQ17	LMCI28
TECNICA		ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Volumetría	Volumetría	Potenciometría
LD		0,01	0,05	250	10	20	10	10	--------
LCS		--------	--------	--------	--------	--------	--------	--------	--------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	SHMN-010	1,03	<1,00	179327	8575	416	N.D	501	7,24

SECCION QA - QC

DETERMINACION		Densidad	Conductividad	STD (180°)
UNIDAD		g/mL	mS/cm	mg/L
COD. DE ANALISIS		LMFQ19	LMFQ01	LMFQ08
TECNICA		Picnometría	Potenciometría	Gravimetría
LD		--------	--------	2500
LCS		--------	--------	--------
Prefijo (ASA)	Identificación			
DUP	SHMN-010	1,181	197	319600

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1811826**

ANALISIS: 0002NLMCI28_NOA LMFQ01_NOA LMFQ15_NOA LMFQ16_NOA LMFQ17_NOA LMCI13_NOA LMMT03_NOA 0002NLMCI01_NOA LMCI22_NOA 0001NLMFQ19_NO DFR-17_NOA

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-814-1	**FECHA RECEPCION DE MUESTRAS:**	09-05-2018
DIRECCION:	San Martin 924 - 3 piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	13	**FECHA RECEPCION DE INSTRUCCIONES:**	09-05-2018
SOLICITANTE:	Sergio Lopez	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	09-05-2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	17-05-2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	N.D : No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCION RESULTADOS

DETERMINACION					Li	Ca	Mg	B	Na	K	Ba
UNIDAD					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS					LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA					ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD					0.05	0.025	0.05	0.05	0.1	0.25	0.01
LCS					---------	---------	---------	---------	---------	---------	---------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS							
463004	HMN-1	Salmuera (líq.)	Ambiental		< 0,50	30	13	0.7	30	3	<0,20
463005	HMN-2	Salmuera (líq.)	Ambiental		929	991	2974	331	89425	7263	< 0,20
463006	HMN-3	Salmuera (líq.)	Ambiental		895	960	2678	382	97685	7399	< 0,20
463007	HMN-4	Salmuera (líq.)	Ambiental		942	1036	3027	329	91639	7299	< 0,20
463008	HMN-5	Salmuera (líq.)	Ambiental		911	1039	3072	311	91492	6941	< 0,20
463009	HMN-6	Salmuera (líq.)	Ambiental		962	1036	3113	318	91478	7343	< 0,20
463010	HMN-7	Salmuera (líq.)	Ambiental		939	996	2925	355	91231	7430	< 0,20
463011	HMN-8	Salmuera (líq.)	Ambiental		879	972	2367	445	96697	7772	< 0,20
463012	HMN-9	Salmuera (líq.)	Ambiental		881	979	2378	444	96606	7787	< 0,20
463013	HMN-10	Salmuera (líq.)	Ambiental		782	873	1548	585	104192	8177	< 0,20
463014	HMN-11	Salmuera (líq.)	Ambiental		879	1217	3035	373	92758	7135	< 0,20
463015	HMN-12	Salmuera (líq.)	Ambiental		935	1123	3055	342	92833	7323	< 0,20
463016	HMN-13	Salmuera (líq.)	Ambiental		931	1104	3054	339	92047	7268	< 0,20

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Sr	Fe	Mn	SO4=	Densidad	Conductividad
				UNIDAD	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI22	LMFQ19	LMFQ01
				TECNICA	ICP-OES	ICP-OES	ICP-OES	Gravimetría	Picnometría	Potenciometría
				LD	0.005	0.01	0.05	10	---------	---------
				LCS	---------	---------	---------	---------	---------	---------
463004	HMN-1	Salmuera (líq.)	Ambiental	RESULTADOS	0.26	< 0,20	< 1,00	< 100	0.980	0.35
463005	HMN-2	Salmuera (líq.)	Ambiental		27.36	9.17	3.58	9573	1.158	206
463006	HMN-3	Salmuera (líq.)	Ambiental		24.65	4.39	3.15	9664	1.180	209
463007	HMN-4	Salmuera (líq.)	Ambiental		27.87	10.44	3.65	9829	1.158	207
463008	HMN-5	Salmuera (líq.)	Ambiental		26.41	9.03	3.69	9752	1.159	208
463009	HMN-6	Salmuera (líq.)	Ambiental		28.41	8.84	3.67	9598	1.157	206
463010	HMN-7	Salmuera (líq.)	Ambiental		26.96	17.33	3.44	9703	1.160	207
463011	HMN-8	Salmuera (líq.)	Ambiental		24.14	7.50	2.85	9228	1.164	210
463012	HMN-9	Salmuera (líq.)	Ambiental		24.15	7.61	2.90	9178	1.164	209
463013	HMN-10	Salmuera (líq.)	Ambiental		18.69	1.48	2.12	8512	1.171	212
463014	HMN-11	Salmuera (líq.)	Ambiental		31.92	4.18	4.14	8002	1.157	206
463015	HMN-12	Salmuera (líq.)	Ambiental		30.05	15.36	4.18	9096	1.158	206
463016	HMN-13	Salmuera (líq.)	Ambiental		29.99	15.40	4.10	9046	1.158	207

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
LCS		---------	---------	---------	---------	---------	---------	---------	---------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-10	787	860	1571	586	103986	8140	< 0,20	18.63

SECCION QA - QC

DETERMINACION		Fe	Mn	SO4=	Densidad	Conductividad
UNIDAD		mg/L	mg/L	mg/L	g/mL	mS/cm
COD. DE ANALISIS		LMMT03	LMMT03	LMCI22	LMFQ19	LMFQ01
TECNICA		ICP-OES	ICP-OES	Gravimetría	Picnometría	Potenciometría
LD		0.01	0.05	10	---------	---------
LCS		---------	---------	---------	---------	---------
Prefijo (ASA)	Identificación	RESULTADO				
DUP	HMN-10	1.51	2.11	8660	1.171	215

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza;
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1811941**

ANALISIS: 0002NLMCI28_NOA LMFQ01_NOA LMFQ15_NOA LMFQ16_NOA LMFQ17_NOA LMCI13_NOA LMMT03_NOA 0002NLMCI01_NOA LMCI22_NOA

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-814-1	**FECHA RECEPCION DE MUESTRAS:**	28-05-2018
DIRECCION:	San Martin 924 - 3 piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	17	**FECHA RECEPCION DE INSTRUCCIONES:**	28-05-2018
SOLICITANTE:	Marcelo Olaneta	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	28-05-2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	05-06-2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS
- BL: Blanco de limpieza de cuarzo
- BK M: Blanco de muestra
- BK R: Blanco de reactivo

ESTANDARES
- STD: Standard
- VN: Valor nominal
- SD: Desviación standard

TIPO DE MUESTRA
- Pun: puntual
- Dup: Duplicado
- Dup C: Duplicado de cuarteo
- Tri: Triplicado
- Rep: Repetición
- Com: Compuesta

OTRAS
- BIS: Nuevo informe
- LCS: Límite de cuantificacion superior
- LC: Límite de cuantificación
- ID: Identificación
- COD: Código
- LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCIÓN RESULTADOS

DETERMINACIÓN					Li	Ca	Mg	B	Na	K	Ba
UNIDAD					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANÁLISIS					LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TÉCNICA					ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD					0.05	0.025	0.05	0.05	0.1	0.25	0.01
LCS					----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	RESULTADOS							
467808	HMN-14	Salmuera (liq.)	Ambiental		815	842	2440	329	98296	5887	0.21
467809	HMN-15	Salmuera (liq.)	Ambiental		925	977	2882	292	93686	6985	0.28
467810	HMN-16	Salmuera (liq.)	Ambiental		918	959	2838	317	93922	7090	0.23
467811	HMN-17	Salmuera (liq.)	Ambiental		917	960	2859	319	94784	7411	0.21
467812	HMN-18	Salmuera (liq.)	Ambiental		869	882	2603	374	97684	7240	< 0,20
467813	HMN-19	Salmuera (liq.)	Ambiental		917	968	2885	289	88430	7164	< 0,20
467814	HMN-20	Salmuera (liq.)	Ambiental		879	842	2535	385	96790	7939	< 0,20
467815	HMN-21	Salmuera (liq.)	Ambiental		850	807	2435	372	95400	7794	0.22
467816	HMN-22	Salmuera (liq.)	Ambiental		939	978	2925	303	93151	7438	0.21
467817	HMN-23	Salmuera (liq.)	Ambiental		927	961	2910	298	92683	7122	< 0,20
467818	HMN-24	Salmuera (liq.)	Ambiental		923	844	2544	458	98108	7645	< 0,20
467819	HMN-25	Salmuera (liq.)	Ambiental		< 0,50	30	14	1	29	3	< 0,20
467820	HMN-26	Salmuera (liq.)	Ambiental		835	789	2371	408	99171	8489	< 0,20
467821	HMN-27	Salmuera (liq.)	Ambiental		819	761	2287	413	102315	8057	< 0,20
467822	HMN-28	Salmuera (liq.)	Ambiental		866	844	2552	360	101188	7890	< 0,20
467823	HMN-29	Salmuera (liq.)	Ambiental		899	883	2668	376	102224	8178	< 0,20
467824	HMN-30	Salmuera (liq.)	Ambiental		891	894	2678	337	94211	7618	< 0,20

(*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

SECCIÓN RESULTADOS

				DETERMINACIÓN	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
				COD. DE ANÁLISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
				TÉCNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
				LD	0.005	0.01	0.05	250	10	10	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	RESULTADOS							
467808	HMN-14	Salmuera (liq.)	Ambiental		20.43	62.12	3.63	167954	9126	620	(*)
467809	HMN-15	Salmuera (liq.)	Ambiental		25.26	89.66	4.40	---------	---------	---------	(*)
467810	HMN-16	Salmuera (liq.)	Ambiental		24.32	64.46	4.16	161256	9586	445	(*)
467811	HMN-17	Salmuera (liq.)	Ambiental		24.30	64.37	4.17		---------	---------	(*)
467812	HMN-18	Salmuera (liq.)	Ambiental		21.37	53.58	3.48	165875	9899	531	(*)
467813	HMN-19	Salmuera (liq.)	Ambiental		25.07	57.96	4.10		---------	---------	(*)
467814	HMN-20	Salmuera (liq.)	Ambiental		20.93	33.93	3.06	166073	9977	492	(*)
467815	HMN-21	Salmuera (liq.)	Ambiental		20.21	27.43	2.93	---------	---------	---------	(*)
467816	HMN-22	Salmuera (liq.)	Ambiental		25.65	52.75	4.12	159210	9683	449	(*)
467817	HMN-23	Salmuera (liq.)	Ambiental		25.13	35.70	3.81	---------	---------	---------	(*)
467818	HMN-24	Salmuera (liq.)	Ambiental		20.29	33.30	2.84	169307	9543	521	(*)
467819	HMN-25	Salmuera (liq.)	Ambiental		0.30	< 0,20	< 1,00	---------	---------	---------	(*)
467820	HMN-26	Salmuera (liq.)	Ambiental		19.00	30.20	2.52	169934	9801	511	(*)
467821	HMN-27	Salmuera (liq.)	Ambiental		18.21	24.87	2.45	---------	---------	---------	(*)
467822	HMN-28	Salmuera (liq.)	Ambiental		21.23	30.03	3.13	173134	10048	494	(*)
467823	HMN-29	Salmuera (liq.)	Ambiental		22.18	37.85	3.26	---------	---------	---------	(*)
467824	HMN-30	Salmuera (liq.)	Ambiental		22.78	41.08	3.44	164522	9708	466	(*)

