

The slide features a background image of a desert landscape with large, layered rock formations in shades of red and orange. A dark blue horizontal band is overlaid across the middle of the image, containing the title and company logo. The sky above the rocks is a clear, light blue.

# Red Helium Project Update

April 2022

GRANDGULF  
ENERGY LIMITED

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## Competent Person’s Statement

The information in this report is based on information compiled or reviewed by Mr Keith Martens, consulting geologist/geophysicist to Kessel Resources. Mr Martens is a qualified oil and gas geologist/geophysicist with over 45 years of Australian, North American and other international executive oil and gas experience in both onshore and offshore environments. He has extensive experience of oil and gas 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.

# Red Helium Project

## Strategic Pivot to Pure-play Helium Exploration Project

### Prolific Location



- Helium-Prolific Four Corners area
- Drill Friendly Utah
- 250,713 acre AMI, > **29,000 gross leased**
- Proximal to dedicated infrastructure
  - 20 miles to 2 of 8 US helium plants
- Pipeline connected to Lisbon helium plant
  - **Mar '22 Helium Offtake Agreement**
  - **Helium Price ~\$605/mcf**
  - **Mar '22 Strategic Alliance**

### De-Risked Geology



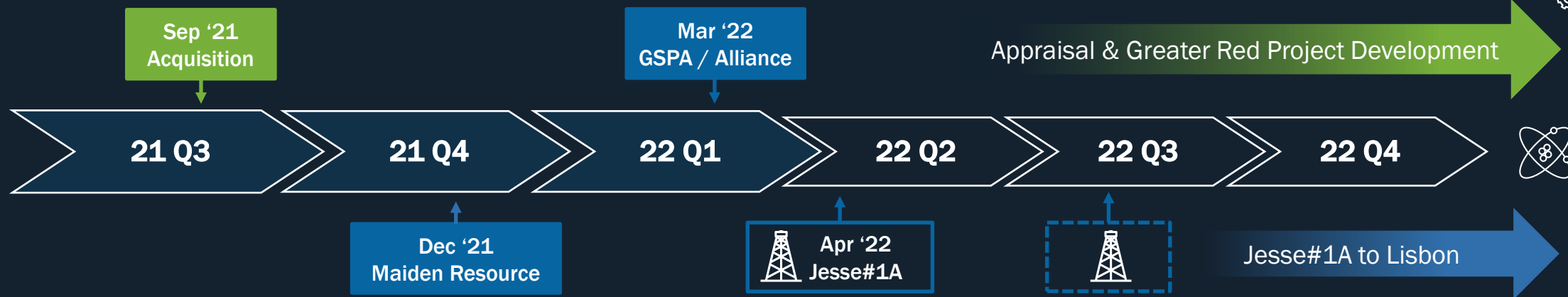
- Known Geology, 315km quality 2D seismic
- Vintage wells within AMI proved:
  - Trap, Seal, Reservoir Presence, Gas Charge, Helium system within AMI
- 4 independent prospects with 2 drill ready locations and deeper under-explored potential
- **Jesse#1A** Key Objectives:
  - Helium Presence / Concentration
  - Reservoir Effectiveness / Flowrates

### Large Resource



- Red Structural Closure
  - 4 - 5 times Doe Canyon
- Doe Canyon Analog, 15 miles to East
  - 3 - 5 bcf anticipated helium production
  - High rate gas wells: Avg. IP ~20mmcf/d
  - Average helium grade ~0.4 - 0.5% with upside
  - = **high helium flow rates**
- **Dec'21 Maiden Helium Prospective Resource**
  - **Gross P50 unrisks 10.9bcf<sup>1</sup>**

## Commitment to Project Delivery & Monetisation: Fully Funded for at least 2 Exploration Wells and Strategic Opportunities / Acquisitions<sup>2</sup>



<sup>1</sup> ASX announcement 8 December 2021, Maiden Prospective Resource, based on Sproule Report, detailed in Slide 4. <sup>2</sup> ASX announcement 20 April 2022, \$11m placement, before costs

## US-Focused Helium Explorer with positive Energy production cashflow

### Financial Information

ASX Trading Symbol	GGE
Total Shares	1,546 million
Market Cap @ 4.7c	A\$72.7 million*
Net Cash @ 31 Dec 2021	A\$3.0 million
Performance Shares/Rights	165 million**
Options (3 years at 2.5 cents each)	60 million
Options (3 years at 7.0 cents each)	10 million**
Options (3 years at 8.0 cents each)	103 million**

\* Market Cap includes placement shares

\*\* Options and 30 million performance rights subject to SH approval

### OTCQB Listing: North American (NA) Visibility

OTC enhance visibility / accessibility of the company to NA shareholders and media partners.

### Red Helium: Earning 85% of Valence<sup>1</sup>

	Earning	Max Cost \$US
Current Interest	55%	
Drilling first well by Oct '22	15%	\$1.5M
Drilling second well by Oct '23	7.5%	\$1.5M
Drilling third well by Oct '23	7.5%	\$1.5M
<b>Total Payments Remaining</b>	<b>85%</b>	<b>\$4.5M</b>

### Recoverable Helium (bcf)<sup>2</sup>

	P90 (1U)	P50 (2U)	P10 (3U)
Gross to Valence (28,046 gross acres)	7.6	10.9	12.9
Net to Valence (18,959 net acres)	5.2	7.4	8.5
Net to GGE (earning 85% of Valence)	4.4	6.3	7.2
Red Project Total	7.9	20.8	57.6

The estimated quantities of helium that may potentially be recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal is required to determine the existence of a significant quantity of potentially moveable helium.



#### De-risked asset base

Assets have existing wells with Helium present and extensive 2D seismic



#### Low-cost exploration

Multiple Drill Ready Targets:  
Future wells ~US\$3.3m



#### Carbon market exposure

45Q Tax Credit upside through CO<sub>2</sub> sequestration potential



#### Robust netbacks

Low breakeven and low production costs with high torque to commodity prices



#### Skilled executive team

Management brings track record of North American asset development



#### Access to capital

ASX/OTCQB listing expands investor base, provides exposure to international capital

<sup>1</sup> Well cost overrun shared at earned WI split.

