UPDATED RESOURCE ESTIMATE REPORT
SALAR DE TOLILLAR PROJECT

SALTA PROVINCE, ARGENTINA

NI 43-101 REPORT

PREPARED FOR:

ALPHA LITHIUM CORPORATION

PREPARED BY:

GROUNDWATER INSIGHT, INC.

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1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

Alpha Lithium Corporation ("Alpha Lithium") retained Groundwater Insight, Inc. ("GWI") to prepare this independent technical report ("Technical Report"). It was prepared in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101, Form 43-101F1, and NI 43-101CP), under the supervision of Dr. Mark King, Ph.D., P.Geo., F.G.C., a Qualified Person ("QP") who is independent of Alpha Lithium, as such terms are defined by NI 43-101. Dr. King is President of GWI. In preparing this Technical Report, Dr. King worked closely with Alpha Lithium and their consultants, which included salar geology specialists.

This document is an Updated Resource Estimate Technical Report for the Alpha Lithium Tolillar Project ("Tolillar Project" or "Project"). Three previous Technical Reports have been issued for the Tolillar Project (Ausenco, 2023; Montgomery, 2022; and Montgomery, 2019), and large sections of the previous reports are included herein. The potential mineral deposits discussed in this report are related to lithium in brine contained within salar deposits.

All figures in this Technical Report were prepared for this report, or brought forward from the three previous Tolillar Project reports, unless otherwise noted.

Dr. King is independent of Alpha Lithium, as such terms are defined by NI 43-101. Neither Dr. King, nor GWI, have, or have had previously, any material interest in Alpha Lithium or mineral properties in which Alpha Lithium has any interest. The relationship of Dr. King (and GWI) with Alpha Lithium is solely one of professional association between client and independent consultant.

1.2 RELIANCE ON OTHER EXPERTS

The QP has fully relied upon, and disclaims responsibility for, information derived from Argañaraz & Associates through the following documents:

- Argañaraz & Associates (2023a). *Alpha Lithium Corp. ("the Corporation") – Argentina Projects*. Report prepared for Alpha Lithium Corp., April 26, 2023. 6 pp.
- Argañaraz & Associates (2023b). *Alpha Lithium Corp. ("the Corporation") – Argentina Projects*. Report prepared for Alpha Lithium Corp., June 6, 2023. 5 pp.

The QP has not researched the Project title and mineral rights, and expresses no opinion as to the ownership status of the Project properties.

1.3 PROPERTY DESCRIPTION AND LOCATION

The Salar de Tolillar is located about 15 km to the northwest of the Salar del Hombre Muerto, where Livent's Phoenix project is located. The Tolillar Project currently consists of 16 Exploitation Concessions and Exploration Permits totaling 28,030 ha registered in the Province of Salta, and owned by Alpha Lithium Argentina, S.A.; some of these titles are still awaiting the granting sentence to be issued by the Mining Court of Salta. This area will be slightly less, (closer to 27,000) when the Mining Cadaster rules out overlapping areas between the exploration permits; the final value is not yet known. The Project is in the Argentinean Puna, at an elevation of approximately 3650 masl.

Alpha Lithium legal counsel notes that Alpha Lithium is 99.98% owner of an Argentine entity known as Alpha Minerals S.A. ("AMSA"). Legal counsel states that AMSA holds all property rights to the Project properties, and has the right to undertake mineral exploration activities on the Mineral Titles.

1.4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, & PHYSIOGRAPHY

The Project is located in the Salar de Tolillar basin ("the Salar"), in the Salta Province, in northwest Argentina, about 170 km from Salta, and approximately 90 km south of the town of Estación Salar de Pocitos. The elevation at the surface of the Salar is approximately between 3600 and 3650 masl and in the concessions of the Project, elevation ranges between 3600 and 4000 masl. The area that encompasses the entire project is the Altiplano-Puna magmatic volcanic arc complex (commonly "APVC" in literature), located between the Altiplano and Puna. It is associated with numerous stratovolcanoes and calderas. Abundant dry salt lakes (salars) fill many basins in the region. In general terms, it is a zone with low humidity and limited soil development.

The climate of the Tolillar Project area corresponds to a typical climate of the "Puna argentina", which is of an intense Andean continental type, reaching desert climate conditions. The area presents scarce rainfall, mostly originating from the Atlantic air masses coming from the east. Surface water inflow to the Salar is marked by seasonal precipitation events, mainly in the period between October and March.

Due the extreme weather conditions in the region, the predominant vegetation is high altitude, xerophytic type plants, dominated by woody herbs, grasses, and cushion plants. Due to the high salinity on the salar surface, the core area of the Salar is devoid of vegetation. In the Project area, two phytogeographic provinces exist and have been described by Cabrera (1994): the Puneña Province and the Altoandina Province. The two are included in the more general Andean-Patagonian domain. All the plants have adapted to living in extreme cold and windy conditions.

The Project camp is located northeast of the Salar de Tolillar with the purpose of providing lodging for personnel and contractors carrying out exploration work; currently, this camp has a capacity for up to 100 workers. The Tolillar Project plans to build a new camp for its operational phase. Additional detail is provided in the PEA (Ausenco, 2023).

The nearest community with services is the town of Antofagasta de la Sierra, located south of the Tolillar Project along RP-17 and RP-43. The town of Pocitos is located north of the Project on provincial road RP-17 at the north end of Salar de Pocitos about the same distance from site but with more limited services. The nearest town with full services, including fuel and medical services, is San Antonio de Los Cobres, located about a 3-hour drive from the site, and Salta, located about 6 hours from the site. Currently, only satellite phone and internet communication are available at the Project location. Fresh water has been identified in several wells in the area, but a sustainable supply has yet to be identified.

1.5 HISTORY

Several exploration activities have occurred on the Project area since 2012, carried out by Argañaraz & Associates.

- A surface water and brine sampling campaign was carried out in November, 2012 by Rafael Argañaraz (2013). A total of 12 brine samples were obtained and three solid samples were obtained, analyzed by Alex Stewart Laboratory ("ASA").
- In mid-2014, several trenches were excavated with backhoe and ten brine samples were taken, analyzed by ASA.
- An exploration campaign was carried out in 2015 (Argañaraz, 2018a) where two shallow holes were drilled and five brine samples were taken, analyzed by ASA.
- A Vertical Electrical Sounding ("VES") survey was carried out by Tecnología y Recursos (2017) with 26 survey points.

- Drilling, aquifer testing, and confirmation brine sampling from borehole DDHB-01 were conducted in 2018, by the QP responsible for the previous Resource Estimate (Montgomery, 2022). Brine samples were analyzed by ASA.

A private Argentine entity purchased and then developed the initial concessions until 2018 when they were sold to a private Canadian company. The property was then sold to Voltaic Minerals in two transactions, finalized at the beginning of 2020. Voltaic Minerals subsequently changed its name to Alpha Lithium Corp. in 2020 and has remained the owner and developer of the assets ever since.

Although the previous QP (Montgomery, 2022) and the current QP have examined the reported information from the historic exploration campaigns, they have not completed a full due diligence review this information. Therefore, the reported results should not be relied on as verified.

1.6 GEOLOGICAL SETTING AND MINERALIZATION

The Salar de Tolillar is located in the Geological Province of La Puna (Turner, 1972) and within the Puna Austral Geological Sub-province (Alonso et al., 1984a, 1984b). One of the most important characteristics that define the Geological Province of Puna, is the presence of evaporitic basins, or “salars”, where important deposits of borates, sodium sulphate, and lithium can concentrate. Salars near the Tolillar Project area include: Hombre Muerto, Antofalla, Ratones, Pocitos, Centenario, and Diablillos.

One of the most important characteristics that define the Geological Province of La Puna, is the presence of evaporitic basins, where important deposits of borates, sodium sulphate, and lithium salts occur. The Salar de Tolillar occupies one of these endorheic (internally drained) basins. The oldest rocks in the area are the Tolillar Formation, which consists of graywackes and marine sediments assigned to the Tremadocian period (early Ordovician), mainly located North and South of the Salar. This formation is intruded by gabbro dikes that form part of the Ojo de Colorados Basic Complex, which are also assigned to the Tremadocian period.

The mineralization for the Project consists of a lithium-enriched brine that is contained within the pore spaces of the sedimentary strata in the salar basin in the upper several hundred meters of the basin, in the evaporite, alluvial, and colluvial sediments. The mineralization of the brine has occurred over a long period of time via evapo-concentration of the brine, which enriched the brine in lithium because lithium does not precipitate to a solid form in the brine. Except where there is a strong influx of freshwater to the salar basin, like in the north part of the property, the entire aquifer system is a lithium-enriched brine with generally uniform chemistry. Approximate average lithium concentration in undiluted brine ranges from about 200 - 350 mg/L.

The boundaries of the mineralization are suspected to be the fault-controlled, hard rock basin boundary, although some lithium-enriched brine may be contained in the fractures and/or pores of the rocks that form the basin boundary. Detailed distribution and chemical composition of the brine in the salar sediments is not currently known, although an area of non-mineralized freshwater occurs in the northern concessions in the uppermost part of the sedimentary sequence; thickness of this unmineralized fresh water is not known.

1.7 DEPOSIT TYPE

Salar de Tolillar appears to be a relatively immature salar and the floor of the Salar consists of two distinct deposit types. The northern part of the Salar consists of an earthier crust weakly cemented with salt. To the south, the salt crust varies in thickness from several centimeters to 20 - 30 centimeters. The thicker saline crust allows for better road access than the earthy crust that tends to be softer, especially after precipitation.

Hydrogeologic sections created using information from the surface geology, results from exploration drilling, and geophysical interpretations were studied, showing there are effectively four sub-basins in the Tolillar basin within the concessions:

- a northeastern basin that is mostly separated from the south by shallow metamorphic rocks, also containing abundant fresh water in the far north part of the sub-basin;
- a south sub-basin appearing to become more clastic to the south, with abundant halite occurring in the north part of the sub-basin;
- a west sub-basin containing abundant halite; and
- an east sub-basin mostly devoid of halite, consisting predominantly of clastic basin-fill sediments.

Depth to bedrock is interpreted to be considerably deep below land surface based on VES geophysical surveys (Tecnología y Recursos, 2017), but because it appears to be variable throughout the Tolillar Project and was not encountered during exploration drilling, depth to bedrock is considered unknown.

The principal source of water entering the Project area is from surface water coming into the basin from the basin margins. To date, surface water flow has not been formally measured. Some groundwater also enters the basin from natural recharge along the mountain fronts via alluvial fans, but there appears to be limited mixing of the fresh water and brine in the basin due to density differences. As a result, the fresh water entering the Project tends to stay in the upper part of the aquifer system on the edges of the basin, without moving to the center part of the Salar. These freshwater discharge areas tend to support altiplanic vegetation. Evaporation of fresh water in the basin over time results in concentration of the dissolved minerals and ultimately results in brine generation.

1.8 EXPLORATION

Vertical Electrical Sounding ("VES") surveys were conducted over the project during years 2020 - 2022 in order to obtain a preliminary understanding of the underlying stratigraphy of the Project property, identify potential geological structures, identify freshwater/brine interfaces (if present), and to be able to identify future locations for exploration wells.

- Twelve survey lines were conducted in the northern part of the Tolillar Project by Conhidro (2020a). In 2022, Conhidro conducted an additional VES survey in the northern concessions effectively extending the previous lines into unexplored areas where brine was expected to occur.
- Four survey lines conducted in the southern part of the Tolillar Project in by Conhidro (2020a).

The VES measurements and their interpretations appear to be in agreement with the information obtained from exploration drilling. At the edges of the basin, especially to the west and north, there is uncertainty as to whether the VES is measuring dry sediments, freshwater areas, or bedrock. In these relatively higher conductivity zones, they are not interpreted to be brine aquifer, and therefore, are not considered as part of the measured or indicated resource.

In the southern concessions, VES results suggest a potential zone for fresh or brackish water exploration. This is consistent with the results which showed only brackish water with little lithium.

1.9 DRILLING

1.9.1 EXPLORATION DRILLING PROGRAM

Updated results of the year 2020 - 2022 and preliminary results of year 2023 exploration drilling and testing program are reported in herein. The current exploration well program was designed to obtain additional aquifer hydraulic parameters, to develop a conceptual hydrogeological model, and to obtain sufficient information to estimate an updated lithium resource. Drilling and construction of brine exploration wells WBALT-01, -02, -03, -04, -05, -06, -07, -09, -10, -11, -12, -13, -14, -15, -16, and -17, and piezometer WBALT-03P in the northern concession are documented in this Report. Drilling was done using conventional circulation mud rotary. Logs comprise descriptions of drill cuttings that were then stored in labeled plastic cutting boxes.

Pumping tests conducted at exploration wells included step-discharge and constant discharge tests. Pumping test equipment was provided by drilling and testing contractor Andina Perforaciones, a local drilling contractor based in Salta, Argentina. Aquifer test drawdown data were analyzed for aquifer transmissivity using the semi-logarithmic graphical method developed by Cooper and Jacob (1946) using Aqtesolv software (HydroSOLVE, 2008) and verified manually. Transmissivity was also calculated using the Theis (1935) recovery method, which is generally considered to be more reliable.

Geophysical surveys in each well were performed by Zelandez, a multi-disciplinary consulting firm based in Salta province, Argentina. Geophysical logs performed by Zelandez included ultrasonic caliper, gamma, Short-Normal resistivity, Long-Normal resistivity, spontaneous potential, electrical conductivity, temperature, and borehole magnetic resonance (“BMR”). In particular, BMR was prioritized due to the strength of the technology as an indicator of total porosity, and for differentiating between porewater that is held immobile by capillary forces within the formation, and porewater that is mobile. This latter measure is comparable to drainable porosity or specific yield.

1.9.2 FRESH WATER PROGRAM

To date, the exploration program for fresh water has included drilling and construction of exploration wells FWBALT-01, -01A, -01B, and -02. In the southern sector, in the vicinity of the FWWALT-02 well, two piezometer wells were built. No aquifer tests were conducted at the freshwater wells.

Geophysical surveys in each well were performed by Zelandez, a geophysical logging company based in Salta province, Argentina. Geophysical logs performed by Zelandez included short-normal resistivity, long-normal resistivity, and spontaneous potential.

1.9.3 PIEZOMETER PROGRAM

To date, three piezometer wells were constructed: WBALT-03P drilled at brine well WBALT-03, and PzWRALT-01 and PzWRALT-02 drilled in the southern area of the concessions. The latter two are located within proximity to the fresh water well FWWALT-02. Borehole PzWRALT-01 is considered to be optimal for taking piezometric level measurements for any future recharge studies conducted in the area. While borehole PzWRALT-02 is also considered optimal for measurements, it is intended to be the observation well for FWWALT-02.

1.10 SAMPLE PREPARATION, ANALAYSES, AND SECURITY

Sampling information described herein entails the initial and second surface sampling programs conducted by Argañaraz & Associates, and also to the subsequent exploration drilling and testing program conducted by Alpha Lithium.

The brine samples were collected and transferred into either 1-liter or 250-milliliter plastic bottles, which were labeled and documented with sample information. After being sealed on site, samples were stored in a cool location, then shipped in sealed containers to the laboratories for analysis; no further preparation was conducted prior to shipment. Chain of custody sheets and field traffic reports were used to document the samples prior to transportation to the assay laboratory by the project geologists.

Sampling methodology was dependent on the type of exploration program and are listed here:

- Shallow surface sample collection in years 2012, 2014, and 2015: Samples were obtained manually from shallow hand-dug pits, trenches, and from shallow boreholes using plastic bottles and bailers.

- Brine samples collected during exploration well pumping tests in years 2018 and 2020 – 2023: Samples were collected at approximately 12-hour intervals during continuous pumping and at the end of the pumping period, collected directly from the discharge line.
- Depth specific brine sampling in years 2018 and 2020 – 2023: Collected via bailer.
- During the 2018 exploration drilling and testing program, depth specific sampling was carried out at well DDHB-01, via several methods including pumping from the bottom of the well and sampling with a bailer at intervals of 25 - 50 m. During the years 2020 - 2023 drilling and testing program, additional sampling using a bailer was attempted, but only shallow samples were collected.
- Depth specific brine sampling via Hydrasleeve from years 2020 - 2023: Samples were collected by Hydrasleeve model HS-2 of 600-mL capacity sampling bags that were lowered to a specific depth in selected wells, at 30 - 40 m intervals. At the desired sampling depth, the sample bag was allowed to wait 5 to 10 minutes prior to collecting the sample.

Brine samples from the years 2020 - 2023 pumping test program along with duplicate samples were sent to SGS Laboratory, Salta, Argentina. Brine samples from the 2018 drilling and testing program were sent to Alex Stewart Laboratory ("ASA") in San Salvador de Jujuy, Argentina, which is an ISO-certified lab and independent of the Issuer. An additional analysis of one duplicate sample collected from DDHB-01 was performed by Universidad de Antofagasta laboratory in Chile. While it is an unaccredited laboratory, it is used by many groups including SQM for the Salar de Atacama project, and is considered a reliable laboratory for lithium.

Analytical quality was monitored through the use of quality control samples, including blanks and duplicates, as well as check assays at independent laboratories. Each batch of samples submitted to the laboratory contained at least one blank, and one duplicate. All samples were labeled with permanent marker, sealed with tape and stored at a secure site, both in the field, and in Salta, Argentina. All field samples obtained during drilling and testing are currently being stored in the Argañaraz & Associates offices in Salta pending future submittal to a laboratory.

In the opinion of the QP, sample preparation, security, and analytical procedures were adequate for use in the updated Resource Estimate.

1.11 DATA VERIFICATION

Dr. Mark King, the QP for the updated Resource Estimate conducted the following forms of data verification:

- Visited the Tolillar Project site and the Alpha office in Salta in March 2023;
- Obtained independent duplicate samples from WBALT-12 and WBALT-15, on March 24, 2023;
- Reviewed drill cuttings and descriptions from the previous drilling programs and from the ongoing program;
- Checked summary tables against original laboratory reports; and
- Checked receipt of regular field reports that document exploration progress.

It is the opinion of the current QP (Dr. Mark King) that the reported results for the previous and recent exploration programs are acceptable for use in the updated Resource Estimate.

1.12 MINERAL PROCESSING

Mineral Processing details are provided in the recent PEA (Ausenco, 2023).

1.13 MINERAL RESOURCE ESTIMATES

An updated Mineral Resource Estimate for the Tolillar Project is provided in Table 1-1. The Estimate was developed using a polygon domain methodology, incorporating recent drilling and sampling results. The methods were generally similar to the previous Resource (Montgomery, 2022) with the following exceptions:

- Eleven additional boreholes were available to inform the updated Resource Estimate, for a total of 21.
- Indicated and Inferred Resource category assignment is based on depth-specific drill data and not on lateral boundaries as previously used.
- The footprint of the updated Resource zone is approximately 11% larger. The total polygon (and Resource) area increased from 90.58 to 102.0 km^2.
- Lithology profiles for each hole were reconstructed for the updated Resource. Since drainable porosity was assigned based on lithology, this resulted in some change to drainable porosity values and distribution.
- Additional drainable porosity information sources were compiled for the updated Resource.

A total of 150 borehole brine samples were used in the Resource Estimate, including:

- One hundred and two (102) composite brine samples (including four duplicates) collected during pumping tests;
- Thirty-three (33) step test samples (including two duplicates); and
- Fifteen (15) depth-specific samples, collected with Hydrasleeve HS-2 disposable samplers.

Technical oversight of the Resource Estimate was provided by the QP, working with Alpha and GWI specialists. The QP considers the input data and the results to be valid and appropriate for an Indicated and Inferred Mineral Resource Estimate.

TABLE 1-1. UPDATED RESOURCE ESTIMATE.

	Updated Resource Estimate		Change from Previous Estimate	
Resource Category	Indicated	Inferred	Indicated	Inferred
Brine Volume (m^3)	2,940,766,000	1,453,640,300	+1,293,066,000	+313,117,300
Avg. Li (mg/L)	232	180	-10	-11
In-situ Li (tonnes)	681,000	262,000	+283,000	+44,000
LCE (tonnes)	3,626,000	1,393,000	+1,507,000	+235,000
Avg. porosity	0.124	0.149	+0.025	+0.039
Avg. K (mg/L)	2361	1919	+10	-281
In-situ K (tonnes)	6,942,000	2,790,000	+3,069,000	+280,000
KCl (tonnes)	13,237,000	5,320,000	+5,850,000	+534,000

LCE: Lithium Carbonate Equivalent, calculated as in-situ lithium multiplied by the equivalency factor (5.3228).
KCl: Potassium Chloride (potash) Equivalent, calculated as in-situ potassium multiplied by the equivalency factor (1.91).
Product and sums not exact, due to rounding.

1.14 ADJACENT PROPERTIES

Physically adjacent properties to the Tolillar Project are not associated with potential lithium production. However, there are several projects in the area that have reported subsurface brines with elevated concentrations of lithium located near Salar de Tolillar.

Overall, many projects occur in the vicinity of the Tolillar Project but are not hydraulically connected to the Salar de Tolillar. Therefore, even though these other projects are located nearby, they do not provide site-specific information that is relevant for the ongoing exploration in Salar de Tolillar. These projects are:

- Sal De Vida Project - Allkem
- Fénix Project - Livent
- Sal De Oro Project - Posco
- Hombre Muerto West - Galan Lithium
- Hombre Muerto - Alpha Lithium
- Hombre Muerto North - Lithium South
- Centenario-Ratones Project - Eramine
- Antofalla North Project - Argentina Lithium & Energy Corporation
- Antofalla Project - Albemarle

The current resources and information on the adjacent properties are reported on the corporate websites and SEDAR filings of the holding companies. These data have not been verified by the author and are not reported herein. The information presented may not necessarily be indicative of the geology or mineralization on the Tolillar Project that is the subject of this Technical Report.

Investors are cautioned that this information is taken from the publicly available sources, has not been independently verified by the Company and it is not known if it conforms to the standards of NI 43-101. Furthermore, proximity to a discovery, mine, or mineral resource, does not indicate that mineralization will occur at the Company's Project, and if mineralization does occur, that it will occur in sufficient quantity or grade that would result in an economic extraction scenario.

1.15 INTERPRETATIONS AND CONCLUSIONS

The Tolillar Project is at a mid to advanced stage of exploration. Laboratory results for composite brine samples obtained during the recent pumping tests at the exploration wells demonstrate that subsurface brine in the Salar is enriched with lithium. The elevated concentrations of lithium observed in the Tolillar Project area justify continued exploration activities and resource characterization.

The Mineral Resource Estimates were calculated in light of known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, and other relevant issues. At this time there is no indication that the mineral resources will be materially affected by these items.

The updated Mineral Resource Estimates conform with National Instrument 43-101 (NI 43-101) and the Canadian Institute of Mining, Metallurgy, and Petroleum Definition Standards for Resources and Reserves (CIM Standards).

The additional exploration work conducted since the previous Resource Estimate has further improved the understanding of the Salar de Tolillar basin. The Indicated and Inferred Resource estimates will change as more information becomes available. Additional recommended activities are intended to:

- further increase the Resource;
- upgrade the Resource (from Inferred to Indicated and from Indicated to Measured); and
- collect additional hydrogeology information (e.g., permeability, hydraulic boundary conditions, brine chemistry boundary conditions) that would contribute to estimation of Reserves.

The QP considers that additional exploration zones with potential to increase the Resource occur primarily at depth, either:

- within the deep salar in-fill materials in the central (deeper) zones of the salar, or
- within potentially permeable basement rock immediately underlying the in-fill materials.

The wells that have been drilled into basement to date provide some indication that this material may be permeable at some locations. Further, it is reasonable to expect that dense brine would invade any drainable porosity within these materials.

1.16 RECOMMENDATIONS

The following recommendations and budget (Table 1-2) pertain to the exploration component of the next stage of development for the Project. Additional recommendations for this next stage were provided in the recent PEA (Ausenco, 2023), and pertain to mining methods, metallurgical studies, infrastructure, environmental, permitting, social, and communities.

TABLE 1-2. EXPLORATION RECOMMENDATIONS FOR THE NEXT STAGE OF DEVELOPMENT AT THE TOLILLAR PROJECT.

Exploration Program Component	Cost Estimate (US$ M)
Roads and drilling platforms	0.17
Environmental studies	0.04
Drilling and testing	3.20
Field monitoring and supervision	0.45
Fresh water sustainability study (including drilling)	0.80
Development of a resource block model	0.08
Reporting	0.07
Subtotal	4.81
Contingency (5%)	0.24
TOTAL	**5.05**

Based on the initial results of exploration to date, additional exploration activities are justified to better characterize the subsurface brine in the Project. Additional drilling and testing may allow for some expansion of the Resource laterally throughout the entire concession area, and deeper into bedrock. Eight additional diamond drill coreholes (drilled to a maximum of about 400 mbgs) are recommended. The coreholes will include depth-specific brine sampling using an inflatable packer, and laboratory analysis of core for drainable porosity values. If the results of the proposed exploration program continue to be favorable and support feasibility of a lithium extraction Project, additional studies should include the following:

- Fresh water study to identify a long-term supply for the Tolillar Project.
- Development of a hydrogeological flow model to allow estimation of an initial reserve.

2.0 INTRODUCTION

2.1 TERMS OF REFERENCE

Alpha Lithium Corporation ("Alpha Lithium") retained Groundwater Insight, Inc. ("GWI") to prepare this independent technical report ("Technical Report"). It was prepared in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101, Form 43-101F1, and NI 43-101CP), under the supervision of Dr. Mark King, Ph.D., P.Geo., F.G.C., a Qualified Person ("QP") who is independent of Alpha Lithium, as such terms are defined by NI 43-101. Dr. King is President of GWI. In preparing this Technical Report, Dr. King worked closely with Alpha Lithium and their consultants, which included specialists that are experts in the geology of the Andes and of salars.

This document is an Updated Resource Estimate Technical Report for the Alpha Lithium Tolillar Project ("Tolillar Project" or "Project"). Three previous Technical Reports have been issued for the Tolillar Project (Ausenco, 2023; Montgomery, 2022; and Montgomery, 2019), and large sections of the previous reports are included herein. The potential mineral deposits discussed in this report are related to lithium in brine contained within salar deposits.

All figures in this Technical Report were prepared for this report, or brought forward from the three previous Tolillar Project reports noted in the paragraph above.

2.2 SOURCES OF INFORMATION

A substantial exploration record was compiled at the Tolillar Project before the start of Dr. King's involvement, in March 2023. Dr. King conducted a detailed review of previous data and reporting and considers it to be acceptable and appropriate for inclusion in the current Updated Resource Estimate.

Several Sections of this report are largely reproduced from the recent PEA (Ausenco, 2023), including Sections 4, 5, 6, 7, 8, 9, 10, 11, 12, 23 and 26. Updates have been inserted where appropriate. Dr. King has overall responsibility for all sections of the current report, excluding the Title Opinion content in Section 4, consistent with the allowable exclusions of NI 43-101.

2.3 OVERVIEW OF BRINE EVALUATION FRAMEWORK

NI 43-101 applies to all disclosures of technical information for mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada. NI 43-101 defines the term "mineral project" as "any exploration, development, or production activity in respect of a natural solid inorganic material, including industrial minerals."

The exploration activity on the Project is in respect to lithium, a natural solid inorganic material, which is an industrial mineral. The natural occurrence of lithium within a liquid, i.e., brine, does not preclude the application of the NI 43-101 reporting framework, although certain evaluation approaches are required that will be different to those used for solid phase mineralization.

NI 43-101 provides a rigorous reporting framework for mineral projects hosted in brine while also providing the necessary flexibility to accommodate the characteristics and analytical parameters specific to brine. Furthermore, reporting on mineral projects hosted in a brine pursuant to NI 43-101 provides the necessary level of protection expected by investors.

The approach used by GWI to evaluate lithium brine projects is based on the framework in the Canadian Institute of Mining Metallurgy and Petroleum ("CIM") Standards (CIM, 2014), with some enhancements to accommodate the special considerations for brine (for example, Hains, 2012). The CIM Standards define a Mineral Resource as: "a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade, or quality and quantity that there are reasonable prospects for eventual economic extraction."

A Mineral Reserve is defined as: "the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted. Reserves are defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified."

The evaluation framework used for this Project is shown in Figure 2-1. The figure identifies the primary enhancements to conventional, solid phase, mineral evaluation, namely:

1. characterization of host formation porosity (for Resources), and
2. characterization of host formation permeability and boundary conditions (for Reserves).

Certain components of this framework are enhancements of, or otherwise in addition to, those already contained in the CIM Standards (2014).

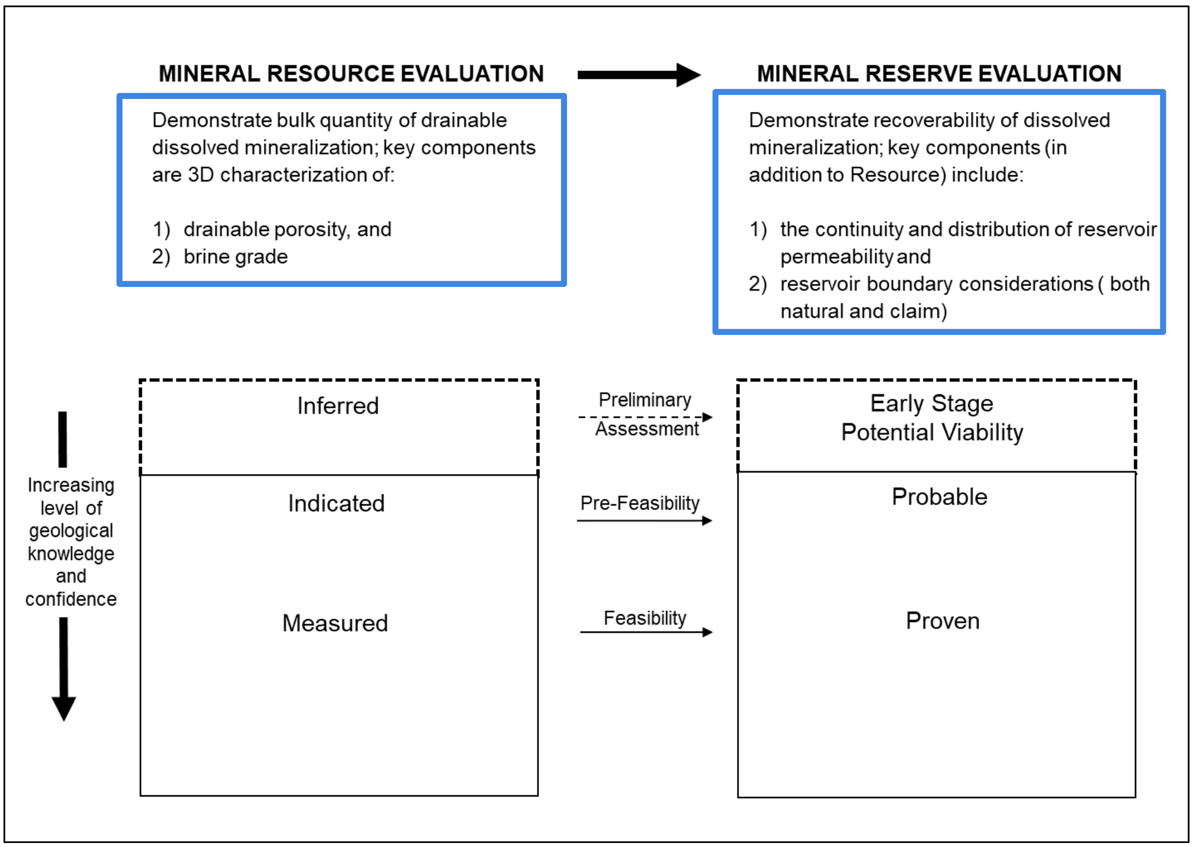

FIGURE 2-1. EVALUATION FRAMEWORK FOR LITHIUM BRINE PROSPECTS.

2.4 QP PROPERTY INSPECTION AND INTERACTION

Dr. King (QP) conducted the following verification activities at the Tolillar Project and Alpha Lithium office that are relevant to the current Technical Report:

- Visited the Project concessions on March 22-24, 2023.
- Met with the Alpha Lithium expert team, at the Alpha Lithium office in Salta on March 28, 2023.

2.5 STATEMENT OF INDEPENDENCE

Dr. King is independent of Alpha Lithium, as such terms are defined by NI 43-101. Neither Dr. King, nor GWI, have, or have had previously, any material interest in Alpha Lithium or mineral properties in which Alpha Lithium has any interest. The relationship of Dr. King (and GWI) with Alpha Lithium is solely one of professional association between client and independent consultant.

2.6 UNITS AND CURRENCY

Unless otherwise stated, all units used in this report are metric. The concentration of dissolved brine constituents, including lithium, is reported in mg/L, unless otherwise noted. All currency values in the report are expressed in US dollars ("US$").

2.7 USE OF REPORT

This Technical Report was prepared with data and information provided by Alpha Lithium and third parties, with evaluation and assessment by the QP, in accordance with National Instrument 43-101 and 43-101F1 pursuant to the agreed contractual terms of the present engagement. The QP represents that reasonable care was exercised in preparing this report, that the report complies with published industry standards, and that it is subject to the terms and conditions of engagement between GWI and Alpha Lithium.

This Technical Report is considered current as of August 8, 2023.

3.0 RELIANCE ON OTHER EXPERTS

Several Sections of this report are largely reproduced from the recent PEA (Ausenco, 2023), including Sections 4, 5, 6, 7, 8, 9, 10, 11, 12, 23 and 26. Updates have been inserted where appropriate. Dr. King has overall responsibility for all sections of the current report, excluding the Title Opinion content in Section 4, consistent with the allowable exclusions of NI 43-101.

For legal matters, the QP has relied upon, and, to the extent permitted under Item 3 of Form 43-101F1, disclaims responsibility for, the Title Opinion from Rafael A. Argañaraz Olivero of the law firm of Argañaraz & Associates. The ownership and claim Title Opinion (June 6, 2023) is summarized in Sections 4.2 and 4.3 of this Technical Report. The QP has not researched these Project title and mineral rights, and expresses no opinion as to the ownership status of the Project properties. In preparing this report, Dr. King worked closely with Alpha Lithium and their consultants, including salar specialists. Nevertheless, Dr. King retains overall responsibility for all sections of the Technical Report that are not related to legal matters.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 INTRODUCTION

The Tolillar Project is located in the Salar de Tolillar basin ("the Salar"), in the Salta Province, in northwest Argentina, about 170 km from Salta, and approximately 90 km south of the town of Estación Salar de Pocitos. Tolillar coordinates are shown in Table 4-1.

TABLE 4-1. SALAR DE TOLILLAR COORDINATES.

Description	Unit	Value
UTM Zone	-	19 J
UTM East Coordinate	m	689,020.95 m E
UTM North Coordinate	m	7,221,130.88 m S
Latitude		-25.089988
Longitude		-67.110797

The Tolillar Project is in the Argentinean Puna, at an elevation of approximately 3650 masl. Project location is shown on Figure 4-1. The Salar de Tolillar is located about 15 km to the northwest of the Salar del Hombre Muerto, where Livent's Fénix project is located. The Tolillar Project currently consists of 16 concessions totaling approximately 28,030 ha in the Province of Salta.

4.2 PROPERTY AND TITLE

The Republic of Argentina is a federal republic. The federal government coexists with the governments of twenty-three autonomous and pre-existing provinces and the city of Buenos Aires. According to Argentine Law, mineral resources belong to the provinces where the resource is located. Such province has the authority to grant exploration permits and exploitation concession rights to private applicant entities. However, the Federal Congress is entitled to enact the National Mining Code and any substantive mining legislation which is similarly applicable in all of the country. Provinces have the authority to regulate the procedure aspects of the National Mining Code and to organize each enforcement authority within its territory.

There are two types of mining rights that can be awarded to a private individual under the Argentinean National Mining Code, while there are different actions through which such rights are awarded by the proper provincial mining authority.

1. **The Exploration Permit:** The holder of this right can explore an area during the period granted. In case of discovering mineral evidence, the holder has an exclusive right to apply for an exploitation concession. The only way to acquire an exploration permit is through an application to the proper mining authority to explore an area which is free of other mining tenements.

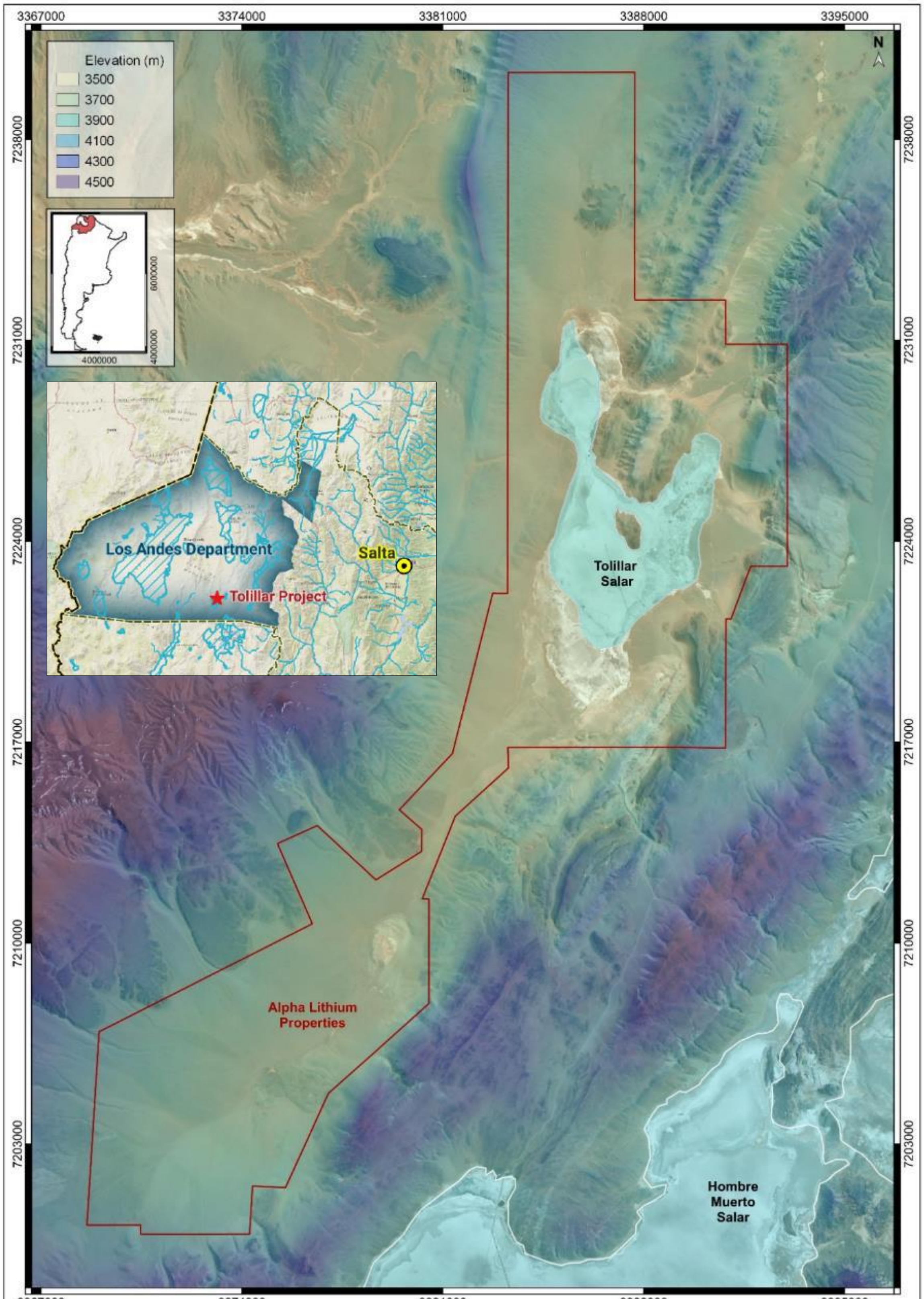

FIGURE 4-1. REGIONAL LOCATION MAP OF THE TOLILLAR PROJECT CONCESSION AREAS.

Source: Modified from Ausenco (2023)

2. **The Exploitation Concession:** It has no time limit, provided the holder complies with the requirements of law, which are basically, the annual payment of a canon, the compliance of the working and investment plan, and the measurement obligations of the exploitation concession. For mining activity in the area, the submission of an Environmental Impact Study ("EIS") that must be updated every two years is also required. There are different ways of acquiring an exploitation concession: (a) by discovering mineral as a consequence of an exploration process as described in action 1, above; (b) when mineral samples are discovered by "Chance," that is, without a previous exploration permit in a free of mining tenements area and (c) when an exploitation right has been declared and posted in the register as "vacant" due to a non-compliance with the requirements settled by law by the previous exploitation concession owner.

3. **The Vacant Mine:** When an exploitation concession is cancelled as a consequence of a previous holder non-compliance to the requirements briefly described in item 2 above, the mine is declared and registered as vacant. Once a mining property is registered as vacant, any third party may apply for its concession, provided that the mining authority has publicized the vacancy in accordance with the Mining Code requisites and the mandatory time-period has elapsed. Vacant mine appliers shall pay at the moment of request of the vacant mine any canon fees due when submitting its application form.

It should also be noted that the mining authority activity with jurisdiction over the grant of mining rights is limited to the confirmation of compliance by petitioner of the requirements set by the Argentinean mining law. Such mining authority has no discretion, and therefore, the obligation to grant a mining right to which application is consistent with those such legally set requirements.

Furthermore, any mining right petition – exploration permit, exploitation concession and/or vacant mine petition is transferrable to third parties without any need of previous discretionary approval and/or consent from the applicable mining authority, without prejudice of the registration formalities that need to be met.

In Salta the mining authority is the Mining Court and the mining environmental authority is the Mining Secretariat.

All the fresh water available in the Province of Salta belongs to the province and is governed by the Water Code of Salta. The application authority for the usage of fresh water is the Secretariat of Water Resources (*Secretaría de Recursos Hídricos*) of Salta.

4.3 PROJECT OWNERSHIP

The entity that owns the Project is Alpha Lithium Argentina S.A. ("ALA"), a company duly incorporated in Salta, Argentina, controlled by Alpha Lithium Corp. ("Alpha Lithium")(Canada).

The Tolillar Project currently consists of 16 Exploitation Concessions and Exploration Permits totaling 28,030 ha registered in the Province of Salta, and owned by ALA; some of these titles are still awaiting the granting sentence to be issued by the Mining Court of Salta. This area will be slightly less, (closer to 27,000) when the Mining Cadaster rules out overlapping areas between the exploration permits; the final value is not yet known. The Project is located in what is called The Lithium Triangle, formed by the provinces of Jujuy, Salta, and Catamarca. In the Argentina Puna, the demand for the mineral has led to the commencement of exploration activities in the Salar de Tolillar. The project concessions locations are shown on Figure 4-2.

The ownership, payment, and location information included in this report section has been verified in a Title Opinion prepared by Salta-based attorney Rafael Argañaraz Olivero and titled "Alpha Lithium Corporation ("the Corporation") – Argentina Projects", dated April 26 and June 6, 2023.

ALA has been incorporated, is organized, and is a valid and subsisting corporation under the laws of Argentina and has all requisite corporate power and capacity to carry on its business as now conducted and to own or lease and operate the property and assets thereof.

ALA (controlled by Alpha Lithium) is 99.98 % owner of the Tolillar Project.

In order to keep the titles in good standing the company needs to comply with the requirements of the Mining Code throughout the life of the concession, including, but not limited to, the fulfilment of certain investment obligations, the payment an annual fee to the province (canon), and the submission of the EIS every two years.

4.4 PROPERTY AGREEMENTS

The following parties have been involved in the most recent sale and purchase of the 16 concessions. Titles comprising the Project include the following agreements:

- Titles Nº 1 to 9 (as set out in Table 4-2):
  - a) ALA is the valid 100% legal recorded holder of these claims and interests pursuant to applicable laws in Argentina ("Applicable Law"). Some of these titles are still awaiting the granting sentence to be issued by the Mining Court of Salta as set out in Table 4-2.
  - b) On July 20, 2021 the deed perfecting the transfer of these titles to ALA was signed and submitted to the Mining Court.
  - c) Other than the filing of the EIS and the payment of the biannual patent fee to Province of Salta in respect of these claims, no filings, proceedings or other actions are required to be taken by ALA in order to maintain valid 100% legal recorded ownership of these claims and interests as set out in Table 4-2 pursuant to Applicable Law.
  - d) These titles are subject to a 2% NSR royalty in the aggregate to the vendors.
  - e) An additional submission was made at the court to reflect the NSR percentages and owners of it on the titles.
- Title Nº 10 (as set out in Table 4-2):
  - a) This is the file started by the Province of Salta through its mining and energy company, Recursos Energéticos y Mineros de Salta ("REMSa") in which the tender process for the REMSa area was conducted.
  - b) This area was awarded to Vendor A on May 30, 2018. This file reflects all the events of the tender process which concluded in the signing of an agreement with Vendor A on January 23, 2019, aiming at the acquisition and exploration of the area comprised in this file.
  - c) The rights to this area were included in the Bonvini Agreement.
  - d) Vendor A notified to REMSa on April 30, 2020, the transfer of its rights and interests under the agreement to Alpha Lithium
  - e) The agreement signed with REMSa establishes the following commitments to acquire the area.
  - f) A spending commitment of US$1.00 M to maintain its interests and rights in the REMSa Property to be completed within twelve months of obtaining the approval of its EIS. This approval was awarded on February 13, 2020.
  - g) A guarantee of 10% of the amount committed for spending.
  - h) An environmental insurance.
  - i) A total purchase price of US$ 210,000 to be paid as follows:
    - i. An initial payment of US$ 10,000 to REMSa on signing of the agreement (Art.5.1.1) (i)–- Paid);
    - ii. A payment of US$ 10,000 to REMSa upon approval of its EIS (Art. 5.1.1) (ii)–- Paid);
    - iii. A payment of US$ 40,000 to REMSa on the first anniversary of the signing date of the Final Agreement (Art. 5.1.2). The deadline to comply with this payment and the ones listed below was suspended on April 30, 2020 in mutual agreement between Vendor A and REMSa. Notwithstanding this suspension, an advance of US$ 10,000 of this payment was paid to REMSa.
    - iv. A payment of US$ 75,000 to REMSa on each of the second and third anniversaries of the signing date of the Final Agreement (Art. 5.1.3 and 5.1.4). The deadline to comply with this payment was suspended on April 30, 2020 in mutual agreement between Vendor A and REMSa.
  - j) On April 30, 2020, Vendor A and REMSa mutually agreed and signed a temporary suspension to these obligations due to lockdowns in place in the Province of Salta and until Titles Nº 11 to 14 are formally granted by the court. This suspension includes the obligations under (a), (d).iii and (d).iv. It could be argued

by REMSA that the suspension of (a) is no longer in effect since the beginning of the works in the Tolillar Project in November 2020.

k) In November 2021 REMSa was notified of the assignment of Alpha Lithium Corp. to Alpha Lithium Argentina of all its rights and obligations under the agreement.

l) On November 9, 2022, REMSa approved the investment obligations under the agreement on Resolution 34/22.

m) On November 10, 2022, ALA paid the outstanding balance of US$ 179,960 and the REMSa agreement was mutually terminated between REMSa and ALA, leaving ALA with no further obligations towards REMSa under the agreement.

- Titles Nº 11 to 14 as set out in Table 4-2:

  a) ALA is the valid 100% legal recorded holder of these claims and interests pursuant to applicable laws in Argentina ("Applicable Law"). These are still awaiting the granting sentence to be issued by the Mining Court of Salta.

  b) These were filed within the REMSa area, which contained vacant mines and free areas. The award of the area on title Nº 10 gave Vendor A priority right to claim those vacant mines and free areas. As a result, titles 11 to 14 were claimed and are currently in the process of being granted to him. The area occupied by former titles Nº 19,122 and 19,164 to which Vendor A had priority has been claimed under titles Nº 24,392 and 24,393.

  c) On July 20, 2021 the deed perfecting the transfer of these titles to Alpha Lithium Argentina was signed and submitted to the Mining Court.

  d) Other than the filing of the EIS and the payment of the biannual patent fee to Province of Salta in respect of these claims, no filings, proceedings, or other actions are required to be taken by Alpha Lithium Argentina in order to maintain valid 100% legal recorded ownership of these claims and interests as set out in Table 4 2 pursuant to Applicable Law.

  e) These titles are subject to a 2% NSR royalty in the aggregate to the vendors.

  f) An additional submission was made at the court to reflect the NSR percentages and owners of it on the titles.

- Titles Nº 15 to 16 as set out in Table 4-2:

  a) ALA filed at the Mining Court of Salta these claims for easements in the area of Salar de Tolillar.

  b) The court has not yet granted these to ALA.

4.5 MINERAL TENURE

Mineral concession or mineral tenure information was given by the Mining Court of Salta in order to keep the titles in good standing. Concession titles are shown in Table 4-2 and shown in Figure 4-2. Mining concessions do not have an expiration date as long as they comply with the provisions of the mining code. ALA has the right to undertake mineral exploration activities on the Mineral Titles.

Each of the mineral concessions comprising the Mineral Titles is in good standing under Applicable Law until the effective date of the present Technical Report. Among the main obligations to retain mineral tenures, but not the only ones established by the Mining Code, are:

- Pay the mining fee semi-annually from the moment it is due, 3 years after registration. All Alpha Lithium fees have been paid on time and in the proper form.

- Submission of the EIS (in Spanish, *Informe de Impacto Ambiental*) and its biannual renewal.

- Comply with the legal investments, articles 217 and 218 of the Mining Code. For all Tolillar Project properties, Alpha submits sworn statements declaring that the legal investments have been complied with.

TABLE 4-2. FILE INFORMATION FOR THE TOLILLAR PROJECT PROPERTY AREAS.

#	File #	Concession Name	Recorded Legal Holder	OC	OR	Status in Mining Court	Area (ha)
1	17,946	Horacio	ALA	No	Yes	Granted	2200.00
2	17,947	Horacio I	ALA	No	Yes	Granted	500.00
3	17,948	Horacio II	ALA	No	Yes	Granted	500.00
4	20,018	Tolillar Sur	ALA	Yes	Yes	Awaiting	1090.09
5	23,288	Tolillar Este 01	ALA	Yes	Yes	Granted	1757.82
6	23,289	Tolillar Sur 01	ALA	Yes	Yes	Awaiting	2784.57
7	23,290	Tolillar Sur 02	ALA	Yes	Yes	Awaiting	3458.61
8	23,291	Tolillar Sur 03	ALA	Yes	Yes	Awaiting	3319.43
9	23,601	Tolillar Norte 01	ALA	Yes	Yes	Awaiting	3500.00
10	22,764	REMSa XII	REMSa	Yes	Yes	Granted	-
11	23,862	REMSa Cateo (Oeste 01)	ALA	Yes	Yes	Awaiting	4916.61
12	23,863	REMSa Cateo (Este 01)	ALA	Yes	Yes	Awaiting	2995.68
13	24,392	Nueva Agua 40	ALA	Yes	Yes	Awaiting	231.37
14	24,393	Nueva Palo	ALA	Yes	Yes	Awaiting	776.09
15	779,376	Easement Camp*	ALA	Yes	Yes	Awaiting	0.88
16	779,377	Easement Ponds*	ALA	Yes	Yes	Awaiting	1.92
						TOTAL	**28,033.07**

OC: Original Claimant: “No” means the property was acquired from a third party
OR: Ownership recorded on title at the MC (either arising from a transfer of ownership or from the initial claim)
ALA: Alpha Lithium Argentina S.A
*The court has not yet granted this title to ALA.