(*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

SECCIÓN RESULTADOS

DETERMINACIÓN	Conductividad	STD (180°)					
UNIDAD	mS/cm	mg/L	SUMA DE IONES mg/L	%CV	Li meq/L	Ca meq/L	Mg meq/L
COD. DE ANÁLISIS	LMFQ01	LMFQ08					
TÉCNICA	Potenciometría	Gravimetría					
LD	----------	2500					
LCS	----------	----------					

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Conductividad	STD (180°)	SUMA DE IONES	%CV	Li	Ca	Mg
467808	HMN-14	Salmuera (liq.)	Ambiental	205	300600	286396	3%	117	42	201
467809	HMN-15	Salmuera (liq.)	Ambiental	207	---------	---------	---------	---------	---------	---------
467810	HMN-16	Salmuera (liq.)	Ambiental	206	288400	277424	3%	132	48	234
467811	HMN-17	Salmuera (liq.)	Ambiental	209	---------	---------	---------	---------	---------	---------
467812	HMN-18	Salmuera (liq.)	Ambiental	215	298500	286036	3%	125	44	214
467813	HMN-19	Salmuera (liq.)	Ambiental	208	---------	---------	---------	---------	---------	---------
467814	HMN-20	Salmuera (liq.)	Ambiental	200	290900	285971	1%	127	42	209
467815	HMN-21	Salmuera (liq.)	Ambiental	203	---------	---------	---------	---------	---------	---------
467816	HMN-22	Salmuera (liq.)	Ambiental	197	283500	275160	2%	135	49	241
467817	HMN-23	Salmuera (liq.)	Ambiental	197	---------	---------	---------	---------	---------	---------
467818	HMN-24	Salmuera (liq.)	Ambiental	203	301800	289949	3%	133	42	209
467819	HMN-25	Salmuera (liq.)	Ambiental	0.36	---------	---------	---------	---------	---------	---------
467820	HMN-26	Salmuera (liq.)	Ambiental	212	305300	292361	3%	120	39	195
467821	HMN-27	Salmuera (liq.)	Ambiental	212	---------	---------	---------	---------	---------	---------
467822	HMN-28	Salmuera (liq.)	Ambiental	210	307100	297430	2%	125	42	210
467823	HMN-29	Salmuera (liq.)	Ambiental	212	---------	---------	---------	---------	---------	---------
467824	HMN-30	Salmuera (liq.)	Ambiental	208	292100	281393	3%	128	45	220

RESULTADOS

(*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

SECCIÓN RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	DETERMINACIÓN / UNIDAD / COD. DE ANÁLISIS / TÉCNICA / LD / LCS	BALANCE IÓNICO B meq/L	Na meq/L	K meq/L	Ba meq/L	Sr meq/L	Fe meq/L	Mn meq/L
467808	HMN-14	Salmuera (liq.)	Ambiental	RESULTADOS	4	4276	151	0.00	0.5	3	0.1
467809	HMN-15	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467810	HMN-16	Salmuera (liq.)	Ambiental		4	4085	181	0.00	0.6	3	0.2
467811	HMN-17	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467812	HMN-18	Salmuera (liq.)	Ambiental		5	4249	185	0.00	0.5	3	0.1
467813	HMN-19	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467814	HMN-20	Salmuera (liq.)	Ambiental		5	4210	203	0.00	0.5	2	0.1
467815	HMN-21	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467816	HMN-22	Salmuera (liq.)	Ambiental		4	4052	190	0.00	0.6	3	0.2
467817	HMN-23	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467818	HMN-24	Salmuera (liq.)	Ambiental		6	4267	196	0.00	0.5	2	0.1
467819	HMN-25	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467820	HMN-26	Salmuera (liq.)	Ambiental		5	4314	217	0.00	0.4	2	0.1
467821	HMN-27	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467822	HMN-28	Salmuera (liq.)	Ambiental		5	4401	202	0.00	0.5	2	0.1
467823	HMN-29	Salmuera (liq.)	Ambiental		---------	---------	---------	---------	---------	---------	---------
467824	HMN-30	Salmuera (liq.)	Ambiental		4	4098	195	0.00	0.5	2	0.1

(*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

SECCIÓN RESULTADOS

DETERMINACIÓN	Cl-	SO4=	HCO3-	Suma Cationes	Suma Aniones	%
UNIDAD	meq/L	meq/L	meq/L	Δ + meq/L	Δ - meq/L	Balance Iónico
COD. DE ANÁLISIS						
TÉCNICA						
LD						
LCS						

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Cl- meq/L	SO4= meq/L	HCO3- meq/L	Suma Cationes Δ + meq/L	Suma Aniones Δ - meq/L	% Balance Iónico
467808	HMN-14	Salmuera (liq.)	Ambiental	4737	190	10	4795	4938	-3
467809	HMN-15	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467810	HMN-16	Salmuera (liq.)	Ambiental	4548	200	7	4689	4755	-1
467811	HMN-17	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467812	HMN-18	Salmuera (liq.)	Ambiental	4679	206	9	4826	4894	-1
467813	HMN-19	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467814	HMN-20	Salmuera (liq.)	Ambiental	4684	208	8	4798	4900	-2
467815	HMN-21	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467816	HMN-22	Salmuera (liq.)	Ambiental	4491	202	7	4674	4700	-1
467817	HMN-23	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467818	HMN-24	Salmuera (liq.)	Ambiental	4776	199	9	4856	4983	-3
467819	HMN-25	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467820	HMN-26	Salmuera (liq.)	Ambiental	4793	204	8	4893	5006	-2
467821	HMN-27	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467822	HMN-28	Salmuera (liq.)	Ambiental	4883	209	8	4987	5101	-2
467823	HMN-29	Salmuera (liq.)	Ambiental	---------	---------	---------	---------	---------	---------
467824	HMN-30	Salmuera (liq.)	Ambiental	4641	202	8	4693	4850	-3

(*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

SECCION QA - QC

Prefijo (ASA)	Identificación	DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
		UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
		TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
		LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01
		LCS	----------	----------	----------	----------	----------	----------	----------
		RESULTADO							
DUP	HMN-23		925	981	2962	304	93331	7675	< 0,20

SECCION QA - QC

		DETERMINACION	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
		UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
		COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
		TECNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
		LD	0.005	0.01	0.05	250	10	10	----------	----------	2500
		LCS	----------	----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación		RESULTADO								
DUP	HMN-23		25.75	40.40	4.07	---------	---------	---------	(*)	198	---------

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1812014**

ANALISIS: **0002NLMCI28_NOA** **LMFQ01_NOA** **LMFQ15_NOA** **LMFQ16_NOA** **LMFQ17_NOA** **LMCI13_NOA** **LMMT03_NOA** **LMFQ08_NOA** **0002NLMCI01_NOA** **LMCI22_NOA** **0001NLMFQ19_NO** **DFR-17_NOA** **LMIS01_NOA** **U48HLi-NOA**

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-814-3	**FECHA RECEPCION DE MUESTRAS:**	06-06-2018
DIRECCION:	San Martin 924 - 3 piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	12	**FECHA RECEPCION DE INSTRUCCIONES:**	06-06-2018
SOLICITANTE:	Marcelo Olaneta	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	06-06-2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	21-06-2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	BIS: Nuevo informe	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCION RESULTADOS

DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01
LCS	----------	----------	----------	----------	----------	----------	----------

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K	Ba
470998	HMN-31	Salmuera (liq.)	Ambiental	< 0,50	< 0,50	< 0,5	1	< 1,00	< 2,5	< 0,20
470999	HMN-32	Salmuera (liq.)	Ambiental	933	1001	2929	330	93657	6932	< 0,20
471000	HMN-33	Salmuera (liq.)	Ambiental	952	1008	3016	332	93693	6988	< 0,20
471001	HMN-34	Salmuera (liq.)	Ambiental	912	884	2641	425	98420	7976	< 0,20
471002	HMN-35	Salmuera (liq.)	Ambiental	912	893	2615	422	99749	7946	< 0,20
471003	HMN-36	Salmuera (liq.)	Ambiental	899	853	2497	449	103222	8176	< 0,20
471004	HMN-37	Salmuera (liq.)	Ambiental	894	850	2496	439	102582	8032	< 0,20
471005	HMN-38	Salmuera (liq.)	Ambiental	< 0,50	< 0,50	< 0,5	1	< 1,00	< 2,5	< 0,20
471006	HMN-39	Salmuera (liq.)	Ambiental	625	1298	2077	374	100687	6362	< 0,20
471007	HMN-40	Salmuera (liq.)	Ambiental	748	814	1587	539	116135	8994	< 0,20
471008	HMN-41	Salmuera (liq.)	Ambiental	785	731	1704	547	108841	9181	< 0,20
471009	HMN-42	Salmuera (liq.)	Ambiental	787	726	1687	543	108859	9071	< 0,20

