

20 October 2020

## HIGH PURITY 99.97% BATTERY QUALITY LITHIUM CARBONATE PRODUCED FROM KACHI BRINES

- High purity 99.97% lithium carbonate produced by Hazen Research Inc from lithium chloride produced at the Lilac Solutions pilot plant module from Lake's Kachi brines.
- Samples have very low impurities; Lake expects this product to be attractive for the battery market.
- Lake Resources is confident of replicating these results at full production
- Sample production by Hazen to continue with samples expected to be sent to Novonix and supply chain customers in Asia and Europe for battery tests, anticipated this quarter.

Clean lithium developer **Lake Resources NL (ASX:LKE; OTC:LLKKF)** is pleased to announce the high purity results from tests carried out at Hazen Research Inc (Hazen), a world renowned independent process laboratory.

### Lithium Carbonate Results

Lake's technology partner, Lilac Solutions Inc (Lilac) has already demonstrated the production of high purity lithium chloride eluate using its proprietary ion-exchange direct lithium extraction method (DLE) at pilot plant module scale in California (refer ASX announcement 3 July 2020). Samples of this lithium chloride were further processed into lithium carbonate by Hazen in Colorado, USA. Hazen conducted a series of tests aimed at optimizing lithium carbonate quality while maintaining a simple flowsheet. Conventional treatment methods, including evaporation, treatment with sodium hydroxide and soda ash, ion exchange, and precipitation, were used (see Appendix 1). This process optimization was a critical step prior to production of larger volumes of high purity lithium carbonate samples.

**The tests at Hazen establish that very high purity 99.97% lithium carbonate with low impurities can be produced from Kachi brines.**

To ensure accuracy, a number of analytical techniques were employed to verify the lithium carbonate grade and the low impurities levels including inductively coupled plasma spectrometry and titration, both of which are accepted assaying techniques. Sample preparation and analytical methods are included in Appendix 1.

### Very Low Impurities

Samples produced by Hazen show a 70% reduction in the overall level of impurities compared to Lake's earlier lithium carbonate production (99.9% lithium carbonate, refer ASX announcement 9 January 2020) and a significant 94% reduction in impurities compared with 99.5% lithium carbonate, widely accepted as "battery grade" in the current market. Notably, the results include very low metal and cation impurities including iron (Fe) and boron (B).

**Lake expects this product to be highly attractive for the lithium-ion battery market where low impurities is a key factor in determining battery quality.**

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Chemical Component	Actual (wt%)	Target
Lithium (Li)	99.97	99.5 Min
Sodium (Na)	0.0011	0.025 Max
Magnesium (Mg)	<0.001	0.008 Max
Calcium (Ca)	<0.001	0.005 Max
Potassium (K)	0.0049	0.005 Max
Sulphur (S)	<0.01	0.01 SO4 Max
Aluminum (Al)	<0.001	0.001 Max
Iron (Fe)	<0.001	0.001 Max
Silicon (Si)	<0.001 *	0.005 Max
Boron (B)	<0.001	0.005 Max
Strontium (Sr)	0.0018	Uncertain
Copper	<0.001	0.002 Max

**Table 1:** Analytical results of lithium carbonate produced by Hazen Research Inc from lithium chloride produced from the Lilac’s pilot module using the direct extraction ion exchange process which processed Kachi Lithium Brine Project brines. (\* being reanalyzed)



**Figure 1:** Hazen Research – Neutralisation and precipitation of Lake’s lithium product at its lab in Colorado, USA, with the production of Lake’s lithium carbonate product.

### **Premium Pricing Potential**

Pricing in the lithium carbonate market is largely determined by lithium carbonate grade and the level and type of impurities. The results achieved by Lilac and Hazen with Kachi brine suggest the potential to achieve substantially higher prices than previously envisaged. The Pre-Feasibility Study (PFS) (refer ASX announcement 30 April 2020) was based on achieving 99.9% lithium carbonate and a fixed selling price of US\$11,000/t.

### **Next steps**

Hazen will continue to produce lithium carbonate samples over the coming weeks, targeting 5kg to 6kg in this round. Samples will be sent to Novonix Limited (ASX:NVX), to be tested together with commercial battery cathode precursor materials in NMC622 batteries (refer ASX announcement 27 August 2020). Novonix is currently developing “million mile” battery technologies with revolutionary anode and cathode materials. Samples will also be sent to other potential off-take partners in Asia and Europe.

