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STATE OF CALIFORNIA

STATE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

IN THE MATTER OF: MORTON BAY GEOTHERMAL PROJECT APPLICATION FOR CERTIFICATION	Docket No. 23-AFC-01

COMMENTS OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY ON THE PRELIMINARY STAFF ASSESSMENT

September 4, 2024

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ATTACHMENTS

Attach. A: Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from Komal Shukla, Group Delta Consultants re: Review of Preliminary Staff Assessment for Morton Bay Geothermal Project (Sept. 4, 2024)

Attach. B: Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from James J. Clark, Clark & Associates re: Comment Letter on Preliminary Staff Assessment for the Morton Bay Geothermal Project (CEC-700-2024-003-PSA) (Sept. 4, 2024)

Attach. C: Letter to Kelilah D. Federman, Adams Broadwell Joseph & Cardozo from Scott Cashen, Independent Biological Resources Consultant re: Comments on the Preliminary Staff Assessment for the Morton Bay Geothermal Project (Sept. 1, 2024)

Attach. D: Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Timothy Parker, Parker Groundwater Hydrogeologic Consulting re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Aug. 29, 2024)

Attach. E: Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Bwalya Malama, Professor, California Polytechnic State University, San Luis Obispo, CA re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Sept. 4, 2024)

Attach. F: Letter to Sheila Sannadan, Adams Broadwell Joseph & Cardozo from Geoffrey P. Holbrook, Imperial Irrigation District re: Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023 (Sept. 22, 2023)

Attach. G: Authority to Construct/Permit to Operate Permits Issued by the Imperial County Air Pollution Control District for Hudson Ranch Power I (2008)

Attach. H: Reference Documents for Comments of the California Unions for Reliable Energy on the Preliminary Staff Assessment

California Unions for Reliable Energy ("CURE") respectfully submits the following comments on the Preliminary Staff Assessment[1] ("PSA") for the Morton Bay Geothermal Project ("Project" or "Morton Bay").

INTRODUCTION

The PSA prepared for the Morton Bay Project fails to comply with the California Environmental Quality Act ("CEQA").[2] Despite CEQA's stringent requirements for thorough environmental review and public disclosure, the PSA lacks comprehensive analysis, overlooks significant environmental impacts, and fails to propose adequate mitigation measures. These deficiencies undermine the core purpose of CEQA, which is to inform decision-makers and the public about the environmental consequences of proposed projects.

Morton Bay Geothermal, LLC, an indirect, wholly owned subsidiary of BHE Renewables, LLC ("BHER") ("Applicant") filed an Application for Certification ("AFC") to construct and operate a 157-megawatt ("MW") electricity generating facility powered by steam sourced from super-heated geothermal brine.[3] The Project would be located on a 51-acre portion of an approximately 160-acre parcel in the Salton Sea Known Geothermal Resource Area, in Imperial County, south of the Salton Sea.[4] The Project would provide electricity via a new 3.2-mile transmission line to deliver power to a new Imperial Irrigation District ("IID") switching station to be built adjacent to the Elmore North Geothermal Project ("Elmore North") site, under the same ownership.[5]

Construction and commissioning activities are expected to take approximately 29 months.[6] These construction activities include, but are not limited to, construction of the power plant facilities, on-site ancillary equipment, gen-tie line, water supply pipeline, conveyance pipeline, a new switching station and drilling operations for production and injection wells.[7] The Project is designed with an operational life of approximately 40 years.[8]

California Energy Commission ("Commission" or "CEC") Staff prepared the PSA to evaluate the potential environmental effects of the construction and operation of the Project, in compliance with CEQA, the Warren-Alquist Act, and the

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[1] TN # 257470, California Energy Commission, Morton Bay Geothermal Project: Preliminary Staff Assessment (June 2024) (hereinafter "PSA").
[2] Pub. Res. Code § 21000 *et seq*.
[3] *Id.* at p. 1-1.
[4] *Id.* at p. 3-2.
[5] *Id.* at p. 1-1.
[6] *Id.* at p. 3-17.
[7] *Ibid.*
[8] *Id.* at p. 3-27.

California Code of Regulations, Title 20.[9] The PSA also evaluates whether the construction and operation of the Project would conform with all applicable local, state, and federal laws, ordinances, regulations, and standards.[10]

CURE reviewed the PSA, its technical documentation, and available supporting documents with the assistance of its technical experts, including:

- Dr. Komal Shukla, Ph.D., M.S.c., B.S.c., air quality and public health;[11]
- Dr. James J. Clark, Ph.D., M.S., air quality and hazards;[12]
- Timothy Parker, PG, CEG, CHG, water resources;[13]
- Scott Cashen, M.S., biological resources;[14] and
- Dr. Bwalya Malama, Ph.D., M.S., hydrogeologic resources.[15]

Their comments and qualifications are attached hereto as attachments. The Commission must respond to each technical expert's comments separately and fully.[16]

CURE's comprehensive review of the PSA and the analysis by its technical consultants demonstrates that the PSA fails to comply with CEQA. As detailed below, the PSA improperly piecemeals environmental review of the proposed Project by failing to describe and analyze necessary transmission infrastructure to interconnect the proposed Project to the California Independent System Operator ("CAISO") controlled grid. It fails to adequately describe all construction, operation, and decommissioning activities. It fails to describe the existing baseline for sensitive natural communities, Yuma Ridgway's Rail, and aquatic resources.

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[9] PSA at p. 1-1.
[10] *Ibid.*
[11] **Attachment A**, Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from Komal Shukla, Group Delta Consultants re: Review of Preliminary Staff Assessment for Morton Bay Geothermal Project (Sept. 4, 2024) (hereinafter "Shukla Comments")
[12] **Attachment B**, Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from James J. Clark, Clark & Associates re: Comment Letter on Preliminary Staff Assessment for the Morton Bay Geothermal Project (Sept. 4, 2024) (hereinafter "Clark Comments")
[13] **Attachment C**, Letter to Kelilah D. Federman, Adams Broadwell Joseph & Cardozo from Scott Cashen, Independent Biological Resources Consultant re: Comments on the Preliminary Staff Assessment for the Morton Bay Geothermal Project (Sept. 1, 2024) (hereinafter "Cashen Comments").
[14] **Attachment D**, Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Timothy Parker, Parker Groundwater Hydrogeologic Consulting re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Aug. 29, 2024) (hereinafter "Parker Comments")
[15] **Attachment E**, Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Dr. Bwalya Malama, Professor, California Polytechnic State University, San Luis Obispo, CA re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Sept. 4, 2024) (hereinafter "Malama Comments")
[16] Pub. Res. Code § 21091(d); 14 Cal. Code Regs. §§ 15088(a), 15132.

Furthermore, the PSA fails to analyze key impact areas and lacks substantial evidence to support its impact conclusions. For example, with respect to air quality, the PSA ignores new federal emissions standards, fails to quantify emissions for all Project-related activities, relies on erroneous meteorological data, does not meaningfully evaluate localized cumulative impacts, and underestimates construction vehicle emissions. With respect to GHGs, the PSA significantly overestimates avoided GHG emissions and fails to analyze whether the Project would result in net GHG emissions over its lifetime. With respect to public health, the PSA fails to analyze meaningfully analyze radon, cumulative public health, and Valley Fever impacts.

With respect to hazardous waste, the PSA fails to disclose the disposal facility for hazardous waste, omits whether the waste will be recycled during operations, and fails to analyze cumulative impacts from the transportation and disposal of hazardous waste. With respect to solid waste, the PSA fails to adequately analyze the impacts from disposal of nonhazardous filter cake waste and lacks substantial evidence to conclude that cumulative solid waste impacts are less than significant. With respect to transportation, the PSA lacks substantial evidence to support the assumed trip generation rates and selected Vehicle Miles Traveled ("VMT") screening threshold, and it fails to analyze cumulative VMT impacts.

With respect to environmental justice, the PSA fails to adequately analyze the Project's impacts on public health and environmental equity associated with particulate matter emissions, Valley Fever exposure, greenhouse gas ("GHG") emissions, and hazardous materials. With respect to water resources, the PSA lacks substantial evidence to support its water availability analysis and freshwater volume estimates, fails to disclose and analyze the Project's water sources and flood risks, omits analysis of the revised brine pond design, fails to analyze cumulative impacts on water supply and the Salton Sea, and must revise the proposed mitigation measure for evaporation loss to require a water storage tank.

With respect to biological resources, the PSA fails to adequately analyze impacts to numerous special status plant and animal species and their habitat, including the desert pupfish, snowy plover, California black rail, and Yuma Ridgway's rail. With respect to geology, the PSA fails to adequately analyze hazards from induced seismicity, soil erosion, and liquification, and fails to evaluate soil and groundwater contamination from pipeline leaks.

Moreover, the PSA impermissibly defers formulation of solid waste, biological resources, and agricultural mitigation measures. Additionally, the PSA fails to adequately analyze cumulative impacts because it omits the Lithium Valley Specific Plan ("LVSP"), fails to adequately consider existing emissions sources, fails to

evaluate cumulative air quality impacts of emergency generation, does not meaningfully analyze cumulative public health impacts, fails to adequately analyze cumulative impacts from transportation and disposal of hazardous waste, omits an analysis of cumulative VMT impacts, fails to analyze cumulative impacts to water supply and the Salton Sea, and fails to adequately analyze cumulative impacts to biological resources. Finally, the PSA lacks substantial evidence to conclude that there are no other potentially feasible alternatives that could attain the Project Objectives while avoiding or substantially lessening any of the Project's significant impacts.

The Commission must revise the PSA to correct these informational and evidentiary deficiencies and recirculate it for additional public review and comment before it can approve the Project.

LEGAL STANDARD

Certified regulatory programs, such as the Commission's power plant site certification program,[17] are exempt from the provisions of CEQA concerning preparation of environmental impact reports ("EIRs").[18] Instead of preparing an EIR under CEQA, these agencies follow the environmental review process included in their own regulatory program.[19] However, this exemption does not extend to all CEQA requirements.