SECCION RESULTADOS

				DETERMINACION	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
				TECNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
				LD	0.005	0.01	0.05	250	10	10	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS							
470998	HMN-31	Salmuera (liq.)	Ambiental		< 0,05	< 0,20	< 1,00	----------	----------	----------	0.999
470999	HMN-32	Salmuera (liq.)	Ambiental		25.82	13.94	3.79	160969	9977	445	1.184
471000	HMN-33	Salmuera (liq.)	Ambiental		26.05	13.54	3.86	----------	----------	----------	1.185
471001	HMN-34	Salmuera (liq.)	Ambiental		22.44	10.84	2.98	169868	10281	478	1.195
471002	HMN-35	Salmuera (liq.)	Ambiental		22.28	10.67	2.97	----------	----------	----------	1.201
471003	HMN-36	Salmuera (liq.)	Ambiental		20.78	8.51	2.67	175824	10450	511	1.201
471004	HMN-37	Salmuera (liq.)	Ambiental		20.87	14.76	2.81	----------	----------	----------	1.185
471005	HMN-38	Salmuera (liq.)	Ambiental		< 0,05	0.22	< 1,00	----------	----------	----------	1.000
471006	HMN-39	Salmuera (liq.)	Ambiental		27.93	1.04	11.20	164449	6397	337	1.209
471007	HMN-40	Salmuera (liq.)	Ambiental		16.08	4.96	1.90	----------	----------	----------	1.209
471008	HMN-41	Salmuera (liq.)	Ambiental		14.57	3.14	2.33	184544	9458	255	1.210
471009	HMN-42	Salmuera (liq.)	Ambiental		14.46	2.93	2.32	----------	----------	----------	1.209

SECCION RESULTADOS

DETERMINACION					Conductividad	STD (180°)					
UNIDAD					mS/cm	mg/L					
COD. DE ANALISIS					LMFQ01	LMFQ08	SUMA DE IONES	%CV	Li	Ca	Mg
TECNICA					Potenciometría	Gravimetría	mg/L		meq/L	meq/L	meq/L
LD					----------	2500					
LCS					----------	----------					
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna								
470998	HMN-31	Salmuera (liq.)	Ambiental	RESULTADOS	0.02	----------	----------	----------	----------	----------	----------
470999	HMN-32	Salmuera (liq.)	Ambiental		226	283100	277215	1%	134.4	49.9	241.1
471000	HMN-33	Salmuera (liq.)	Ambiental		224	----------	----------	----------	----------	----------	----------
471001	HMN-34	Salmuera (liq.)	Ambiental		225	302100	291921	2%	131.4	44.1	217.4
471002	HMN-35	Salmuera (liq.)	Ambiental		226	----------	----------	----------	----------	----------	----------
471003	HMN-36	Salmuera (liq.)	Ambiental		229	312400	302914	2%	129.5	42.6	205.5
471004	HMN-37	Salmuera (liq.)	Ambiental		227	----------	----------	----------	----------	----------	----------
471005	HMN-38	Salmuera (liq.)	Ambiental		0.03	----------	----------	----------	----------	----------	----------
471006	HMN-39	Salmuera (liq.)	Ambiental		229	292700	282646	2%	90.0	64.8	170.9
471007	HMN-40	Salmuera (liq.)	Ambiental		230	----------	----------	----------	----------	----------	----------
471008	HMN-41	Salmuera (liq.)	Ambiental		231	317200	316065	0%	113.1	36.5	140.2
471009	HMN-42	Salmuera (liq.)	Ambiental		230	----------	----------	----------	----------	----------	----------

N° Orden: NOA1812014

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	BALANCE IÓNICO						
				UNIDAD / COD. DE ANALISIS / TECNICA / LD / LCS	B meq/L	Na meq/L	K meq/L	Ba meq/L	Sr meq/L	Fe meq/L	Mn meq/L
470998	HMN-31	Salmuera (liq.)	Ambiental	RESULTADOS	----------	----------	----------	----------	----------	----------	----------
470999	HMN-32	Salmuera (liq.)	Ambiental		4.2	4073.8	177.3	0.0	0.6	0.7	0.1
471000	HMN-33	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
471001	HMN-34	Salmuera (liq.)	Ambiental		5.5	4281.0	204.0	0.0	0.5	0.6	0.1
471002	HMN-35	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
471003	HMN-36	Salmuera (liq.)	Ambiental		5.8	4489.9	209.1	0.0	0.5	0.5	0.1
471004	HMN-37	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
471005	HMN-38	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
471006	HMN-39	Salmuera (liq.)	Ambiental		4.8	4379.7	162.7	0.0	0.6	0.1	0.4
471007	HMN-40	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
471008	HMN-41	Salmuera (liq.)	Ambiental		7.0	4734.3	234.8	0.0	0.3	0.2	0.1
471009	HMN-42	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION / UNIDAD / COD. DE ANALISIS / TECNICA / LD / LCS	Cl- meq/L	SO4= meq/L	HCO3- meq/L	Suma Cationes Δ + meq/L	Suma Aniones Δ - meq/L	% Balance Iónico
470998	HMN-31	Salmuera (liq.)	Ambiental	RESULTADOS	----------	----------	----------	----------	----------	----------
470999	HMN-32	Salmuera (liq.)	Ambiental		4540.3	207.7	7.3	4678	4760	-2
471000	HMN-33	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------
471001	HMN-34	Salmuera (liq.)	Ambiental		4791.3	214.0	7.8	4879	5019	-3
471002	HMN-35	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------
471003	HMN-36	Salmuera (liq.)	Ambiental		4959.4	217.6	8.4	5078	5191	-2
471004	HMN-37	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------
471005	HMN-38	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------
471006	HMN-39	Salmuera (liq.)	Ambiental		4638.5	133.2	5.5	4869	4782	2
471007	HMN-40	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------
471008	HMN-41	Salmuera (liq.)	Ambiental		5205.3	196.9	4.2	5260	5413	-3
471009	HMN-42	Salmuera (liq.)	Ambiental		----------	----------	----------	----------	----------	----------

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-40	761	815	1584	535	116129	9096	< 0,20	16.06

SECCION QA - QC

DETERMINACION		Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
TECNICA		ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
LD		0.01	0.05	250	10	10	----------	----------	2500
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación								
		RESULTADO							
DUP	HMN-40	4.26	1.91	----------	----------	----------	1.209	231	----------

Alex Stewart
Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1812385**

ANALISIS: **0002NLMCI28_NOA LMFQ01_NOA LMFQ15_NOA LMFQ16_NOA LMFQ17_NOA LMCI13_NOA LMMT03_NOA LMFQ08_NOA 0002NLMCI01_NOA LMCI22_NOA 0001NLMFQ19_NO DFR-17_NOA LMIS01_NOA U48HLi-NOA**

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	**QE-814-3**	**FECHA RECEPCION DE MUESTRAS:**	17-07-2018
DIRECCION:	San Martin 924 - 3 piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	7	**FECHA RECEPCION DE INSTRUCCIONES:**	17-07-2018
SOLICITANTE:	Marcelo Olaneta	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	17-07-2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	02-08-2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	N.D : No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCION RESULTADOS

DETERMINACION					Li	Ca	Mg	B	Na	K	Ba
UNIDAD					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS					LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA					ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD					0.05	0.025	0.05	0.05	0.1	0.25	0.01
LCS					----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna								
485074	HMN-43	Salmuera (líq.)	Ambiental	RESULTADOS	779	879	1801	439	106092	8074	< 0,20
485075	HMN-44	Salmuera (líq.)	Ambiental		507	1074	1538	232	104274	4631	0.38
485076	HMN-45	Salmuera (líq.)	Ambiental		521	1071	1554	241	103901	4751	0.29
485077	HMN-46	Salmuera (líq.)	Ambiental		525	1061	1547	243	103853	4829	0.25
485078	HMN-47	Salmuera (líq.)	Ambiental		607	981	1749	290	106167	5718	0.21
485079	HMN-48	Salmuera (líq.)	Ambiental		534	1091	1305	376	93423	5517	< 0,20
485080	HMN-49	Salmuera (líq.)	Ambiental		< 0,50	26	14	1	31	3	< 0,20

SECCION RESULTADOS

DETERMINACION					Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
UNIDAD					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
COD. DE ANALISIS					LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
TECNICA					ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
LD					0.005	0.01	0.05	250	10	10	----------
LCS					----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS							
485074	HMN-43	Salmuera (líq.)	Ambiental		17.94	6.94	2.68	----------	----------	----------	1.223
485075	HMN-44	Salmuera (líq.)	Ambiental		15.50	36.45	3.48	169043	7302	508	1.237
485076	HMN-45	Salmuera (líq.)	Ambiental		15.68	32.79	3.67	----------	----------	----------	1.215
485077	HMN-46	Salmuera (líq.)	Ambiental		15.72	34.05	3.60	169367	7384	508	1.215
485078	HMN-47	Salmuera (líq.)	Ambiental		15.91	30.48	4.29	----------	----------	----------	1.215
485079	HMN-48	Salmuera (líq.)	Ambiental		13.53	12.77	1.45	152597	8882	384	1.192
485080	HMN-49	Salmuera (líq.)	Ambiental		0.24	< 0,20	< 1,00	----------	----------	----------	1.011

SECCION RESULTADOS

DETERMINACION					Conductividad	STD (180°)					
UNIDAD					mS/cm	mg/L					
COD. DE ANALISIS					LMFQ01	LMFQ08	SUMA DE IONES	%CV	Li	Ca	Mg
TECNICA					Potenciometría	Gravimetría	mg/L		meq/L	meq/L	meq/L
LD					----------	2500	----------	----------	----------	----------	----------
LCS					----------	----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna								
485074	HMN-43	Salmuera (líq.)	Ambiental	RESULTADOS	213	----------	----------	----------	----------	----------	----------
485075	HMN-44	Salmuera (líq.)	Ambiental		217	291300	289164	1%	73.0	53.6	126.6
485076	HMN-45	Salmuera (líq.)	Ambiental		214	----------	----------	----------	----------	----------	----------
485077	HMN-46	Salmuera (líq.)	Ambiental		220	297300	289369	2%	75.6	53.0	127.3
485078	HMN-47	Salmuera (líq.)	Ambiental		211	----------	----------	----------	----------	----------	----------
485079	HMN-48	Salmuera (líq.)	Ambiental		208	273600	264137	2%	76.9	54.4	107.4
485080	HMN-49	Salmuera (líq.)	Ambiental		0.34	----------	----------	----------	----------	----------	----------

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	BALANCE IÓNICO						
				UNIDAD / COD. DE ANALISIS	B	Na	K	Ba	Sr	Fe	Mn
				TECNICA	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
				LD	----------	----------	----------	----------	----------	----------	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
485074	HMN-43	Salmuera (líq.)	Ambiental	RESULTADOS	----------	----------	----------	----------	----------	----------	----------
485075	HMN-44	Salmuera (líq.)	Ambiental		10.7	4535.7	118.4	0.0	0.4	2.0	0.1
485076	HMN-45	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
485077	HMN-46	Salmuera (líq.)	Ambiental		11.2	4517.3	123.5	0.0	0.4	1.8	0.1
485078	HMN-47	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------
485079	HMN-48	Salmuera (líq.)	Ambiental		17.4	4063.7	141.1	0.0	0.3	0.7	0.1
485080	HMN-49	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------	----------

