Date: 24 July 2023

ASX Code: MAN

Capital Structure
Ordinary Shares: 598,759,920
Current Share Price: 4.4c
Market Capitalisation: $26.3M
Cash: $18.3M (Mar 2023)
EV: $8.0M
Debt: Nil

Directors

Lloyd Flint
Non-Executive Chairman
Company Secretary

James Allchurch
Managing Director

Roger Fitzhardinge
Non-Executive Director

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Extensive regional continuity of Lithium brine reservoir gives scale

Highlights

- **Review of 181km^2 of 3D seismic and correlations from historic well logs at the 100%-owned Utah Lithium Project has revealed vast lateral continuity and significant thickness of formations hosting potentially Li-rich brines**
- **Deep-rooted fault systems which could provide preferential pathways for the migration of lithium-rich brines have also been identified**
- **Priority re-entry wells selected for sampling are located proximal to these deep-rooted fault systems in order to target high lithium concentrations**
- **Workplans for the B-912 and Big Indian Unit 1 (BIU-1) re-entry wells have been completed and designed to provide multiple chances of success and potential for large aggregate brine volumes**
- **Well-funded with $18.3M in the cash (March 2023) and no debt.**

Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company), with the aid of the newly acquired 3D seismic dataset covering much of the Utah Lithium Project and petrophysical and mud logs from historic wells, has completed detailed stratigraphic correlation and modelling that has identified the regional-scale lateral continuity and significant thickness of formations to be targeted for lithium brine sampling.

Figure 1. Re-entry and sampling – Big Indian Unit 1 well head and pad

Large-scale brines

Mandrake's review of 181km^2 of recently acquired 3D seismic and its correlation with historical logs has highlighted the large scale of the Utah Lithium Project where Mandrake currently hold a dominant tenure position in excess of 88,000 acres.

Lithological units, or aquifers, with potential for hosting lithium-rich brines include the Devonian McCracken Sandstone, the Mississippian Leadville Limestone and a multitude of clastic zones within the overlying Pennsylvanian Paradox Formation. According to logs, the aggregate thickness of these laterally continuous regional units is typically in excess of 500ft (150m) of total brine-saturated rock.

Potential 'high-grading of lithium concentrations

The precise genesis of anomalously high lithium concentrations in Paradox Basin brines is understood to be from one or both of: 1) high lithium legacy in-situ evaporite sediments (contemporaneous with the formation of the Paradox Basin) and 2) the breakdown of hydrothermal and felsic basement rocks with high lithium content. Given its highly soluble nature, lithium is readily dissolved and transported in sub-surface fluids with highest concentrations of lithium typically proximal to feeder structures.

The 3D seismic clearly outlines the large NW-SE trending Lisbon Fault together with associated structural features. The majority of historical oil and gas wells are located along these structures.

The deep-rooted faults across the Utah Lithium Project typically extend to the basement and have been subjected to hydrothermal fluid flow giving rise to base metal and other mineralisation in the area. It is anticipated that the fault systems also provide preferential migration pathways for brines enriched in basement-sourced lithium to flow towards the surface and recharge existing aquifers in overlying sediments. It therefore follows that wells located relatively close to the deep rooted faults have greater potential to host relatively high concentrations of lithium in brine.

The historic Peterson 88-21 well is located proximal to this fault system and was drilled and sampled by Superior Oil Co. in 1959. Peterson 88-21 returned lithium concentrations of 340mg/L from a clastic zone overlying Clastic Zone B in the Paradox Formation[1]. The Peterson well is located only 200 m from Mandrake tenure and 6 km from the B-912 priority well (Figures 2 and 4).