When conducting its environmental review and preparing documentation, a certified regulatory program remains subject to CEQA's broad policy goals and substantive standards, as outlined in Public Resources Code § 21000 and 21002.[20] These standards require identifying a project's adverse environmental effects, mitigating those effects through feasible alternatives or mitigation measures, and justifying approval actions based on specific, economic, social, or other conditions.[21]

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[17] Pub. Res. Code §§ 25500-25543; 14 Cal. Code Regs. § 15251(j).
[18] Pub. Res. Code at § 21080.5(c); 14 Cal. Code Regs. at § 15250; *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.4th 1215; *John R. Lawson Rock & Oil, Inc. v. State Air Resources Bd.* (2018) 20 Cal.App.5th 77, 95; *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 239.
[19] *Californians for Alternatives to Toxics v. Department of Pesticide Regulation* (2006) 136 Cal.App.4th 1049, 1067.
[20] *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 239; *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 710; *City of Arcadia v. State Water Resources Control Bd.* (2006) 135 Cal.App.4th 1392, 1422; *Environmental Protection Info. Ctr. v. Johnson* (1985) 170 Cal.App.3d 604, 616; *see also* 14 Cal. Code Regs. § 15250; *Californians for Native Salmon & Steelhead Ass'n v Department of Forestry* (1990) 221 Cal.App.3d 1419.
[21] *Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.App.4th 1215.

The agency must also comply with procedural requirements outside of Chapters 3, 4, or Section 21167 of CEQA.[22]

Courts have characterized agencies' environmental documents – such as the PSA – as the functional equivalent of EIRs because they require similar information.[23] The PSA must include a description of the proposed activity, its significant adverse effects, and a discussion of alternatives and mitigation measures.[24] It should provide comprehensive information on the project's potential significant environmental effects and describe mitigation measures and alternatives to reduce these impacts.[25] Since CEQA's broad policy goals apply, the PSA must contain the same basic environmental information as an EIR, including a activity description, impact analysis, mitigation measures, alternatives, and cumulative impacts.[26]

The Commission's power plant certification program requires that staff prepare a preliminary and final environmental assessment of the proposed site and related facilities.[27] The assessment must describe and analyze the project's significant environmental effects, the completeness of the applicant's proposed mitigation measures, and the need for additional or alternative mitigation measures.[28] It must also evaluate the safety and reliability of the project.[29] Finally, the assessment must provide a description of all applicable federal, state, regional and local laws, ordinances, regulations and standards, and assess the

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[22] *See Joy Rd. Area Forest & Watershed Ass'n v. Department of Forestry & Fire Protection* (2006) 142 Cal.App.4th 656, 667 (significant new information in agency's environmental document added after the public comment period required notice and recirculation); *see also Ultramar, Inc. v. South Coast Air Quality Mgmt. Dist.* (1993) 17 Cal.App.4th 689.

[23] *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Environmental Protection Info. Ctr. v. Department of Forestry & Fire Protection* (2008) 44 Cal.4th 459, 481; *Californians for Alternatives to Toxics v. Department of Pesticide Regulation* (2006) 136 Cal.App.4th 1049, 1059; *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2004) 123 Cal.App.4th 1331, 1340; *Santa Barbara County Flower & Nursery Growers Ass'n v. County of Santa Barbara* (2004) 121 Cal.App.4th 864, 872; *Environmental Protection Info. Ctr. v. Johnson* (1985) 170 Cal.App.3d 604, 611; *Natural Resources Defense Council, Inc. v. Arcata Nat'l Corp. (*1976) 59 CA3d 959, 976.

[24] Pub Res C §21080.5(d)(3); *see Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.App.4th 1215; *Conway v. State Water Resources Control Bd.* (2015) 235 Cal.App.4th 671, 680.

[25] *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Katzeff v. Department of Forestry & Fire Protection* (2010) 181 Cal.App.4th 601, 608; *County of Santa Cruz v. State Bd. of Forestry* (1998) 64 Cal.App.4th 826, 830.

[26] *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 247; *Friends of the Old Trees v. Department of Forestry & Fire Protection* (1997) 52 Cal.App.4th 1383, 1393; *Laupheimer v. State* (1988) 200 Cal.App.3d 440, 462; *compare Citizens for Non-Toxic Pest Control v. Department of Food & Agric.* (1986) 187 Cal.App.3d 1575, 1586.

[27] 20 Cal. Code Regs. § 1742(b).

[28] 20 Cal. Code Regs. § 1742(b).

[29] *Id.* at § 1742(d).

project's compliance with them.[30] In the case of noncompliance, the assessment must describe the staff's efforts with the responsible agencies to correct or eliminate the noncompliance.[31]

Staff may rely on information submitted by parties, other public agencies, members of the public, and experts in the field, as well as any other information obtained through staff's independent research and investigation.[32] The applicant has the burden of producing evidence to support all findings and conclusions required for certification of the site and related facilities.[33] For any additional condition, modification, or other provision relating to the manner in which the proposed facility should be designed, sited, and operated in order to protect environmental quality and ensure public health and safety, the proponent of the measure has the burden of making a reasonable showing to support the need for and feasibility of the proposed condition, modification, or provision.[34]

A public agency commits prejudicial abuse of discretion when its actions or decisions do not substantially comply with the requirements of CEQA.[35] The agency abuses its discretion if it does not proceed in the manner required by law or if its decision is not supported by substantial evidence.[36]

Claims of procedural error or informational inadequacies are questions of law subject to independent review by the courts.[37] An environmental assessment will be held inadequate as a matter of law where (1) it omits information required by law and (2) the omission precludes informed decision-making by the lead agency or informed participation by the public.[38] "[T]he existence of substantial evidence supporting the agency's ultimate decision on a disputed issue is not relevant when one is assessing a violation of the information disclosure provisions of CEQA."[39]

The environmental assessment must disclose the analytic route the agency traveled from evidence to action, and failure to do so amounts to a procedural

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[30] *Ibid.*
[31] *Id.* at § 1742(e).
[32] *Id.* at § 1742(b).
[33] *Id.* at § 1745(c).
[34] *Id.* at § 1745(d).
[35] Pub. Res. Code §§ 21168, 21168.5.
[36] *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 512; *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 426.
[37] *Sierra Club*, 6 Cal.5th at 512-13; *see also Laurel Heights Improvement Assoc. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392, fn. 5; *Woodward Park Homeowners Assoc., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, 705.
[38] *Madera Oversight Coal., Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 76-77.
[39] *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 82, quoting *Assn. of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1392.

error—not a factual one.[40] If it lacks analysis or omits the magnitude of an environmental impact, the issue is "not a substantial evidence question" – rather, the courts review the issue de novo.[41] In other words, a conclusory discussion of an environmental impact deemed significant may be held to be inadequate as a matter of law "without reference to substantial evidence," even where mixed questions of law and fact are involved.[42] Only where factual questions *predominate* is a more deferential standard warranted.[43]

The substantial evidence standard applies to an agency's substantive factual conclusions, findings or determinations.[44] Like EIRs, the PSA must use substantial evidence to support its conclusions.[45] Substantial evidence means "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[46] This includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts, but it does not include argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment.[47]

GENERAL COMMENTS

A. The PSA Must Be Revised and Recirculated for Public Comment

In the approval process for an application for certification of a power plant project, the Commission acts as lead agency under CEQA.[48] Because a PSA is the functional equivalent to a draft EIR,[49] the draft environmental document prepared

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[40] *Sierra Club*, 6 Cal.5th at 513, *quoting Topanga Assn. for a Scenic Community v. City of L.A.* (1974) 11 Cal.3d 506, 515.
[41] *Id.* at 514.
[42] *Ibid.*; *see also Save the Hill Group v. City of Livermore* (2022) 76 Cal.App.5th 1092, 1103-04.
[43] *Sierra Club*, 6 Cal.5th at 514, 516 (emphasis added).
[44] Pub. Res. Code § 21168.
[45] *Id.* at § 21168; *see Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936; *Joy Rd. Area Forest & Watershed Ass'n v. Department of Forestry & Fire Protection* (2006) 142 Cal.App.4th 656, 677; *Mountain Lion Coalition v. Fish & Game Comm'n* (1989) 214 Cal.App.3d 1043, 1047.
[46] 14 Cal. Code Regs. § 15384(b).
[47] *Id.* at § 15384(a).
[48] Pub. Res. Code § 25519(c).
[49] *See* Memorandum of Understanding Between the U.S. Department of the Interior, Bureau of Land Management California Desert District and the California Energy Commission Staff, Concerning Joint Environmental Review For Solar Thermal Power Plant Projects, p. 4, available at http://www.energy.ca.gov/siting/solar/BLM_CEC_MOU.PDF ("[t]he assessments provided by the Parties must be sufficient to meet all federal and state requirements for NEPA and CEQA and shall

by Staff must meet CEQA's standards to inform decision-makers and the public of a project's environmental impacts.

CEQA has two basic purposes. Unfortunately, the PSA falls short of satisfying either of them. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[50] The PSA, like an EIR, is the "heart" of this requirement.[51] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[52] CEQA mandates that an EIR, or EIR equivalent, be prepared "with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences."[53] Further, in preparing an environmental document, "an agency must use its best efforts to find out and disclose all that it reasonably can."[54] Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.[55]

The PSA could not have satisfied these purposes because the Applicant failed to provide Staff with the information necessary to draft a CEQA-compliant document. Although the PSA purports to contain similar analysis to those contained in an EIR, the PSA does not contain the information required by CEQA and its implementing guidelines.[56] Because the Applicant neglected to provide Staff with sufficient information, Staff issued a PSA that is incomplete with respect to potentially significant impacts and mitigation measures for several resource areas.[57]

It appears that Staff's goal is to include additional analyses and mitigation measures in the Final Staff Assessment ("FSA"). However, CEQA requires recirculation of an EIR, or EIR equivalent, when significant new information is added to the EIR following public review but before certification.[58] The CEQA

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be included as part of the joint Preliminary Staff Assessment/Draft Environmental Impact Statement and the joint Final Staff Assessment/Final Environmental Impact Statement.")

[50] 14 Cal. Code Regs. § 15002(a)(1).)

[51] *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

[52] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795.

[53] 14 Cal. Code Regs. § 15151.

[54] *Id.* at § 15144.

[55] *Id.* at § 15002(a)(2) and (3). *See also Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564; *Laurel Heights Improvement Ass'n v. Regents of the University of California* (1988) 47 Cal.3d 376, 400.

[56] Pub. Res. Code § 21100; 14 Cal. Code Regs. §§ 15120(c), 15122-15131.

[57] PSA at p. 1-7.

[58] Pub. Res. Code § 21092.1.

Guidelines clarify that new information is significant if "the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect."[59] The purpose of recirculation is to give the public and other agencies an opportunity to evaluate the new data and the validity of conclusions drawn from it.[60] Consequently, Staff's objective to include numerous additional analyses and mitigation measures in the FSA violates CEQA. Rather, Staff must recirculate a revised PSA that includes the outstanding analyses and currently unidentified mitigation measures.

As shown below, the PSA must be revised to inform the public and decision makers of the Project's significant impacts, and to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures. Thus, Staff, after receiving the necessary information from the Applicant to draft a complete PSA, must correct the shortcomings outlined below, and circulate a revised PSA for public review and comment.