<sup>2</sup> ASX announcement 8 December 2021, Maiden Prospective Resource, based on Sproule Report. The Company is not aware of any new information or data that materially affects the information included in the referenced ASX announcement and confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

# Helium: Critical Path Irreplaceable Technological Enabler

Major growth predicted in most usage areas, particularly: Space, Medical, Semiconductor and Fibre Optics



**Inert**

Doesn't react with other elements and non-flammable unlike hydrogen



**Non-toxic**

Can be used in many applications without posing health or wellness risks



**Lighter than air**

Ability to lift or float. Atmospheric molecules escape to space



**Boiling point -269°C**

Liquid at ultra cool temperatures enables superconductivity



**High Thermal Conductivity**

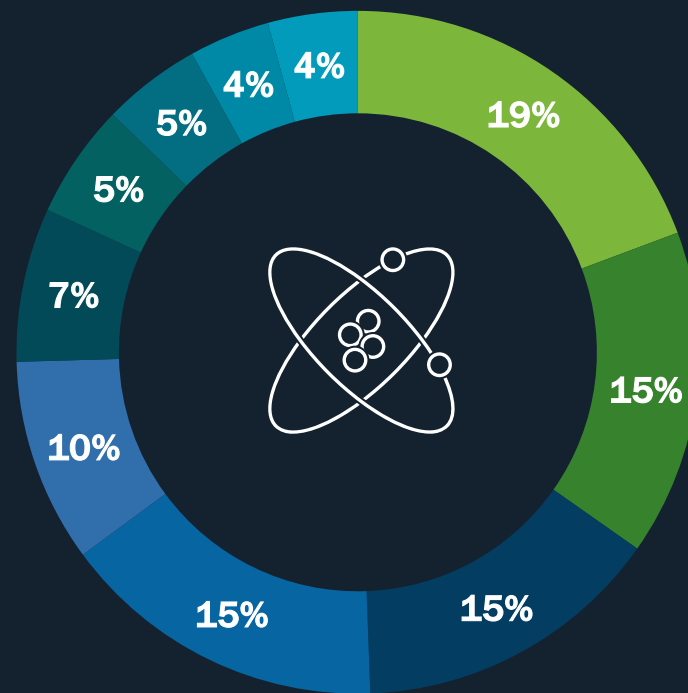
Removes heat in space applications and electronics manufacturing



**Small molecular size**

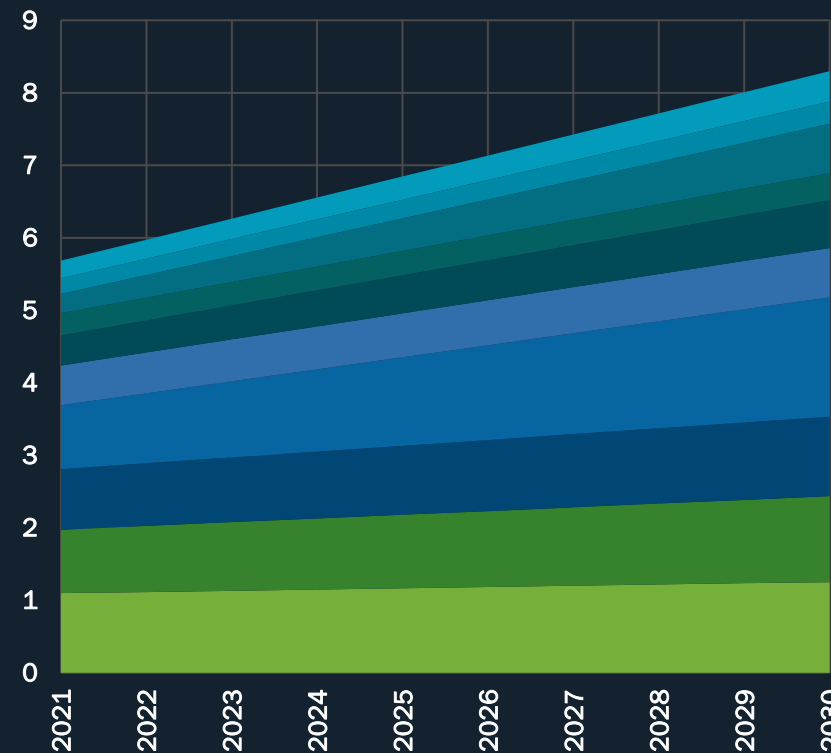
Can be used to find the smallest of leaks

Helium Usage by Industry



- MRI/NMR
- Welding/Cutting
- Diving
- Lifting
- Fibre Optics
- Other

Forecast helium consumption by industry 2021 - 2030E (bcf/y)



- Laboratory/Space
- Leak Detection
- Semiconductors
- Military & Space

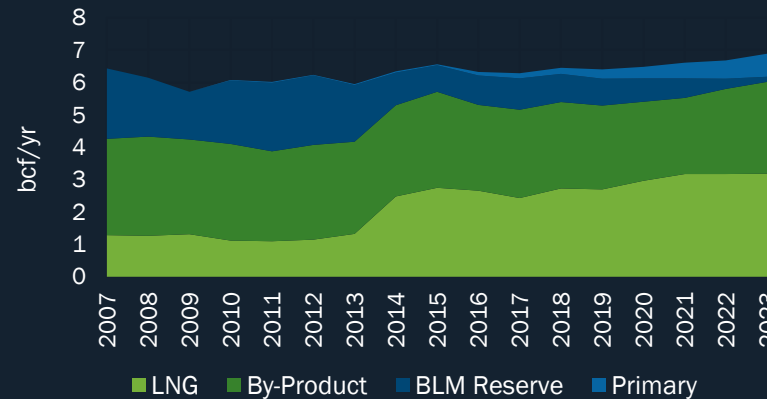
Source: H&P Equity Research / Akap Energy estimates Feb 2022

# Helium Supply and Demand Factors

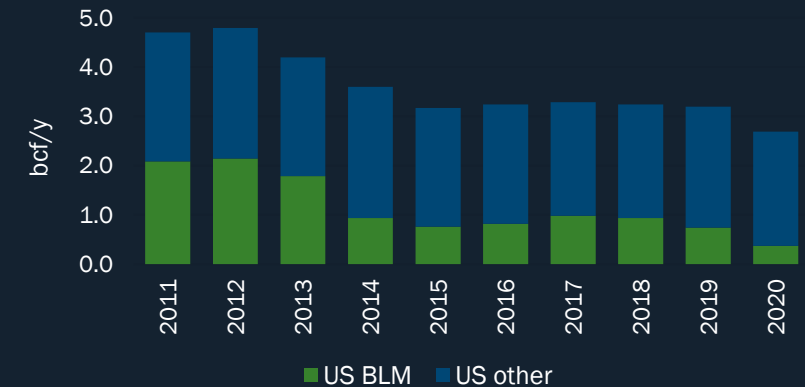
## Key Observations

- Historic Supply predominantly oil and gas / LNG by-product, and BLM reserve.
- Recently increasing helium supply from primary projects.
- China:
  - most important growth market
  - imports close to 1bcf/yr
  - virtually no domestic supply
- Helium Stewardship Act of 2013 is part of a privatization effort that began back in 1996 and culminated in the BLM divesting itself of helium storage and facilities in 2021, with supplies currently being depleted.

