

**DOCKETED**

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<b>Project Title:</b>	Black Rock Geothermal Project (BRGP)
<b>TN #:</b>	260016
<b>Document Title:</b>	Black Rock Geothermal LLC Response to Workshop Follow Up Informal Data Request Set 2
<b>Description:</b>	N/A
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<b>Organization:</b>	Jacobs
<b>Submitter Role:</b>	Applicant Consultant
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<b>Docketed Date:</b>	11/13/2024

# Response to Post-Workshop Informal Data Request Set 2

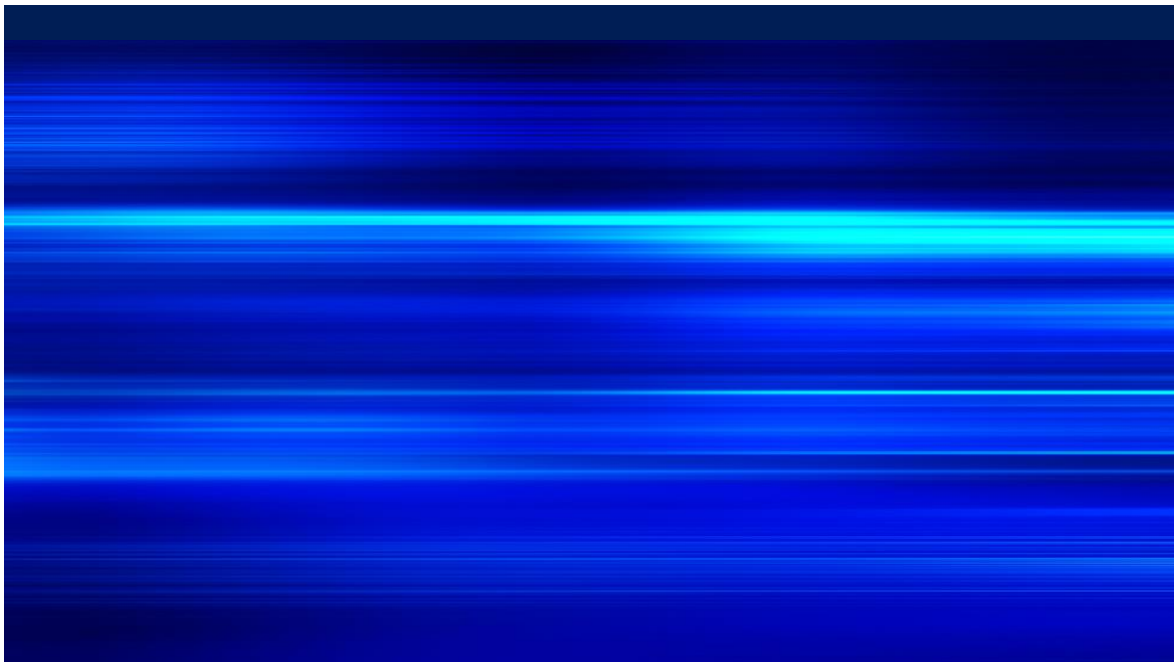
*Submitted to*  
California Energy Commission

*Prepared by*  
Black Rock Geothermal LLC

With assistance from  
**Jacobs**

**Black Rock Geothermal Project (23-AFC-03)**

November 13, 2024



## Introduction

Attached are the responses from Black Rock Geothermal LLC to the California Energy Commission (CEC) Staff's *Post-Workshop Informal Data Request Set 2*, regarding the Application for Certification (AFC) for the Black Rock Geothermal Project (BRGP; 23-AFC-03).

New or revised graphics or tables are numbered in reference to the Informal Data Request number. For example, the first table used in response to Informal Data Request 28 would be numbered Table IDR28-1. The first figure used in response to Informal Data Request 28 would be Figure IDR28-1, and so on. Figures or tables from the BRGP AFC that have been revised have a "R" following the original number, indicating a revision.

Additional tables, figures, or documents submitted in response to an informal data request (for example, supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of each discipline-specific section and are not sequentially page numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

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## Acronyms and Abbreviations

AFC	Application for Certification
APN	Assessor's Parcel Number
BRGP	Black Rock Geothermal Project
CEC	California Energy Commission
ENGP	Elmore North Geothermal Project
EPA	Environmental Protection Agency
GIS	geographic information system
IDR	Informal Data Request
MBGP	Morton Bay Geothermal Project
MWh	megawatt hour

## 1. Air Quality and Public Health

### Background:

*U.S. EPA 2017 Guidelines on Air Quality Models (40 CFR 51 Appendix W) recommend that individual sources located in the vicinity of the source(s) under consideration for emissions limits that are not adequately represented by ambient monitoring data be accounted for by explicitly modeling their emissions. The BHER geothermal projects would be adjacent to the projects listed below. The applicant used a qualitative approach to respond to comments on the PDOCs of the projects. Intervenors questioned the qualitative approach and requested an explicit modeling of the nearby sources (e.g. CURE comments on the PSA [TN# 258994]).*

