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CURE Data Response Set 4 (Responses to Data Requests 255 to 287)

Submitted to
California Energy Commission

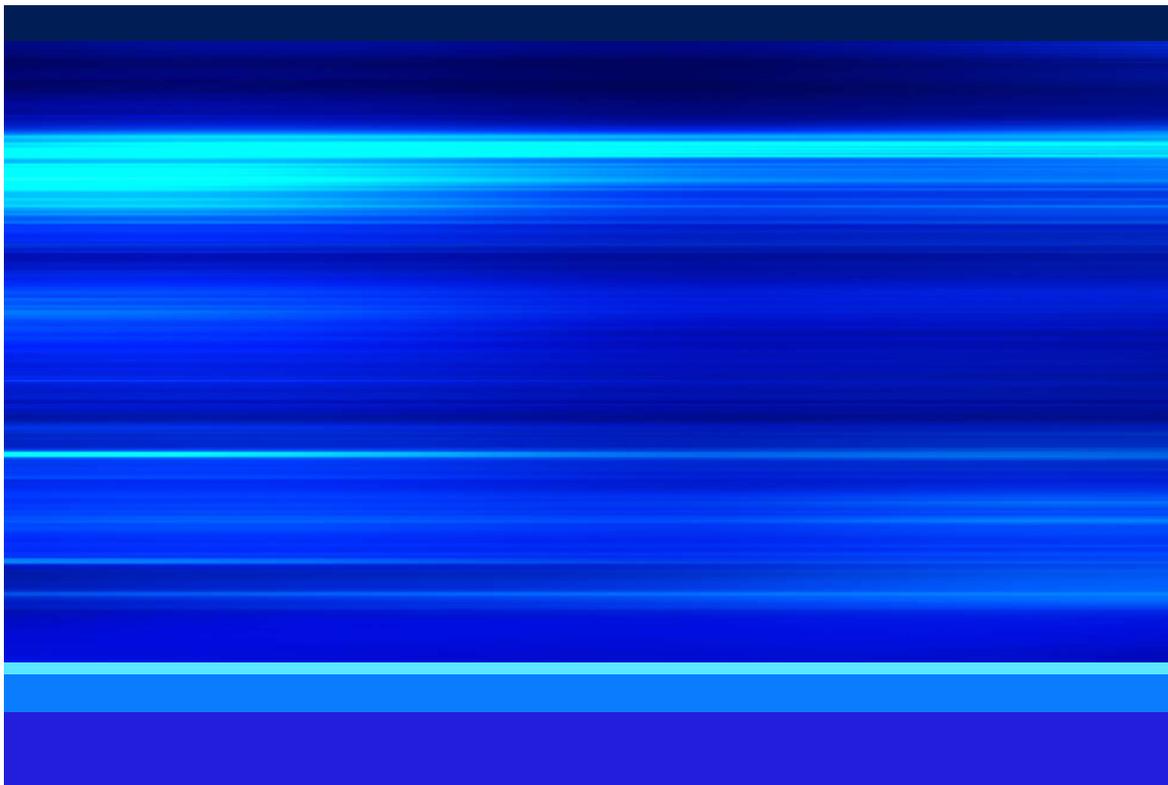
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With assistance from

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Elmore North Geothermal Project
(23-AFC-02)

February 21, 2024



Introduction

Attached are Elmore North Geothermal LLC's¹ (Applicant) responses to the California Unions for Reliable Energy's (CURE) *Data Requests Set 4* regarding the Application for Certification (AFC) for the Elmore North Geothermal Project (ENGP) (23-AFC-02). This submittal includes a response to Data Requests 255 through 287.

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as presented *CURE Data Requests Set 4* and are keyed to the Data Request numbers.

New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 28 would be numbered Table DR28-1. The first figure used in response to Data Request 28 would be Figure DRR 28-1, and so on. Figures or tables from the ENGP AFC that have been revised have a "R" following the original number, indicating a revision.

Additional tables, figures, or documents submitted in response to a 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").

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Acronyms and Abbreviations

AFC	Application for Certification
afy	Acre feet per year
BHER	BHE Renewables, LLC
BRGP	Black Rock Geothermal Project
BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CURE	California Unions for Reliable Energy
DR	Data Request
DRR	Data Request Response
EDP	Equitable Distribution Plan
ENGP	Elmore North Geothermal Project
IID	Imperial Irrigation District
MBGP	Morton Bay Geothermal Project
TN	Transaction Number
WSA	Water Supply Assessment

1. Water Resources (DR 255-260)

Background: Water Shortages (DR 255-258)

The Project will rely on Imperial Irrigation District ("IID") supplied water. IID relies on the Colorado River for meeting water user demands. The Colorado River Basin continues to be largely in abnormally dry to severe drought conditions, continuing the historic decadal drought. Climate projections indicate these dry conditions are not expected to change dramatically either short-term or long-term. Several laws, regulations, and agreements control IID's water rights along the Colorado River and influence future decisions regarding water supply availability during periods of shortages.

For example, the U.S. Bureau of Reclamation ("BOR") responded to a multi-year drought in the Colorado River Upper Basin by developing the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead ("2007 Interim Guidelines"). (TN 253194) The 2007 Interim Guidelines are in place from 2008 through December 31, 2025. (Id.) In 2007, BOR announced that "Conservation Before Shortage" was the selected preferred alternative for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations of Lake Powell and Lake Mead ("Final Preferred Alternative"). (Id.) This Final Preferred Alternative is comprised of four key operational elements that guide operations of Lake Powell and Lake Mead through 2026. (Id.)