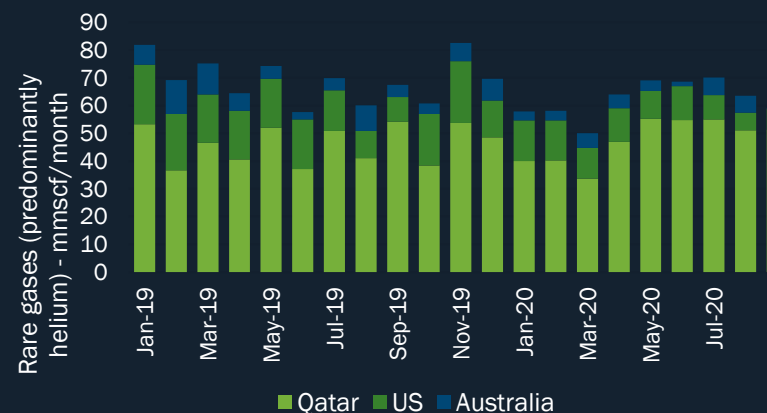
Helium Production by Supply Source



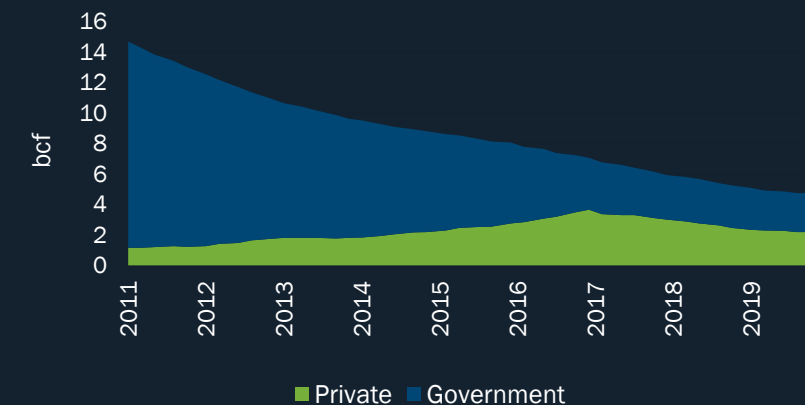
US annual helium Supply 2011-20



Chinese Monthly Imports by Exporter



US BLM Inventories 2011-2020



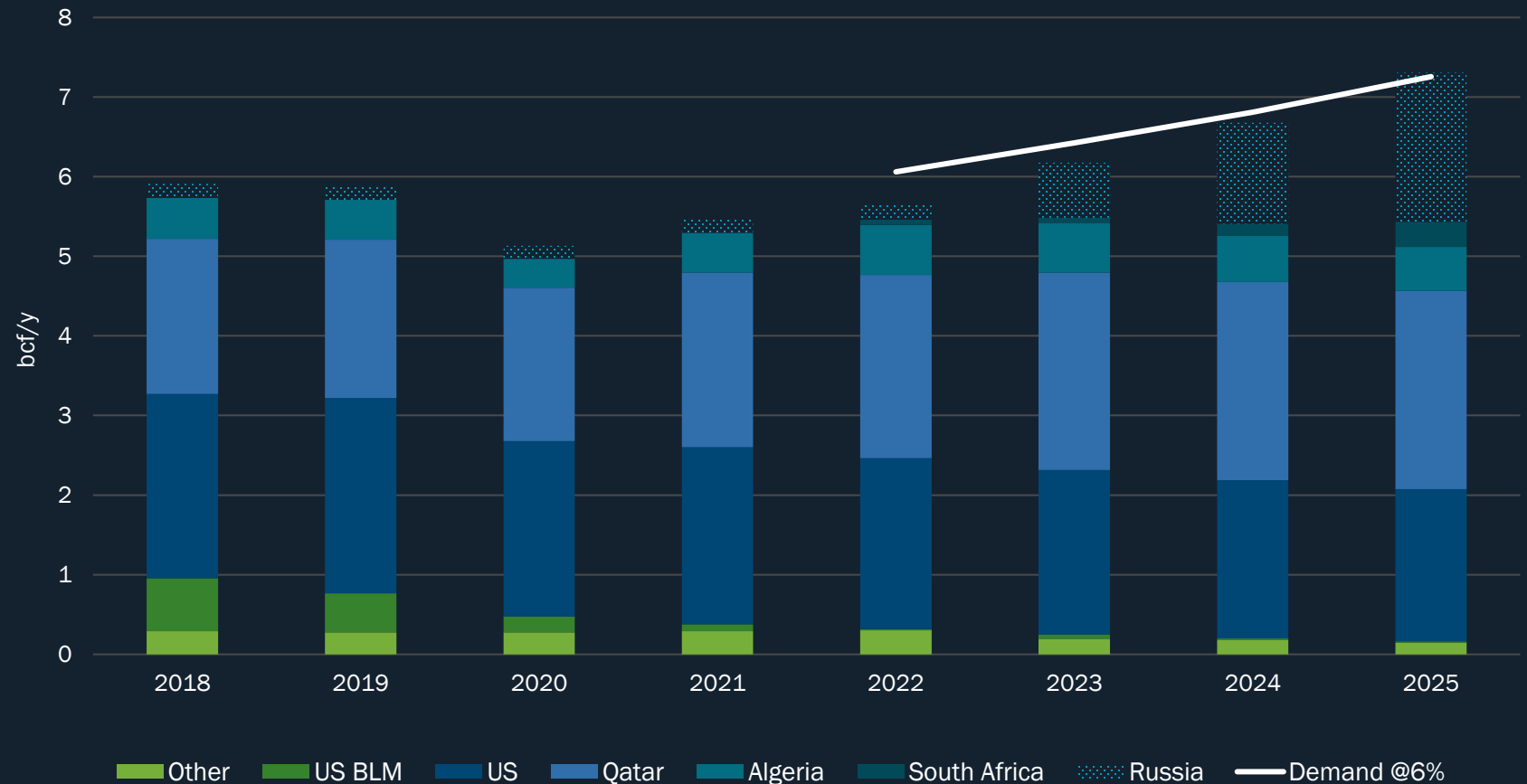
Source: H&P Equity Research / Akap Energy estimates Dec 2021, Feb 2022, Edison Research Global Helium Market Update, May 2021.