### Informal Data Request:

*Please provide an explicit cumulative air quality modeling analysis (for PM<sub>2.5</sub> and H<sub>2</sub>S) and a cumulative health risk assessment to include the following projects:*

- 1. The J.J. Elmore Power Plant with the Elmore North Geothermal Project*
- 2. The Hudson Ranch Power Plant and the Energy Source Mineral ATLAS Project with the Morton Bay Geothermal Project*
- 3. The Vulcan Power Plant and the Hoch (Del Ranch) Power Plant with the Black Rock Geothermal Project*

**Response:** The existing projects proposed for inclusion in the cumulative dispersion modeling and public health risk assessment have been in operation for several decades and are adequately represented in the ambient air monitoring data being used to assess the Black Rock Geothermal Project's (BRGP's) air quality impacts. However, due to discussions during the recent public workshops, the Applicant will be proposing changes to the BRGP's location within the current parcel. Therefore, the Applicant is remodeling the project's air quality and public health impacts. During this analysis, the Applicant will include the existing Vulcan and Del Ranch (Hoch) Power Plants into the air quality and public health impact assessments. The revised air quality and public health impact assessments are expected to be submitted by the end of December 2024.

## 2. Biological Resources

### **Background:**

*Applicant comments on the PSA included edits to acres of impacts listed in Table 5.2-5 (Elmore North, Morton Bay, Black Rock) and Table 5.2-6 (Elmore North, Black Rock).*

### **Informal Data Request:**

4. *Provide revised GIS data to support these changes or provide clarification on how these numbers were determined.*

**Response:** Revised GIS data that supports these changes will be docketed separately through the CEC's Kiteworks system.

### 3. Alternatives

#### Background:

*Informational needs for Alternatives, with overlap with Cultural and Tribal Cultural due to the need to identify potentially feasible ways to reduce potential impacts...*

#### Informal Data Request:

5. *Provide information on directional drilling, along with graphical illustrations for the drilling associated with ENGP and BRGP, similar to what was filed for MBGP (TN 256064).*

**Response:** Please see Figure IDR3.b-4, which was submitted as part of the *Morton Bay Geothermal Project Responses to Informal Data Request Set 1* (TN 256064). The production well courses depicted in that figure are largely consistent with the proposed production well courses. The well courses currently proposed by the Applicant have been granted confidential designation by the California Geologic Energy Management Division and should not be made publicly available.

#### Informal Data Request:

6. *Provide updated plan view parcel map showing the parcel split into APNs 020-110-056 and 020-110-057 (previously APN 020-110-031). Please list surface ownership and mineral rights for the two new parcels.*

**Response:** APN 020-110-056 is owned by Magma Power Company and APN 020-110-057 is owned by Kudu, Inc. The mineral rights for the two parcels are owned by Peter Landerman, Mary Margaret Troisi, Helen Landerman, Robert Dupuis and Joan Dupuis. Magma Land Company I holds the mineral rights by lease. The parcel maps are provided as Attachment 1.

#### Informal Data Request:

7. *Provide conceptual site plan and description for a technically feasible relocation of the proposed BRGP to either or both of those two parcels. Staff plans to add this as an offsite alternative for analysis in the FSA to reduce the project's impact on Obsidian Butte, a tribal cultural resource.*

**Response:** It is not possible to provide a conceptual site plan or description for a "technically feasible relocation" of the proposed BRGP to either APN 020-110-056 or APN 020-110-057. Development of a geothermal power plant requires an evaluation of several factors, including a geotechnical survey of the project site and proximity to the geothermal resource.

#### Geotechnical Surveys

The geotechnical survey informs the basics of infrastructure placement on the site. Geotechnical surveys require development of a potential site layout, identification of required geotechnical borings, definition of investigatory scope, mobilization of soil boring drill rig, conducting borings, analysis of results, issuance of a preliminary report, and review of geotechnical results against the potential site layout.



In the best-case scenario, these activities would be expected to take a minimum of 12 months and significant resources to complete the geotechnical evaluation for a new parcel, including the deep foundations design for the plant. This best-case schedule assumes the alternative parcel is very similar from a geotechnical perspective to the already surveyed parcel. If any adverse conditions were to be identified, additional time and resources would be required to design and engineer the facility to address the different site conditions (e.g. additional and/or deeper piles, a more elevated Class II Surface Impoundment to avoid higher ground water) and/or relocate the project site again if the site conditions result in excessive design, engineering, and construction costs. As recognized by the California Public Utilities Commission's Decisions 21-06-035, 23-02-040, and D.24-02-047 at least 1,000 megawatts of new capacity from long lead-time clean firm resources, such as geothermal were ordered to be procured to "ensure that there are sufficient resources available to ensure reliability and to meet the state's greenhouse gas (GHG) emission reduction goals."<sup>1</sup> These resources must be online by June 1, 2028, unless otherwise authorized for an extension to June 1, 2031, through the use of replacement resources. These projects require upwards of 33 months to order long-lead equipment and another 29 months to construct. Adding an additional year (at minimum) to the development timeline to conduct the geotechnical analysis and other resultant permitting delays for the alternative site threatens the ability of the BRGP to meet the June 1, 2031, online date and is adverse to California's climate change policy objectives.