In October of 2023, BOR published the Revised Draft Supplemental Environmental Impact Statement ("SEIS") for Near-Term Colorado River Operations, which is intended to replace the 2007 Interim Guidelines under which the Colorado River has been operating and making water deliveries. The BOR is proposing to revise the 2007 Interim Guidelines for the operation of Glen Canyon and Hoover Dams beginning in the 2024 operating year to address the potential for continued low-runoff conditions in the Colorado River Basin. As stated in the SEIS, "[u]nder the Proposed Action, there is the possibility that the IID and [Coachella Valley Water District] could take additional shortages;..." (SEIS 2023 at 3-133) The SEIS also discusses the No Action and other Alternatives that may impact surface water deliveries to IID. BOR has not yet identified a preferred alternative, which will be identified in the Final SEIS.

Data Requests:

255. *Please provide the minimum volume of average annual water demand in acre feet per year ("AFY") for the Project to operate.*

Response: The minimum volume of annual water required to operate the Elmore North Geothermal Project (ENGP) at full load is 6,480 acre-feet per year (afy) based on site specific ambient conditions. The majority of the ENGP's water use is associated with dilution water, which is required to be added to the geothermal brine as it flashes (lowers in pressure) and cools to prevent the increasingly saline geothermal brine from precipitating solids uncontrollably and causing blockages in the plant and pipelines.

256. *State the maximum volume of average annual water demand in AFY for the Project to operate.*

Response: The maximum volume of annual water required to operate the ENGP at full load is 6,480 acre-feet- per year (afy) based on site specific ambient conditions. The majority of the ENGP's water use is associated with dilution water, which is required to be added to the geothermal brine as it flashes (lowers in pressure) and cools to prevent the increasingly saline geothermal brine from precipitating solids uncontrollably and causing blockages in the plant and pipelines.

257. *State whether the Applicant has identified alternative sources of water for the Project if IID does not meet the Project's total water demand.*

Response: The Applicant has conducted an evaluation for alternative sources of water, including Imperial Irrigation District (IID) drain water and effluent from the town of Calipatria's water treatment system.

258. *If alternative sources of water for the Project have been identified, please describe the alternative sources of water.*

Response: The two alternative sources of water identified are IID drain water and effluent from Calipatria's water treatment system. The IID drain water contains higher levels of total dissolved solids content than the Project can accept, and withdrawal of drain water would impact desert pupfish within the drains. Further the use of IID drain water would reduce agricultural drain flows into the Salton Sea, resulting in further reduction in the sea's elevation. The quantity of effluent from Calipatria's water treatment system is insufficient to support the project. The Applicant is unaware of any reclaimed water sources in the Project area with sufficient supply to support the Project's water demand.

Background: Equitable Distribution Plan (DR 259-260)

The SB-610 Water Supply Assessment ("WSA") states that the water supply for the Project has been assured by Imperial County Planning and Development Services ("ICPDS"). (TN 253194) The WSA also explains that the proposed Project would be designated as a non-agricultural water user, and water will be supplied under an Industrial Water Supply Agreement with IID, or alternatively, under IID's Interim Water Supply Policy. (Id.)

Due to ongoing Colorado River drought conditions, Lake Mead's declining elevation, reduced inflows from Lake Powell, and the suspension of the federal Inadvertent Overrun and Payback Policy, the IID Board has implemented an annual apportionment program known as the Equitable Distribution Plan ("EDP"). In general, IID apportions the available water supply among all its water users equitably under the EDP. The intent of the EDP is to address times when customers' demand would exceed IID's Colorado River supply. (Id.) The EDP indicates that the basis for the equitable distribution for the industrial/commercial apportionment is based on the average of the previous three calendar years of water used. The EDP also has a provision that the apportionment may be changed for any calendar year prior to the notification period at the discretion of the IID Board of Directors.

Data Requests:

259. *State whether the Applicant and IID have discussed the apportionment of water to the Project pursuant to the EDP.*

Response: Yes.

260. *If the response to Data Request No. 259 is "Yes," please:*

- a. *Summarize this discussion(s) and any outcomes; and*

Response: Potential apportionment of water to the Project pursuant to the Equitable Distribution Plan (EDP) was discussed with the Imperial Irrigation District (IID) to prepare a response to CEC Data Response Set 4, DR 37 and DR 38 (TN# 254505). IID informed the Applicant that any proposed reductions to IID's water allocation will be distributed equally across all IID water users (i.e., a 10% reduction in IID's water allocation will mean a 10% reduction in all users' water allocation).

- b. Provide all document referring or related to the Applicant's discussions with IID regarding the apportionment of water to the Project pursuant to the EDP.*

Response: Please see CEC Data Response Set 4, DR 37 and DR 38.

2. Geologic Hazards and Resources (DR 261-267)

Background: Geothermal Reservoir Properties (DR 261-264)

The geothermal reservoir characteristics dictate the applicable technologies for energy production. In response to CURE Data Requests Set 1 No. 9 concerning the geothermal reservoir, the Applicant's response focuses on system state variables, namely temperature, pressure, and fluid chemistry rather than the reservoir properties. (TN 253376) Information regarding reservoir properties pertains to reservoir permeabilities and their distribution (heterogeneity), porosity, fracture density and orientations, thermal conductivity and heat capacity of reservoir rock, capillary pressure curves.