Pursuant to the recently executed Well Access Agreement (WAA) with Paradox Resources LLC (Paradox), Mandrake will re-enter and sample the existing B-912 and Big Indian Unit 1 (BIU-1) oil and gas wells at the Utah Lithium Project. These wells have been selected on the basis of:

1. Proximity to NW-SE trending fault structures
2. Total well depths of >9,000 feet, penetrating the highly prospective clastic units (Paradox) as well as the underlying Leadville and McCracken Formations (BIU-1 only)
3. Interpretation of logs indicates good porosity and permeability of target zones
4. Access (roads and pad)
5. Infrastructure (power and pipelines)
6. Down-hole well conditions (engineering)

[1] Hite, R.J., 1978, The Geology of the Lisbon Valley Potash Deposits, San Juan County, Utah: U. S. Geological Survey Open File Report 78-148

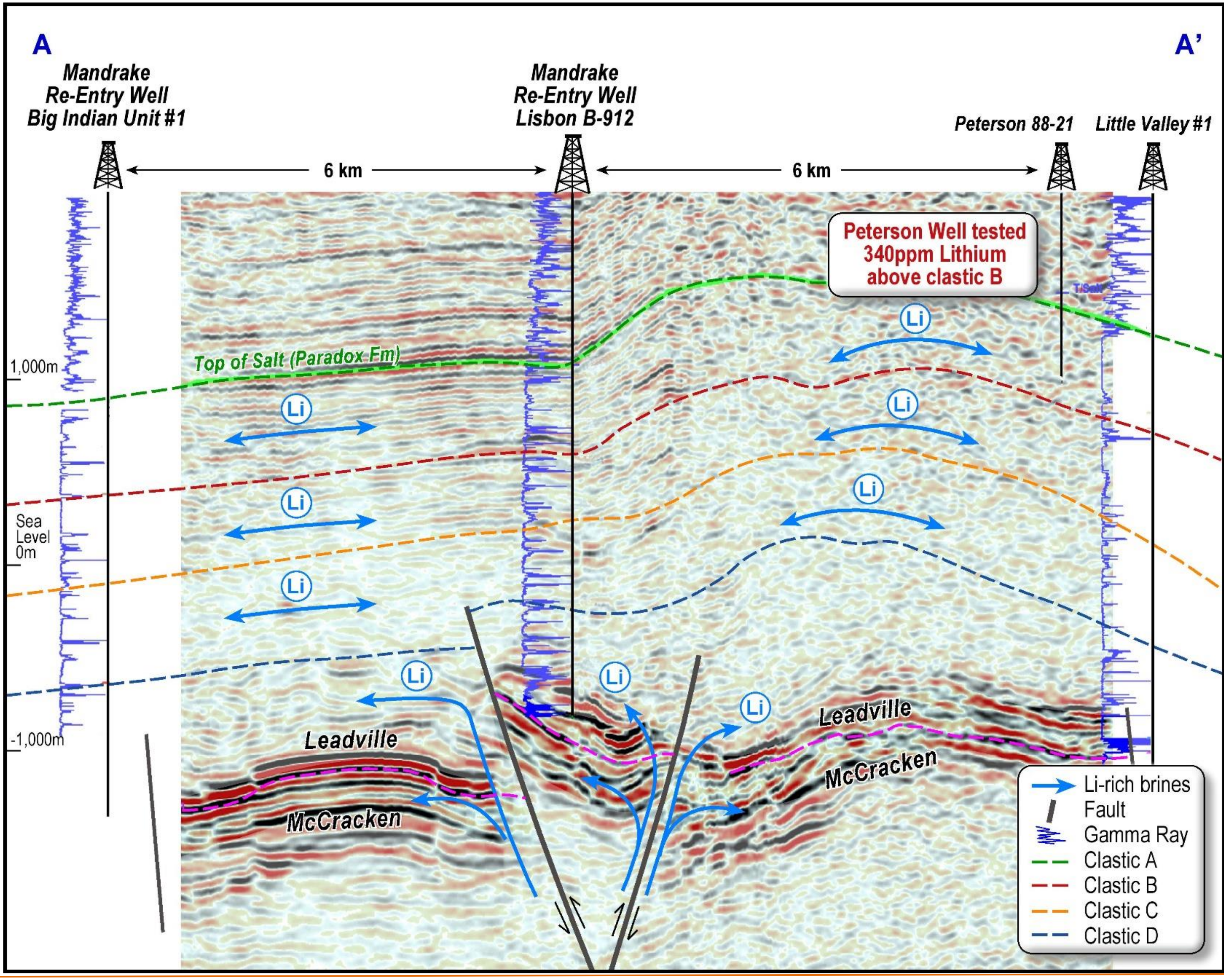

Figure 2. Cross-section A– A' (see Figure 4 for cross-section location) - 3D seismic, re-entry wells and lateral continuity of lithological units