### *Close Proximity to the Geothermal Resource*

The siting of the BRGP and corresponding production wells was carefully considered relative to the need for the facility to be located in close proximity to the geothermal resource. The CEQA Guidelines specifically recognize that there may be certain situations where there are no feasible alternative locations to a project, such as a geothermal power plant, because the facility "must be in close proximity to natural resources at a given location" (14 C.C.R. § 15126.6(f)(2)). Similarly, the BRGP must be located in close proximity to the planned production wells to access the geothermal resources necessary for electrical generation. As a result, relocating the BRGP to APN 020-110-056 or another alternative site is infeasible for several reasons.

First, assuming that geotechnical studies confirmed the viability of the site for the power plant, relocating the BRGP to APN 020-110-056 would require longer production pipelines from the power plant facility to the planned production well locations. The diameter of the gathering system (production pipelines) would also have to be increased to partially mitigate the energy (pressure and heat) loss from a longer pipeline. Even assuming the larger diameter gathering system described above, the increased length of the production pipelines would result in lower pressure flows than the current design. This would cause the sweep velocity in the high-pressure separator to increase by 24% and produce lower quality steam from the separator that would damage the steam turbine, resulting in avoidable and otherwise unnecessary maintenance costs as well as reduced generation output. To avoid the lower quality steam, the high-pressure separator for BRGP would have to be redesigned. High level calculations indicate the vessel size would at least increase from a 12-foot internal diameter to a 13-foot internal diameter, which would likely require the vessel to be fabricated in the field instead of a fabrication shop, adding project risk. Fabrication of pressure vessel that is clad with exotic alloy in a controlled shop environment is strongly preferred by the project due to the potential for weather (including dust) induced quality and project schedule risks when fabrication is performed in the field. Even if all of these changes were

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<sup>1</sup> California Public Utilities Commission Fact Sheet: Decision Requiring Clean Energy Procurement for Mid-Term Reliability

incorporated, the same brine flow would lead to a reduction of at least 3,504 megawatt-hours of power generation annually due to the increased distance in the production pipeline length. Brine flows could not be increased to make up the lost generation without a corresponding increase in emissions and increased water demand from the project.

Second, the gen-tie transmission line connecting BRGP to the Sinclair Switching Station approaches BRGP from the north. As such, moving the project site one parcel to the south would require the gen-tie line to increase by 0.5 miles. This would increase construction environmental impacts, including particulate emissions. Moreover, schedule impacts associated with acquiring additional crossing agreements for the extended gen-tie line, performing geotechnical for the pole foundations and cost impacts associated with the additional power poles, conductors, and foundations required would be incurred as well.

Third, relocating the BRGP to APN 020-110-056 would add significant costs to the project. The increased length of the gathering system pipeline would, in the lowest visual impact scenario, add approximately 3,600 feet of large diameter, alloy, insulated gathering system pipeline. The diameter of the gathering system pipelines would have to be increased from 24 inches to 36 inches. Procurement and installation of this alternative pipeline configuration is expected to significantly increase project costs, even after accounting for reductions in the injection pipeline length.

This challenge is not one that can be remedied by shifting production well locations south along with the BRGP. The production well locations must remain unchanged due to the location of the geothermal leasehold assigned to the BRGP and to provide sufficient distances between production and injection areas to ensure the proper balance of injection and production fluid, and that the reservoir receives adequate pressure support from the returned injection fluid. These locations and distances were specifically analyzed to ensure sustainability of the geothermal reservoir. When siting the BRGP wells, the Applicant performed extensive research to ensure that the following principles were met:

- Production wells would be located near known production areas.
- Sufficient spacing between production and injection wells is maintained to prevent thermal breakthrough of injection fluid.
- Production wells are located to minimize production impacts to existing geothermal projects.
- Well spacing will ensure adequate resource to support generation for the project life.
- Well pads, when possible, will support multiple directionally drilled wells to limit the impact on surface lands.

Shifting of the production wells south to maintain proximity to BRGP generating facility will not meet the principles above relating to well spacing.

Furthermore, due to the geomechanical constraints of highly fractured, permeable rocks along with the barefoot well completion, horizontal drilling and slotted linears are not a feasible option for accessing the geothermal resource within the BRGP production unit boundary. Any relocation of production wells further south to main, along with the power plant, would require significant directional drilling to ensure that only minerals accessible to BRGP are accessed by placing the wells' casing shoes within those mineral areas. Directional drilling would require a significantly deeper production casing shoe, far exceeding standard casing depths typically determined by reservoir temperature and formation competency.

