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Response to Workshop Follow Up: Informal Data Request Set 1

Submitted to
California Energy Commission

Prepared by
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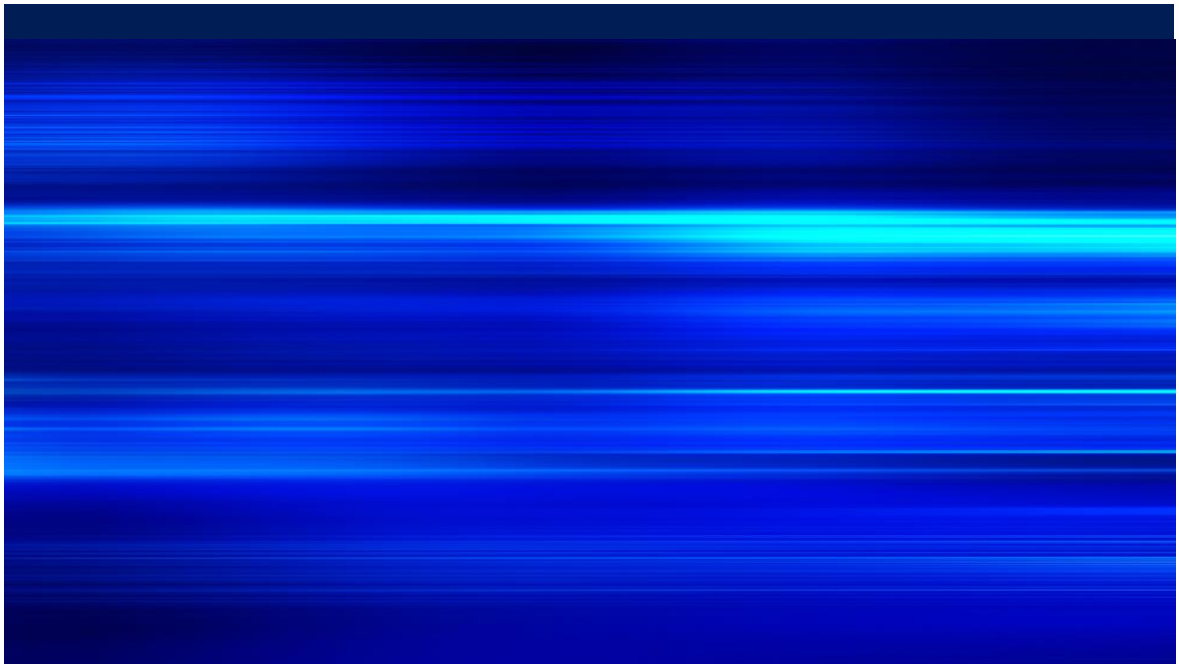
With assistance from
Jacobs

Morton Bay Geothermal Project (23-AFC-01)

October 30, 2024



Introduction

Attached are the responses from Morton Bay Geothermal LLC[1] to the California Energy Commission (CEC) Staff's *Workshop Follow Up: Informal Data Request Set 1*, regarding the Application for Certification (AFC) for the Morton Bay Geothermal Project (MBGP; 23-AFC-01)[2].

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 IDRR28-1. The first figure used in response to Informal Data Request 28 would be Figure IDRR-1, and so on. Figures or tables from the MBGP 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.

[1] An indirect, wholly owned subsidiary of BHE Renewables, LLC ("BHER").

[2] TN#: 259522.

Contents

Acronyms and Abbreviations

AFC	Application for Certification
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
dBA	A-weighted decibels
IDRR	Informal Data Request Response
IID	Imperial Irrigation District
MBGP	Morton Bay Geothermal Project
USFWS	U.S. Fish and Wildlife Service

1. Biological Resources

Background: Biological Assessment (BA)

Informal Data Request:

1. *California Energy Commission's (CEC) staff informally requested the following additional information:*
   A. *Operational impacts from operation of the Morton Bay plant facility and associated mitigation measures.*
   B. *Construction noise impacts from ancillary sites associated with Elmore and Black Rock near Morton Bay and other rail habitat taking into account anticipated schedules for nighttime construction work.*
   C. *Noise impacts to nearby rail habitat outside ground disturbance area for Elmore (i.e.: Hazard Tract) and Black Rock (i.e.: McKendry Beach).*

Response 1.A:

Operational impacts from operation of the Morton Bay plant facility and associated mitigation measures.