### **Scale-up from Pilot Plant Module to Production Scale**

Lilac’s pilot plant module treatment of Kachi brine to produce lithium chloride solution was conducted at roughly 1,000x the earlier laboratory bench-scale tests. The scale-up from the pilot module to full production scale modules is expected to be a relatively small, 3-5 times, depending on the final module design. The PFS was based on utilizing a series of modules to produce 25,500 tonnes per annum lithium carbonate equivalent. These successful pilot module tests from brine to final product, provide the confidence to replicate the results at planned production scale. Further, the use of direct lithium extraction as designed by Lilac, allows for consistent product quality and for ready production scalability.

### **Definitive Feasibility Study**

The results of Hazen’s process optimization, forthcoming battery tests, updated price expectations, and decisions on final plant module capacity, will be incorporated into the forthcoming Definitive Feasibility Study.

Lake’s ambition is to sustainably produce the cleanest quality lithium carbonate at scale for use in the fast-growing battery market.

**Lake’s Managing Director, Steve Promnitz said:** *“These are excellent results. We are very pleased not only with the very high purity lithium carbonate grades, but also with the very low impurities. This is a function of the purity of the raw brine at our Kachi project, combined with the excellent work done by Lilac Solutions over the past two years, and by Hazen Research. Lake has a clean process, based on standard chemical processing techniques, which is readily scalable. The environmental footprint is small. Based on the results reported today, we believe Lake is well placed to deliver among the highest quality, sustainable, clean lithium carbonate products to the EV and energy storage market”.*

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### About Lake Resources NL (ASX:LKE OTC:LLKKF) - Cleaner high purity lithium using efficient disruptive clean technology

Lake Resources NL (ASX:LKE, OTC: LLKKF) is a clean lithium developer utilising clean, direct extraction technology for the development of sustainable, high purity lithium from its flagship Kachi Project, as well as three other lithium brine projects in Argentina. The projects are in a prime location within the Lithium Triangle, where 40% of the world's lithium is produced at the lowest cost.

This method will enable Lake Resources to be an efficient, responsibly-sourced, environmentally friendly and cost competitive supplier of high-purity lithium, which is readily scalable, and in demand from Tier 1 electric vehicle makers and battery makers.

1. **Clean-Tech:** Efficient, disruptive clean technology to produce sustainable high purity lithium, with a smaller environmental footprint, in demand by Tier1 EV makers and battery makers. This is a cost-competitive technology provided by our partner in California, Lilac Solutions, who have received the backing of the Bill Gates-led Breakthrough Energy fund and MIT's The Engine fund.

2. **High Purity:** High purity lithium carbonate samples (99.9%) with very low impurities has been produced from lithium brines from Lake's flagship project (refer ASX announcement 9 January 2020 and October 2020). The growth of higher density batteries to drive the latest electric vehicles has significantly increased demand for a high purity product with low impurities, and the process delivers this consistently for a premium price.

3. **Prime Location, Large Projects:** Lake's projects are located in the Lithium Triangle, in Argentina, the prime location globally for low cost lithium production from large projects. The Kachi project covers 70,000 ha over a salt lake south of Livent's lithium operation with a large indicated and inferred resource of 4.4 Mt LCE (Indicated 1.0Mt, Inferred 3.4Mt) (refer ASX announcement 27 November 2018). A pre-feasibility study (PFS) by a tier 1 engineering firm over Kachi shows a large, long-life low-cost potential operation with competitive production costs at the lower end of the cost curve similar to current lithium brine producers (refer ASX announcement 28 April 2020).

4. **Sustainable ESG Benefit:** The environmental footprint is far smaller than conventional brine evaporation processes or of hard rock mining. By using a benign water treatment process to produce lithium, Lake avoids any mining and returns virtually all water (brine) to its source without changing its chemistry (apart from lithium removal). This avoids the "water politics" in arid environments and is a better outcome for local communities. Tier 1 electric vehicle makers and Tier 1 battery makers have been seeking more sustainable, responsibly sourced materials in their supply chain which has driven demand for our products.