Specifically, relocating BR-1, BR-2, BR-3, or BR-4 closer to BR-5 would require a lateral deviation (throw) of more than 1,300 feet to access Black Rock's mineral area in Section 32. This relocation would place the

production casing shoes at an approximate measured depth of at least 6,000 feet. A casing shoe at this depth would isolate productive reservoir zones between 2,500 feet and 6,000 feet, and substantially diminish production from these shallower zones where the majority of geothermal flow is anticipated. Furthermore, production wells with casing shoes at a depth of 6,000 feet would present a heightened risk of not encountering sufficient production, which would render the wells commercially nonviable to any reasonably prudent developer.

In conclusion, the significant increased marginal up-front costs, the reduced project generating output, and the increased risks from sub-optimal geological conditions result in disparate economic, operational, and technical downfalls compared to the original site that render the alternative site infeasible.

***Informal Data Request:***

8. *Provide updated general arrangement figures showing the reoriented cooling towers for the three proposed projects, MBGP, ENGP, and BRGP.*

**Response:** The Applicant is proposing to move the BRGP further south within the current parcel, where sufficient geotechnical information was already acquired, rather than modifying the cooling tower orientation. The general arrangement and other figures showing this refinement will be docketed by the end of November 2024.

***Informal Data Request:***

9. *Provide plan view map showing the discussed shift of the proposed BRGP site a little below the previously proposed site on the same parcel (APN 020-110-008) and any related relocations of offsite project components.*

**Response:** Please see the response to Data Request #8.

***Informal Data Request:***

10. *Provide updated version of Figure 2-3 "Applicant's Mineral Leases, BRGP" from the application, due to the parcel split that resulted in new APNs, -056 and -057.*

**Response:** The parcel split and change in surface rights ownership for parcels 020-110-056 and 020-110-057 did not change mineral ownership or control for the Mineral Leases depicted on Figure 2-3.

## 4. Water Resources

### Background:

*In the Preliminary Staff Assessment Technical and Mitigation Workshop of August 1, 2024, CEC staff asked if there were a level of mandatory water reduction imposed by IID that could affect power production at three BHER geothermal plants or result in plant shutdown. Samantha Neumeyer, on behalf of the applicant, stated that the answer to the question was complex and could not be easily answered at the time, but the applicant's staff would work on providing a range of likely scenarios.*

### Informal Data Request:

11. Provide the range of likely scenarios regarding geothermal plant response to mandatory water reductions.

**Response:** The facility's response to mandatory reductions will be dependent upon the circumstances surrounding the mandatory reductions, such as the duration and amount of any curtailment or the ability to obtain surplus water. In general, if there is a decrease in water supply, the flow of production brine will be decreased, resulting in a reduction in power generation. The reason for decreasing the production brine flow is to reduce the heat load on the cooling tower to manage water demand. Makeup water to the cooling tower is required to offset water lost through evaporation. Although cooling tower makeup water will be primarily provided by condensed geothermal steam, during high ambient conditions and/or low steam production due to reduced brine flow more relative supplemental water will be used. The lower steam production during lower water supply conditions results in a rapid decrease in power production. Table IDR11-1 provides possible outcomes regarding operating scenarios due to decreased water; again, given the fact-dependent nature of any water reduction, it would be speculative to state how likely the following outcomes would be.

Table IDR11-1. Water Reduction Impact on Power Generation

Water Supply	100%	95 %	90 %	75 %
Power Generation	100%	82.2%	64.4%	11.1%

### Background:

*Section 5.11 of the application for the BHER projects recognize the existence of subsurface agricultural "tile drains" underlying the project sites that drain groundwater with accumulated salts that would prevent crop growth. The construction activities description in the application does not appear to address the removal or mitigation of these tile drains, which could affect the ground stability of not only the water resources related project elements such as the brine ponds, water supply ponds and onsite wastewater treatment systems, but power plant facilities as well.*

### Informal Data Request:

12. Please provide details how the tile drains will be removed or mitigated during project construction to ensure the ground stability of project facilities.

### **Response:**

#### ***Tile Drain Management Approach***

In locations where excavation reaches the depth of the drain tiles, these tiles will be extracted alongside the other materials that have been excavated. All other drain tiles will be abandoned in place.

#### ***Tile Drain Impacts to Water Resources***

Drain tiles underneath the sites are three to four inches in diameter and generally 200 to 250 feet apart. For the heaviest power plant equipment, deep foundations and excavations will be utilized, resulting in the removal of tiles. Therefore, the tiles that will remain in place will be those located beneath shallow foundations or will not be under any foundations and subjected to only truck traffic. It is very unlikely that a significant number of tiles would fill with any of the surrounding ground. If a tile was to fill with surrounding ground, the impact to surface conditions would not be significant.