Potential Operational Impacts

As stated in the MBGP AFC Biology Section 5.2 (23-AFC-01), potential operational impacts of the MBGP are similar to those occurring during construction, but are of a smaller magnitude and shorter duration. Many of the Applicant proposed measures, such as speed limits, were incorporated into Preliminary Staff Assessment (PSA) BIO-4 General Measures. Three excerpts from AFC regarding operational impacts:

> AFC page 5.2-27: "Sound levels during startup and typical operation and maintenance activities may vary. The highest sound levels are associated with temporary steam venting through a rock muffler during upset or startup/ shutdown conditions. These were observed to vary between approximately 68 dBA at 300 feet to 71 [A-weighted decibels] (dBA) at 4,000 feet (Section 5.7, Noise). As these events are infrequent, temporary, and finite, they are not expected to pose a significant impact."
>
> AFC pages 5.2-28-29, Section 5.2.2.3 Operation "Following initial construction activities, Project operation also would generate varying levels of dust, lighting, and noise disturbance adjacent to the plant site, offsite well pads, and, on limited occasion, in proximity to injection well pipelines. The level of disturbance from noise, lighting, and other elements associated with maintenance activities would be of smaller magnitude and of shorter duration than those associated with construction. A small, less-than-significant increase in this type of disturbance also would be anticipated for day-to-day general Project operations at the plant site."
>
> AFC Page 5.2-29 Section 5.2.3.3.3 Wildlife Species "For protected wildlife species, indirect impacts are possible from the noise associated with the operations of the proposed Project. The noise plan would require that overall noise levels at the power plant site during the breeding season of Yuma Ridgway's rails [(*Rallus longirostris yumanensis*)] (February 16 to August 31) not exceed an hourly average threshold of 80 dBA at occupied habitat areas for one-half hour before

> and one hour after sunrise and one hour before and one-half hour after sunset. In general, nearly all equipment will be specified to have near-field maximum noise levels that do not exceed 90 dBA at three feet from the activity (or 85 dBA at three feet where available as a vendor standard) to limit the noise exposure of plant personnel to acceptable levels. It is expected that during normal steady-state operations the 80 dBA threshold will not be exceeded at the rail habitat. Additionally, the noise plan will require the Project Owner to conduct regular inspection on Project equipment, including pipes and valves associated with well pads, to ensure proper operations do not exceed an average sound level of 80 dBA in proximity to rail habitat during the sensitive time periods in the breeding season. Therefore, no significant noise impacts to the Yuma Ridgway's rail or other special-status bird species would occur as a result of the operation of the Project."

In the Data Adequacy response, the Applicant predicted that normal steady-state operations noise levels at the plant site boundary would not be expected to exceed 80 dBA (TN 250679):

> "For protected wildlife species, indirect impacts are possible from the noise associated with the operations of the proposed Project. In general, nearly all equipment will be specified to have near-field maximum noise levels that do not exceed 90 A-weighted decibels (dBA) at three feet from the activity (or 85 dBA at three feet where available as a vendor standard) to limit the noise exposure of plant personnel to acceptable levels. It is expected that during normal steady-state operations the 80 dBA threshold will not be exceeded beyond plant boundaries. Therefore, no significant noise impacts to special-status bird species would occur as a result of the operation of the Project."

Operational Management to Avoid Harassment or Harm

The operation of the power plant and the gen-tie line would be conducted to avoid harassment and harm to sensitive biological resources. At a minimum, maintenance and operations personnel would follow this guidance:

1. The Project personnel would observe the areas under gen-tie lines during the course of their regularly scheduled duties to informally monitor for birds that have struck the gen-tie lines.
2. All employees, contractors, and visitors would be advised of the need to adhere to speed limits. The maximum speed on unpaved roads within 300 feet of occupied special-status species habitat (such as near Obsidian Butte, SBSSNWR, or Imperial Wildlife Area, Hazard Tract) would be restricted to 15 miles per hour[3] or lower during operations.
3. Make certain all food-related trash is disposed of in closed containers and removed at least once a week.
4. Avoid the use of herbicides at the MBGP.
5. Avoid spread of noxious weeds. The Applicant will implement the same best management practices (BMPs) during operation as identified for construction activities to prevent the spread and propagation of noxious weeds (as defined by the U.S. Department of Agriculture).
6. Report all deaths of special-status species to the appropriate U.S. Fish and Wildlife Service (USFWS), California Energy Commission, and/or California Department of Fish and Wildlife (CDFW)

[3] The PSA already proposes speed limits in Condition of Certification BIO-4 General Measures.

representative. Injured animals would be reported to an appropriate Project representative and the Project representative would follow instructions that are provided by the appropriate agency representative. If there is a conflict in the instructions, the Project representative will work with agency representatives to reconcile the conflict prior to proceeding.