Data Requests:

261. *Provide data or documents describing the reservoir permeability.*

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024.

262. *Provide data or documents describing the reservoir porosity.*

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024.

263. *Provide data or documents describing fractures in the reservoir.*

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024.

264. *Provide data or documents describing the reservoir thermal conductivity.*

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024.

Background: Hulen, Et Al (2002), Hulen, Et Al (2003) (DR 265-266)

The Applicant's response to CURE Data Requests Set 1 No. 9 cited to Hulen et al. (2003); Geology and a Working Conceptual Model of the Obsidian Butte (Unit 6) Sector of the Salton Sea Geothermal Field, California; Proceedings GRC 2003; and Hulen et al. (2002); Refined Conceptual Modeling and a New Resource Estimate for the Salton Sea Geothermal Field, Imperial Valley, California; Proceedings GRC 2002, but did not attach these reports. (TN 253376)

Data Response:

265. *Provide a copy of Hulen et al. (2003): Geology and a Working Conceptual Model of the Obsidian Butte (Unit 6) Sector of the Salton Sea Geothermal Field, California; Proceedings GRC 2003.*

Response: Due to potential copyright concerns, the Hulen et al. 2003 study has not been included as part of this response package. However, the study is available online at:
<https://publications.mygeoenergynow.org/grc/1021914.pdf>.

266. *Provide a copy of Hulen et al. (2002): Refined Conceptual Modeling and a New Resource Estimate for the Salton Sea Geothermal Field, Imperial Valley, California; Proceedings GRC 2002.*

Response: Due to potential copyright concerns, the Hulen et al. 2002 study has not been included as part of this response package. However, the study is available online at:

<https://www.geothermalresourcegroup.com/publications/refined-conceptual-modeling-and-a-new-resource-estimate-for-the-salton-sea-geothermal-field-imperial-valley-california/>.

Background: Model Calibration (DR 267)

A summary explanation of the results of model calibration should include the estimated properties of the reservoir as well as measures of uncertainty. For example, estimates of permeability are averages, which should be accompanied by measures estimation error (variance or confidence intervals). When performing history matching (calibration), the modeler modifies reservoir properties (e.g., permeability, porosity, fractures, thermal conductivity) to determine the optimal values that lead the modeled pressures and temperatures to match the corresponding measured (historical) values. Information regarding the uncertainty associated with the estimated reservoir properties has not been provided. It is sufficient if the history matching is accompanied by a cone of (predictive) uncertainty. Figure DRR 10c-1 would not be considered adequate without some measure of uncertainty.

Data Response:

267. Provide the reservoir numerical modeling report.

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024. Without waiving its objection to this data request, the Applicant provides the following response.

The Elmore North Geothermal Project Resource Adequacy Report was docketed on May 8, 2023 (TN# 250041) and the CEC resource adequacy determination for this geothermal resource is provided in TN# 250452.

3. Biological Resources (DR 268-283)

Background: Biological Survey Area (DR 268-269)

Figure 5.2-1 in the AFC identifies the boundaries of the Biological **Study** Area (“BSA”) and the Biological **Survey** Area. With regards to the Biological **Survey** Area, the AFC at page 5.2-1 states: “[f]or the purposes of the biological resources analysis, biologists surveyed a larger area than the final Project footprint to allow for flexible placement of Project features while avoiding sensitive areas (Figure 5.2-1).” The Biological Survey Area includes numerous areas outside of the BSA (AFC Figure 5.2-1), including the water-bearing portions of Morton Bay that are inaccessible to vehicles or pedestrians. It is unclear what resources were surveyed in the Biological Survey Area, if any, and the methods utilized.

Data Requests:

268. Describe the survey methods utilized and resources surveyed in the Biological Survey Area, including the portions that overlap with Morton Bay.

Response: Survey methods and resources surveyed are described in AFC Section 5.2.1.6.1 Methods, and in a preliminary *Burrowing Owl Survey Report* docketed on October 27, 2023 (TN# 252792). Biologists observed inaccessible areas of the Biological Survey Area², such as the open water in Morton Bay, using binoculars or spotting scopes while driving public access roads or walking adjacent areas.

269. State the criteria utilized to avoid sensitive areas in the Biological Survey Area, as discussed in the AFC at page 5.2-1.

Response: Prior to conducting field surveys, a desktop review was conducted to identify sensitive areas (AFC Section 5.2.1), such as:

- California Department of Fish and Wildlife (CDFW) special-status habitat types
- U.S. Fish and Wildlife Service designated critical habitat
- Wildlife movement corridors
- Significant regional protected areas
- Aerial imagery review to identify potentially suitable special-status species habitats to focus on during field surveys
- CDFW document identifying sensitive areas of the Salton Sea

During field surveys, biologists used professional judgement to analyze sensitive areas identified during the desktop review and survey additional areas that should be avoided. Biological survey methods are described in AFC Section 5.2.1. When a sensitive area was identified, for example suitable riparian habitat, that information was provided to the applicant to avoid to the extent feasible. As described in AFC Section 5.2:

“For the purposes of the biological resources analysis, biologists surveyed a larger area than the final Project footprint to allow for flexible placement of Project features while avoiding sensitive areas (Figure 5.2-1).”