An innovative direct extraction technique, based on a well-used ion exchange water treatment method, has been tested for over 18 months in partnership with Lilac Solutions, with a pilot plant module operating on Kachi brines and has shown 80-90% recoveries. Battery quality lithium carbonate (99.9% purity) has been produced from Kachi brine samples with very low impurities (Fe, B, with <0.001 wt%) (refer ASX announcement 9 January 2020). Test results were incorporated into a Pre-Feasibility Study (PFS). The Lilac pilot plant module in California is producing samples for downstream participants. A pilot plant /demonstration plant on site is planned to produce larger battery quality lithium samples. Discussions are advanced with downstream entities, as well as financiers, to develop the project.

On 3 July 2020, Lake Resources announced that the first samples of lithium chloride had been successfully produced from Lilac Solution's direct extraction pilot plant module, supporting the scale-up from previously successful lab-scale work. On 20 October 2020, independent laboratory, Hazen Research, produced the first samples of high purity battery quality lithium carbonate for testing in a 622 battery by Novonix. Hazen will produce further samples for downstream supply chain participants and off-takers. The sector continues to see positive news around demand and issues have been highlighted with a pending shortfall of supply of clean battery quality lithium.

Lake's other projects include the Olaroz and Cauchari brine projects, located adjacent to major world class brine projects in production or construction, including Orocobre's Olaroz lithium production and adjoins the impending production of Ganfeng Lithium/Lithium Americas' Cauchari project. Lake's Cauchari project has shown lithium brines over 506m interval with high grades averaging 493 mg/L lithium (117-460m) with up to 540 mg/L lithium. These results are similar to lithium brines in adjoining leases and infer an extension and continuity of these brines into Lake's leases (refer ASX announcements 28 May, 12 June 2019).

For more information on Lake, please visit <http://www.lakeresources.com.au/home/>

#### Competent Person's Statement – Kachi Lithium Brine Project

*The information contained in this ASX release relating to Exploration Results has been compiled by Mr Andrew Fulton. Mr Fulton is a Hydrogeologist and a Member of the Australian Institute of Geoscientists and the Association of Hydrogeologists. Mr Fulton has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a competent person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.*

*Andrew Fulton is an employee of Groundwater Exploration Services Pty Ltd and an independent consultant to Lake Resources NL. Mr Fulton consents to the inclusion in this announcement of this information in the form and context in which it appears. The information in this announcement is an accurate representation of the available data from initial exploration at the Kachi project.*