B. The PSA Fails to Adequately Analyze Cumulative Impacts

The PSA fails to evaluate the Project's impacts in connection with key Lithium Valley projects. This results in a deficient cumulative impact analysis which underestimates the severity of the Project's impacts when combined with the impacts of other concurrent projects in the region, and a failure to mitigate them.

An EIR must discuss a cumulative impact if the project's incremental effect combined with the effects of other projects is "cumulatively considerable."[61] This determination is based on an assessment of the project's incremental effects "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."[62] The purpose of the cumulative impact analysis is to avoid considering projects in isolation, as failing to account for cumulative harm could result in severe environmental damage.[63] Without this analysis, piecemeal approval of several projects with related impacts could lead to significant environmental harm.[64]

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[59] 14 Cal. Code Regs. § 15088.5.
[60] *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (1981) 122 CalApp3d 813, 822.
[61] 14 Cal. Code Regs. § 15130(a).
[62] *Id.* at § 15065(a)(3); *Banning Ranch Conservancy v. City of Newport* (2012) 211 Cal.App.4th 1209, 1228.
[63] *Whitman v. Board of Supervisors* (1979) 88 Cal.App.3d 397, 408.
[64] *Golden Door Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 527; *San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 720; *Las Virgenes Homeowners Fed'n v. County of Los Angeles* (1986) 177 Cal.App.3d 300, 306.

The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."[65] These individual effects may arise from a single project or multiple projects.[66] Cumulative impacts can result from individually minor but collectively significant projects occurring over time.[67]

A cumulative impact is the change in the environment created by the combination of the project reviewed in the EIR together with other projects causing related impacts.[68] The cumulative impact from several projects is the change in the environment that results from the incremental effect of the project when added to the past, present and probable future projects.[69]

The CEQA Guidelines outlines two methods for satisfying the cumulative impact analysis requirement: this list-of-projects approach and the summary-of-projections approach. Under either method, the EIR must summarize the expected environmental effects of the project and related projects, provide a reasonable analysis of the cumulative impacts, and examine reasonable options for mitigating or avoiding the project's contribution to any significant impacts.[70] The EIR should also reference additional information, stating where it is available.[71] At least one of these methods must be used to discuss cumulative impacts.[72]

The PSA adopts the list-of-projects approach.[73] An EIR's evaluation of cumulative impacts may be based on a list of past, present, and probable future projects producing related impacts, including, if necessary, projects outside the lead agency's control.[74] The basic standard for compiling a list of cumulative projects is that projects should be included when it is reasonable, feasible, and practical to do so, given the information available, and when failure to include such projects would lead to an inadequate analysis of the severity and significance of the cumulative impact questions.[75] Within that framework, a lead agency has discretion to select a

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[65] 14 Cal. Code Regs. § 15355.
[66] *Id.* at § 15355(a).
[67] *Id.* at § 15355(b).
[68] *Id.* at § 15130(a)(1).
[69] *Id.* at §§ 15065(a)(3), 15130(b)(1)(A), 15355(b).
[70] *Id.* at §§ 15130(b)(1)(A)-(B), 15130(b)(4)-(5).
[71] *Id.* at § 15130(b)(4).
[72] *League to Save Lake Tahoe Mtn. Area Preservation Found. v. County of Placer* (2022) 27 Cal.App.5th 63, 149.
[73] PSA at pp. 1-7 to 1-8.
[74] 14 Cal. Code Regs. § 15130(b)(1)(A).
[75] *Golden Door Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 529; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 723; *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 74.

reasonable cutoff date for which projects to include in the cumulative impact analysis, provided that determination is supported by substantial evidence.[76]

The PSA lists the projects used in the cumulative impacts analysis in Table 1-2.[77] However, this list is incomplete as it omits several key projects, most notably the LVSP. The LVSP aims to designate land use for future development of power plants, mineral recovery, lithium battery manufacturing, and other renewable industries within an approximately 51,786-acre area adjacent to the Salton Sea.[78] This plan will not only guide development, but also regulate the land use, design, and community benefits, making it a critical component of the region's environmental planning.[79]

The PSA fails to mention the LVSP or include it in the cumulative impact analysis, despite its significant implications for the region's environmental future. The omission of such a significant project renders the impact analysis inadequate and undermines the comprehensiveness required by CEQA. A thorough and legally sound cumulative impact analysis must include all reasonably foreseeable projects to accurately assess cumulative environmental impacts. The PSA fails to meet this standard by omitting one of the region's most significant planning projects.

Caselaw consistently demonstrates that projects under concurrent or reasonably foreseeable future environmental review should be considered in the cumulative impact analysis. For example, the court in *San Franciscans for Reasonable Growth v. City & County of San Francisco* held that a development proposal should be considered a probable future project once the environmental review process for the project is underway, regardless of the potential length and outcome of the approval process.[80] In *Friends of the Eel River v. Sonoma County Water Agency*, the court concluded that pending federal impact reviews rendered related projects probable future projects.[81] In G*olden Door Props., LLC v. County of San Diego*, the court mandated the inclusion of various "in process" general plan amendment projects in the cumulative impact analysis for a countywide climate plan.[82] Finally, in *Gray v. County of Madera*, the court upheld the inclusion of a

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[76] *South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 245, 337-38; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 74 n. 14.
[77] PSA at pp. 1-9 to 1-10.
[78] Imperial County, Lithium Valley, Developing Lithium Valley, https://lithiumvalley.imperialcounty.org/planning/ (last visited July 29, 2024).
[79] *Ibid.*
[80] *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61.
[81] *Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal.App.4th 859, 870.
[82] *Golden Doors Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 529.

range of projects in the analysis, emphasizing that a project should be considered a probable future project when significant time and financial resources have been invested in its regulatory review and an application has been filed.[83]

The LVSP is undeniably foreseeable and should be included in the cumulative impact analysis. In June 2022, SB 125 appropriated funding to develop the LVSP and its Programmatic Environmental Impact Report ("PEIR"), indicating clear legislative and financial commitment to the project. In February 2023, prior to the filing of the proposed Project's application, Imperial County released a final baseline report to establish an inventory of existing conditions of the LVSP, demonstrating substantial progress.[84] In October 2023, nearly three months before the close of discovery and eight months before the release of the PSA, Imperial County released the land use alternatives memorandum for the LVSP, identifying potential approaches to land use designations that will determine development intensity.[85] In December 2023, one month prior to the close of discovery and six months prior to the release of the PSA, Imperial County released a notice of preparation and initial study for the LVSP PEIR.[86]

The lead agency has discretion to determine a reasonable cutoff date for including projects in the cumulative impact analysis; however, the agency's selection must be supported by substantial evidence.[87] Given the significant developments in the LVSP's environmental review process by January 22, 2024, this date is the most reasonable cutoff.[88] By this time, discovery in this proceeding closed and the Commission had sufficient access to information about the LVSP and

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[83] *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127.
[84] Imperial County, Lithium Valley Specific Plan: Final Baseline Report (Feb. 2024) (hereinafter "LVSP Baseline Report"), *available at* https://lithiumvalley.imperialcounty.org/wp-content/uploads/2024/02/LithiumValley_Final-Baseline-Report_2.15.24_wAppendices-1.pdf.
[85] Imperial County, Lithium Valley Specific Plan: Land Use Alternatives Memorandum (Oct. 27, 2023) (hereinafter "LVSP Alternatives Memo"), *available at* https://lithiumvalley.imperialcounty.org/wp-content/uploads/2023/11/Lithium-Valley-Land-Use-Alternatives-Memorandum_102723.pdf.
[86] Imperial County, Planning & Development Services Department, Notice of Preparation of Draft Program EIR for the Lithium Valley Specific Plan and Notice of Public Scoping Meeting (Dec. 7, 2024) (hereinafter "LVSP NOP"), *available at* https://files.ceqanet.opr.ca.gov/293418-1/attachment/4ETSzki0f_7UZ6vlSLrr6EHVNoqc6ranc5yNocSVW6dFO61Lcu87l2NnQXSTofwF-IY0c1ZvzfWOK1qs0; Imperial County, Initial Study: Imperial County Lithium Valley Specific Plan (Dec. 2023) (hereinafter "LVSP Initial Study"), *available at* https://files.ceqanet.opr.ca.gov/293418-1/attachment/E3f8TOUtzLRvU5g3BM31wQq-4ic5MD5SwgYVXg3QYx41n1ytItuL70sQ_ZkJnuznpnArgMDiXeM5qorf0.
[87] *South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 245, 337-38; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 74 n. 14.
[88] TN # 252285, Presiding Member's Scheduling Order for the Morton Bay Geothermal Project Proceeding (Sept. 15, 2023) p. 6.

its potential environmental impacts to include it in its analysis. Even if the cutoff date were set to July 2023, when the application for the proposed Project was deemed complete, there was still ample information available to assess the LVSP's impacts in combination with the proposed Project. By this date, funding for the LVSP and its PEIR had already been appropriated and the final baseline report had been released.

The legislative actions, detailed preparatory documents, and clear legal precedents unequivocally establish the LVSP as a probable future project. Consequently, the LVSP must be included in the cumulative impact analysis to ensure a thorough and accurate environmental assessment of the proposed Project's cumulative impact. Ignoring the LVSP undermines the credibility of the PSA and fails to comply with established legal standards for comprehensive environmental review.

Several impact areas are directly affected by the PSA's failure to include the LVSP as part of the cumulative impact analysis. For example, the LVSP will involve substantial industrial development, including additional geothermal power plants and lithium recovery operations, which are known to be significant sources of air pollutants. The combined emissions from these new facilities, when added to those from the Project, could result in higher levels of particulate matter ("PM"), nitrogen oxides ("NOx"), and sulfur dioxide ("SO_2") in the region. The cumulative effect of these emissions, particularly considering the area's existing air quality issues, may exacerbate health problems such as respiratory diseases and further degrade air quality in the region. Therefore, the PSA must analyze the potential for cumulative impacts arising from the simultaneous operation of facilities under the LVSP and the Project.

Both the LVSP and the Project are expected to contribute to GHG emissions. Given California's stringent GHG reduction goals, it is critical that the cumulative impact of these emissions be assessed to ensure that regional development aligns with the state's climate policies. The omission of the LVSP from the cumulative impact analysis in the PSA neglects a potentially significant contributor to the region's overall GHG emissions, which could undermine efforts to meet state-mandated climate targets.

The industrial activities anticipated under the LVSP, such as lithium extraction and battery manufacturing, are likely to generate significant quantities of hazardous waste. This waste, when combined with the hazardous waste produced by the Project, could pose a substantial risk to public health and the environment if not properly managed. The cumulative impact of hazardous waste generation and disposal must be analyzed in the PSA to ensure appropriate mitigation measures are in place and that the region's waste management infrastructure can handle the increased load.