The provinces of Salta and Catamarca maintain a decades long dispute over some of their borders. It is a faculty of Argentina Congress to resolve this dispute. The Supreme Court of Argentina (“SCA”) set principles in some cases involving this dispute, in particular jurisdiction conflicts involving private mining companies. Under the SCA criteria, in the case of mining claims filled at both jurisdictions and overlapping in the dispute area, the first claim in time in the area of the overlap will have the priority and the courts of the jurisdiction under which it was filled will be the mining authority over that claim in charge of enforcing the Mining Code obligations to that claimant.

A small area to the south of the Tolillar Project falls within the area disputed between the provinces. And even though there may exist overlapping claims filed in Catamarca, Alpha Lithium’s claims were first filed in Salta. Thus, following the SCA jurisprudence, Alpha Lithium’s claims would prevail over those filed in Catamarca and the Mining Court of Salta should be the application authority for the claims of the Company.

4.6 SURFACE RIGHTS

Provinces in Argentina control property mineral resources, so they have authority to grant mining rights to private applicant entities and have the authority to implement the National Mining Code and to regulate its procedural aspects and to organize each enforcement authority within its territory. Two types of mineral tenure granted by provinces according to Argentina mining laws are 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.

Neither exploitation nor exploration can start without obtaining the EIS permit. 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.

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

4.7 WATER RIGHTS

For water rights, well FWWALT-02, located in the area of Tolar Grande in Los Andes region, was registered in the census for the Secretariat of Water Resources, a Public Services Regulator, which is the only water permit held by Alpha Lithium to date. This permit corresponds to a groundwater extraction right for industrial use only (see details in census), reaching approximately 11 to 25 L/s for daily use.

The permit is an Administrative Resolution, with a Concession Act number of 1565 granted in 2022. It is clarified that the declarant has an adjudicated permit for this type of use (Act 1565 of the year 2022), with a depth of 153 m (it does not indicate the uptake's name).

This permit would not be part of the mineral tenure rights.

4.8 ROYALTIES AND ENCUMBRANCES

Other than the following royalties, none of the mineral titles are subject to any mortgage, lien, charge, pledge, security interest, claim, demand, or other similar encumbrance:

1. Titles Nº 01 to 03, as set out in Table 4-2, are subject to:
    a) A royalty due to underlying vendors as defined in the Final Agreement equal to 1.78% of the net smelter return ("NSR") in respect of production from these properties. This royalty can be bought back for US$ 4.00 M payable to the vendors.
    b) A royalty due to (a) Vendor A and (b) Vendor B equal to 0.22% of the net smelter return in respect of production from these properties.
2. Titles Nº 04 to 14 (excluding N°10), as set out in Table 4-2, are subject to a royalty due to (a) Vendor A and (b) Vendor B equal to 2% of the NSR in respect of production from these properties.
3. The royalties described in 1(b) and in 2 can be bought back for US$ 1.00 M 12 months following completion of a feasibility study in respect of any or all of the Assets; or within five years from the date of the Final Agreement (December 2, 2018).
4. All titles set out in Table 4-2 are subject to a 3% NSR royalty payable to the Province of Salta.

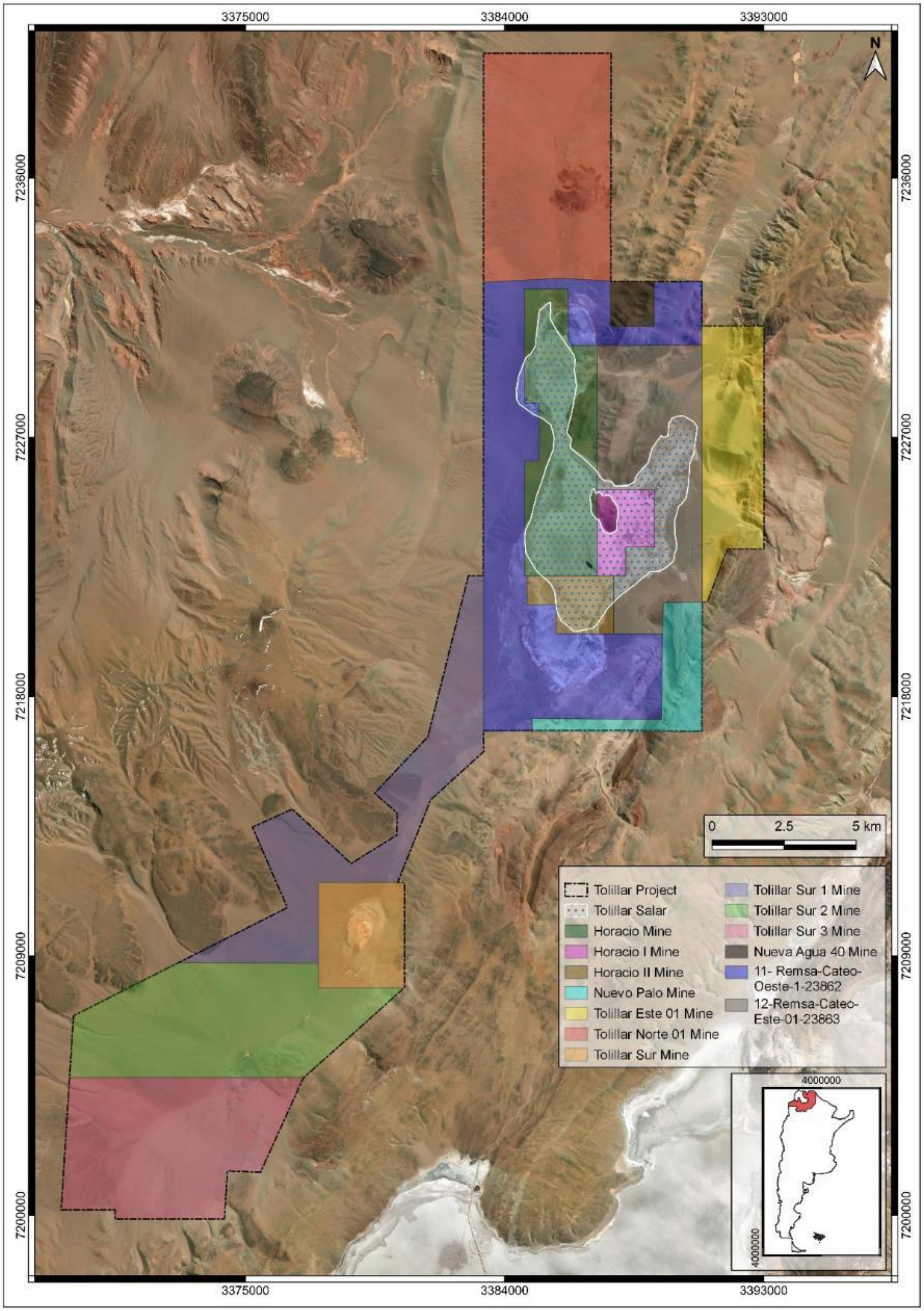

FIGURE 4-2. LOCATION MAP OF THE TOLILLAR PROJECT CONCESSION AREAS.

Source: Ausenco (2023)

4.9 ENVIRONMENTAL CONSIDERATIONS

In November 2021 an EIS was submitted to the provincial mining authorities for exploration activities at the Tolillar Project, including the social and community aspects, to provide general information on the area. As required by the authority, in February 2022, Alpha conducted the biannual renewal of the environmental and social impact study for the evaporation testing and advanced exploration stages.

The information available for the Project area indicates the potential presence of sensitive elements, such as protected fauna and fragile ecosystems, such as high Andean meadows, as well as Indigenous communities. These characteristics could result in environmental liabilities for the Project, which will be reviewed in detail in the subsequent EIS as required by the authority.

The Company obtained the Environmental Impact Permit (“DIA”) in December 2022 under Resolution № 207/22 of the Mining Secretary. Additional environmental detail is provided by Ausenco (2023).

4.10 PERMITTING CONSIDERATIONS

Concerning the permits that the Tolillar Project must have, these are classified as environmental permits and other authorizations required for operation. Information on the environmental permit can be found in the previous section and in the PEA (Ausenco, 2023).

The other authorizations are:

- Permit for the consumption of water for processing and human consumption.
- Registration in the Registry of Hazardous Waste Generators.
- Registration in the National Register of Chemical Precursors (RNPQ).

The Project is already registered in the Registry of Hazardous Waste Generators, valid until September of 2023. The Project still needs to request other permits. Please refer to Ausenco (2023) for further details.

4.11 SOCIAL LICENSE CONSIDERATIONS

Indigenous communities have been identified near the Tolillar Project. Details are provided in the PEA (Ausenco, 2023).

4.12 COMMENTS ON PROPERTY DESCRIPTION AND LOCATION

To the extent known, there are not any foreseeable risks or uncertainties regarding property ownership, surface/legal access, environmental issues, and social license.

5.0 ACESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 PHYSIOGRAPHY

The Tolillar Project is in a Puna ecoregion corresponding to a high elevation plateau within the Central Andes that covers parts of the Argentinean provinces of Jujuy, Salta, and Catamarca. It is characterized as a high Andean desert with elevations that range between 3600 masl in the depressions to about 6000 masl in the high mountains of the volcanic arc. The physiography of the region is characterized by extensive depressions and basins separated by mountain ranges, with marginal canyons cutting through the Western and Eastern Cordilleras and numerous volcanic centers, particularly in the Western Cordillera.

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, 1989) and potentially the ultimate source of anomalously high values of lithium in the region. Abundant dry salt lakes (salars) fill many basins in the region. In general terms, it is a zone with low humidity and limited soil development.

Locally, the Tolillar Project is in the Salar de Tolillar basin. The elevation at the surface of the Salar is approximately between 3600 and 3650 masl and in the concession areas of the Tolillar Project have elevation ranges between 3600 and 4000 masl. The Salar is located within a hydraulically closed, endorheic basin, with water courses mainly developed on the eastern edge of the Salar, and with basin elevations that reach approximately 5000 masl at the southwest of the Salar.

Surface water inflow to the Salar is marked by seasonal precipitation events, mainly in the period between October and March.

Due the extreme weather conditions in the region, the predominant vegetation is high altitude, xerophytic type plants, dominated by woody herbs, grasses, and cushion plants. Due to the high salinity on the salar surface, the core area of the Salar is devoid of vegetation. In the Project area, two phytogeographic provinces exist and have been described by Cabrera (1994): the Puneña Province and the Altoandina Province. The two are included in the more general Andean-Patagonian domain. The division into provinces within the Andean-Patagonian domain is based on the differences of some genera and species:

- Puneña Province: With a predominance of bushes of the Fabiana genera: *Parastrephia, Acantholippia, Senecio, Nardophyllum, Baccharis, Junellia*, and others. The Puneña Province occupies the largest area in the study area, between 3400 and 4400 masl although in vast sectors of the area it rises only up to about 3900 masl. Above this altitude is a gradual transition and the coexistence of floristic elements of this Province and the Altoandina Province. The dominant vegetation is *Estepa Arbustiva*. Towards the north and the east, the greater humidity favors an increase in diversity. Towards the south and the west, the aridity increases, and is the reason why the plant communities are less abundant and why sometimes the vegetation disappears completely.
- Altoandina Province: With predominance of xerophilous grasses of the genera: *Festuca, Deyeuxia, Stipa, Poa,* and others. The Altoandina Province typically includes the higher altitude areas, above 4400 masl, although in the study area it is also presented at lower altitudes (4000 masl) in transition with the Puneña Province. The dominant vegetation is *Steppe Herbaceous* or Graminosa type. All the plants have adapted to living in extreme cold and windy conditions. Although this Province has three Districts, in the Project area only the Altoandina Quichua District is represented, up to 5600 masl.

5.2 ACCESSIBILITY

The Salar de Tolillar is in the department of Los Andes, Province of Salta, approximately 370 km from the city of Salta. It is accessed by National Route (“RN”) 51 which, from Salta Capital, heads west until it reaches the town of San Antonio de Los Cobres, after traveling about 160 km. From here it continues for about 60 km to Puesto Cauchari, where Provincial Route (“RP”) 27 begins and heads south, until it reaches the town of Salar de Pocitos, after traveling about 50 km. From this last place, it continues along RP-17, heading south. The first of the accesses is located at about 60 km following this route and 20 km of internal road to reach the Project site (North access road). An alternative access is about 80 km along RP-17 plus 10 km of internal road (East access road). Figure 5-1 shows the layout of the accesses to the Tolillar Project.

5.3 CLIMATE

The climate of the Tolillar Project area corresponds to a typical climate of the “Puna Argentina”, which is of an intense Andean continental type, reaching desert climate conditions. The area presents scarce rainfall, mostly originating from the Atlantic air masses coming from the east. The main rainy season is December through March. The period between April and November is typically dry, with an average annual rainfall of 160 mm/y.

The average annual temperature is 6.5° C with absolute maximum and minimum temperatures of 25.9° C and -19.1° C and relative humidity generally does not exceed 25%. During the winter months there are heavy snowfalls in the mountain systems. Little is known about solid precipitation (hail and snowfall), which undoubtedly must have a significant relevance in the hydrological cycle of the region. The existence of snowfalls from June to August and hail in April - May and September - October is common in almost the entire Puna Region.

Solar radiation is considered one of the factors with the greatest impact on daily and annual temperature trends in the Puna. Due to the very low relative humidity, it enhances the nocturnal radiation of the surface, resulting in a pronounced daily thermal amplitude. As a result, the air becomes highly evaporative, defining a desert climate.

The daily temperature range is recorded both in winter and summer, with values reaching up to 35° C difference between daily highs and lows. The intense sunlight leads to significant evaporation, further increasing the dryness of the soil, resulting in a shrubby xerophytic vegetation.

The prevailing winds are almost constant, predominantly blowing from the west, west-northwest, and west southeast. They are extremely dry, with temperatures ranging between 5° C and 20° C . The most common wind speeds range from 7 to 80 km/h (sometimes exceeding 100 km/h), and they typically occur between midday and early afternoon. Table 5-1 presents a summary of the climatological conditions of the Tolillar sector.

5.4 LOCAL RESOURCES AND INFRASTRUCTURE

The Project camp is located northeast of the Salar de Tolillar with the purpose of providing lodging for personnel and contractors carrying out exploration work. Currently, this camp has a capacity for up to 100 workers (Photo 5-1). Alpha Lithium plans to build a new camp for its operational phase. Additional detail is provided in the PEA (Ausenco, 2023).

5.4.1 ELECTRICAL POWER

A 600 MW, 375 kV power line between Salta and Mejillones in Chile passes about 150 km north of the Property. The line reportedly transmits 110 MW from Mejillones to the Argentinean Interconnected System. Also, two photovoltaic plants, La Puna Solar and Altiplano are located near the town of Olacapato (east of Pocitos), in the department of Los Andes. Since October 2021, both plants are connected to the Argentina Interconnected System.

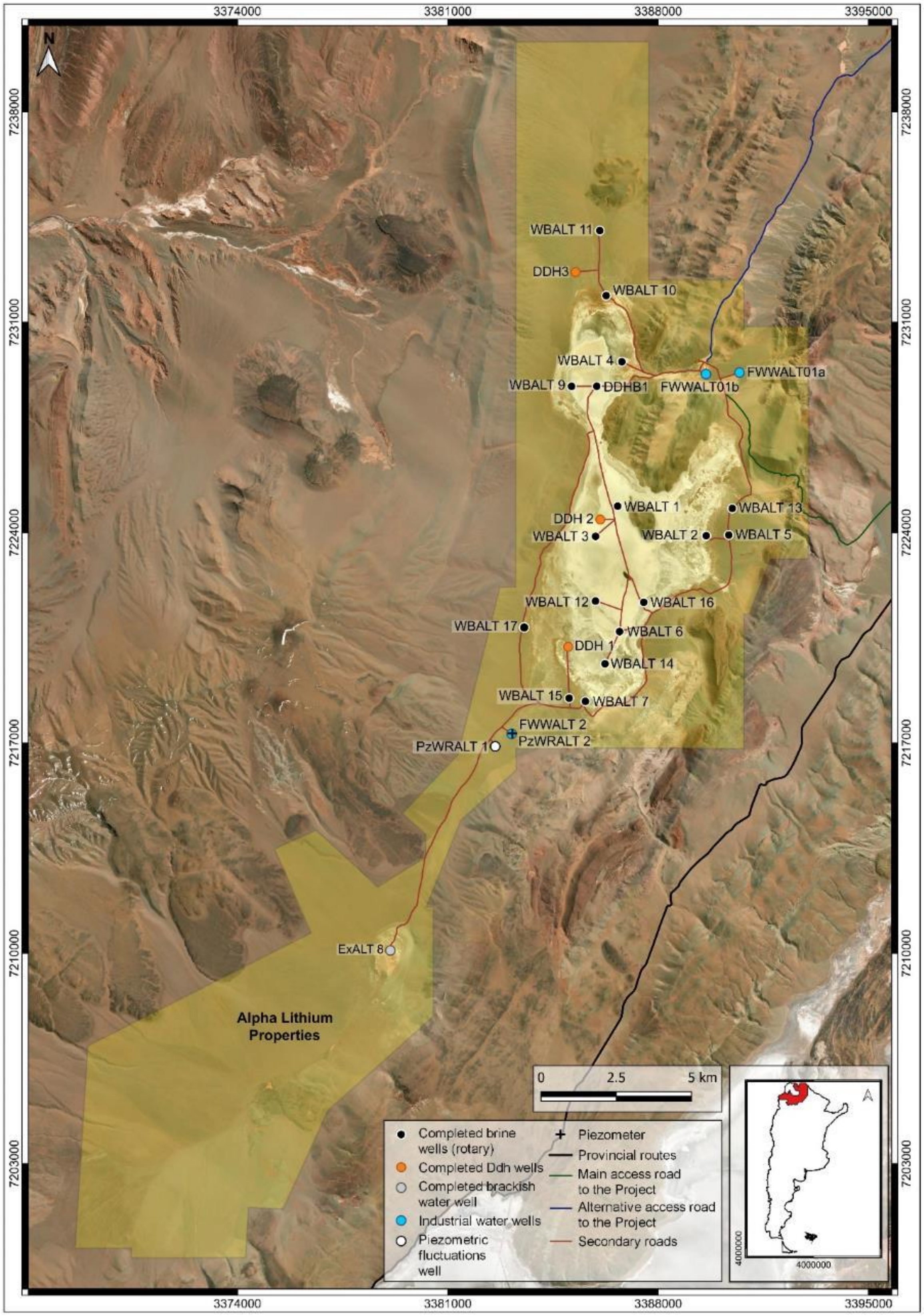

FIGURE 5-1. TOLILLAR PROJECT ACCESS ROUTES.

Source: Ausenco (2023)

TABLE 5-1. TOLILLAR PROJECT CLIMATOLOGICAL CONDITIONS.

Item	Environmental Conditions	Units	Value
Temperature	Wet bulb	°C	14.3
	Medium	°C	6.5
	Absolute maximum	°C	25.9
	Absolute minimum	°C	-19.1
	Average maximum	°C	18.9
	Average minimum	°C	-7.6
Humidity	Medium	%	25
	Maximum	%	96.5
	Minimum	%	0.5
	Average maximum	%	76.4
	Average minimum	%	2.2
Air Pressure	Ambient pressure for modelling	kPa	65.8
Wind	Predominant direction	NA	N 292.5°
	Medium velocity	km/h	12.24
	Maximum velocity	km/h	155.5
	Average maximum velocity	km/h	104.7
Solar radiation	Net annual average	W/m2	88.7
	Maximum annual net average	W/m2	823.2
	Annual absolute maximum	W/m2	1267.6
Storms	Isokeraunic level (according to Norm IRAM 2184-1- 1: 1997)	days	45
Rainfall	Average yearly	mm/a	160
	Nominal annual mean water evaporation rate	mm	2044
Snow	Design charge	kN/m2	0.9
	Total snow	mm/a	50
Freezing	Freeze level	m	1.1

5.4.2 NATURAL GAS PIPELINE

A natural gas line (*Gasoducto de la Puna*) passes along provincial highway RP-17 south of Salar de Pocitos. This pipeline is less than 10 km east of the Tolillar Project area.

5.4.3 RAILWAY ANTOFAGASTA-SALTA

The nearest rail line in the region is an existing narrow-gauge railway between Salta, Argentina and Antofagasta, Chile. Two companies maintain the rail line: the Chilean Ferrocarril Antofagasta – Bolivia (Chilean Luksic Group) and the Argentinean state owned Ferrocarril General Belgrano. Currently, the track from La Polvorilla to Salta is operated by the Tren de las Nubes and is not currently in use east of San Antonio de Los Cobres.

5.4.4 ROAD CONNECTIONS

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

PHOTO 5-1. TOLILLAR PROJECT CAMP FACILITIES.

Source: Ausenco (2023)

5.4.5 GENERAL SERVICES

Communities: The nearest community with services is the town of Antofagasta de la Sierra, located south of the Project along RP-17 and RP-43. The town of Pocitos is located north of the Tolillar Project on RP-17 at the north end of Salar de Pocitos about the same distance from site but with more limited services. The nearest town with full services, including fuel and medical services, is San Antonio de Los Cobres, located about a 3-hour drive from the site, and Salta, located about 6 hours from the site.

Water Supply: Fresh water occurs mostly as groundwater in the area. A preliminary freshwater exploration program has been started in the area near the Tolillar Project; fresh water has been identified in several wells, but a sustainable supply has yet to be identified.

Camp: There is currently an exploration camp with facilities on site to support the ongoing exploration activities.

Communications: Currently, only satellite phone and internet communication are available at the Tolillar Project location.

5.5 SEISMICITY

In accordance with the IMPRES-CIRSOC 103 Standard, which establishes the requirements of constructions that can be subjected to loads dynamics due to seismic actions, zoning the territory of the Republic Argentina in five zones depending on the danger generated by the events, the area under study would be in Zone II, classified as moderately dangerous seismic.

6.0 HISTORY

6.1 OVERVIEW

Several exploration activities have occurred on the Tolillar Project area since 2012. These included surface brine sampling campaigns in 2012 and 2015, carried out by Argañaraz & Associates. In addition, a VES survey was carried out by Tecnología y Recursos (2017). Drilling and testing, and confirmation sampling were conducted in 2018, by the QP responsible for the previous Resource Estimate (Montgomery, 2022). Although the previous QP and the current QP have examined the reported information from the historic exploration campaigns, they have not completed a full due dillegence review this information. Therefore, the reported results should not be relied on as verified.

6.2 PRIOR OWNERSHIP

A private Argentine entity purchased and then developed the initial concessions until 2018 when they were sold to a private Canadian company. That private Canadian company paid the final two remaining property payments to the underlying vendors and then sold the property to Voltaic Minerals in two transactions, the first occurring at the end of 2019 and the second, at the beginning of 2020. Voltaic Minerals subsequently changed its name to Alpha Lithium Corp. in 2020 and Alpha Lithium has remained the owner and developer of the assets ever since.

6.3 SURFACE BRINE SAMPLING - 2012

A surface water and brine sampling campaign was carried out in November, 2012 by Rafael Argañaraz (2013). A total of 12 brine samples were obtained and three solid samples were obtained and analyzed by Alex Stewart Laboratory (“ASA”). All brine samples were obtained by hand at depths less than one meter below ground surface (“mbgs”). Locations for the samples are given in Table 6-1 and shown on Figure 6-1. All samples were obtained within the current property boundaries.

TABLE 6-1. LOCATION OF TRENCH BRINE SAMPLES IN 2012.

Sample ID	Type	GPS 1 LAT	GPS 2 LONG	Y	X
NT 1	Brine	-25 02 12.2	-67 07 26.8	3,386,549.929	7,231,372.699
NT 2	Brine	-25 02 14.5	-67 07 43.1	3,386,093.519	7,231,298.116
NT 3	Brine	-25 02 39.8	-67 07 44.5	3,386,060.762	7,230,519.199
NT 4	Brine	-25 03 08.2	-67 08 01.7	3,385,585.881	7,229,641.177
NT 5	Brine	-25 03 40.6	-67 08 01.8	3,385,591.436	7,228,644.064
NT 6	Brine	-25 04 12.8	-67 07 59.2	3,385,672.621	7,227,653.739
ST 1	Brine	-25 08 06.8	-67 07 12.0	3,387,055.327	7,220,463.538
ST 2	Brine	-25 07 35.7	-67 07 22.4	3,386,756.011	7,221,418.206
ST 3	Soil	-25 07 05.2	-67 07 34.9	3,386,397.971	7,222,353.911
ST 4	Soil	-25 06 33.7	-67 07 43.5	3,386,148.907	7,223,321.297
ST 5	Brine	-25 06 01.8	-67 07 51.4	3,385,919.324	7,224,301.152
ST 6	Brine	-25 05 29.4	-67 07 54.6	3,385,821.297	7,225,297.495
ST 7	Brine	-25 04 56.5	-67 07 53.0	3,385,857.659	7,226,310.351
ST 8	Soil	-25 06 32.9	-67 06 56.4	3,387,468.459	7,223,356.887
ST 9	Brine	-25 06 59.2	-67 06 40.0	3,387,934.654	7,222,551.309

TABLE 6-2. LABORATORY ANALYTICAL RESULTS FOR 2012 BRINE SURFACE SAMPLES.

Liquid Samples	B (mg/L)	Ba (mg/L)	Ca (mg/L)	Fe (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Na (mg/L)	Sr (mg/L)
LC1	1	0.01	2	0.3	2	1	1	0.01	2	0.5
NT 1	<10	<0.10	1057	4.8	74	<10	65	0.91	2234	5.6
NT 2	<10	<0.10	3680	6.1	168	12	223	0.73	18,340	17.4
NT 3	54	<0.10	3152	4.1	828	63	562	0.70	79,702	77.8
NT 4	13	<0.10	2539	6.1	511	30	257	0.73	112,724	30.9
NT 5	<10	<0.10	1642	6.5	346	33	153	0.70	121,715	29.9
NT 6	67	<0.10	804	4.1	1317	101	915	<0.10	117,142	21.3
ST 1	127	<0.10	1012	4.9	1598	244	825	0.20	65,692	28.1
ST 2	24	<0.10	1161	8.1	788	76	436	0.89	118,546	19.6
ST 5	<10	<0.10	1552	5.2	190	<10	28	0.22	117,177	24.8
ST 6	21	<0.10	1886	4.8	231	21	65	0.31	112,902	17.9
ST 7	<10	<0.10	1738	<3.0	254	12	47	0.21	103,746	14.9
ST 9	128	<0.10	629	5.6	1949	161	1501	0.15	113,379	32.0
DUP NT 5	<10	<0.10	1638	6.8	318	34	158	0.72	121,759	29.8

[1]The limits of quantification (LC) correspond to those obtained from the validation of the method where no dilutions are carried out. The LC values reported other than the above are those obtained when dilutions are applied to the test sample.
Source: Laboratory reports from Alex Stewart Argentina, S.A.

Results of laboratory analyses are given in Table 6-2. With the exception of samples NT01 and NT02 in the far north part of the north sampling area (Figure 6-1), lithium concentrations ranged from 30 to 101 mg/L. Samples NT01 and NT02 appear to be diluted with fresh water. Regarding the south sampling area, with the exception of samples ST06 and ST07 in the south area (Figure 6-1), lithium concentrations reportedly ranged from 76 to 244 mg/L. Samples ST06 and ST07 appear to be diluted by fresh water that is coming into the basin from the north.

A duplicate brine sample was obtained at sample location NT05. Results of the duplicate sample are considered acceptable.

6.4 BRINE SAMPLING CAMPAIGN - 2014

Following the exploration program in December 2012, where lithium concentrations up to 311 mg/L were reported in surface brine samples, Trendix Mining (2016) advanced an exploration phase with the purpose of determining the contents of lithium, potassium, and magnesium in the subsurface brines. In mid-2014, several trenches were excavated with a backhoe to the maximum depth allowed by the backhoe. In trenches that showed water, field personnel collected a sample of brine and measured pH, temperature, and electrical conductivity. The sample was then placed in a 1-liter plastic bottle. In each trench, 4-inch PVC slotted tubing was installed and labeled to allow for future sampling. The site visit by the previous QP (Michael Rosko) in December, 2018 confirmed that at least some of these PVC tubes are still in place. Trench coordinates are given in Table 6-3. Figure 6-2 shows the trench locations and photos of the field operations are shown in Photos 6-1. Field parameters are given in Table 6-4. The brine samples were analyzed at ASA and results are summarized in Table 6-5. A typical lithologic profile of the trenches is shown in Table 6-6.

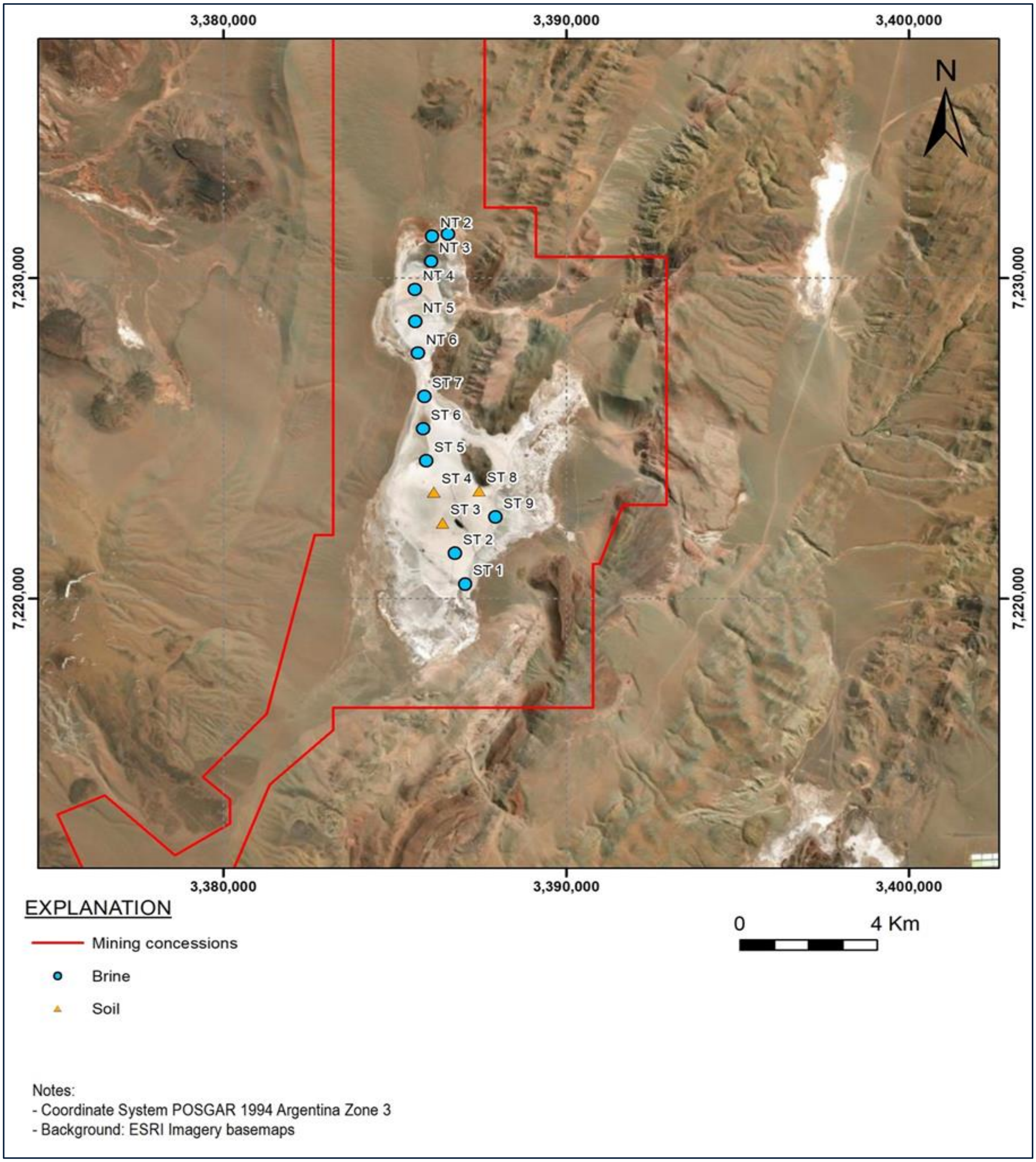

FIGURE 6-1. LOCATIONS FOR THE 2012 SAMPLING AT THE TOLILLAR PROJECT.

Source: Modified from Argañaraz (2013)

TABLE 6-3. SUMMARY OF TRENCH BRINE SAMPLES IN 2014.

Sampling Points	Geodetic Coordinates WGS 84		Gauss Krüger Coordinates WGS 84	
	S	W	X	Y
TR.1	25° 05‘ 22.8”	67° 07’ 31.1”	3,386,465	7,231,028
TR. 2	25° 03’ 45.2”	67° 08’ 0.8”	3,385,613	7,228,484
TR. 3	25° 04’ 35.0”	67° 07’ 53.8”	3,385,832	7,226,977
TR. 4	25° 04’ 52.2”	67° 07’ 50.1”	3,385,950	7,226,439
TR. 5	25° 05’ 26.9”	67° 07’ 43.5”	3,386,141	7,225,381
TR. 6	25° 05’ 20.9”	67° 07’ 18.7”	3,386,835	7,225,572
TR. 7	25° 06’ 36.5”	67° 07’ 48.5”	3,386,010	7,223,234
TR. 8	25° 06’ 29.7”	67° 07’ 52.5”	3,387,578	7,223,458
TR. 9	25° 07’ 46.4”	67° 07’ 05.3”	3,387,238	7,221,093
TR. 10	25° 08’ 09.0”	67° 07’ 44.4”	3,386,148	7,220,388
South River	25° 07’ 53.8”	67° 07’ 55.9”	3,385,822	7,220,853

Source: Trendix (2016)

PHOTOS 6-1. 2014 TRENCH (LEFT) AND PVC TUBE INSTALLED AFTER TRENCHING (RIGHT).

Source: Photos courtesy of Trendix (2016)

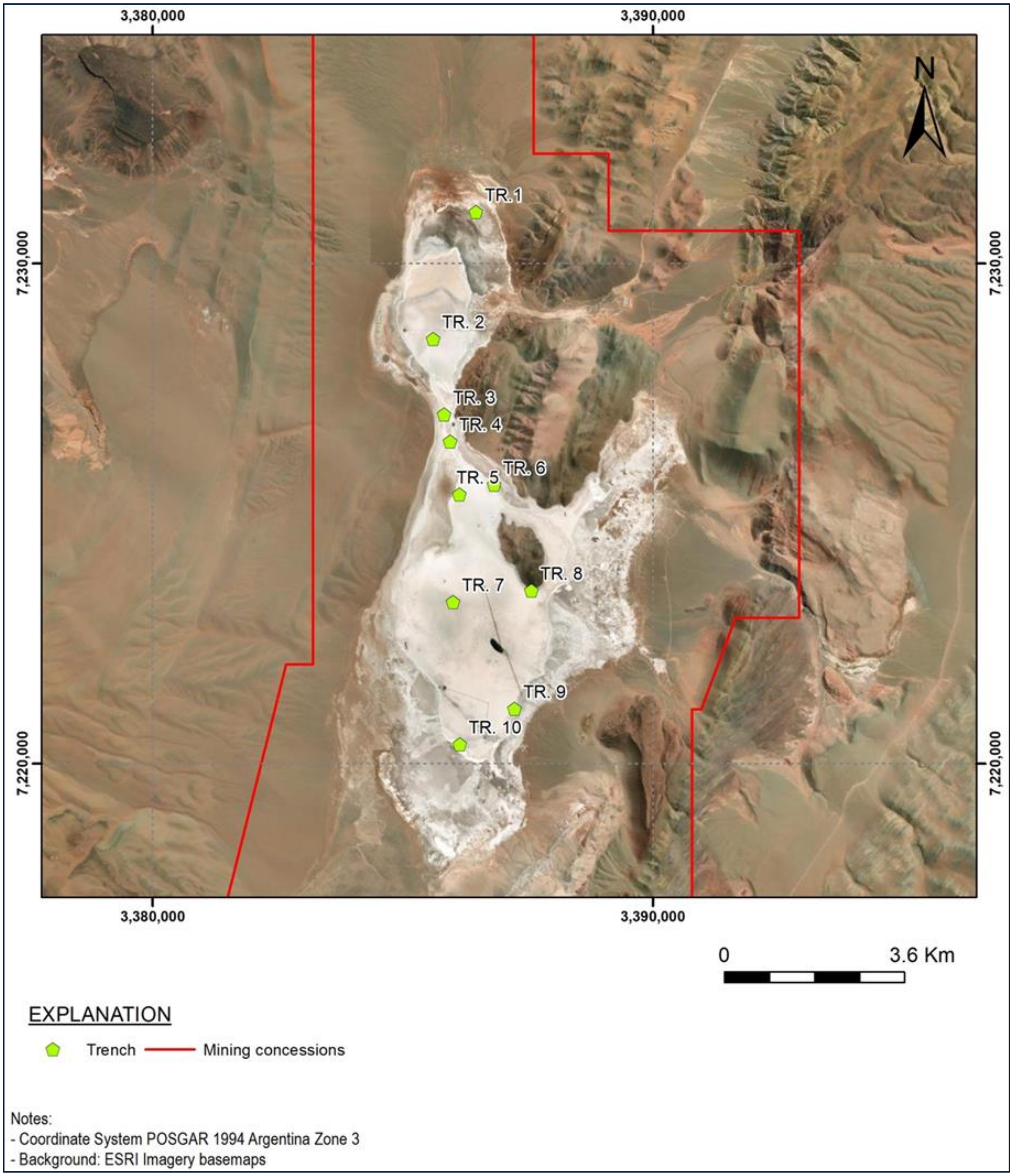

FIGURE 6-2. LOCATION MAP FOR 2014 TRENCH SAMPLES AT THE TOLILLAR PROJECT.

Source: Trendix (2016)

TABLE 6-4. SUMMARY OF 2014 TRENCH BRINE FIELD PARAMETERS.

Sampling Points	Final Depth Hole (mbgs)	pH	Conductivity (ms)	Temperature (°C)
TR. 1	4.50	6.53	20	10.4
TR. 2	2.00	6.30	20	0.2
TR. 3	4.90	6.16	20	7.7
TR. 4	1.50	6.19	20	6.1
TR. 5	1.00	6.58	20	11
TR. 6	3.00	6.80	20	4.9
TR. 7	1.10	dry	dry	dry
TR. 8	3.50	7.00	20	10
TR.9	4.20	7.04	20	8.7
TR. 10	4.00	7.02	20	9.0

Source: Trendix (2016)

TABLE 6-5. SUMMARY OF 2014 TRENCH BRINE CHEMISTRY RESULTS.

Sample	LAT	LONG	Lab	B (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Depth (m)	pH	Temp °C
TR.1	25°05'22.8''	67°07'31.1''	ASA	23	352	27	330	4.50	6.53	10.40
TR.2	25°03'45.2''	67°08'00.8''	ASA	<10	590	56	272	2.00	6.30	0.20
TR.3	25°04'35.0''	67°07'53.8''	ASA	38	934	58	635	4.50	6.16	7.70
TR.4	25°04'52.2''	67°07'50.1''	ASA	64	1513	90	1119	1.50	6.19	6.10
TR.5	25°05'26.9''	67°07'43.5''	ASA	<10	547	11	70	1.00	6.58	11.00
TR.6	25°05'20.9''	67°07'18.7''	ASA	57	1527	82	1076	3.00	6.80	4.90
TR.8	25°06'29.7''	67°06'52.5''	ASA	27	1017	57	532	3.50	7.00	10.00
TR.9	25°07'46.4''	67°07'05.3''	ASA	99	2312	208	1249	4.20	7.04	8.70
TR.10	25°08'09.0''	67°07'44.4''	ASA	73	1657	133	1029	4.00	7.02	9.00

Source: Modified from Trendix (2016)

TABLE 6-6. SUMMARY OF UPPER LITHOLOGY ENCOUNTERED DURING 2014 PROGRAM.

Depth Interval (mbgs)	Description
Land surface to 0.3	Semi-hard salt and sand crust
0.3 to 0.7	Mostly sand and silt
0.7 to total depth	Hard salt deposit

Source: Trendix (2016)

TABLE 6-7. SUMMARY OF 2015 SHALLOW BOREHOLE CHEMISTRY RESULTS.

Sample	LAT	LONG	B (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	DEPTH (m)
DDH 1-4	25°03'45.2"	67°08'00.8"	<10	696	60	277	4
DDH 1-8	25°03'45.2"	67°08'00.8"	<10	745	63	288	8
DDH 1-12	25°03'45.2"	67°08'00.8"	<10	763	62	284	12
DDH 2-4	25°05'26.9"	67°07'43.5"	94	2258	194	817	4
DDH 2-8	25°05'26.9"	67°07'43.5"	268	5089	504	1897	8

6.5 GEOCHEMICAL SAMPLING - 2015

Another exploration campaign was carried out in 2015 (Argañaraz, 2018a). Two shallow holes were drilled with rotary drilling. Locations for the boreholes are shown on Figure 6-3. Table 6-7 shows the location, sampling depth, and laboratory results of each sample collected from the boreholes. The brine samples were analyzed at ASA. Figure 6-3 and Table 6-7 supports the thought that slightly elevated concentrations of lithium are located in the surface brine.

6.6 VES GEOPHYSICAL SURVEY

A VES geophysical survey covering a substantial part of the Tolillar Project area was conducted in 2017 for former owner Argañaraz & Associates by Tecnología y Recursos (2017). Locations for the 26 survey points are shown on Figure 6-4. Goals of the survey were to obtain a preliminary understanding of the underlying stratigraphy, to identify potential geological structures, and to be able to identify future locations for exploration wells.

Based on the conceptualization of the salar system, it is assumed that the Salar is likely to be uniformly saturated with brine, with possible fresh or brackish water areas in the upper part of the system, and/or along the margins of the Salar. Based on the results of the survey, Tecnología y Recursos (2017) identified the following units:

- an upper conductive layer, believed to be a clastic unit likely interbedded with halite;
- a semi-resistive layer similar to the upper unit, but possibly more compact;
- a lower conductive layer above the basement is found throughout the Salar that was interpreted to be older Tertiary sediments with lower porosity; and
- a basal, low conductive unit interpreted as Ordovician basement.

The survey measurements also suggest that the basin is fault-bounded on the west side.

6.7 DRILLING AND TESTING PROGRAMS

The 2018 exploration drilling and testing program was conducted by former owner Argañaraz & Associates, and was designed to support eventual development of a Resource Estimate, and to demonstrate that brine could be pumped from the Salar to eventually support development of a lithium brine extraction project. Specifically, the short-term goal of the program was to determine the chemistry of the brine in the north part of the Tolillar Project. In addition, drilling of DDHB-01 well was also carried out to allow calibration of the existing geophysics and to help identify potential next exploration targets.

Drilling and construction of exploration well DDHB-01 was done by PerTerSer S.R.L during the period of April 22 to July 28, 2018 using conventional mud rotary drilling methods. Drilling, construction, and testing were monitored by consulting geologist Paola Luna of Aminco S.R.L. The location for the well DDHB-01 is shown on Figure 6-5.

Location information for the exploration well is given in Table 6-8. A photo of the drill cuttings is shown on Photo 6-2.

TABLE 6-8. LOCATION AND DEPTH FOR PUMPING DDHB-01.

Exploration Well Identifier	Total Depth Drilled (m)	Easting (m, UTM)	Northing (m, UTM)
DDHB-01	208.35	3,385,840	7,228,666

Easting and Northing from a hand-held portable GPS. Datum Gauss Krüger – Posgar

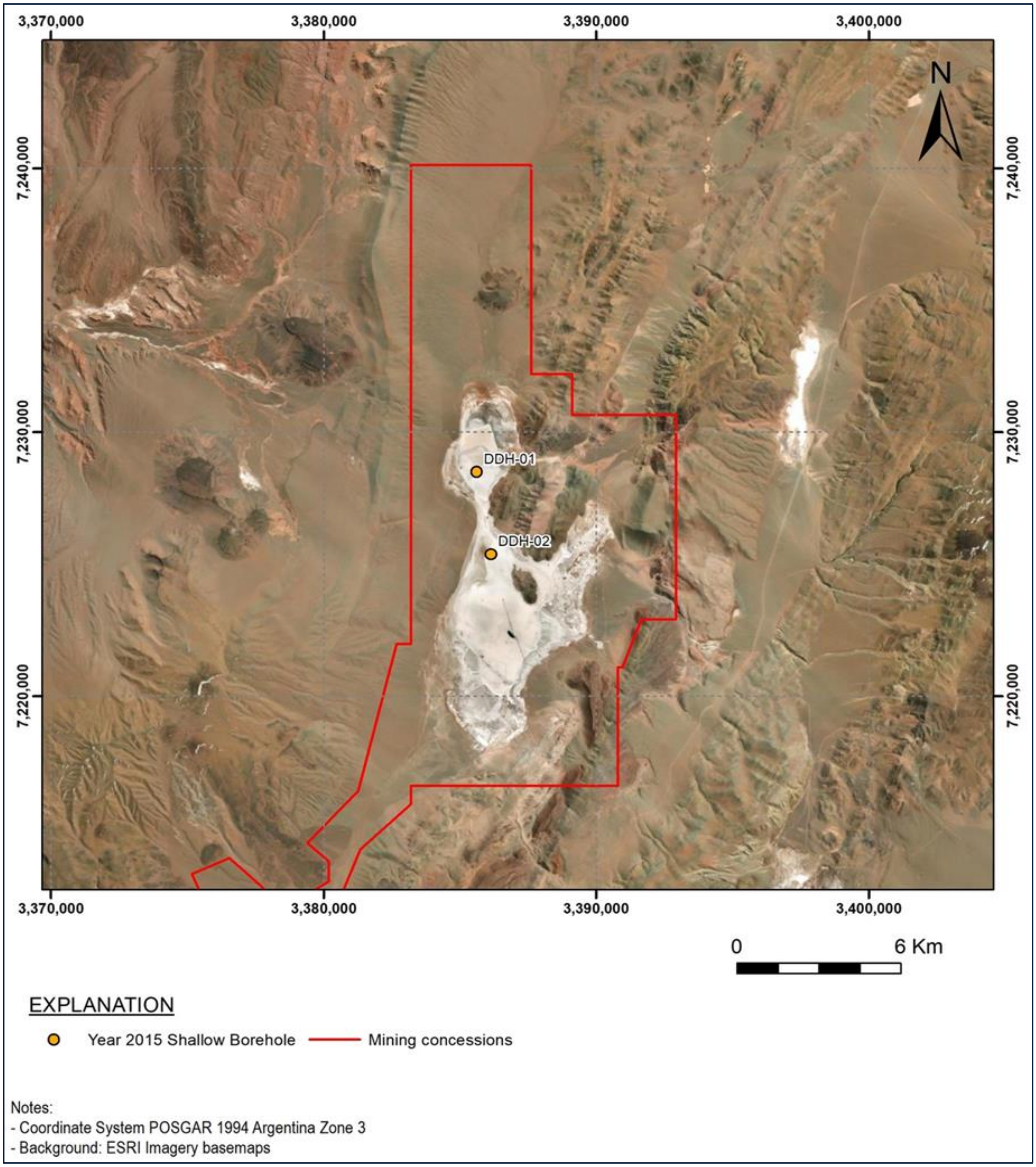

FIGURE 6-3. LOCATION MAP FOR YEAR 2015 SHALLOW BOREHOLE.

Source: Modified from Argañaraz (2018b)

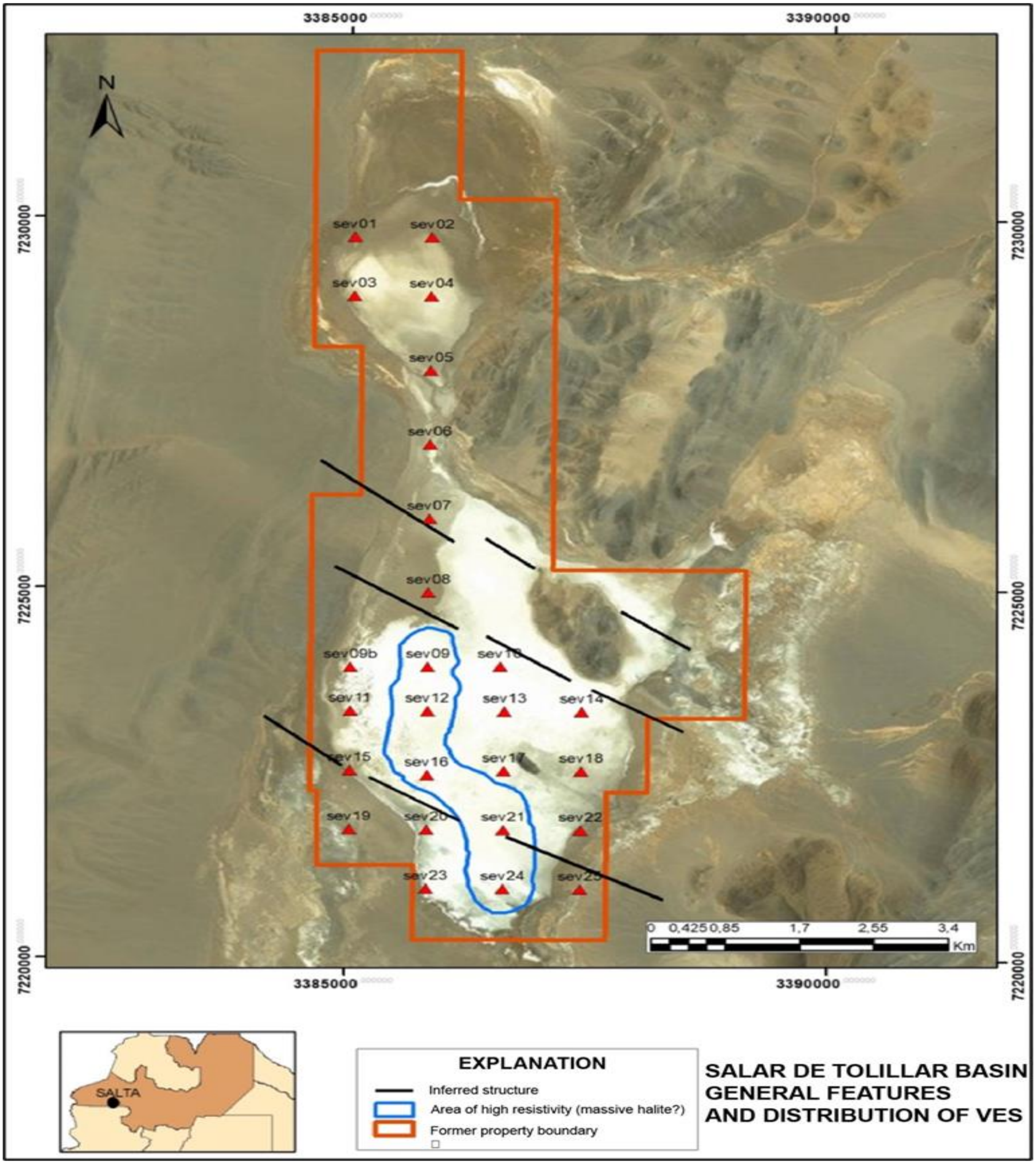

FIGURE 6-4. 2017 VES LOCATIONS FOR THE TOLILLAR PROJECT.