**1 APPENDIX 1 - JORC CODE, 2012 EDITION, JORC TABLE 1 REPORT: KACHI LITHIUM BRINE PROJECT**

Criteria	Section 1 - Sampling Techniques and Data
<i>Sampling techniques</i>	<ul style="list-style-type: none"> <li>• Brine samples were taken from the diamond drill hole with a bottom of hole spear point during advance and using a straddle packer device to obtain representative samples of the formation fluid by purging a volume of fluid from the isolated interval, to minimize the possibility of contamination by drilling fluid then taking the sample. Low pressure airlift tests are used as well. The fluid used for drilling is brine sourced from the drill hole and the return from drillhole passes back into the excavator dug pit lined to avoid leakage.</li> <li>• The brine sample was collected in a clean plastic bottle (1 litre) and filled to the top to minimize air space within the bottle. A duplicate was collected at the same time for storage and submission of duplicates to the laboratory. Each bottle was taped and marked with the sample number.</li> <li>• Drill core in the hole was recovered in 1.5 m length core runs in core split tubes to minimize sample disturbance.</li> <li>• Drill core was undertaken to obtain representative samples of the sediments that host brine.</li> </ul>
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li>• Diamond drilling with an internal (triple) tube was used for drilling. The drilling produced cores with variable core recovery, associated with unconsolidated material, in particularly sandy intervals. Recovery of these more friable sediments is more difficult with diamond drilling, as this material can be washed from the core barrel during drilling.</li> <li>• Rotary drilling has used 8.5" or 10" tricone bits and has produced drill chips.</li> <li>• Brine has been used as drilling fluid for lubrication during drilling.</li> </ul>
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li>• Diamond drill core was recovered in 1.5m length intervals in the drilling triple (split) tubes. Appropriate additives were used for hole stability to maximize core recovery. The core recoveries were measured from the cores and compared to the length of each run to calculate the recovery. Chip samples are collected for each metre drilled and stored in segmented plastic boxes for rotary drill holes.</li> <li>• Brine samples were collected at discrete depths during the drilling using a double packer over a 1 m interval (to isolate intervals of the sediments and obtain samples from airlifting brine from the sediments within the packer).</li> <li>• As the brine (mineralisation) samples are taken from inflows of the brine into the hole (and not from the drill core – which has variable recovery) they are largely independent of the quality (recovery) of the core samples. However, the permeability of the lithologies where samples are taken is related to the rate and potentially lithium grade of brine inflows.</li> </ul>
<i>Logging</i>	<ul style="list-style-type: none"> <li>• Sand, clay, silt, salt and cemented rock types was recovered in a triple tube diamond core drill tube, or as chip samples from rotary drill holes, and examined for geologic logging by a geologist and a photo taken for reference.</li> <li>• Diamond holes are logged by a senior geologist who also supervised taking of samples for laboratory porosity analysis as well as additional physical property testing.</li> <li>• Logging is both qualitative and quantitative in nature. The relative proportions of different lithologies which have a direct bearing on the overall porosity, contained and potentially extractable brine are noted, as are more qualitative characteristics such as the sedimentary facies and their relationships. When cores are split for sampling they are photographed.</li> </ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>• Brine samples were collected by packer and spear sampling methods, over a metre. Low pressure airlift tests are used as well to purge test interval and gauge potential yields.</li> <li>• The brine sample was collected in one-litre sample bottles, rinsed and filled with brine. Each bottle was taped and marked with the sample number.</li> </ul>
<i>Quality of assay data and laboratory tests</i>	<ul style="list-style-type: none"> <li>• The Alex Stewart Argentina/Nor lab SA in Palpala, Jujuy, Argentina, is used as the primary laboratory to conduct the assaying of the brine samples collected as part of the sampling program. The SGS laboratory in Buenos Aires has also been used for both primary and check samples. They also analysed blind control samples and duplicates in the analysis chain.</li> <li>• The Alex Stewart/Norlab SA laboratory and the SGS laboratory are ISO 9001 and ISO 14001 certified, and are specialized in the chemical analysis of brines and inorganic salts, with experience in this field. This includes the oversight of the experienced Alex Stewart Argentina S.A. laboratory in Mendoza, Argentina, which has been operating for a considerable period.</li> <li>• The quality control and analytical procedures used at the Alex Stewart/Norlab SA laboratory or SGS laboratory are considered to be of high quality and comparable to those employed by ISO certified laboratories specializing in analysis of brines and inorganic salts.</li> </ul>