² The Biological Survey Area is significantly larger and encompasses the Biological Study Area. The Biological Study Area is the refined Project footprint.

Background: Biological Study Area (DR 270-272)

The AFC at page 5.2-12 states that the Project's botanical surveys in the BSA were conducted by driving fifteen (15) to twenty (20) miles per hour along dirt and paved roads throughout the entire BSA. When natural communities with potentially suitable habitat for special-status plants were encountered, the AFC explains that botanists conducted surveys in accordance with California Department of Fish and Wildlife ("CDFW") and U.S. Fish and Wildlife Service ("USFWS") protocols, but the AFC does not identify the areas that were surveyed in accordance with these protocols. (Id.)

The AFC at page 5.2-13 provides the following description of the reconnaissance-level wildlife surveys within the BSA: "[b]iologists conducted windshield surveys and pedestrian surveys when burrowing owl, burrows, or burrowing owl sign was observed." Areas that were subject to pedestrian surveys are not identified in the AFC, but the discussion generally states that the wildlife surveys were conducted in the BSA. The AFC at page 5.2-14 states that the aquatic resource delineation was also confined to the BSA.

Data Requests:

270. Provide a map that identifies the areas that were subject to surveys for botanical resources according to the CDFW and USFWS protocols.

Response: Please refer to AFC, Figure 5.2-1 Biological Study Area (BSA), which depicts the BSA and project components within the boundaries of the BSA, as well as the larger Biological Survey Area. As described in AFC Section 5.2, biologists surveyed the larger Biological Survey Area for botanical resources. Botanists used professional judgement when necessary to conduct pedestrian surveys in potentially suitable special-status plant habitat, including natural vegetation types. As stated in AFC Section 5.2.1.1:

"The BSA is highly disturbed by agriculture and geothermal development and does not contain high quality natural habitat. Most of the land cover types found within the BSA are classified as nonnatural including agriculture, developed, and disturbed. Nonnatural is defined as being modified by human activities, whereas natural vegetation and land cover types are defined as unmodified by human activities (NatureServe 2004). Natural vegetation types within the BSA include North American Arid West Emergent Marsh, North American Warm Desert Playa, and Invasive Southwest Riparian Woodland and Shrubland. Open Water land cover type would typically be considered a natural land cover type; however, the Open Water within the BSA is a nonnatural manmade trench that had filled with water."

AFC Figure 5.2-4 provides the natural vegetation types within the BSA.

271. Provide a map that identifies the roads that were driven during the "windshield surveys" for wildlife.

Response: AFC Figure 5.2-1 BSA depicts the larger Biological Survey Area, including roads driven during windshield surveys.

272. Provide a map that identifies the areas that were walked during the pedestrian surveys for wildlife.

Response: Please see DRR 270. Biologists used professional judgement when necessary to conduct pedestrian surveys in potentially suitable special-status wildlife habitat.

Background: Land Cover Type Mapping (DR 273)

CURE Data Request Set 2 No. 169 asked for large-scale maps that show areas that would be impacted by the Project in relation to the nine land cover types within the BSA. The Applicant's response cites to "Data

Adequacy Supplement Appendix DA 5.2-3a and Appendix DA 5.2-3b (TN# 250677)" as containing the land cover and vegetation types overlaid with potential disturbance/impact areas (i.e., BSA). (TN 254014) The California Energy Commission ("CEC") Docket No. 23-AFC- 02 for the Project does not include document TN 250677 referenced in Applicant's response. Moreover, Data Adequacy Supplement Set 2 Appendix DA 5.2-3 does not provide maps of the land cover and vegetation types overlaid with potential disturbance/impact areas. (TN 250678) Such maps are also not available in Data Adequacy Response Set 1. (TN 250395)

Data Requests:

273. *Provide the correct reference(s) or a copy of the maps of the land cover and vegetation types overlaid with potential disturbance/impact areas.*

Response: Land cover and vegetation types overlaid with potential disturbance/impact areas (i.e., BSA) are shown in Data Adequacy Supplement Appendix DA 5.2-1d (TN# 250678). AFC Figure 5.2-3 shows the IID irrigation canals and drains. Irrigation infrastructure, including canals and drains, will not be impacted. Nine land cover and vegetation types were mapped within the BSA and will be impacted (AFC Sections 5.2.1.6.2 and 5.2.2.2.3; AFC Table 5.2-7). Impact areas mapped as Invasive Southwest Riparian Woodland and Shrubland, North American Arid West Emergent Marsh, and Open Water are small, disturbed locations (less than 8 acres [AFC Table 5.2-5]) that are located in the northwestern portion of the BSA. Impacts to North American Warm Desert Playa, also in the northwestern portion of the BSA, represent only 4% of overall impacts.

Background: Habitat Mapping Within Buffer Areas (DR 274-275)

The AFC at page 5.2-5 suggests that special-status species within a one-mile buffer of the Project could be subject to impacts from construction and operation of the Project. The AFC at page 5.2-11 states that the Applicant's biologists and botanists conducted reconnaissance-level habitat mapping within the Project's buffer areas, i.e., one mile for the geothermal plant area and 1,000 feet for well pads, pipelines, auxiliary features, and linear features. However, the habitats within the Project's buffer areas are undisclosed. For example, AFC Figure 5.2-4 only depicts the land cover and vegetation types within the Biological Study Area, which is considerably smaller than the Project's buffer areas.