SECCION RESULTADOS

DETERMINACION					Cl-	SO4=	HCO3-	Suma Cationes Δ +	Suma Aniones Δ -	% Balance Iónico
UNIDAD					meq/L	meq/L	meq/L	meq/L	meq/L	Balance Iónico
COD. DE ANALISIS										
TECNICA										
LD					----------	----------	----------	----------	----------	----------
LCS					----------	----------	----------	----------	----------	----------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS						
485074	HMN-43	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------
485075	HMN-44	Salmuera (líq.)	Ambiental		4768.1	152.0	8.3	4910	4939	-1
485076	HMN-45	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------
485077	HMN-46	Salmuera (líq.)	Ambiental		4777.2	153.7	8.3	4899	4951	-1
485078	HMN-47	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------
485079	HMN-48	Salmuera (líq.)	Ambiental		4304.2	184.9	6.3	4445	4513	-2
485080	HMN-49	Salmuera (líq.)	Ambiental		----------	----------	----------	----------	----------	----------

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-49	< 0,50	26	14	1	31	3	< 0,20	0.24

SECCION QA - QC

DETERMINACION		Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
TECNICA		ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
LD		0.01	0.05	250	10	10	----------	----------	2500
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-49	< 0,20	< 1,00	----------	----------	----------	1.011	0.34	----------

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1812601**

ANALISIS: 0002NLMCI28_NOA LMFQ01_NOA LMFQ15_NOA LMFQ16_NOA LMFQ17_NOA LMCI13_NOA LMMT03_NOA LMFQ08_NOA 0002NLMCI01_NOA LMCI22_NOA 0001NLMFQ19_NO DFR-17_NOA LMIS01_NOA U48HLi-NOA

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-814-3	**FECHA RECEPCION DE MUESTRAS:**	10-08-2018
DIRECCION:	San Martin 924 - 3 piso - Ciudad - Mendoza	**TOTAL DE MUESTRAS:**	17	**FECHA RECEPCION DE INSTRUCCIONES:**	10-08-2018
SOLICITANTE:	Marcelo Olaneta	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	10-08-2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	16-08-2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	N.D : No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier substancia o material que atente al medio ambiente.

Informe
- Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorizacion a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

SECCION RESULTADOS

DETERMINACION	Li	Ca	Mg	B	Na	K
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD	0.05	0.025	0.05	0.05	0.1	0.25
LCS	---------	---------	---------	---------	---------	---------

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K
494062	HMN-50	Salmuera (líq.)	Ambiental	793	882	2061	544	103712	7829
494063	HMN-51	Salmuera (líq.)	Ambiental	790	778	1873	582	107347	8202
494064	HMN-52	Salmuera (líq.)	Ambiental	790	741	1814	600	108620	8365
494065	HMN-53	Salmuera (líq.)	Ambiental	783	736	1806	593	108984	8255
494066	HMN-54	Salmuera (líq.)	Ambiental	784	746	1818	594	109147	8239
494067	HMN-55	Salmuera (líq.)	Ambiental	788	740	1803	598	109333	8427
494068	HMN-56	Salmuera (líq.)	Ambiental	774	738	1802	594	109059	7965
494069	HMN-57	Salmuera (líq.)	Ambiental	786	737	1806	597	109099	8199
494070	HMN-58	Salmuera (líq.)	Ambiental	784	744	1823	594	109403	8113
494071	HMN-59	Salmuera (líq.)	Ambiental	783	746	1827	593	109475	8082
494072	HMN-60	Salmuera (líq.)	Ambiental	787	735	1806	599	110958	8129
494073	HMN-61	Salmuera (líq.)	Ambiental	< 0,50	28	14	1	28	3
494074	HMN-62	Salmuera (líq.)	Ambiental	787	732	1802	604	110419	8145
494075	HMN-63	Salmuera (líq.)	Ambiental	792	736	1806	602	112029	8210
494076	HMN-64	Salmuera (líq.)	Ambiental	796	744	1823	608	111240	8259
494077	HMN-65	Salmuera (líq.)	Ambiental	788	734	1801	597	111646	8199
494078	HMN-66	Salmuera (líq.)	Ambiental	788	738	1808	592	111407	8128

SECCION RESULTADOS

			DETERMINACION	Ba	Sr	Fe	Mn
			UNIDAD	mg/L	mg/L	mg/L	mg/L
			COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03
			TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES
			LD	0.01	0.005	0.01	0.05
			LCS	---------	---------	---------	---------
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS			
494062	HMN-50	Salmuera (líq.)	Ambiental	< 0,20	19.97	0.90	2.61
494063	HMN-51	Salmuera (líq.)	Ambiental	< 0,20	16.68	0.79	2.13
494064	HMN-52	Salmuera (líq.)	Ambiental	< 0,20	15.61	0.69	1.97
494065	HMN-53	Salmuera (líq.)	Ambiental	< 0,20	15.47	0.66	1.92
494066	HMN-54	Salmuera (líq.)	Ambiental	< 0,20	15.58	0.84	1.95
494067	HMN-55	Salmuera (líq.)	Ambiental	< 0,20	15.53	0.85	2.00
494068	HMN-56	Salmuera (líq.)	Ambiental	< 0,20	15.33	0.69	1.91
494069	HMN-57	Salmuera (líq.)	Ambiental	< 0,20	15.50	0.72	1.97
494070	HMN-58	Salmuera (líq.)	Ambiental	< 0,20	15.75	0.73	2.00
494071	HMN-59	Salmuera (líq.)	Ambiental	< 0,20	15.55	0.76	1.89
494072	HMN-60	Salmuera (líq.)	Ambiental	< 0,20	15.36	0.78	1.90
494073	HMN-61	Salmuera (líq.)	Ambiental	< 0,20	0.25	< 0,20	< 1,00
494074	HMN-62	Salmuera (líq.)	Ambiental	< 0,20	15.33	0.80	1.87
494075	HMN-63	Salmuera (líq.)	Ambiental	< 0,20	15.46	0.73	1.97
494076	HMN-64	Salmuera (líq.)	Ambiental	< 0,20	15.54	0.85	1.92
494077	HMN-65	Salmuera (líq.)	Ambiental	< 0,20	15.36	0.91	1.94
494078	HMN-66	Salmuera (líq.)	Ambiental	< 0,20	15.40	1.12	2.01

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr	Fe	Mn
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005	0.01	0.05
LCS		---------	---------	---------	---------	---------	---------	---------	---------	---------	---------
Prefijo (ASA)	Identificación	RESULTADO						RESULTADO			
DUP	HMN-59	784	742	1819	595	111538	8151	< 0,20	15.59	0.74	1.89

Alex Stewart Argentina S.A.
Official ASIC Member

Rodriguez Peña 1140
(M5516BBX) Luzuriaga, Maipú, Mendoza:
T: +54 261 4932253
F: +54 261 4931603
E: atencion.cliente.mza@alexstewart.com.ar
W: www.alexstewart.com.ar

INFORME DE ANALISIS

SECCION GENERAL

Nº DE INFORME: **NOA1813276**

ANALISIS: 0002NLMCI28_NOA, LMFQ01_NOA, LMFQ15_NOA, LMFQ16_NOA, LMFQ17_NOA, LMCI13_NOA, LMMT03_NOA, LMFQ08_NOA, 0002NLMCI01_NOA, LMCI22_NOA, 0001NLMFQ19_NO, DFR-17_NOA, LMIS01_NOA, U48HLi-NOA

CLIENTE:	NRG METAL ARGENTINA SA en formacion	**Nº DE COTIZACION:**	QE-814-3	**FECHA RECEPCION DE MUESTRAS:**	01/11/2018
DIRECCION:	Peru 930 - Piso 2, Mendoza, Argentina	**TOTAL DE MUESTRAS:**	9	**FECHA RECEPCION DE INSTRUCCIONES:**	01/11/2018
SOLICITANTE:	Marcelo Olaneta	**PREPARACION DE MUESTRA:**		**FECHA INGRESO AL LABORATORIO:**	01/11/2018
PROYECTO:	NRG METAL ARGENTINA SA			**FECHA EMISION DE INFORME:**	15/11/2018
N° DE ENVIO:					

OBSERVACIONES

ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA		OTRAS	
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado	N.D : No Detecta	ID: Identificación
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición	LCS: Límite de cuantificacion superior	COD: Código
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta	LC: Límite de cuantificación	LD: Límite de Detección

NOTAS

Muestreo
- Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.

Almacenaje
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
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- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.

QA / QC
- Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R^2 superiores a 0.99.

Ing. María de las Mercedes Otaiza
Directora Técnica
Alex Stewart NOA

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
				TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
				LD	0,05	0,025	0,05	0,05	0,1	0,25	0,01
				LCS	----------	----------	----------	----------	----------	----------	----------
528429	HMN-67	Salmuera (sol.)	Ambiental	RESULTADOS	649	735	1405	511	111743	7759	< 0,20
528430	HMN-68	Salmuera (sol.)	Ambiental		665	738	1422	517	111914	7754	< 0,20
528431	HMN-69	Salmuera (sol.)	Ambiental		< 0,50	51	15	1	4	< 2,5	< 0,21
528432	HMN-70	Salmuera (sol.)	Ambiental		667	727	1431	522	112243	7850	< 0,20
528433	HMN-71	Salmuera (sol.)	Ambiental		672	722	1425	519	112937	7839	< 0,20
528434	HMN-72	Salmuera (sol.)	Ambiental		674	721	1426	521	111770	7949	< 0,20
528435	HMN-73	Salmuera (sol.)	Ambiental		673	724	1420	521	112232	7853	< 0,20
528436	HMN-74	Salmuera (sol.)	Ambiental		676	717	1418	518	112793	7974	< 0,20
528437	HMN-75	Salmuera (sol.)	Ambiental		666	715	1412	517	112505	8001	< 0,20