#### ***Tile Drain Impact to Ground Stability***

Groundwater resources have minimal potential for impact as a result of the project due to the broad concrete containments around the site that are in place to collect any potential spills from the process. Furthermore, the tiles capture and divert flow primarily when the ground is under flooded agricultural conditions. With these sites no longer under irrigation, the infrequent rainfall will trigger minimal flow to the tile drains. Additionally, the drain pipes connected to the drain tiles and leading to Imperial Irrigation District's drains will be capped to prevent any discharge.

## 5. Land Use, Agriculture, and Forestry

### Background:

*There was discussion at the PSA workshop(s) about additional information available regarding feasible options to satisfy COC LAND-3/MM LAND-3.*

### Informal Data Request:

- 13. Please provide more specifics on the anticipated selected option/s for mitigation, along with an analysis of feasibility, and summarize any relevant research or discussion. Provide any records you have documenting consultations with the city or any land trusts on this issue.*

**Response:** Although the Imperial County Board of Supervisors is on record with the CEC supporting no agricultural mitigation for the conversion of Agricultural land, due in part to Imperial County's work on a programmatic environmental impact report for the Lithium Valley Specific Plan, the Applicant intends to satisfy Condition of Certification LAND-3, if adopted by the CEC, through payment of an agricultural mitigation fee. This is described as "Option 2" in the County's Renewable Energy and Transmission Element Programmatic Environmental Impact Report. The Applicant is discussing how to implement this Option with Imperial County.

## **Attachment 1**

### **Parcel Map**



**RECORDING REQUESTED BY**  
**CHICAGO TITLE INSURANCE CO.**

**AND WHEN RECORDED RETURN TO:**

IMPERIAL COUNTY PUBLIC WORKS  
155 S. 11<sup>TH</sup> STREET  
EL CENTRO, CA 92243

Recorded in Official Records, IMPERIAL COUNTY

06/21/2023

**CHUCK STOREY**  
COUNTY CLERK-RECORDER

09:54 AM  
IV

CT CHICAGO TITLE

Doc#: **2023009391**

Titles: 1 Pages: 3



Fees	\$87.00
Taxes	\$0.00
Other	\$0.00
<b>PAID</b>	<b>\$87.00</b>

**BOOK: 15 PAGES: 23 - 24**

**MAP COVER SHEET**  
**PARCEL MAP No 02501**

**LEGAL DESCRIPTION:**

LOTS 5 AND 6, THE SOUTH HALF OF THE NORTHWEST QUARTER, AND THE SOUTHWEST QUARTER OF SECTION 4, IN TOWNSHIP 12 SOUTH, RANGE 13 EAST, SBM IN AN UNINCORPORATED AREA OF THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

**GRANTORS:**

ELMORE, HOWARD/PM No 02501  
SECTION 4 TOWNSHIP 12 SOUTH RANGE 13 EAST SBM/PM No 02501  
TOWNSHIP 12 SOUTH RANGE 13 EAST SBM/PM No 02501  
PARCEL MAP No 02501



PARCEL MAP No. 02501

THE WEST HALF OF SECTION 4, TOWNSHIP 12 SOUTH, RANGE 13 EAST, SAN BERNARDINO MERIDIAN, IN AN UNINCORPORATED AREA OF THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

SIGNATURE OMISSIONS

THE SIGNATURES OF THE FOLLOWING PARTIES HAVE BEEN OMITTED PURSUANT TO SECTION 66436 OF THE SUBDIVISION MAP ACT IN THAT THEIR INTERESTS CANNOT RIPEN INTO A FEE:

- 5 WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS.
- 6 RIGHTS OR CLAIMS OF EASEMENTS FOR CANALS, DRAINS, LATERALS, IRRIGATION PIPELINES AND GATES NOT RECORDED IN THE PUBLIC RECORD.
- 7 TITLE TO, AND EASEMENTS IN, ANY PORTION OF THE LAND LYING WITHIN ANY HIGHWAYS, ROADS, STREETS, OR OTHER WAYS.
- 10 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** AN IRRIGATION DITCH OR DITCHES, CANAL OR CANALS, WASTE WATER DITCHES, ETC., AND ALL THINGS NECESSARY TO MAINTAIN AND OPERATE AN IRRIGATION SYSTEM.  
**RECORDING No.:** BK. 149, PG. 349 OF DEEDS  
**PLOTTED ON MAP**
- 12 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** ROBERT L. COOPER, et ux  
**PURPOSE:** WASTE WATER OR DRAINAGE DITCH EXTENDING ALONG AND ADJOINING THE NORTHERLY LINE OF SAID LAND.  
**RECORDING DATE:** MAY 19, 1917  
**RECORDING No.:** BK. 124, PG. 246 OF DEEDS  
**NOT PLOTTED ON MAP**
- 13 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL WATER COMPANY No. 9  
**PURPOSE:** BUILD, CONSTRUCT, MAINTAIN AND OPERATE WITH THE RIGHT OF ADDITION, RELOCATION, CHANGING AND ABANDONING AN IRRIGATION DITCH OR DITCHES, CANAL OR CANALS, LATERALS, MAIN OR OTHERWISE, WATER WEIRS, FLUMES, PIPE LINES AND ALL THINGS NECESSARY TO FULLY MAINTAIN AND FULLY OPERATE AN IRRIGATION SYSTEM.  
**RECORDING DATE:** OCTOBER 23, 1919  
**RECORDING No.:** BK. 152, PG. 294 OF DEEDS  
**PLOTTED ON MAP**
- 14 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** FOR THE CONSTRUCTION, MAINTENANCE AND/OR USE OF A CANAL, TELEPHONE AND/OR ELECTRIC POWER LINE OR LINES, AS NOW EXIST OR AS MAY HEREAFTER BE CONSTRUCTED, ENLARGED OR OTHERWISE CHANGED.  
**RECORDING DATE:** APRIL 25, 1939  
**RECORDING No.:** BK. 521, PG. 505 OF OFFICIAL RECORDS  
**PLOTTED ON MAP**

- 15 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** THE CONSTRUCTION, MAINTENANCE AND/OR USE OF A CANAL, TELEPHONE AND/OR ELECTRIC POWER LINE OR LINES, AS NOW EXIST OR AS MAY HEREAFTER BE CONSTRUCTED, ENLARGED OR OTHERWISE CHANGED.  
**RECORDING DATE:** MARCH 16, 1942  
**RECORDING No.:** BK. 585, PG. 139 OF OFFICIAL RECORDS  
**PLOTTED ON MAP**
- 17 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**PURPOSE:** FOR IRRIGATION, WASTE OR DRAINAGE CANALS, OR POWER OR TELEPHONE LINES.  
**RECORDING DATE:** FEBRUARY 17, 1945  
**RECORDING No.:** BK. 632, PG. 401 OF OFFICIAL RECORDS  
**NOT PLOTTED ON MAP**
- 18 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** FOR THE CONSTRUCTION, MAINTENANCE AND/OR USE OF A CANAL, TELEPHONE AND/OR ELECTRIC POWER LINE OR LINES, AS NOW EXIST OR AS MAY HEREAFTER BE CONSTRUCTED, ENLARGED OR OTHERWISE CHANGED.  
**RECORDING DATE:** APRIL 10, 1945  
**RECORDING No.:** BK. 639, PG. 139 OF OFFICIAL RECORDS  
**PLOTTED ON MAP**
- 20 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL WATER COMPANY No. 9  
**PURPOSE:** THE RIGHT TO BUILD, CONSTRUCT, MAINTAIN AND OPERATE AT ALL TIMES, WITH POWER AND RIGHT OF ADDITION, RELOCATION, CHANGING AND ABANDONING AN IRRIGATION DITCH OR DITCHES, CANAL OR CANALS, WASTE WATER DITCHES, ETC., AND ALL THINGS NECESSARY TO MAINTAIN AND OPERATE AN IRRIGATION SYSTEM; ALSO, THE RIGHT TO USE THE BED AND BANKS OF THE NEW RIVER, WHERE, IF AT ALL, SAID LAND BORDERS THEREON, OR IN OR ACROSS THE SAME, FOR WASTE WAYS, CANALS, DAMS, RESERVOIRS, OR OTHER PARTS OF A GENERAL IRRIGATION SCHEME AND SYSTEM.  
**RECORDING No.:** BK. 149, PG. 349 OF DEEDS  
**NOT PLOTTED ON MAP**