Data Requests:

274. *Provide a map that depicts the habitats within the Project's one-mile and 1,000-foot buffer areas.*

Response: Please see the Applicants Notice Pursuant to 20 C.C.R. § 1716 for CURE Data Requests Set 4 submitted on February 12, 2024. Without waiving its objection to this data request, the Applicant provides the following response.

Please refer to AFC Table 5.2-6, Vegetation Communities within the ENGP Biological Study Area Buffers, which describes the vegetation communities and habitats occurring within the Project's one-mile and 1,000-foot buffer areas.

275. *Describe the methods that were used to map habitats within the Project's one-mile and 1,000-foot buffer areas, including areas that lie outside of the Biological Survey Area.*

Response: Survey methods and resources surveyed, including habitat mapping, are described in AFC Section 5.2.1.6.1 Methods.

Background: Revised Project Arrangement (DR 276-279)

The revised Project boundaries are shown in Figure 1-4R of the Elmore North Geothermal Project Revised General Arrangement Refinement Package. (TN 253187) The Project now proposes a laydown area and an injection well in two locations outside of the BSA, which are depicted within red circles in Figure 1. Information on the land cover types and aquatic resources within the updated Project boundaries has not been provided.

Data Requests:

276. *State whether biological resource surveys were conducted within the revised Project boundaries in Figure 1-4R that are outside of the BSA boundaries in AFC Figure 5.2-4.*

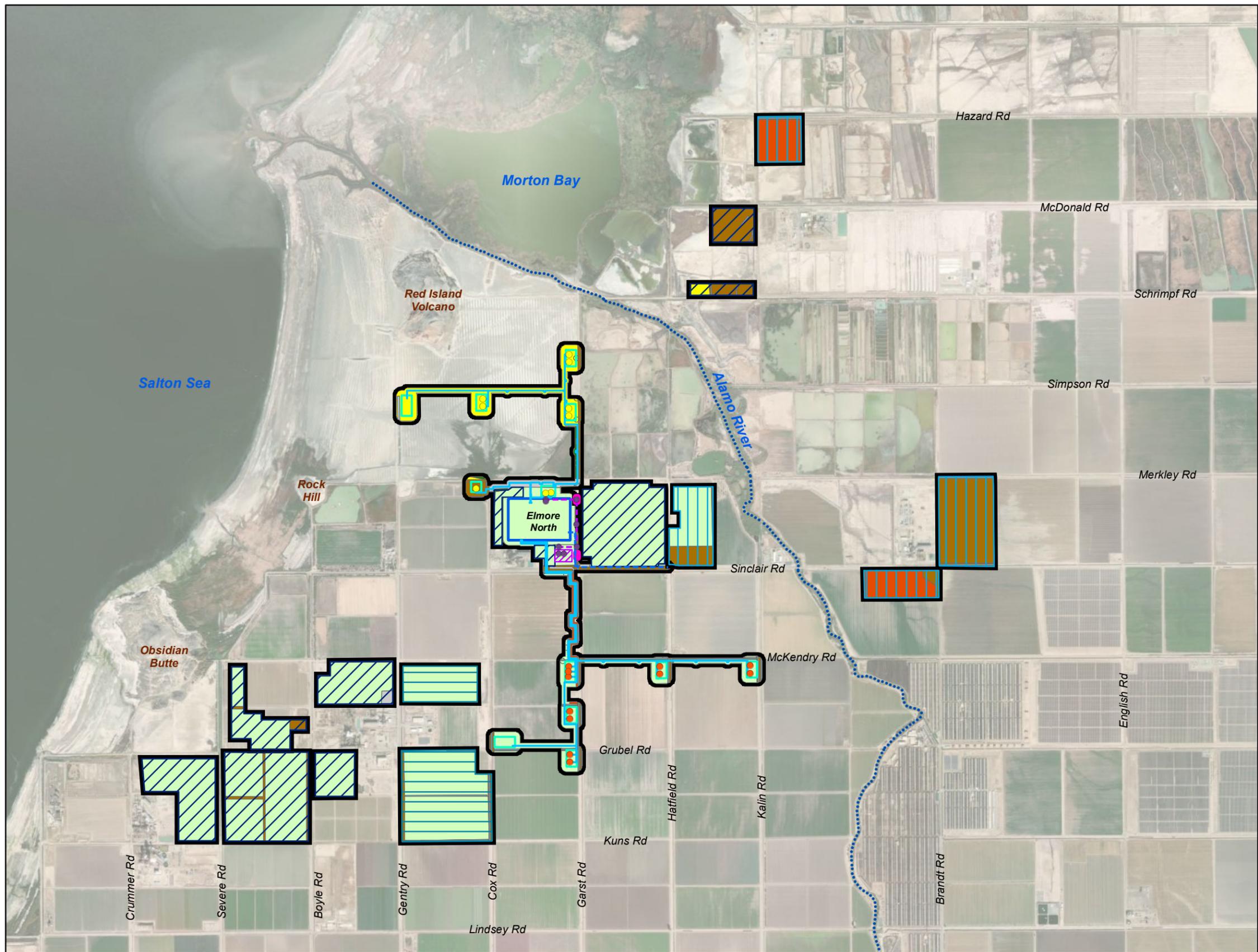
Response: AFC Figure 5.2-1 Biological Study Area, depicts the BSA and project components within the boundaries of the BSA as well as the larger Biological Survey Area. The laydown area and injection wellpads proposed as part of the revised Project boundaries fall within this larger Biological Survey Area and were covered during the biological resource surveys.