The development of the LVSP is likely to result in increased traffic due to the transportation of raw materials, products, and workforce to and from the sites. When considered alongside the transportation impacts of the Project, the cumulative effect could lead to significant traffic congestion, increased road wear, and higher levels of vehicle emissions in the region. The PSA must include analysis of these combined transportation impacts to assess their full extent and develop appropriate mitigation strategies.

The LVSP will demand significant water resources for its operations, particularly in industries like energy production, mineral recovery, and battery manufacturing.[89] This demand, in combination with usage of the Project, could strain local and regional water supplies, especially in an area already facing water scarcity challenges. A comprehensive cumulative impact analysis is required to evaluate these issues and propose strategies to mitigate the combined effects on water availability and quality in the region.

In conclusion, the LVSP is a substantial project that will play a critical role in shaping the region's industrial and environmental landscape. Its omission from the PSA's cumulative impact analysis represents a significant gap in the assessment process. Including the LVSP in the cumulative impact analysis is essential to ensure a comprehensive evaluation of the potential environmental impacts across key areas such as air quality, GHGs, hazardous waste, water resources, and transportation. This will help in the development of more effective mitigation measures and in ensuring that the environmental health of the region is protected as both projects advance.

C. The PSA Improperly Defers the Identification of Mitigation Measures

Several of the Conditions of Certification ("COC") in the PSA impermissibly defer the preparation of plans, reports, and/or studies as mitigation for the Project's significant environmental effects until after certification and without specific performance standards. The PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project; "Additional impacts associated with project components outside of CEC's jurisdiction, such as the well complex licensed by CalGEM, the temporary structures such as the laydown yard to be permitted by Imperial County, and the switchyard to be permitted by IID,

[89] LVSP Alternatives Memo at p. 2 (Phase 1 water consumption estimated between 91,881 acre feet per year ("AFY") and 144,401 AFY, and Phase 2 water consumption estimated between 18,775 AFY and 133,292 AFY).

require mitigation to be less than significant."[90] The following measures are deferred until after the Commission has certified the Project:

- COC SOLID WASTE-2/MM SOLID WASTE-2: requires identification of an alternative disposal facility and mandates further environmental review if at any time the Desert Valley Company Monofill ("DVCM") Class II facility can no longer accept nonhazardous filter cake.[91]

- COC BIO-19/MM BIO-19: requires the Project owner to incorporate design features to allow escape of wildlife that may enter the ponds within the facility and prior to construction of the facility ponds, the Project owner must submit a Facility Pond Wildlife Escape and Monitoring Plan to the California Department of Fish and Wildlife ("CDFW") for review and comment and to the CPM for review and approval.[92]

- COC BIO-20/MM BIO-20: requires the Project owner to prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. The plan must detail the monitoring methods and duration, methods for estimating carcass persistence and searcher efficiency, impact thresholds (i.e., number of collision deaths), and remedial actions to be implemented during operations.[93]

- COC VIS-2/MM VIS-2: requires the Project owner to submit to the CPM for approval and simultaneously to the Director of Planning and Development Services for the County of Imperial for review and comment a light pollution control plan.[94]

- COC LAND-3/MM LAND-3: allows the Project owner to implement one of three options to mitigate for agricultural land conversation of Farmland of Statement Importance (including the transmission line and switching station.[95]

  The following measure is deferred to other agencies:

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[90] PSA at p. 5.6-30.
[91] *Id.* at p. 5.12-8.
[92] *Id.* at p. 5.2-178—179.
[93] *Id.* at p. 5.2-178.
[94] *Id.* at p. 5.15-39.
[95] *Id.* at p. 5.8-28—29.

- COC BIO-22/MM BIO-22: requires the Project to comply with state and federal regulatory requirements pertaining to wetlands.[96]

The staff assessment in an AFC proceeding is an independent report by Commission Staff that evaluates "the significant environmental effects of a project, the completeness of the applicant's proposed mitigation measures, and the need for, and feasibility of, additional or alternative mitigation measures."[97] "In developing its assessment, staff may rely on information submitted by parties, other public agencies, members of the public, and experts in the field, as well as any other information obtained through staff's independent research and investigation."[98] Identifying all feasible mitigation measures is crucial to assist the Commission in meeting CEQA's requirement that mitigation measures be identified for each significant effect. The COCs and mitigation measures discussed herein must be revised to adequately minimize significant adverse impacts consistent with CEQA's requirements in a revised and recirculated PSA.

1. The PSA Defers the Formulation of Mitigation Measures to an Uncertain Future Time

The mitigation measures in the PSA fail to provide adequate assurance that a future plan, report, or study will actually mitigate the Project's significant environmental impacts. Under CEQA, "[f]ormulation of mitigation measures should not be deferred until some future time."[99] "Deferred mitigation violates CEQA if it lacks performance standards to ensure the mitigation goal will be achieved."[100] An EIR is inadequate if "[t]he success or failure of mitigation efforts…may largely depend upon management plans that have not yet been formulated, and have not been subject to analysis and review within the EIR."[101] "A study conducted after approval of a project will inevitably have a diminished influence on decisionmaking. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA."[102]

Several CEQA cases establish that mitigation measures relying on tentative plans or studies for future mitigation after project approval "significantly undermine[] CEQA's goals of full disclosure and informed decision making; and consequently, these mitigation plans have been overturned on judicial review as

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[96] *Id.* at p. 5.2-183.
[97] 20 Cal. Code Regs. § 1742.
[98] *Ibid.*
[99] 14 Cal. Code Regs. § 15126.4(a)(1)(B).
[100] *Golden Door Properties, LLC v. Cnty. of San Diego* (2020) 50 Cal.App.5th 467, 520.
[101] *San Joaquin Raptor Rescue Ctr. v. Cnty. of Merced* (2007) 149 Cal.App.4th 645, 670, *as modified* (Apr. 11, 2007).
[102] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307.

constituting improper deferral of environmental assessment."[103] For instance, in *Sundstrom*, the court rejected a determination that a project would not result in significant impacts because the success of mitigation was uncertain.[104] In that case, two mitigation measures called for a hydrological study and a soil study to be prepared to determine whether the project would have adverse effects.[105] The court stated "[b]y deferring environmental assessment to a future date, the conditions run counter to that policy of CEQA which requires environmental review at the earliest feasible stage in the planning process."[106] A study conducted after approval of a project will diminish the influence on decision making and "[e]ven if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA."[107] An agency cannot hide behind its failure to gather relevant data.[108]

Additionally, in *Communities for a Better Environment v. City of Richmond*, the court held that the GHG mitigation plan was deficient and deferred because it "merely propose[d] a generalized goal of no net increase in greenhouse gas emissions and then set[] out a handful of cursorily described mitigation measures for future consideration that might serve to mitigate the 898,000 metric tons of emissions resulting from the Project."[109] The court determined that the mitigation measures were undefined, and "[t]he only criteria for 'success' of the ultimate mitigation plan" was "the subjective judgment of the City Council, which presumably will make its decision outside of any public process a year after the Project has been approved."[110] The court concluded that the mitigation plan violated CEQA because it "offered no assurance that the plan for how the [p]roject's greenhouse gas emissions would be mitigated to a net-zero standard was both feasible and efficacious…."[111]

The PSA improperly defers several mitigation measures to future studies or plans without adequate performance standards in violation of CEQA's requirements. Although CEQA allows for certain aspects of mitigation to be appropriately deferred, the PSA fails to do so here. First, MM BIO-20 requires the

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[103] *Communities for a Better Env't v. City of Richmond* (2010) 184 Cal.App.4th 70, 92; *see, e.g., Gentry v. Murrieta* (1995) 36 Cal.App.4th 1359; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296.
[104] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 306-07.
[105] *Id.* at p. 306.
[106] *Id.* at p. 307.
[107] *Ibid., citing to Mount Sutro Defense Committee v. Regents of University of California* (1978) 77 Cal.App.3d 20, 35.
[108] *Ibid.*
[109] *Communities for a Better Env't v. City of Richmond* (2010) 184 Cal.App.4th 70, 93.
[110] *Ibid.*
[111] *Id.* at p. 95.

Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan after Project approval.[112] COC BIO-20 requires that "[t]he project owner shall prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. This plan shall incorporate Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006) guidelines and provide specific details on design, placement, and maintenance of line markers, as well as the associated analysis requested. The plan shall detail the monitoring methods and duration, methods for estimating carcass persistence and searcher efficiency, impact thresholds (i.e., number of collision deaths), and remedial actions to be implemented during operations."[113] This measure lacks performance standards which are critical to preventing avian collision deaths. Specifically, the PSA should be recirculated to include the specific details on design, placement, and maintenance of line markers before the Project is approved. COC BIO-20 should also be strengthened to revise the measure to state that "If impacts are estimated to exceed the thresholds established in the Plan, remedial actions shall be implemented within 60 days and monitoring shall continue, up to a period of 10 years, to determine effectiveness of remedies."[114]

Second, the Facility Pond Wildlife Escape and Monitoring Plan required by COC BIO-19 does not adequately mitigate impacts to biological resources from the floating cover required by WATER-9 and constitutes impermissibly deferred mitigation for failure to include the design features that will be incorporated to allow wildlife to escape the ponds within the facility.[115] COC BIO-19 requires that "The project owner shall incorporate design features to allow escape of wildlife that may enter the ponds within the facility. These may include, but are not limited to, gradual slopes, side traction to facilitate upward movement, escape ramps, floating platforms, and/or wildlife ledges. Prior to construction of the facility ponds, the project owner will submit a Facility Pond Wildlife Escape and Monitoring Plan to CDFW for review and comment and to the CPM for review and approval. The plan will outline the wildlife escape methods, procedures for handling dead or injured wildlife, wildlife rehabilitation centers that take injured animals, and schedule for monitoring during the first year of pond operation."[116] The PSA does not provide any rational as to why it was infeasible to include the design features to be incorporated to allow wildlife to escape the ponds within the facility. The PSA also fails to adequately evaluate the effectiveness of each method, or provide performance standards to ensure that the most effective measures are selected for inclusion in the plan.

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[112] PSA at p. 5.2-180.
[113] *Ibid*.
[114] Cashen Comments, at p. 33.
[115] PSA at pp. 5.2-178-179.
[116] *Ibid*.