- 21 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** FOR CANAL, TELEPHONE AND/OR ELECTRIC POWER LINES.  
**RECORDING No.:** BK. 177, PG. 309 AND BK. 532, PG. 567 OF OFFICIAL RECORDS  
**PLOTTED ON MAP**
- 22 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:  
**GRANTED TO:** IMPERIAL IRRIGATION DISTRICT  
**PURPOSE:** TELEPHONE AND/OR ELECTRIC POWER LINES, TOGETHER WITH RIGHT OF ACCESS.  
**RECORDING No.:** BK. 177, PG. 309 AND BK. 583, PG. 533 OF OFFICIAL RECORDS  
**PLOTTED ON MAP**
- 23 MATTERS CONTAINED IN THAT CERTAIN DOCUMENT:  
**ENTITLED:** EASEMENT AGREEMENT  
**DATED:** MAY 5, 1998  
**EXECUTED BY:** KUDU, INC., A CALIFORNIA CORPORATION AND MAGMA POWER COMPANY, A NEVADA CORPORATION  
**RECORDING DATE:** SEPTEMBER 11, 1998  
**RECORDING No.:** BK. 1945, PG. 1535 OFFICIAL RECORDS  
**PLOTTED ON MAP**
- 24 COVENANTS AND RESTRICTIONS IMPOSED BY A LAND CONSERVATION CONTRACT EXECUTED PURSUANT TO SECTION 51200 ET SEQ. CALIFORNIA GOVERNMENT CODE (WILLIAMSON ACT) AUTHORIZING THE ESTABLISHMENT OF AGRICULTURAL PRESERVES. THE USE OF THE LAND WITHIN THE PRESERVE MAY BE RESTRICTED BY THE CONTRACT TO AGRICULTURAL, RECREATIONAL, OPEN-SPACE, AND OTHER APPROVED COMPATIBLE USES.  
**DATED:** DECEMBER 28, 2000  
**EXECUTED BY:** KUDU, INC. AND THE COUNTY OF IMPERIAL  
**RECORDING DATE:** JANUARY 16, 2001  
**RECORDING No.:** No. 01-00695 IN BK. 2041, PG. 1781 OF OFFICIAL RECORDS  
A "NOTICE OF NONRENEWAL LAND CONSERVATION CONTRACT (WILLIAMSON ACT)", RECORDED NOVEMBER 10, 2010 AS DOCUMENT No. 2010-028184 OF OFFICIAL RECORDS.  
**PLOTTED ON MAP**

SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF HOWARD ELMORE IN MAY, 2022. I HEREBY STATE THAT THIS PARCEL MAP SUBSTANTIALLY CONFORMS TO THE APPROVED OR CONDITIONALLY APPROVED TENTATIVE MAP, IF ANY.

ALL MONUMENTS SHOWN ON THIS MAP ARE OF THE CHARACTER INDICATED AND OCCUPY THE POSITIONS INDICATED AND THAT THE MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

*[Signature]*  
TAYLOR J. PREECE, P.L.S. No. 9436



DATE: MAY 12, 2023

COUNTY SURVEYOR'S STATEMENT

I, DAVID DALE, COUNTY SURVEYOR OF IMPERIAL COUNTY, STATE THAT I HAVE EXAMINED THIS MAP; THAT THE SUBDIVISION AS SHOWN IS SUBSTANTIALLY THE SAME AS IT APPEARS ON THE TENTATIVE MAP, IF REQUIRED, AND ANY APPROVED ALTERATIONS THEREOF; THAT ALL PROVISIONS OF CHAPTER 2, DIVISION 2, TITLE 7 OF THE GOVERNMENT CODE OF THE STATE OF CALIFORNIA AND ANY ORDINANCES OF IMPERIAL COUNTY APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP, IF REQUIRED, HAVE BEEN COMPLIED WITH; AND THAT I AM SATISFIED THAT THIS MAP IS TECHNICALLY CORRECT.

*[Signature]*  
DAVID DALE, PLS 8603  
COUNTY SURVEYOR



DATE: JUNE 8, 2023

COUNTY PLANNING DIRECTOR'S STATEMENT

PURSUANT TO SECTION 90805.18 OF THE CODIFIED ORDINANCES OF IMPERIAL COUNTY, I HEREBY CERTIFY THAT THIS MAP COMPLIES WITH THE APPROVED TENTATIVE MAP.

DATE: 6/8/23  
*[Signature]*  
JIM MINICK  
PLANNING & DEVELOPMENT SERVICES DIRECTOR

COUNTY RECORD'S STATEMENT

FILED THIS 21<sup>st</sup> DAY OF JUNE, 20 23, AT 9:54 A.M.  
IN BOOK 15 OF PARCEL MAPS AT PAGE 23-24, AT THE REQUEST OF PRECISION ENGINEERING & SURVEYING, INC.

*[Signature]*  
CHUCK STOREY  
COUNTY RECORDER

SUPPORTING DOCUMENTS

THE FOLLOWING DOCUMENTS, WERE RECORDED CONCURRENTLY WITH THIS PARCEL MAP AS OFFICIAL RECORDS OF THE COUNTY OF IMPERIAL.

TAX CERTIFICATE	DOC. No.	<u>2023009393</u>	O.R.
SUBDIVISION GUARANTEE	DOC. No.	<u>2023009394</u>	O.R.
DEDICATION OF PARCEL "A"	DOC. No.	<u>2023009395</u>	O.R.
DEDICATION OF PARCEL "B"	DOC. No.	<u>2023009396</u>	O.R.
DEDICATION OF PARCEL "C"	DOC. No.	<u>2023009397</u>	O.R.
BENEFICIARY'S CERTIFICATE	DOC. No.	<u>2023009392</u>	O.R.
	DOC. No.		O.R.