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
				UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
				COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
				TECNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
				LD	0,005	0,01	0,05	250	10	10	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
528429	HMN-67	Salmuera (sol.)	Ambiental	RESULTADOS	16,05	0,75	3,56	182965	9185	322	1,206
528430	HMN-68	Salmuera (sol.)	Ambiental	RESULTADOS	15,21	0,49	3,67	-----------	-----------	-----------	1,205
528431	HMN-69	Salmuera (sol.)	Ambiental	RESULTADOS	0,44	< 0,20	< 1,00	< 250	< 100	224	1,003
528432	HMN-70	Salmuera (sol.)	Ambiental	RESULTADOS	14,94	0,64	3,68	-----------	-----------	-----------	1,206
528433	HMN-71	Salmuera (sol.)	Ambiental	RESULTADOS	14,85	0,57	3,68	183688	9460	314	1,207
528434	HMN-72	Salmuera (sol.)	Ambiental	RESULTADOS	14,93	0,47	3,72	-----------	-----------	-----------	1,207
528435	HMN-73	Salmuera (sol.)	Ambiental	RESULTADOS	14,85	0,47	3,63	184556	9477	315	1,208
528436	HMN-74	Salmuera (sol.)	Ambiental	RESULTADOS	14,86	0,55	3,59	-----------	-----------	-----------	1,207
528437	HMN-75	Salmuera (sol.)	Ambiental	RESULTADOS	14,83	0,53	3,49	181229	9576	320	1,207

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	Conductividad	STD (180°)	SUMA DE IONES	%CV	Li	Ca	Mg
				UNIDAD	mS/cm	mg/L					
				COD. DE ANALISIS	LMFQ01	LMFQ08					
				TECNICA	Potenciometría	Gravimetría	mg/L		meq/L	meq/L	meq/L
				LD	----------	2500	----------	----------	----------	----------	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
528429	HMN-67	Salmuera (sol.)	Ambiental	RESULTADOS	224	320400	315293	1%	93,5	36,7	115,6
528430	HMN-68	Salmuera (sol.)	Ambiental		228	-----------	-----------	-----------	-----------	-----------	-----------
528431	HMN-69	Salmuera (sol.)	Ambiental		0,51	< 2500	< 2500	-----------	0,0	2,6	1,3
528432	HMN-70	Salmuera (sol.)	Ambiental		229	-----------	-----------	-----------	-----------	-----------	-----------
528433	HMN-71	Salmuera (sol.)	Ambiental		225	328900	317594	2%	96,8	36,0	117,3
528434	HMN-72	Salmuera (sol.)	Ambiental		227	-----------	-----------	-----------	-----------	-----------	-----------
528435	HMN-73	Salmuera (sol.)	Ambiental		228	324700	317790	2%	96,9	36,1	116,9
528436	HMN-74	Salmuera (sol.)	Ambiental		223	-----------	-----------	-----------	-----------	-----------	-----------
528437	HMN-75	Salmuera (sol.)	Ambiental		227	320300	314961	1%	96,0	35,7	116,2

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION	BALANCE IÓNICO						
				UNIDAD							
				COD. DE ANALISIS	B	Na	K	Ba	Sr	Fe	Mn
				TECNICA	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L
				LD	----------	----------	----------	----------	----------	----------	----------
				LCS	----------	----------	----------	----------	----------	----------	----------
528429	HMN-67	Salmuera (sol.)	Ambiental	RESULTADOS	6,6	4860,6	198,4	0,0	0,4	0,0	0,1
528430	HMN-68	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------	-----------
528431	HMN-69	Salmuera (sol.)	Ambiental		0,0	0,2	0,0	0,0	0,0	0,0	0,0
528432	HMN-70	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------	-----------
528433	HMN-71	Salmuera (sol.)	Ambiental		6,7	4912,5	200,5	0,0	0,3	0,0	0,1
528434	HMN-72	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------	-----------
528435	HMN-73	Salmuera (sol.)	Ambiental		6,7	4881,8	200,9	0,0	0,3	0,0	0,1
528436	HMN-74	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------	-----------
528437	HMN-75	Salmuera (sol.)	Ambiental		6,7	4893,7	204,6	0,0	0,3	0,0	0,1

SECCION RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	DETERMINACION			Suma Cationes	Suma Aniones	
				COD. DE ANALISIS	Cl-	SO4=	HCO3-	Δ +	Δ -	%
				UNIDAD / TECNICA	meq/L	meq/L	meq/L	meq/L	meq/L	Balance Iónico
				LD	----------	----------	----------	----------	----------	----------
				LCS	----------	----------	----------	----------	----------	----------
528429	HMN-67	Salmuera (sol.)	Ambiental	RESULTADOS	5160,8	191,2	5,3	5305	5364	-1
528430	HMN-68	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------
528431	HMN-69	Salmuera (sol.)	Ambiental		0,0	0,0	3,7	4	4	9
528432	HMN-70	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------
528433	HMN-71	Salmuera (sol.)	Ambiental		5181,2	197,0	5,1	5364	5390	0
528434	HMN-72	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------
528435	HMN-73	Salmuera (sol.)	Ambiental		5205,6	197,3	5,2	5333	5415	-2
528436	HMN-74	Salmuera (sol.)	Ambiental		-----------	-----------	-----------	-----------	-----------	-----------
528437	HMN-75	Salmuera (sol.)	Ambiental		5111,8	199,4	5,2	5347	5323	0

SECCION QA - QC

DETERMINACION		Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA		ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD		0,05	0,025	0,05	0,05	0,1	0,25	0,01	0,005
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-75	661	718	1408	518	112565	8008	< 0,20	14,83

SECCION QA - QC

DETERMINACION		Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
UNIDAD		mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
COD. DE ANALISIS		LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
TECNICA		ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
LD		0,01	0,05	250	10	10	----------	----------	2500
LCS		----------	----------	----------	----------	----------	----------	----------	----------
Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-75	0,54	3,52	182748	9593	322	1,207	227	320300

GSA GeoSystems Analysis, Inc.
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3393 N Dodge Blvd
Tucson, AZ 85716
520-628-9330
Fax: 520-628-1122
www.gsanalysis.com

DATE: August 27, 2018
Project # **91834**
Project Name **NRG Metals Argentina Brine Release Testing**
TO: NRG Metals
Carlos Pellegrini 1373 10rd Floor A - C1011
Buenos Aires, Argentina
Project Contact José de Castro

Enclosed are results for: Brine Release Capacity Test

Test	***Method***	***Qty***
Bulk Density	ASTM D 2937 - 00	20
Total Porosity, Field Water Capacity, and Specific Yield	MOSA Part 4 Ch. 2, 2.3.2.1, Ch. 3, 3.3.3.2 and 3.3.3.5/Horton et al	20

Thank you for choosing GeoSystems Analysis for your material testing needs. We look forward to working with you again. If you have any questions or require additional information, please contact us at 1-520-628-9330

Sincerely,

Prepared By: Katherine Heydorn
Laboratory Project Manager

Reviewed By: Mike Yao
Laboratory Technical Director

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3393 N Dodge Blvd
Tucson, AZ 85716
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Fax: 520-628-1122
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Laboratory Test Results - Soil Particle Density

Date: August 27, 2018
Job No: **91834**
Job Name: **NRG Metals Argentina Brine Release Testing**
Job Description: **Brine Release Capacity Test**
Company: NRG Metals

Sample ID	Post RBR Assumed Particle Density (g/cm^3)
HMNC_002	2,79
HMNC_004	2,81
HMNC_006	2,93
HMNC_009	2,99
HMNC_012	2,81
HMNC_016	2,79
HMNC_019	2,50
HMNC_023	2,70
HMNC_027	2,57
HMNC_034	2,81
HMNC_038	2,74
HMNC_039	2,78
HMNC_040	2,76
HMNC_041	2,76
HMNC_042	2,81
HMNC_043	2,76
HMNC_044	2,80
HMNC_045	2,54
HMNC_046	2,57
HMNC_047	2,49

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520-628-9330
Fax: 520-628-1122
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Laboratory Test Results - Core Bulk Density

Date: August 27, 2018
Job No: **91834**
Job Name: **NRG Metals Argentina Brine Release Testing**
Job Description: **Brine Release Capacity Test**
Company: NRG Metals

Sample ID	Bulk Density (g/cm^3)	Core type	Estimated Texture
HMNC_002	1,88	HQ	unconsolidated med to fine sandstone dark grey
HMNC_004	1,93	HQ	unconsolidated med to fine sandstone dark grey
HMNC_006	1,83	HQ	unconsolidated med to fine sandstone dark grey
HMNC_009	1,71	HQ	unconsolidated med to fine sandstone dark grey
HMNC_012	1,76	HQ	unconsolidated med grain sandstone brown
HMNC_016	1,96	HQ	polymictic cong. Sandstone matrix
HMNC_019	2,23	HQ	polymictic cong. Sandstone matrix
HMNC_023	2,46	HQ	polymictic cong. sandy matrix
HMNC_027	2,22	HQ	polymictic cong. sandy matrix
HMNC_034	1,96	HQ	polymictic cong. sandy matrix
HMNC_038	1,88	HQ	Arenisca fina a muy fina, muy friable
HMNC_039	1,64	HQ	Arenisca fina a muy fina, muy friable
HMNC_040	1,74	HQ	Arenisca Media a fina, gris oscuro, poco friable
HMNC_041	1,91	HQ	Intercalacion Halita_Ar Media a fina, gris oscuro, poco friable
HMNC_042	1,92	HQ	Arenisca fina a mediana. Friable
HMNC_043	1,89	HQ	Arenisca fina a mediana
HMNC_044	1,74	HQ	Arenisca mediana poco consolidada
HMNC_045	2,14	HQ	Arenisca fina a mediana compacta
HMNC_046	1,95	HQ	Arenisca mediana a fina, compacta
HMNC_047	2,26	HQ	Arenisca mediana compacta

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Fax: 520-628-1122
www.gsanalysis.com

Laboratory Test Results - Porosity and Effective Porosity

Date: August 27, 2018
Job No: **91834**
Job Name: **NRG Metals Argentina Brine Release Testing**
Job Description: **Brine Release Capacity Test**
Company: NRG Metals

Sample ID	Porosity ($cm3/cm^3$)	Field Water Capacity (cm3/cm3)	Yield for 0-120 mbar (cm3/cm3)	Specific Yield (cm3/cm3)
HMNC_002	0,325	0,199	0,093	0,126
HMNC_004	0,313	0,237	0,044	0,076
HMNC_006	0,374	0,262	0,088	0,112
HMNC_009	0,428	0,351	0,064	0,078
HMNC_012	0,373	0,300	0,060	0,073
HMNC_016	0,299	0,156	0,119	0,143
HMNC_019	0,110	0,059	0,041	0,051
HMNC_023	0,087	0,049	0,031	0,038
HMNC_027	0,135	0,072	0,050	0,063
HMNC_034	0,304	0,165	0,104	0,139
HMNC_038	0,313	0,229	0,064	0,084
HMNC_039	0,412	0,355	0,038	0,057
HMNC_040	0,368	0,285	0,065	0,083
HMNC_041	0,310	0,252	0,049	0,058
HMNC_042	0,315	0,233	0,055	0,083
HMNC_043	0,317	0,229	0,058	0,088
HMNC_044	0,380	0,134	0,212	0,246
HMNC_045	0,158	0,057	0,081	0,101
HMNC_046	0,242	0,092	0,101	0,149
HMNC_047	0,095	0,069	0,014	0,026