# Helium Supply Demand Balance

## Helium Supply Shortage: extending into 2023

- Devastating fire at Amur facility impacts 10-20% of potential global helium capacity into 2023, exacerbated by increasing geopolitical tensions.
- The Russian shaded area includes the Amur contribution ramping up to ~1.4bcf/yr by 2025, now significantly delayed.
- 2022 maintenance shutdown US BLM Cliffside facility from January impacting up to ~20% of US supply (5 - 10% of global supply).
- Helium supply chain is complex, opaque and the above issues coupled with other supply side pressures have led to an extended supply demand deficit expected to reach into 2023
- After numerous previous supply side shortages, current situation dubbed:
  - **Helium Shortage v4.0**

Estimated supply demand balance for helium

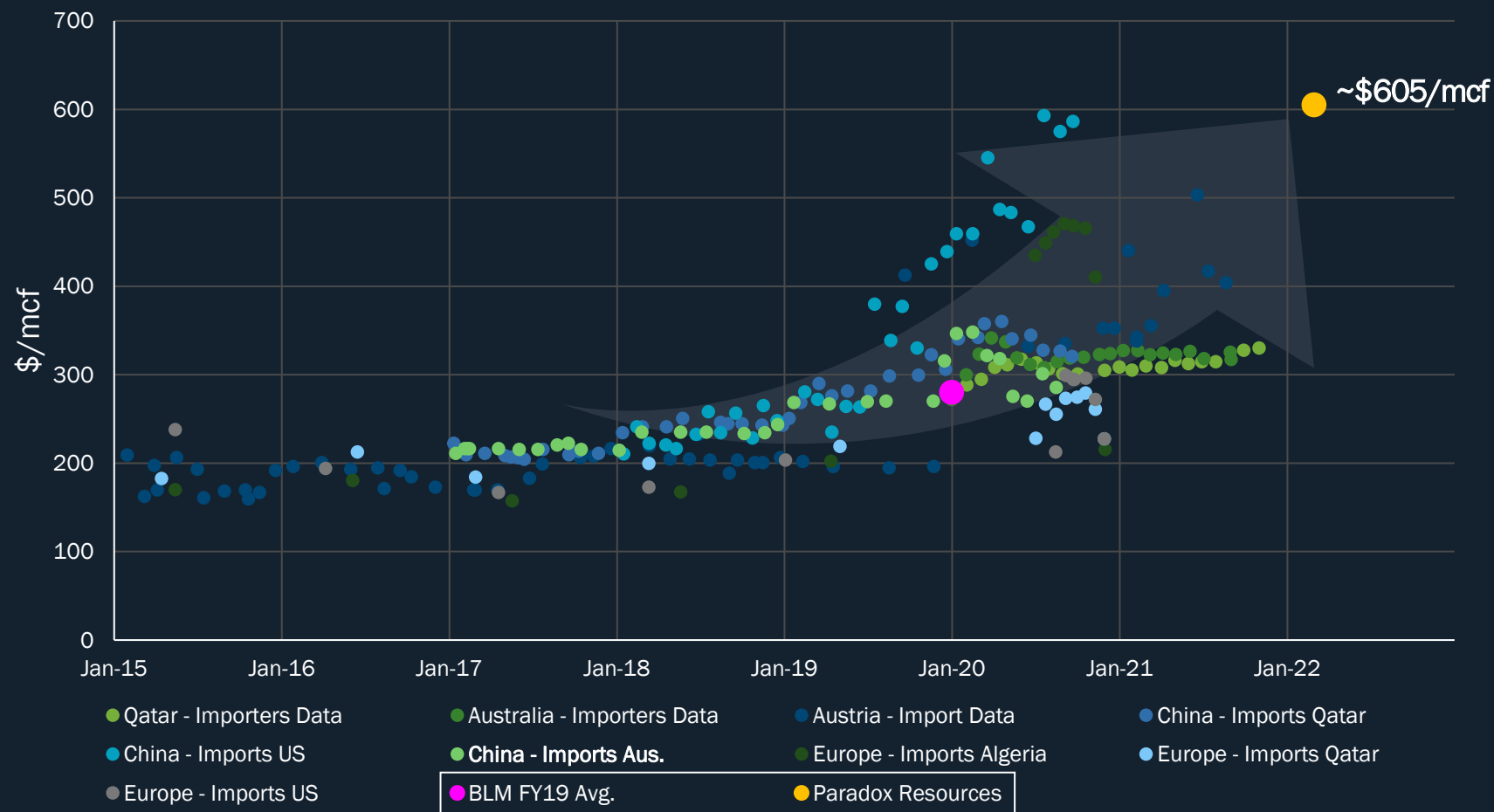


Source: H&P Equity Research / Akap Energy estimates Feb 2022  
<https://www.gasworld.com/helium-markets-now-experiencing-helium-shortage-40/2022650.article>

# Helium Pricing

## US\$/mcf

- Helium pricing is localised, complex, and opaque, however sustained supply demand deficit has led to sustained wholesale prices exceeding US\$300/mcf since 2020. FY19 BLM average auction price was US\$280/mcf.
- Recent supply side pressures have further exacerbated the situation.
- US swing exporter to China since 2019 with break-out pricing an indicator of increasing spot market price pressures
- **Paradox Resources recently received \$605/mcf<sup>1</sup> for 99.989% purified gaseous helium.**
- Highly purified >5.5 nines (>99.9995%) liquid helium can attract premium price multiples. Recent US spot market prices have reached over **\$1000/mcf<sup>2</sup>**.



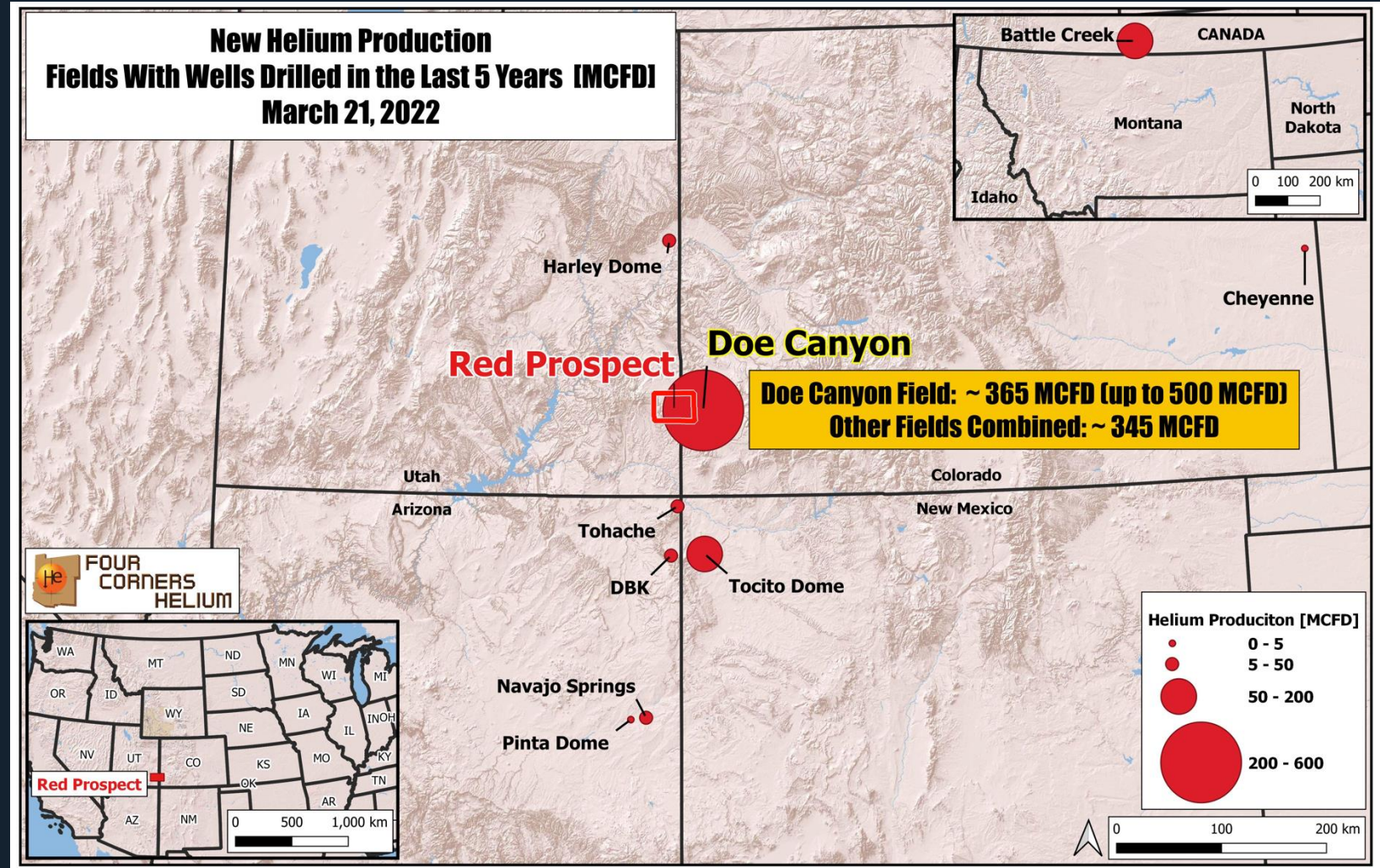
Source: H&P Equity Research / Akap Energy estimates Dec 2020, Feb 2022. Source: Edison Research Global Helium Market Update, May 2021  
<sup>1</sup> ASX announcement 16 Mar 2022 <sup>2</sup>ASX announcement 11 Apr 2022