OWNER'S STATEMENT

I HEREBY STATE THAT I AM THE OWNER OF THE LAND INCLUDED WITHIN THE SUBDIVISION SHOWN HEREON; THAT I AM THE ONLY PERSON WHOSE CONSENT IS NECESSARY TO PASS A CLEAR TITLE TO SAID LAND; THAT I CONSENT TO THE MAKING AND RECORDING OF THIS SUBDIVISION MAP AS SHOWN WITHIN THE DISTINCTIVE BORDER LINE.

*[Signature]*  
(RICHARD D. ELMORE,  
DIRECTOR KUDU, INC.)

NOTARY ACKNOWLEDGEMENT

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF CALIFORNIA }  
COUNTY OF IMPERIAL }  
ON May 30, 2023 BEFORE ME, Linda Godsey, Notary Public  
(DATE) (HERE INSERT NAME & TITLE OF THE OFFICER)

PERSONALLY APPEARED Richard D. Elmore  
(RICHARD D. ELMORE, DIRECTOR)

WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME AND THEIR AUTHORIZED CAPACITIES, AND THAT BY THEIR SIGNATURES ON THE INSTRUMENT THE PERSONS, OR THE ENTITY UPON BEHALF OF WHICH THE PERSONS ACTED, EXECUTED THE INSTRUMENT.

SIGNATURE: *[Signature]*  
(SIGNATURE OF NOTARY PUBLIC)

MY PRINCIPLE PLACE OF BUSINESS IS IN Imperial COUNTY.  
MY COMMISSION NUMBER IS 2340992  
MY COMMISSION EXPIRES Jan. 8, 2025

OWNER'S STATEMENT

I HEREBY STATE THAT I AM THE OWNER OF THE LAND INCLUDED WITHIN THE SUBDIVISION SHOWN HEREON; THAT I AM THE ONLY PERSON WHOSE CONSENT IS NECESSARY TO PASS A CLEAR TITLE TO SAID LAND; THAT I CONSENT TO THE MAKING AND RECORDING OF THIS SUBDIVISION MAP AS SHOWN WITHIN THE DISTINCTIVE BORDER LINE.

*[Signature]*  
(MARK T. GRAN FOR MAGMA POWER)

NOTARY ACKNOWLEDGEMENT

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF CALIFORNIA }  
COUNTY OF IMPERIAL }  
ON May 30, 2023 BEFORE ME, Linda Godsey, Notary Public  
(DATE) (HERE INSERT NAME & TITLE OF THE OFFICER)

PERSONALLY APPEARED Mark T. Gran  
(MARK T. GRAN FOR MAGMA POWER)

WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME AND THEIR AUTHORIZED CAPACITIES, AND THAT BY THEIR SIGNATURES ON THE INSTRUMENT THE PERSONS, OR THE ENTITY UPON BEHALF OF WHICH THE PERSONS ACTED, EXECUTED THE INSTRUMENT.

SIGNATURE: *[Signature]*  
(SIGNATURE OF NOTARY PUBLIC)

MY PRINCIPLE PLACE OF BUSINESS IS IN Imperial COUNTY.  
MY COMMISSION NUMBER IS 2340992  
MY COMMISSION EXPIRES Jan. 8, 2025

LEGAL DESCRIPTION

LOTS 5 AND 6; THE SOUTH HALF OF THE NORTHWEST QUARTER, AND THE SOUTHWEST QUARTER OF SECTION 4, IN TOWNSHIP 12 SOUTH, RANGE 13 EAST, S.B.M., IN AN UNINCORPORATED AREA OF THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

EXCEPTING THEREFROM ALL GEOTHERMAL AND GEOTHERMAL MINERAL AND RELATED RIGHTS AS RESERVED IN THE DEED RECORDED DECEMBER 19, 1979 IN BOOK 1444, PAGE 1705 OF OFFICIAL RECORDS.

SAID LAND IS ALSO SHOWN ON THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED APRIL 28, 1978, IN BOOK 1415, PAGE 650, OF OFFICIAL RECORDS.

BASIS OF BEARINGS

BASIS OF BEARINGS IS S12°53'18"W 14148.25' BETWEEN THE NORTH QUARTER CORNER OF SECTION 4 (POINT No. 6 OF CORNER DESCRIPTIONS) AND CRTN STATION REDISLANDMCS2005/P507

NOTE

- PARCELS "A", "B", AND "C" ARE OFFERED FOR PUBLIC STREET AND UTILITY PURPOSES. REFER TO THE DEDICATIONS RECORDED CONCURRENTLY WITH THIS MAP FOR PARTICULARS.
- REFERENCED RECORD BEARINGS SHOWN HEREON MAY OR MAY NOT BE OF SAID SYSTEM.



# PARCEL MAP No. 02501

THE WEST HALF OF SECTION 4, TOWNSHIP 12 SOUTH, RANGE 13 EAST, SAN BERNARDINO MERIDIAN, IN AN UNINCORPORATED AREA OF THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

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SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10

SECTION 11

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