Appendix C: Well Schematics

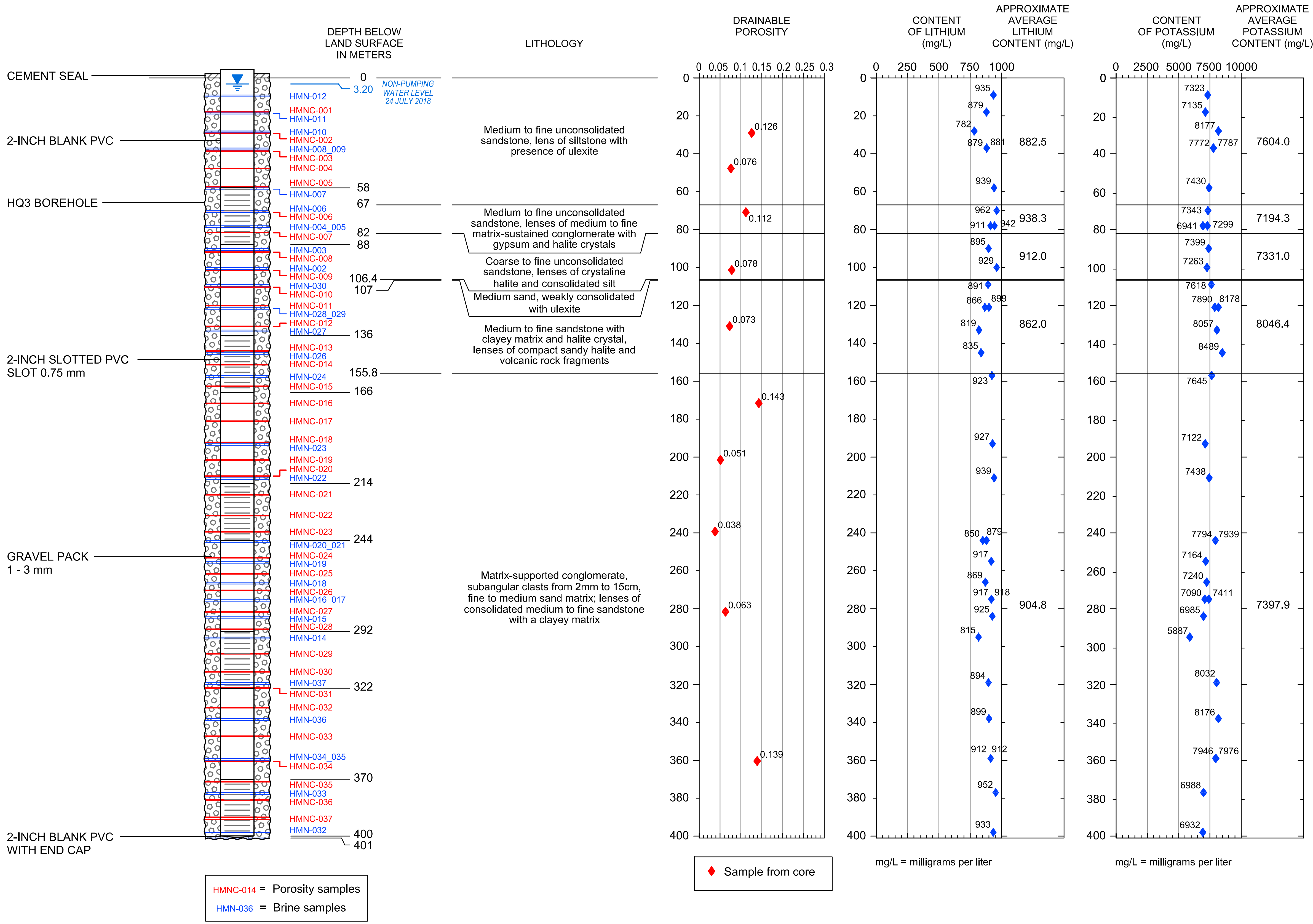

FIGURE C-1. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION WELL TH18-01

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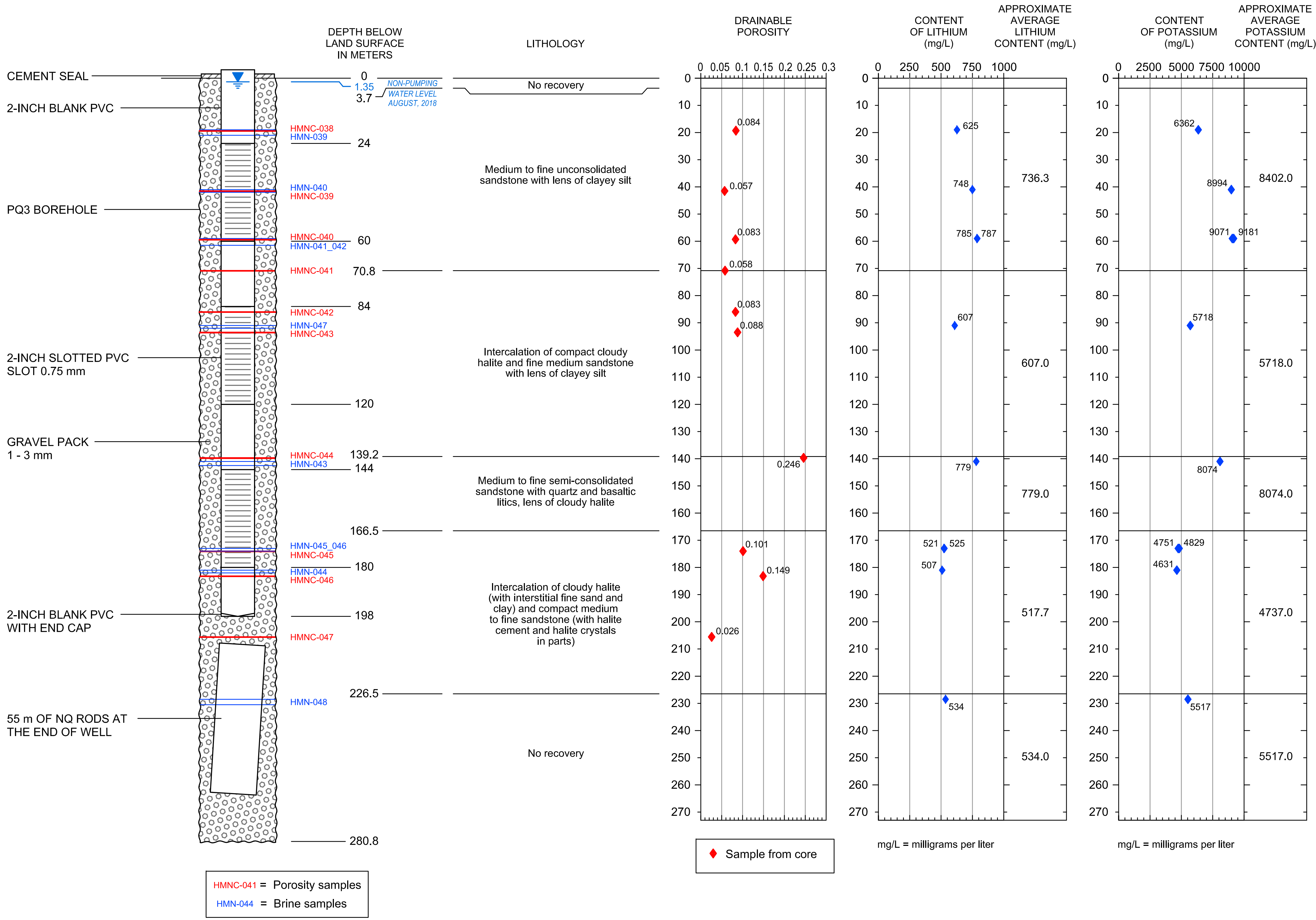

FIGURE C-2. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION WELL TH18-02

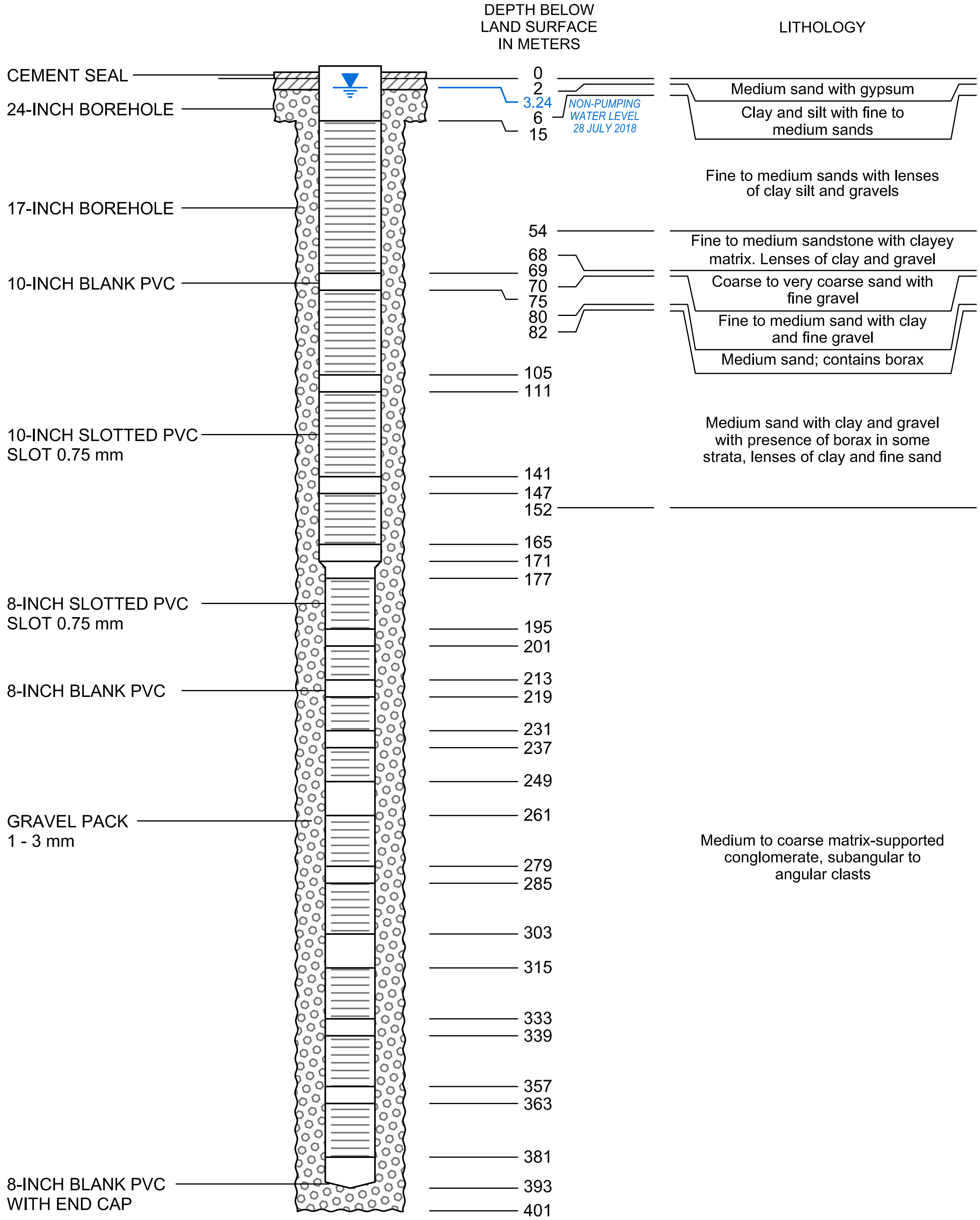

FIGURE C-3. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION PUMPING WELL TWW18-01