Source: Modified from Tecnología y Recursos (2017)

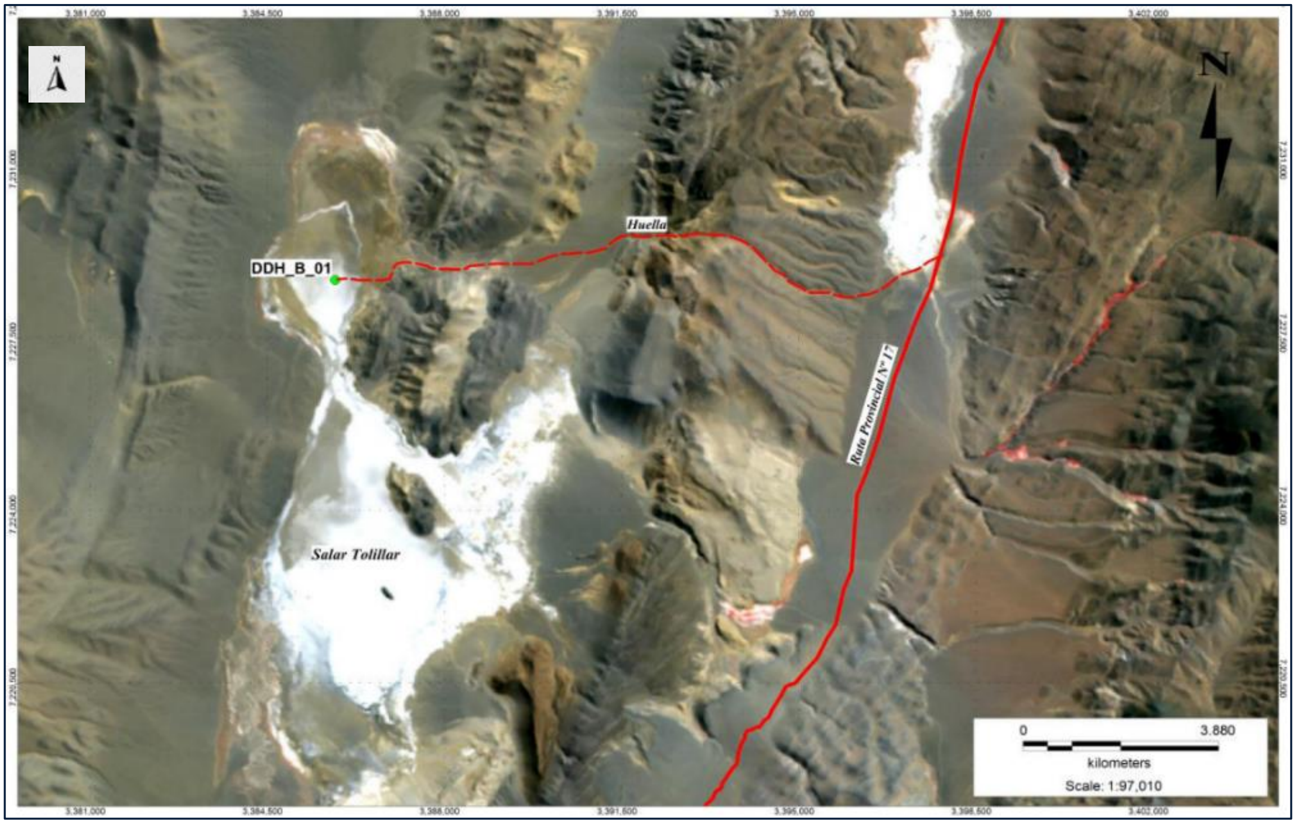

FIGURE 6-5. LOCATION MAP FOR WELL DDHB-01.

Source: Aminco (2018)

The following is a list of equipment and methods used during well construction.

- Drilled using conventional circulation mud rotary. Drilling fluid was polymer-based.
- Pilot borehole diameter was 8.5-inch from land surface to a depth of 208.35 m, and subsequently reamed to 12.25-inch diameter to a depth of 205 m.
- Unwashed and washed drill cuttings were collected every 2 m and described and stored in labelled plastic cutting boxes.
- A borehole geophysical survey was conducted.
- Once drilling was completed, 6-inch PVC casing and screen was installed from 0 to 198 m depth.
- After casing installation, gravel pack was installed in the annular space surrounding the well screen and the well was developed via injection of clean water, jetting, and pump development.

6.7.1 LITHOLOGICAL DESCRIPTIONS FOR SUBSURFACE SEDIMENTS

During drilling, cuttings samples were obtained at 2 m intervals, described on site, and placed in plastic cuttings boxes. Drill cuttings are currently stored at the Argañaraz & Associates office in Salta. Below is a brief summary of the major hydrogeological units (Argañaraz, 2018a) and Photo 6-2 shows the drilling cuttings from exploration well DDHB-01.

- 0-18 m Halite
- 18-50 m Mostly clay and silt with minor sand
- 50-58 m Silt and sand
- 58-96 m Fine gravel and sand, with some silt
- 96-200 m Coarse sand with lesser gravel and silt
- 200-208 m Sandy silt

PHOTO 6-2. DRILL CUTTINGS FROM EXPLORATION WELL DDHB-01.

Source: Aminco (2018)

6.7.2 GEOPHYSICAL LOGGING RESULTS FOR EXPLORATION WELL DDHB-01

Borehole logging was conducted at well DDHB-01 prior to installation of the casing, and included spontaneous potential, Single Point Resistivity, Short-Normal Resistivity, and Long-Normal Resistivity. Although the halite unit in the upper part of the borehole shows reasonably good correlation with the drill cuttings, the correlation with the lower units is not as obvious. In addition, a reduction in silt and clay in the lower part of the hole is generally observed in both the cuttings and in the geophysical survey.

6.7.3 AQUIFER TESTING AT EXPLORATION WELL DDHB-01

The pumping test at well DDHB-01 started on July 27, 2018 with an average flow rate of 2 L/s. Testing details are given in Table 6-9. Drawdown and recovery graphs for the pumped well, and nearby observation well DDHB-01, are shown on Figure 6-6. Results are tabulated in Table 6-9 and Table 6-10. 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. Density was measured with a hydrometer with a consistent density value of 1.2 grams per cubic centimeter. pH values ranged from 5.8 to 6.4; EC from 139.5 to 141.4 microseimens per centimeter. Temperature ranged from 16.7 to 17.1 ˚C. The pumping test stopped on July 27, 2018 after 18 hours of pumping and 24 hours of recovery measurements.

TABLE 6-9. PUMPING TEST RESULTS FOR WELL DDHB-01.

Well Identifier	Date Pumping Started	Pumping Duration (Hours)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 18 Hours of Pumping (m)	Specific Capacity (L/s/m)
DDHB-01	26-Jul-2018	18	0.66	2	4.1	0.49

L/s = liters per second
L/s/m = liters per second per meter of drawdown

TABLE 6-10. SUMMARY OF COMPUTED AQUIFER PARAMETERS FOR WELL DDHB-01.

Pumped Well Identifier	Average Pumping Rate (L/s)	**Cooper Jacob (1946) Drawdown method Transmissivity (m^2/d)**	**Theis (1935) Recovery Method Transmissivity (m^2/d)**
DDHB-01	2	100	60

L/s = liters per second
m^2/d = square meters per day

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 Cooper and Jacob (1946). 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. Because recovery water level measurements tend to be more reliable for analysis, the operative transmissivity for well DDHB-01 is judged to be about 60 m^2/d and is considered to be good for finer-grained salar sediments (Table 6-10).

6.7.4 BRINE SAMPLING AT EXPLORATION WELL DDHB-01

During drilling of DDHB-01, brine samples were obtained. On June 3, 2018, the well was pumped and a total of 13 brine samples were collected from various pump depth settings using a depth-specific bailer.

Table 6-11 is a summary of the samples obtained during the first round. On June 23, 2018, a second round of 10 brine samples were collected during the drilling process; samples are currently stored in the Argañaraz & Associates office in Salta.

Five brine samples were also collected during the period July 25-27, 2018, directly from the discharge pipe at regular intervals during the aquifer test at well DHHB-01. A summary of the brine samples obtained during testing is given in Table 6-13. Two of these samples were submitted to Alex Stewart Laboratory in November, 2018 for analyses. Results from the two samples are given in Table 6-14. Laboratory results for the pumped brine samples show effectively no difference in chemical composition after pumping for 17 hours.

A duplicate, depth-specific brine sample was obtained at a depth of 52 mbgs at well DDHB-01 by previous QP Michael Rosko on December 2, 2018 (Montgomery, 2022). The sample was analyzed by the University of Antofagasta laboratory in Chile. Summary of laboratory results are given in Table 6-16. Laboratory results for the sample are consistent with brine previously sampled at a depth of 50 m (Table 6-15 and Table 6-16).

Following testing, depth-specific samples were obtained at exploration well DDHB-01 (Saravia, 2018). A summary of laboratory results is given in Table 6-15. Table 6-12 is a summary of the samples obtained during the second round. Neither sets of these samples were submitted for laboratory analyses; samples are currently stored in the Argañaraz & Associates office in Salta.

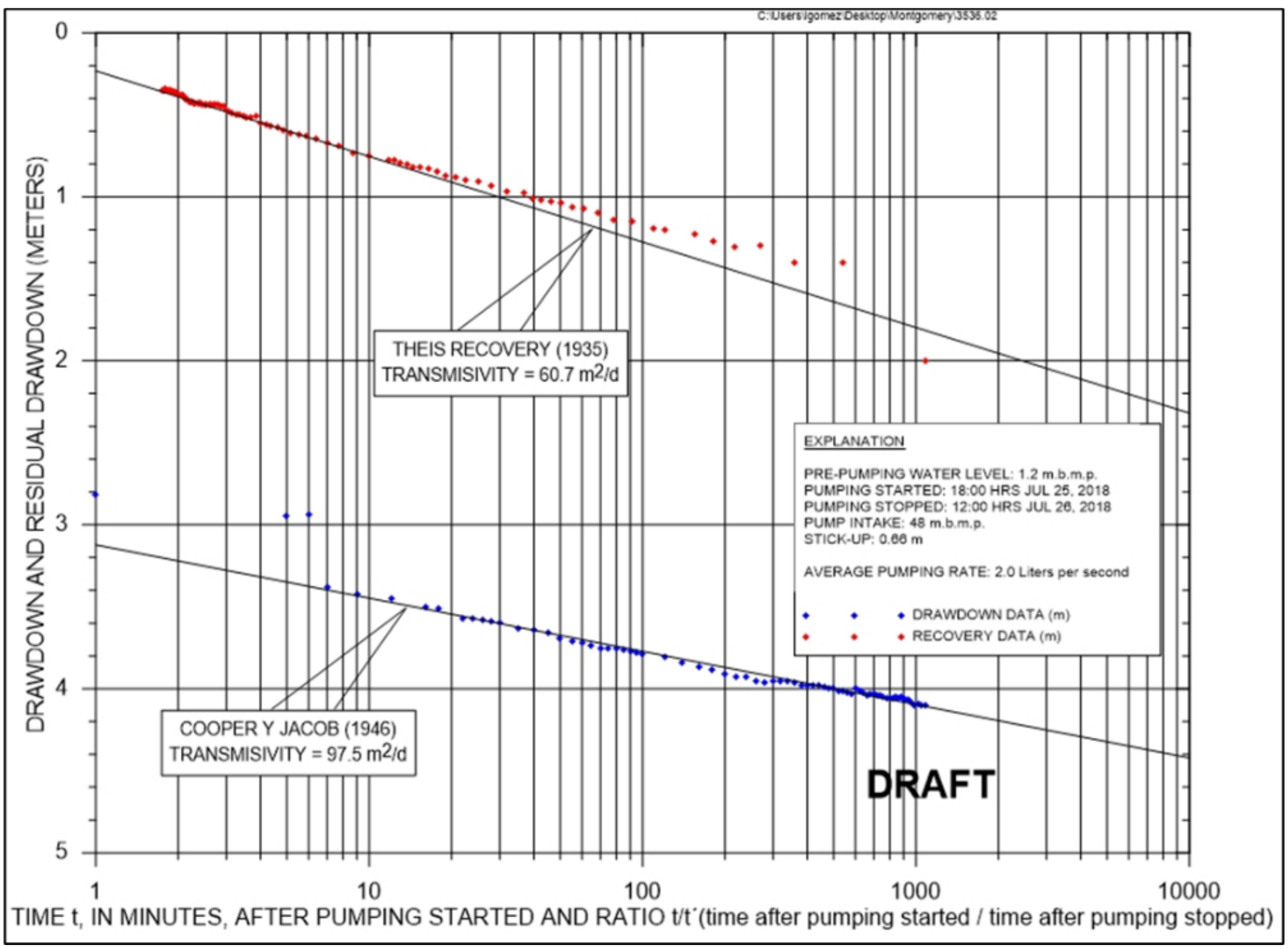

FIGURE 6-6. PUMPING TEST RESULTS FOR EXPLORATION WELL DDHB-01.

Source: Modified from Aminco (2018)

TABLE 6-11. SUMMARY OF DEPTH-SPECIFIC BRINE SAMPLES FROM WELL DDHB-01, JUNE 3, 2018.

Number of Samples	Conductivity (mS/cm)	Temp (°C)	**Density (g/cm^3)**	pH	Date	Hour	Observations	Pumping Rate (L/s)	Volume (L)
1	151.3	12.0	1.225	6.08	3/06/2018	0:49	30 minutes pumping	2.4	5
2	147.8	11.0	1.225	6.1	3/06/2018	1:53	10 minutes pumping	2.4	2
1	150.8	11.0	1.225	5.8	3/06/2018	2:20	10 minutes pumping	2.4	5
2	149.8	10.8	1.225	6.40	3/06/2018	2:35		2.4	2
2	147.3	11.3	1.225	6.35	3/06/2018	2:40	Fine, slightly cloudy sand	2.4	2
1	144.2	11.3	1.225	6.34	3/06/2018	3:10	Fine, slightly cloudy sand	2.4	5
2	142.2	11.5	1.225	6.34	3/06/2018		Fine, slightly cloudy sand	2.4	2
2	138.0	11.0	1.220	6.46	3/06/2018	4:10	Fine, slightly cloudy sand	2.4	2

Source: Aminco (2018)

TABLE 6-12. SUMMARY OF DEPTH-SPECIFIC BRINE SAMPLES FROM WELL DDHB-01, JUNE 23, 2018.

Number of Samples	Conductivity (mS/cm)	Temp (°C)	**Density (g/cm^3)**	pH	Observations	Volume (L)
1	146.9	10.9	1.225	6.59	Clean and crystal-clear water	1
1	147.1	10.1	1.200	6.60	Clean and crystal-clear water	1
1	139.8	9.8	1.200	6.60	Clean and crystal-clear water	1
1	140.1	9.5	1.200	6.53	Clean and crystal-clear water	1
1	136.8	9.5	1.200	6.56	Clean and crystal-clear water	1
1	133.1	7.5	1.200	6.48	Clean and crystal-clear water	1
1	129.1	8.3	1.200	6.51	Clean and crystal-clear water	1
1	126.1	8.5	1.200	6.47	Clean and crystal-clear water	1
1	121.0	8.9	1.200	6.48	Clean and crystal-clear water	20
1	118.0	8.7	1.200	6.48	Cloudy water made to check the effectiveness of sampling	1

Source: Aminco (2018)

TABLE 6-13. SUMMARY OF PUMPED BRINE SAMPLES FROM WELL DDHB-01.

Sampling Date	Parameter Measurement Date	CE (mS/cm)	T (°C)	pH	**Density (g/cm^3)**
25/07/2018	14/08/2018	139.5	17.1	6.40	1.2
25/07/2018	14/08/2018	140.0	16.7	6.37	1.2
25/07/2018	14/08/2018	140.0	1.6	5.84	1.2
25/07/2018	14/08/2018	140.3	17.1	6.33	1.2
25/07/2018	14/08/2018	141.4	16.9	6.38	1.2

Parameter measurement date of 14/08/2018.
Source: Aminco (2018)

TABLE 6-14. RESULTS OF LABORATORY ANALYSES FROM BRINE SAMPLES OBTAINED DURING THE 2018 PUMPING TEST.

Sample	Hours after pumping	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Observations
AK46	1	201	595	1493	119,600	2146	Alex Stewart Laboratory (ASA)
AK47	17	203	584	1504	120,038	2194	ASA

Source: Aminco (2018)

TABLE 6-15. RESULTS OF ANALYSES FROM AUGUST 2018 DEPTH-SPECIFIC SAMPLING.

Sample	Depth (m)	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Observations
PTO-075	75	175	684	1241	117,735	1741	Alex Stewart Laboratory (ASA)
PTO-50	50	122	826	1047	119,227	1412	ASA
PTO-100	100	196	615	1438	118,231	1895	ASA
PTO-150	150	193	615	1424	120,371	1764	ASA
PTO-190	190	204	597	1442	115,120	1846	ASA

Source: Aminco (2018)

TABLE 6-16. RESULTS OF ANALYSES FROM DECEMBER 2018 DEPTH-SPECIFIC SAMPLING.

Sample	Depth (m)	Li (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Observations
DDH-B-01-1	52	150	718	1145	121,500	1418	University of Antofagasta

Source: Aminco (2018)

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Salar de Tolillar is located in the Geological Province of La Puna (Turner, 1972) and within the Puna Austral Geological Sub-province (Alonso et al., 1984a, 1984b). One of the most important characteristics that define the Geological Province of Puna is the presence of evaporitic basins, or "salars", where important deposits of borates, sodium sulphate, and lithium can concentrate. Salars near the Tolillar Project area include: Hombre Muerto, Antofalla, Ratones, Pocitos, Centenario, and Diablillos. Figure 7-1 shows the geological map for the area and the associated stratigraphic explanations for the units.

The oldest rocks outcropping in the region correspond to the metamorphic rocks of the Pachamama Formation (Aramayo, 1986; Hongn & Seggiaro, 2001) of Neoproterozoic age. The Ordovician is represented by graywackes, marine clay sediments, and lava from the Tolillar Formation (Zappettini et al., 1994; Zimmermann et al., 1999) and Falda Cienaga (Aceñolaza et al., 1975, 1976).

Conglomerates and red sandstones of the Geste Formation (Turner, 1964) assigned to the Middle Eocene (Alonso & Gutiérrez, 1986) unconformably overlie older rocks. Overlying the Geste Formation are younger conglomerates, sandstones and red mudstones with gypsum, and eolianites of the Miocene Vizcachera Formation (Donato & Vergani, 1985; Hongn & Seggiaro, 2001). The Catal Formation overlies the Vizachera Formation (Alonso & Gutiérrez, 1986), age-dated between 15.0 ± 2.4 Ma to 7.2 ± 1.4 Ma (Alonso, 1991). The next youngest units in the area include sedimentary evaporites (borates and halite) of the Sijes Formation (Turner, 1964) which have been dated to be 5.86 ± 0.14 Ma (Watson, in Alonso et al., 1984a).

Volcanic units in the area include dacites and andesites of the Tebenquicho Formation, age dated to be 14 ± 5 to 11 ± l Ma (Gonzales, 1983). La Ratones Andesite (Gonzales, 1983) was dated as 7.1 ± 0.2 Ma (Vandervoort, 1993). Dacitic ignimbrites are widely distributed in the area with age dates of between 2.56 ± 0.14 Ma and 2.03 ± 0.07 Ma (Francis et al., 1983; Sparks et al., 1985). Quaternary deposits are represented by clastic, evaporitic sediments and the basaltic volcanics of the Incahuasi Formation (Aceñolaza et al., 1976) dated at 0.754 ± 0.02 Ma (Alonso et al., 1984b).

7.1.1 SOILS

According to the 1976 taxonomic classification of the *Organización de las Naciones Unidas para la Alimentación y la Agricultura (F.A.O.)*, the following soil types are found in the study area: Lithosols, Fluvisols, and Solonchaks. The Lithosols are associated with rocky outcrops, have poor soil development, and consist mostly of unweathered or partly weathered rock material. The Fluvisols occupy the low areas of the closed salar basins in the region, including Salar de Tolillar. Fluvisols tend to be moderately alkaline to neutral have a clear evidence of stratification, with weakly developed, but with a possible topsoil horizon. The Solonchak soils (Russian for "salt marsh") develop in the peripheries of the saline bodies and in alluvial fan material where it meets the Salar. They are immature, moderately alkaline soils, with the presence of white saline crusts at land surface.

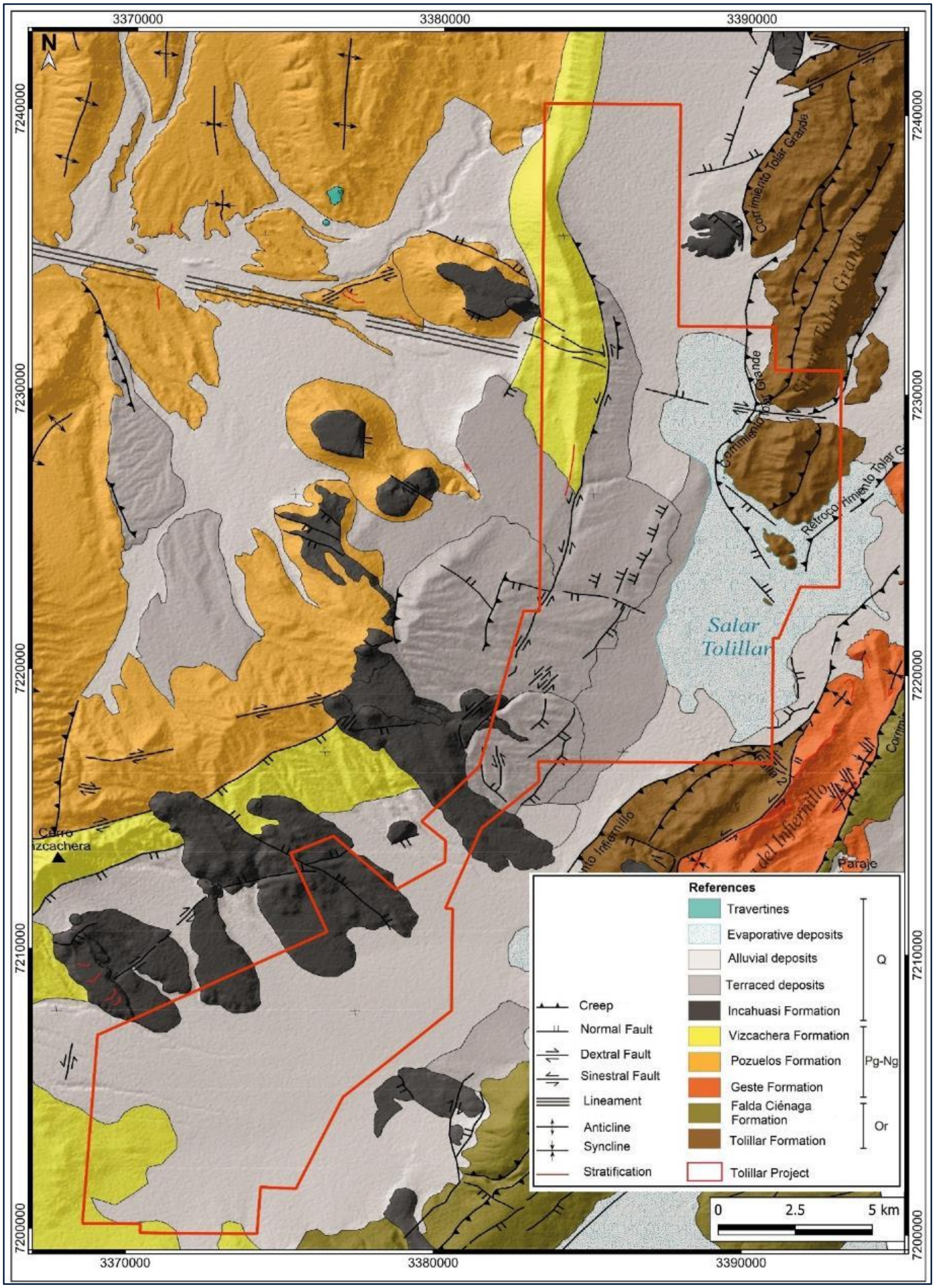

FIGURE 7-1. GEOLOGICAL MAP OF THE TOLILLAR PROJECT AREA.

Source: Segemar (2001)

7.2 LOCAL GEOLOGY

One of the most important characteristics that define the Geological Province of Puna, is the presence of evaporitic basins, where important deposits of borates, sodium sulphate, and lithium salts occur. The Salar de Tolillar occupies one of these endorheic (internally drained) basins. The oldest rocks in the area are the Tolillar Formation, which consists of graywackes and marine sediments assigned to the Tremadocian period (early Ordovician). They are mainly located North and South of the Salar. This formation is intruded by gabbro dikes that form part of the Ojo de Colorados Basic Complex, which are also assigned to the Tremadocian period.

Outcrops of the Falda Cienaga Formation (Middle Ordovician) formed by marine sediments occur east of the Salar area. The stratigraphic sequence continues with younger continental sediments of the Geste Formation (Eocene) which includes conglomerates, sandstones, and mudstones. The Pleistocene sediments consist of terrace deposits composed of conglomerates with intercalated sandstones, mudstones, and tuffs. The youngest formation consists of Holocene alluvial and colluvial deposits (gravels, sands, and clays) that occur on the margins of the Salar, and evaporite deposits which occur in the Salar proper.

The floor of the Salar consists of two distinct deposit types. The northern part, of the Salar consists of an earthier crust weakly cemented with salt. To the south, the salt crust varies in thickness from several centimeters to 20-30 centimeters. The thicker saline crust allows for better road access than the earthy crust that tends to be softer, especially after precipitation.

Inspection of a satellite image for the Salar de Tolillar shows a series of outcrops that range down from the north part of the Salar and into the center and center-south (Figure 4-2). The trend is NE-SW and is consistent with the structure of the mountains that bound the basin to the north (Figure 7-1). Recent drilling and geophysical surveys confirm this interpretation.

Using information from the surface geology, results from exploration drilling, and geophysical interpretations, hydrogeological sections have been prepared for the basin. Figure 7-2 shows a base map with the locations for the sections. A north-south section is shown on Figure 7-3, and a west-east section is shown on Figure 7-4.

Inspection of the sections shows that there are effectively four sub-basins in the Tolillar basin within the concessions. Figure 7-3 shows that there is a northeastern basin that is mostly separated from the south by shallow metamorphic rocks. This northeast sub-basin also contains abundant fresh water in the far north part of the sub-basin. The south sub-basin appears to become more clastic to the south, with abundant halite occurring in the north part of the sub-basin near WBALT-03 and WBALT-06 (Figure 7-3). Figure 7-4 shows the west and east sub-basins. The west sub-basin has abundant halite, where the east sub-basin is mostly void of halite, consisting mostly of basin-fill sediments.

7.3 MINERALIZATION

The mineralization for the Tolillar Project consists of a lithium-enriched brine that is contained within the pore spaces of the sedimentary strata in the salar basin in the upper several hundred meters of the basin, in the evaporite, alluvial, and colluvial sediments (Figure 7-1). The mineralization of the brine has occurred over a long period of time via evapo-concentration of the brine, which enriched the brine in lithium because lithium does not precipitate to a solid form in the brine. Except where there is a strong influx of freshwater to the salar basin, like in the north pert of the property, the entire aquifer system is a lithium-enriched brine with generally uniform chemistry. Approximate average lithium concentration in undiluted brine ranges from about 200 – 350 mg/L.

The boundaries of the mineralization are suspected to be the fault-controlled, hard rock basin boundary, although some lithium-enriched brine may be contained in the fractures and/or pores of the rocks that form the basin boundary. Detailed distribution and chemical composition of the brine in the salar sediments is not currently known, although an area of non-mineralized freshwater occurs in the northern concessions in the uppermost part of the sedimentary sequence; thickness of this unmineralized fresh water is not known.

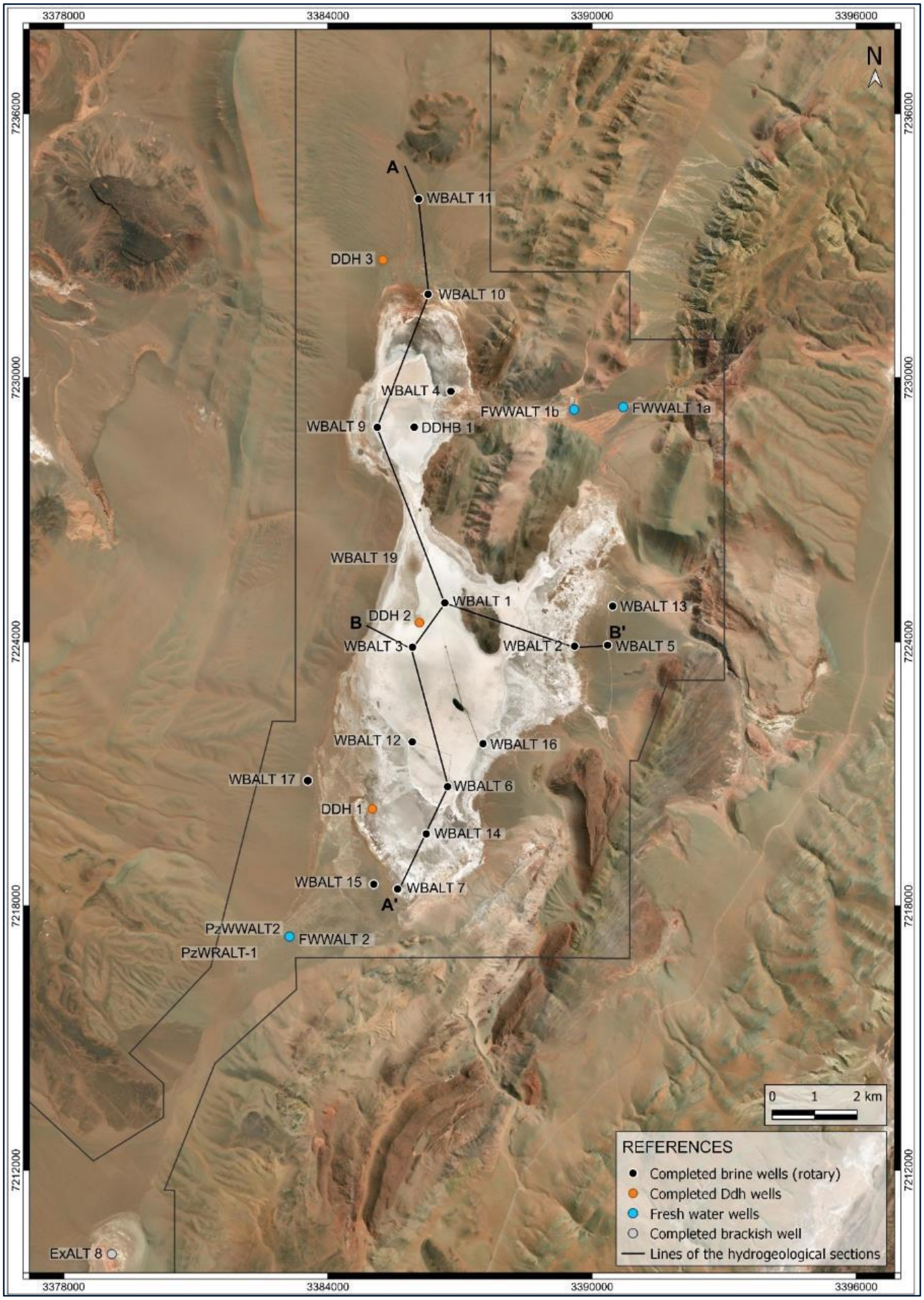

FIGURE 7-2. MAP SHOWING LOCATIONS FOR HYDROGEOLOGICAL SECTIONS.

Source: Montgomery (2022)

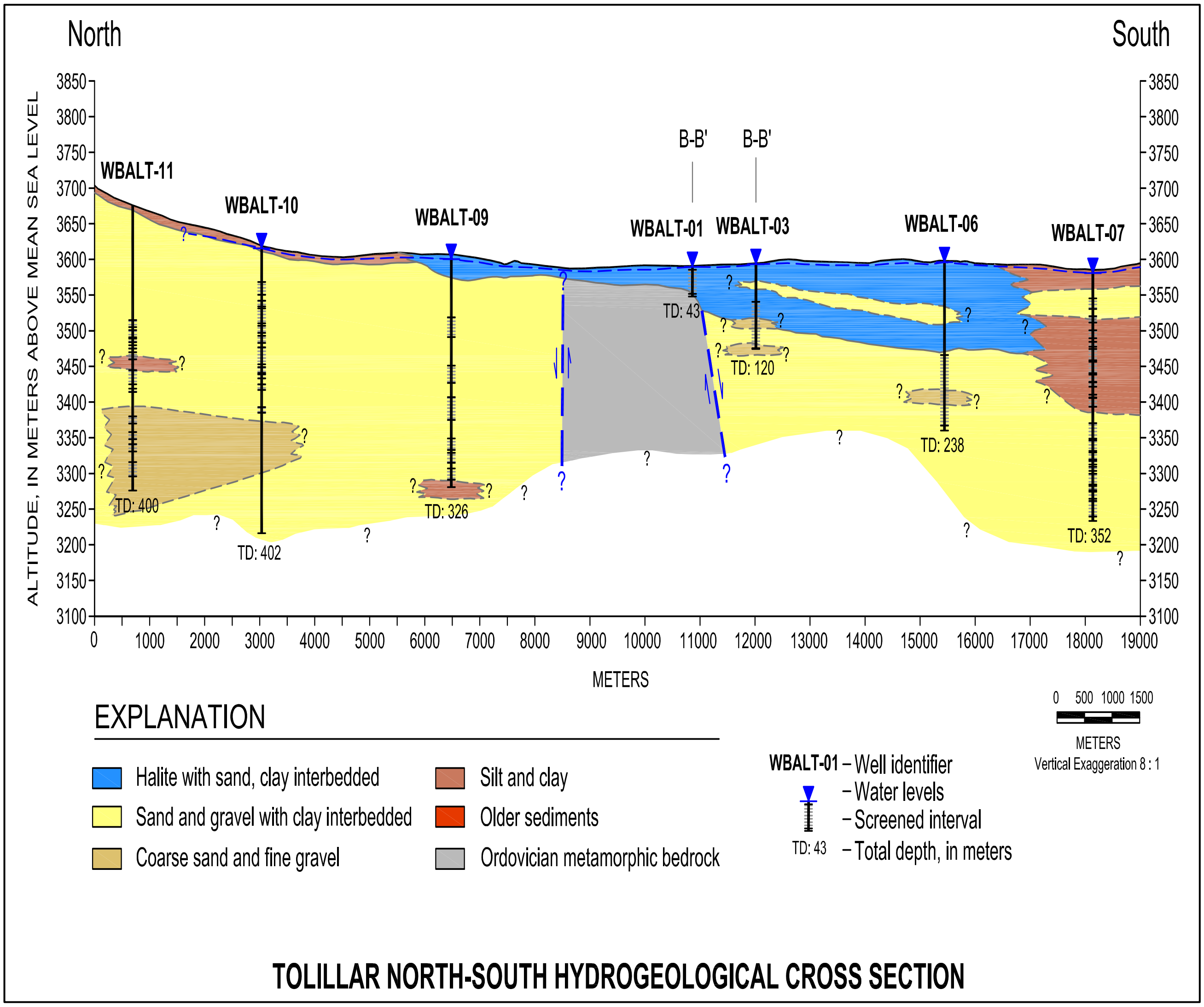

FIGURE 7-3. NORTH-SOUTH HYDROGEOLOGICAL SECTION A-A'.

Source: Montgomery (2022)

7.4 CONCEPTUAL MODEL OF SALAR DE TOLILLAR

Based on the available information, Salar de Tolillar appears to be a relatively immature salar. Although evaporites and brine occur, a well-developed halite core typically associated with more mature salars, such as Salar de Arizaro, Salar de Hombre Muerto, and others, does not appear to exist. Basin margins are interpreted to be fault controlled. The margin of the basin is dominated by Ordovician crystalline rocks. Volcanic units are not known to occur in the basin, but may be deeper than 208 m in the north part of the basin, or in the south part of the Project that has yet to be drilled. Depth to bedrock is considered to be unknown.

Ordovician bedrock is expected to have low hydraulic conductivity and should approximate a "no-flow" groundwater boundary during extraction of brine from basin fill deposit aquifers by future pumping wells. Fine-grained lacustrine deposits and interbedded halite in the upper part basin are interpreted to have relatively low hydraulic conductivity based on results of aquifer testing at well DDHB-01 (Figure 6-5). In other basins, highly permeable halite occurs in the upper parts of the Salar where intercrystalline porosity is high; however, based on exploration drilling, very little halite occurs in the north part of the concession.

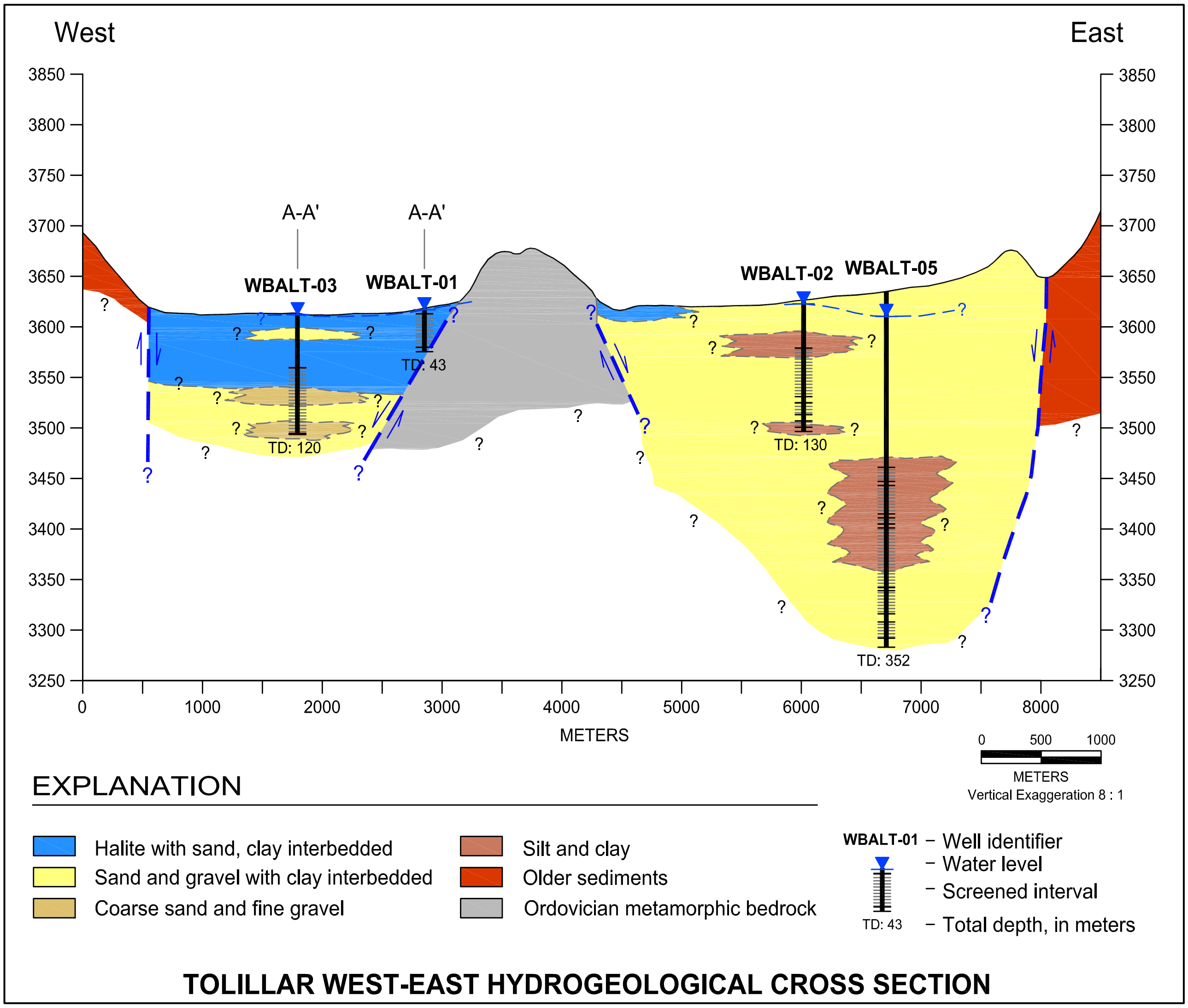

FIGURE 7-4. WEST-EAST HYDROLOGEOLOGICAL SECTION B-B'.

Source: Montgomery (2022)

Coarser-grained clastic units encountered during drilling are believed to be moderately permeable and should be able to provide brine to properly constructed production wells.

The principal sources of water entering the Tolillar Project area are from surface water coming into the basin from the basin margins. To date, surface water flow has not been formally measured. Some groundwater inflow from natural recharge along the mountain fronts via alluvial fans is also believed to exist. In both cases, there appears to be limited mixing of the fresh water and brine in the basin due to density differences. As a result, the fresh water entering the Tolillar Project tends to stay in the upper part of the aquifer system on the edges of the basin, without moving to the center part of the Salar. These freshwater discharge areas tend to support altiplanic vegetation. Evaporation of fresh water in the basin over time results in concentration of the dissolved minerals and ultimately results in brine generation.

8.0 DEPOSIT TYPES

8.1 DEPOSIT MODEL

The conceptual model for salar basins, and associated brine aquifers, is based on exploration and studies of similar salar basins in Chile, Argentina, and Bolivia. 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 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.

Salar basins are characterized by closed topography and interior drainage. Typically, no significant amount of groundwater discharges from these basins as underflow. Effectively, all groundwater discharge that occurs within the basin is via evapotranspiration. 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. If lithium occurs in the surface water, the evaporation concentrates the lithium and other constituents in the water, resulting in a lithium-enriched brine. Water levels tend to be relatively shallow in the flat part of the Salar. Figure 8-1 shows conceptual diagrams of mature and immature salar basins that host brine aquifers.

8.2 CONCEPTUAL MODEL OF SALAR DE TOLILLAR

Based on the available information, Salar de Tolillar appears to be a relatively immature salar. Although evaporites and brine occur, a well-developed halite core typically associated with more mature salars, such as Salar de Arizaro, Salar de Hombre Muerto, and others, does not appear to exist. Basin margins are interpreted to be fault controlled. The margin of the basin is dominated by Ordovician crystalline rocks. Volcanic units are not known to occur in the basin, but may be deeper than 208 m in the north part of the basin, or in the south part of the Tolillar Project that has yet to be drilled. Depth to bedrock is interpreted to be considerably deep below land surface based on VES geophysical surveys (Tecnología y Recursos, 2017), but because it appears to be variable throughout the Tolillar Project and was not encountered during exploration drilling, depth to bedrock is considered unknown.

Ordovician bedrock is expected to have low hydraulic conductivity and should approximate a “no-flow” groundwater boundary during extraction of brine from basin fill deposit aquifers by future pumping wells. Fine-grained lacustrine deposits and interbedded halite in the upper part basin are interpreted to have relatively low hydraulic conductivity based on results of aquifer testing at well DDHB-01 (Figure 6-12). In other basins, highly permeable halite occurs in the upper parts of the salar where intercrystalline porosity is high; however, based on exploration drilling, very little halite occurs in the north part of the concession. Coarser-grained clastic units encountered during drilling are believed to be moderately permeable and should be able to provide brine to properly constructed production wells.

The principal sources of water entering the Tolillar Project area are from surface water coming into the basin from the basin margins. To date, surface water flow has not been formally measured. Some groundwater inflow from natural recharge along the mountain fronts via alluvial fans is also believed to exist. In both cases, there appears to be limited mixing of the fresh water and brine in the basin due to density differences. As a result, the fresh water entering the Tolillar Project tends to stay in the upper part of the aquifer system on the edges of the basin, without moving to the center part of the Salar. These freshwater discharge areas tend to support altiplanic vegetation. Evaporation of fresh water from the basin over time results in concentration of the dissolved minerals and ultimately results in brine generation.

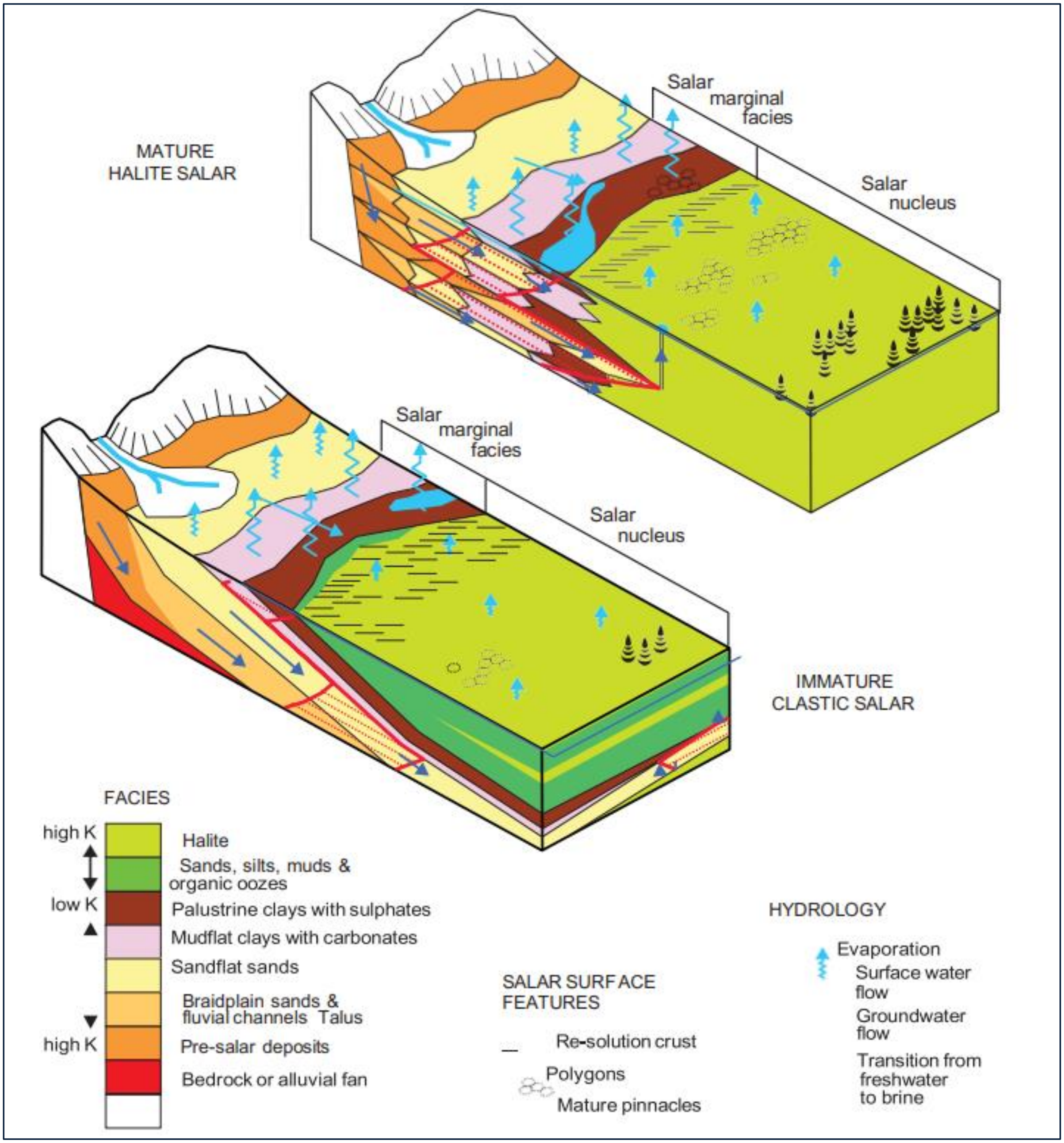

FIGURE 8-1. CONCEPTUAL DIAGRAMS OF MATURE AND IMMATURE SALAR BASIN SYSTEMS.

Source: Houston et al. (2011)

9.0 EXPLORATION

9.1 EXPLORATION OVERVIEW

VES surveys were conducted on July 15, 2020 by Conhidro (2020a) for the north concessions owned by Alpha Lithium. Conhidro (2020b) subsequently did an additional survey for Alpha Lithium's southern concessions. Goals of the surveys were to obtain a preliminary understanding of the underlying stratigraphy of the Tolillar Project property, identify potential geological structures, identify freshwater/brine interfaces (if present), and to be able to identify future locations for exploration wells. An additional VES survey was conducted by Conhidro (2022) for the northern concessions. The survey points were effectively extensions of the previous lines into unexplored areas where brine was expected to occur.

9.2 YEAR 2020 - 2022 VES RESULTS FOR THE NORTHERN CONCESSIONS

Locations of the VES survey points conducted by Conhidro during years 2020 and 2022 for the northern concessions are shown on Figure 9-1.

The orientation and reference for the VES survey lines in the north part of the Tolillar Project are as follows:

- Line 1-1': Oriented W-E – (Conhidro, 2022a)
- Line 2-2': Oriented W-E – (Conhidro, 2020a)
- Line 3-3': Oriented W-E – (Conhidro, 2020a, 2022)
- Line 4-4': Oriented W-E – (Conhidro, 2020a)
- Line 5-5': Oriented W-E – (Conhidro, 2020a, 2022a)
- Line 6-6': Oriented W-E – (Conhidro, 2020a, 2022a)
- Line 7-7': Oriented W-E – (Conhidro, 2020a)
- Line 8-8': Oriented W-E – (Conhidro, 2022a)
- Line 9-9': Oriented W-E – (Conhidro, 2022a)
- Line 10-10': Oriented W-E – (Conhidro, 2022a)
- Line 11-11': Oriented N-S through central part of the Salar – (Conhidro, 2020a, 2022a)
- Line 12-12': Oriented N-S through eastern side of the Salar – (Conhidro, 2020a, 2022a)

Figure 9-2 shows the interpreted section for Line 1-1', located farthest north from the main Salar; it has an extension of 2.7 km.

Figure 9-3 shows the interpreted section for Line 2-2', located about 1 km south from Line 1; it has an extension of 2.4 km. In this section, basement is interpreted to be approximately at an altitude of 3430 m with an estimated sediment thickness of a little over 200 m. Well WBALT-04 near station STC1 was drilled to a total depth of 79 m and did not encounter bedrock.

Line 3-3' is shown on Figure 9-4 and is located in the northern part of the Salar and immediately south of Line 2-2'. It has an extension of 2.8 km. In this section basement according to resistivity values is at an altitude of 3375 m suggesting an estimated sediment thickness of 255 m at this northern part of the Salar and deepening to the west. Well DDHB-01 near station TL4 corroborates this thickness until 208.4 m of depth. Well WBALT-09 is located at station TL03, has a depth of 325 m; basement was not encountered at well WBALT-09.