Third, providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan.[117] The PSA does not state why specifying these light pollution performance standards were impractical or infeasible at the time the PSA was drafted. In *Preserve Wild Santee v. City of Santee,* the city impermissibly deferred mitigation where the EIR did not state why specifying performance standards for mitigation measures "was impractical or infeasible at the time the EIR was certified."[118] The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.[119] Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any standards is inadequate.[120] Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.[121]

Fourth, COC SOLID WASTE-2/MM SOLID WASTE-2 impermissibly defers formulation of specific performance standards and provides no standards for determining whether mitigation will be required, which violates CEQA. The PSA fails to analyze the impacts from disposal of the Project's nonhazardous filter cake at the Copper Mountain Landfill. Instead, it proposes COC SOLID WASTE-2/MM SOLID WASTE-2, which requires identification of an alternative disposal facility and mandates further environmental review if the DVCM can no longer accept nonhazardous filter cake. No evidence is offered in the PSA to explain why this analysis and mitigation measure is deferred. COC SOLID WASTE-2/MM SOLID WASTE-2 is contrary to CEQA, and the PSA must be revised to include a thorough impacts analysis regarding the use of the Copper Mountain Landfill.

Finally, COC LAND-3/MM LAND-3 lacks the necessary analysis pursuant to CEQA Guidelines § 15126.4 concerning the feasibility of each mitigation option, particularly regarding the payment of fees. The measure also fails to commit the Applicant to one of Imperial County's mitigation options. The PSA determines that the Project would permanently impact approximately 6.15 acres of Farmland of Statewide Importance.[122] The PSA concludes that impacts to Important Farmlands would be significant and proposed COC LAND-3/MM LAND-3 to mitigate these impacts to less-than-significant levels.[123] This measure is "based on Imperial

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[117] Cashen Comments, at p. 24.
[118] *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.
[119] *Ibid.*
[120] *Endangered Habitats League, Inc. v. County of Orange,* (2005) 131 Cal.App.4th 777, 794.
[121] *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.
[122] PSA at p. 5.8-17.
[123] *Ibid.*

County's Mitigation Monitoring and Reporting Program [("MMRP")] in the Final Programmatic Environmental Impact Report for the Imperial County Renewable Energy and Transmission Element Update. LAND-3 would require the project owner to implement one of Imperial County's mitigation options for conversion of Important Farmlands. These options include procuring Agricultural Conservation Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County."[124]

According to CEQA, "[w]here several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified."[125] CEQA prohibits the deferred formulation of mitigation measures until a future time.[126] Mitigation measures must be known, feasible, and effective.[127] In *Kings County*, the court evaluated a mitigation agreement "pursuant to which [the Applicant] agreed to contribute financially to [a] water district's ground water recharge program."[128] However, the evidence revealed uncertainty as to the availability of water for purchase.[129] The court stated "to the extent the… agreement was an independent basis for finding no significant impact, the failure to evaluate whether the agreement was feasible and to what extent water would be available for purchase was fatal to a meaningful evaluation by the city council and the public."[130] Thus, where it is unclear whether funds as mitigation will actually be used to implement a mitigation measure, the use of such technique lacks substantial evidence under CEQA.[131]

Here, COC LAND-3/MM LAND-3 fails to analyze the feasibility of each mitigation option and fails to commit the Applicant to one of Imperial County's mitigation options. The MMRP in the County's PEIR does not allow for the deferred selection of one of the available options.[132] Rather, it requires that one of the mitigation options be "***implemented***" "prior to the issuance of a grading permit or building permit…."[133] There is no basis in the PEIR to defer the selection of a mitigation measure for the Project's significant impacts on agricultural resources. The PSA also does not explain why a particular mitigation option could not be

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[124] *Ibid.* (internal citation omitted).
[125] 14 Cal Code Regs. § 15126.4(a)(1)(B).
[126] *Ibid.*
[127] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727-28.
[128] *Id.* at p. 709.
[129] *Id.* at p. 728.
[130] *Ibid.*
[131] *Ibid.*
[132] Imperial County, Final Programmatic Environmental Impact Report: Imperial County Renewable Energy and Transmission Element Update (undated) pp. 5-4 to 5-5 (emphasis added), *available a*t https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmrp.pdf.
[133] *Ibid.*

selected and evaluated at this time. Without any evidence to the contrary, the PSA has deferred the analysis of how the Project's significant impacts on agricultural lands will be mitigated, violating CEQA.

The PSA must be revised to ensure that all feasible mitigation measures are not deferred and adequately reduce impacts to a less than significant level.

2. The PSA Defers to Other Agencies to Analyze the Impacts or Identify Mitigation Measures for the Project

The PSA improperly defers to other agencies to analyze the impacts or identify mitigation measures for the Project, such as for impacts to biological resources. When a project is to be carried out or approved by more than one public agency, the lead agency is responsible for preparing an EIR, negative declaration or CEQA equivalent document for the project.[134] Where two or more public agencies will be involved with a project, the lead agency is the public agency that will be carrying out the project, with the greatest responsibility for approving the project, or with general governmental powers (as opposed to an air pollution control district, for example), even if the project would be located within the jurisdiction of another public agency.[135] In evaluating the significance of the environmental effect of a project, the lead agency must consider the Project's direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment.[136]

CEQA establishes a process whereby a lead agency conducts environmental review of the project, and a responsible agency works with the lead agency to identify impacts and mitigation measures to be included in the environmental review document. Section 21081.6(c) provides:

> A responsible agency, or a public agency having jurisdiction over natural resources affected by the project, shall either submit to the lead agency complete and detailed performance objectives for mitigation measures which would address the significant effects on the environment, or refer the lead agency to appropriate, readily available guidelines or reference documents.[137]

In COC BIO-22/MM BIO-22, the PSA requires the Applicant to comply with state and federal regulatory requirements pertaining to wetlands, which is not mitigation as defined in the CEQA statutes. As the lead agency, the Commission is responsible for identifying the specific mitigation needed to reduce the Project's

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[134] *Id.* § 15050(a).
[135] *Id.* § 15051.
[136] *Id.* § 15064(d).
[137] Pub. Res. Code § 21081.6(c).

wetland impacts to less-than-significant levels. The Commission cannot defer that responsibility to other agencies (i.e., USACE and RWQCB), as proposed in BIO-22. In its comment letter to the lead agency for another project, the RWQCB (Lahontan Region) stated:

> It is inappropriate to rely upon agency regulations for determining that impacts will be at insignificant levels…Water Board staff strongly discourages the County [of Kern] from attempting to defer to the later preparation of Waste Discharge Requirements (WDRs) permits to address the above issues. Such an approach would constitute deferment of mitigation. In the event that this occurs, the Water Board may require substantial modifications to the Project during the course of permitting review to ensure all water quality impacts [are] adequately mitigated. Water Board staff encourages the Project proponents to initiate detailed plans early in the process to allow for full and adequate review of the Project to address the above issues. This planning should be concurrent with the CEQA process as opposed to a sequential permitting approach.[138]

The RWQCB (San Francisco Bay Region) raised similar issues in its comment letter on yet another project:

> CEQA requires that mitigation measures for each significant environmental effect be adequate, timely, and resolved by the lead agency. In an adequate CEQA document, mitigation measures must be feasible and fully enforceable through permit conditions, agreements, or other legally binding instruments (CEQA Guidelines Section 15126.4). Mitigation measures to be identified at some future time are not acceptable. It has been determined by court ruling that such mitigation measures would be improperly exempted from the process of public and governmental scrutiny which is required under the California Environmental Quality Act. The current text of the DEIR does not demonstrate that it is feasible to mitigate all potentially significant impacts to wetlands that may result from project implementation to a less than significant level. Impacts to the jurisdictional waters at the project site, as well as proposed mitigation measures of such impacts, will require review under CEQA before the Water Board can issue permits for those proposed impacts.[139]

Thus, the Commission, as lead agency, must evaluate the potentially significant impacts and identify measures to reduce the impacts from all Project facilities, including the plant site, production and injection wells, well pads and

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[138] Kern County, Final Environmental Impact Report: RE Distributed Solar Projects (Oct. 2021) p. 7-142 to 7-146, *available at* https://psbweb.co.kern.ca.us/planning/pdfs/eirs/recurrent_desert/recurrent_rtc_ch7-4_part1.pdf.
[139] City of Dublin, Final Environmental Impact Report: At Dublin Project, Comment Letter #2 (Oct. 2018).

pipeline facilities, and associated transmission line activities (including the transmission lines, switching station, and utility corridor). The PSA must be revised to include all feasible mitigation measures, including those that should be required by other agencies, to reduce impacts to a less than significant level.

PIECEMEALING

The PSA states that electricity generated by the Project would be delivered to a substation near the northeast corner of the MBGP site.[140] The substation would deliver energy through a generation (gen-tie) line into the IID transmission system at a new, as-yet-to-be built 230 kV switching station.[141] However, the PSA fails to disclose that a new 230 kV transmission line running from the new switching station to the Coachella Valley and additional infrastructure upgrades must be completed for the Elmore North, Morton Bay, and Black Rock facilities to interconnect to the CAISO controlled grid, through which the Applicant wishes to make wholesale sales of electricity.[142]

A project under CEQA refers to the "whole of an action which has the potential for resulting in either a direct physical change in the environment, or reasonably foreseeable indirect physical change in the environment."[143] CEQA prohibits segmenting the review of the significant environmental impacts.[144] This mandate ensures that environmental considerations are not diluted by dividing a large project into smaller ones, each with a minimal potential impact, which cumulatively may have disastrous consequences.[145] Public agencies must interpret the project broadly to encompass the whole of the action and its environmental impacts.[146]

Before undertaking a project, the lead agency must assess the environmental impacts of all reasonably foreseeable phases. Public agencies cannot segment a large project into smaller parts to obscure serious environmental consequences.[147] The court in *Laurel Heights Improvement Association v. Regents of University of*

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[140] PSA at p. 3-10.
[141] *Id.* at p. 3-10.
[142] **Attachment F**, Letter to Sheila Sannadan, Adams Broadwell Joseph & Cardozo from Geoffrey P. Holbrook, Imperial Irrigation District re: Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023 (Sept. 22, 2023); *see also* Imperial Irrigation District, Board Agenda Memorandum re: Engineering, Study, and Design Agreement for BHE Renewables, LLC for the Salton Sea Transmission Project (Nov. 1, 2022) pp. 187-206, *available at* https://www.iid.com/home/showpublisheddocument/20710/638024821913130000.
[143] 14 Cal. Code Regs. § 15378(a).
[144] *Laurel Heights Improvement Assn.,* 47 Cal. 3d at 396; *See also* Pub. Res. Code § 21002.1(d).
[145] *Id.*; *See also City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1452; *Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 165.
[146] 14 Cal. Code Regs. § 15378.
[147] *See Citizens Assn. for Sensible Development of Bishop Area,* 172 Cal. App.3d 165-68.