# Four Corners Area: New Helium Production

## Prolific Proven Producing Helium Region

- Wholesale global helium industry is a multi-billion dollar market<sup>1</sup>
- Approximate annual global helium market:
  - ~6 bcf/yr<sup>1</sup>
  - ~16,500 mcf/d
- Red Helium Project
  - Large Prospective Resource
  - Gross P50 unrisks **10.9 bcf**
- Up to ~50% of new North American production is from the Doe Canyon Field.<sup>2</sup>
  - (within last 5 years)

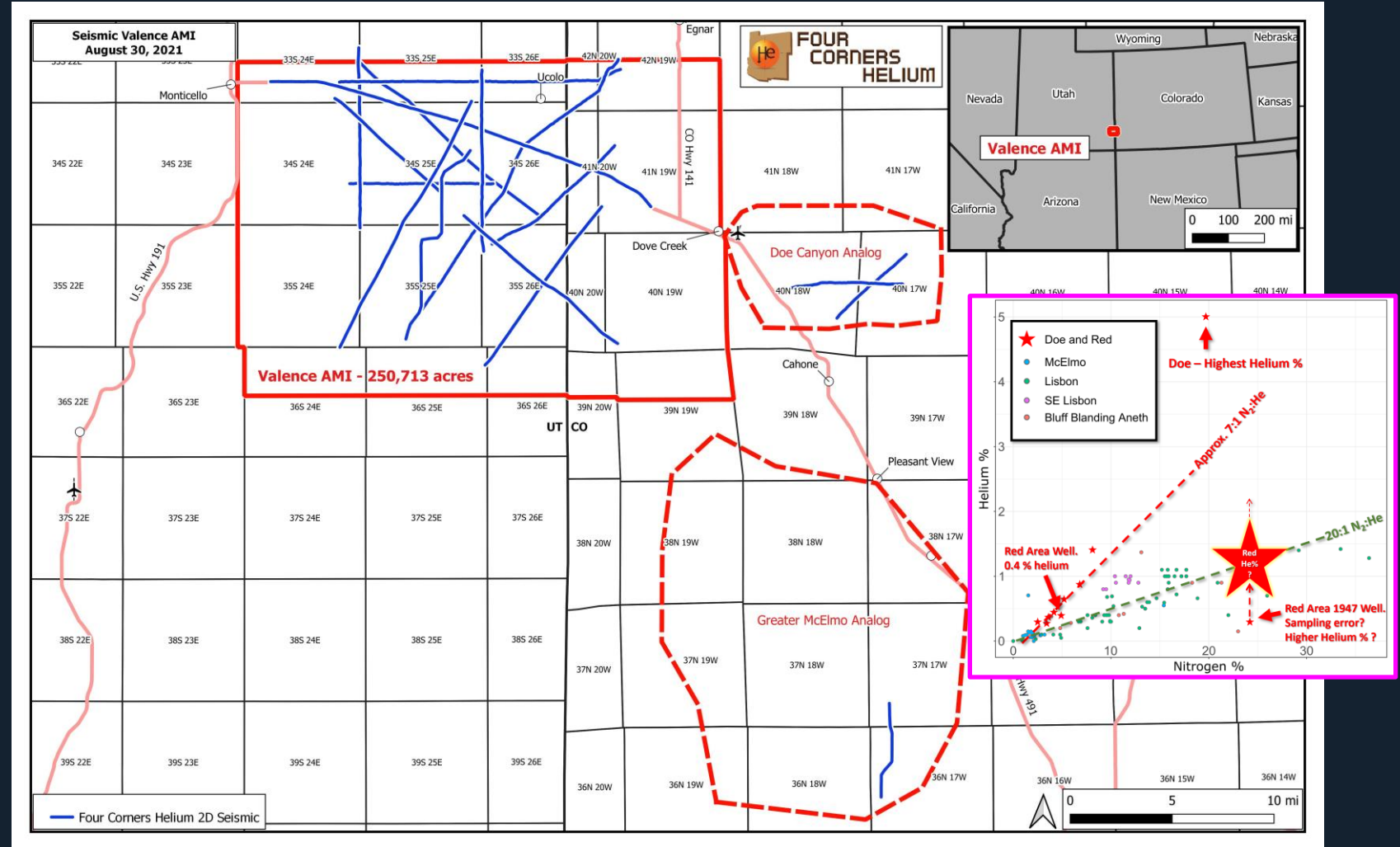


Source: <sup>1</sup> Edison Research Global Helium Market Update, May 2021, <sup>2</sup> Four Corners Helium LLC Internal Estimate