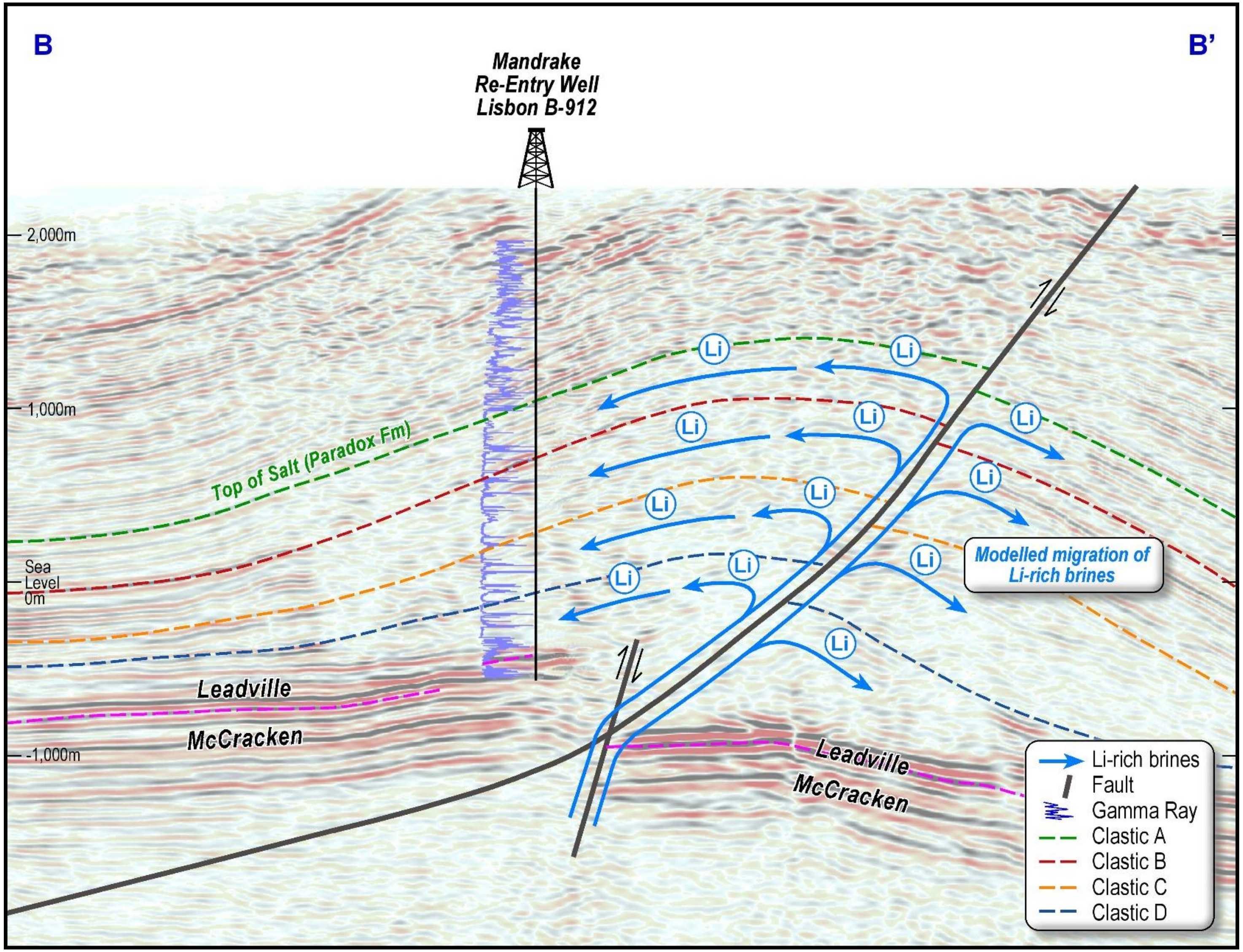

Figure 3. Cross-section B– B' (see Figure 4 for cross-section location) - 3D seismic, re-entry well B-912 and potential Li-rich brine migration pathways