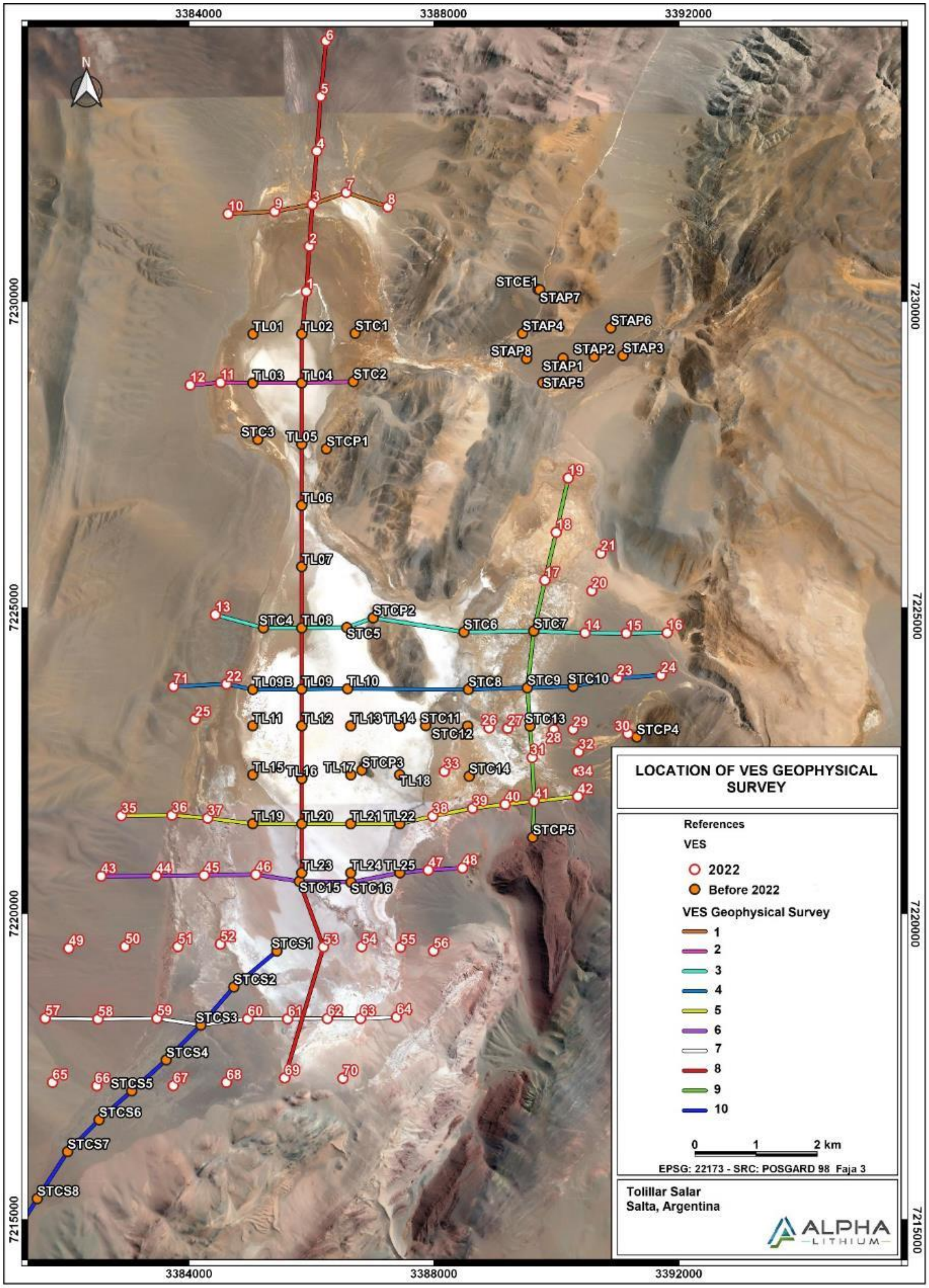

FIGURE 9-1. LOCATION MAP OF VES SURVEY POINTS IN THE NORTHERN CONCESSIONS FROM YEARS 2020 AND 2022.

Source: Modified from Conhidro (2020b)

Line 4-4’ is shown on Figure 9-5 and is located toward the narrow area separating the north-most sub-basin and the main Salar basin; it has an extension of 2.0 km. The easternmost survey point is located at bedrock and the VES interpretation agrees with this. Bedrock apparently deepens to the west.

Line 5-5’ is shown on Figure 9-6 and is located in the central part of the Salar. It has an extension of 7.5 km. In this section, the large outcrop (Figure 9-1) is clearly defined at survey point STCP2 and STCP2a. This bedrock appears to be an extension of the mountains to the north, and is likely also connected to the outcrops to the southwest (Figure 9-1). Moving east and west from this central outcrop shows basin sediments, with sediments to the west thickening substantially – likely due to faulting. Both wells WBALT-01 and -02 corroborate this interpretation. Well WBALT-13 is located near station SEV14, with a total depth of 269 m; basement was not encountered. The same bedrock outcrops that can be seen on Figure 9-1 occur at the east side of this section.

Line 6-6’ is shown on Figure 9-7 and is located in the central part of the Salar; it has an extension of 8.2 km. In this section, the same shallow bedrock that occurs near the central part of the section, similar to Line 5-5’ is also here at survey points STCP2b and 2c. Similar to section 5-5’ to the north, there are sedimentary basins both east and west and the hills recognized in the east of the Salar (Figure 9-1) are recognized in the section. At station TL09, well WBALT-02 is nearby with a depth of 127 m; basement was not recognized. On the east side of the line, WBALT-05, with a depth of 352 m, the Geste Formation was recognized.

Line 7-7’ is shown on Figure 9-8 and is located in the center part of the Salar; it has an extension of 6.75 km. In this section, the central, shallow bedrock associated with the outcrops to the north and south is evident, even though there is no physical outcrop. The shallow bedrock appears to be farther west than in the north. Between survey points TL11 to TL13, it is possible to observe very shallow bedrock about 25 mbgs.

Line 8-8’ is shown on Figure 9-9 and is located in the center-south part of the Salar; it has an extension of 7.6 km. To the west part of the profile, high resistivity values are recognized and can be associated to dry clastic sediments and to east, the same hills recognized in Lines 6-6’ and 7-7’. To the east, the basement is recognized at 200 m (survey point 39) and shallows to the east, which is consistent with the outcrops recognized on Figure 9-1.

Line 9-9’ is shown on Figure 9-10 and is located southern part of the Salar; it has an extension of 6.2 km. In both the west and east parts of the profile, high resistivity values are recognized and likely associated with dry clastic sediments. In the eastern half of the section, high resistivity values are recognized and can be associated with massive halite in the area.

Line 10-10’ is shown on Figure 9-11 and is located in the southern-most of the Salar; it has an extension of 6.0 km. To the west part of the profile, high resistivity values are recognized and can be associated to dry clastic sediments in the upper part and can be associated to the hills recognized on Figure 9-11.

Figure 9-11. This section is characterized by low resistivity values characteristic of a brine aquifer in most of the profile. Between survey points 61 and 62, well WBALT-07 was drilled to a depth of 352 m without encountering bedrock, which is also consistent with the resistivity values.

Line 11-11’ is shown on Figure 9-12 and is located toward central part of both salar areas, and is oriented N-S; it has an extension of 17.0 km. It includes survey points from E-W Lines 1 to 10 (Figure 9-1). Several wells are located along the section line, including WBALT-11, -10, -03, and -07. The interpretations from the VES survey are consistent with the hydrogeological units encountered in the wells, and also the surface outcrops of bedrock in the basin. In the farthest north part of this section, high resistivity values occur, and appear associated with dry clastic sediments, and/or fresh water in the upper part of the aquifer.

Line 12-12’ is a N-S section in the eastern half of the basin to the east of the bedrock outcrops (Figure 9-1), and is shown on Figure 9-13; it has an extension of 6.0 km. Well WBALT-03 is located at survey point TL09, and was drilled to a depth of 120 m; and well WBALT-02 is located at survey point STC9, and was drilled to a depth of 127 m. In both cases basement is not recognized. South of this profile, high resistivity values are associated with the outcrops recognized on Figure 9-13.

Figure 9-2 to Figure 9-13 are sourced from Conhidro, 2020a and 2022b.

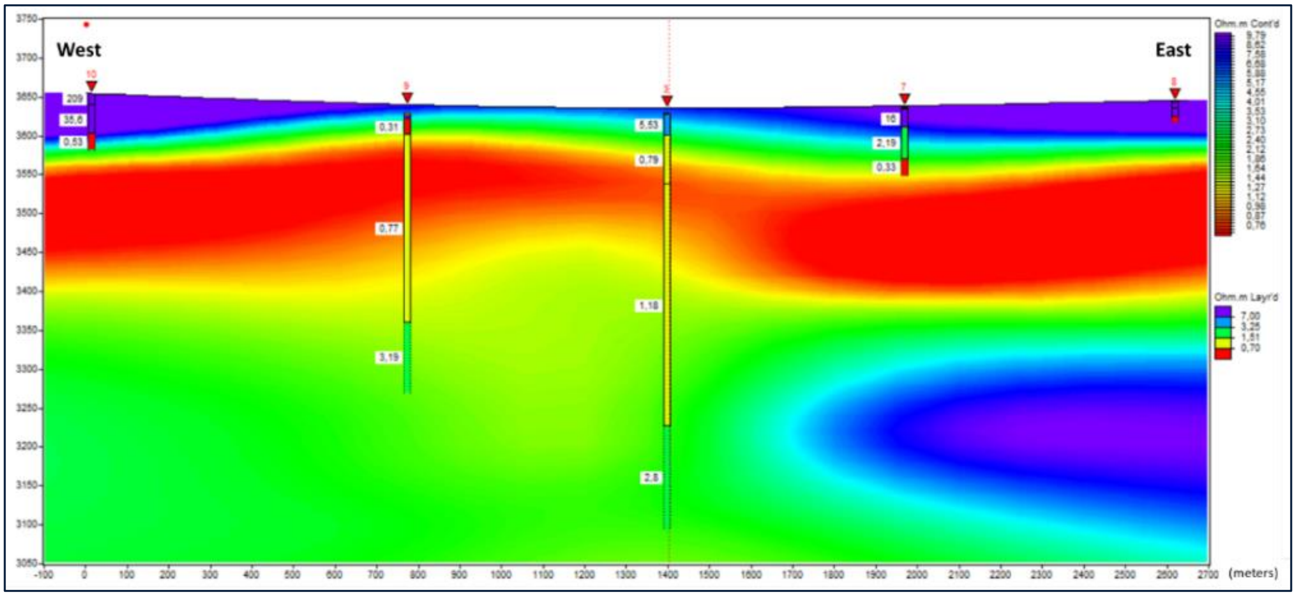

FIGURE 9-2. INTERPRETED SECTION FOR VES LINE 1-1'.

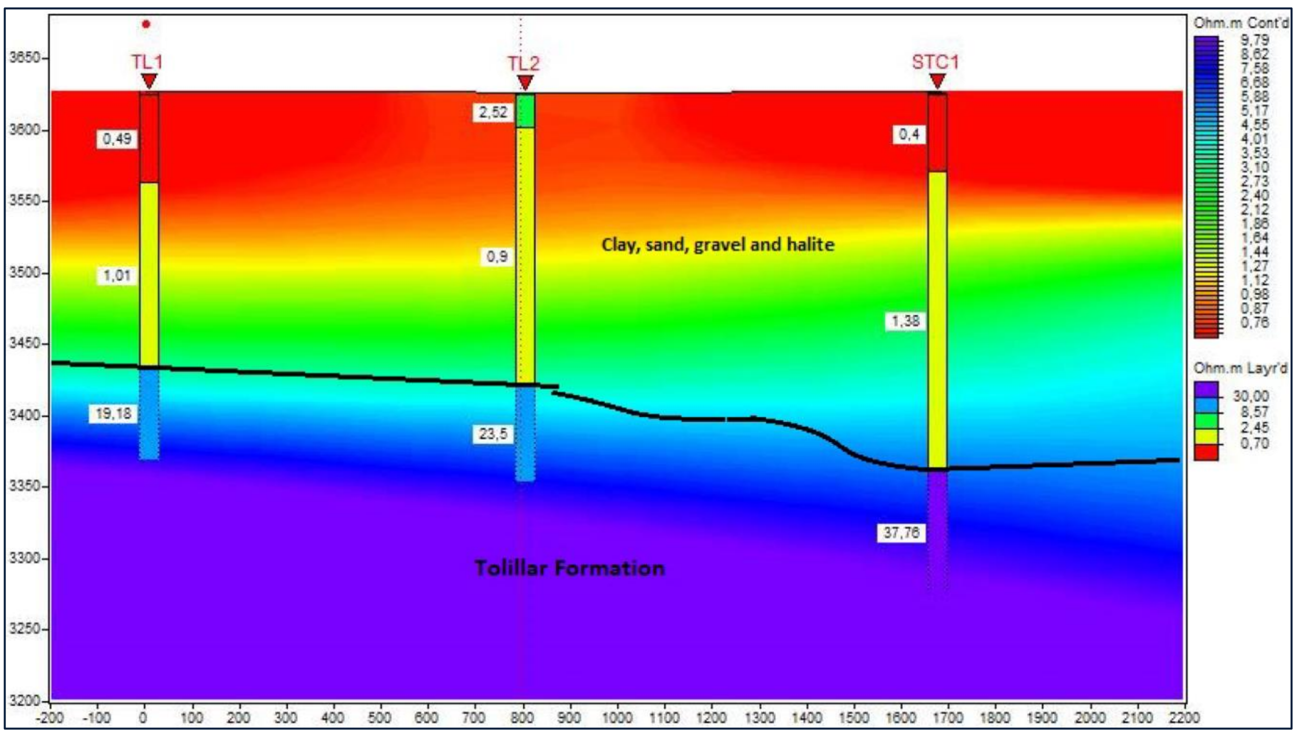

FIGURE 9-3. INTERPRETED SECTION FOR VES LINE 2-2'.

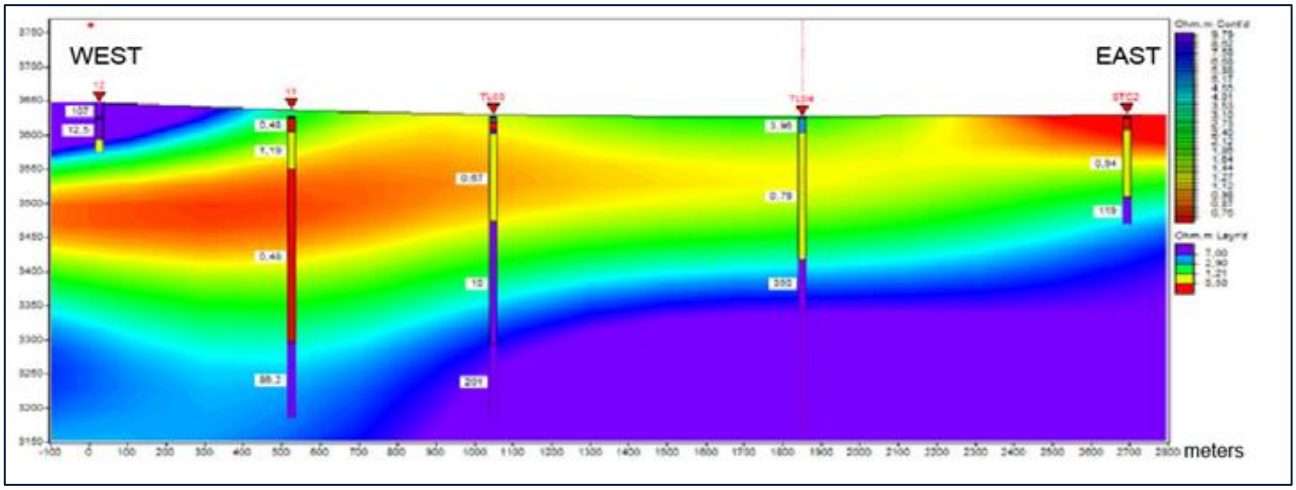

FIGURE 9-4. INTERPRETED SECTION FOR VES LINE 3-3'.

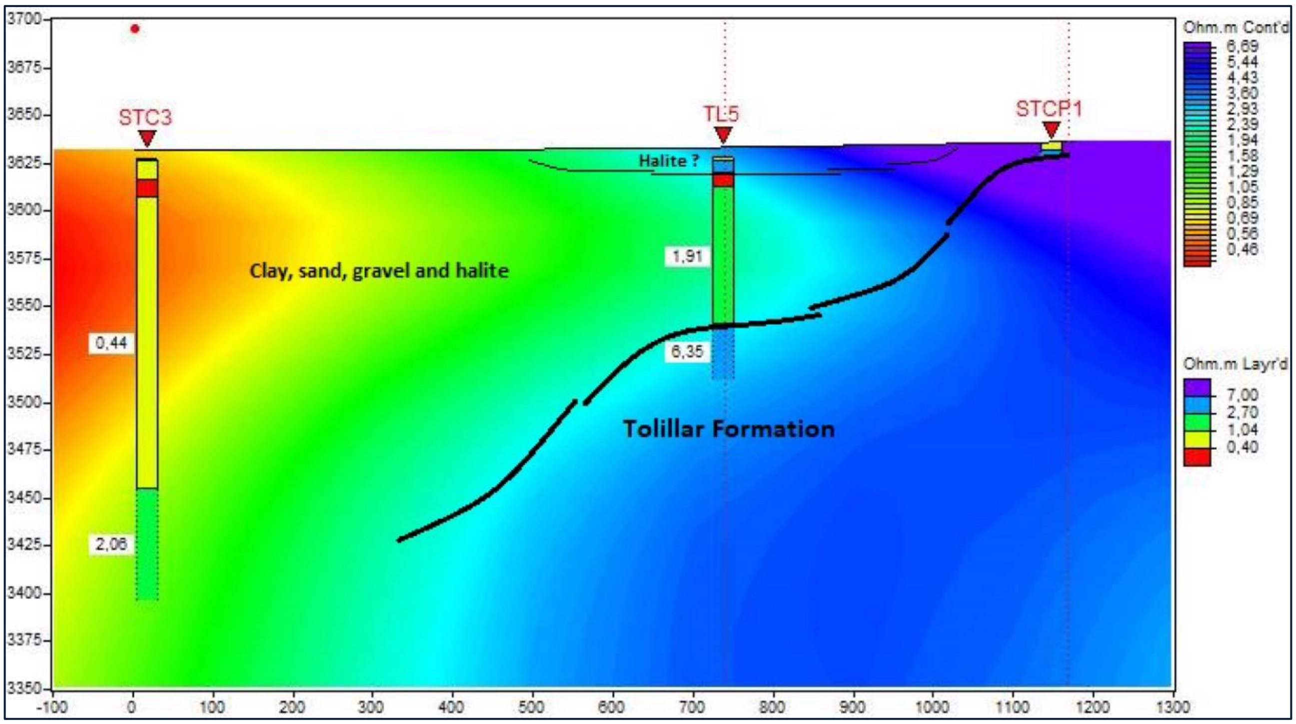

FIGURE 9-5. INTERPRETED SECTION FOR VES LINE 4-4'.

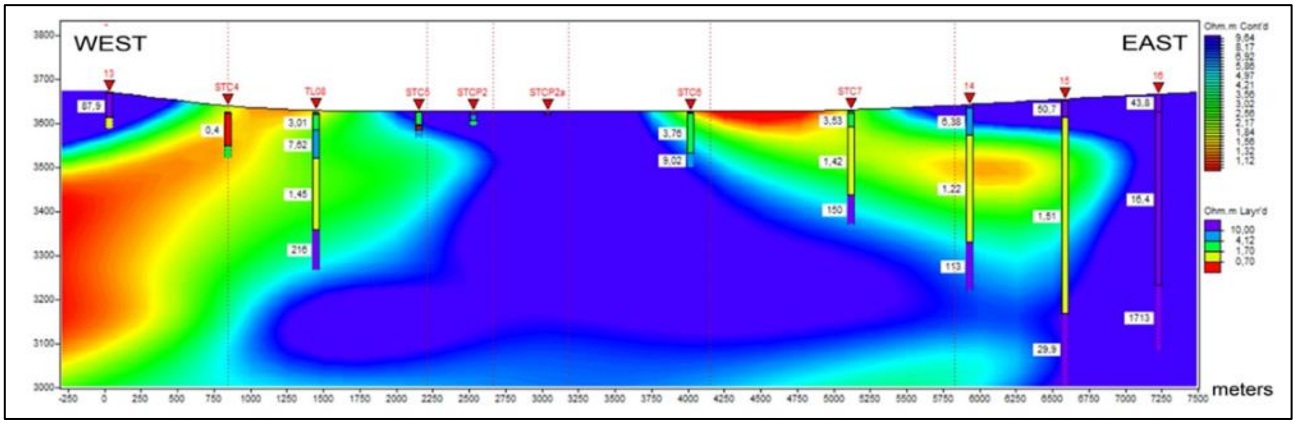

FIGURE 9-6. INTERPRETED SECTION FOR VES LINE 5-5'.

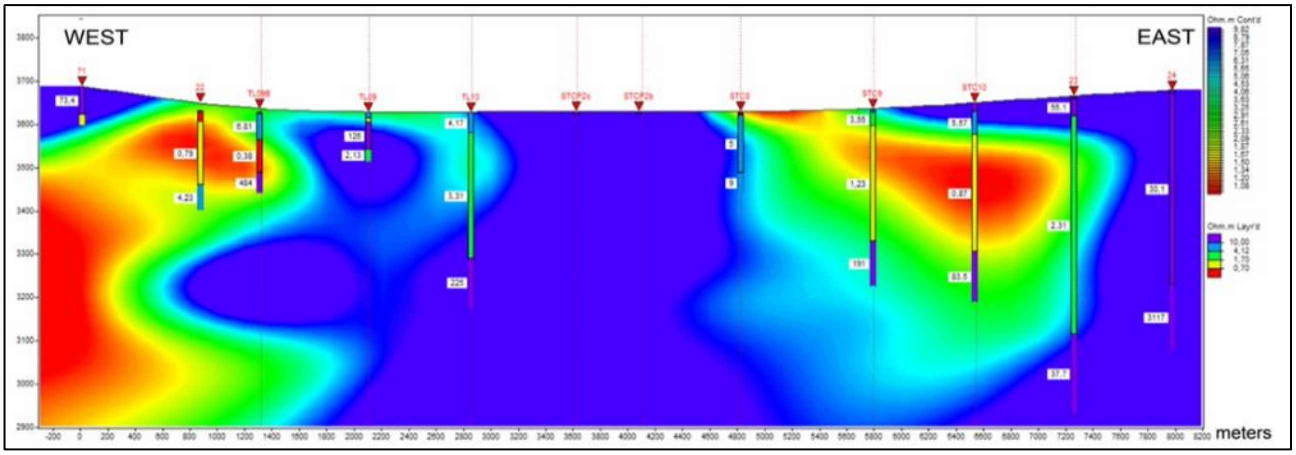

FIGURE 9-7. INTERPRETED SECTION FOR VES LINE 6-6'.

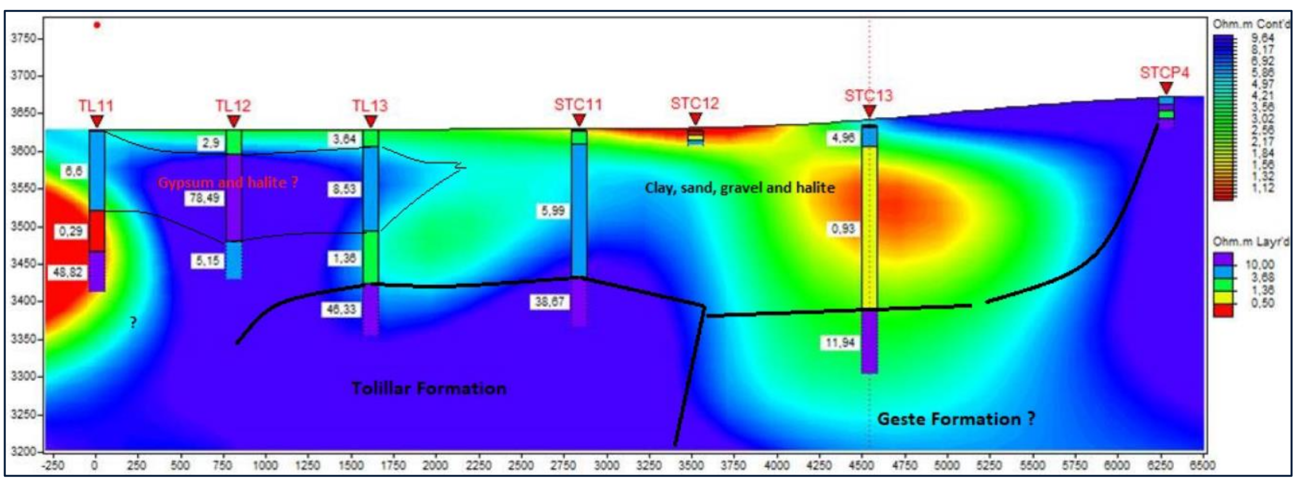

FIGURE 9-8. INTERPRETED SECTION FOR VES LINE 7-7'.

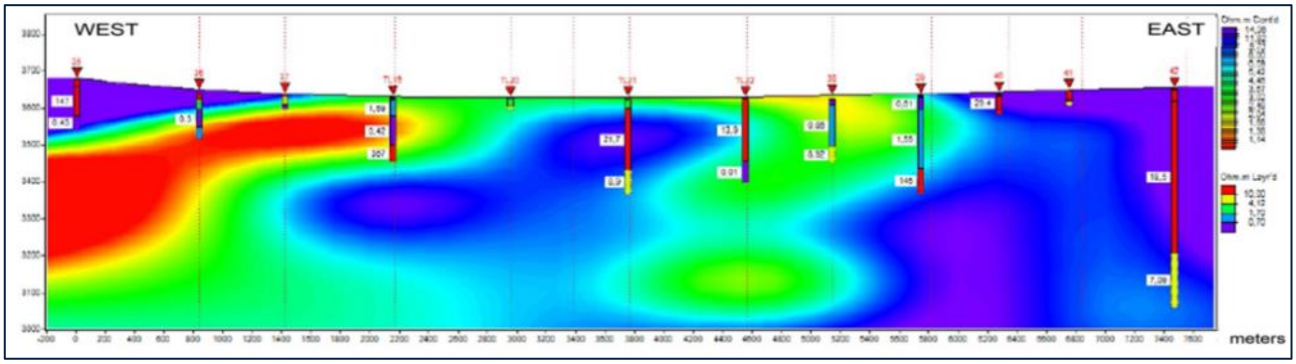

FIGURE 9-9. INTERPRETED SECTION FOR VES LINE 8-8'.

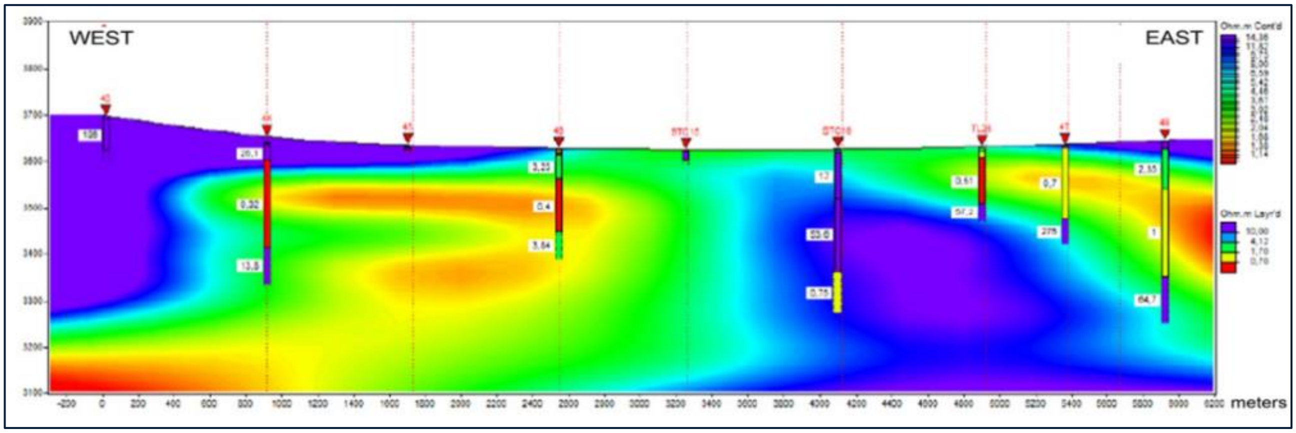

FIGURE 9-10. INTERPRETED SECTION FOR VES LINE 9-9'.

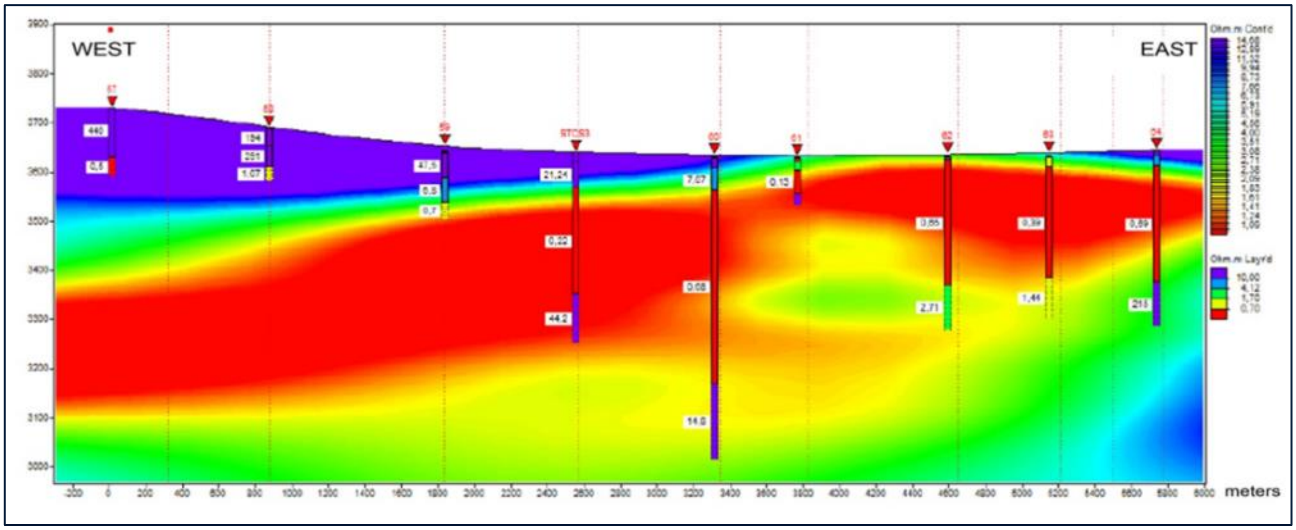

FIGURE 9-11. INTERPRETED SECTION FOR VES LINE 10-10'.

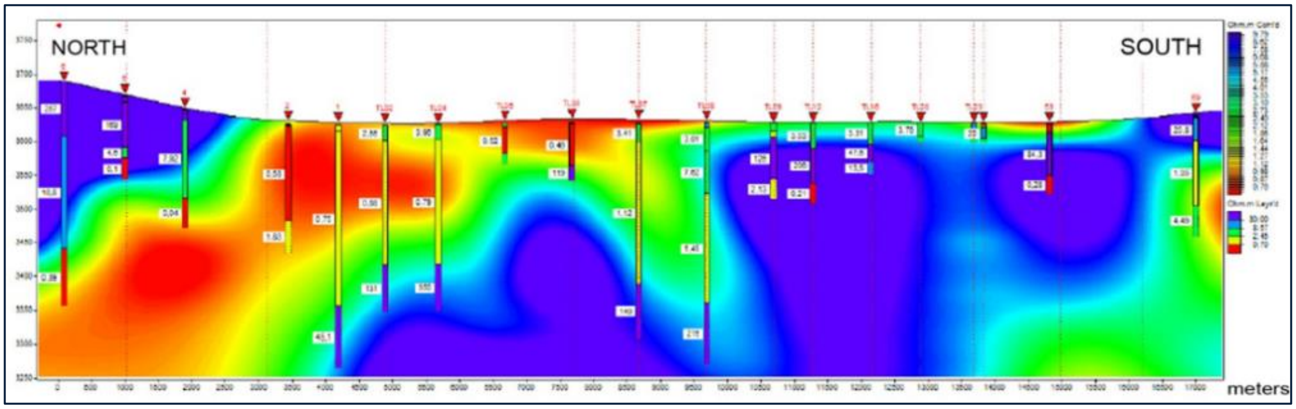

FIGURE 9-12. INTERPRETED SECTION FOR VES LINE 11-11'.

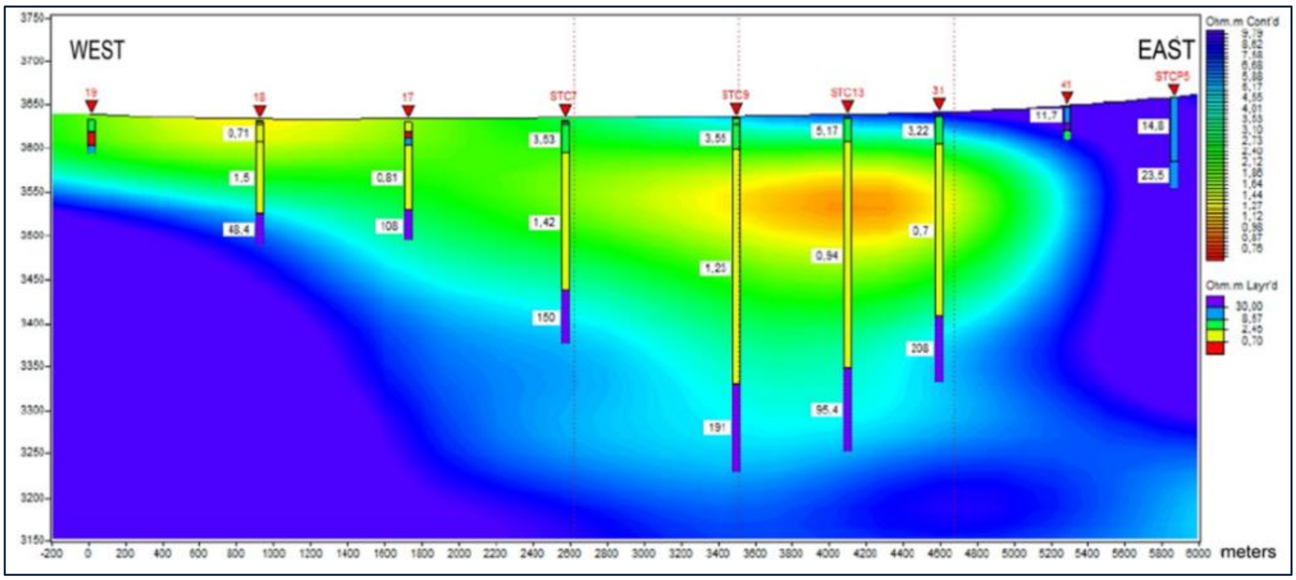

FIGURE 9-13. INTERPRETED SECTION FOR VES LINE 12-12'.

9.3 YEAR 2020 VES RESULTS FOR THE SOUTHERN CONCESSIONS

Locations of the VES survey points conducted by Conhidro during September 2020 are shown on Figure 9-14.

The orientation and reference for the VES survey lines in the south part of the Tolillar Project are as follows:

- Line A-A': Oriented NE-SW– (Conhidro, 2020b)
- Line B-B': Oriented E-W– (Conhidro, 2020b)
- Line C-C': Oriented E-W– (Conhidro, 2020b)
- Line D-D': Oriented NW-SE– (Conhidro, 2020b)

Line A-A' is shown on Figure 9-15 and starts at the south end of the main Salar de Tolillar and continues to the farthest southern part of the exploration concession. It has an extension of approximately 20 km. South of survey points SEV-1 and -2, brine is potentially diluted by fresher water. Unit 1 resistivity zone is interpreted to be unsaturated sediments and is consistent with the slight increase in land surface altitude and increased depth to water. The increasing resistivity in Units 4 and 2 moving north may be due to increased influence of fresh water as the survey points get farther from the Salar.

The south half of Line A-A' (stations SEV-12 to SEV-20) is located in the southern sub-basin and is shown on Figure 9-16. Similar to the north part of the section outside of the Salar, there appears to be a relatively thick unsaturated zone, with underlying sediments. A moderate resistivity anomaly shows up in SEV-17 at around 80 mbgs, whereas in the other survey points, such as SEV-18, this unit tends to be deeper.

Line B-B' is a W-E line and is shown on Figure 9-17; it has an extension of 3.6 km. Depth to the low resistivity unit is shallowest at survey point SEV-12 at about 120 mbgs. This location may represent the best location for further exploration in this part of the sub-basin if the Unit 3 conductive zone is associated with lithium brine.

Line C-C' is a NW-SE line and is shown on Figure 9-18; it has an extension of about 4 km. The NW survey point is in unsaturated bedrock and has the highest resistivity levels in the sub-basin. A moderate resistivity anomaly is located with a maximum depth from surface at station FW5, and the lowest resistivity zone along the line is at 270 mbgs.

Line D-D' is an E-W line and is shown on Figure 9-19; it has an extension of 2 km. Depth to the low resistivity unit is shallowest at survey point SEV-16 at about 120 mbgs. This location may represent the best location for further exploration in this part of the sub-basin if the Unit 3 conductive zone is associated with lithium brine.

Figure 9-14 to Figure 9-19 are sourced from Conhidro 2020b.

9.4 INTERPRETATION BASED ON VES SURVEY RESULTS

VES geophysical surveys were conducted by Conhidro in years 2020 and 2022 for the concessions owned by Alpha Lithium. The main objectives for these surveys were to understand stratigraphic sequence, geological structures, hard rock boundaries both within the basin and at the boundaries, and freshwater/brine interfaces at the edges of the Salar. In general, the VES measurements and their interpretations appear to be reasonable and in agreement with the information obtained from exploration drilling. At the edges of the basin, especially to the west and north, there is some uncertainty as to whether the VES is measuring dry sediments, freshwater areas, or bedrock. These relatively higher conductivity zones are not interpreted to be brine aquifer and therefore, are not considered part of the Measured or Indicated Resource.

In the southern concessions, VES results suggest a potential zone for fresh or brackish water exploration. This is consistent with the results from exploration well Ex-ALT-08 drilled near station SEV-13 (Figure 9-14) which showed only brackish water with little lithium.

VES surveys were conducted on July 15, 2020 by Conhidro (2020a) for the north concessions owned by Alpha Lithium. Conhidro (2020b) subsequently did an additional survey for Alpha Lithium's southern concessions. Goals of the surveys were to obtain a preliminary understanding of the underlying stratigraphy of the Tolillar Project property, identify potential geological structures, identify freshwater/brine interfaces (if present), and to be able to identify future locations for exploration wells.

An additional VES survey was conducted by Conhidro (2020b) for the northern concessions. The survey points were effectively extensions of the previous lines into unexplored areas where brine was believed to occur.

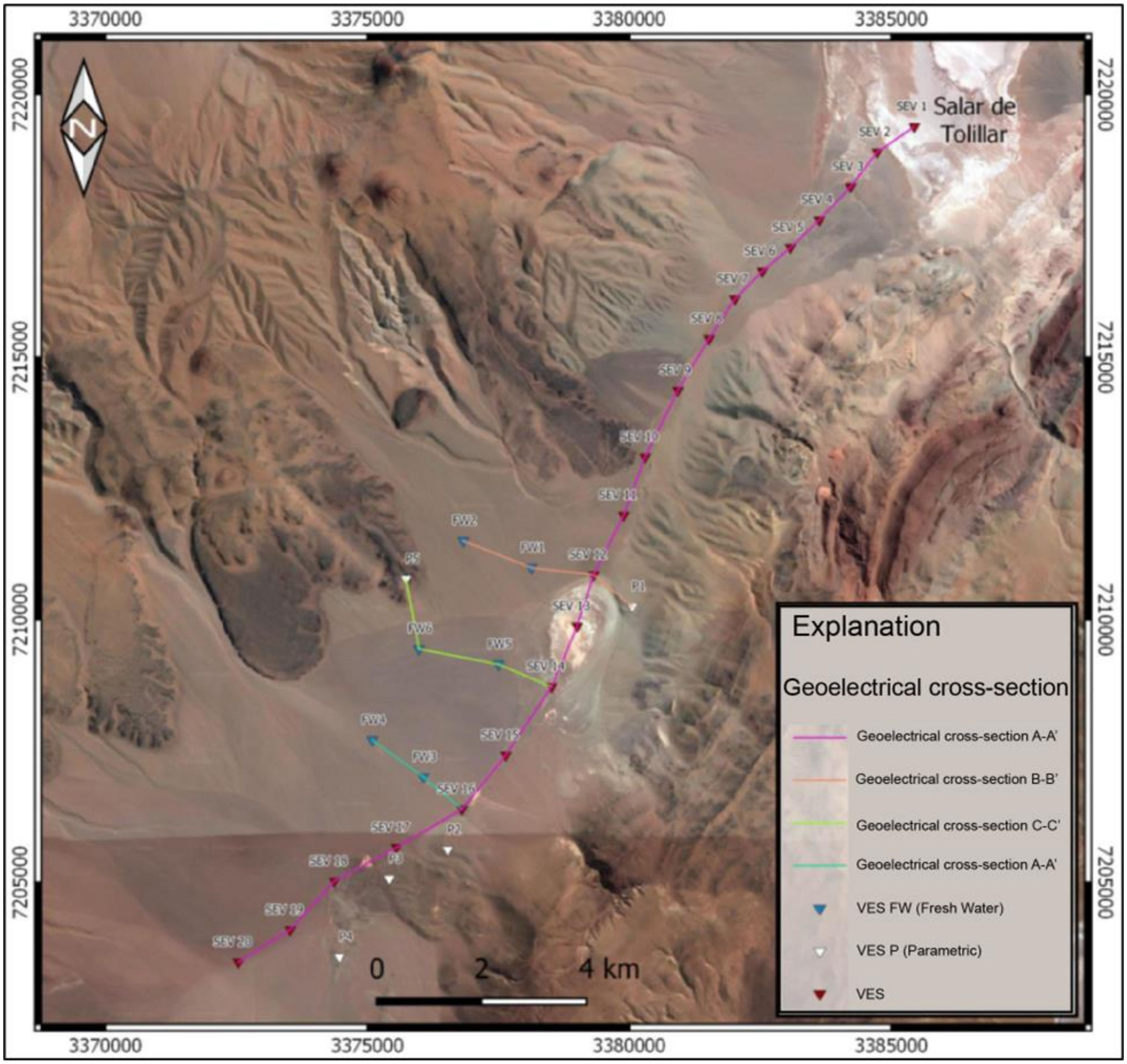

FIGURE 9-14. LOCATION MAP OF VES SURVEY POINTS IN THE SOUTHERN CONCESSIONS.

Source: Conhidro (2020b)

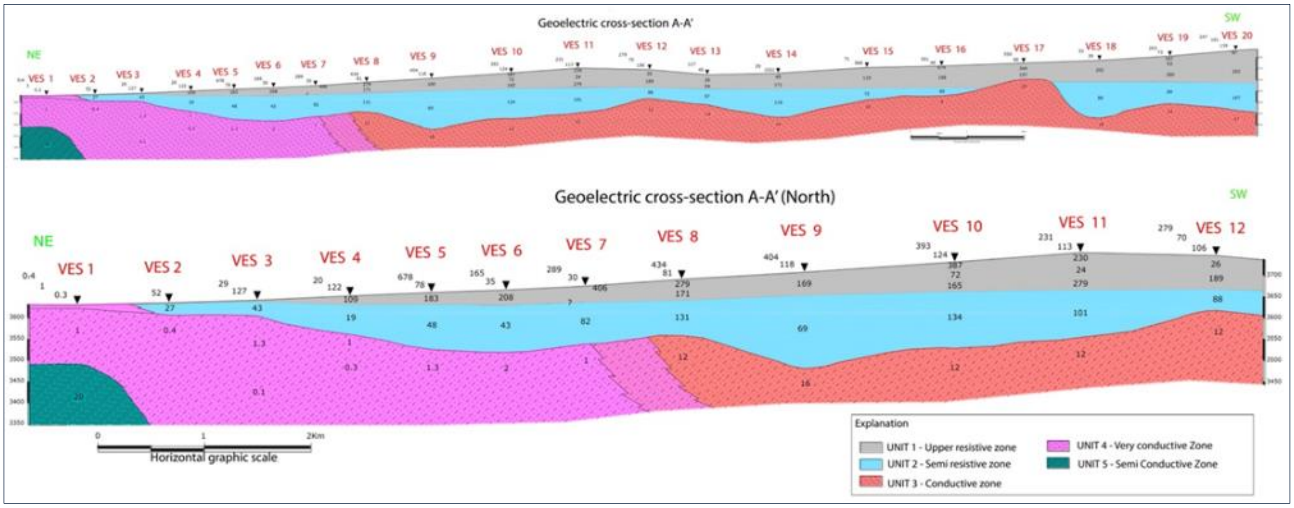

FIGURE 9-15. ENTIRE VES SECTION A-A' AND EXPANDED NORTHERN SECTION.

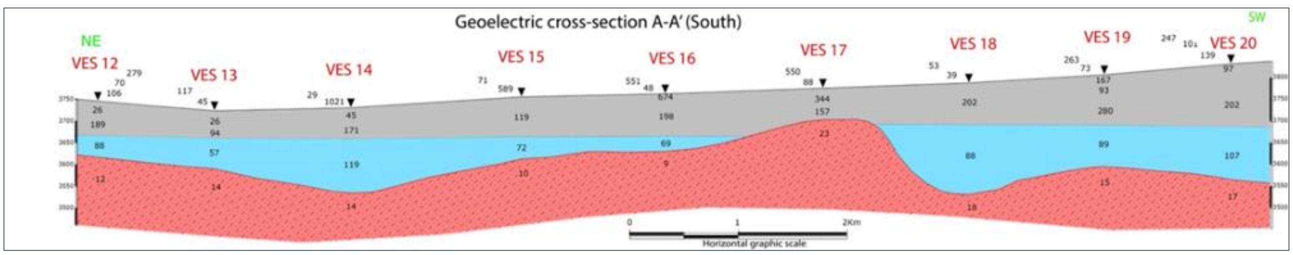

FIGURE 9-16. VES EXPANDED SOUTH SECTION OF LINE A-A'.

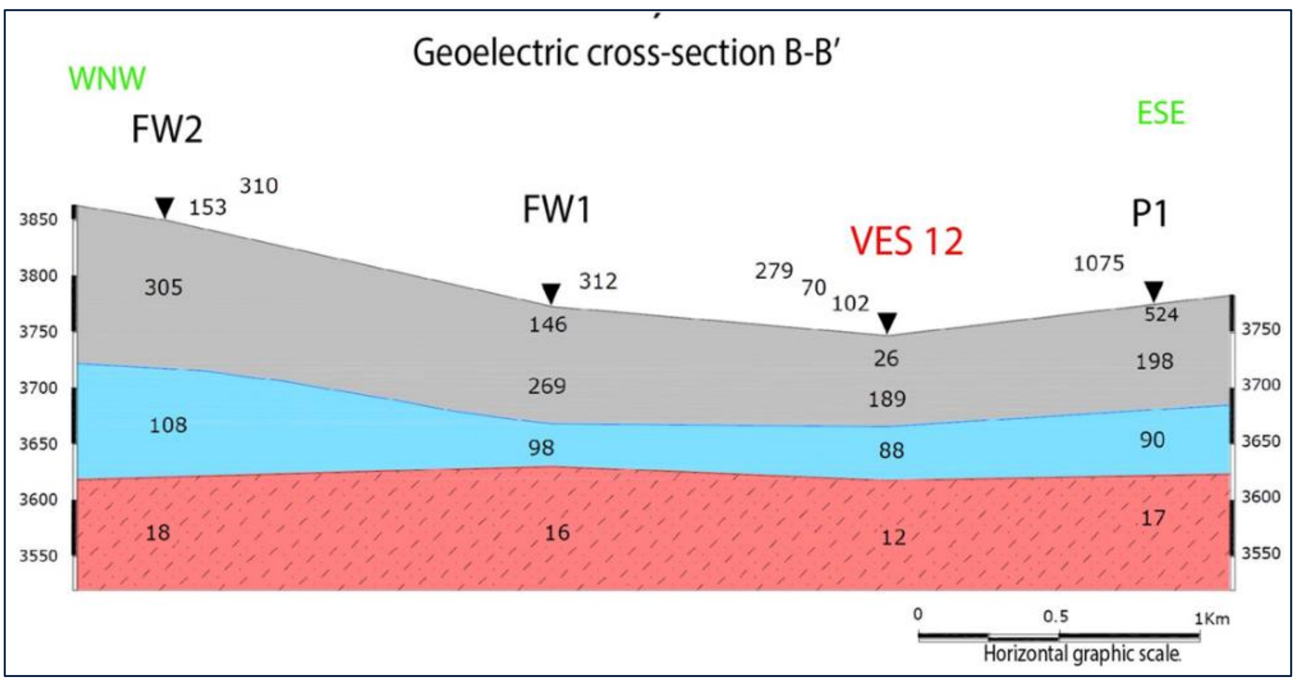

FIGURE 9-17. VES SECTION B-B'.

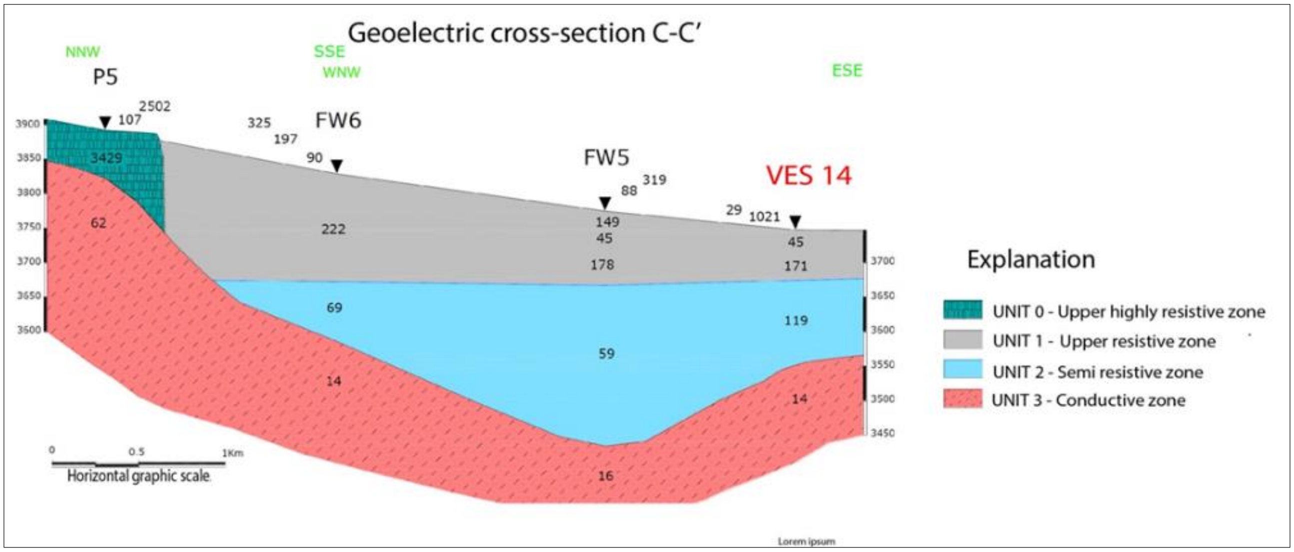

FIGURE 9-18. VES SECTION C-C'.

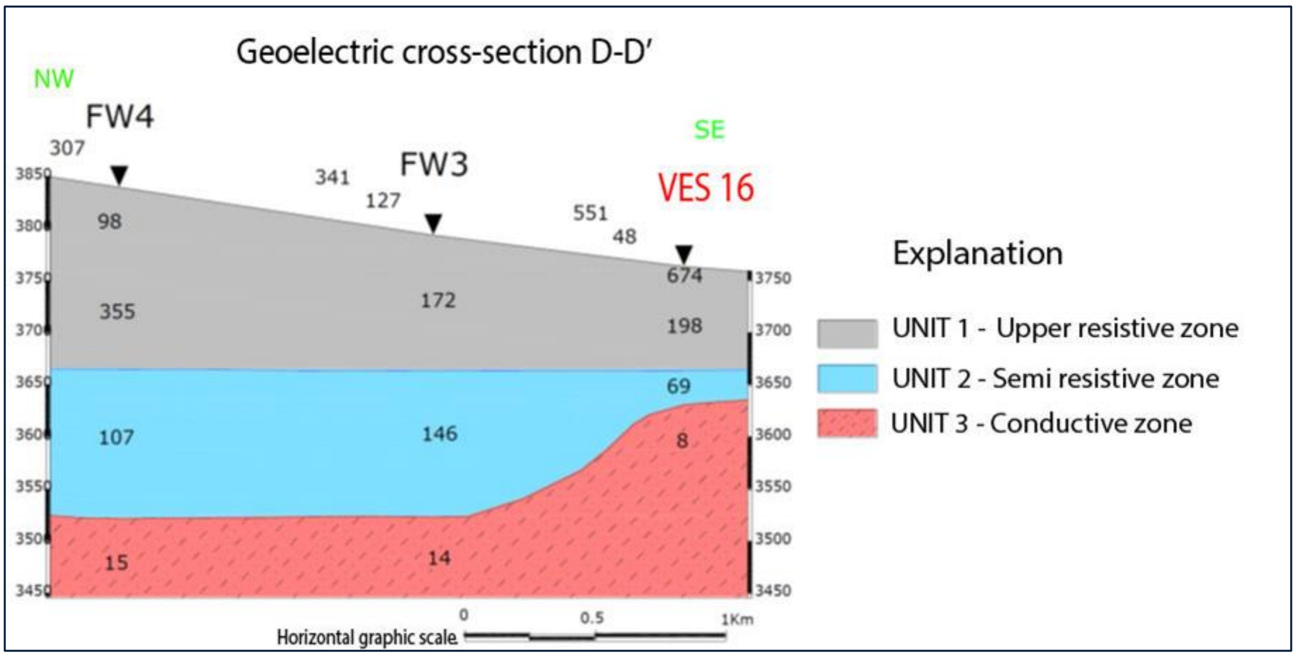

FIGURE 9-19. VES SECTION D-D'.