California ("*Laurel Heights*") emphasizes that "[t]he CEQA process is intended to be a careful examination, fully open to the public, of the environmental consequences of a given project, covering the entire project, from start to finish."[148] "[A]n EIR must include a [*sic*] analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects."[149]

BHER entered into an Engineering, Study, and Design Agreement ("Agreement") with IID for the "Salton Sea Transmission Project" on November 1, 2022.[150] The Agreement indicates that the transmission project is necessary to interconnect the three proposed geothermal facilities (Elmore North, Morton Bay, and Black Rock) with the CAISO Controlled Grid.[151] Furthermore, the Agreement specifies that BHE Renewables, LLC will determine the preliminary design of the transmission project, acquire and secure property rights, and finalize the transmission route.[152] BHE Renewables, LLC will also undertake the environmental compliance analysis for the transmission project.[153] CEQA requires consideration of the whole action, including the reasonably foreseeable transmission project.

As to the first inquiry in the *Laurel Heights* test, the transmission project is imminent and reasonably foreseeable. In a letter dated July 23, 2024, IID described the transmission line connecting to the Coachella Valey substation as having an "essential role" in the feasibility of the BHER projects.[154] Moreover, the executed Agreement commits BHE Renewables, LLC to several tasks in furtherance of the transmission project including, identifying the route, undertaking environmental review, designing the project, and acquiring and procuring the project.[155] "These specific, pending plans distinguish cases rejecting piecemealing claims on the ground the future actions were too speculative."[156]

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[148] *Natural Resources Defense Council v. City of Los Angeles* (2002) 103 Cal.App.4th 268; *see also Whitman v. Board of Supervisors* (1979) 88 Cal.App.3d 402 (EIR for an exploratory oil well that failed to analyze the impacts associated with a proposed pipeline was inadequate and violated CEQA).
[149] *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 396, *as modified on denial of reh'g* (Jan. 26, 1989).
[150] Attachment F at p. 4.
[151] *Ibid.*
[152] Attachment F, attach. A at p. 15.
[153] *Ibid.*
[154] TN # 257957, Letter to California Energy Commission from Imperial Irrigation District re: Notice of Availability of Preliminary Staff Assessment for the Proposed Elmore North Geothermal Project (July 23, 2024) p. 1 (hereinafter "IID EN PSA Comments"), *available at* https://efiling.energy.ca.gov/GetDocument.aspx?tn=257957&DocumentContentId=93880.
[155] Attachment F, attach. A at p. 15.
[156] *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1224.

As to the second past of the *Laurel Heights* test, the transmission project proposes to construct and operate new transmission lines and ancillary components that "will likely change the scope or nature of the initial project or its environmental effects."[157] Construction of the transmission project would increase impacts on air quality, public health, GHG emissions, among other impacts. Additionally, simultaneous construction of the transmission project and the three geothermal facilities could amplify the Project's impacts during construction.

The court in *Banning Ranch Conservancy v. City of Newport Beach* clarified that the *Laurel Heights* inquiry is not just whether the project may make reasonably foreseeable changes to the scope and nature of the project, but whether "'it is a reasonably foreseeable *consequence* of the initial project.'"[158] In that case, the court evaluated whether the Newport Banning Ranch development project and the Sunset Ridge Park Project were separate actions.[159] The court focused on the fact that the projects had different proponents, the projects "serve[d] different purposes," the park project would go forward regardless of any development on Banning Ranch, "and importantly, [that] the City's general plan call[ed] for construction of Bluff Road" regardless of whether the site would be annexed for the development project or not.[160]

In this case, the Project and transmission project have the same applicant, and both are related to geothermal energy generation. The Agreement states that the transmission project is "necessary" for the three geothermal projects, with BHE Renewables, LLC responsible for the associated costs.[161] The PSA fails to provide substantial evidence demonstrating that the projects could be implemented independently of each other or that the transmission project could proceed without the Projects, especially given BHE Renewables, LLC financial responsibilities.[162]

Therefore, the PSA fails to fully disclose, analyze, and mitigate the full scope of the Project's potentially significant impacts, given that the transmission project has been improperly segmented from this CEQA review.[163] In its letter, IID

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[157] *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 396, *as modified on denial of reh'g* (Jan. 26, 1989).
[158] *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1225.
[159] *Id.* at 1224-27.
[160] *Id.* at 1226.
[161] Attachment F at pp. 2-6.
[162] *Id.* at pp. 5-6.
[163] E.g., Pub. Res. Code §§ 21002, 210021.1(a); 14 Cal. Code Regs. §§ 151363, 15121, 15140, 15151. (An EIR is informational document whose purpose is to disclose and mitigate impacts, analyze a reasonable range of alternatives, and select as the project any alternative which can achieve project objectives, but is more protective of the environment, consistent with CEQA's substantive mandate); 14 Cal. Code Regs. § 15378 (project description must include all project components).

concludes that the requisite analyses of the transmission project's environmental impacts must be included in the PSA, explaining that "if an activity or facility is necessary for the operation of a project, or necessary to achieve the project objectives, or a reasonably foreseeable consequence of approving the project, then it should be considered an integral project component that should be evaluated within the environmental analysis."[164] The PSA must be revised to fully disclose, analyze, and mitigate the impacts of both the current Project and the transmission project.

PROJECT DESCRIPTION

The PSA fails to provide a complete project description. The PSA claims that the project description "summarizes the proposed project, including the location of the site and project boundaries, characteristics of the proposed project, and objectives sought by the proposed project."[165] However, the PSA's project description fails to satisfy this purpose. It inadequately describes key Project elements, including but not limited to: 1) access road construction; 2) the location of wells and well pads; 3) the location of the gen-tie line; 4) restoration of the borrow pits; 5) the location of pile driving activities; 6) the construction schedule; and 7) decommissioning activities. Consequently, the PSA's impact analysis is fundamentally flawed due to its inaccurate project description and omission of adequate analysis related to these critical areas.

A. The PSA Fails to Describe the Access Road Construction Required for the Project

Construction of the Project will result in significantly more ground disturbing activity than the PSA estimates due to the development of access roads on the Project site. The Application for Certification provides that construction of the well pads will involve clearing and grubbing, grading, construction of raised earthen berms, and construction of access roads.[166] The well pads will be raised approximately 1.5 feet above the adjacent grade, and the high temperature well head valve area (commonly called the cellar) will be fenced.[167] The well pads and associated access roads will be surfaced with paving or Class 2 road base material.[168]

The Application for Certification provides that construction-related impacts associated with the construction of the gen-tie line from the MBGP plant site to the IID switching station primarily involve access road construction, ROW and worksite

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[164] IID EN PSA Comments at pp. 1-2.
[165] PSA at p. 2-5.
[166] Application for Certification (hereinafter "AFC") TN 249723, at p. 5.11-17.
[167] AFC at p. 2-63.
[168] *Id.* at p. 5.11-17.

clearing, foundation installation, structure assembly and erection, pulling, tensioning, splicing, installation of ground wires, conductors, counterpoise/ground rods, cleanup, and site reclamation.[169] Construction of the pipeline will involve clearing and grubbing, and excavation for pipeline supports. Construction of the gen-tie line will involve access road construction, clearing vegetation within the ROW and worksite, and 30 feet of excavation for the foundation of each power pole.[170] The PSA' Project Description analysis does not characterize the degree to which ground disturbing activities will take place for the construction of access roads. This results in a potentially significant underestimation of the impacts associated with air quality, water quality, and biological resource impacts.

Further, the PSA provides that "[p]lant operators would drive the pipeline routes daily to perform visual inspections."[171] However, the PSA does not clarify whether a road will be built along the portion of Red Hill Bay where no existing road is present. The potential construction of such a road is not discussed in the PSA. If construction of a road along the pipeline is proposed in Red Hill Bay, it must be thoroughly analyzed in the PSA.

Conversely, if the Applicant does not intend to build a road, plant operators required to perform daily visual inspections would need to drive off-road through the playa.[172] The PSA fails to analyze impacts associated with off-road driving for visual inspections of the pipeline. Off-road driving through the playa could significantly impact the existing iodine bush scrub (a sensitive natural community), and ground-nesting birds such as the snowy plover (a special-status species).[173] It also would generate dust and damage furrows installed in Red Hill Bay for dust control.

The PSA must be revised and recirculated to include comprehensive analysis of the necessary improvements for daily visual inspections of the pipeline route in Red Hill Bay, or lack thereof, and the resultant environmental impacts.

The Project Description chapter of the PSA does not discuss the roads that would need to be constructed and improved to enable: (a) access to the wells, well pads, and gen-tie line ROW; and (b) plant operators to drive the pipeline routes for daily inspections. These roads are not depicted on any maps, nor or they accounted for in the PSA's assessment of impacts to sensitive biological resources.[174]

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[169] AFC at p. 2-50.
[170] *Id.* at p. 5.15-18.
[171] PSA at p. 3-24.
[172] Cashen Comments at p. 2.
[173] *Id.*
[174] Cashen Comments at p. 2.

In addition to failing to discuss road construction associated with the Project, the PSA does not discuss the amount of clearing that would be required within the gen-tie line ROW. The AFC does not provide this information either, it merely states: "IID requirements, the National Electrical Safety Code (NESC), and operational considerations determine the width of the ROW. Specific ROW requirements depend on the structure type, height, span, and conductor configuration."[175]

Information on the location(s) and amount of road construction, road improvements, and vegetation clearing (within the gen-tie line ROW) is critical to assessing the Project's direct and indirect impacts on sensitive biological resources. If road construction and improvements *will not* be conducted for the Project, the PSA must explain how the Applicant would be able to access remote work sites, and drive the pipeline route, without causing additional impacts beyond those addressed in the PSA.[176]

B. The PSA Fails to Describe the Number and Location of Production Wells, Injection Wells, and Well Pads

The PSA fails to adequately describe the Project with respect to the number of well pads associated with the Project. According to the Project Description chapter of the PSA, the Project would have 5 production well pads, 6 injection well pads, and 1 back-up injection well pad.[177] The Biological Resources chapter of the PSA states the Project would have 6 production well pads, 5 injection well pads, and 1 back-up injection well pad.[178] However, Figure 3-3 in the PSA depicts 5 production well pads, 3 injection well pads, 1 back-up production well pad, and 1 back-up injection well pad.[179] This issue is exacerbated by the PSA's failure to provide a map that shows the Project footprint including all ground disturbance areas in relation to land cover types, vegetation communities or habitat types.[180] These deficiencies preclude the ability to validate the impact calculations particularly with respect to impacts to biological resources on the Project site. The PSA must be revised to accurately reflect the Project's well pads footprint and thoroughly address the associated environmental impacts.