Forthcoming well re-entry and lithium sampling

Utah Division of Oil, Gas and Mining (UDOGM) has approved the transfer of operatorship of B-912 and BIU-1 from Paradox to Mandrake to facilitate permitting and field operations to re-enter and sample the wells for lithium concentrations in brines.

A detailed workplan has been completed by Vanoco Consulting LLC (Vanoco) who has been engaged to provide drill engineering and wellsite management support. The workplan is subject to change based on hole conditions encountered, however at this stage Mandrake plans to test various zones in each well across independent formations, providing multiple chances of success and the potential for large aggregate brine volumes.

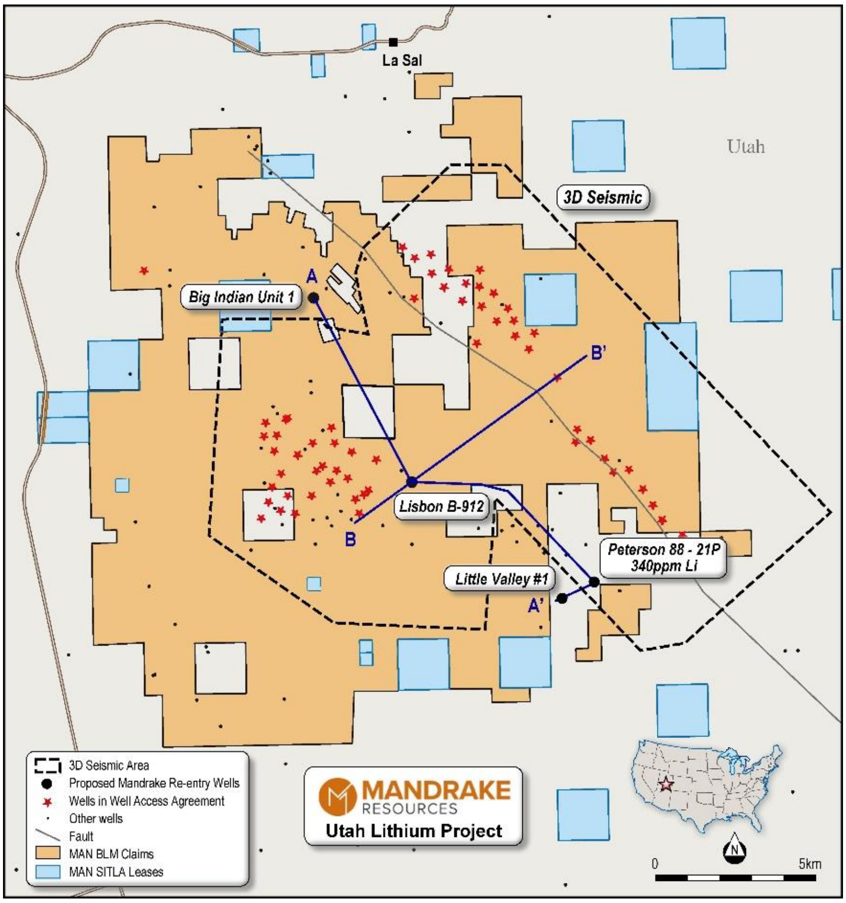

Figure 4. Extent of 3D seismic and cross-section locations

Paradox Basin, USA

The Paradox Basin in the south-eastern Utah 'lithium four corners' area hosts hypersaline brines historically documented to contain significant concentrations of lithium, potassium salts (potash), bromine, boron and other elements. The Paradox Basin hosts the Cane Creek potash mine operated by Intrepid Potash (NYSE: IPI) (the United States' biggest potash producer) and the operations of mid-tier ASX-listed lithium developer Anson Resources (ASX: ASN) who has an existing JORC Mineral Resource of 1.04Mt of Lithium Carbonate Equivalent (LCE) and 5.27Mt of Bromine[2].