277. *If surveys were conducted in response to Data Request No. 269, please describe the survey methods and resources that were surveyed.*

Response: Survey methods and resources surveyed are described in AFC Section 5.2.1.6.1 Methods.

278. *Provide a map that identifies the land cover and vegetation types within the revised Project boundaries in Figure 1-4R.*

Response: Figure DRR-278 depicts the land cover and vegetation types mapped within the revised Project boundaries. The relocated laydown area as part of the revised Project boundaries falls entirely within the Disturbed with Vegetation land cover type. The new injection wellpad to the south falls within the Agriculture and Developed land cover types.



Legend

- Biological Study Area
- Plant
- Well Pad
- Injection Well
- Production Well
- Pipeline
- Water Supply Pipeline
- Gen-Tie Line Pole
- Gen-Tie Line
- Pull Site
- Switching Station
- Borrow Pit
- Construction Camp
- Construction Laydown and Parking Areas

Land Cover and Vegetation Types

- Agriculture
- Canals and Drains
- Developed
- Disturbed with Vegetation
- Disturbed with No Vegetation
- Invasive Southwest Riparian Woodland and Shrubland/Tamarisk Thickets
- North American Arid West Emergent Marsh/Cattail Marsh
- North American Warm Desert Playa/Iodine Bush Scrub
- Open Water

Note:
Impacts to canals and drains are included for completeness;
no IID infrastructure will be impacted by this Project.

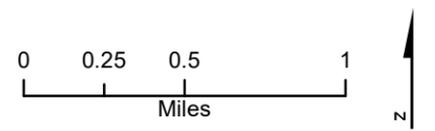


Figure DRR-278
Land Cover and Vegetation Types
Elmore North Geothermal Project
 Imperial County, California

279. *Provide a map that identifies the aquatic resources within the revised Project boundaries in Figure 1-4R.*

Response: As noted in DRR 279 above, the relocated laydown area and injection wellpad fall within the disturbed with vegetation land cover and the agriculture land cover, respectively. There are no aquatic resources in these locations.

Background: Impacts to Canals, Drains, and Desert Pupfish Habitat (DR 280-282)

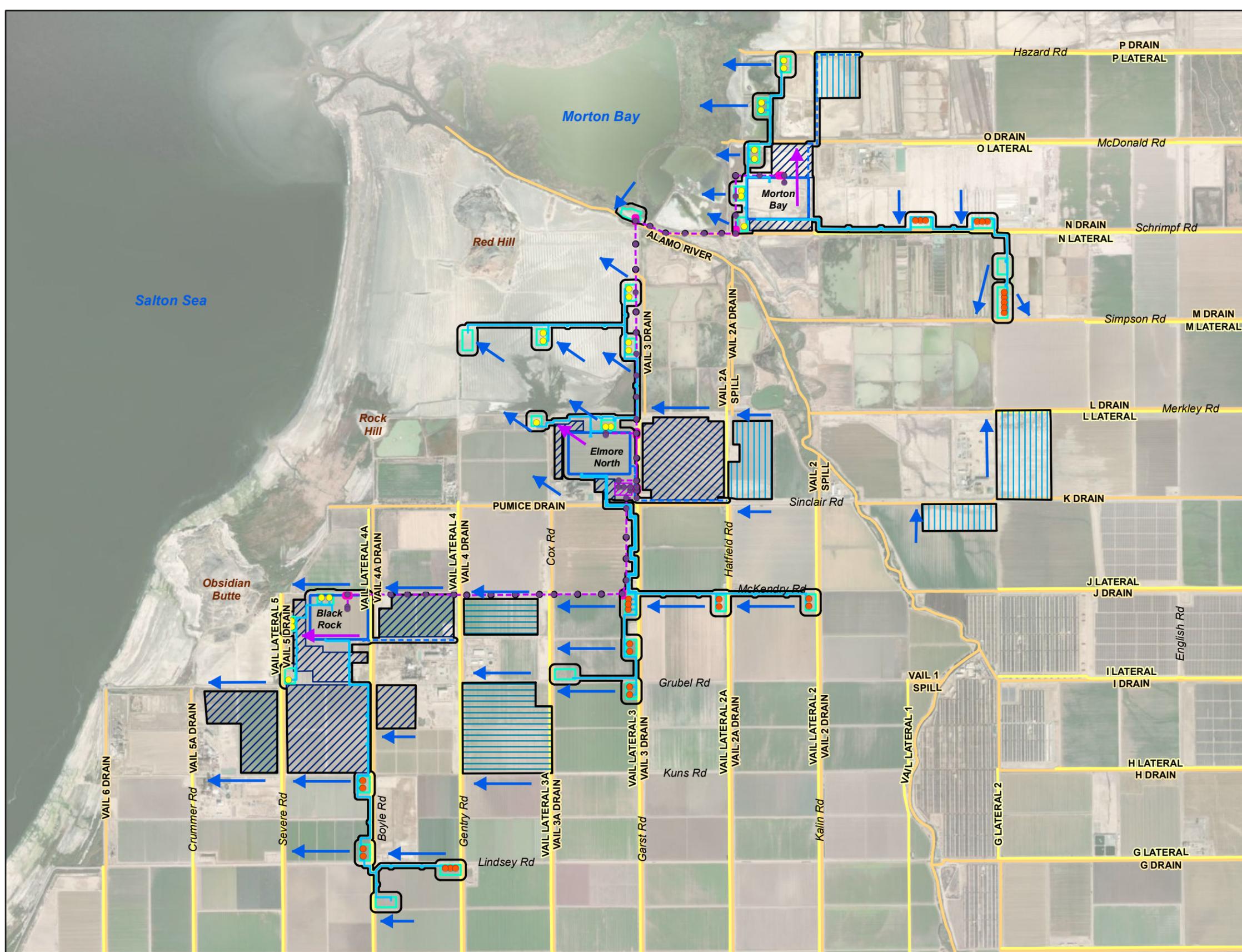
CURE Data Request Set 2 No. 182 asked the Applicant to provide a map that identifies the path of agricultural return flows (irrigation runoff) from the agricultural fields that would be impacted by the Project. In response, Figure DR 182 shows the agricultural return flows from the proposed Project plant site, but not from any of the other agricultural fields that would be impacted by the Project. (TN 254014)