# Red Helium Project – High Quality Dataset

## High Quality 2D Seismic Coverage and Well Control

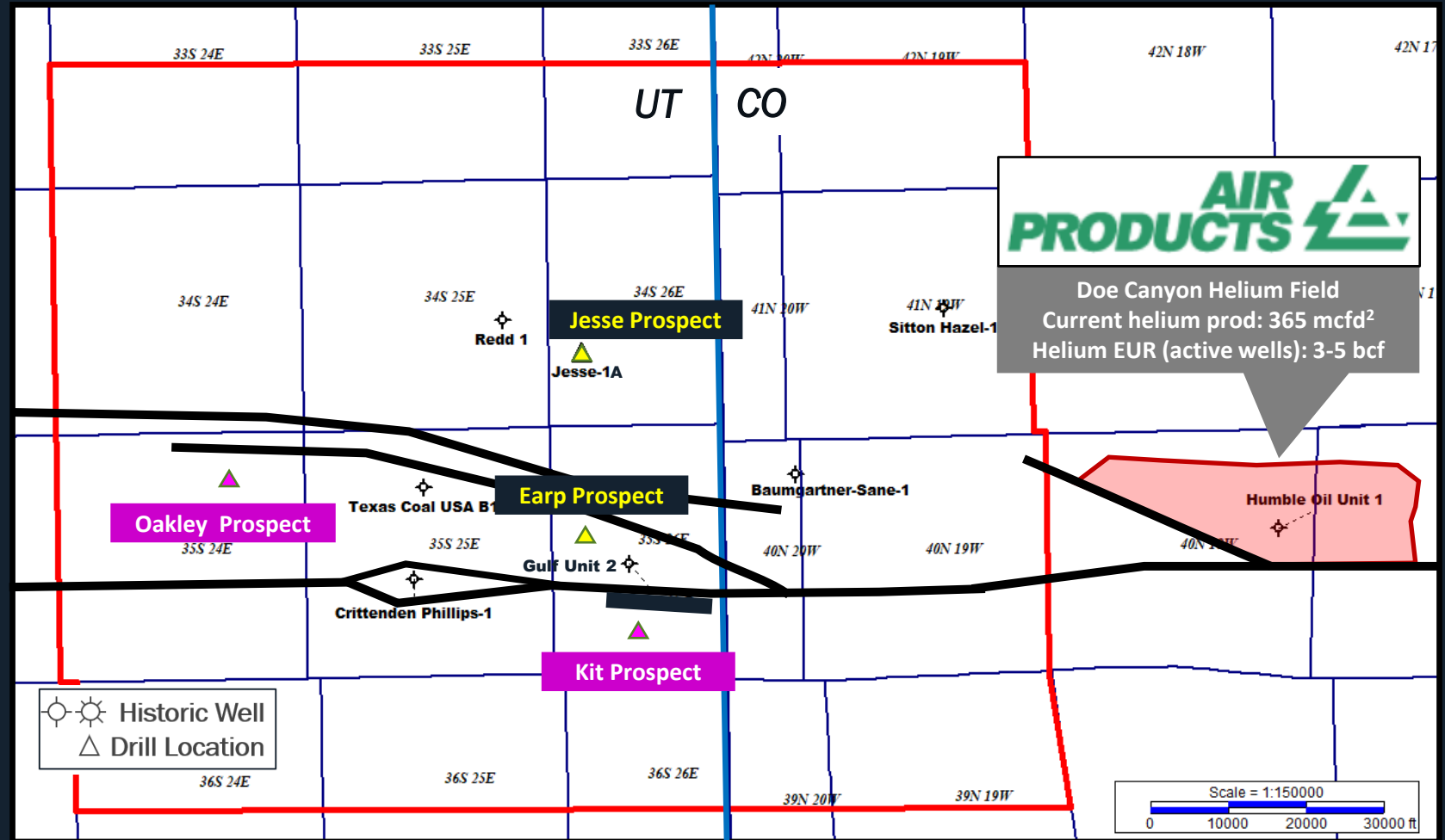
- Dominant lease position
- >29,000 acres (private leases/Utah state leases) leased in drill-friendly Utah
- Lease holdings focused on prime prospective locations
- 315 km's of high quality seismic data acquired and reprocessed
- Excellent data, particularly below the salt seal
- Geologic analogs with historic He concentrations
- Analog Doe Canyon and McElmo Fields – same reservoir/same trap/same source rock



# Multiple Independent Prospects

## De-risks greater Red Helium Project<sup>1</sup>

- Three drill locations on mature prospects independent to the Jesse prospect identified.
- Earp location drill ready with permitting advanced.
- Prospects are considered independent due to structure associated with well-defined and favorably-timed strike-slip faulting.
- Faulting markedly diversifies the Grand Gulf exploration portfolio while providing conduits for basement-derived helium and pathways for magnesium rich geothermal brines.
- Similar to the adjacent analog field (Doe Canyon), these brines lead to hydrothermal dolomitization and the potential for anomalously high porosities and permeabilities



<sup>1</sup> ASX announcement 4 Apr 2022 [https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02506327-6A1085020?access\\_token=83ff96335c2d45a094df02a206a39ff4](https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02506327-6A1085020?access_token=83ff96335c2d45a094df02a206a39ff4)