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[175] TN 249723, p. 2-45.
[176] Cashen Comments at p. 2.
[177] PSA at p. 3-19.
[178] *Id.* at p. 5.2-2.
[179] *Id.* at p. 3-6.
[180] Cashen Comments at p. 1.

C. The PSA Fails to Describe the Location of the Gen-Tie Line

The PSA fails to adequately describe the Project with respect to the location of the gen-tie line, power poles, and pull sites. Figure 3-3 in the PSA depicts the Project's facilities, including the gen-tie line route along Garst Road.[181] Figure 3-3 suggests the gen-tie line would be located along the west side of Garst Road, however, given the scale of the figure, it is impossible to determine where specifically the gen-tie line, power poles, and pull sites would be located.[182] The Applicant's Revised General Arrangement Refinement package (TN 253188) provides maps at a larger scale, but the larger-scale maps exclude all but the northernmost portion of Garst Road (*see* Figure 2-7aR).[183] In contrast to what is suggested on PSA Figure 3-3, the Applicant's "Aquatic Resource Delineation Documentation" (TN 249725, AFC Appendix 5.2C, Figure 1D) suggests the gen-tie line would be located on the east side of Garst Road.[184] Due to the implications on impacts to sensitive biological resources, the PSA must provide large-scale maps that depict the specific locations of the gen-tie line, power poles, and pull sites in order to accurately analyze associated environmental impacts with these Project components.

D. The PSA Fails to Describe the Location of Pile Driving Activity

Pile driving is expected to occur during the construction phase of the Project, overlapping with the construction phases of the Elmore North and Black Rock projects for four months.[185] The PSA provides that "[i]t is unclear if pile driving, or steam blows would occur for both projects on the same days and times of day. This analysis, however, assumes that all three projects would perform pile driving and steam blows on the same days and times of day during their respective phases."[186] However, the PSA lacks any description of the location of pile driving activity. The PSA states that the Project's pile driving activities would generate noise levels of 104 dBA Leq at 50 feet, if unsilenced.[187] Because the metric Leq represents the average noise level over a period of time (usually 1 hour), and pile driving is an intermittent activity,[188] the noise level (Lmax) of each pile drive would be substantially more than 104 dBA.[189] This omission is significant, as understanding the exact location and potential maximum noise levels is crucial for

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[181] PSA at p. 3-6.
[182] Cashen Comments at p. 2; PSA at p. 3-6.
[183] TN # 253188 Morton Bay Geothermal Project Revised General Arrangement Refinement, at Figure 2-7aR.
[184] Cashen Comments at p. 2.
[185] PSA at p. 5.9-11.
[186] *Ibid.*
[187] *Id.* at 5.9-7.
[188] *Ibid.*
[189] Cashen Comments at p. 3.

assessing the impact on nearby communities and sensitive wildlife habitats. The PSA must be revised to include detailed information on the location of pile driving activities and the associated maximum noise levels to ensure a comprehensive analysis of the potential environmental and community impacts.

E. The PSA Fails to Adequately Describe Borrow Pit Restoration

The Project includes borrow pits located throughout the Project area,[190] which would be utilized for the 29-month construction period.[191] Following their use, these borrow pits must be restored to preconstruction conditions.[192] The Applicant estimates that 5 feet of excavation would occur at the borrow pit sites.[193] The PSA provides that "[b]orrow pits would provide fill for the project site if needed, although it is assumed that excavated materials from the project site would be suitable for backfill.[194] Topsoil removed from the project site would be set aside and stockpiled at the borrow sites for use as topsoil in restoring the borrow sites to preconstruction conditions as much as possible."[195]

The PSA and AFC do not provide substantial evidence that topsoil from the borrow pits would be stockpiled and salvaged to help restore the borrow pits upon completion of construction activities.[196] In fact, the AFC states the following regarding impacts to the borrow pits: "[i]mpacts during excavation and export of material to the Project site may include alteration of the existing soil profile, increased soil erosion, and soil compaction. Alteration of the existing soil profiles, including mixing of soils and rock, will alter the physical, chemical, and biological characteristics of the native soils and underlying geology."[197]

The Elmore North power plant will be located on approximately 51 acres.[198] The power plant for the Morton Bay Geothermal Project will be located on approximately 63 acres,[199] while the power plant for the Black Rock Geothermal Project will be located on approximately 55 acres.[200] Collectively, these projects total 169 acres. Therefore, even if topsoil removed from the 3 project sites is used for restoration at the 460-acre borrow pit sites, it appears there would be a deficit of

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[190] PSA at p. 5.8-17.
[191] *Id.* at p. 3-17.
[192] Pub. Res. Code § 2712.
[193] TN #252490-13, Figures 2-7a- -7d.
[194] PSA at p. 5.8-16.
[195] *Ibid.*
[196] Cashen Comments at p. 3.
[197] AFC at p. 5.11-21.
[198] Elmore North Geothermal Project PSA, p. 1-2. (TN 256843).
[199] Morton Bay Geothermal Project AFC, p. 1-1 (TN 249723).
[200] Black Rock Geothermal Project AFC, p. 1-1 (TN 249752).

approximately 291 acres of topsoil.[201] Thus, even though the PSA states the borrow pits would be restored "as much as possible,[202] it fails to discuss the fate of the borrow pit sites if it is not possible to fully restore them due to the lack of topsoil.[203]

The PSA notes that the Applicant intends to request a one-time exemption for the borrow pits consistent with the Surface Mining and Reclamation Act ("SMARA").[204] Public Resources Code § 2714(f) provides an exemption for surface mining operations deemed to be of an "infrequent nature and that involve only minor surface disturbances." However, the PSA does not provide an adequate analysis of the borrow pit restoration process, including whether there will be sufficient soil to restore the pits and to what extent they will be restored. The lack of detailed analysis raises concerns about the feasibility and effectiveness of the proposed restoration efforts. To comply with CEQA, the PSA must be revised to include a comprehensive description of the borrow pit restoration plans, ensuring that all potential environmental impacts are thoroughly assessed.

F. The PSA Fails to Adequately Describe the Construction Schedule

The PSA fails to provide an accurate, stable, and finite project description with respect to the Project construction schedule. The PSA provides the following description of the Project's construction schedule:

> Construction activity will be based on a two-shift, 10 hours per day, six days per week schedule, with a seven-day work week possible. Construction labor workforce personnel is expected to peak between during approximately the 19th and 23rd month, with a maximum between 580 and 610 workers. Facility startup schedules are based on a two-shift, 24 hours per day, seven days per week work week. Overtime and shift work for construction may be used to maintain or enhance the construction schedule. Workers including construction craft employees, supervisory and support staff, and construction management personnel, can be expected to be onsite during typical working hours, between 7 am and 8 pm, with the possibility of adjustment for shortened winter daylight hours, for specialize work such as concrete pours, or for noisy construction activities.[205]

The PSA provides conflicting information about the construction schedule. Initially, it mentions a two-shift, 24 hours per day schedule, implying that each shift would last 10 hours, resulting in 10 hours of construction activity per day.

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[201] Cashen Comments at p. 4.
[202] PSA at p. 5.8-16.
[203] Cashen Comments at p. 4.
[204] PSA at p. 5.6-11.
[205] PSA at pp. 3-17 to 3-18 (internal citations omitted).

However, the PSA later suggests that construction activity would typically occur for 13 hours per day, from between 7 am and 8 pm.[206] Adding further inconsistency, it states "[w]ell drilling operations are conducted 24 hours per day, seven days per week."[207] These statements do not align with the AFC, which states construction activity, including operation of construction equipment, would occur 20 hours per day, 7 days per week.[208] Further, the Noise chapter of the PSA states that no construction activities would occur on Sundays or holidays.[209] It is essential to resolve these discrepancies and ensure a clear and consistent construction schedule.

Moreover, the Noise/Vibration and Environmental Justice chapters of the PSA state: "construction equipment operations would be limited to the hours of 7:00 A.M. to 7:00 P.M., Monday through Friday, and 9:00 A.M. to 6:00 P.M., Saturday. No commercial construction operations are permitted Sunday or holidays (Imperial County 2015)."[210] This statement is inconsistent with: (a) the PSA's mention of a seven-day work week; (b) the PSA's claim that drilling operations would run 24 hours per day; and (c) the AFC's assertion that construction equipment will operate up to 20 hours per day, 7 days per week.[211]

The inaccurate characterization of the construction schedule in the PSA has far-reaching consequences for the environmental impact assessment. The construction schedule directly affects the potential for significant impacts on wildlife due to night lighting.[212] It also impacts the Project's ability to comply with Condition of Certification ("COC") NOISE-6 (Construction and Demolition Noise Constrictions), COC NOISE-7 (Steam Blow Restrictions), and COC BIO-4 (regarding avoidance of night work whenever feasible).[213]

The Commission must revise the PSA to provide consistent information on the Project's construction schedule. This revision must address whether the Applicant can comply with NOISE-6, NOISE-7, and BIO-4, given the proposed construction schedule and any potential modifications (e.g., overtime work or a 7-day work week).[214]

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[206] *Id.* at p. 3-19.
[207] *Ibid.*
[208] AFC at p. 5.1-27.
[209] PSA at p. 5.9-6.
[210] PSA at pp. 5.9-6, 6-17.
[211] Cashen Comments at p. 4.
[212] *Id.*
[213] *Id.*
[214] *Id.*

G. The PSA Fails to Adequately Describe Construction of the Switching Station

CURE's experts were unable to quantify emissions associated with these components because the PSA lacks an adequate project description.[215] An EIR must clearly identify the project's main features and provide sufficient information to facilitate a complete and informative evaluation of the project's environmental impacts.[216] The PSA does not adequately detail the construction of the switching station. It omits specific construction activities (e.g., site preparation, foundation installation, equipment assembly, wiring), the types and quantities of materials used, the expected duration and schedule of construction activities, the types and numbers of construction equipment and vehicles to be used, the fuel types and expected usage rates for equipment and vehicles, or the emission factors for equipment and vehicles. The lack of detailed information hinders proper assessment of the project's environmental impacts, particularly with respect to pollutant emissions. The PSA must be revised to provide a detailed description of anticipated construction activities for the switching station.

H. The PSA Fails to Accurately and Consistently Describe Decommissioning Activities for the Project

The decommissioning phase is a critical component of this Project, yet the project description omits a complete and accurate discussion of these activities. Courts have held that reclamation is "simply the final phase of the overall usage of the land" and must be considered with the construction and operational phases.[217] The PSA provides inconsistent information about the decommissioning activities, thereby failing to satisfy CEQA's requirement for a comprehensive project description. The PSA vaguely states that "in case of permanent closure, the facility will be cleaned, and the facility components will be salvaged to the greatest extent possible."[218] This description fails to mention key decommissioning activities such as facility demolition, removal and disposal of project components, or the of the site to pre-project conditions.