CURE Data Request Set 2 No. 183 asked whether the Applicant analyzed how reduced agricultural return flows associated with the Project would indirectly impact: (a) habitat for the desert pupfish, and (b) vegetation communities that are dependent on the agricultural return flows. The Applicant's response states the analysis "is underway with IID as part of the WSA and impact study analysis." (TN 254014)

Data Requests:

280. *Provide maps that identify the path (including receptor drains) of agricultural return flows (irrigation runoff) from all agricultural fields that would be impacted (permanently or temporarily) by the Project (i.e., field that will be impacted by the proposed well pads, laydown areas, borrow pits, and construction camp).*

Response: Figure DRR-280 identifies all project components along with existing agricultural return flows. Flows from the plant site drain towards Red Hill Bay. Flow directions from all other project components are as shown. Flow direction for the ENGP project site provided in the CURE DR Set 2, Figure DRR 182 has been updated as a result of recent information provided by IID.



- Legend**
- Biological Study Area
 - Plant
 - Well Pad
 - Injection Well
 - Production Well
 - Pipeline
 - Water Supply Pipeline
 - Gen-Tie Line Pole
 - Gen-Tie Line
 - Pull Site
 - Switching Station
 - Borrow Pit
 - Construction Camp
 - Construction Laydown and Parking Areas
 - IID Canal
 - IID Drain
 - ➔ Direction of Agricultural Return Flows - Well Pads
 - ➔ Direction of Agricultural Return Flows - Project Site

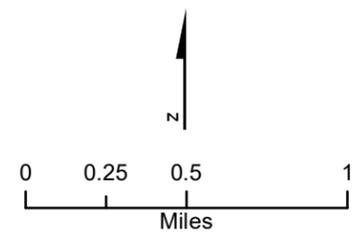


Figure DRR-280
Agricultural Return Flows
 Imperial County, California

281. *State an estimate of when the analysis referenced in response to CURE Data Request Set 2 No. 183 (TN 254014) will be available for review.*

Response: The analysis is still underway as part of the water supply assessment (WSA) and impact study analysis and will be provided when available.

282. *Provide copies of maps or data used to inform or conduct the analysis of reduced agricultural return flows associated with the Project referenced in response to CURE Data Request Set 2 No. 183 (TN 254014).*

Response: Please see the response to DR 281.

Background: Noise Impacts on Wildlife (DR 283)

The AFC at page 5.2-23 proposes 80 dBA as the noise threshold for birds, but does not identify the proposed noise threshold level for impacts to other wildlife taxa (e.g., mammals). CURE Data Request Set 2 No. 238 asked the Applicant to identify the noise threshold level and the Applicant's response to Data Request No. 238 states:

"In general, 80 dB is an acceptable threshold for wildlife noise impacts (AFC Sections 5.2.2.2.6 for wildlife noise discussion and 5.7 for noise). Not all mammals have the same hearing sensitivity. Sensitive mammal species have a similar hearing sensitivity to birds (Dooling, 1978). Mammals present in the Project vicinity are habituated to noise from existing agriculture and power facilities." (TN 254014)

The paper cited in the Applicant's response is not publicly available.

Data Requests:

283. *Provide a copy of Dooling, R.J. 1978. Behavior and Psychophysics of Hearing in Birds. J. Acoust. Soc. Am., Supplement 1. Vol. 65, p. S4.*

Response: Due to potential copyright concerns, a copy has not been included as part of this response package. However, a fee can be paid to download a copy from the following link:
https://link.springer.com/chapter/10.1007/978-1-4613-8074-0_9.