[2] ASN ASX release dated 2 November 2022

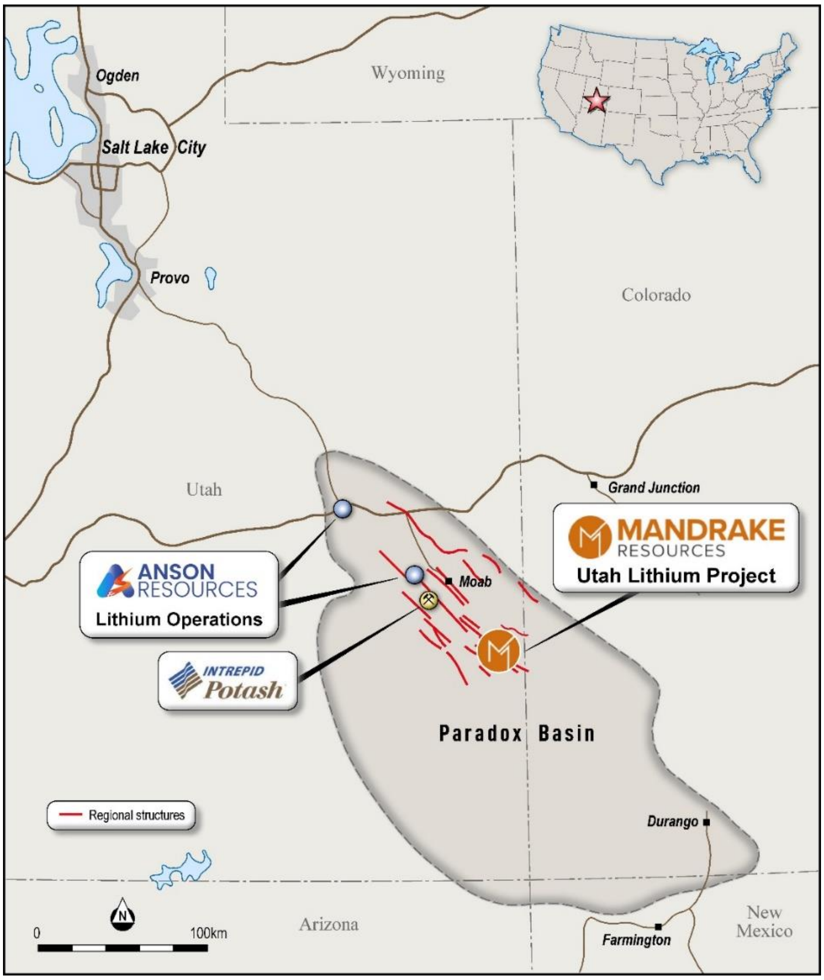

Figure 5. Location of the Utah Lithium Project

Competent Persons Statement

The information related in this announcement has been compiled and assessed under the supervision of Mr James Allchurch, Managing Director of Mandrake Resources. Mr Allchurch is a Member of the Australian Institute of Geoscientists. He has sufficient experience that is relevant to the information under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Allchurch consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The information in this report that relates to 3D seismic is based on information compiled or reviewed by Mr Keith Martens, consulting geologist/geophysicist to Mandrake Resources Limited. Mr Martens is a qualified petroleum geologist/geophysicist with over 45 years of Australian, North American and other international executive petroleum experience in both onshore and offshore environments. He has extensive experience of petroleum exploration, appraisal, strategy development and reserve/resource estimation. Mr Martens has a BSc. (Dual Major) in geology and geophysics from The University of British Columbia, Vancouver, Canada.