10.0 DRILLING

10.1 OVERVIEW

Updated results of the year 2020 - 2022 and preliminary results of year 2023 exploration drilling and testing program are reported herein. The current exploration well program is designed to obtain additional aquifer hydraulic parameters, to develop a conceptual hydrogeological model, and to obtain sufficient information to estimate an updated lithium resource. Locations for all brine wells are shown in Table 10-1 and Figure 10-1.

TABLE 10-1. SUMMARY OF LOCATIONS AND DEPTHS DRILLED FOR YEAR 2020 - 2023.

Well ID	Type	Date Completed (mm-yyyy)	Total Depth Drilled (m)	UTM Easting (m, POSGAR 94)	UTM Northing (m, POSGAR 94)
DDHB-01	rotary	07-2022	204	3,385,840	7,228,666
WBALT-01	rotary	12-2020	43	3,386,592	7,224,686
WBALT-02	rotary	02-2021	130	3,389,527	7,223,693
WBALT-03	rotary	09-2021	120	3,385,842	7,223,667
WBALT-04	rotary	05-2021	80	3,386,714	7,229,475
WBALT-05	rotary	03-2021	352	3,390,256	7,223,716
WBALT-06	rotary	02-2022	238	3,385,731	7,220,505
WBALT-07	rotary	10-2021	352	3,385,499	7,218,187
EX-ALT-08	rotary	12-2021	372	3,379,316	7,210,856
WBALT-09	rotary	03-2022	326	3,385,042	7,228,654
WBALT-10	rotary	07-2022	402	3,386,194	7,231,682
WBALT-11	rotary	08-2022	400	3,385,980	7,233,844
WBALT-12	rotary	09-2022	361	3,385,836	7,221,513
WBALT-13	rotary	07-2022	273	3,390,388	7,224,598
WBALT-14	rotary	04-2023	280	3,386,153	7,219,425
WBALT-15	rotary	10-2022	363	3,384,960	7,218,281
WBALT-16	rotary	02-2023	272	3,387,443	7,221,472
WBALT-17	rotary	10-2022	355	3,383,463	7,220,633
DDH-01	diamond	04-2023	401	3,384,938	7,220,000
DDH-02	diamond	06-2023	191	3,385,999	7,224,224
DDH-03	diamond	01-2023	506	3,385,172	7,232,461
FWBALT-01	rotary	11-2022	44	3,389,517	7,229,061
FWBALT-01A	rotary	06-2021	89	3,390,624	7,229,094
FWBALT-01B	rotary	11-2021	103	3,389,700	7,230,171
FWBALT-02	rotary	06-2022	153	3,383,076	7,217,166
WBALT-03P	piezometer	07-2021	36	3,385,842	7,223,670
PzWRALT-01	piezometer	10-2022	53	3,402,083	7,206,129
PzWRALT-02	piezometer	10-2022	95	3,402,083	7,206,120
		Total	**6594**		

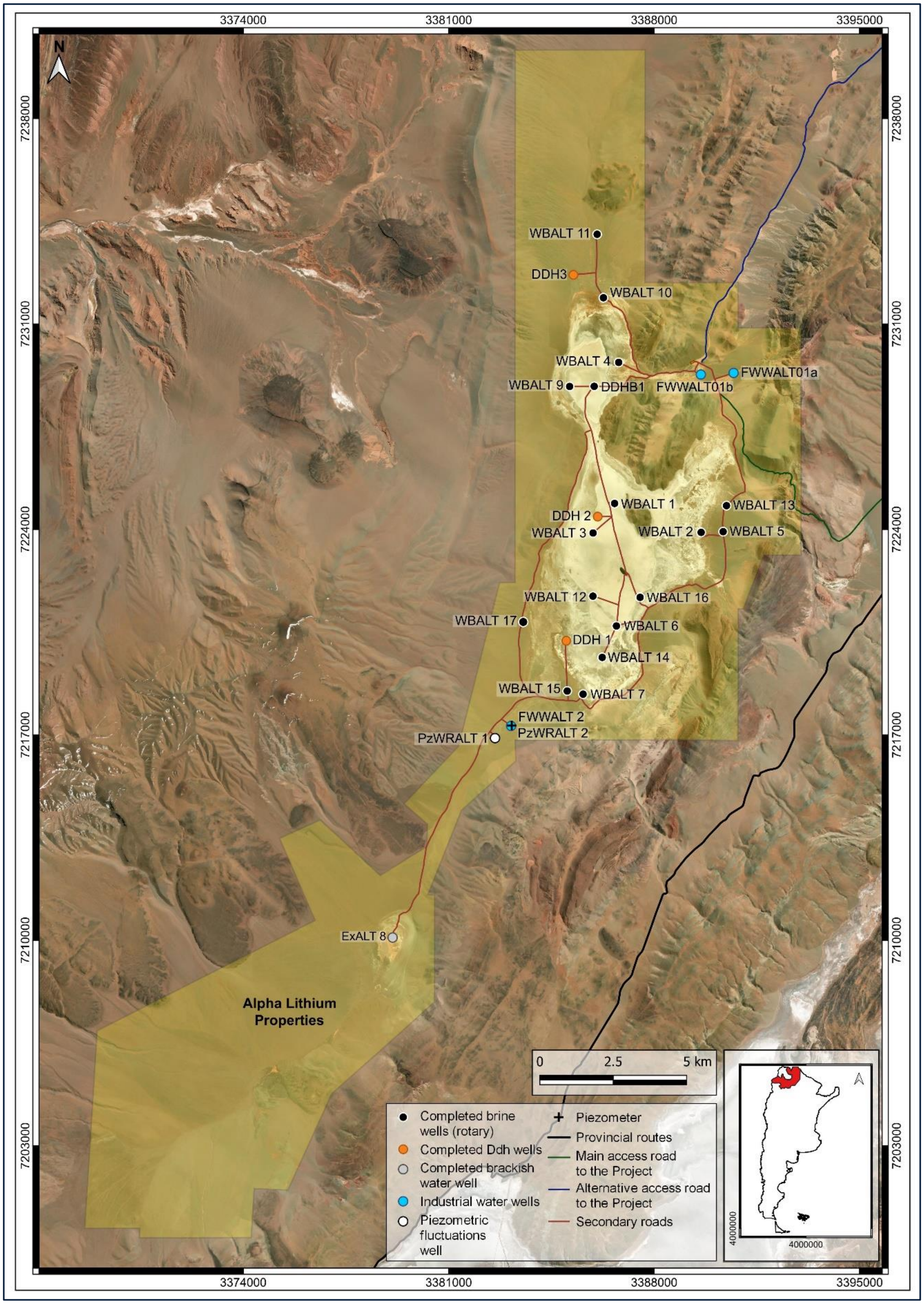

FIGURE 10-1. LOCATION MAP FOR EXPLORATION WELLS.

10.2 YEARS 2020 - 2023 DRILLING AND TESTING PROGRAM

10.2.1 EXPLORATION WELLS

Drilling and construction of brine exploration wells WBALT-01, -02, -03, -04, -05, -06, -07, -09, -10, -11, -12, -13, -14, -15, -16, and -17, and piezometer WBALT-03P in the northern concession are documented in this section.

Pumping tests conducted at exploration wells included step-discharge and constant discharge tests. The step-discharge test was conducted to evaluate drawdown and specific capacity at different pumping rates for determination of sustainable pumping capacity of the wells, both for the constant-discharge tests, and for selection of long-term sustainable pumping rate. The constant-discharge test was conducted to further evaluate sustainable yield and to provide data to estimate aquifer hydraulic parameters. Pumping test equipment was provided by drilling and testing contractor Andina Perforaciones, a local drilling contractor based in Salta, Argentina. Locations and total depths drilled for exploration wells are given in Table 10-1. Aquifer test drawdown data were analyzed for aquifer transmissivity using the semi-logarithmic graphical method developed by Cooper and Jacob (1946) using Aqtesolv software (HydroSOLVE, 2008) and verified manually. Transmissivity was also calculated using the Theis (1935) recovery method, which is generally considered to be more reliable.

Drilling was done using conventional circulation mud rotary. Drilling fluid was a polymer mud mixed with brine. For each well, time to drill one meter was recorded to monitor penetration rate. Unwashed and washed drill cuttings were described and stored in labeled plastic cutting boxes.

Geophysical surveys were conducted on each well after pilot borehole drilling was completed. The surveys were performed by Zelandez, a multi-disciplinary consulting firm based in Salta province, Argentina. Geophysical logs performed by Zelandez included ultrasonic caliper, gamma, Short-Normal resistivity, Long-Normal resistivity, spontaneous potential, electrical conductivity, temperature, and borehole magnetic resonance (BMR).

All downhole geophysical results were considered, in assigning drainable porosity estimates to the various borehole lithologies (Section 14). In particular, BMR was considered, due to the strength of the technology as an indicator of total porosity, and for differentiating between porewater that is held immobile by capillary forces within the formation, and porewater that is mobile. This latter measure is comparable to drainable porosity or specific yield.

10.2.1.1 Exploration Well WBALT-01

Drilling activities for exploration well WBALT-01 started on November 27, 2020, reaching the depth of 43 mbgs on December 02, 2020. Construction schematic for well WBALT-01 is shown in Appendix A.

On December 17, 2020, a step-discharge test was conducted at well WBALT-01 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 8:30 AM. Average pumping rate, drawdown, and computed specific capacity for each 120-minute step are summarized in Table 10-2. The step-discharge test consisted of three 120-minute steps and the pre-pumping water level was at a depth of 1.57 m below measuring point (“mbmp”).

TABLE 10-2. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-01.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)*
WBALT-01	12/17/2020	1	1.7	8.29	0.21
		2	2.8	16.92	0.17
		3	4.2	29.65	0.14

*Specific capacity of a well is computed by dividing the average pumping rate by the maximum water level drawdown at that rate and is expressed as liters per second per meter of drawdown.

A constant-rate pumping test at well WBALT-01 started on December 18, 2020 with an average flow rate of 3.8 L/s; pre-pumping water level was 1.57 mbmp. A summary of the test is given in Table 10-3. The pumping test stopped on December 20, 2020 after 48 hours; water level recovery measurements were then manually measured for 5 hours.

TABLE 10-3. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-01.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping/ Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 5 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-01	12/18/2020	48/5	1.57	3.8	28.93	0.12	0.13

A summary of computed aquifer parameters is given in Table 10-4. Analysis of the trend of groundwater level drawdown for the period 100 minutes after pumping started until end of the test, indicates a transmissivity of about 90 m^2/d. Analysis of the trend of groundwater level recovery for the late period after pumping stopped indicates a transmissivity of about 60 m^2/d. Analysis for calculation of transmissivity was performed using recovery data measured for a period of 5 hours. A reasonable estimation of the "operative" transmissivity for well WBALT-01 is considered to be 60 m^2/d.

TABLE 10-4. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-01.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-01	3.8	90	60

10.2.1.2 Exploration Well WBALT-02

Drilling activities for exploration well WBALT-02 started on January 13, 2021, reaching the depth of 130 mbgs on January 23, 2021. Construction schematic for well WBALT-02 is shown in Appendix A. On February 22, 2021, a step-discharge test was conducted at well WBALT-02 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 3:00 PM. The step-discharge test consisted of three 90-minute steps and the pre-pumping water level was at a depth of 3.63 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 90-minute step are summarized in Table 10-5.

TABLE 10-5. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-02.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-02	02/22/2021	1	4.9	21	0.23
		2	7.7	41.42	0.19
		3	14.6	83.12	0.18

A constant rate pumping test at well WBALT-02 started on February 18, 2021 with an average flow rate of 17.2 L/s; pre-pumping water level was 3.84 mbmp. A summary of the test is given in Table 10-6. The pumping test stopped on February 20, 2021 after 48 hours; water level recovery measurements were then manually measured for the same period.

TABLE 10-6. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-02.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-02	02/18/2021	48/48	3.84	17.2	88.35	-0.21	0.19

A summary of computed aquifer parameters is given in Table 10-7. Analysis of the trend of groundwater level drawdown for the period 210 minutes after pumping started until end of the test, indicates a transmissivity of about 135 m^2/d. Analysis of the trend of groundwater level recovery for the late period after pumping stopped indicates a transmissivity of about 110 m^2/d. A reasonable estimation of the "operative" transmissivity for well WBALT-01 is considered to be 110 m^2/d.

TABLE 10-7. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-02.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-02	17.2	135	110

10.2.1.3 Exploration Well WBALT-03

Drilling activities for exploration well WBALT-03 started on June 26, 2021, reaching the depth of 120 mbgs in June 30, 2021. Construction schematic for well WBALT-03 is shown in Appendix A.

On September 17, 2021, a step-discharge test was conducted at well WBALT-03 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 2:00 PM. The step-discharge test consisted of three 120-minute steps and the pre-pumping water level was at a depth of 2.33 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 120-minute step are summarized in Table 10-8.

TABLE 10-8. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-03.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-03	09/17/2021	1	5.8	8.38	0.69
		2	8.0	12.78	0.63
		3	10.5	16.40	0.64

A constant rate pumping test at well WBALT-03 started on September 13, 2021, with an average flow rate of 10.3 L/s; pre-pumping water level was 2.11 mbmp. A summary of the test is given in Table 10-9. The pumping test stopped on September 16, 2021, after 72 hours; water level recovery measurements were then manually measured for 27.5 hours.

TABLE 10-9. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-03.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 27.5 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-03	09/13/2021	72/27.5	2.11	10.3	17.6	0.22	0.59

A summary of computed aquifer parameters is given in Table 10-10. Analysis of the trend of groundwater level drawdown, for the period of 300 minutes after pumping started until end of the test, indicates a transmissivity of about 350 m^2/d. Analysis of the trend of groundwater level recovery for the late period after pumping stopped indicates a transmissivity of about 125 m^2/d. Analysis for calculation of transmissivity was performed using recovery data only for a period of 27.5 hours. A reasonable estimation of the "operative" transmissivity for well WBALT-03 is considered to be 125 m^2/d.

TABLE 10-10. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-03.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-03	10.3	350	125

10.2.1.4 <u>Exploration Well WBALT-04</u>

Drilling activities for exploration well WBALT-04 started on March 11, 2021, reaching the depth of 80 mbgs on March 20, 2021. Construction schematic for well WBALT-04 is shown in Appendix A.

On April 27, 2021, a step-discharge test was conducted at well WBALT-04 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 8:30 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 1.67 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-11.

TABLE 10-11. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-04.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-04	04/27/2021	1	4.4	4.23	1.04
		2	8.3	8.0	1.04
		3	19.6	19.93	1.00

A constant rate pumping test at well WBALT-04 started on April 28, 2021 with an average flow rate of 19.9 L/s; pre-pumping water level was 1.8 mbmp. A summary of the test is given in Table 10-12. The pumping test stopped on April 30, 2021 after 48 hours; water level recovery measurements were then manually measured for 20 hours.

TABLE 10-12. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-04.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 20 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-04	04/28/2021	48/20	1.8	19.9	22.12	0.31	0.9

A summary of computed aquifer parameters is given in Table 10-13. Analysis of the trend of groundwater level drawdown after pumping started until end of the test, indicates a transmissivity of about 160 m^2/d. Analysis of the trend of groundwater level recovery after pumping stopped indicates a transmissivity of about 200 m^2/d. Analysis for calculation of transmissivity was performed using recovery data for 20 hours. A reasonable estimation of the "operative" transmissivity for well WBALT-04 is considered to be 200 m^2/d.

TABLE 10-13. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-04.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-04	19.9	160	200

10.2.1.5 Exploration Well WBALT-05

Drilling activities for exploration well WBALT-05 started on January 10, 2021, reaching the depth of 352 mbgs on January 25, 2021. Well schematic for well WBALT-05 is shown in Appendix A.

On March 29, 2021, a step-discharge test was conducted at well WBALT-05 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 2:00 PM. The step-discharge test consisted of three 150-minute steps and the pre-pumping water level was at a depth of 27.51 mbmp. It is important to mention that 84 minutes before last step started pump equipment stopped and recovery measurements started. Average pumping rate, drawdown, and computed specific capacity for each 150-minute step are summarized in Table 10-14.

TABLE 10-14. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-05.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-05	03/29/2021	1	0.31	16.65	0.019
		2	0.65	33.49	0.019
		3	0.92	55.09	0.017

A constant rate pumping test at well WBALT-05 started on March 27, 2021 with an average flow rate of 0.73 L/s; pre-pumping water level was 26.08 mbmp. A summary of the test is given in Table 10-15. The pumping test stopped on March 28, 2021 after 18 hours due to problems with the pumping equipment; water level recovery measurements were then manually measured during 18 hours.

TABLE 10-15. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-05.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 22 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-05	03/27/2021	18/18	26.08	0.73	41	1.58	0.018

A summary of computed aquifer parameters is given in Table 10-16. Analysis of the trend of groundwater level drawdown for the period 130 minutes after pumping started until end of the test, indicates a transmissivity of about 40 m^2/d. However, it appears that flow rate may not have been kept constant, effectively invalidating the calculated transmissivity. Analysis of the trend of groundwater level recovery for the late period after pumping stopped indicates a transmissivity of about 1 m^2/d. A reasonable estimation of the "operative" transmissivity for well WBALT-05 is considered to be 1 m^2/d.

TABLE 10-16. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-05.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-05	0.73	40	1

10.2.1.6 Exploration Well WBALT-06

Drilling activities for exploration well WBALT-06 started on October 29, 2021, reaching the depth of 238 mbgs on November 19, 2021. Well schematic with most updated construction information for well WBALT-06 is shown in Appendix A.

TABLE 10-17. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-06.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-06	01/26/2022	1	4.4	14.97	0.294
		2	7.7	26.81	0.287
		3	16.5	58.74	0.281

A constant rate pumping test at well WBALT-06 started on January 26, 2022 with an average flow rate of 17.2 L/s; pre-pumping water level was 3.17 mbmp. A summary of the test is given in Table 10-18. After about 1800 minutes into pumping, issues with generator caused variance in the pumping rate. The pumping test stopped on January 28, 2022 after 48 hours; water level recovery measurements were then manually measured during the following 59 hours.

TABLE 10-18. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-06.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 59 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-06	01/26/2022	48/59	3.17	17.2	60.87	0.98	0.28

A summary of computed aquifer parameters is given in Table 10-19. Analysis of the trend of groundwater level drawdown for the period 100 minutes after pumping started until about 1800 minutes into the test, indicates a transmissivity of about 60 m^2/d. Analysis of the trend of groundwater level recovery for the period after pumping stopped indicates a transmissivity of about 40 m^2/d. A reasonable estimation of the "operative" transmissivity for well WBALT-06 is considered to be 40 m^2/d.

TABLE 10-19. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-06.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-06	17.2	60	40

10.2.1.7 Exploration Well WBALT-07

Drilling activities for exploration well WBALT-07 started on May 15, 2021, reaching the depth of 352 mbgs at the beginning of June, 2021. Well schematic for well WBALT-07 is shown in Appendix A.

On October 10, 2021, a step-discharge test was conducted at well WBALT-07 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 9:00 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 4.96 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-20.

TABLE 10-20. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-07.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-07	10/10/2021	1	6.3	5.51	1.143
		2	10.3	9.34	1.103
		3	17.4	15.82	1.100

A constant rate pumping test at well WBALT-07 started on October 17, 2021 with an average flow rate of 17.6 L/s; pre-pumping water level was 5.0 mbmp. A summary of the test is given in Table 10-21. The pumping test stopped on October 20, 2021, after 72 hours; water level recovery measurements were then manually measured for 7.5 hours.

TABLE 10-21. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-07.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 7.5 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-07	10/17/2021	72/7.5	5.0	17.6	16.67	0.76	1.06

A summary of computed aquifer parameters is given in Table 10-22. Analysis of the trend of groundwater level drawdown for the period 200 minutes after pumping started until 1500 minutes, indicates a transmissivity of about 230 m^2/d. Analysis of the trend of groundwater level recovery for the late period after pumping stopped indicates a transmissivity of about 190 m^2/d. A reasonable estimation of the "operative" transmissivity for well WBALT-07 is considered to be 190 m^2/d.

TABLE 10-22. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-07.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-07	17.6	230	190

10.2.1.8 Exploration Well EX-ALT-08

Drilling activities for exploration well EX-ALT-08 started on August 18, 2021, reaching the depth of 352 mbgs on September 17, 2021. Well schematic for well EX-ALT-08 is shown in Appendix A.

On December 12, 2021, a step-discharge test was conducted at well EX-ALT-08 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 5:45PM. The step-discharge test consisted of two steps. The first one for 240 minutes and the second and last step for 120 minutes. Due to problems with the sounder, water level was measured with a pressure transducer only. The pre-pumping water level was at a depth of 45.70 mbmp. Average pumping rate, drawdown, and computed specific capacity for each step are summarized in Table 10-23.

TABLE 10-23. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WEL EX-ALT-08L.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
ExALT-08	12/12/2021	1	2.4	20.75	0.12
		2	3.0	26.16	0.11

A constant rate pumping test at well Ex-ALT-08 started on December 02, 2021 with an average flow rate of 3.9 L/s; pre-pumping water level was 43.7 mbmp. A summary of the test is given in Table 10-24. The pumping test stopped on December 06, 2021 after 96 hours; water level recovery measurements were then manually measured for the following 48 hours.

TABLE 10-24. PUMPING TEST SUMMARY FOR FRESH WATER WELL EX-ALT-08.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 96 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
ExALT-08	12/02/2021	96/48	45.70	3.9	34.66	0.02	0.11

A summary of computed aquifer parameters is given in Table 10-25. Analysis of the trend of groundwater level drawdown for the duration of the test, indicates a transmissivity of about 60 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 40 m^2/d. A reasonable estimation of the “operative” transmissivity for well Ex-ALT-08 is considered to be 40 m^2/d.

TABLE 10-25. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL EX-ALT-08.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2d)
Ex-ALT-08	3.9	60	40

10.2.1.9 Exploration Well WBALT-09

Drilling activities for exploration well WBALT-09 started on December 13, 2021 reaching the depth of 326 mbgs on March 17, 2022. Well schematic for well WBALT-09 is shown in Appendix A.

On March 11, 2022, a step-discharge test was conducted at well WBALT-09 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 9:00 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 6.54 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-26.

TABLE 10-26. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-09.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
ExALT-08	03/11/2022	1	5.6	4.20	1.3
		2	13.3	11.05	1.2
		3	20.3	17.40	1.2

A constant rate pumping test at well WBALT-09 started on March 12, 2022 with an average flow rate of 20.2 L/s; pre-pumping water level was 6.49 mbmp. A summary of the test is given in Table 10-27. The pumping test stopped on March 15, 2021 after 72 hours; water level recovery measurements were then manually measured during the following 48 hours.

TABLE 10-27. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-09.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WBALT-09	03/12/2022	72/48	6.49	20.2	20.02	0.085	1.01

A summary of computed aquifer parameters is given in Table 10-28. Analysis of the trend of groundwater level drawdown for the duration of the test, indicates a transmissivity of about 170 m^2/d. Analysis of the trend of groundwater level recovery after pumping stopped indicates a transmissivity of about 115 m^2/d. A reasonable estimation of the “operative” transmissivity for well WBALT-09 is considered to be 115 m^2/d.

TABLE 10-28. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-09.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-09	20.2	170	115

10.2.1.10 Exploration Well WBALT-10

Drilling activities for exploration well WBALT-10 started on February 07, 2022, reaching the depth of 402 mbgs on March 03, 2022. Well schematic for well WBALT-10 is shown in Appendix A.

On July 06, 2022, a step-discharge test was conducted at well WBALT-10 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Manual water level measurements were not taken during testing. Pumping for the step-discharge test commenced at 9:00 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 3.40 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-29.

TABLE 10-29. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-10.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-10	07/06/2022	1	6.9	3.69	1.9
		2	15.0	8.25	1.8
		3	20.4	11.21	1.8

A constant rate pumping test at well WBALT-10 started on July 07, 2022 with an average flow rate of 20.2 L/s; pre-pumping water level was 3.43 mbmp. A summary of the test is given in Table 10-30. The pumping test stopped on July 10, 2021 after 72 hours; water level recovery measurements were then manually measured during the following 72 hours.

TABLE 10-30. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-10.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WBALT-10	07/07/2022	72/72	3.43	20.2	11.82	0.24	1.71

A summary of computed aquifer parameters is given in Table 10-31. Analysis of the trend of groundwater level drawdown for the duration of the test, indicates a transmissivity of about 550 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 550 m^2/d. A reasonable estimation of the "operative" transmissivity for well WBALT-10 is considered to be 550 m^2/d.

TABLE 10-31. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-10.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-10	20.2	550	550

10.2.1.11 Exploration Well WBALT-11

Drilling activities for exploration well WBALT-11 started on January 27, 2022, reaching the depth of 400 mbgs on February 10, 2022. Well schematic for well WBALT-11 is shown in Appendix A.

On August 20, 2022, a step-discharge test was conducted at well WBALT-11 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 10:00 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 58.95 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-32.

TABLE 10-32. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-11.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-11	08/20/2022	1	2.09	5.79	0.36
		2	4.03	12.78	0.32
		3	10.25	28.49	0.36

A constant rate pumping test at well WBALT-11 started on August 13, 2022 with an average flow rate of 9.2 L/s; pre-pumping water level was 57.57 mbmp. A summary of the test is given in Table 10-33. The pumping test stopped on August 16, 2022 after 72 hours; water level recovery measurements were then manually measured during the following 72 hours.

TABLE 10-33. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-11.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 72 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WBALT-11	08/13/2022	72/72	57.57	9.32	31.73	1.37	0.29

A summary of computed aquifer parameters is given in Table 10-34**.** Analysis of the trend of groundwater level drawdown for the duration of the test indicates a transmissivity of about 50 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 80 m^2/d. A reasonable estimation of the “operative” transmissivity for well WBALT-11 is considered to be 80 m^2/d.

TABLE 10-34. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-11.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-11	9.2	50	80

10.2.1.12 Exploration Well WBALT-12

Drilling activities for the WBALT-12 exploration well commenced on July 25, 2022, reaching a depth of 361 mbgs on September 9, 2022. Well schematic for well WBALT-12 is shown in Appendix A.

On April 08, 2023, a step-discharge test was conducted at well WBALT-12 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 2.52 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-35.

TABLE 10-35. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-12.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-12	04/08/2023	1	7.22	7.68	0.94
		2	16.94	17.04	0.99
		3	22.78	20.69	1.10
		Additional 1	3.19	2.41	1.32
		Additional 2	22.32	22.05	1.01

A constant rate pumping test at well WBALT-12 started on April 02, 2023 with average flow rate of 22.325 L/s. A summary of the test is given in Table 10-36. The pumping test stopped after 72 hours; water level recovery measurements were then manually measured during the following 72 hours.

Data from both assays were used to calculate the transmissivity of the aquifer. Table 10-37 shows a summary of the data obtained.

TABLE 10-36. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-12.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WBALT-12	04/02/2023	72/48	3.075	22.325	22.055	-0.405	1.01

TABLE 10-37. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-12.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-12	22.325	72.75	159.9

10.2.1.13 Exploration Well WBALT-13

Drilling activities for exploration well WBALT-13 started in the beginning of 2022, reaching the depth of 273 mbgs in the first half semester of 2022. Well schematic for well WBALT-13 is shown in Appendix A.

On July 06, 2022, a step-discharge test was conducted at well WBALT-13 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 8:40 AM. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 15.93 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-38.

TABLE 10-38. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-13.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-13	07/06/2022	1	0.4	10.02	0.04
		2	0.6	27.49	0.02
		3	1.1	44.96	0.02

A constant rate pumping test at well WBALT-13 started on July 09, 2022 with an average flow rate of 1.2 L/s; pre-pumping water level was 15.89 mbmp. A summary of the test is given in Table 10-39. The pumping test stopped on July 12, 2022 after 72 hours; water level recovery measurements were then manually measured during the following 72 hours.

TABLE 10-39. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-13 .

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WBALT-13	07/09/2022	72/72	15.89	1.2	56.97	-0.13	0.02

A summary of computed aquifer parameters is given in Table 10-40. Analysis of the trend of groundwater level drawdown for the duration of the test, indicates a transmissivity of about 3 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 5 m^2/d. A reasonable estimation of the “operative” transmissivity for well WBALT-13 is considered to be 5 m^2/d.

TABLE 10-40. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-13.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-13	1.2	3	5

10.2.1.14 Exploration Well WBALT-14

Drilling activities for the WBALT-14 exploration well commenced on December 9, 2022, reaching a depth of 280 mbgs on April 15, 2023. Well schematic for well WBALT-14 is shown in Appendix A.

On Apr 08, 2023, a step-discharge test was conducted at well WBALT-14 to evaluate drawdown and well efficiency at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. The step-discharge test consisted of three 180-minute steps and the pre-pumping water level was at a depth of 4.3 mbmp. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-41.

TABLE 10-41. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-14.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-14	04/08/2023	1	4.69	2.13	2.20
		2	9.81	4.61	2.13
		3	22.08	10.79	2.05

A constant rate pumping test at well WBALT-14 started on April 9, 2023 with an average flow rate of 22.49 L/s; pre-pumping water level was 4.21 mbgs. A summary of the test is given in Table 10-42.

TABLE 10-42. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-14.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 48 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-14	04/09/2023	72/72	4.21	22.49	11.99	0.03	1.88

A summary of computed aquifer parameters is given in Table 10-43**.** Analysis of the trend of groundwater level drawdown for the duration of the test, indicates a transmissivity of about 113.3 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 290.8 m^2/d.

TABLE 10-43. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-14.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-14	22.49	113.3	290.8

10.2.1.15 Exploration Well WBALT-15

Drilling activities for the WBALT-15 exploration well commenced on July 22, 2022, reaching a depth of 363 mbgs on August 12, 2022. Well schematic for well WBALT-15 is shown in Appendix A.

A step-discharge pumping test was carried out with three increasing, constant and different flow rates, which were applied for 180 minutes each. Before starting the test, the static level was 9.07 mbgs. Average pumping rate, drawdown, and computed specific capacity for each 180-minute step are summarized in Table 10-44.

TABLE 10-44. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL WBALT-15.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
WBALT-15	11/01/2022	1	3.83	1.29	2.97
		2	5.75	2.99	1.92
		3	10	6.86	1.45

A constant rate pumping test at well WBALT-15 started on October 25, 2022 with an average flow rate of 11.94 L/s; pre-pumping water level was 8.7 mbmp. A summary of the test is given in Table 10-45.

TABLE 10-45. PUMPING TEST SUMMARY FOR EXPLORATION WELL WBALT-15.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 72 Hours of Pumping (m)	Residual Drawdown After 24 Hours of Recovery (m)	Specific Capacity (L/s/m)
WBALT-15	10/25/2022	72/24	8.7	11.94	7.79	0.68	1.53

A summary of computed aquifer parameters is given in Table 10-46. Analysis of the trend of groundwater level drawdown after pumping started until end of the test, indicates a transmissivity of about 177 m^2/d. Analysis of the trend of groundwater level recovery after pumping stopped indicates a transmissivity of about 289 m^2/d.

TABLE 10-46. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL WBALT-15.

Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
WBALT-15	11.94	177.4	288.8

10.2.1.16 <u>Exploration Well WBALT-16</u>

Drilling activities for the WBALT-16 exploration well commenced on January 18, 2023, reaching a depth of 272 mbgs on February 7, 2023. Well schematic for well WBALT-16 is shown in in Appendix A. The results of the pumping tests were deemed inconclusive and repeat tests should be conducted.

10.2.1.17 <u>Exploration Well WBALT-17</u>

Drilling activities for the WBALT-17 exploration well commenced on October 2, 2023, reaching a depth of 355 mbgs on October 24, 2022. Well schematic for well WBALT-17 is shown in in Appendix A. The results of the pumping tests were deemed inconclusive and repeat tests should be conducted.

10.2.1.18 Exploration DDH-01

Drilling activities for the DDH-01 exploration well began on January 27, 2023, reaching a depth of 401 mbgs on March 24, 2023. The objective of the drilling was to extract core for in-depth analysis regarding information at depth under the salar.

A circulation mud specially designed and adjusted for the particular conditions of a salt flat environment was used, but it was not possible to profile the well due to the instability of its walls. Brine samples were extracted using a packer system, but results were inconclusive.

10.2.1.19 Exploration DDH-02

Drilling activities for the DDH-02 exploration well began on April 17, 2023, reaching a depth of 191 mbgs on June 4, 2023. The objective of the drilling was to extract core for in-depth analysis regarding information at depth under the salar. A circulation mud specially designed and adjusted for the particular conditions of a salt flat environment was used.

Once the exploratory drilling was completed, geophysical profiling of the well was carried out by Zelandez. Brine samples were extracted using a packer system, but results were inconclusive.

10.2.1.20 Exploration DDH-03

Drilling activities for the DDH-03 exploration well began on November 9, 2022, reaching a depth of 506 mbgs on December 04, 2022. The objective of the drilling was to extract core for in-depth analysis regarding information at depth under the salar. A circulation mud specially designed and adjusted for the particular conditions of a salt flat environment was used.

Once the exploratory drilling was completed, geophysical profiling of the well was carried out by Zelandez. Brine samples were extracted using a packer system, but results were inconclusive.

10.2.1.21 Summary of Exploration Well Program

The exploration well program documented herein was designed to obtain additional aquifer hydraulic parameters, to develop a conceptual hydrogeological model, to obtain information to estimate an updated Mineral Resource Estimate, and to demonstrate that brine could be pumped from the salar to eventually support development of a lithium brine extraction project. Nineteen brine exploration wells (DDHB-01, WBALT-01, -02, -03, -04, -05, -06 -07, -09, -10, -11, -12, -13, -14, -15, -16, and -17, and Ex-ALT-08 in the southern concession area), and one piezometer (WBALT-03P) are documented in this report. The wells were drilled up to a maximum depth of approximately 500 mbgs, and completed with 6- and 8-inch, 8-inch, or 10-inch and 6-inch PVC casing, except WBALT-05, which was completed with 6-inch galvanized steel casing.

The exploration wells in the basin identified a brine aquifer in the majority of the basin. Laboratory results confirm that enriched lithium occurs in the basin. Brine samples were collected during testing and sent for analysis to SGS Laboratory in Salta.

Pumping test results indicate that brine can be pumped from the wells and supports the premise that the basin represents a viable lithium exploitation project. Step-discharge and constant-discharge tests were conducted in completed exploration wells to estimate sustainable pumping capacity and aquifer parameters. According to pumping test results, transmissivity values ranged between 40 and 200 m^2/d for most of the wells, with wells WBALT-05 and -13 being less than 10 m^2/d. Pumping rates were typically between 10 - 20 L/s. In the southern concession, well EX-ALT-08 had a transmissivity of about 40 m^2/d and a pumping rate of about 4 L/s.

Exploration well EX-ALT-08 was drilled and tested in the south concession; groundwater encountered was fresh to brackish, and suggests that a fresh water source overlying a brine aquifer may occur in this part of the concession.

Overall, the QP believes that the results from the drilling exploration program are sufficient to update the lithium Resource Estimate.

10.2.2 FRESHWATER WELLS

To date, the exploration program for fresh water has included drilling and construction of exploration wells FWBALT-01, -01A, -01B, and -02. Schematic diagrams for each of the three freshwater exploration wells are shown in Appendix A. No aquifer tests were conducted at the freshwater wells.

In the southern sector, in the vicinity of the FWWALT-02 well, a piezometer and a piezometric fluctuations well were built. Locations and total depths drilled for exploration wells are given in Table 10-1.

Geophysical surveys were conducted after pilot borehole drilling was completed. The surveys were performed by Zelandez, a geophysical logging company based in Salta province, Argentina. Geophysical logs performed by Zelandez included short-normal resistivity, long-normal resistivity, and spontaneous potential.

10.2.2.1 Freshwater Well FWWALT-01

Drilling activities for exploration well FWWALT-01 started in November 27, 2021, reaching the depth of 44 mbgs in the same month. Construction schematic for well FWWALT-01 is shown in Appendix A.

10.2.2.2 Freshwater Well FWWALT-01A

Drilling activities for exploration well FWWALT-01A started on June 03, 2021, reaching the depth of 89 mbgs in the same month. Construction schematic for well FWWALT-01A is shown in Appendix A.

10.2.2.3 Freshwater Well FWWALT-01B

Drilling activities for exploration well FWWALT-01B started on October 01, 2021, reaching the depth of 103 mbgs in the same month. Construction schematic for well FWWALT-01B is shown in Appendix A. According to the results of the geophysical logging, and after a pumping test was conducted in the uncased hole, it was decided not to case the well, and it was abandoned.

10.2.2.4 Freshwater Well FWWALT-02

Drilling activities for exploration well FWWALT-02 were finished on December 06, 2021, reaching the depth of 153 mbgs. Construction schematic for well FWWALT-02 is shown in Appendix A.

On January 20, 2022, a step-discharge test was conducted at well FWWALT-02 to evaluate drawdown at different pumping rates for determination of sustainable pumping capacity of the well for the constant-discharge test. Pumping for the step-discharge test commenced at 8:55 AM. The step-discharge test consisted of three 120-minute steps and the pre-pumping water level was at a depth of 17.65 mbmp. Average pumping rate, drawdown, and computed specific capacity for each step are summarized in Table 10-47.

TABLE 10-47. SUMMARY OF THE STEP-DISCHARGE TEST AT EXPLORATION WELL FWWALT-02 .

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
FWWALT-02	01/020/2022	1	3.3	2.56	1.3
		2	6.6	5.76	1.1
		3	12.2	11.35	1.1

A constant rate pumping test at well FWWALT-02 started on December 21, 2021 with an average flow rate of 11.7 L/s; pre-pumping water level was 17.59 mbmp. A summary of the test is given in Table 10-48. The pumping test stopped on December 23, 2021, after 48 hours; water level recovery measurements were then manually measured during the following 12 hours.

TABLE 10-48. PUMPING TEST SUMMARY FOR EXPLORATION WELL FWWALT-02 .

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 48 Hours of Pumping (m)	Residual Drawdown After 12 Hours of Recovery (m)	Specific Capacity After 72 Hours of Pumping (L/s/m)
WFFALT-02	12/21/2021	48/12	17.59	11.7	11.02	0.14	1.06

Drawdown data were analyzed for aquifer transmissivity using the semi-logarithmic graphical method developed by Cooper and Jacob (1946) using Aqtesolv software (HydroSOLVE, 2008) and verified manually. The Theis (1935) recovery method results are generally considered to be more reliable.

A summary of computed aquifer parameters is given in Table 10-49. Analysis of the trend of groundwater level drawdown for the duration of the test indicates a transmissivity of about 240 m^2/d. Analysis of the trend of groundwater level recovery for the early period after pumping stopped indicates a transmissivity of about 360 m^2/d. A reasonable estimation of the “operative” transmissivity for well FWWALT-02 is considered to be 360 m^2/d.

TABLE 10-49. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT WELL FWWALT-02.

Pumped Well ID	Average Pumping Rate (L/s)	Cooper-Jacob (1946) Drawdown Method Transmissivity (m^2/d)	Theis (1935) Recovery Method Transmissivity (m^2/d)
FWWALT-02	1.2	240	360

10.2.2.5 <u>Freshwater Exploration Summary</u>

A freshwater exploration program was executed in 2022 and consisted of three exploration boreholes in the northwest part of the northern concession area, and one borehole in the southwest part of the north concession. A single sample was obtained from an open hole at borehole FWWALT-02 in the southwest area and, although not considered potable, is generally considered fresh. Brine exploration well EX-ALT-08 drilled and tested in the south concession was fresh to brackish, and suggests that a freshwater source also occurs in this part of the concession. Additional exploration of the southern concession is recommended to identify a sustainable freshwater source, and to determine confirm if there is a lithium brine located at depth in this part of the Tolillar Project.

In addition, it appears that there is fresh water in the upper part of the aquifer in the far north part of the concessions in the area of WBALT-10 and -11. It is recommended that relatively shallow exploration wells be installed in this area and also northwest and west from WBALT-11 to determine the nature of the freshwater system.

10.2.3 PIEZOMETER PROGRAM

To date, three piezometer wells were constructed. Locations and total depths drilled for piezometer boreholes are given in Table 10-1.

10.2.3.1 Piezometer WBALT-03P

Drilling activities for well WBALT-03P started on July 28, 2021, reaching the depth of 36 mbgs on July 29, 2021. Well schematic for well WBALT-03P is shown in Appendix A.

10.2.3.2 PzWRALT-01

The PzWRALT-01 fluctuation well was constructed to measure static level variations in the recharge zone of the FWWALT-02 well. Drilling activities for the PzWRALT-01 well commenced on September 16, 2022, reaching a depth of 53 mbgs on October 19, 2022. The step-discharge test consisted of three increasing and constant flow rates, and each flow rate lasted for one hour as summarized in Table 10-50. Water level recovery of the well was measured after pumping was completed.

TABLE 10-50. SUMMARY OF THE STEP-DISCHARGE TEST AT PZWRALT-01 WELL.

Well ID	Test Date (mm/dd/yyyy)	Step	Average Pumping Rate (L/s)	Maximum Drawdown (m)	Specific Capacity (L/s/m)
PzWRALT-1	11/01/2022	1	0.88	1.47	0.6
		2	2.21	3.73	0.59
		3	4.31	7.33	0.58

A constant rate pumping test at well PzWRALT-01 started on Nov 02, 2022 with an average flow rate of 4.92 L/s for a duration of 360 minutes for both pumping and recovery, in order to estimate the hydraulic parameters of the reservoir. The static level of the well before starting this test was 22.16 m. Results are summarized in Table 10-51.

A summary of computed aquifer parameters is given in Table 10-52.

TABLE 10-51. PUMPING TEST SUMMARY FOR PZWRALT-01 WELL.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (mbgs)	Average Pumping Rate (L/s)	Drawdown After 6 Hours of Pumping (m)	Residual Drawdown After 6 Hours of Recovery (m)	Specific Capacity After 6 Hours of Pumping (L/s/m)
PzWRALT-1	11/02/2022	6/6	22.16	4.92	1.18	0	4.17

TABLE 10-52. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT PZWRALT-01 WELL.

Well ID	Average Pumping Rate (L/s)	Theis (1935) Recovery Method Transmissivity (m^2/d)
PzWRALT-1	4.92	345.2

10.2.3.3 PzWRALT-02

The PzWRALT-02 piezometer well was constructed to measure static level variations in the recharge zone of the FWWALT-02 well. Drilling activities for the PzWRALT-02 well commenced on October 19, 2022, reaching a depth of 95 mbgs on October 22, 2022, from which piezometric levels were measured. Due to the well being located at a distance of 10 m from FWWALT-02, step-discharge testing was not performed. Table 10-53 shows summarized results.

A summary of computed aquifer parameters is given in Table 10-54.

TABLE 10-53. PUMPING TEST SUMMARY FOR PZWRALT-02 WELL.

Well ID	Date Pumping Started (mm/dd/yyyy)	Pumping / Recovery Duration (h)	Pre-Pumping Water Level (meters, bls)	Average Pumping Rate (L/s)	Drawdown After 12 Hours of Pumping (m)	Residual Drawdown After 9 Hours of Recovery (m)	Specific Capacity After 12 Hours of Pumping (L/s/m)
PzWRALT-2	10/20/2022	12/9	17.59	11.73	10.98	0.17	1.07

TABLE 10-54. SUMMARY OF COMPUTED AQUIFER PARAMETERS AT PZWRALT-02 WELL.

Pumped Well ID	Average Pumping Rate (L/s)	Theis (1935) Recovery Method Transmissivity (m^2/d)
PzWRALT-2	11.73	239.9

10.2.3.4 Piezometer Exploration Summary

Piezometer readings were taken from three wells, WBALT-03P drilled at brine well WBALT-03, and PzWRALT-01 and PzWRALT-02 drilled in the southern area of the concessions. The latter two are located within proximity to the fresh water well FWWALT-02. Borehole PzWRALT-01 is considered to be optimal for taking piezometric level measurements for any future recharge studies conducted in the area. While borehole PzWRALT-02 is also considered optimal for measurements, it is intended to be the observation well for FWWALT-02.

10.3 PUMPING TEST BRINE SAMPLE RESULTS FOR 2020 - 2023 FIELD PROGRAM

Alpha Lithium has collected and received laboratory results for composite brine samples collected from wells DDHB-01, WBALT-01, -02, -03, -04, -05, -06, -07, EX-ALT-08, WBALT-09, -10, -11, -12, -13, -14, -15, and FWWALT-02 obtained during the pumping test at each well. Results are summarized in Appendix B.

10.3.1 BRINE SAMPLING USING HYDRASLEEVE SYSTEM

Depth-specific brine samples using Hydrasleeve HS-2 disposable samplers were collected from wells DDHB-01, WBALT-01, -02, -04, 05, and WBALT-03P in May 2021.

Results are summarized in Appendix B.

11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 OVERVIEW

The following section applies to the initial and second surface sampling programs conducted by Argañaraz & Associates, and also to the subsequent exploration drilling and testing program conducted by Alpha Lithium. Brine samples were obtained for laboratory analyses. Additionally, Montgomery staff conducted several confirmatory tests to evaluate the brine chemistry. During the pumping tests, composite brine samples were obtained from several wells.

After the samples were sealed on site, they were stored at the Argañaraz & Associates (operations manager for one of the vendors) office in Salta, and then selected samples were shipped to the laboratories for analysis. Original samples not sent to the laboratory, and duplicate brine samples are stored at the Argañaraz & Associates office in Salta. Recent samples obtained by Montgomery were stored in Salta with Montgomery staff.

11.2 BRINE SAMPLING METHODOLOGY

Four methods were used to obtain brine samples along the exploration programs conducted. Brine samples were used to support the reliability of the depth-specific samples included analyses of the following:

- Bailed samples from shallow trenches, and shallow pits-boreholes,
- Bailed and pumped sampling at well DDHB-01,
- Brine samples obtained near the end of the pumping tests in the exploration wells, and
- Brine samples obtained using depth-specific Hydrasleeve sampling bags.

11.2.1 SHALLOW SURFACE SAMPLE COLLECTION AND PREPARATION

A surface brine sampling program covering the Tolillar Project properties was conducted during 2012, 2014, and 2015. Samples were obtained manually from shallow, hand-dug pits, trenches, and from shallow boreholes. A total of 26 brine samples (not including duplicate samples) were collected; lithological descriptions of the aquifer material in the upper part of the Salar were prepared. The brine samples were collected by means of plastic bottles and bailers. Once at the surface, the brine in the bailer was poured into a clean, 1-liter, plastic bottle. The bottles were labeled and with sample information documented. Sample containers were transported to the assay laboratory by the project geologists.

11.2.2 BRINE SAMPLING DURING EXPLORATION WELL PUMPING TESTS

Brine samples were collected during pumping tests conducted on recently-drilled WBALT exploration wells, and during the previous 2018 exploration well program. Samples were typically obtained during testing and at the end of the pumping period: brine samples were collected at approximately 12-hour intervals during pumping. The purpose of sampling was to document the chemistry of brine from pumping wells, and to document changes in chemistry, if any, during the initial pumping periods. Unlike depth-specific samples, brine samples collected during well pumping are a composite chemistry sample for the entire screened interval of the well, and are more representative of the chemistry that would be expected from that well during production pumping.

Brine samples were collected directly from the discharge line. Temperature (°C), EC, pH, and brine density were monitored during pumping. Brine samples from current pumping test program along with duplicate samples were sent to SGS Laboratory, Salta, Argentina; brine samples from 2018 drilling and testing program were sent to Alex Stewart Laboratory ("ASA") in San Salvador de Jujuy, Argentina, which is an ISO-certified lab and independent of the Issuer.

11.2.3 BRINE SAMPLING USING DEPTH-SPECIFIC METHODS

During the 2018 exploration drilling and testing program a depth specific sampling was carried out at well DDHB-01 and at various wells during the 2023 exploration drilling. Methods used to collect samples included pumping from the bottom of the well and sampling with a bailer at specific depth. The purpose of sampling was to document the chemistry of brine with depth. Brine samples were also taken using a depth specific sampler (bailer), which allow sample collection at intervals of 25 - 50 meters. During the 2020 - 2022 drilling and testing programs additional sampling using a bailer was attempted. However, samples could not be taken at depth and only shallow samples were collected.

Brine samples from the 2020 - 2022 pumping test program along with duplicate samples were sent to SGS Laboratory, Salta, Argentina, and brine samples from 2018 drilling and testing program were sent to ASA on San Salvador de Jujuy, Argentina. Besides, additional analysis of one duplicate sample collected from DDHB-01, was performed by Universidad de Antofagasta laboratory in Chile. Temperature (°C), EC, pH, and brine density were monitored during sampling. The Universidad of Antofagasta laboratory is independent from Alpha Lithium, but is an unaccredited laboratory. However, the Universidad of Antofagasta laboratory is used by many groups, including SQM for the Salar de Atacama project, and is considered a reliable laboratory for lithium.

During the 2020 - 2022 exploration program, Hydrasleeve model HS-2 of 600-mL capacity sampling bags were lowered to a specific depth at selected wells. A weight was placed on the bottom of the Hydrasleeve sampler to facilitate lowering of the sample bag. Once the bag reached the desired sampling depth, the sample bag was allowed to wait 5 to 10 minutes prior to collecting the sample. For each well, samples were obtained at 30 - 40 m intervals. Once the sample bags were at ground surface, the brine was transferred to 250-mL plastic bottles for shipment to the laboratory. Electrical conductivity, temperature (°C), pH, and oxide reduction potential were measured for each sample. Brine density was measured in the field at the request of the laboratory.

11.3 SAMPLE PREPARATION

The brine samples were collected and placed in clean, 1-liter, plastic bottles. The bottles were labeled and with sample information documented. Chain of custody sheets and field traffic reports were used to document the samples prior to transportation to the assay laboratory by the project geologists. Chemistry samples (brine) were not subjected to any further preparation prior to shipment to participating laboratories. After the samples were sealed on site, they were stored in a cool location, then shipped in sealed containers to the laboratories for analysis. Duplicate samples were taken and have been stored for all samples.

11.4 SAMPLE ANALYSES

Alex Stewart Laboratories ("ASA") was the primary laboratory for analysis of brine samples during the 2018 and most recent 2023 exploration program and is independent of the Issuer. 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 International Standards Organization (ISO) 9001 accredited and operate according to Alex Stewart Group international standards, consistent with ISO 17025 standards. Samples were filtered and then analyzed for metals at the ASA laboratory using the Inductively Coupled Plasma spectrometry analytical method.

For the 2020 - 2022 drilling program, brine chemistry samples were analyzed by SGS laboratories, Argentina, who have extensive experience analyzing lithium-bearing brines. SGS Laboratory is independent of the Issuer, accredited to ISO 9001 and operates according to SGS Group standards consistent with ISO 17025 methods at other laboratories.