<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"> <li>Field duplicates, standards and blanks will be used to monitor potential contamination of samples and the repeatability of analyses. Accuracy, the closeness of measurements to the “true” or accepted value, will be monitored by the insertion of standards, or reference samples, and by check analysis at an independent (or umpire) laboratory.</li> <li>Duplicate samples in the analysis chain were submitted to Alex Stewart/Norlab SA or SGS laboratories as unique samples (blind duplicates) during the process</li> <li>Stable blank samples (distilled water) were used to evaluate potential sample contamination and will be inserted in future to measure any potential cross contamination</li> <li>Samples were analysed for conductivity using a hand-held Hanna pH/EC multiprobe.</li> <li>Regular calibration using standard buffers is being undertaken.</li> </ul>
<i>Location of data points</i>	<ul style="list-style-type: none"> <li>The diamond drill hole sample sites and rotary drill hole sites were located with a hand-held GPS.</li> <li>The properties are located at the junction of the Argentine POSGAR grid system Zone 2 and Zone 3 (UTM 19) and in WGS84 Zone 19 south.</li> </ul>
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> <li>Brine samples were collected over 1m intervals every 6 m intervals within brine producing aquifers, where this was possible.</li> </ul>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <li>The salt lake (<i>salar</i>) deposits that contain lithium-bearing brines generally have sub-horizontal beds and lenses that contain sand, gravel, salt, silt and clay. The vertical diamond drill holes will provide a better understanding of the stratigraphy and the nature of the sub-surface brine bearing aquifers</li> </ul>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>Samples were transported to the Alex Stewart/Norlab SA laboratory or SGS laboratory for chemical analysis in sealed 1-litre rigid plastic bottles with sample numbers clearly identified. Samples were transported by a trusted member of the team.</li> <li>The samples were moved from the drillhole sample site to secure storage at the camp on a daily basis. All brine sample bottles sent to the laboratory are marked with a unique label not related to the location.</li> </ul>
<i>Review (and Audit)</i>	<ul style="list-style-type: none"> <li>No audit of data has been conducted to date. However, the CP has been onsite periodically during the programme. The review included drilling practice, geological logging, sampling methodologies for water quality analysis and, physical property testing from drill core, QA/QC control measures and data management. The practices being undertaken were ascertained to be appropriate.</li> </ul>
<b>Criteria</b>	<b>Section 2 - Mineral Tenement and Land Tenure Status</b>
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>The Kachi Lithium Brine project is located approximately 100km south-southwest of Livent’ (FMC’s) Hombre Muerto lithium operation and 45km south of Antofagasta de la Sierra in Catamarca province of north western Argentina at an elevation of approximately 3,000m asl.</li> <li>The project comprises approximately 70,462 Ha in thirty seven mineral leases (minas) of which five leases (9,445 Ha) are granted for drilling, twenty two leases are granted for initial exploration (44,328 Ha) and ten leases (16,689 Ha) are applications pending granting.</li> <li>The tenements are believed to be in good standing, with statutory payments completed to relevant government departments.</li> </ul>
<i>Exploration by other parties</i>	<ul style="list-style-type: none"> <li>Marifil Mines Ltd conducted sparse near-surface pit sampling of groundwater at depths less than 1m during 2009.</li> <li>Samples were taken from each hole and analysed at Alex Stewart laboratories in Mendoza Argentina.</li> <li>Results were reported in an NI 43-101 report by J. Ebisch in December 2009 for Marifil Mines Ltd.</li> <li>NRG Metals Inc commenced exploration in adjacent leases under option. Two diamond drillholes intersected lithium bearing brines. The initial drillhole intersected brines from 172-198m and below with best results to date of 15m at 229 mg/L Lithium, reported in December 2017. The second hole, drilled to 400 metres in mid-2018, became blocked at 100 metres and could not be sampled. A VES ground geophysical survey was completed prior to drilling. A NI 43-101 report was released in February 2017.</li> <li>No other exploration results were able to be located.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li>The known sediments within the <i>salar</i> consist of salt/halite, clay, sand and silt horizons, accumulated in the <i>salar</i> from terrestrial sedimentation and evaporation of brines.</li> <li>Brines within the Salt Lake are formed by solar concentration, interpreted to be combined with warm geothermal fluids, with brines hosted within sedimentary units.</li> <li>Geology was recorded during the diamond drilling and from chip samples in rotary drill holes.</li> </ul>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>15 drill holes completed, totalling 3150 metres with varying depths up to 403 metres.</li> </ul>