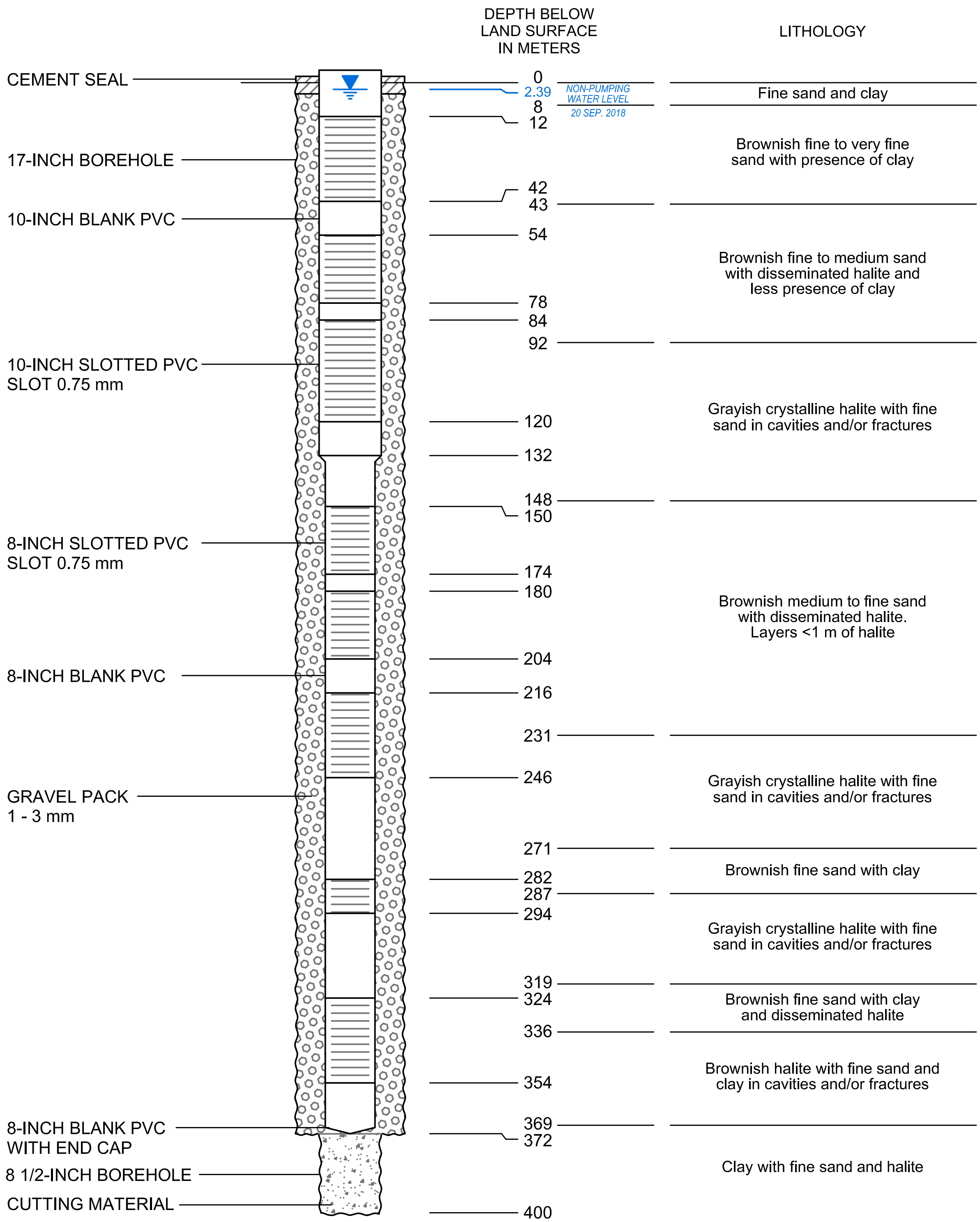

FIGURE C-4. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION PUMPING WELL TWW18-02

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Appendix D: Pumping Test Graphs