For the independent duplicate samples collected during the 2023 current QP site visit (Section 12.0), samples were sent to AGAT Laboratories in Dartmouth, Canada. AGAT Laboratories is independent of the Issuer, accredited to ISO 9001 and operates according to requirements consistent with ISO/IEC 17025.

Based on the sample duplicate analyses, blank anaylses, and lab duplicate results, the reported lithium chemistry results are considered acceptable and reliable.

11.5 QUALITY CONTROL RESULTS AND ANALYSES

Analytical quality was monitored through the use of quality control samples, including blanks and duplicates, as well as check assays at independent laboratories. Each batch of samples submitted to the laboratory contained at least one blank and one duplicate. During the 2020 - 2022 exploration wells program, brine samples were sent for analysis at SGS Laboratory at Salta in Argentina.

11.5.1 SAMPLE DUPLICATE ANALYSES

Sample duplicates were obtained during sample collection in the field. Table 11-1 presents original and duplicate sample analytical results and statistics for selected constituents.

Table 11-2 presents percentage of difference between original and duplicate samples for selected constituents.

TABLE 11-1. RESULTS AND STATISTICS FOR DUPLICATE (DUP) SAMPLE ANALYSES. VALUES ARE IN MG/L.

Statistics	Li	Dup Li	K	Dup K	Mg	Dup Mg	B	Dup B	Ca	Dup Ca	Na	Dup Na
Count =	6	6	6	6	6	6	6	6	6	6	6	6
Min =	58	59	597	595	713	714	47	50	401	390	109,000	108,000
Max =	295	280	3017	2847	2624	2481	236	222	1193	1211	126,575	122,256
Mean =	114	112	1139	1119	1165	1162	88	88	886	898	115,762	114,997

TABLE 11-2. PERCENTAGE DIFFERENCE BETWEEN ORIGINAL AND DUPLICATE SAMPLE RESULTS.

Well ID	Sample ID	Interval Depth (m)	Li (mg/L) %	Mg (mg/L) %	Ca (mg/L) %	K (mg/L) %	Na (mg/L) %	SO4 (mg/L) %	Cl (mg/L) %	B (mg/L) %
WBALT-01	AST-0017[1]	16	1.7	5.1	1.5	-0.4	2.2	-0.1	0.0	2.0
WBALT-01	BLCSM-0024[2]	N/A	-1.3	-0.4	-0.9	1.2	0.0	-0.5	-0.6	-2.6
WBALT-01	BLCSM-0025[2]	N/A	-2.1	-2.0	-2.7	-4.0	-0.9	0.8	0.3	-0.4
WBALT-01	AST-0026[3]	38	-0.8	0.1	0.8	-3.7	-3.4	0.8	-0.6	5.3
WBALT-05	AST-0036[3]	177	-5.1	-5.5	-2.7	-5.6	3.7	-1.7	0.8	-6.1
WBALT-06	AST-0106[2]	N/A	2.8	1.2	---	1.9	0.9	0.07	-0.9	5.8
WBALT-09	AST-0166	N/A	0.9	2.9	0.9	2.6	1.1	0.4	0.1	2.2
WBALT-13	AST_309[2]	N/A	0.6	0.7	0.7	1.8	-1.8	---	---	1.4
DDHB-01	AST-0046[3]	112	12.6	10.7	11.7	10.5	-4.6	0.0	0.8	14.8

[1] Sample collected with bailer

[2] Sample collected during pump test

[3] Sample collected with Hydrasleeve

11.5.2 BLANK ANALYSES

Samples of distilled water were submitted as part of the laboratory quality control program. With the exception of calcium and sodium, results of the blank samples showed little to no constituents in the analytical results, indicating acceptable accuracy and precision. Lithium was not detected in any of the blank samples.

11.5.3 STANDARD SAMPLE ANALYSES

Standard samples of known lithium concentration have been used for some, but not all of the lithium projects to date in Argentina and Chile. Standard samples were not used for this Project due to the cost and difficulty of finding suitable labs to prepare these samples. Instead, Alpha Lithium relied on the laboratory certification and their own internal QA/QC processes for confirming reliability of the reported chemistry results for the brine samples.

11.6 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. All field samples obtained during drilling and testing that were not sent for anlaysis are currently being stored in the Argañaraz & Associates offices in Salta pending future submittal to a laboratory.

11.7 CONCLUSIONS

The field sampling of brines from the pumping tests was done in accordance with generally accepted industry standards. Future sampling programs should include a more rigorous QA/QC program that includes field blanks, additional duplicate samples, chain of custody documentation, formal traffic report for every sample obtained, and possible duplicate analyses by other laboratories.

In the opinion of the QP, sample preparation, security, and analytical procedures were acceptable, and the associated analytical results are acceptable for use in the updated Resource Estimate.

12.0 DATA VERIFICATION

The QP for the previous Resource Estimate (Michael Rosko, QP for Montgomery, 2022) conducted the following forms of data verification:

- Visited the Tolillar Project site several times in 2018 and 2022;
- Obtained a depth-specific sample from 52 m at exploration well DDHB-01 and measured the depth to water on December 2, 2018, as 0.88 mbgs;
- Obtained a duplicate sample of the brine being pumped from WBALT-07 on April 7, 2022;
- Reviewed drill cuttings and descriptions from the older drilling program and from the ongoing program;
- Checked summary tables against original laboratory reports; and
- Checked receipt of regular field reports that document exploration progress, and occasional field inspections by Montgomery staff.

In previous Technical Reports, the previous QP indicated that data verification efforts by the QP and their staff were adequate to ensure that reported results are reliable.

Dr. Mark King, the QP for the updated Resource Estimate conducted the following forms of data verification:

- Visited the Project site and the Alpha office in Salta in March 2023;
- Obtained independent duplicate samples from WBALT-12 and WBALT-15, on March 24, 2023 (Photos 12-1; Table 12-1);
- Reviewed drill cuttings and descriptions from the previous drilling programs and from the ongoing program;
- Checked summary tables against original laboratory reports; and
- Checked receipt of regular field reports that document exploration progress.

It is the opinion of the current QP (Dr. Mark King) that the reported results for the previous and recent exploration programs are acceptable for use in the updated Resource Estimate.

The QP considers that the analytical results are acceptable for use in the updated Resource Estimate.

PHOTOS 12-1. 2023 QP TOLILLAR PROJECT VISIT DUPLICATE SAMPLING.

TABLE 12-1. RESULTS FOR INDEPENDENT QP SAMPLES (2023) VERSUS FIELD PROGRAM AVERAGE.

WELL ID	SAMPLE ID	Li (mg/L)	Li (mg/L) %	Mg (mg/L)	Mg (mg/L) %	K (mg/L)	K (mg/L) %	B (mg/L)	B (mg/L) %	Mg/Li
WBALT-12	Field Program AVERAGE	171	11.7%	1103	9.7%	1920	-15.1%	137	5.1%	6.43
WBALT-12	QP Sample [ID]	191		1210		1630		144		6.34
WBALT-15	Field Program AVERAGE	332	1.2%	1753	-4.7%	3179	-0.9%	267	8.2%	5.28
WBALT-15	QP Sample [ID]	336		1670		3150		289		4.97

[ID] Independent Duplicate sample

QP Brine samples were analyzed at AGAT Laboratories in Calgary, Canada

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The recent PEA (Ausenco, 2023) contains the latest version of this Section.

14.0 MINERAL RESOURCE ESTIMATES

14.1 METHOD OVERVIEW

An updated Mineral Resource Estimate was developed for the Tolillar Project using a polygon domain methodology, incorporating recent drilling and sampling results. The methods were generally similar to the previous Resource (Montgomery, 2022), with the differences noted in Section 14.2. Technical oversight of the Resource Estimate was provided by the QP, working with Alpha and GWI specialists. The QP considers the input data and the results to be valid and appropriate for an Indicated and Inferred Mineral Resource Estimate.

The estimation steps are summarized as follows:

1. A domain was delineated for the entire Resource Zone (Section 14.3), and sub-domains were delineated for individual polygons, including Indicated and Inferred Zones (Sections 14.4 and 14.5).
2. Drainable porosity was assigned to each lithology unit in each polygon, based on borehole logging and previously published porosity values of similar lithologies (Section 14.6).
3. Lithium and potassium brine concentrations were assigned to each polygon, based on sampling results (Section 14.7).
4. Estimation parameters were compiled in a spreadsheet, for calculation of the Resource (Section 14.8).

14.2 DIFFERENCES FROM PREVIOUS ESTIMATE

The methodology of the updated Resource differs from that of the previous estimate in the following ways:

- Eleven additional boreholes were available to inform the updated Resource Estimate, for a total of 21.
- The footprint of the updated Resource zone is approximately 11% larger. The total polygon (and Resource) area increased from 90.58 to 102.0 km^2.
- Lithology profiles for each hole were reconstructed for the updated Resource. Since drainable porosity was assigned based on lithology, this resulted in some change to drainable porosity values and distribution.
- Additional drainable porosity information sources were compiled for the updated Resource.

Relative changes in the Resource are summarized in Section 14.8.

14.3 RESOURCE DOMAIN

The surface footprint of the Resource domain was based on either: interpreted salar boundaries, deposit characteristics, surface geophysics, or concession boundaries (Figure 14-1), as follows:

- The western limits of the domain were defined by the concession boundaries, with support from geophysical results showing the subsurface presence of brine extending to the boundary.
- In the eastern and central zone, the limits of the domain were defined by the interpreted outer boundaries of the salar, supported by geophysical results.
- The northeast and northwest limits were defined by an estimate of brine extent, supported by geophysical results.
- The southern limits were defined by concession boundaries, with support from geophysical results showing the subsurface presence of brine extending to the boundaries.

14.4 POLYGON ASSIGNMENT

Polygons were defined around 17 boreholes in the Resource domain, as shown in Figure 14-1 and Table 14-1. The total polygon (and Resource domain) area used for the Resource Estimate is 102.0 km^2. Polygons were delineated based on the following criteria:

- Outer boundaries of the polygons were defined by the Resource domain, as described in the previous section.
- Inner boundaries separating polygon blocks were equidistant between boreholes.
- Each polygon enclosed a single exploration well that contributed to the estimate.
- In some cases, there were additional boreholes located in the polygon, in addition to the primary borehole. These additional boreholes included DDH-01, DDH-02, and DDH-03. They contributed to the lithology and depth information compiled for the polygon, but they were not used for brine concentrations.

14.5 MINERAL RESOURCE ZONES

Indicated and Inferred Resource Zones were based on borehole drilling results and VES geophysics (Section 9.0). The top of the Indicated Zone at a given borehole (and associated polygon) was defined as the static brine level. The bottom was defined as either bedrock (if confirmed in the borehole) or the bottom of the hole (if bedrock was not confirmed). Polygon details are provided in Table 14-2.

Inferred Zones were defined for polygons in which the given borehole did not encounter bedrock. For these boreholes, the top of the Inferred Zone was defined as the final depth of the borehole. The bottom of the zone was defined as the interpreted top of bedrock, based on nearby boreholes and/or geophysical data. For example, borehole WBALT-02 reached 127 mbgs and did not intersect bedrock. Using the confirmed bedrock depth from nearby (<1 km) borehole WBALT-05 at 352 mbgs, basement was interpreted to be similar in WBALT-02. Therefore, an Inferred Resource Zone thickness for WBALT-02 is calculated to be 352 m – 127 m = 225 m. Boreholes used to interpret bedrock for Inferred Resources are listed in Table 14-3.

For reference, the resource category domains estimated for the Tolillar Project were compared against the brine deposit borehole density guidelines suggested by Houston et al. (2011). According to their definition, Tolillar would be conservatively classified as an immature (clastic-dominant) salar, which would suggest the following Resource zone criteria:

- Maximum borehole density for Measured category is 6.25 km^2/borehole;
- Maximum borehole density for Indicated category is 25 km^2/borehole; and
- Maximum borehole density for Inferred category is 49 to 100 km^2/borehole.

Although a direct comparison of the Tolillar Resource to these criteria is limited by the variable depths to which the resource categories extend in each of the Tolillar polygons, the following is noted:

- The density of ALL primary polygon boreholes (17) across the entire Tolillar Resource domain (102.0 km^2) is representative of the Indicated Resource. This density is approximately 6 km^2/borehole and does not consider the additional four boreholes in the Resource domain (Table 14-2). The borehole density is well below the Houston et al. criteria for Indicated Resources and is numerically within the criteria for Measured Resources. However, the QP considers that discrete-level brine and porosity sampling is required, to achieve conversion to Measured.
- The boreholes that proceed to basement across the entire Tolillar Resource domain (six) are representative of the Inferred Resource. The density associated with these boreholes is approximately 17 km^2/borehole, which is well below the density criteria for Inferred Resources posited by Houston et al. 2011 (49 to 100 km^2/borehole).

TABLE 14-1. COMPARISON OF BOREHOLES CONTRIBUTING TO THE PREVIOUS AND UPDATED RESOURCE ESTIMATES.

Well ID	Type	Type of Information used to inform Previous Resource, 2022		Type of Information used to inform Updated Resource	
		Lithology	Brine Chemistry	Lithology	Brine Chemistry
DDHB-01	rotary	✓	✓	✓	✓
WBALT-02	rotary	✓	✓	✓	✓
WBALT-03	rotary	✓	✓	✓	✓
WBALT-04	rotary	✓	✓	✓	✓
WBALT-05	rotary	✓	✓	✓	✓
WBALT-06	rotary	✓	✓	✓	✓
WBALT-07	rotary	✓	✓	✓	✓
WBALT-09	rotary	✓	✓	✓	✓
WBALT-10	rotary	✓	✓	✓	✓
WBALT-11	rotary	✓	✓	✓	✓
WBALT-12	rotary	✓	-	✓	✓
WBALT-13	rotary	✓	-	✓	✓
WBALT-14	rotary	-	-	✓	✓
WBALT-15	rotary	-	-	✓	✓
WBALT-16	rotary	-	-	✓	✓
WBALT-17	rotary	-	-	✓	✓
DDH-01	diamond	-	-	✓	-
DDH-02	diamond	-	-	✓	-
DDH-03	diamond	-	-	✓	-
WBALT-03P	piezometer	✓	-	✓	-
FWBALT-02	rotary	-	-	✓	✓
	TOTAL INCLUDED	**13**	**10**	**21**	**17**

✓ = included

- = not included

TABLE 14-2. POLYGON THICKNESS AND AVERAGE GRADE.

Well ID		INDICATED				INFERRED			
	Area	From	To	Thickness	Avg Li	From	To	Thickness	Avg Li
	(km^2)	(mbgs)[+]	(mbgs)	(m)	(mg/L)	(mbgs)	(mbgs)	(m)	(mg/L)
DDHB-01	2.90	3	208	205	202	N/A	N/A	N/A	N/A
WBALT-02	5.40	3.5	127	123.5	210	127	352.0*	225	351
WBALT-03	12.00	1.8	120	118.2	218	120	191.0*	71	218
WBALT-04	1.60	1.7	77	75.3	197	77	208.4*	131.4	197
WBALT-05	3.90	26	352	326	351	N/A	N/A	N/A	N/A
WBALT-06	3.13	4.1	237.5	233.4	254	237.5	393.0*	155.5	254
WBALT-07	3.16	4.5	352	347.5	343	352	393.0*	41	343
WBALT-09	10.00	6.5	109	102.5	216	N/A	N/A	N/A	N/A
		109	325	216	232				
WBALT-10	10.60	3.4	N/A	N/A	N/A	3.4	90	86.6	61
						90	402	312	125
WBALT-11	14.40	57.5	108	50.5	61	400	518.0*	118	125
		108	400	292	125				
WBALT-12	4.28	4.1	101	96.9	186	361	393.0*	32	164
		101	198	97	160				
		198	361	163	164				
WBALT-13	4.30	16	269	253	172	269	318	49	172
WBALT-14	4.27	4	280	276	293	N/A	N/A	N/A	N/A
WBALT-15	7.10	9	363	354	332	363	393.0*	30	332
WBALT-16	4.96	6	158	152	285	158	271	113	285
WBALT-17	7.44	10	353	343	290	353	393.0*	40	290
FWWALT-02	2.56	N/A	N/A	N/A	N/A	80	363.0*	283	332
TOTAL	**102.00**								

[+]Static water level

*Interpreted bedrock depth, extrapolated from nearby boreholes

N/A = not applicable

TABLE 14-3. BOREHOLES USED TO INTERPRET BEDROCK, FOR INFERRED RESOURCE THICKNESS.

Well ID	Borehole used for Depth Interpretation
WBALT-02	WBALT-05
WBALT-03	DDH-02
WBALT-04	DDHB-01
WBALT-06	DDH-01
WBALT-07	DDH-01
WBALT-11	DDH-03
WBALT-12	DDH-01
WBALT-15	DDH-01
WBALT-17	DDH-01
FWWALT-02	WBALT-15

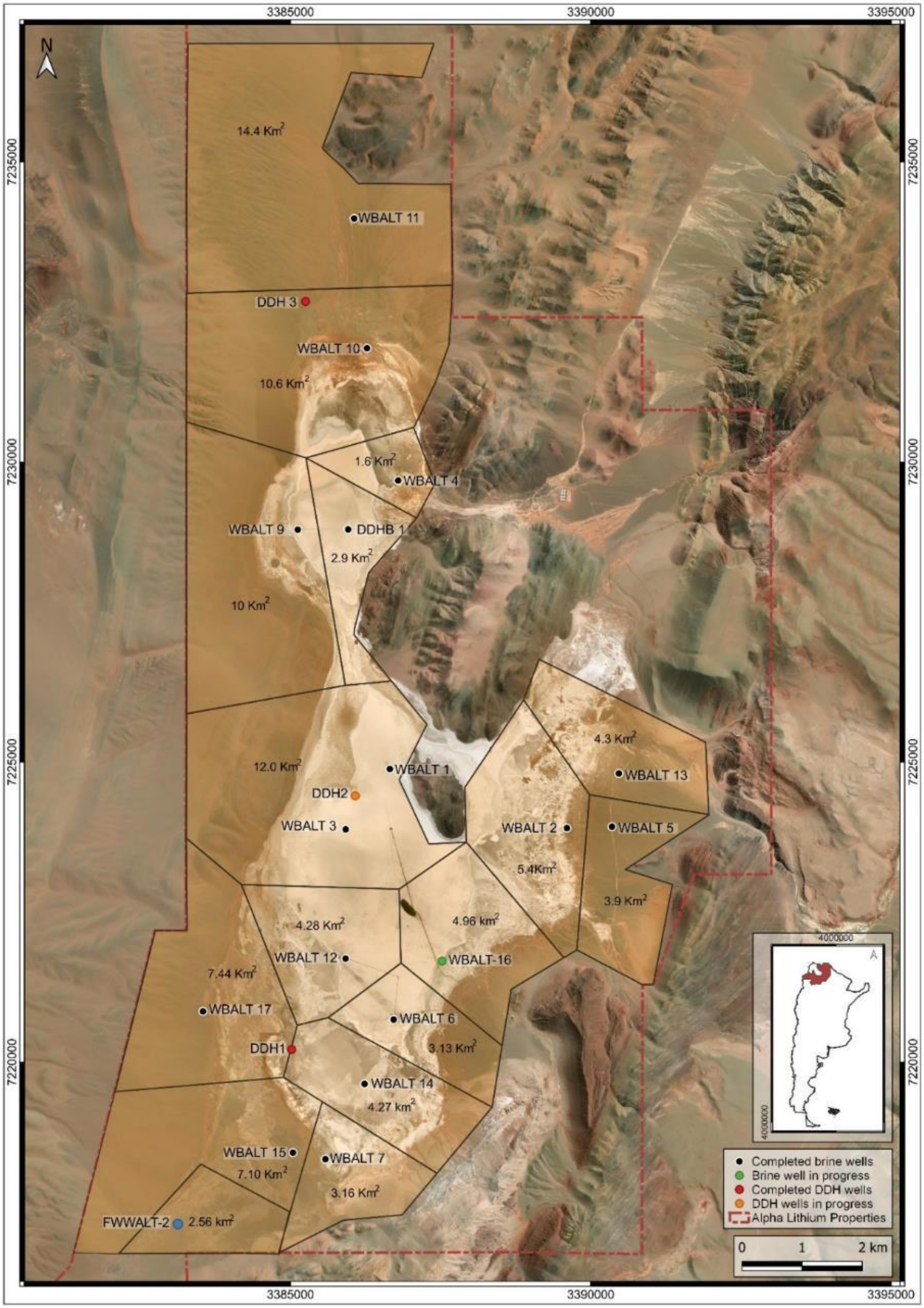

FIGURE 14-1. PLAN VIEW OF THE RESOURCE DOMAIN AND POLYGONS.

14.6 ASSIGNMENT OF DRAINABLE POROSITY VALUES

Drainable porosity values are reported as a fraction of total rock volume. Best estimates were assigned to every lithological unit in each borehole on a qualitative basis, using the following information sources:

- Sanders (1998);
- Salar del Hombre Muerto (Montgomery, 2021);
- Pozuelos and Pastos Grandes Salars (GDH Group Engineering, 2019); and
- Cauchari Salar (FloSolutions, 2019).

Lithology profiles for each borehole were reconstructed for the updated Resource based on lithological type, grain size, grain shape, grain roundness, as well as on borehole geophysics including resistivity, gamma, and BMR logs available for most of the boreholes. Representative porosity values were assessed and assigned for each unique earth material type within each borehole.

14.7 BRINE CHARACTERIZATION

14.7.1 SAMPLE DATA

Brine sampling methods are provided in Section 9.0 and QA/QC procedures are provided in Section 11.5. A total of 150 borehole brine samples were used in the Resource Estimate (Table 14-4), including:

- One hundred and two (102) composite brine samples (including four duplicates) collected during pumping tests;
- Thirty-three (33) step test samples (including two duplicates); and
- Fifteen (15) depth-specific samples, collected with Hydrasleeve HS-2 disposable samplers.

The QP considers that the lithium sampling results are acceptable for use in the updated Resource Estimate.

14.7.2 ASSIGNMENT OF GRADE VALUES

Grade values assigned to the boreholes are summarized in Table 14-5. For the Indicated category, assigned grade is generally based on a single average of all the samples collected from a given well. The assigned grade for the Inferred category extends beyond the bottom of the given borehole and is assigned based on the nearest deeper well. Exceptions are as follows:

- WBALT-09: Depth-specific sampling showed a trend of higher lithium grades at depth. Consequently, depth-specific samples were used to assign an upper and lower grade.
- WBALT-10: A pumping test at this well showed an average grade below 100 mg/L Li, which was considered to be related to the capture of lower grade brine (due to fresh water dilution) in the upper part of the well screen. Consequently, a low-grade shallow zone and higher-grade deep zone was assigned to this well, based on surface geophysics and sampling results from the nearest wells (WBALT-09 and WBALT-11). The entire WBALT-10 Resource polygon was categorized as Inferred, due to this interpretative assignment.
- WBALT-11: A low grade shallow zone was also assigned to this well. Although pumping test samples showed an overall higher grade than WBALT-10, depth-specific (Hydrasleeve) sampling showed some lower values in the shallow zone.
- WBALT-12: This well is constructed with a telescopic design that allowed pump testing of the entire well, and also of three depth discrete intervals. Results from the discrete interval tests were used to assign three different lithium grades along the borehole.

- FWWBALT-02: This well was drilled to a depth of 151.0 m near the southern boundary of the Resource Zone, to explore for a potential shallow source of industrial water. The VES survey results for this area indicated shallow freshwater on top of deeper brine. The shallow freshwater was confirmed by sampling of the well. A deeper brine zone was assigned below 80 m depth based on VES results, with grades based on nearby well WBALT-15. The Resource associated with the FWWBALT-02 polygon was categorized as Inferred, due to this interpretive assignment.

TABLE 14-4. SUMMARY OF BRINE SAMPLES.

Well **ID**	**Sample Type**	**No. of Samples**	**Total Samples**
DDHB-01	pumping test	2	2
WBALT-02	pumping test	5	5
WBALT-03	pumping test	7	7
WBALT-04	pumping test	4	8
	step test	4	
WBALT-05	pumping test	2	6
	step test	4	
WBALT-06	pumping test	5	9
	step test	4	
WBALT-07	pumping test	6	9
	step test	3	
WBALT-09	depth specific	11	11
WBALT-10	depth specific	4	4
WBALT-11	pumping test	10	14
	step test	4	
WBALT-12	pumping test	8	8
WBALT-13	pumping test	10	10
WBALT-14	pumping test	11	16
	step test	5	
WBALT-15	pumping test	11	16
	step test	5	
WBALT-16	pumping test	10	14
	step test	4	
WBALT-17	pumping test	11	11
		TOTAL	**150**

TABLE 14-5. LITHIUM GRADES USED IN THE RESOURCE ESTIMATE.

Well ID		INDICATED				INFERRED			
	Area (km^2)	From (mbgs)+	To (mbgs)	Thickness (m)	Avg Li (mg/L)	From (mbgs)	To (mbgs)	Thickness (m)	Avg Li (mg/L)
DDHB-01	2.90	3	208	205	202	N/A	N/A	N/A	N/A
WBALT-02	5.40	3.5	127	123.5	210	127	352.0*	225	351
WBALT-03	12.00	1.8	120	118.2	218	120	191.0*	71	218
WBALT-04	1.60	1.7	77	75.3	197	77	208.4*	131.4	197
WBALT-05	3.90	26	352	326	351	N/A	N/A	N/A	N/A
WBALT-06	3.13	4.1	237.5	233.4	254	237.5	393.0*	155.5	254
WBALT-07	3.16	4.5	352	347.5	343	352	393.0*	41	343
WBALT-09	10.00	6.5	109	102.5	216	N/A	N/A	N/A	N/A
		109	325	216	232				
WBALT-10	10.60	3.4	N/A	N/A	N/A	3.4	90	86.6	61
						90	402	312	125
WBALT-11	14.40	57.5	108	50.5	61	400	518.0*	118	125
		108	400	292	125				
WBALT-12	4.28	4.1	101	96.9	186	361	393.0*	32	164
		101	198	97	160				
		198	361	163	164				
WBALT-13	4.30	16	269	253	172	269	318	49	172
WBALT-14	4.27	4	280	276	293	N/A	N/A	N/A	N/A
WBALT-15	7.10	9	363	354	332	363	393.0*	30	332
WBALT-16	4.96	6	158	152	285	158	271	113	285
WBALT-17	7.44	10	353	343	290	353	393.0*	40	290
FWWALT-02	2.56	N/A	N/A	N/A	N/A	80	363.0*	283	332
	102.00								

+Static water level
*Interpreted bedrock depth, extrapolated from nearby boreholes
N/A = Not Applicable

14.8 MINERAL RESOURCE ESTIMATE

The updated Resource was calculated according to the following steps:

1. Brine volume was calculated for each geological unit in each polygon:

$$Brine\ Volume\ (m^3) = Unit\ thickness\ (m)\ \times D.Porosity\ \times Area\ (km^2) \times 1{,}000{,}000\ \ (m^2/km^2)$$

where,

Unit Thickness (m) = derived from drilling information,

D.Porosity (fraction) = Drainable Porosity value assigned to each unit, and

Area (km^2) = Area of the polygon in which the unit is located.

2. In-situ lithium mass was calculated for each geological unit in each polygon:

$$Li\ mass\ (tonnes) = Brine\ volume\ (m^3)\ \times Grade\ (mg/L)\ \times 1e^{-9}(tonnes/mg)\ \times 1000\ \ (L/m^3)$$

where,

Grade (mg/L) = lithium grade values from laboratory analyses.

3. Brine volume and lithium mass was summed for each polygon, with separate tracking for Indicated and Inferred Resources.

4. Brine volume and lithium mass in all polygons was summed for the entire Resource zone.

5. Lithium mass was expressed as LCE, through multiplication by 5.3228.

A cutoff grade of 100 mg/L was assigned to the Resource Estimate, based on the research of Alpha Lithium on reasonable grades for application of Direct Lithium Extraction (DLE) mineral processing methods. Additional verification of this cutoff will be required for subsequent estimation of Measured Resources and and for Reserves.

A summary of the updated Resource Estimate is provided in Table 14-6. The presentation of Mineral Resources in this Report conforms with NI 43-101 and CIM Standards. As defined under these standards, Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

TABLE 14-6. SUMMARY OF THE UPDATED MINERAL RESOURCE ESTIMATE.

Mineral Resource Estimate relative to a 100 mg/L lithium grade cut-off (Effective Date: August 8, 2023).

	Updated Resource Estimate		Change from Previous Estimate	
Resource Category	Indicated	Inferred	Indicated	Inferred
Brine Volume (m^3)	2,940,766,000	1,453,640,300	+1,293,066,000	+313,117,300
Avg. Li (mg/L)	232	180	-10	-11
In-situ Li (tonnes)	681,000	262,000	+283,000	+44,000
LCE (tonnes)	3,626,000	1,393,000	+1,507,000	+235,000
Avg. porosity	0.124	0.149	+0.025	+0.039
Avg. K (mg/L)	2361	1919	+10	-281
In-situ K (tonnes)	6,942,000	2,790,000	+3,069,000	+280,000
KCl (tonnes)	13,237,000	5,320,000	+5,850,000	+534,000

LCE: Lithium Carbonate Equivalent, calculated as in-situ lithium multiplied by the equivalency factor (5.3228).
KCl: Potassium Chloride (potash) Equivalent, calculated as in-situ potassium multiplied by the equivalency factor (1.91).
Product and sums not exact, due to rounding.

The additional exploration work conducted since the last Resource Estimate has further improved the understanding of the basin. The Indicated and Inferred Resource estimates will likely change as more information becomes available. Additional recommended activities (Section 26.0) are intended to:

- further increase the Resource;
- upgrade parts of the Resource (from Inferred to Indicated and from Indicated to Measured); and
- Collect hydrogeology information (e.g., permeability, hydraulic boundary conditions, brine chemistry boundary conditions) that would contribute to estimation of Reserves.

The QP considers that additional exploration zones with potential to increase the Resource occur primarily at depth, either:

- within the deep salar in-fill materials in the central (deeper) zones of the salar, or
- within potentially permeable basement rock immediately underlying the in-fill materials.

The wells that have been drilled into basement to date provide some indication that this material may be permeable at some locations. Further, it is reasonable to expect that dense brine would invade any drainable porosity within these materials.

15.0 MINERAL RESERVE ESTIMATES

Mineral Reserves have not yet been estimated for the Tolillar Project.

16.0 MINING METHODS

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

17.0 RECOVERY METHODS

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

18.0 PROJECT INFRASTRUCTURE

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

19.0 MARKET STUDIES AND CONTRACTS

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL OR COMMUNITY IMPACT

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

21.0 CAPITAL AND OPERATING COSTS

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

22.0 ECONOMIC ANALYSIS

The recent PEA (Ausenco, 2023) contains the latest version of this Section, which pertains to the previous Resource Estimate.

23.0 ADJACENT PROPERTIES

23.1 SUMMARY OF ADJACENT PROPERTIES

Properties adjacent to the Tolillar Project are not associated with lithium production. However, there are several projects in the area that have reported subsurface brines with elevated concentrations of lithium located nearby Salar de Tolillar which are shown in Figure 23-1 and described below.

FIGURE 23-1. PROJECTS NEAR TOLILLAR PROJECT.

Source: Ausenco (2023)

Overall, many projects occur in the vicinity of the Tolillar Project but are not hydraulically connected to the Salar de Tolillar. Therefore, even though these advanced projects are located nearby, they do not provide site-specific information that is relevant for the ongoing exploration in Salar de Tolillar.

The current resources and information on the adjacent properties are reported on the corporate websites and SEDAR filings of the holding companies. These data have not been verified by the QP and are not reported herein. The information presented may not necessarily be indicative of the geology or mineralization on the Tolillar Project that is the subject of this Technical Report. The information provided in this section is simply intended to describe examples of the type and tenure of mineralization that exists in the region.

Investors are cautioned that this information is taken from publicly available sources and has not been independently verified by the Company and it is not known if it conforms to the standards of NI 43-101. Furthermore, proximity to a discovery, mine, or mineral resource, does not indicate that mineralization will occur at the Tolillar Project, and if mineralization does occur, that it will occur in sufficient quantity or grade that would result in an economic extraction scenario.

23.2 SAL DE VIDA PROJECT - ALLKEM

The Sal de Vida Project is located in the southwest section of the Salar del Hombre Muerto salt flat in the province of Catamarca, Argentina, 39 km southeast of Tolillar Project. The Sal de Vida Project is located 650 km from the city of Catamarca via Antofagasta de la Sierra, 390 km from the city of Salta via San Antonio de Los Cobres and approximately 1400 km northwest of Buenos Aires, Argentina, on the Salar del Hombre Muerto.

Allkem currently has mineral rights over 26,253 ha at Salar del Hombre Muerto, which are held under 31 mining concessions. The Resource estimate of 6.85 Mt of lithium carbonate equivalent (LCE) has an average grade of 752 mg/L Li and low levels of impurities. The Reserve estimate of 1.74 Mt of LCE supports a 40-year project life for the production of high-grade lithium brines.

The Sal de Vida Project has shown significant potential, and the company has conducted extensive exploration programs to further delineate the resources. The Sal de Vida Project was divided into three stages: the initial production target of 15,000 t/a in Stage 1 feasibility stage concluded in 2021, it currently is under construction; and Stage 2 and 3 remains on feasibility study at the moment setting an expansion to a 45,000 t/a brine operation with an additional 30 kt/a from Stage 2 (Montgomery, 2022).

23.3 FÉNIX PROJECT - LIVENT

The Fénix lithium mine is located in the western section of the Salar del Hombre Muerto salt flat in the province of Catamarca, Argentina, 40 km south of Tolillar Project. It is located at an elevation of 4000 masl, the Salar del Hombre Muerto covers an area of approximately 600 km^2.

The mining concession is owned and operated by Minera del Altiplano, a local Argentinian operating subsidiary of Philadelphia-based chemical manufacturing company Livent. The Fénix lithium mine was previously under the ownership of FMC Corporation until it was separated from it through a spin-off in March 2019.

The Fénix lithium mining concession on the Salar del Hombre Muerto was estimated to hold recoverable Reserves of up to 1.2 Mt of LCE as of March 2019. To date, Fénix produces 10,000 t of LCE. In 2021, Livent announced the start-up of its first expansion works for the second lithium carbonate production plant in the Fénix Project, this first expansion was planning to add 20,000 t LCE production capacity upon completion in two equal phases of 10,000 t each. Phase 1 of this expansion saw an addition of 10,000 t of LCE production capacity by Q1 2023.

The phase 2 will increase capacity by another 10,000 t by the end of 2023. The Fénix Project is targeting an LCE production of 100,000 t by the end of 2030.

23.4 SAL DE ORO PROJECT - POSCO

The Sal de Oro Project is located in the northwestern section of the Salar del Hombre Muerto, at an elevation of 3990 masl, 19 km southeast of Tolillar Project. The mining concession is owned by POSCO, a South Korean company. Currently, Sal de Oro is in Advanced Exploration stage, and it is expected to have a 25,000-t lithium hydroxide plant completed by the end of 2023. A second expansion to increase production by 20,000 t lithium hydroxide is being planned for the following year.

23.5 HOMBRE MUERTO WEST - GALAN LITHIUM

The Hombre Muerto West (HMW) Project is part of the Hombre Muerto basin in which mining properties are owned 100% by Galan Lithium Limited. It is located on the west side of the Salar del Hombre Muerto, 30 km southwest of Tolillar Project.

The Mineral Resource Estimates were undertaken by SRK. The forecasted total mine life is 40 years. A PEA was updated at the end of 2021. Pilot plant operations are progressing rapidly with the successful completion of 5000 m^2 of basin area and evaporation testing as of May 2022.

23.6 HOMBRE MUERTO - ALPHA LITHIUM

Hombre Muerto Project ("HMN") is located in the northeast part of the Salar del Hombre Muerto, 28 km southeast of Tolillar Project. These mining properties are owned by Alpha Lithium and bordered by the POSCO and Livent projects. The HMN Project is a 5000-ha early exploration stage project. To date Alpha Lithium has completed 56 VES points and a total of 28.5 km of VES lines and applied for several drilling licenses.

23.7 HOMBRE MUERTO NORTH - LITHIUM SOUTH

Hombre Muerto North Project is located in the north section of the Salar del Hombre Muerto, 14 km southeast of Tolillar Project. The mining concession is 100% owned by Lithium South, a Canadian company. The project is 5687 ha and includes nine separated mining concessions: Tramo, Alba Sabrina, Natalia Maria, Gaston Enrique, Via Monte, and Norma Edith. The Sophia I, II, and III claims are located north of the salar claim blocks and were acquired for potential plant location and water sourcing. The 2018 Resource Estimate and 2019 PEA focus on the Tramo claim area.

Preliminary results provided in the PEA indicate a target production rate of 5000 t/a LCE. Lithium South expects to expand the Resource with its current drilling program, which includes Alba Sabrina and Natalia Maria. Currently, the HMN Project updated Mineral Resource Estimate is expected to be completed in 2023. Additional project work, including permitting, environmental studies, and process test work, is ongoing.

23.8 CENTENARIO-RATONES PROJECT - ERAMINE

The Centenario-Ratones Project is located 45 km northeast of the Tolillar Project. The property concessions are owned by the local company Eramine Sudamerica S.A. which is owned by the French conglomerate Eramet. Eramet controls 50.1% of the Centenario-Ratones Project and will manage it from an operational standpoint. The Group began constructing the lithium production plant in April 2022 in partnership with Tsingshan (a Chinese steel group with 49.9% ownership).

The plant is scheduled to be completed in the first quarter of 2024, with a nominal production capacity to be reached in mid 2025. The nominal production capacity in Phase 1 is 24,000 t LCE per year. In collaboration with its partner in Phase 1, Eramet is continuing its Feasibility Study for a second phase of the Centenario-Ratones Project, an expansion phase which will allow annual production capacity to reach a total of around 75,000 t LCE.

23.9 ANTOFALLA NORTH PROJECT - ARGENTINA LITHIUM & ENERGY CORPORATION

The Antofalla North Project is located approximately 47 km southwest of Tolillar Project. The mining concession is 100% owned by Argentina Lithium & Energy Corporation, member of the Grosso Group, a Canadian entity. The southern boundary of the Antofalla North Project is situated approximately 500 m north of properties controlled by global lithium producer Albemarle Inc.

The Antofalla North Project includes 15,800 ha of mining leases in the north end of the Salar de Antofalla, distributed between the adjacent provinces of Salta and Catamarca. Argentina Lithium holds 100% interest in 9080 ha and the remaining leases are held under option. In 2022, 70 line-km of Transient Electromagnetic soundings were completed to delineate brine deposits. Six diamond drill holes are planned for 2023.

23.10 ANTOFALLA PROJECT - ALBEMARLE

The Antofalla Project is located in the central area of the Salar de Antofalla, approximately 102 km southwest of Tolillar Project. This project is owned by Albemarle Corporation.

24.0 OTHER RELEVANT DATA AND INFORMATION

The information presented in this Technical Report is considered sufficient to characterize and evaluate this exploration project and to support the updated Mineral Resource Estimates reported herein.

25.0 INTERPRETATION AND CONCLUSIONS

Results from recent exploration activities support the concept that brine enriched in lithium occurs at the Tolillar Project in large quantities and may be favorable for production. The elevated concentrations of lithium observed in the Tolillar Project area justify continued exploration activities and resource characterization. The overall geometry of the basin continues to become better known, and will be important for development of a numerical groundwater flow model capable of conducting wellfield simulations and supporting lithium Reserve Estimates.

The updated Mineral Resource Estimates conform with National Instrument 43-101 (NI 43-101) and the Canadian Institute of Mining, Metallurgy, and Petroleum Definition Standards for Resources and Reserves (CIM Standards). The Tolillar Project contains an estimated 3,626,000 tonnes LCE of Indicated and 1,393,000 tonnes LCE of Inferred lithium Resources, relative to a 100 mg/L lithium cut-off grade.

The additional exploration work conducted since the last Resource Estimate has further improved the understanding of the Salar de Tolillar basin. The Indicated and Inferred Resource estimates will change as more information becomes available. Additional recommended activities (Section 26.0) are intended to:

- further increase the Resource;
- upgrade the Resource (from Inferred to Indicated and from Indicated to Measured); and
- collect additional hydrogeology information (e.g., permeability, hydraulic boundary conditions, brine chemistry boundary conditions) that would contribute to estimation of Reserves.

The QP considers that additional exploration zones with potential to increase the Resource occur primarily at depth, either:

- within the deep salar in-fill materials in the central (deeper) zones of the salar, or
- within potentially permeable basement rock immediately underlying the in-fill materials.

The wells that have been drilled into basement to date provide some indication that this material may be permeable at some locations. Further, it is reasonable to expect that dense brine would invade any drainable porosity within these materials.

Mineral tenure, surface rights, water rights, royalties, and agreements are reviewed in detail in the recent PEA (Ausenco, 2023).

26.0 RECOMMENDATIONS

The following recommendations and budget (Table 26-1) pertain to the exploration component of the next stage of development proposed for the Tolillar Project. Additional recommendations for this next stage were provided in the recent PEA (Ausenco, 2023) pertaining to mining methods, metallurgical studies, infrastructure, environmental, permitting, social, and communities.

TABLE 26-1. EXPLORATION RECOMMENDATIONS FOR THE NEXT STAGE OF DEVELOPMENT AT THE TOLILLAR PROJECT.

Exploration Program Component	Cost Estimate (US$ M)
Roads and drilling platforms	0.17
Environmental studies	0.04
Drilling and testing	3.20
Field monitoring and supervision	0.45
Fresh water sustainability study (including drilling)	0.80
Development of a resource block model	0.08
Reporting	0.07
Subtotal	4.81
Contingency (5%)	0.24
TOTAL	**5.05**

Based on the initial results of exploration to date, additional exploration activities are justified to better characterize the subsurface brine in the Project concessions. Additional drilling and testing will allow for expansion of the resource laterally throughout the entire concession area, and deeper, potentially into bedrock.

We recommend eight coreholes (drilled to a maximum of about 400 mbgs). The coreholes will include:

- depth-specific brine sampling using an inflatable packer, and
- laboratory analysis of core for drainable porosity values.

Additional drilling and testing will allow for improved estimation of the lithium resource and will support increasing the Indicated Resource to Measured. In addition, additional core and brine sampling will increase understanding of the hydrogeological units and allow for a more confident construction of a groundwater flow model to obtain an estimated lithium reserve.

If the results of the proposed exploration program continue to be favorable and support feasibility of a lithium extraction Project, additional studies should include the following:

- Fresh water study to identify a long-term supply for the Tolillar Project, and
- Development of a hydrogeological flow model to allow estimation of an initial reserve estimation.

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28.0 LIST OF ABBREVIATIONS

%	percentage
°C	temperature in degrees Celsius
ASA	Alex Stewart International (laboratory)
B	boron
Ca	calcium
Cl	chloride
cm	centimeter
CO_3	carbonate
EIS	Environmental Impact Study
g/cm^3	grams per cubic centimeter
g/L	grams per liter
GPS	global positioning system
GWI	Groundwater Insight Inc.
h	hour
ha	hectare
ICP	Inductively Coupled Plasma
K	potassium
kg	kilogram
kPa	kilopascal
km	kilometer
km^2	square kilometer
km/h	kilometers per hour
kN/m^2	Kilo-newton per meter squared
kt/a	Kilotonnes per annum
L	liter
L/s/m	liters per second per meter, measure of specific capacity
LCE	lithium carbonate equivalent
Li	lithium
Li_2CO_3	lithium carbonate
m	meter
masl	meters above sea level
mbgs	meters below ground surface
mbmp	meters below measuring point
m^2/d	square meters per day
Ma	mega annum 1,000,000 years
mg	milligram
mg/L	milligrams per liter
Mg/Li	magnesium to lithium ratio
mm	millimeter
mm/y	millimeters per year
mS/cm	millisiemens per centimeter
Mt	million tonnes
pH	measure of acidity or alkalinity
QA/QC	quality assurance/quality control
R	resistivity
REMSa	Recursos Energéticos y Mineros de Salta
SO_4	sulfate
t	tonnes
t/a	tonnes per annum
TDS	total dissolved solids
US$	United States dollar
UTM	Universal Transverse Mercator coordinate system
W/m^2	Watts per square metre
WGS	World Geodetic System

29.0 DATE AND SIGNATURE PAGE

I, Mark W.G. King, served as supervising QP for this Technical Report, entitled UPDATED RESOURCE ESTIMATE REPORT, SALAR DE TOLILLAR PROJECT. It was prepared for Alpha Lithium Corporation and has an effective date of August 8, 2023.

In my role as QP, I do hereby certify that:

1. I am employed as President and Senior Hydrogeologist with Groundwater Insight Inc., 3 Melvin Road, Halifax, Nova Scotia, B3P 2H5, telephone 902 223 6743, email king@gwinsight.com.

2. I have the following academic and professional qualifications and experience:

a) Academic
   - i. B.Sc. (Geology), Dalhousie University, Halifax, Nova Scotia, 1982
   - ii. M.A.Sc. (Civil Eng.), Technical University of Nova Scotia, 1987
   - iii. Ph.D. (Earth Science), University of Waterloo, Waterloo, Ontario, 1997

b) Professional
   - i. Registered Professional Geoscientist of Nova Scotia (membership #84); Serving on Admissions Board of the Association
   - ii. Member of Association of Groundwater Scientists and Engineers (membership #3002241)

c) Experience and Areas of Specialization Relevant to this Technical Report
   - i. Technical involvement in lithium brine projects, in various levels of detail, on more than 30 projects in Chile, Argentina, Nevada, Utah, California, Mongolia, and Germany
   - ii. Numerical modelling of groundwater flow and solutes in groundwater
   - iii. Field delineation and monitoring of solutes in groundwater
   - iv. Organic and inorganic groundwater geochemistry
   - v. 35 years of experience in groundwater quality and quantity projects

3. I am a qualified person ("QP") for the purposes of National Instrument 43-101 – Standards of Disclosure for Mineral Projects (the "Instrument").

4. While working on the current Technical Report, I visited the Alpha Lithium Tolillar Project on March 22-24, and with the Alpha Lithium expert term on March 28, 2023.

5. I am responsible for supervising the preparation of all sections of this Technical Report.

6. I am independent of Alpha Lithium as described in Section 1.5 of the Instrument.

7. I have had no previous involvement with Alpha Lithium.

8. I have read the Instrument, and this Technical Report has been prepared in compliance with the Instrument.

9. As of the effective date of this Technical Report, and 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 this Technical Report not misleading.

Effective Date: August 8, 2023
Date of Signing: August 8, 2023

"Mark King"

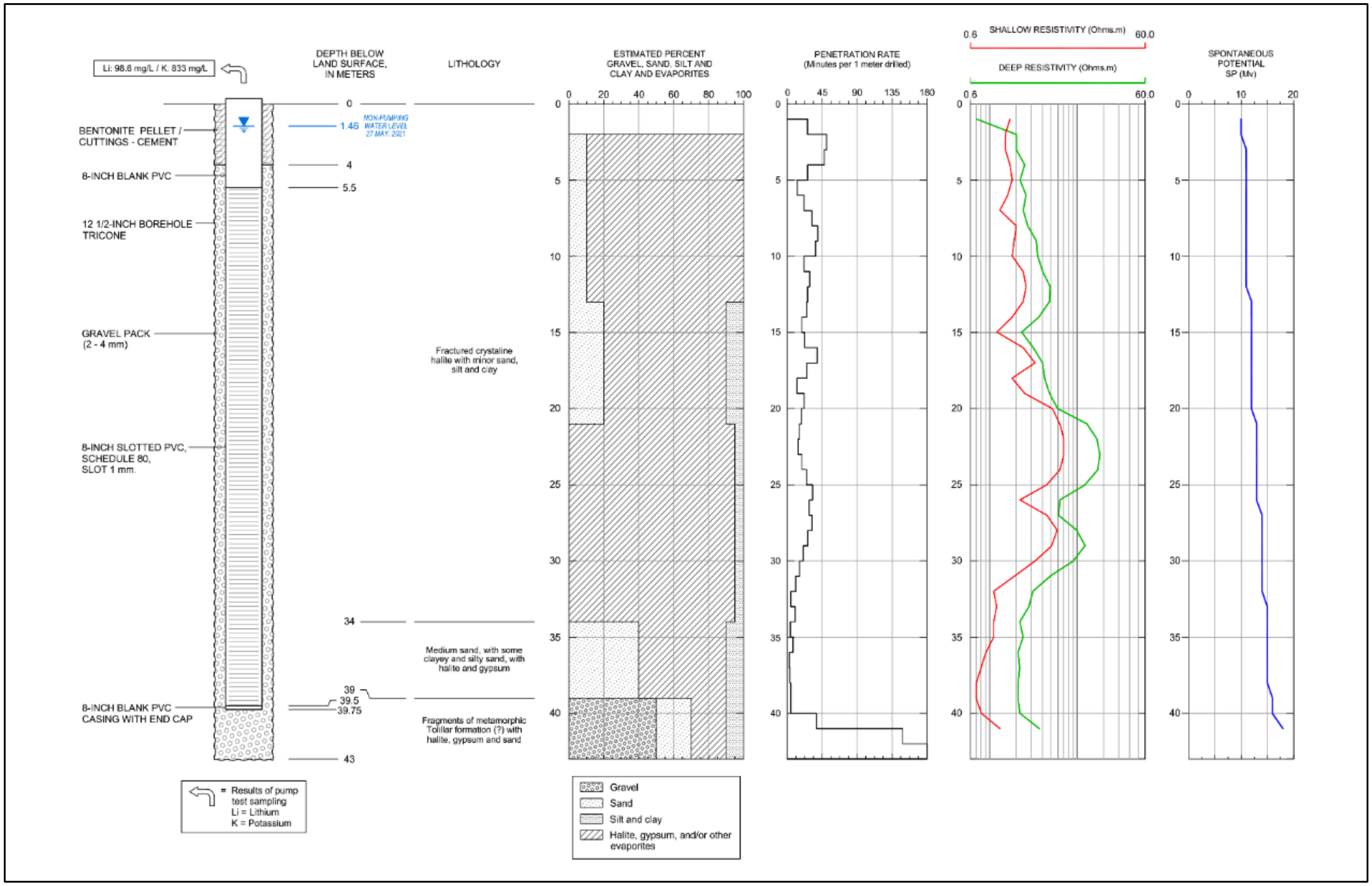
"sealed"

Original signed and stamped by

Mark W.G. King, Ph.D., P. Geo., F.G.C.