	<ul style="list-style-type: none"> <li>Lithological data was collected from the holes as they were drilled and drill cores or chip samples were retrieved. Detailed geological logging of cores is ongoing.</li> <li>All drill holes are vertical, (dip -90, azimuth 0 degrees).</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>Assay averages have been provided where multiple sampling occurs in the same sampling interval.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li>Mineralisation interpreted to be horizontally lying and drilling perpendicular to this.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>A drill hole location plan is provided showing the locations of the drill platforms is not presented here but has been shown in previous statements.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>Brine assay results are available from 15 drill holes from the drilling to date, are not presented here but have been reported in previous statements.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>There is no other substantive exploration data available regarding the project.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>Further water well drilling is planned to expand the resource and test pumping rates.</li> </ul>
<b>Criteria</b>	<b>Section 3 – Estimation and Reporting of Mineral Resources</b>
<i>Database integrity</i>	<ul style="list-style-type: none"> <li>Data was transferred directly from laboratory spreadsheets to the database.</li> <li>Data was checked for transcription errors once in the database to ensure coordinates, assay values, and lithological codes were correct.</li> <li>Data was plotted to check the spatial location and relationship to adjoining sample points.</li> <li>Duplicates and standards have been used in the assay process.</li> <li>Brine assays and porosity test work have been analysed and compared with other publicly available information for reasonableness.</li> <li>Comparison of original and current datasets were made to ensure no lack of integrity.</li> </ul>
<i>Site visits</i>	<ul style="list-style-type: none"> <li>The Competent Person visited the site multiple times during the drilling and sampling program</li> <li>Some improvements to procedures were made during visits by the Competent Person</li> </ul>
<i>Geological Interpretation</i>	<ul style="list-style-type: none"> <li>The geological model is continuing to develop. There is a high level of confidence in the interpretation of the exploration results to date. There are relatively consistent geological units with relatively uniform clastic sediments</li> <li>Any alternative interpretations are restricted to smaller scale variations in sedimentology, related to changes in grain size and fine material in units</li> <li>Data used in the interpretation includes rotary and diamond drilling methods</li> <li>Drilling depths and geology encountered has been used to conceptualise hydro-stratigraphy</li> <li>Sedimentary processes affect the continuity of geology, whereas the concentration of lithium and potassium and other elements in the brine is related to water inflows, evaporation and brine evolution in the Salt Lake.</li> </ul>
<i>Dimensions</i>	<ul style="list-style-type: none"> <li>The lateral extent of the resource has been defined by the boundary of the Company's properties. The brine mineralisation subsequently covers 175 km<sup>2</sup>.</li> <li>The top of the model coincides with the topography obtained from the Shuttle Radar Topography Mission (SRTM). The original elevations were locally adjusted for each borehole collar with the most accurate coordinates available. The base of the resource is limited to a 400 m depth. The basement rocks underlying the Salt Lake sediments have been intercepted in drilling.</li> <li>The resource is defined to a depth of 400 m below surface, with the exploration target immediately extending beyond the aerial extent of the resource.</li> </ul>
<i>Estimation and modelling techniques</i>	<ul style="list-style-type: none"> <li>No grade cutting or capping was applied to the model.</li> <li>No assumptions were made about correlation between variables. Lithium and potassium were estimated independently.</li> <li>The geological interpretation was used to define each geological unit and the property limit was used to enclose the reported resources.</li> </ul>
<i>Moisture</i>	<ul style="list-style-type: none"> <li>Moisture content of the cores was not Measured (porosity and density measurements were made), but as brine will be extracted by pumping not mining this is not relevant for the resource estimation.</li> <li>Tonnages are estimated as elemental lithium and potassium dissolved in brine.</li> </ul>
<i>Cut-off parameters</i>	<ul style="list-style-type: none"> <li>No cut-off grade has been applied.</li> </ul>