Noise Assessment and Abatement Plan

The Project Owner will prepare a detailed noise assessment and abatement plan based on the final design of the facility to determine the most practicable measures to avoid, reduce, and mitigate potential noise impacts during construction and operation.

At a minimum, the noise plan would include the following measures to avoid harassment and harm:

7. Operations: Require overall noise levels at the power plant site during the breeding season of Yuma Ridgway's rails (February 16 to September 15) do not exceed the threshold of an hourly average of 80 dBA at occupied habitat areas for one-half hour before and one hour after sunrise and one hour before and one-half hour after sunset.

8. Conduct regular inspections of Project equipment, including pipes and valves associated with well pads, to ensure proper operations do not exceed an hourly average sound level above 80 dBA in proximity to rail habitat during the breeding season (February 16 to September 15) for one-half hour before and one hour after sunrise and one hour before and one-half hour after sunset to the maximum extent practical.

Response 1.B:

"Construction noise impacts from ancillary sites associated with Elmore and Black Rock near Morton Bay and other rail habitat (see Item 3)."

Figure IDRR-1 shows the three ancillary sites associated with MBGP, ENGP, and BRGP east of Morton Bay in relation to the Yuma Ridgway's rail 2022 survey results (Sliwa and Conway 2022):

- Borrow Pit (northernmost ancillary site)
- Construction laydown and parking area (located adjacent and north of MBGP along McDonald Road)
- Construction laydown and parking area (located adjacent and north of MBGP along Schrimpf Road)

The three ancillary sites nearest to Morton Bay are approximately 1,500 feet from where rails were detected during the 2022 surveys (Figure IDRR-1, Sliwa and Conway 2022). The construction noise expected at the borrow pit and construction laydown and parking areas would correspond to, at most, the average construction noise similar to "Demolition, Site Clearing, and Excavation" as shown in Table IDRR-1 and would attenuate to less than 60 dBA at 1,500 feet.

Table IDRR-1. Average Construction Noise Levels at Various Distances

	Sound Pressure Level (dBA)		
Construction Phase	375 feet	1,500 feet	3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Concrete Pouring	60	48	42
Steel Erection	69	57	51

Construction Phase	Sound Pressure Level (dBA) 375 feet	1,500 feet	3,000 feet
Mechanical	69	57	51
Cleanup	71	59	53

Source: MBGP AFC Section 5.7, Table 5.7-9.

Based on these results, the construction noise impacts from use of these three ancillary sites near Morton Bay would be expected to have a less than significant impact on rails.

Response 1.C:

"Noise impacts to nearby rail habitat outside ground disturbance area for Elmore (i.e.: Hazard Tract) and Black Rock (i.e.: McKendry Beach)"

Imperial Wildlife Area, Hazard Tract

Figure IDRR-1 shows the location of the Imperial Wildlife Area, Hazard Tract (Hazard Tract) in proximity to BRGP, ENGP, and MBGP. The Hazard Tract is located approximately 200 feet north of two ancillary sites east of ENGP plant site (construction laydown and parking area and borrow pit) (Figure IDRR-1).

Based on 2022 survey results, the Hazard Tract and areas around ENGP plant site were not considered suitable breeding rail habitat. However, protocol surveys were conducted in this area to be certain and no marsh birds of any species were detected (Sliwa and Conway 2022).

Both of these parcels are currently in agricultural production. Existing uses of agricultural equipment, such as tractors, would project noise to the species present in the Hazard Tract (Table IDRR-2).

Table IDRR-2. Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 375 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Pile Drivers (20,000 to 32,000 ft-lbs/blow)	104	86	74
Dozer (250 to 700 hp)	88	70	58
Front End Loader (6 to 15 cu yd)	88	70	58
Trucks (200 to 400 hp)	86	68	56
Grader (13- to 16-foot blade)	85	67	55
Shovels (2 to 5 cu yd)	84	66	54
Portable Generators (50 to 200 kW)	84	66	54
Derrick Crane (11 to 20 tons)	83	65	53
Mobile Crane (11 to 20 tons)	83	65	53
Concrete Pumps (30 to 150 cu yd)	81	63	51

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 375 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Tractor (0.75 to 2 cu yd)	80	62	50
Unquieted Paving Breaker	80	62	50
Quieted Paving Breaker	73	55	43

Source: MBGP AFC Section 5.7, Table 5.7-10.