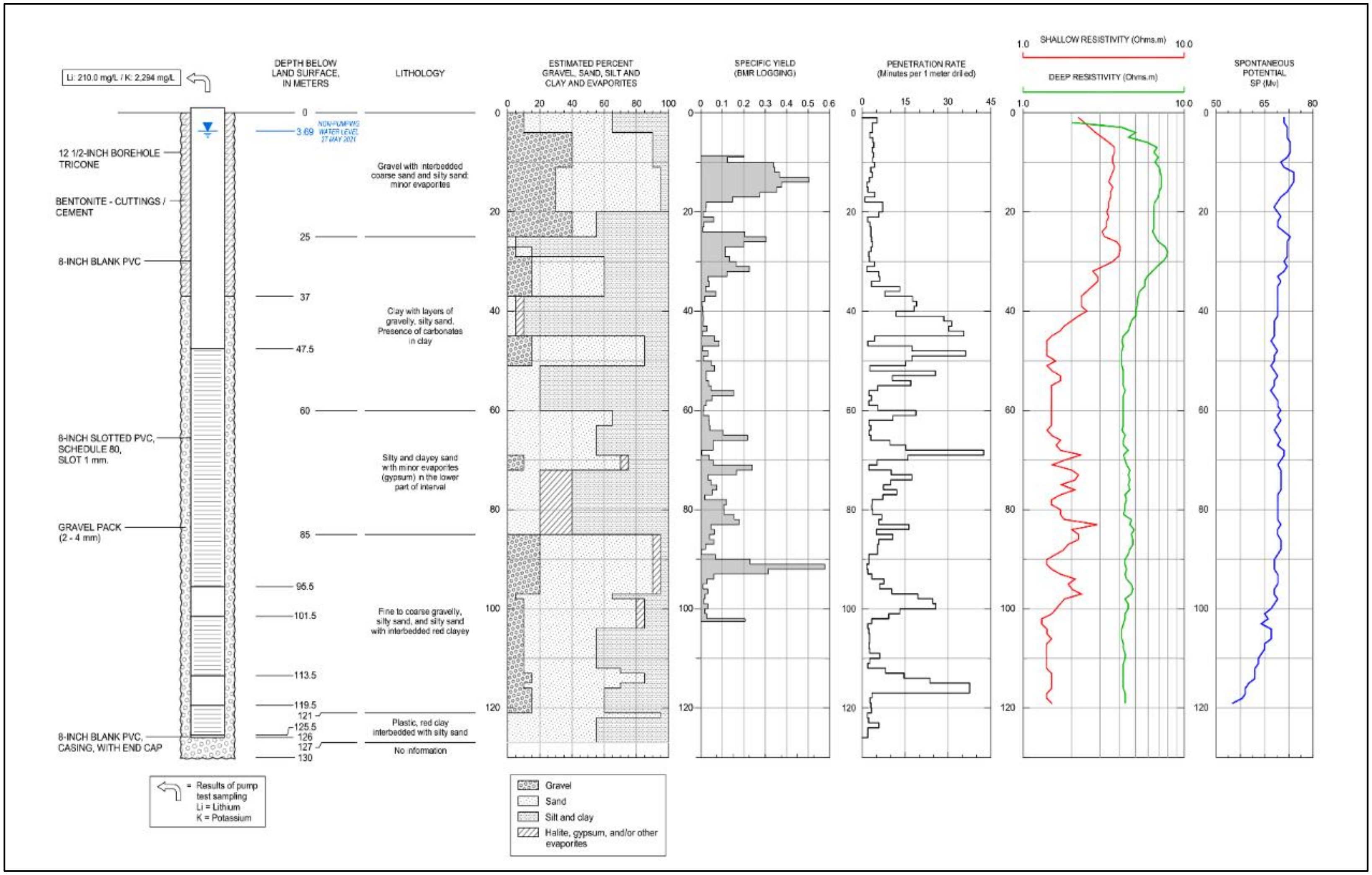
30.0 APPENDICES

APPENDIX A. WELL CONSTRUCTION DIAGRAMS



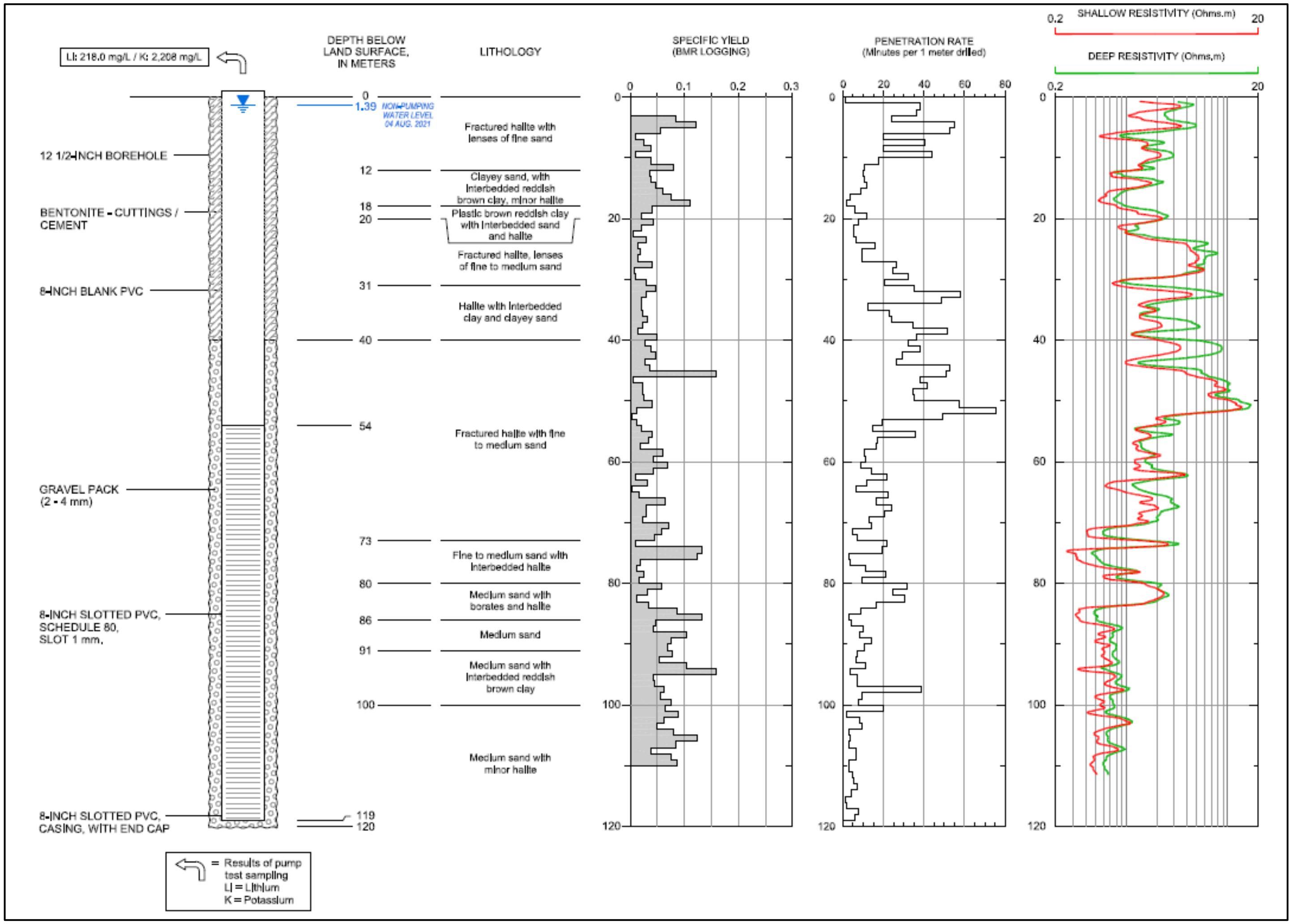
APPENDIX A- 1. WBALT-01 WELL DIAGRAM.

Source: Montgomery (2022)



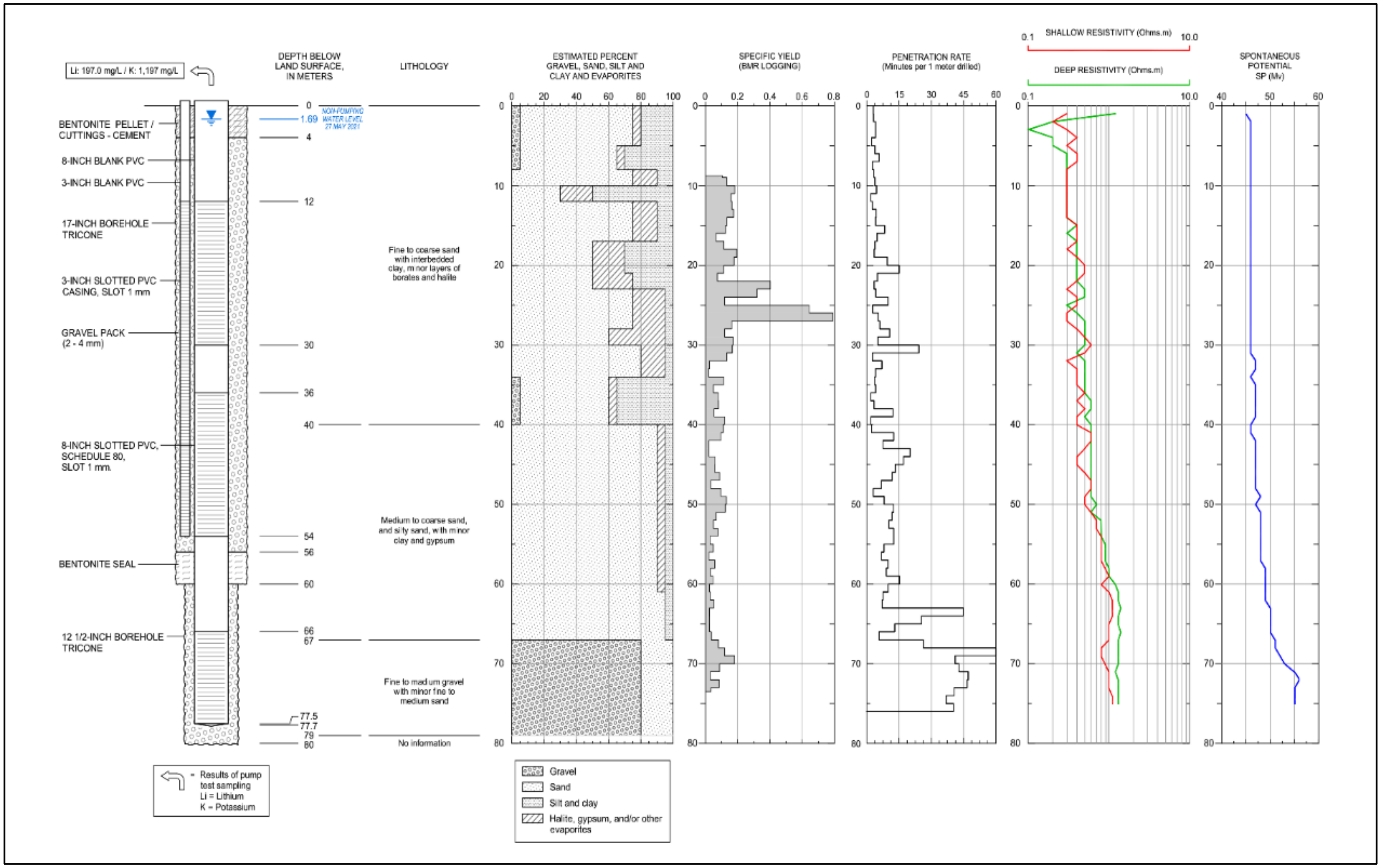
APPENDIX A- 2. WBALT-02 WELL DIAGRAM.

Source: Montgomery (2022)



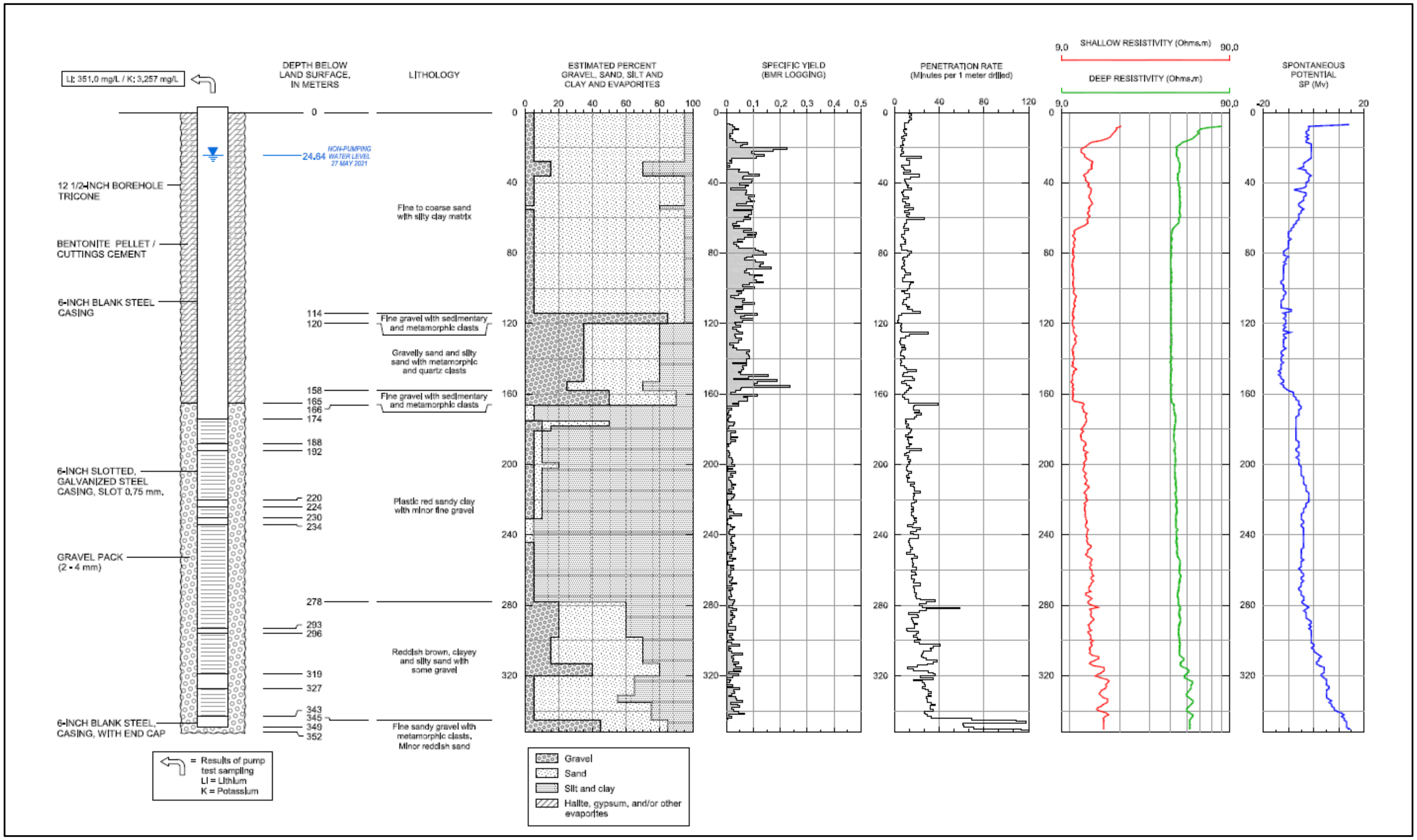
APPENDIX A- 3. WBALT-03 WELL DIAGRAM.

Source: Montgomery (2022)



APPENDIX A- 4. WBALT-04 WELL DIAGRAM.

Source: Montgomery (2022)



APPENDIX A- 5. WBALT-05 WELL DIAGRAM.

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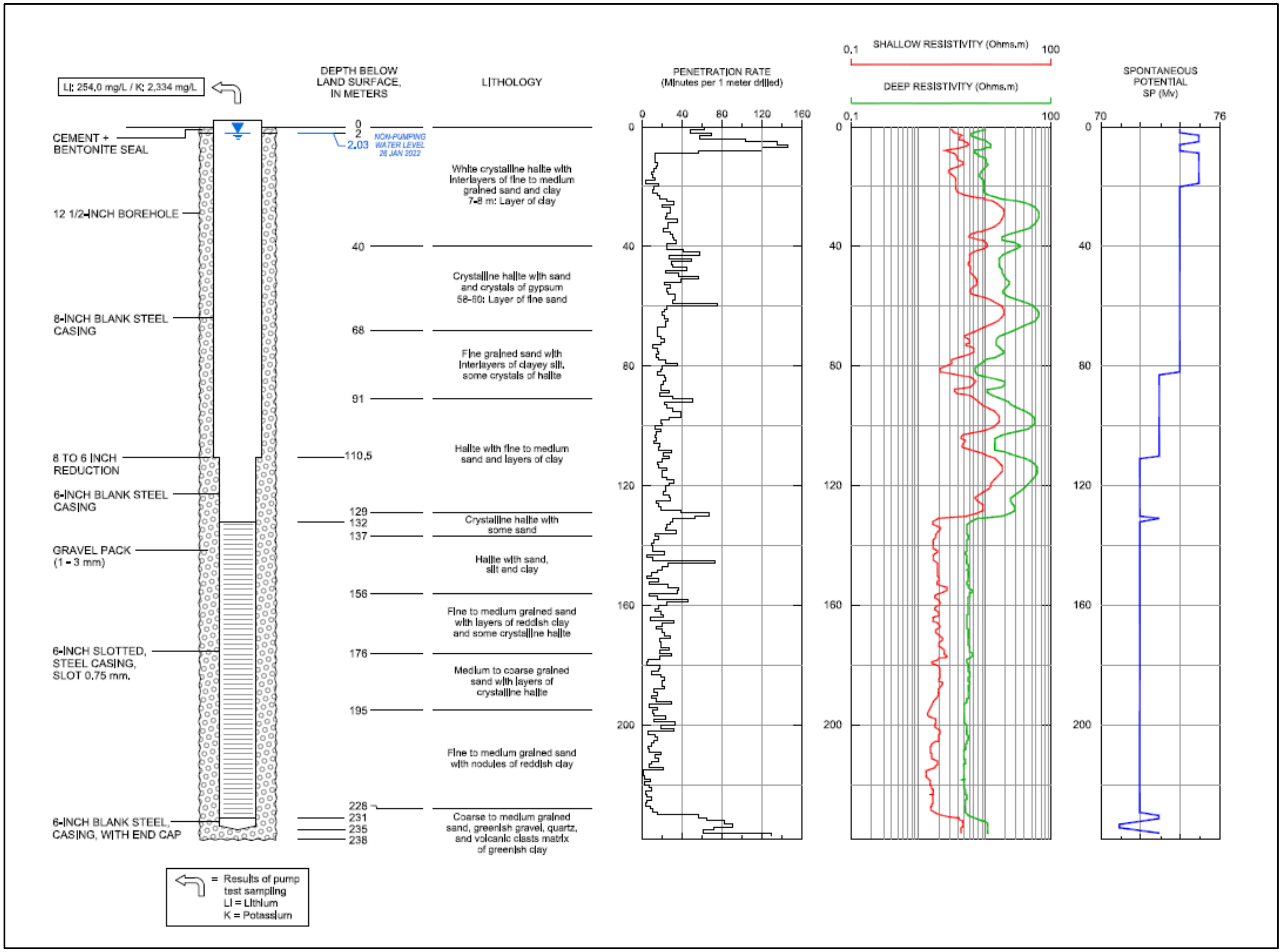
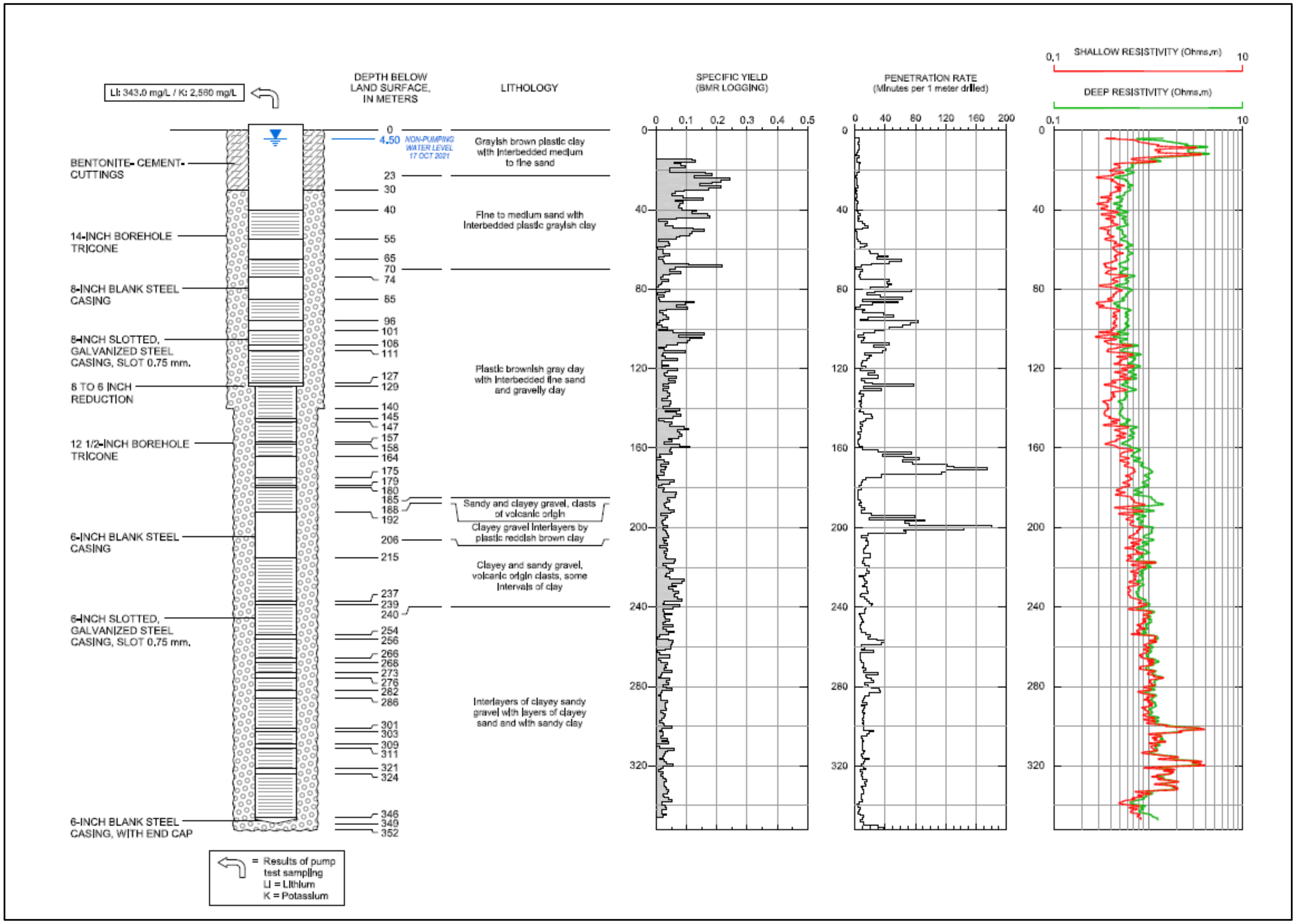


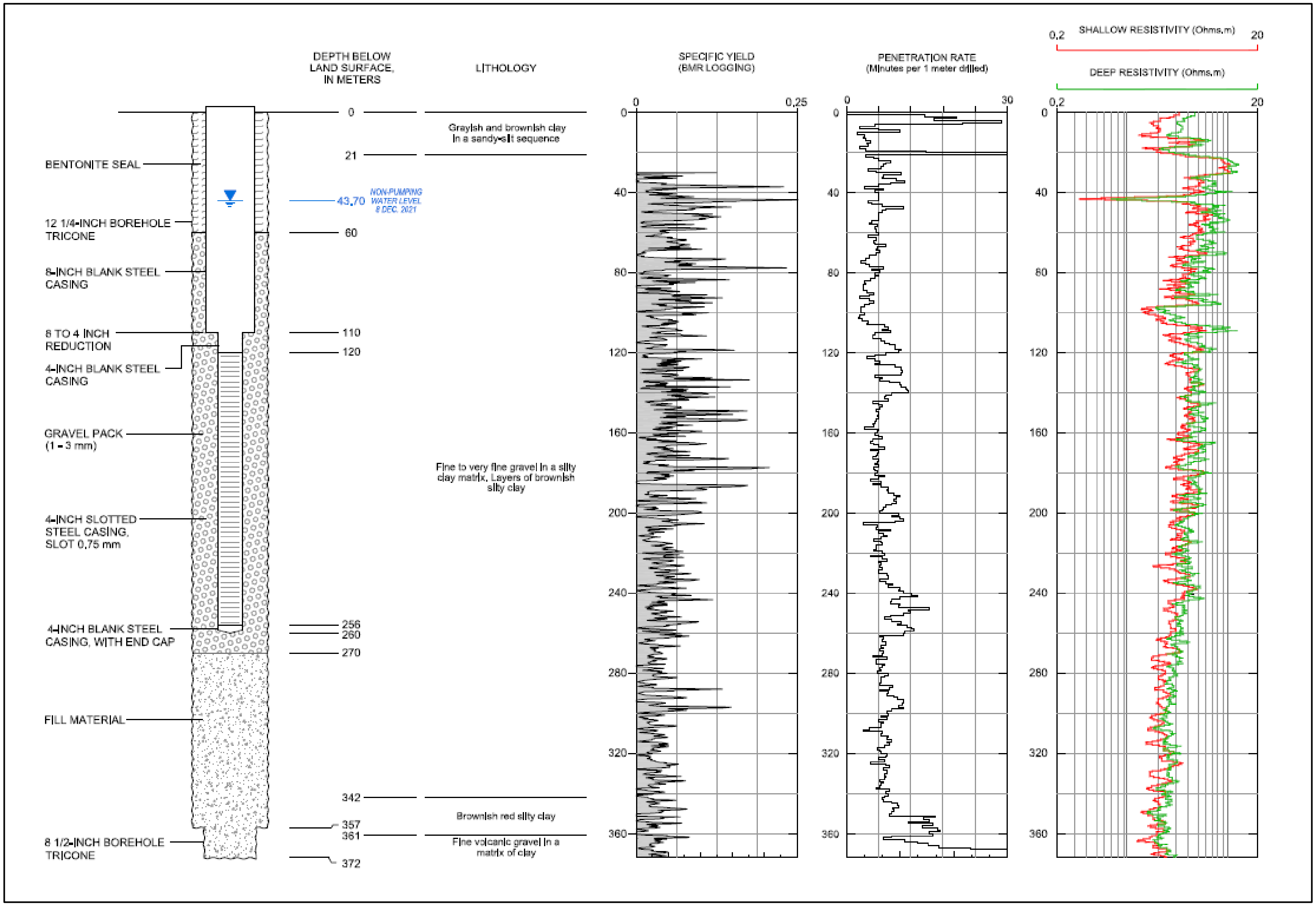
APPENDIX A- 6. WBALT-06 WELL DIAGRAM.

Source: Montgomery (2022)



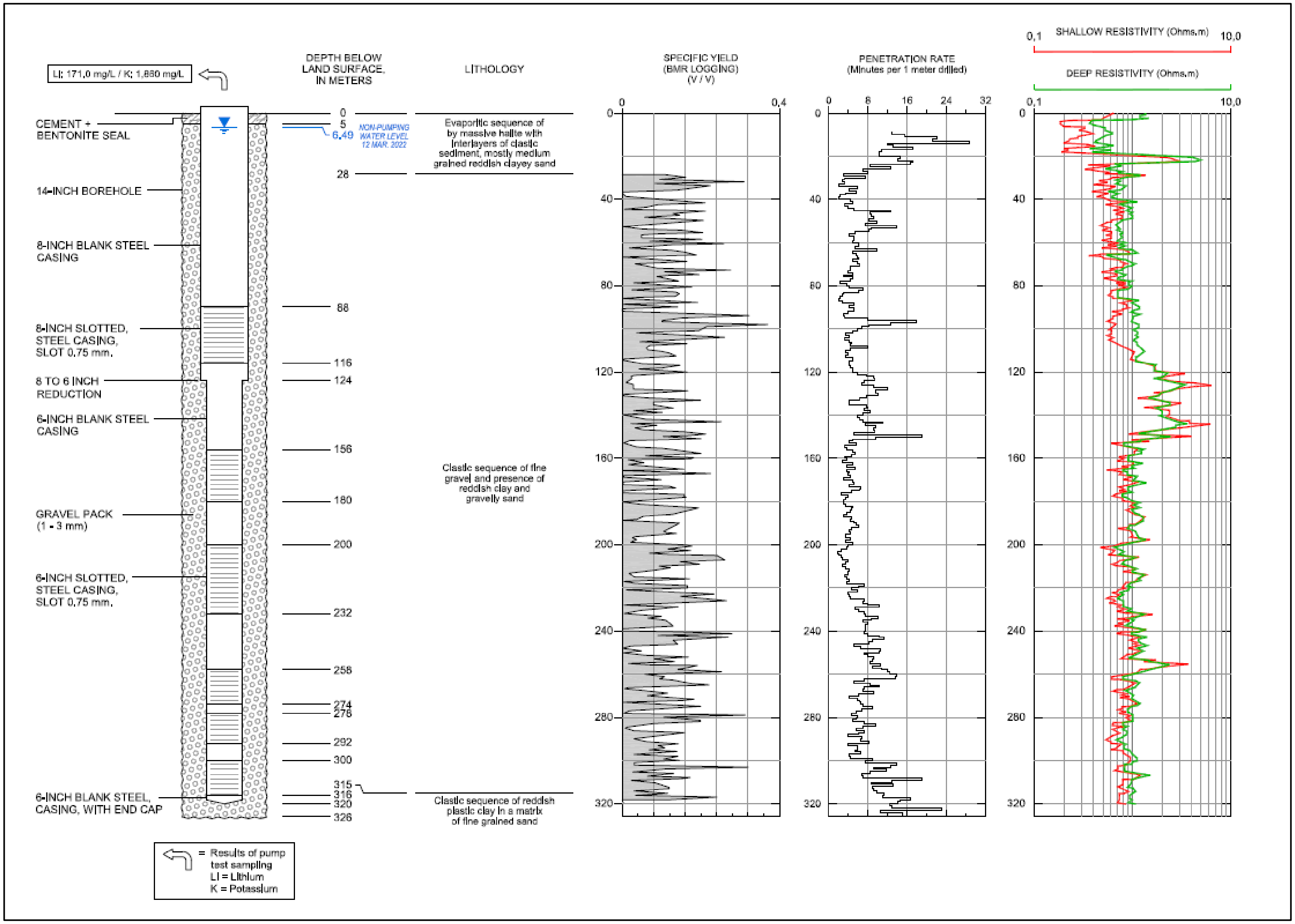
APPENDIX A- 7. WBALT-07 WELL DIAGRAM.

Source: Montgomery (2022)



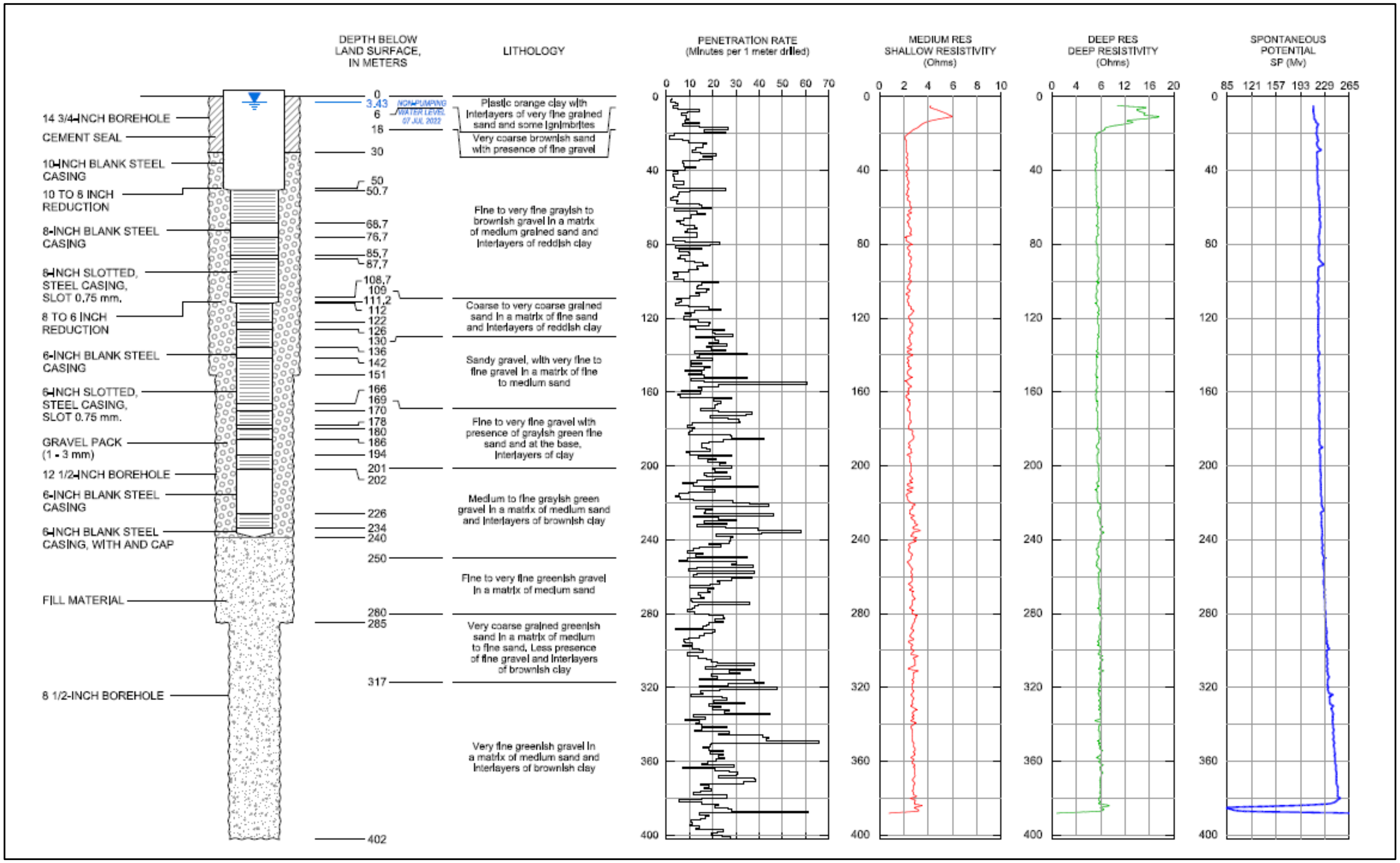
APPENDIX A- 8. EX-ALT-08 WELL DIAGRAM.

Source: Montgomery (2022)



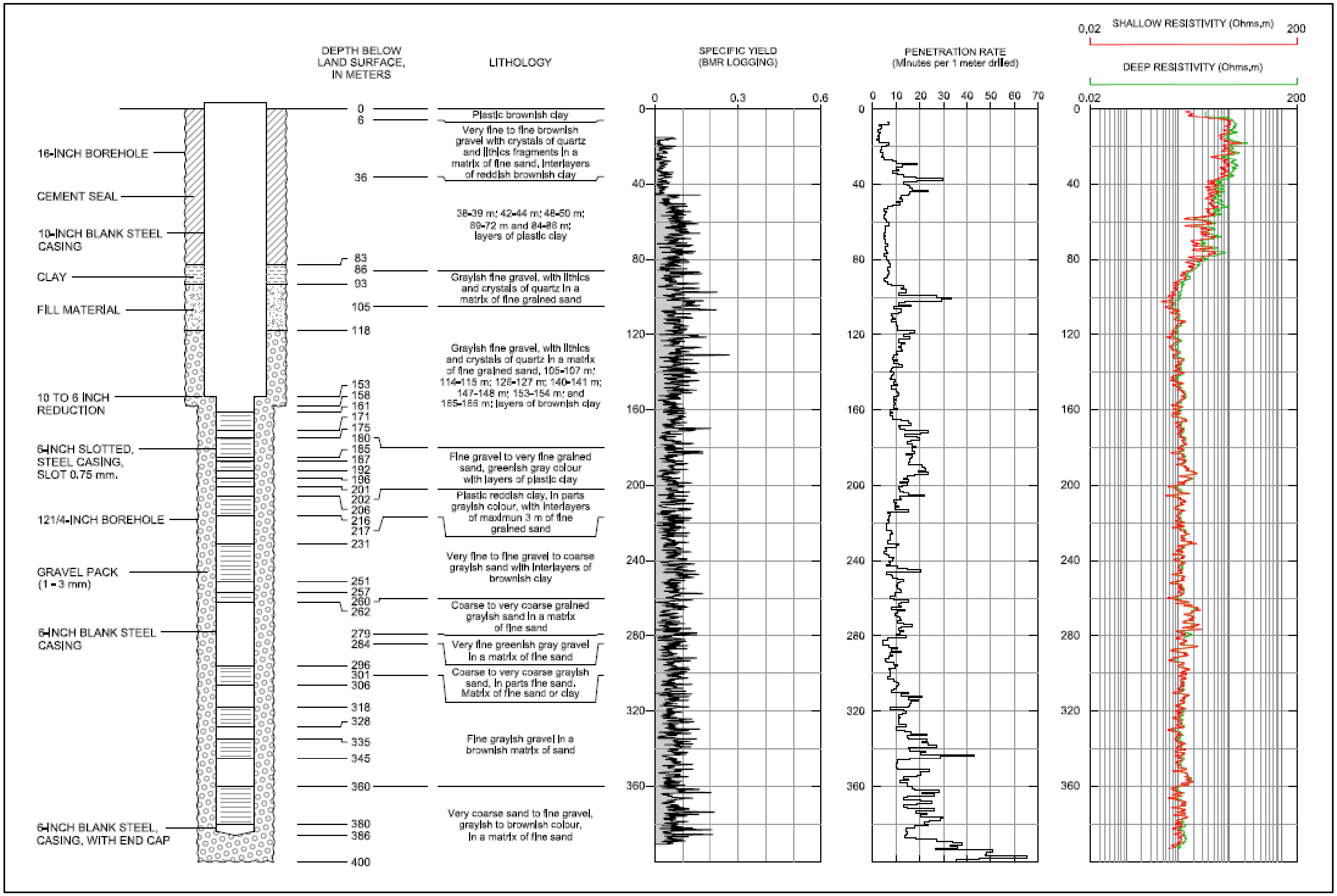
APPENDIX A- 9. WBALT-09 WELL DIAGRAM.

Source: Montgomery (2022)



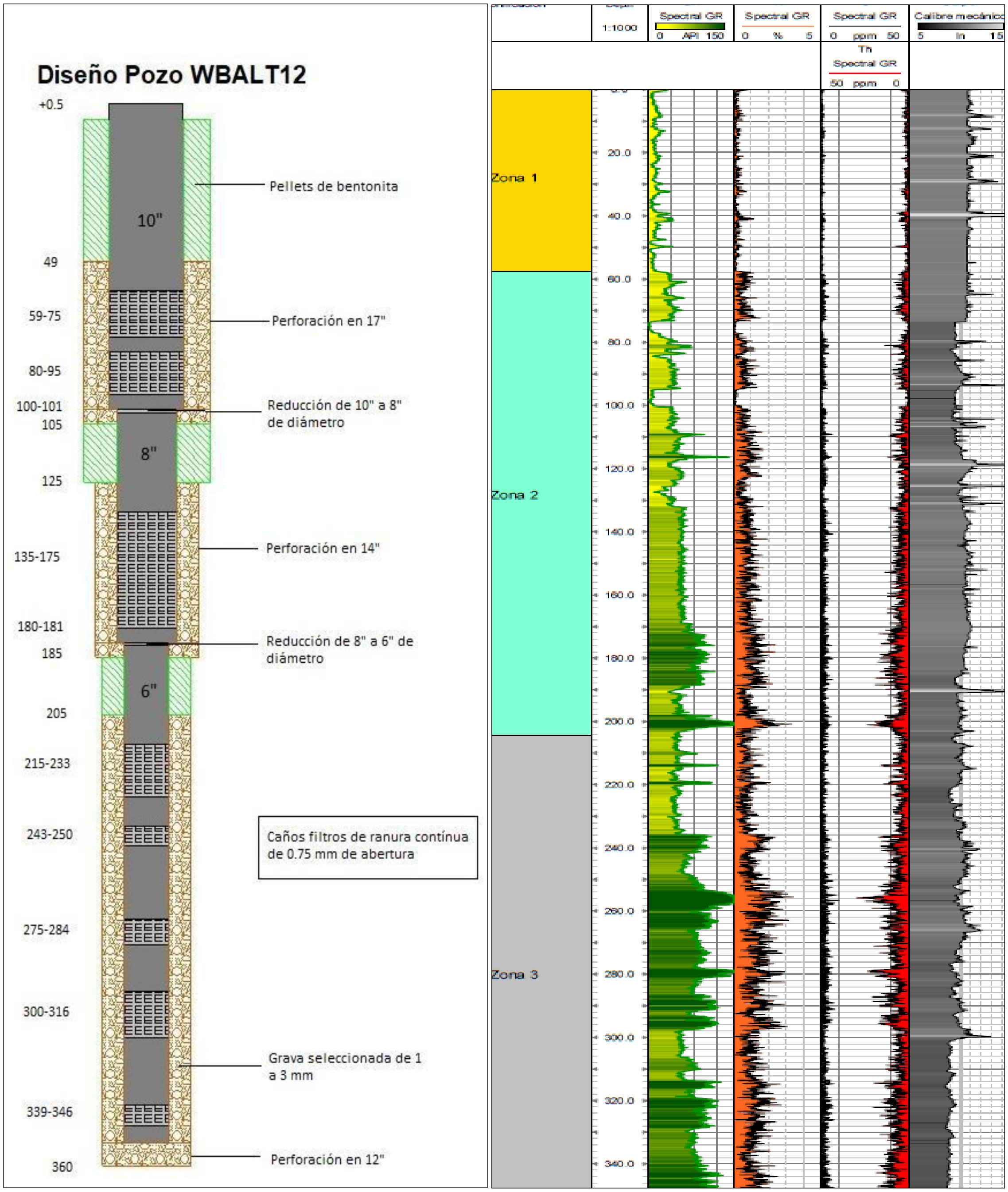
APPENDIX A- 10. WBALT-10 WELL DIAGRAM.

Source: Montgomery (2022)



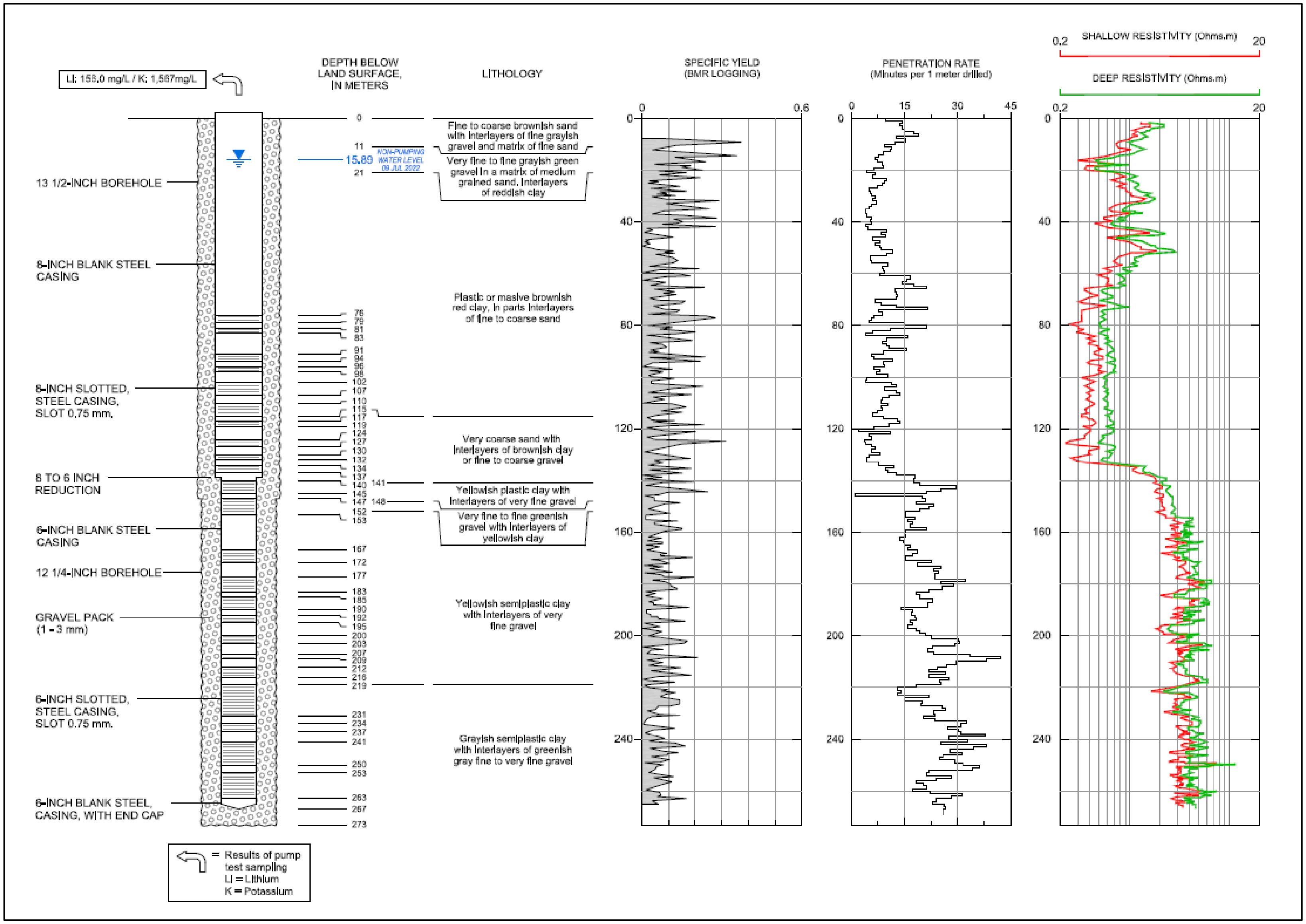
APPENDIX A- 11. WBALT-11 WELL DIAGRAM.

Source: Montgomery (2022)



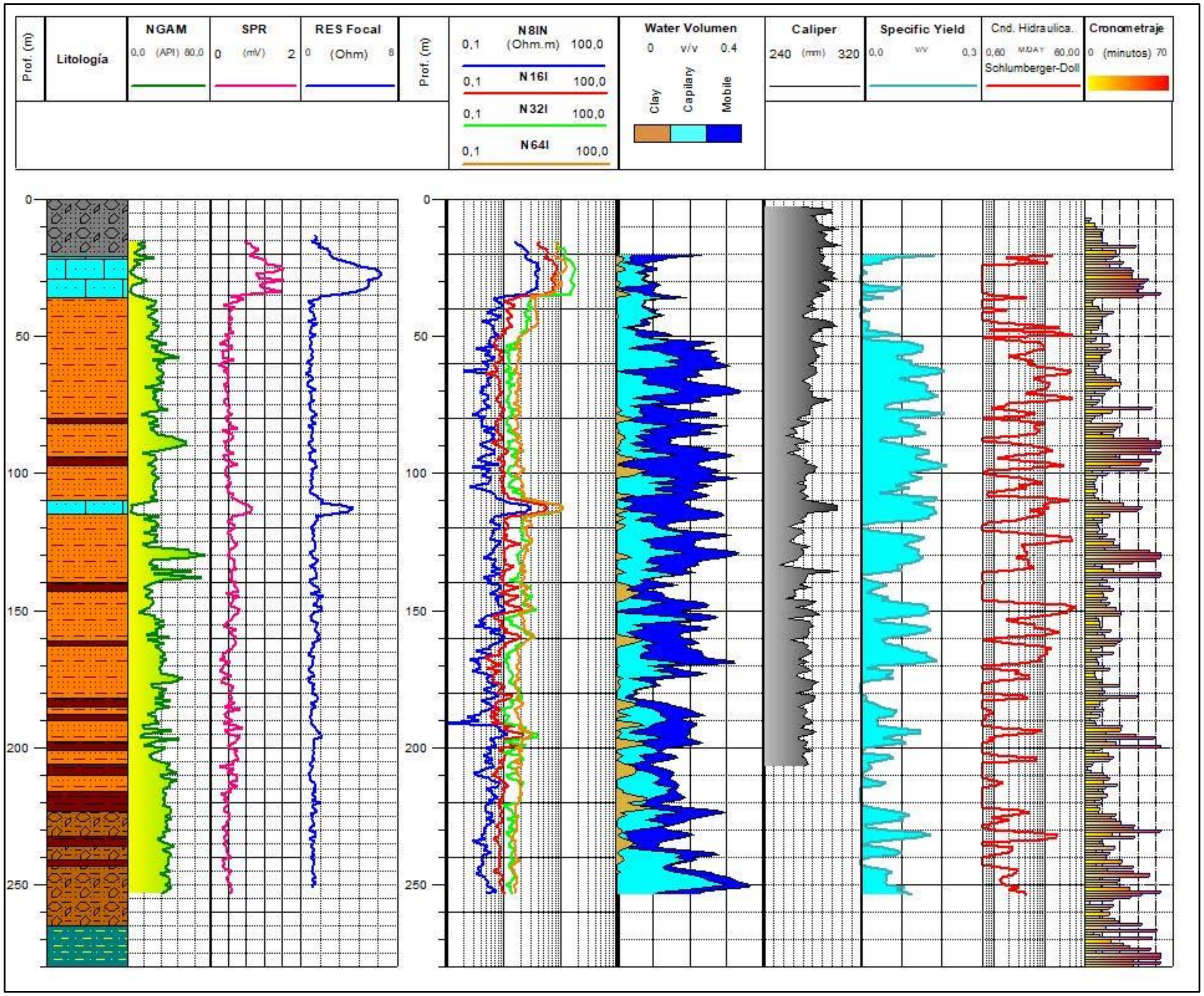
APPENDIX A- 12. WBALT-12 WELL DIAGRAM.

Source: Conhidro (2022b)



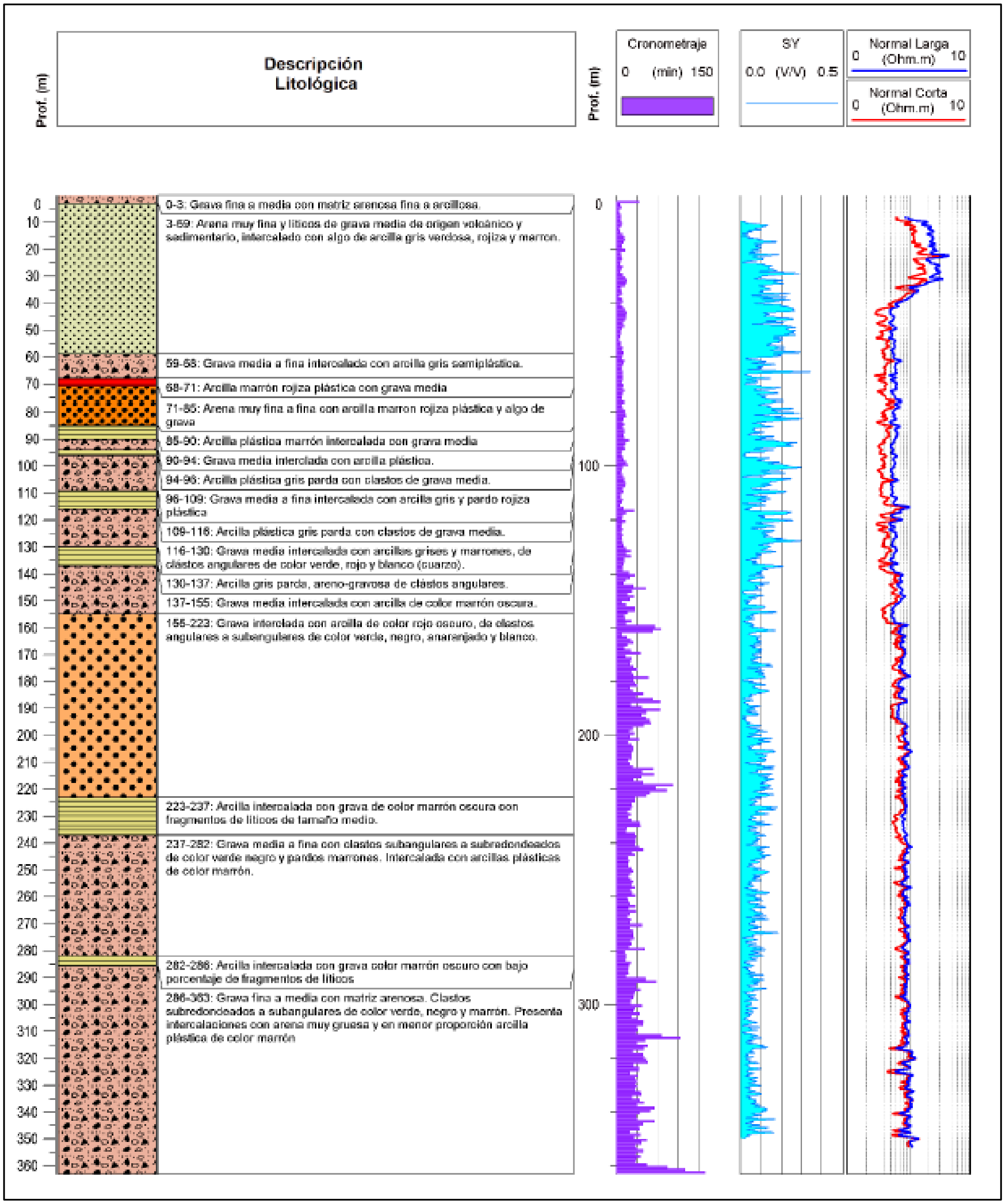
APPENDIX A- 13. WBALT-13 WELL DIAGRAM.