4. Air Quality and Public Health (DR 284-287)

Background: Mitigation Measures for Radon Emissions (DR 284)

Table 5.9-2 in the AFC at page 5.9-4 lists radon as a Toxic Air Contaminant ("TAC") that may potentially be emitted from the Project's operations. The AFC at page 5.9-5 includes radon emissions from the cooling tower in Table 5.9-3. Chronic exposure to radon in humans and animals via inhalation, for example, has resulted in respiratory effects (chronic lung disease, pneumonia, fibrosis of the lung, decreased lung function), while animal studies have also reported effects on the blood and a decrease in body weights. Radium and radon are potent human carcinogens. Radium, via oral exposure, is known to cause lung, bone, head, and nasal passage tumors. Radon, via inhalation exposure, causes lung cancer.

Data Requests:

284. Describe the mitigation measures to reduce impacts on people (i.e., workers, sensitive receptors) from radon emissions identified in the air quality analysis and health risk assessment.

Response: Please see CURE DR Set 1, DRRs 58 and 59 (TN# 253376) for radon emissions and health risk assessment. Like other geothermal facilities, conducting compliance source testing to measure radon emissions and periodic employee radiological dosimeter monitoring are appropriate radiological assessment measures.

Background: Valley Fever (DR 285)

In response to CURE Data Request Set 1 No. 62, the Applicant generally states that it "takes the health and safety of its employees and contractors seriously, and as part of the Project will prepare and submit a construction and operational health and safety plan that will provide the foundation. These plans will provide the foundation for protecting and reducing employee/contractors from physical, environmental, and chemical impacts, including Valley Fever." (TN 253376) However, it is unclear if the Applicant has surveyed the Project areas to be graded for the presence of Valley Fever spores. Valley Fever is endemic in Imperial County and spores in the soil that are disturbed during construction and/or windstorms may cause significant worker and public health impacts.

Data Requests:

285. Describe any efforts undertaken or that will be performed to survey areas of the Project site for the presence of Valley Fever spores.

Response: The Applicant has not performed any surveys for the presences of Valley Fever spores. Prior to commencement of construction, the construction contractor's qualified health and safety professionals will prepare a health and safety plan to ensure workers are protected from potential physical/environmental risks, including conducting Valley Fever spore presence surveys if warranted.

Background: Cumulative Impacts (DR 286-287)

Page 5.1-45 of the AFC states that "[c]umulative multi-source modeling assessments, which are used to analyze impacts from the Project plus nearby new or modified sources, will be performed at a later date following consultation with the appropriate agencies and per the methodology described in Section 5.1.9.5." The AFC at page 5.1-45 states that both 24-hour and annual PM2.5 predicted concentrations during Project operation exceed their respective Significant Impact Level ("SIL") and will require a cumulative modeling analysis. The AFC at page 5.1- 50 states that 1-hour and annual

NO2, 24 hour and annual PM10, and annual PM2.5 predicted concentrations during construction exceed their respective SIL and will require a cumulative modeling analysis. Finally, the AFC at page 5.1-43 explains that impacts from the Project will be combined with other stationary emissions sources within a 6-mile radius that have received construction permits but are not yet operational or are in the permitting process. "The stationary emissions sources included in the cumulative impacts assessment will be limited to new or modified sources (individual emission units) that would cause a net increase of 5 tpy or more per modeled criteria pollutant." (Id.)

In CEC Data Requests Set 1 (TN 252098), CEC staff requested an update on the cumulative impacts analyses mentioned in the AFC, and for the Applicant to provide the modeling files if they are available for review. The Applicant responded that "[a] cumulative impacts analysis modeling protocol is included as Attachment DRR 12-1 and docketed on September 28, 2023 (TN# 252437) for CEC Staff's consideration. This protocol outlines the proposed methodology for conducting the cumulative impacts analysis for the ENGP. The Applicant will conduct the cumulative impacts analysis once the cumulative impacts analysis modeling protocol was finalized and will provide the analysis on or before November 10, 2023." (TN 252490-1) However, the cumulative impacts analyses mentioned in the AFC have not yet been provided by the Applicant.

Data Requests:

286. *Provide an update on the cumulative impacts analyses mentioned in the AFC.*

Response: The cumulative air quality impact assessment was filed on November 13, 2023 filing as Attachment DRR 12-1 (TN# 253081).

287. *Provide the modeling files if they are available for review.*

Response: Access to the modeling files was previously provided to CURE on December 14, 2023 (TN# 253629). Attachment DRR 287 presents an email from the Applicant's consultant providing instructions on how to download the ENGP cumulative modeling files.

Attachment DRR 287
Cumulative Modeling Files
Downloading Instructions



From: Jerry.Salamy@jacobs.com
To: [Salamy, Jerry](#)
Subject: Elmore North Geothermal Project Air and Public Health Modeling Files
Date: Thursday, December 14, 2023 5:41:28 PM

Jacobs File Transfer System

Jerry.Salamy@jacobs.com has sent you a file archive, with the following message:

Hi Tara and David,

This email is transmitting the Elmore North Geothermal Project Air and Public Health Model Files submitted in support of the Applicant's response to CEC Data Request Set 1. The Elmore North cumulative impact files were included with the Black Rock Cumulative Modeling files

Thanks,
Jerry

If you trust Jerry.Salamy@jacobs.com, use the URL below to pick up the file archive (you may need to copy and paste it into your browser):

Download URL: 

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Download contents: elmorenorth.zip

Distribution:

To: dweber@adamsbroadwell.com, trengifo@adamsbroadwell.com

Cc: sgn@eslawfirm.com

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