<p><i>Mining factors or assumptions</i></p>	<ul style="list-style-type: none"> <li>• The resource has been quoted in terms of brine volume, concentration of dissolved elements, contained lithium and potassium and their products lithium carbonate and potassium chloride.</li> <li>• No mining or recovery factors have been applied although the use of the specific yield (drainable porosity) is used to reflect the reasonable prospects for economic extraction with the proposed mining methodology. (Recoveries of 83% lithium have been used in the PFS for the direct processing method)</li> <li>• Dilution of brine concentrations may occur over time and typically there are lithium and potassium losses in both the storage ponds and processing plant in brine extraction operations. However, potential dilution will be estimated in the groundwater model simulating brine extraction.</li> <li>• The conceptual mining method is recovering brine from the Salt Lake via a network of wells, the established practice on existing lithium and potash brine projects.</li> <li>• Detailed hydrological studies of the lake are being undertaken (groundwater modelling) to define the extractable resources and potential extraction rates.</li> </ul>
<p><i>Metallurgical factors or assumptions</i></p>	<ul style="list-style-type: none"> <li>• Lithium carbonate is targeted as the commercial product.</li> <li>• It would be obtained by the brines being subjected to direct lithium extraction (ionic exchange and reverse osmosis) to produce a high grade LiCl eluate (30,000 to 60,000 mg/L lithium), which is processed in a conventional lithium carbonate plant by reaction with sodium carbonate:  <math display="block">\text{LiCl} + \text{Na}_2\text{CO}_3 \rightarrow \text{Li}_2\text{CO}_3 + \text{NaCl}</math> </li> <li>• Process work has been undertaken by Lilac Solutions, which is an expert laboratory in the treatment of brines by ion exchange.</li> <li>• Bench tests include short and long-term tests using ion exchange media and brine from Kachi to establish recovery, reagent consumption, and engineering parameters used in the PFS</li> <li>• Analyses of solutions by ICP and includes the use of standards</li> <li>• The longevity of the ion exchange media has been tested over 1000 cycles, or six months</li> <li>• Lithium carbonate of high purity and low impurities has been produced which can be considered equivalent to metallurgical test work) is being carried out on the brine following initial test work.</li> <li>• Pilot plant module test-work has commenced using Kachi brine using Lilac Solutions ion exchange direct extraction method. 20,000 litres of Kachi brine was being processed by Lilac into concentrated lithium chloride (eluate).</li> <li>• Hazen Research Inc has demonstrated the conversion of lithium chloride from the pilot module into larger volumes of high purity lithium carbonate with purity &gt;99.97% with very low levels of impurities.</li> <li>• Hazen processed the eluate from Lilac to produce the lithium carbonate sample using reduction of water through evaporation, treatment with sodium hydroxide and soda ash, ion exchange, precipitation, filtering and recrystallization.</li> <li>• Due to the high purity of the lithium carbonate, the lithium is reported as 100% minus the sum of impurities. ICP-MS and ICP-AES assays from the Hazen Research lab were used to assess impurities. Titration (acidimetric titration with HCl) was performed for total Lithium, run in duplicate and resulted in assays of 100.2 wt% and 100.3 wt.%. This is the accepted assay technique for larger lithium carbonate samples.</li> <li>• To ensure consistency of the processing and analysis with industry standards, Dr Nick Welham was consulted and reviewed the results and calculations of purity.</li> <li>• This work is yet to be integrated into the resource model.</li> </ul>
<p><i>Environmental factors as assumptions</i></p>	<ul style="list-style-type: none"> <li>• Impacts of a lithium operation at the Kachi project would include surface disturbance from the installation of extraction/processing facilities and associated infrastructure, accumulation of various salt tailings impoundments and extraction from brine and fresh water aquifers regionally.</li> <li>• Environmental management plan for the protection of wetlands, salt lakes, and surrounds.</li> <li>• Consultation with communities in the area of influence of the project.</li> <li>• Environmental impact analysis on-going.</li> </ul>
<p><i>Bulk density</i></p>	<ul style="list-style-type: none"> <li>• Density measurements were taken as part of the drill core assessment. This included determining dry density and particle density as well as field measurements of brine density. Note that no mining is to be carried out as brine is to be extracted by pumping and consequently sediments are not mined</li> <li>• No bulk density was applied to the estimates because resources are defined by volume, rather than by tonnage.</li> </ul>
<p><i>Classification</i></p>	<ul style="list-style-type: none"> <li>• The resource has been classified into the two possible resource categories based on confidence in the estimation.</li> <li>• A Measured resource would reflect higher density drilling, with porosity samples from drill cores and well constrained vertical brine sampling in the holes.</li> </ul>



	<ul style="list-style-type: none"> <li>• The Indicated resource reflects the higher confidence in the brine sampling in the rotary drilling and lower quality geological control from the drill cuttings.</li> <li>• The Inferred resource underlying the Measured and/or Indicated resource reflects the limited drilling to this depth together with the geophysics through the property.</li> <li>• In the view of the Competent Person the resource classification is believed to adequately reflect the available data and is consistent with the suggestions of Houston et. al., 2011</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>• The Mineral Resource was estimated by the Competent Person.</li> </ul>
<i>Discussion of relative accuracy/ confidence</i>	<ul style="list-style-type: none"> <li>• An independent estimate of the resource was completed using a nearest neighbour estimate and the comparison of the results with the ordinary kriging estimate is below 0.3% for measured resources and below 3% for indicated resources which is considered to be acceptable.</li> <li>• Univariate statistics for global estimation bias, visual inspection against samples on plans and sections, swath plots in the north, south and vertical directions to detect any spatial bias shows a good agreement between the samples and the ordinary kriging estimates.</li> </ul>

**References**

Houston, J., Butcher, A., Ehren, P., Evans, K., and Godfrey, L. (2011). The Evaluation of Brine Prospects and the Requirement for Modifications to Filing Standards. Economic Geology. V 106, p 1225-1239.

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