Source: Montgomery (2022)



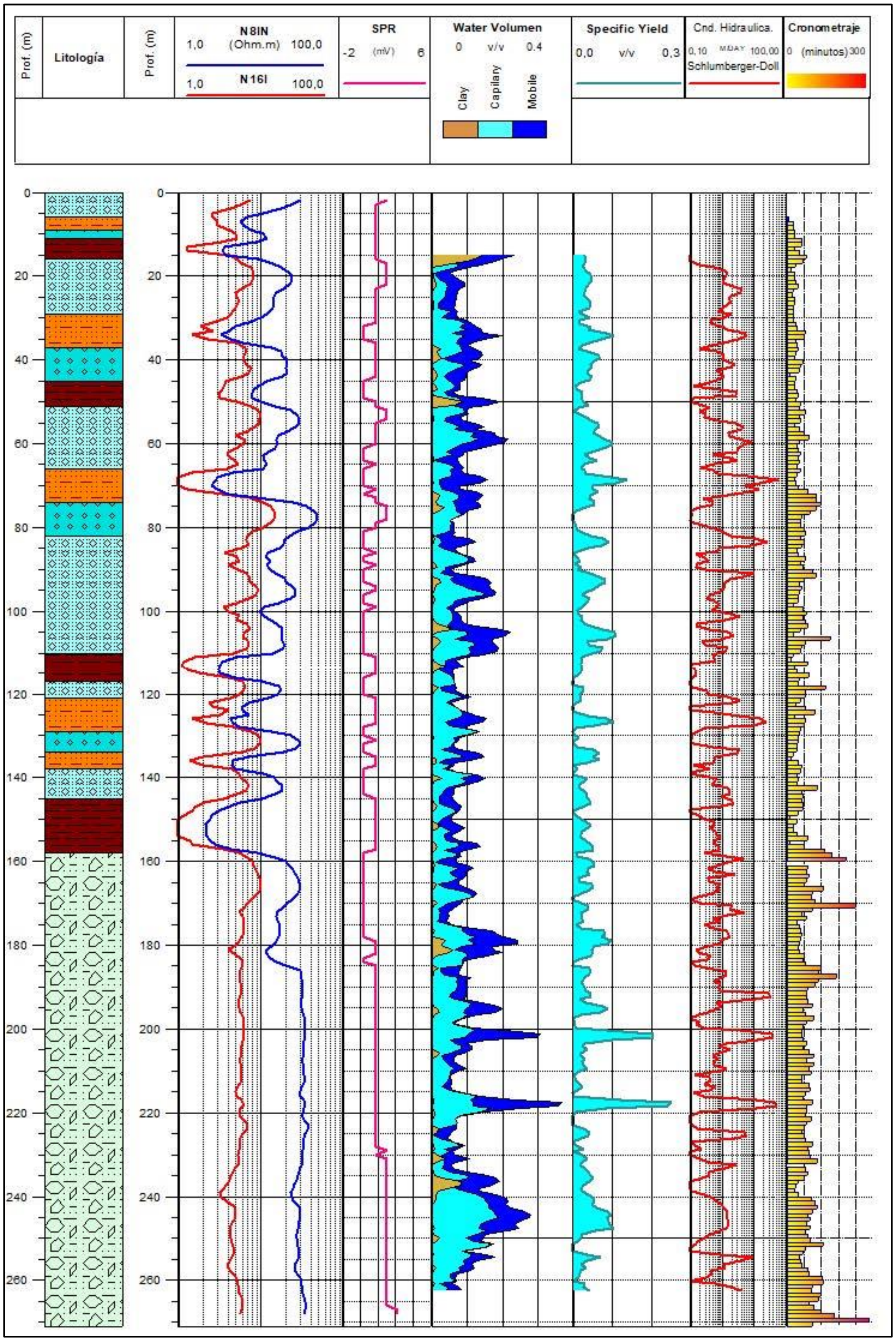
APPENDIX A- 14. WBALT-14 WELL DIAGRAM.

Source: Conhidro (2023a)



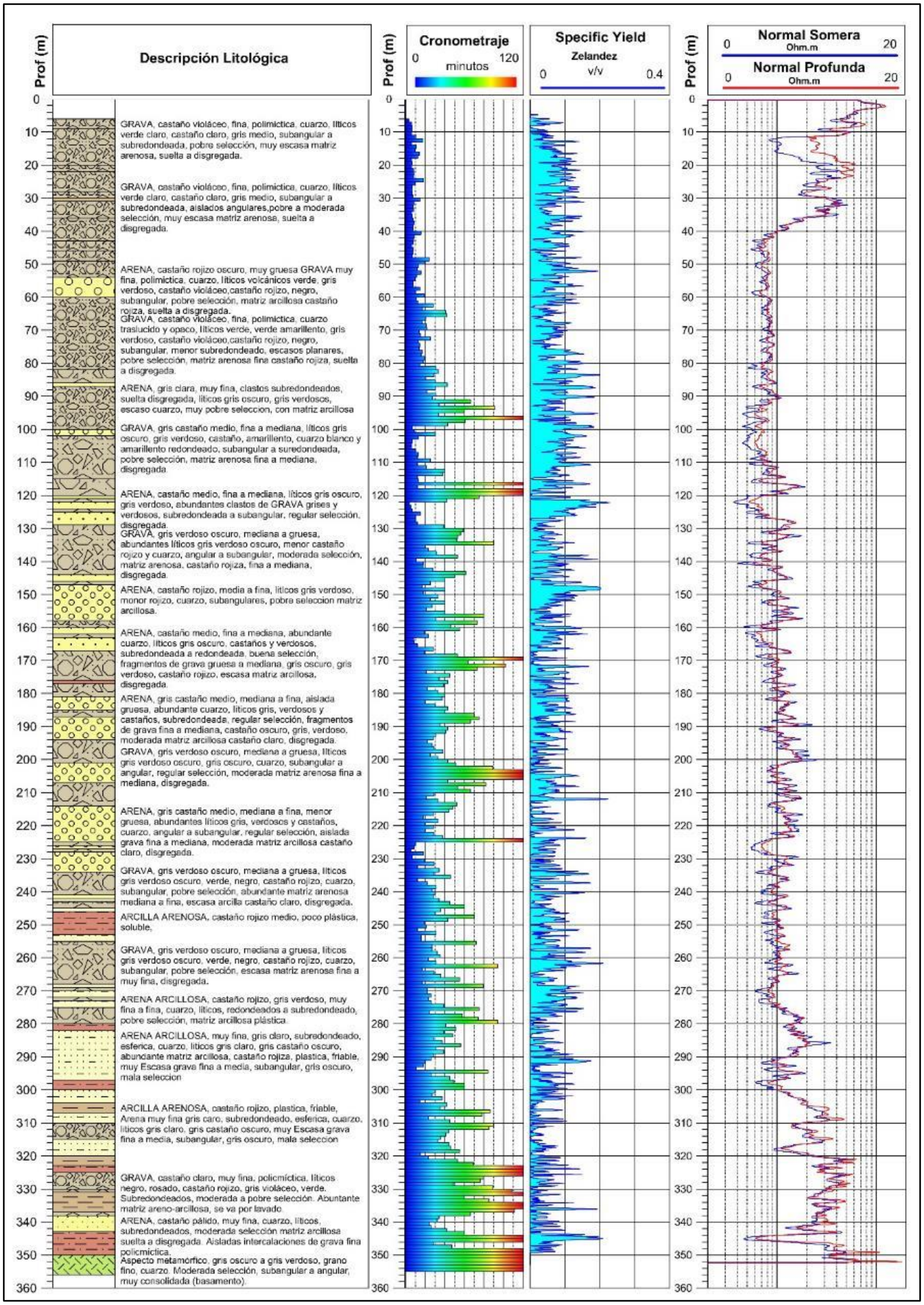
APPENDIX A- 15. WBALT-15 WELL DIAGRAM.

Source: Conhidro (2022c)



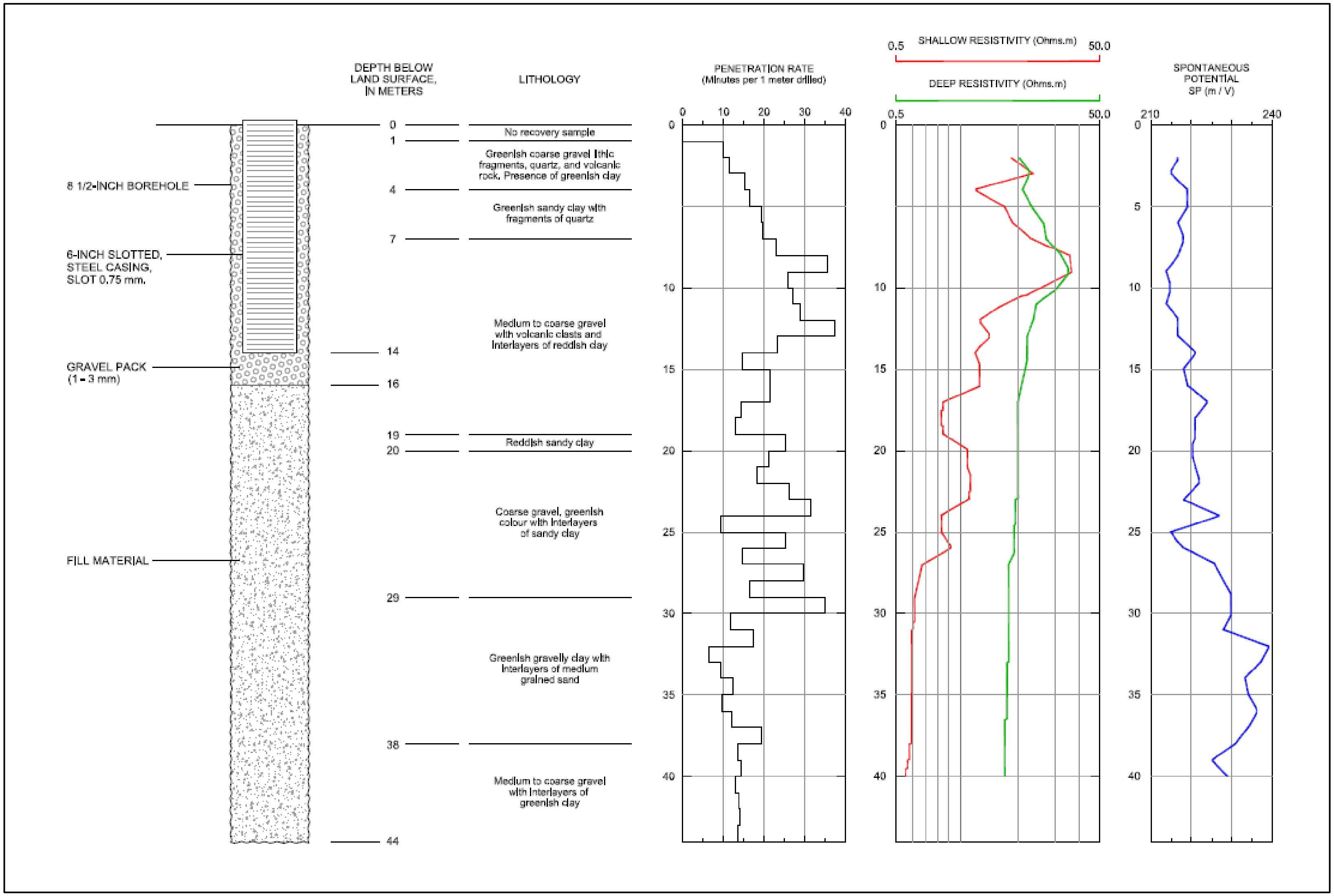
APPENDIX A- 16. WBALT-16 WELL DIAGRAM.

Source: Conhidro (2023c)



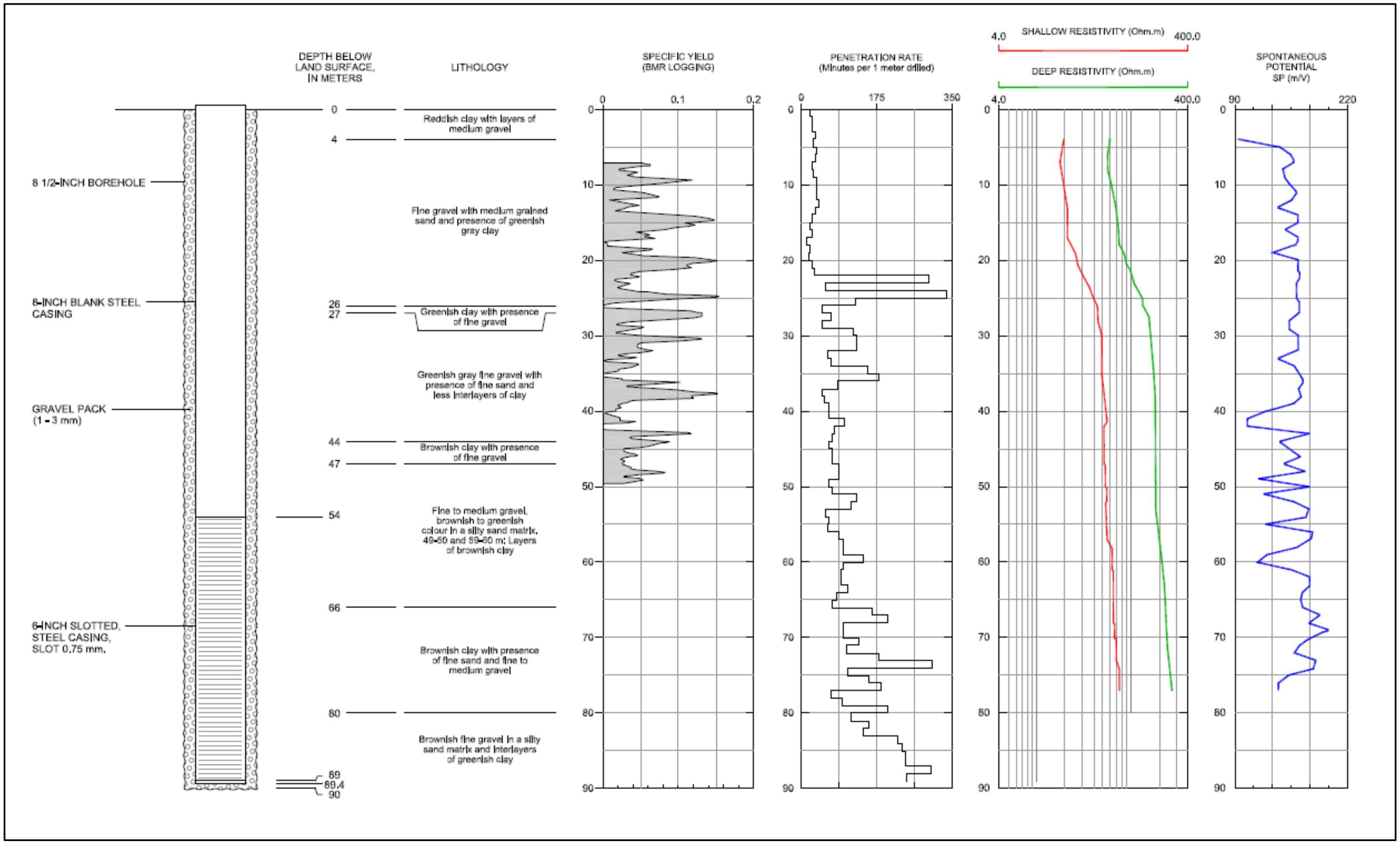
APPENDIX A- 17. WBALT-17 WELL DIAGRAM.

Source: Conhidro (2023b)



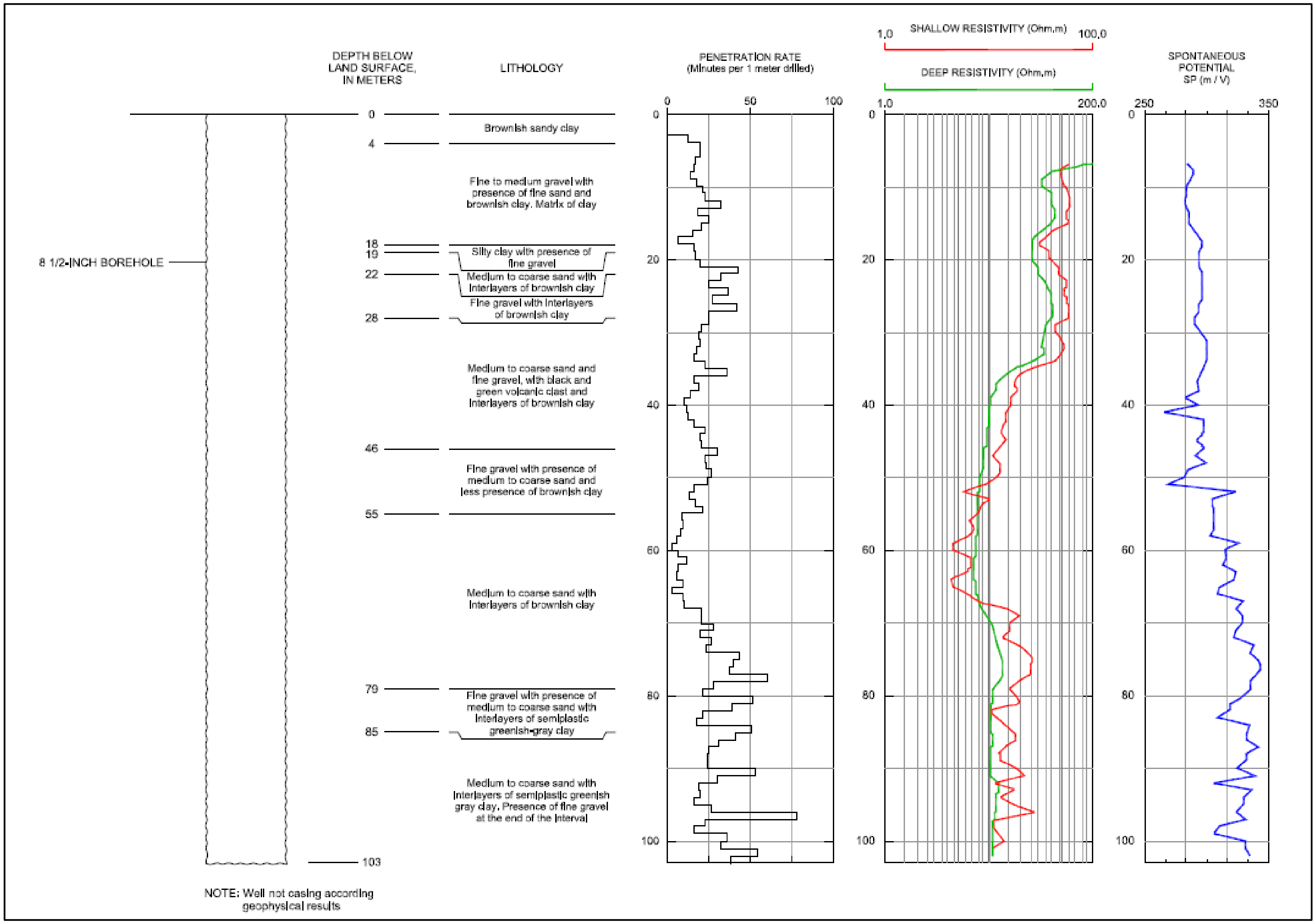
APPENDIX A- 18. FRESH WATER FWWALT-01 WELL DIAGRAM.

Source: Montgomery (2022)



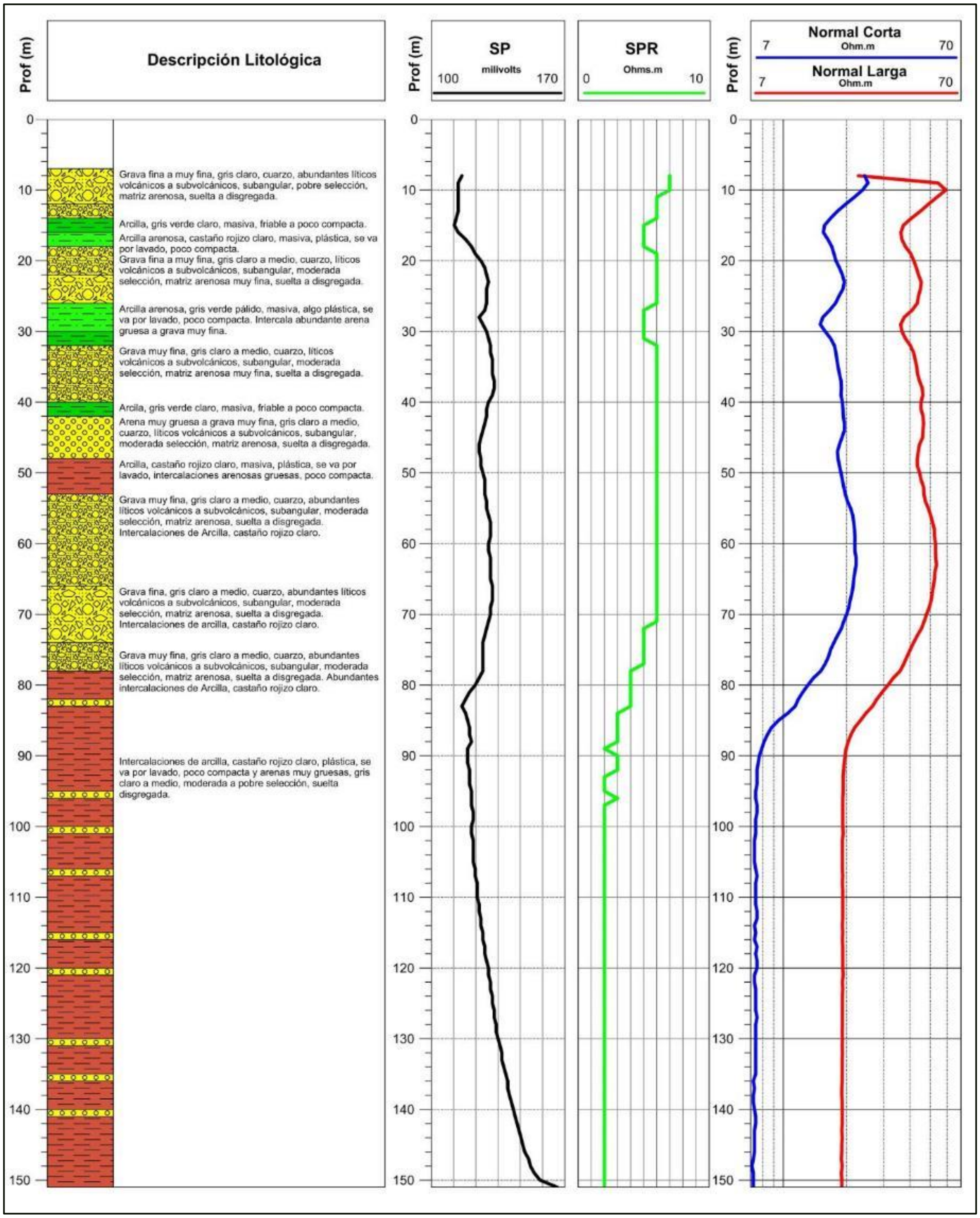
APPENDIX A- 19. FRESH WATER FWWALT-01A WELL DIAGRAM.

Source: Montgomery (2022)



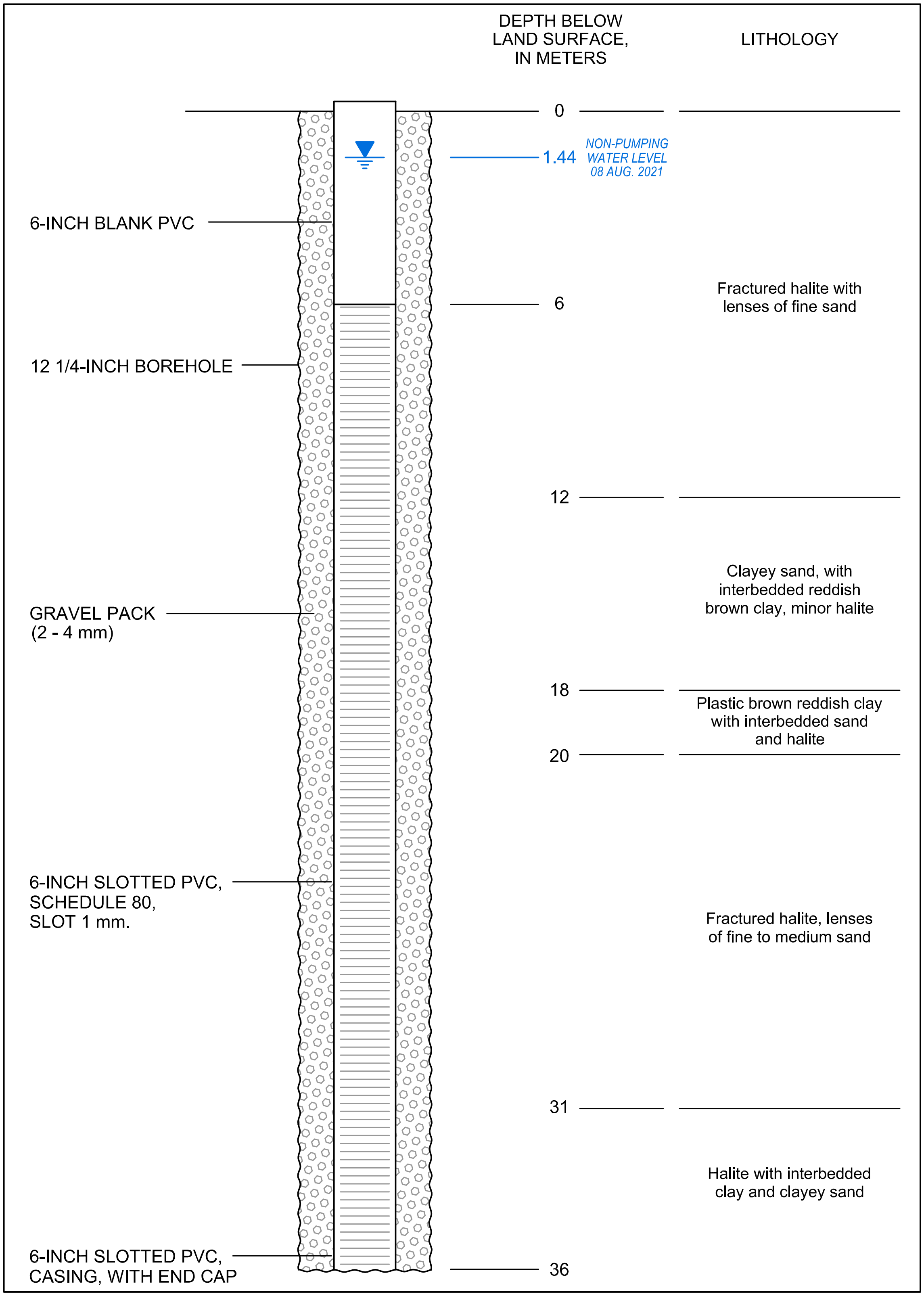
APPENDIX A- 20. FRESH WATER FWWALT-01B WELL DIAGRAM.

Source: Montgomery (2022)



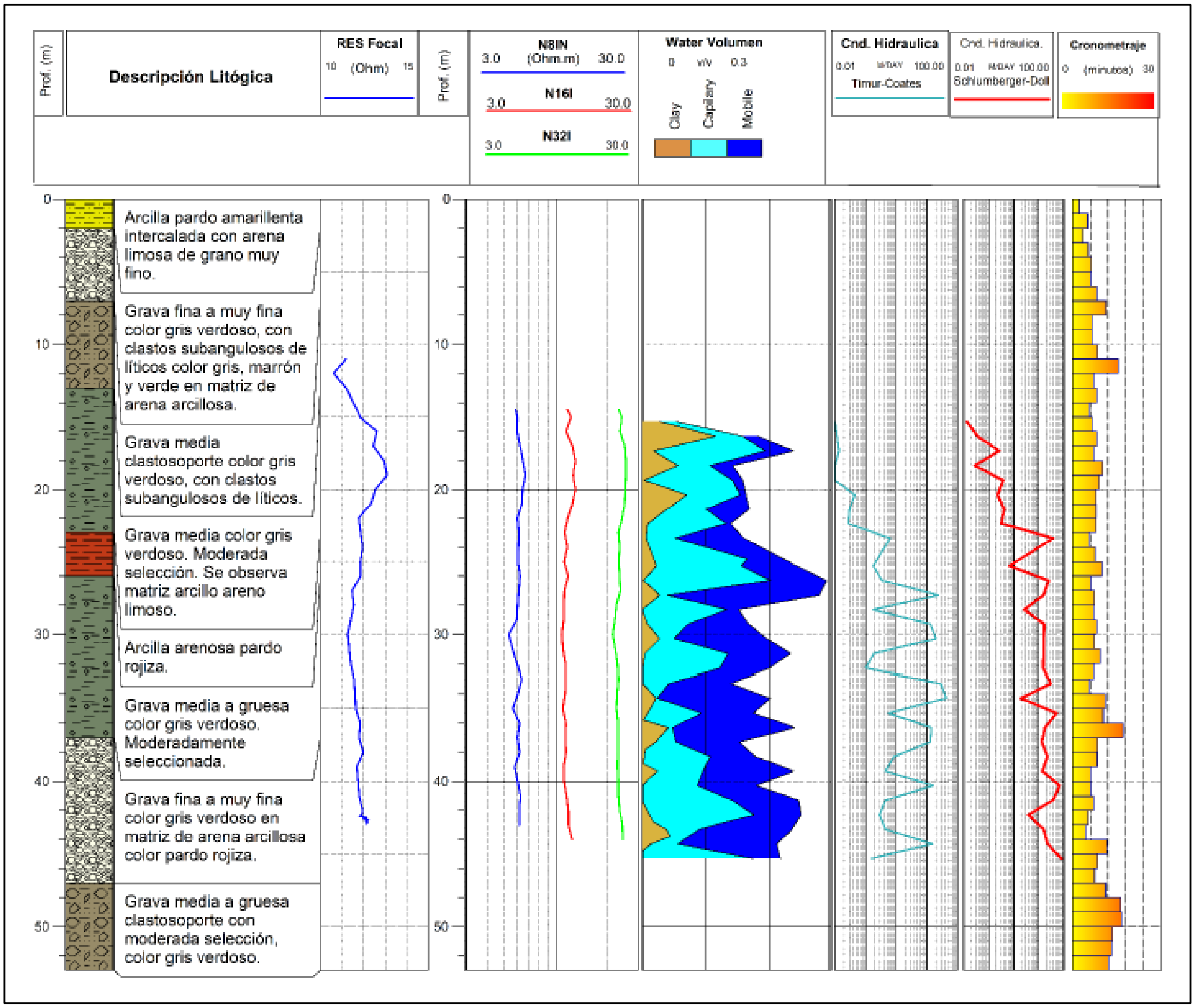
APPENDIX A- 21. FRESH WATER FWWALT-02 WELL DIAGRAM.

Source: Conhidro (2022f)



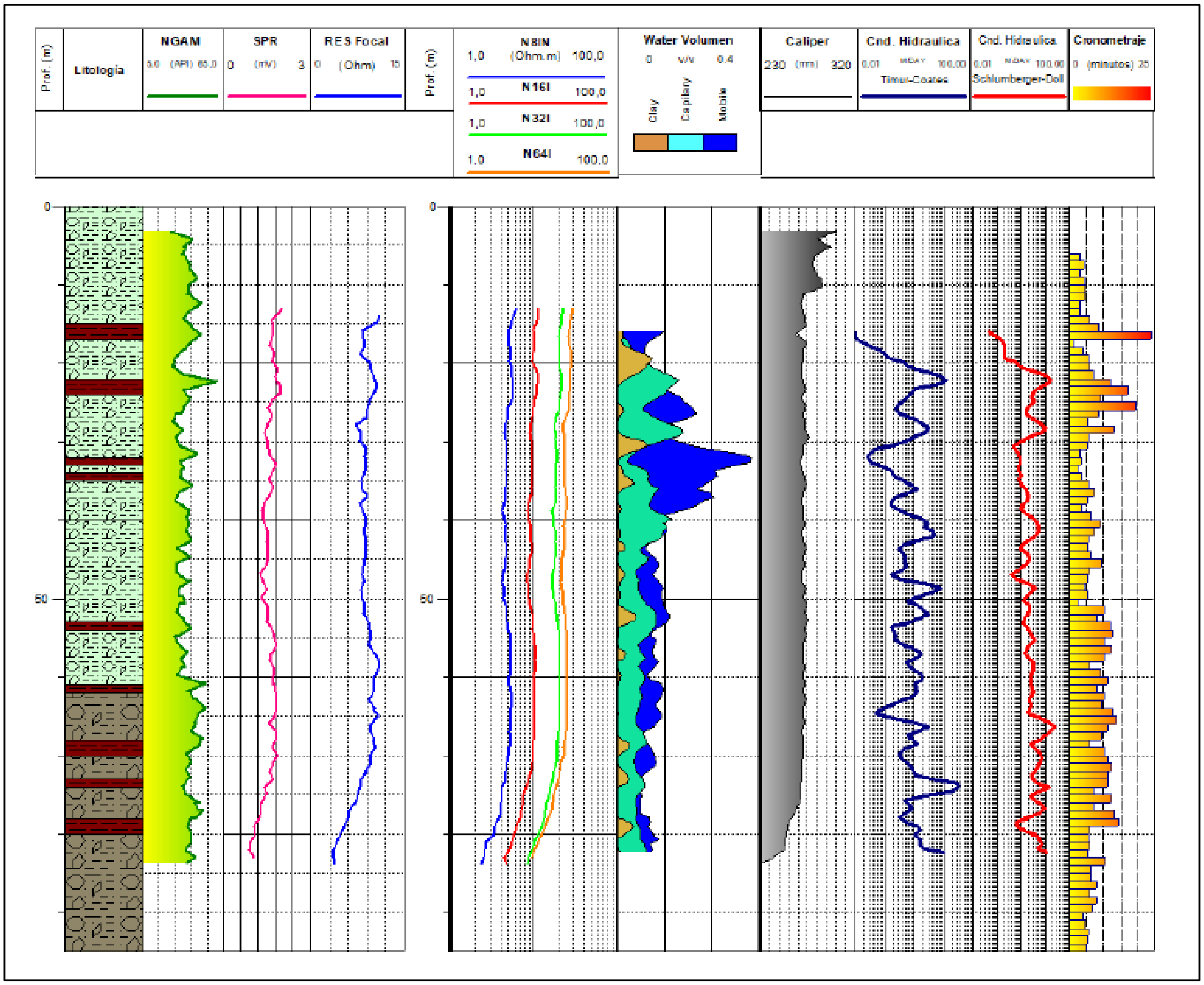
APPENDIX A- 22. PIEZOMETER WBALT-03P WELL DIAGRAM.

Source: Montgomery (2022)



APPENDIX A- 23. PIEZOMETER PZWRALT-01 WELL DIAGRAM.

Source: Conhidro (2022c)



APPENDIX A- 24. PIEZOMETER PZWRALT-02 WELL DIAGRAM.

Source: Conhidro (2022d)

APPENDIX B. SUMMARY OF BRINE SAMPLING RESULTS

APPENDIX B- 1. WELL DDHB-01 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AK46	201	1493	2146	N/A	7.43
AK47	203	1504	2194	N/A	7.41
AVERAGE	**202**	**1498**	**2170**	**N/A**	**7.42**

Pumping test operations conducted at pumping well DDHB-01 during the period July 25 through July 27, 2018.

APPENDIX B- 2. WELL WBALT-01 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS. .

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
BLCSM-0020	113	799	831	69.9	7.07
BLCSM-0021	97	815	842	69.7	8.39
BLCSM-0022	96	819	864	69.2	8.57
BLCSM-0024	96	816	805	68.6	8.51
BLCSM-0025	98	843	853	69.7	8.60
BLCSM-0026	95	813	815	66.8	8.59
BLCSM-0027	96	826	819	69.0	8.60
AVERAGE	**99**	**819**	**833**	**69.0**	**8.33**

Pumping test operations conducted at pumping well WBALT-01 during the period December 18 through December 20, 2020.

APPENDIX B- 3. WELL WBALT-02 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
BLCSM-0048	206	2180	2550	208	10.58
BLCSM-0049	220	2220	2600	212	10.09
BLCSM-0050	209	1890	2250	209	9.04
BLCSM-0051	212	1160	1990	207	5.47
BLCSM-0052	205	1780	2080	198	8.68
AVERAGE	**210**	**1846**	**2294**	**207**	**8.77**

Pumping test operations conducted at pumping well WBALT-02 during the period February 18 through February 19, 2021.

APPENDIX B- 4. WELL WBALT-03 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST_0058	212.8	1342.5	2969.5	153.5	6.33
AST_0059	220.3	1387.1	3068.6	157.1	6.30
AST_0061	212.0	1350.0	2955.8	154.4	6.37
AST_0062	218.8	1393.6	3049.0	155.2	6.37
AST_0063	221.8	1415.3	3092.9	159.1	6.38
AST_0064	228.3	1472.7	3221.7	168.9	6.45
AST_0065	211.8	1341.1	2945.3	145.2	6.33
AVERAGE	**218.0**	**1386.0**	**3043.3**	**156.2**	**6.36**

Pumping test operations conducted at pumping well WBALT-03 during the period September 13 through September 16, 2021.

APPENDIX B- 5. WELL WBALT-04 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST-0001	202	1170	1236	103.1	5.80
AST-0002	205	1196	1298	107.0	5.84
AST-0003	199	1116	1240	100.8	5.60
AST-0004	194	1080	1132	91.6	5.58
AST-0005	197	1296	1266	100.8	6.58
AST-0006	199	1182	1221	95.6	5.95
AST-0007	191	1108	1070	84.6	5.80
AST-0008	192	1218	1115	87.8	6.35
AVERAGE	**197**	**1171**	**1197**	**96.5**	**5.94**

Pumping test operations conducted at pumping well WBALT-04 during the period April 27 through April 30, 2021.

APPENDIX B- 6. WELL WBALT-05 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
BLCSM-0060	344	2710	3090	256	7.88
BLCSM-0061	362	2790	3150	256	7.71
BLCSM-0062	354	2730	3550	258	7.71
BLCSM-0063	351	2850	3250	252	8.12
BLCSM-0064	351	2790	3090	253	7.95
BLCSM-0065	346	2900	3410	259	8.38
AVERAGE	**351**	**2795**	**3257**	**256**	**7.96**

Pumping test operations conducted at pumping well WBALT-05 during the period March 27 through March 28, 2021.

APPENDIX B- 7. WELL WBALT-06 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST-0106	262.0	324.0	2336	188.0	1.23
AST-0107	270.0	328.0	2381	199.0	1.22
AST-0108	259.0	350.0	2368.0	202.0	1.35
AST-0109	249.0	314.0	2319.0	191.0	1.26
AST-0111[D]	252.0	---	2366.6	191.8	---
AST-0112	244.9	---	2283.3	193.4	---
AST-0113	249.2	---	2327.6	196.2	---
AST-0114	247.6	---	2284.3	192.0	---
AST-0115	253.6	---	2359.7	195.0	---
AVERAGE	**249.5**	**---**	**2324.3**	**193.7**	**---**

--- Data considered unreliable

[D] Duplicate sample

Pumping test operations conducted at pumping well WBALT-06 during the period January 26 through January 28, 2022.

APPENDIX B- 8. WELL WBALT-07 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST_0081	323.0	1611.0	2424.0	215.0	4.99
AST_0082	313.0	---	3253.0	216.0	0.00
AST_0083	339.0	1649.0	2520.0	215.0	4.87
AST_0084	365.0	1792.0	2707.0	231.0	4.91
AST-0085	351.9	1745.4	2634.1	224.4	4.96
AST-0086	343.8	1684.3	2534.9	221.5	4.90
AST-0088	351.0	1721.0	2645.9	221.0	4.90
AST-0089	340.2	1675.2	2533.5	215.3	4.92
AST-0091	340.2	1662.0	2530.5	216.3	4.89
AST-0092	343.0	1679.5	2560.4	215.2	4.90
AVERAGE	**343.0**	**1701.0**	**2657.6**	**219.0**	**4.91**

Pumping test operations conducted at pumping well WBALT-07 during the period October 17 through October 20, 2021.

APPENDIX B- 9. WELL EX-ALT-08 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST-0098	10.3	46.3	65.1	<10	4.50
AST-0099	<10	31.4	37.3	<10	N/A
AVERAGE	**N/A**	**38.9**	**51.2**	**N/A**	**N/A**

Pumping test operations conducted at pumping well Ex-ALT-08 during the period December 12 through December 16, 2021. The chemical signature of the groundwater at this location suggests that it may be a potential location for a fresh or brackish water exploration program.

APPENDIX B- 10. WELL WBALT-09 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST_0428	219	1579	2246	168	7.21
AST_0429	202	1443	2118	155	7.14
AST_0431	226	1626	2271	173	7.19
AST_0432	205	1450	2119	159	7.07
AST_0433	256	1790	2393	191	6.99
AST_0434	234	1626	2300	176	6.95
AST_0435	232	1628	2267	177	7.02
AST_0436	251	1737	2362	188	6.92
AST_0438	246	1691	2384	187	6.87
AST_0439	253	1750	2365	189	6.92
AST_0441	179	1232	2102	140	6.88
AVERAGE	**228**	**1596**	**2266**	**173**	**7.02**

Pumping test operations conducted at pumping well WBALT-09 during the period March 12 through March 15, 2022.

APPENDIX B- 11. WELL WBALT-10 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST319	65	724	557	42	11.14
AST321	64	729	555	41	11.39
AST322	65	734	555	42	11.29
AST323	64	725	549	42	11.33
AST324	65	726	557	42	11.17
AST325	64	725	563	42	11.33
AST326	65	724	552	42	11.14
AST327 [D]	65	725	555	41	11.15
AST328	66	734	556	42	11.12
AST329	66	735	553	41	11.14
AST331	66	730	544	41	11.06
AST332	66	732	532	41	11.09
AST333	65	729	556	41	11.22
AST334	66	733	569	42	11.11
AST335	65	732	551	42	11.26
AVERAGE	**65**	**729**	**554**	**42**	**11.20**

[D] Duplicate sample

Pumping test operations conducted at pumping well WBALT-10 during the period July 6 through July 10, 2022.

APPENDIX B- 12. WELL WBALT-11 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST391	127	1418	1470	123	11.17
AST392	125	1359	1451	120	10.87
AST393	124	1325	1470	119	10.69
AST394	121	1312	1446	118	10.84
AST395	123	1322	1467	119	10.75
AST396	122	1310	1466	118	10.74
AST398	124	1332	1471	121	10.74
AST399	123	1319	1439	120	10.72
AST401	125	1328	1488	120	10.62
AST402	125	1329	1487	120	10.63
AST404	118	1297	1455	117	10.99
AST405	129	1408	1488	121	10.91
AST406	129	1400	1477	120	10.85
AST408	128	1324	1491	117	10.34
AVERAGE	**125**	**1342**	**1469**	**120**	**10.78**

Pumping test operations conducted at pumping well WBALT-11 during the period August 13 through 20, 2022.

APPENDIX B- 13. WELL WBALT-12 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST_0584	163	984	2120	160	6.04
AST_0585	164	980	2132	162	5.98
AST_0586	164	969	2153	162	5.91
AST_0588	156	992	1928	135	6.36
AST_0589	163	1051	1872	130	6.45
AST_0593	186	1284	1726	115	6.90
AST_0594	186	1276	1722	115	6.86
AST_0595	185	1285	1708	114	6.95
AVERAGE	**171**	**1103**	**1920**	**137**	**6.43**

Pumping test operations conducted at pumping well WBALT-12 during the period April 2 through April 8, 2022.

APPENDIX B- 14. WELL WBALT-13 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST-302	265	2236	2596	220	8.44
AST-303	177	1557	1760	152	8.80
AST-304	171	1531	1739	151	8.95
AST-305	171	1520	1736	151	8.89
AST-306	159	1433	1612	141	9.01
AST-308	156	1410	1649	141	9.04
AST-309	157	1418	1596	141	9.03
AST-311	156	1411	1577	140	9.04
AST-312	153	1389	1574	137	9.08
AST-313	156	1394	1567	138	8.94
AVERAGE	**172**	**1530**	**1741**	**151**	**8.92**

Pumping test operations conducted at pumping well WBALT-13 during the period July 9 through 12, 2022.

APPENDIX B- 15. WELL WBALT-14 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS..

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST_0566	292	1744	3062	233	5.97
AST_0567 [D]	295	1749	3069	236	5.93
AST_0568	283	1686	2787	205	5.96
AST_0569	292	1713	3057	230	5.87
AST_0571	296	1734	3109	236	5.86
AST_0572	269	1568	2217	167	5.83
AST_0573	296	1727	2965	236	5.83
AST_0574	298	1718	2970	233	5.77
AST_0575	293	1731	2966	234	5.91
AST_0576	296	1725	2957	234	5.83
AST_0577 [D]	296	1725	2970	231	5.83
AST_0578	296	1723	2967	232	5.82
AST_0579	297	1728	2972	233	5.82
AST_0581	298	1727	2998	234	5.80
AST_0582	295	1735	2972	232	5.88
AST_0583	296	1730	3016	234	5.84
AVERAGE	**293**	**1716**	**2941**	**228**	**5.86**

[D] Duplicate sample

Pumping test operations conducted at pumping well WBALT-14 during the period April 8 through April 12, 2023.

APPENDIX B- 16. WELL WBALT-15 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
AST411	316	1475	3072	264	4.92
AST412	342	1650	3159	267	5.16
AST413	342	1776	3215	271	5.21
AST414	334	1786	3216	267	5.32
AST415	341	1786	3213	270	5.35
AST416	339	1634	3164	266	5.17
AST417 [D]	334	1793	3212	265	5.24
AST418	341	1806	3184	268	5.28
AST419	334	1800	3183	266	5.39
AST421	329	1798	3183	265	5.27
AST422	332	1786	3162	266	5.27
AST_0423	300	1795	3174	263	5.37
AST_0424	320	1802	3212	260	5.28
AST_0425	341	1764	3146	268	5.28
AST_0426	336	1801	3201	271	5.47
AST_0427 [D]	334	1801	3172	268	5.42
AVERAGE	**332**	**1753**	**3179**	**267**	**5.28**

[D] Duplicate sample

Pumping test operations conducted at pumping well WBALT-15 during the period October 25 through November 1, 2023.

APPENDIX B- 17. WELL FWWALT-02 BRINE SAMPLE RESULTS OBTAINED DURING PUMPING TESTS.

SAMPLE ID	Date (mm-yyyy)	Li (mg/L)	Na (mg/L)	K (mg/L)	Cl (mg/L)	Total Dissolved Solids (mg/L)
AST-0243	06-2022	0.56	869.44	10.49	544.7	1442

Pumping conducted at pumping well FWWALT-02 during June 2022.

APPENDIX B- 18. SUMMARY OF HYDRASLEEVE SAMPLES COLLECTED FROM SELECT WELLS.

Well ID	Sample ID	Depth of Sample (m)	Li (mg/L)	K (mg/L)
WBALT-01	AST-0025	8	39	440
WBALT-01	AST-0026	38	64	652
WBALT-01	AST-0027 [D]	38	63	627
WBALT-02	AST-0028	50	192	2192
WBALT-02	AST-0029	80	236	2543
WBALT-02	AST-0031	110	197	2201
WBALT-02	AST-0032	124	184	2323
WBALT-04	AST-0033	15	97	1231
WBALT-04	AST-0034	45	105	1251
WBALT-04	AST-0035	75	182	1820
WBALT-05	AST-0036	177	295	3017
WBALT-05	AST-0037 [D]	177	280	2847
WBALT-05	AST-0038	205	288	2882
WBALT-05	AST-0039	235	301	3025
WBALT-05	AST-0041	265	58	774
WBALT-05	AST-0042	298	298	3048
WBALT-05	AST-0043	328	304	3056
DDHB-01	AST-0044	54	293	2962
DDHB-01	AST-0045	80	107	1395
DDHB-01	AST-0046	112	72	912
DDHB-01	AST-0047 [D]	112	81	1007
WBALT-03P	AST-0048	32	12	366

[D] Duplicate sample

Hydrasleeve sampling was conducted during May 2021 on exploration wells drilled in years 2018 to 2021.

APPENDIX B- 19. LITHIUM AND POTASSIUM RESULTS FROM HYDRASLEEVE BRINE SAMPLING.

Exploration Well Identifier	Total Depth (m)	Number of Brine Samples Collected and Analyzed	Average Lithium Content of Brine Samples (mg/L)	Median Lithium Content of Brine Samples (mg/L)	Lithium Content Standard Deviation (mg/L)	Average Potassium Content of Brine Samples (mg/L)	Median Potassium Content of Brine Samples (mg/L)	Potassium Content Standard Deviation (mg/L)
WBALT-01	43.0	3[+D]	51	63.1	130.4	546	627.2	116.1
WBALT-02	130.0	4	102	194.6	112.0	2315	2262.4	163.3
WBALT-03P	32.0	1	12	---	---	366	---	---
WBALT-04	80.0	3	128	105.1	243.0	1434	1251.1	334.5
WBALT-05	352.0	6[+D]	261	295.4	739.7	2664	3017.3	837.7
DDHB-01	208.3	4[+D]	138	93.6	888.2	1569	1201.4	951.9
TOTAL	**813.3**	**21**	-	-	-	-	-	-

[+D] Includes duplicate sample

APPENDIX B- 20. MAGNESIUM/LITHIUM AND LITHIUM/SULFATE RATIOS CALCULATED FROM HYDRASLEEVE BRINE SAMPLING.

Exploration Well Identifier	Total Depth (m)	Number Of Brine Samples Collected and Analyzed	Average Mg/Li Ratio of Brine Samples	Median Mg/Li Ratio of Brine Samples	Mg/Li ratio Standard Deviation	Average SO_4/Li Ratio of Brine Samples	Median SO_4/Li Ratio of Brine Samples	SO_4/Li Ratio Standard Deviation
WBALT-01	43.0	3[+D]	12	11.3	0.75	102	91.4	19.4
WBALT-02	130.0	4	10	10.0	0.62	75	82.9	17.2
WBALT-03P	32.0	1	18	---	---	371	---	---
WBALT-04	80.0	3	11	11.1	1.76	77	77.5	5.2
WBALT-05	352.0	6[+D]	9	8.9	1.07	67	56.6	20.8
DDHB-01	208.3	4[+D]	10	9.9	0.83	85	90.8	18.9
TOTAL	**813.3**	**21**	-	-	-	-	-	-

[+D] Includes duplicate sample