<sup>2</sup> Four Corners Helium LLC Internal Estimate

# De-Risked Geology, Huge Resource

## Jesse#1A spudding late April <sup>1</sup>

### Vintage wells within AMI proved:<sup>2</sup>

- Trap / Seal
- Reservoir Presence
- Gas Charge
- Helium system within AMI

### Jesse#1A Key Objectives:

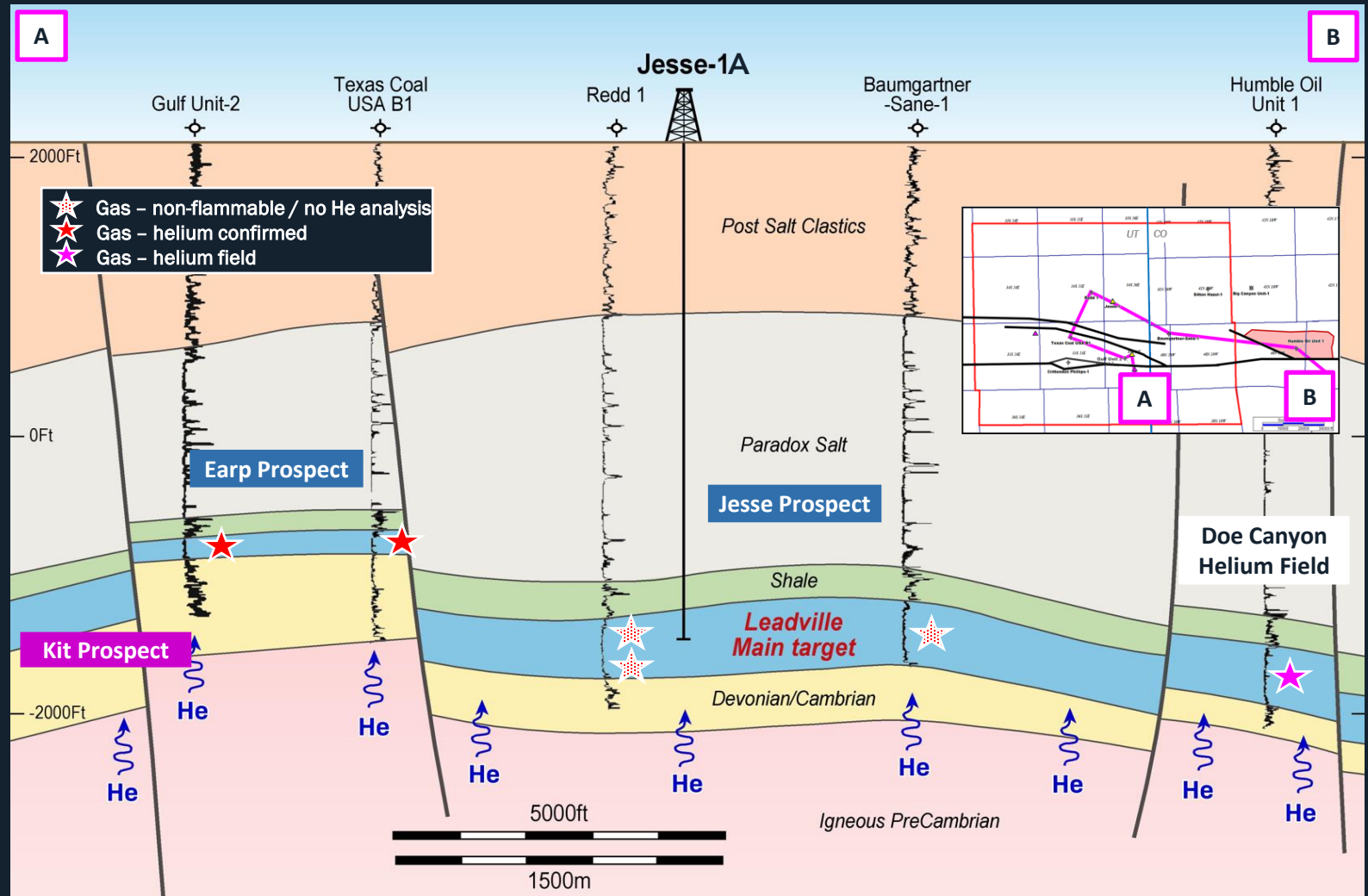
- Leadville formation Dolomite
- Helium Presence / Concentration
- Reservoir Effectiveness / Flowrate
- Optimised Well Design <sup>1</sup>
  - Increased tubing size up to 4.5" = higher flowrates

### Large Helium Prospective Resource:

- Red Helium Project
- Gross P50 unrisked **10.9bcf**

### Running Room:

- Jesse#1A one of four independent mature prospects
- Earp#1 drill ready, permitting advanced
- Deeper under-explored Devonian McCracken Sandstone formation
- Numerous leads



<sup>1</sup> ASX announcement 20 Apr 2022 [https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02511675-6A1087281?access\\_token=83ff96335c2d45a094df02a206a39ff4](https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02511675-6A1087281?access_token=83ff96335c2d45a094df02a206a39ff4)

<sup>2</sup> ASX announcement 5 Apr 2022 [https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02506793-6A1085193?access\\_token=83ff96335c2d45a094df02a206a39ff4](https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02506793-6A1085193?access_token=83ff96335c2d45a094df02a206a39ff4)

# Helium Offtake Agreement Secured

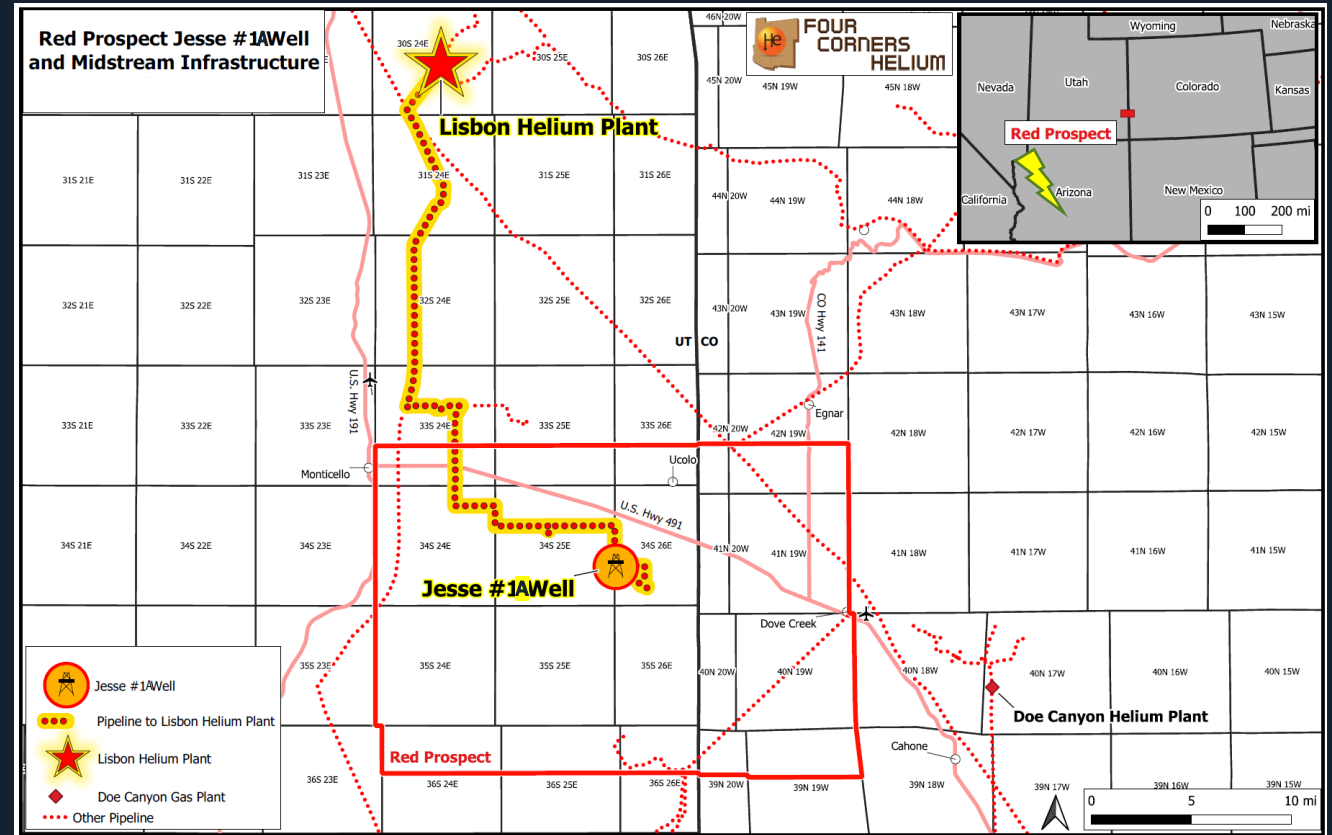
## Gas Sales & Processing Agreement (GSPA) executed with Paradox Resources LLC (March 2022)<sup>1</sup>