Notes:
cu yd = cubic yard
ft-lbs/blow = foot pounds per blow
hp = horsepower
kW = kilowatt

The average construction noise associated with "Demolition, Site Clearing, and Excavation" would attenuate to 71 dBA at 375 feet (Table IDRR-1). Audiograms show that birds are as much as 15 to 20 decibels less sensitive as compared to humans to low frequency noises, such as that from construction equipment (CEC 2014). The 80 dBA noise level for birds would be equivalent to 60 dBA for human hearing, and therefore we recommend using the 80 dBA threshold for bird noise impacts. Based on these results, the construction noise impacts from use of the ancillary site near Hazard Tract would be expected to have a less than significant impact on rails.

McKendry Beach

McKendry Beach is an unmanaged marsh within the Sonny Bono Salton Sea National Wildlife Refuge located between Rock Hill and Obsidian Butte (Figure IDRR-1). According to USFWS survey results, 11 Yuma Ridgway's rail were detected in McKendry Beach in 2023 (Sirchia pers. comm. 2023).

Based on 2022 survey results, the southernmost portion of McKendry Beach near Obsidian Butte was not considered suitable rail habitat (Sliwa and Conway 2022). The southernmost edge of McKendry Beach is approximately 250 feet from the closest project feature, a construction laydown and parking area associated with all three proposed projects (Figure IDRR-1). McKendry Beach encompasses approximately one mile between Obsidian Butte and Rock Hill and suitable habitat may be present outside of 500-foot buffer from ancillary sites.

The average construction noise associated "Demolition, Site Clearing, and Excavation" would attenuate to less than 60 dBA at 1,500 feet (Table IDRR-1). Based on these results, the construction noise impacts from use of the ancillary site near McKendry Beach would be expected to have a less than significant impact on rails.

References

California Energy Commission (CEC). 2014. AE Southland Development, LLC's Opening Testimony, Preliminary Identification of Contested Issues, and Witness and Exhibits Lists: FSA Comments. Huntington Beach Energy Project. Docket No. 12-AFC-02.

Sirchia, Felicia, U.S. Fish and Wildlife Service. 2023b. Personal communication by email with Morgan (King) Holloway, Jacobs Engineering Group Inc. Salton Sea Sonny Bono National Wildlife Refuge Yuma Ridgway's Rail Survey Summary Salton Sea Unmanaged Marshes. June 13.

Sliwa, Kathryn M., and C. J. Conway. 2022. *Distribution and Occupancy of Yuma Ridgway's Rails Within Proposed Geothermal Development Areas in Imperial Valley, California*. Department of Fish and Wildlife Sciences University of Idaho. Moscow, Idaho. September 7.

Background: Water Supply Assessment

Informal Data Request:

2. *CEC staff informally requested the following additional information:*
    - *Impacts to listed species due to fallowing of agricultural fields (short term during construction and long term due to construction of the 3 facilities).*
    - *Associated mitigation measures.*

Response 2: The acreage of temporary and permanent impacts to agricultural land cover types are provided for each site (TN 258975). The MBGP has 740.97 acres of temporary and 6.15 acres of permanent disturbance to agricultural land cover. Therefore, minimal reduction in water flowing to the Salton Sea is expected.

Temporary disturbance to agricultural land may be reverted back to agricultural production post-construction. Permanent impacts (from approximately six to 110 acres) are a relatively small areas in comparison to the over 500,000 acres total agriculture in Imperial County (USDA 2017). The permanent project site will result in 63 acres of the site to no longer be used for agriculture. Therefore, the amount of water currently/historically used by the parcel is assumed to be reduced to zero.

Reference

U.S. Department of Agriculture (USDA). 2017. 2017 Census of Agriculture Imperial County California. Accessed at: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/California/cp06025.pdf

Background: Schedule/Duration of Night Work

Informal Data Request:

3. *CEC staff informally requested the following additional information:*
    - *Anticipated # days, hours of work, etc.*

Response 3: The anticipated day and night shift hours are provided below. Note that these shift hours are subject to adjustment based on factors such as temperature, weather, and potential Project Labor Agreement terms. The intent is to conduct night shifts year-round (excluding Sundays).

During Construction - Up to 316 days are anticipated per year.

- Monday – Saturday
    - Day shift: Start at 4:00 am (±2 hours), end at 2:30 pm (±2 hours)
    - Night Shift: Start at 3:00 pm (±2 hours), end at 1:30 am (±2 hours)
- Sunday/Holiday
    - No Sunday or Holiday work is anticipated, except during production and injection well drilling, which will occur for approximately two-weeks straight, or other specialized work.

During Commissioning

- Monday – Sunday
    - Day shift: Start at 4:00 am (±2 hours), end at 2:30 pm (±2 hours)
    - Night Shift: Start at 3:00 pm (±2 hours), end at 1:30 am (±2 hours)