- # JORC Code, 2012 Edition – Table 1 report template

- ## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	• The La sal and Lisbon 3D seismic surveys were undertaken in 2008 and 2012 respectively using the NAD 1927 survey system. Survey details below: **Recording System:** I/O, SEGD FORMAT, 3/4-NYQ MIN **Sample Interval:** 2 MS SAMPLES/TRACE 2001 SYSTEM IMPERIAL **Source:** DYN, 5.5 LB AT 40 FT **Source Lines:** VARIOUS **Group Interval:** 165/220 FT **Shot Interval:** 300/220 FT **Geophones:** GEOSPACE 30 CT, 10 HZ, 6 PER STRING OVER 50 FT **Record length:** 4.0 SECS **Sample rate**: 2 MS **3D Geometry Assignment:** AZIM=227 DEG; CDP BIN SIZE 110 x 110 FT • Processing details below: **Amplitude Recovery:** Spherical divergence correction, +4 dB boost **Tomo Statics:** DATUM = 7500 FT, Vr =10000 FT/S **Surface-Consistent Statics:** MAX SHIFT 20 MS, 400-3200 MS WINDOW **F-XY Decon:** 3x3, 200 MS OPERATOR LENGTH, RATE OF ADAPTATION 1.0 **Kirchhoff Time PreStack Migration:** ANISOTROPIC FROM FLOATING DATUM CDP Stack: MEAN, 0 MS BULK SHIFT • Mandrake has yet to conduct exploration work and collect brine samples at the Project. Mandrake has not drilled any wells and is reliant on petroleum company wells to access brine.

Criteria	JORC Code explanation	Commentary
		• Historical brine sampling has been conducted on oil and gas wells by oil and gas companies, within the Utah Lithium Project and adjacent area, including the Superior Oil Co. sampling of the Peterson 88-21 well. • No information on Superior Oil Co sampling techniques for the Peterson 88-21 well are known other than brines flowed to the surface during 3 or 4 days during coring operations. • Analysis of the samples of the Peterson 88-21 well were done by K. P. Moore of the U.S. Geological Survey in Casper, Wyoming, USA.
Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	• Mandrake has yet to conduct exploration work at the Utah Lithium Project including the drilling of oil and gas-type wells. • The historical petro-company owned oil and gas wells were drilled using conventional oil and gas drill rigs that drill vertical well bores.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• Mandrake has yet to conduct drilling at the Utah Lithium Project. • The historical collection of brines from oil and gas wells is poorly documented.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. • The total length and percentage of the relevant intersections logged.	• Historical petrophysical well logs associated with the historical wells include gamma-ray, neutron density, resistivity, sonic, mud logs. • The petrophysical logs provide information such that geologists can make stratigraphic formation picks to define the down well lithology of each well. These interpreted lithological logs are used to prepare cross-sections to map the reservoir and to target future well locations.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• Specific sampling techniques, sample preparation of brine, and Quality Control-Quality Assurance procedures related to all historical wells is unknown.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	• Reported analytes typically include, for example, cation and anion data along with a limited number of trace elements. • Precise analytical procedures are unknown. • Often, the laboratory names are not reported, and hence there is no way to evaluate laboratory certificates or make statements on the independence and accreditation of the individual laboratories used in the historical brine analytical work.
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• Mandrake has yet to conduct drilling at the Utah Lithium Project.

Criteria	JORC Code explanation	Commentary
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Mandrake has yet to conduct drilling at the Utah Lithium Project. • Well locations are typically identifiable in the field; however, the Competent Person has yet to verify the location of all individual oil and gas wells. • The longitude and latitude locations of the oil and gas wells provided by the oil and gas companies are recorded in government databases. • The projection used is WGS84 UTM Zone 12N
Data spacing and distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	• Data spacing and distribution is insufficient to establish the degree of geological and grade continuity appropriate for a potential future Mineral Resource or Ore Reserve. • No compositing applied to the historical brine data.
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• Seismic interpretation has been undertaken by Mandrake to evaluate geological structures.
Sample security	• The measures taken to ensure sample security.	• Sample security procedures (if any) as conducted by the historical oil and gas companies are unknown.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• No audits/reviews have been undertaken on the historical work conducted by oil and gas companies to date.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary

Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*
	• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*
		• The Utah Lithium Project is located approx. 60km SSE of the City of Moab, in the eastern State of Utah in the United States.
		• The total land position is 88,096 acres and includes:
		  o 34,670 acres within an Other Business Agreement (OBA) with the Utah State Government's School and Institutional Trust Lands Administration (SITLA).
		  o The remaining land position of 53,426 acres is comprised of over 2,700 staked Bureau of Land Management (BLM) placer claims.
		• All the land tenure is approved, in good standing and is 100% owned by Mandrake's US subsidiary (Mandrake Lithium USA Inc.) or held in trust by Mandrake's commissioned landman, in which the deeds are awaiting transfer to Mandrake Lithium USA Inc.

Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Currently, all primary data reported in this announcement have been collected by oil and gas companies who have completed hydrocarbon-specific exploration and production activities over the last 80 years across the lease and claim areas. • Individual wells within oilfields continue to produce in the Paradox Basin and within the boundaries of the Utah Lithium Project.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Project is in the north-central portion of the Paradox Basin. • Structurally, Mandrake's Property occurs on the southern margin of the "Paradox fold and fault belt", which consists of a series of roughly parallel, northwest-trending faults,

Criteria	JORC Code explanation	Commentary
		northwest striking diapiric salt-cored anticlines, and synclines in the northern part of the Paradox Basin. • Currently, Mandrake's lithium-brine geological target units are defined by the Devonian McCracken sandstone, the Mississippian Leadville-Ouray Limestone Formation (Leadville Limestone), and the Pennsylvanian Paradox Member of the Hermosa Formation. • The Leadville Limestone comprises massive to thinly laminated, grey, buff, and yellow limestone that were deposited in intertidal to subtidal environments. • The Paradox Basin can be defined by the maximum extent of halite and potash salts in the Middle Pennsylvanian Paradox Formation and is composed of halite interbedded with gypsum, shale, sandstone, and dolomite, deposited intermittently in a closed marine depositional environment.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  o *easting and northing of the drill hole collar*
	  o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  o *dip and azimuth of the hole*
	  o *down hole length and interception depth*
	  o *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• Mandrake has yet to conduct drilling at the Utah Lithium Project.
		• The historical oil and gas wells were drilled vertically.
		• The down well surveys are not known; however, vertical wells drilling will always have some level of deviation.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations*	• The historical information has been sourced directly from oil and gas well logs as originally documented and presented by the oil and gas companies.

Criteria	JORC Code explanation	Commentary
	(eg cutting of high grades) and cut-off grades are usually Material and should be stated. • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No length weighting or cut-off grades have been applied. • No metal equivalent values have been reported.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Mandrake has yet to conduct drilling at the Utah Lithium Project. • The oil and gas fluids (hydrocarbons and brine) are produced from large, confined aquifer/reservoir deposits; hence, the brine samples – as fluid media – represent samples from a larger pool of fluids. Accordingly, it is accurate to state that brine data do not have common solid mineral deposit sample intervals or intercepts. Hence downhole lengths and true widths are not applicable to this type of deposit.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Mandrake has yet to conduct drilling at the Utah Lithium Project.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All known significant information reported. The dataset is too sparse to evaluate grade variations.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater,*	• Based on Mandrake's current knowledge of the project, all meaningful information has been provided.

Criteria	JORC Code explanation	Commentary
	geotechnical and rock characteristics; potential deleterious or contaminating substances.	
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Mandrake must access reservoir brines from wells owned by oil and gas operators, or by drilling its own oil and gas type wells. • Once the brine is acquired, geochemical trace element work is required to assess the lithium content and to verify the historical lithium-brine analytical results at the property. • Mandrake requires independently sampled brine to initiate mineral processing test work to verify that lithium can be extracted from deep-seated brine underlying the Utah Lithium Project. • Post exploration work – consider a lithium-brine mineral resource in accordance with JORC (2012).