### GSPA: Jesse#1A to Lisbon in success case

- Validates technical merit of Greater Red Helium project.
- Agrees such industry standard commercial terms such as 80/20 revenue split, gas gathering / treatment tariffs
- Pathway to monetization and FCF with minimal time delay / CapEx for Jesse#1A success case
- Initiates relationship with a proven helium refiner and seller with deep helium processing and marketing experience, and basis for exploring further synergies and strategic corporate opportunities.
- Jesse#1A immediately adjacent to unutilised pipeline which connects directly to the Lisbon plant

### Lisbon Valley Gas Plant

- 60mmsfd treating plant, 45mmcfcd cryogenic plant
  - 0.6mmcfcd liquefaction high purity 99.9995% helium
  - 0.5mmcfcd 99.989% gaseous helium
    - recently pricing **\$605/mcf.**
- Currently sequestering carbon dioxide and well advanced in the permitting process to qualify for carbon capture tax credits under Section 45Q of the US tax code



- 2 of the 8 helium purification plants in the U.S. are within 20 miles
- **+\$32b** investment in semiconductor fabrication hubs in Arizona

<sup>1</sup> ASX announcement 16 Mar 2022 [https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02499691-6A1082068?access\\_token=83ff96335c2d45a094df02a206a39ff4](https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02499691-6A1082068?access_token=83ff96335c2d45a094df02a206a39ff4)

# Strategic Alliance with Helium Offtake Partner

## Exploit Significant Synergies Between Red Helium project and Paradox Resources Assets

Pursue several advanced opportunities to optimize and prioritize near-term exposure to the burgeoning helium market with potential mutually commercially advantageous revenue sharing agreements

### Paradox Liquefier:

- Potential priority supplier to re-start the Paradox liquefier
- Current helium production gaseous purified 99.989%
- Liquefaction high purity 99.9995% helium
- Attracts premium pricing, US spot recently over **US\$1,000/mcf**
- Expansion of Jesse#1A to Lisbon offtake agreement

### Collaborative downstream marketing

- Targeting end users of high-purity helium such as semi-conductor manufacturers and the space industry



### CO<sub>2</sub> Disposal Options with Revenue Generating Potential:

- Joint investigation of Red Helium Project CO<sub>2</sub> for enhanced oil recovery (flooding) from Paradox's Lisbon Oil Field
- Investigate expansion of carbon sequestration activities at Paradox's Lisbon Plant to include CO<sub>2</sub> from Red Helium Project and application for tax credits (revenue) under Section 45Q of the US Tax Code

### Corporate opportunities:

- Potential synergistic commercial benefits in assessing corporate opportunities that involve both Paradox assets and the Red Helium Project and have agreed to jointly pursue such opportunities.

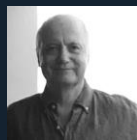
ASX announcement 11 Apr 2022 [https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02509232-6A1086215?access\\_token=83ff96335c2d45a094df02a206a39ff4](https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02509232-6A1086215?access_token=83ff96335c2d45a094df02a206a39ff4)

## Leadership



**Dane Lance**  
Managing Director

- >18 years' experience across E&P Lifecycle, Reservoir Engineer, including many major/mega development projects with significant exploration and MA&D
- Woodside Energy, Oil Search, Ophir



**Keith Martens**  
Technical Director

- >40 years' experience as an oil finder
- North America – Hudson Bay, Home Oil, Marathon, and Sactasco
- Australia – SANTOS, Tap Oil, Bow Energy, Victoria Petroleum/Senex
- International – Jupiter (Kazakhstan)



**Lloyd Flint**  
CFO / Company Secretary

- >25 years' experience in the corporate and financial services arena.
- Chartered Accountant, BAcc, FINSIA and MBA
- Numerous management / senior administrative positions, and corporate advisory services as a consultant to corporate clients



**Craig Burton**  
Chairman

- Experienced active investor in emerging oil and gas companies
- Provides financial backing and legal advice

## Four Corners Helium Team - [www.fourcornersheliumllc.com](http://www.fourcornersheliumllc.com)

Four Corners Helium is a powerhouse of professionals with over 400 years of combined experience and expertise that are committed to finding and producing helium reservoirs.

### Tim Rynott

#### CEO, Exploration Geologist

- 40 years of oil and gas experience
- Has generated or endorsed discoveries with a gross net worth of almost US\$1Bn
- Has held key leadership positions on numerous national and regional Boards, including AAPG, GCAGS, and LOGA.

### David McCarver

#### COO, Contracts/Land

- >46 years experience in oil and gas
- Ex State and Federal basins in Texas and Louisiana Gulf Coast, Ark-La-Tex, Mid-Continent, Permian, Rockies and the Gulf of Mexico
- Leased and directed the leasing of >200 drilling prospects, managed E&P programs, created joint ventures, raised capital from direct investors and promoted industry partners.

### Eric Cummins

#### Vice President, Exploration and Production

- 30yrs experience in exploration and as production geologist
- Ex Geological Manager for Apache – instrumental in reaching goal of 150,000 BOPD in the Permian.

### Sabina Kraushaar

#### Partner, Petrophysicist, Structural Geologist

- Geoscientist with expertise mapping subsurface geology utilizing Petra software.
- Manages a database with >100,000 wells, 17,000 geologic tops and >10,000 digital logs.

### Doug Frederick

#### Drilling Manager

- Over 40 years of experience in drilling and well operations.
- Directed the drilling and workover of over 2500 wells.
- Responsible for annual drilling and workover budgets of over \$500M.
- Drilled in 7 different States

### Jake Cammack

#### Partner, Geochemist, Specialist in Geographic Information Systems (GIS)

- Created a database with >17,000 gas-composition and helium analyses - comprises the most complete gas geochemistry dataset ever assembled for Utah, Colorado, New Mexico and Arizona.

**GRANDGULF**  
ENERGY LIMITED

## Contact Us

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Abbreviation	Description
He	helium
US BLM	US Bureau of Land Management
UDGOM	Utah Division of Gas Oil and Mining
SITLA	Utah School and Institutional Trust Lands Administration
U	Prospective Resources – 1U/2U/3U – P90/P50/P10 - low/most likely/high
cf	Cubic Foot of Gas
scf	Standard Cubic Foot of Gas
b	Prefix – Billions
mm, M	Prefix - Millions
m	Prefix - Thousands
/d, d	Suffix – per day
tCO <sub>2</sub>	Tonnes of Carbon Dioxide
YE	Year End 31 December
WI	Working Interest
NRI	Net Revenue Interest (after royalty)
Net	Working Interest after Deduction of Royalty Interests
NPV (10)	Net Present Value (discount rate), before income tax
EUR	Estimated Ultimate Recovery per well
Net Acres	Working Interest Acres