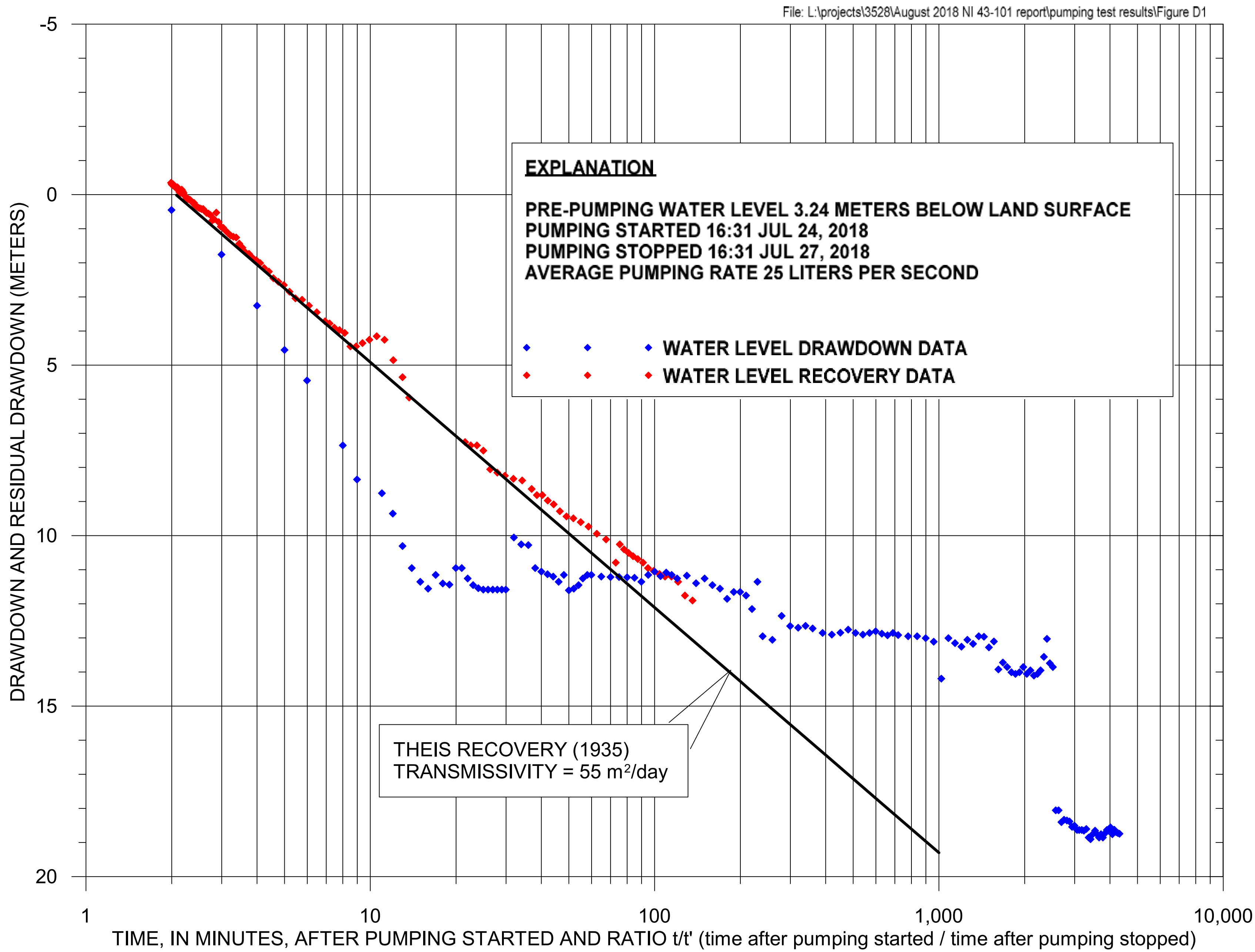

FIGURE D1. DRAWDOWN AND RECOVERY GRAPH FOR PUMPED WELL TWW18_01 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST

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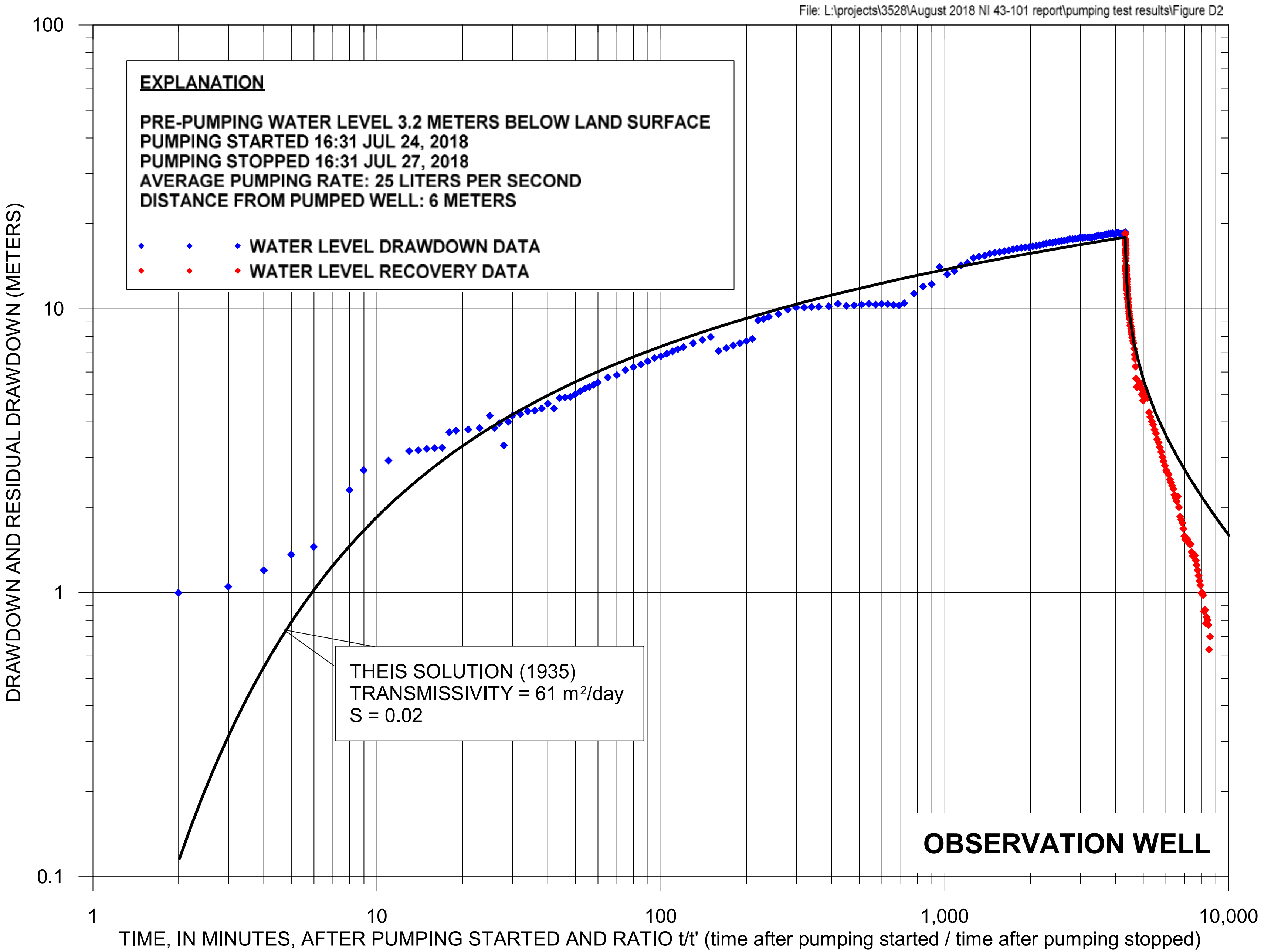

FIGURE D2. DRAWDOWN AND RECOVERY GRAPH FOR OBSERVATION WELL TH18_01 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST AT PUMPED WELL TWW18_01

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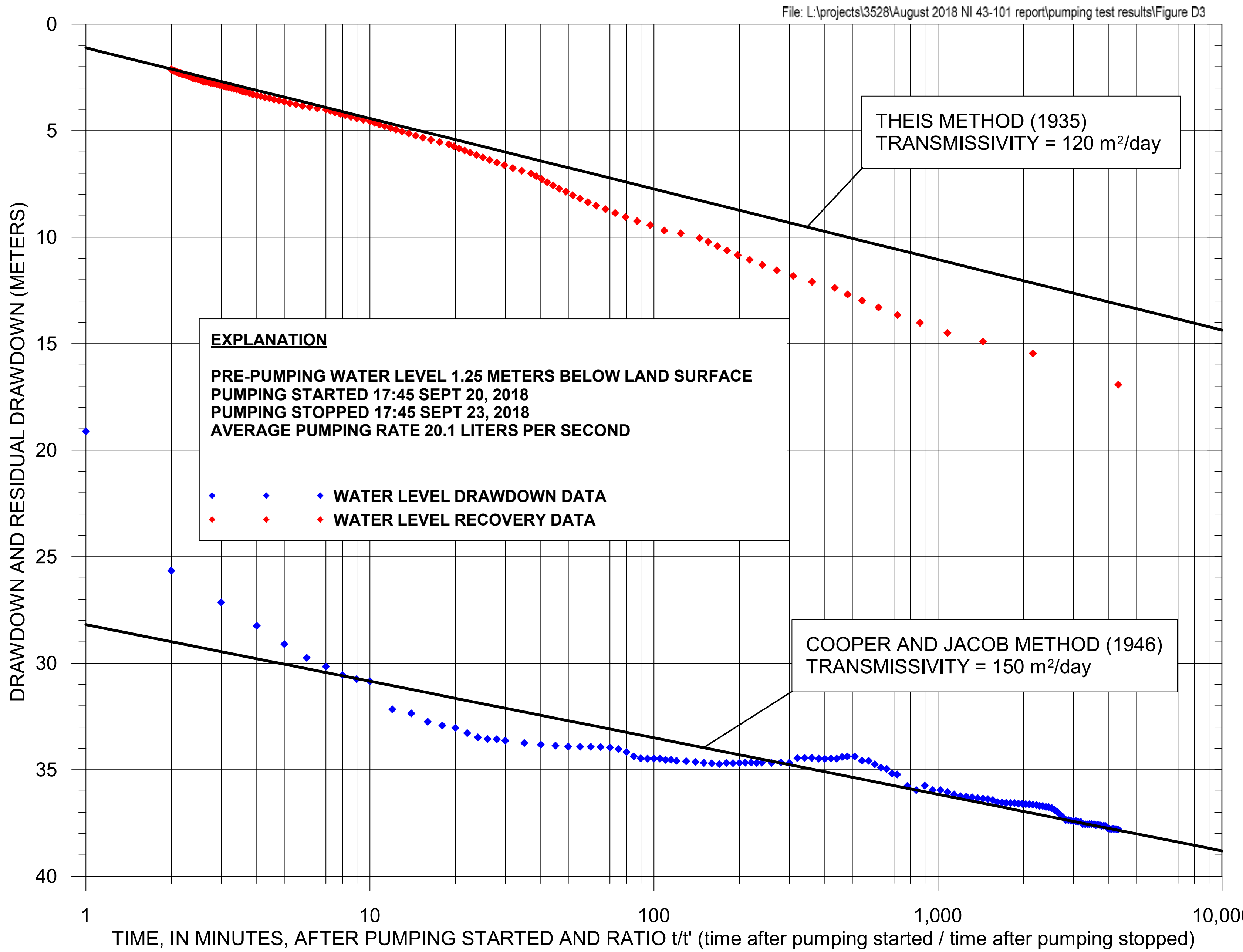

FIGURE D3. DRAWDOWN AND RECOVERY GRAPH FOR PUMPED WELL TWW18_02 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST

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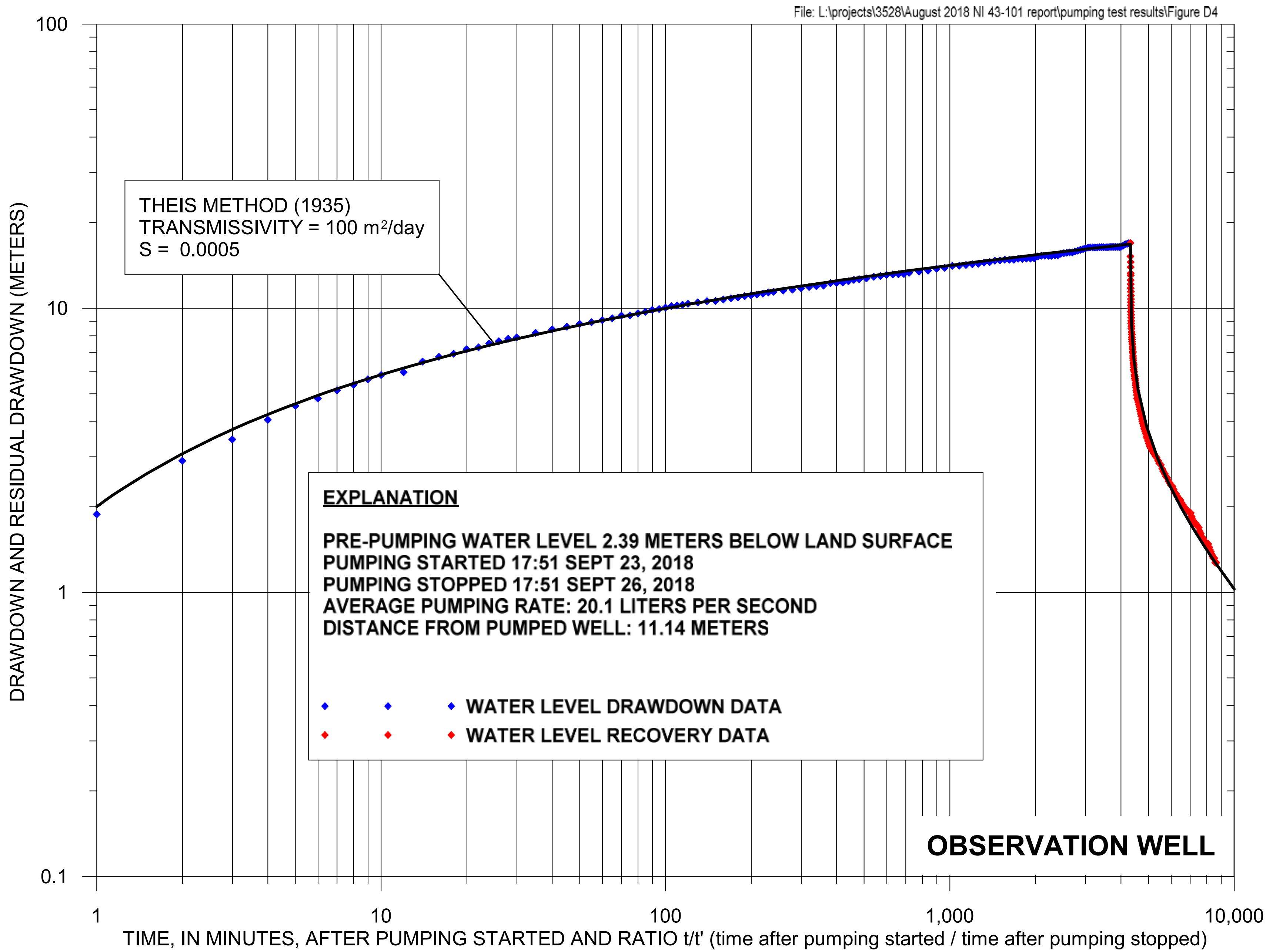

FIGURE D4. DRAWDOWN AND RECOVERY GRAPH FOR OBSERVATION WELL TH18_02 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST AT PUMPED WELL TWW18_02

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