In contrast, COM-15 in the Project's Compliance Conditions and Compliance Monitoring Plan outlines a much more detailed and comprehensive scope of work for the Final Closure Plan. This includes activities such as:

- dismantling and demolition;
- recycling and site clean-up;

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[215] Shukla Comments at pp. 11, 16-18.
[216] *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 654.
[217] *Nelson v. County of Kern* (2010) 190 Cal.App.4th 252, 272.
[218] PSA at p. 3-29.

- impact mitigation and monitoring;
- site remediation and/or restoration;
- exterior maintenance, including paint, landscaping and fencing;
- site security and lighting; and
- any contingencies.[219]

COM-15 clearly references site remediation and restoration activities, while other sections of the PSA remain silent on these critical aspects, focusing instead on salvaging facility components. This inconsistency necessitates that the PSA must be revised and recirculated to provide an accurate and consistent description of the proposed decommissioning activities and their impacts, including at a minimum all activities described in COM-15. CEQA requires the PSA to analyze the impacts all activities associated with building and operating the Project, including activities, aimed at restoring the site to pre-project conditions.

Moreover, by failing to accurately describe the decommissioning activities, the PSA overlooks potentially significant impacts that could arise from this phase of the Project. Based on the detailed activities outlined in COM-15, decommissioning will involve processes similar to those during Project construction, such as dismantling, demolition, recycling, site remediation and/or restoration, and exterior maintenance.[220] These activities are expected to involve soil disturbance, heavy equipment use, and truck trips, potentially resulting in significant impacts related to noise, erosion, air quality, solid waste management, hazardous materials, and transportation. The PSA insufficiently discloses and evaluates these potential impacts, which must be remedied in a revised and recirculated document.

AIR QUALITY

A. The PSA Erroneously Ignores New, More Stringent Federal $PM_{2.5}$ Standards in Evaluating the Project's Construction and Operational Emissions

The PSA acknowledges that the EPA strengthened the primary annual $PM_{2.5}$ NAAQS from 12.0 $\mu g/m^3$ to 9.0 $\mu g/m^3$, and is effective as of May 6, 2024.[221] However, it claims the more stringent standard does not apply to the Project for three reasons: (1) the Project application was deemed complete before the final rule became effective, (2) the Project is neither a major source nor a Prevention of Significant Deterioration ("PSD") source, and (3) the higher limit is consistent with

[219] *Id.* at p. 9-18.
[220] *Ibid.*
[221] *Id.* at p. 5.1-3.

Imperial County Air Pollution Control District ("ICAPCD") rules.[222] The PSA's conclusion is erroneous for several reasons.

First, and foremost, the PSA fundamentally ignores a critical exception to the general rule that projects are subject only to rules in effect the time the application is deemed complete. ICAPCD Rule 207 A.2.b states: "Applications received by the District shall be subject to the requirement of this rule in effect at the time such application is deemed complete, **except** when a more stringent new federal requirement not yet incorporated into this Rule shall apply to the new or modified Stationary Source."[223] The PSA focuses solely on the application completion date, disregarding the second clause, which clearly mandates compliance with new, more stringent standards that became effective after the application is deemed complete.

Second, the PSA's discussion misleadingly focuses on the timeline for states to designate whether areas meet the revised standards and develop state implementation plans. The PSA argues that the less-stringent annual $PM_{2.5}$ NAAQS remain in effect until the EPA designates an area as nonattainment, which is not expected until Spring 2026.[224] However, the timeline for air quality designations is distinct from whether a proposed facility must conduct an air quality analysis that considers the more health-protective standard. Indeed, the exception in Rule 207 A.2.b requires that the new standard be considered.

Finally, while EPA's guidance on implementing the new standard may not directly apply to this Project, it provides valuable insights given the exception in Rule 207 A.2.b. The guidance states: "Facility owners with PSD permits in process will need to determine if their modeling already demonstrates that their planned project will not cause or contribute to an exceedance of the new standard. If there is not a violation, the permit application can continue through review. If modeling does show that the new emissions would cause or contribute to a violation of the revised standard, the owner has options for how they modify their planned project and what types of emission controls they install. A more detailed modeling assessment must show either no violation or that impacts fall below levels considered significant."[225] The guidance underscores the necessity for projects in the permitting process to verify compliance with the new, more stringent standards.

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[222] *Ibid.*
[223] Imperial County Air Pollution Control District, Rule 207: New and Modified Stationary Source Review (Sept. 11, 2018) p. 207-1, *available at* https://apcd.imperialcounty.org/wp-content/uploads/2020/01/1RULE207.pdf.
[224] PSA at p. 5.1-3.
[225] Environmental Protection Agency, Implementing Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter – Clean Air Act Permitting, Air Quality Designations, and State Planning Requirements: Fact Sheet (Feb. 2024) p. 4, *available at* https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-implementation-fact-sheet.pdf.

Rule 207.A.2.b aligns with this principle by mandating that projects adhere to the stricter standards even after the application has been filed.

Here, the air quality modeling demonstrates that the Project would exceed the more stringent standard.[226] The PSA confirms that Project construction, combined with background $PM_{2.5}$ concentrations, would exceed 9.0 $\mu g/m^3$.[227] Project operation, in combination with background $PM_{2.5}$ concentrations, would also exceed this standard.[228] Thus, the PSA's conclusion that the Project is exempt from the more stringent $PM_{2.5}$ standard is not supported by the available data and regulatory requirements.

B. The PSA Fails to Quantify Emissions for All Project-Related Activities

The proposed Project involves connecting to a new IID switching station consisting of nine 3,000-ampre 245 kV circuit breakers, to be constructed adjacent to the Project site.[229] Construction activities will include installing foundations, ground wires, conductors, counterpoise/ground rods, assembling and erecting structures, and clearing, pulling and stringing lines.[230] However, the PSA concedes that emissions from these construction activities were excluded from the air quality modeling.[231] The PSA asserts that air quality and GHG impacts from constructing the switching station are less than significant with mitigation, citing fewer ground disturbance activities, a shorter construction duration, less equipment, and similar distances to sensitive receptors.[232]

Additionally, the PSA does not quantify emissions from construction worker camps.[233] The temporary construction camps would require site surface preparation, including vegetation removal, excavation, minor grading, and gravel application.[234] It would also require the use of temporary power sources,[235] such as generators, which can contribute to GHG emissions and other pollutants. The PSA

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[226] Shukla Comments at p. 20.
[227] PSA at p. 5.1-24.
[228] *Id.* at p. 5.1-27.
[229] PSA at p. 4.3-1.
[230] *Id.* at p. 3-17.
[231] *Id.* at p. 5.1-17.
[232] *Id.* at pp. 5.1-17, 5.3-9 to 5.3-10.
[233] Shukla Comments at p. 12; *see also* PSA at pp. 5.1-17, 5.3-9 to 5.3-10.
[234] PSA at p. 5.8-7.
[235] *Ibid.*

acknowledges that these elements may require mitigation to achieve less than significant impacts.[236]

An EIR must be sufficiently detailed to enable decisionmakers to make informed judgments about the project's environmental impacts.[237] While exhaustive detail is not required, the EIR must be adequate, complete, and demonstrate a good faith effort at disclosure.[238] The EIR fails to explain why it cannot quantify emissions from these components.[239] Moreover, even if emissions from these components are less than those from constructing the main facility, the PSA does not account for the combined effect of these simultaneous construction activities.[240]

Given these deficiencies, the PSA lacks substantial evidence to conclude that the Project's air quality impacts are less than significant. The PSA must be revised to include emissions from all Project components, even those outside the jurisdiction of the Commission.

C. The PSA Relies on Clearly Erroneous Meteorological Data

To determine whether the Project would expose sensitive receptors to substantial pollutant concentrations or health risks, the PSA relies on five years (2015-2018, 2021) of meteorological data from the Imperial County Airport.[241] Despite the meteorological station being 23.8 miles away, the PSA concludes the data is representative of the Project site because there are no intervening geographic features between the Project site, and both are south/southeast of the Salton Sea.[242] However, the PSA's reasoning is significantly flawed.

The Project site's proximity to the Salton Sea creates unique meteorological conditions not captured by the airport monitoring station. The topography and wind flow across the Salton Sea significantly affect the dispersion of pollutants emitted at the Project site.[243] "Higher wind speeds over the heated desert and lower

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[236] *Id.* at p. 5.1-38 ("Additional impacts associated with project components outside of the CECs jurisdiction, such as well complex licensed by CalGEM, the temporary structures such as the laydown yard to be permitted by Imperial County, and the switching station to be permitted by IDD, may require mitigation to be less than significant.").
[237] 14 Cal. Code Regs. § 15151; *Napa Citizens for Honest Gov't v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 356.
[238] *Ibid.*
[239] *See Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421 (requiring quantification of emissions when feasible).
[240] Shukla Comments at pp. 11-12.
[241] PSA at p. 5.1-23.
[242] *Ibid.*
[243] Clark Comments at p. 4; Shukla Comments at pp. 13-14.

relative wind speeds over the cooler Salton Sea result in decreased dispersion near the Project site, increasing ground-level pollutant concentrations."[244] In addition, the marine boundary layer near the Salton Sea can be more stable and exhibit different characteristics compared to the boundary layer over land, further impacting pollutant dispersion.[245] These conditions are not accounted for by the airport monitoring station.

Furthermore, the airport monitoring station is situated in an urban environment, which does not accurately represent the rural conditions of the Project site.[246] While there are no intervening natural geographic features between the Project site and the airport, there are intervening artificial features. The cities of Brawley and Imperial lie between the two sites, increasing the surface roughness factor, results in different dispersion characteristics.[247]

A comparison of wind rose data also reveals significant differences in wind patterns between the two sites.[248] The airport wind rose shows predominantly westerly and southwesterly winds, whereas the Sonny Bono wind rose shows predominantly southeasterly winds.[249]

Finally, the Sonny Bono station contains enough reliable data to perform an accurate impact assessment. While only two years of data from the station meet the EPA's data completeness recommendation, approved statistical methods are available to address any data gaps.[250] The critical factor when selecting meteorological data is spatial representativeness, not just completeness.[251]

For these reasons, meteorological data from the Imperial County Airport is not representative of the Project site. Consequently, the PSA severely underestimates air quality and public health impacts.[252] The PSA must be revised using meteorological data from the Sonny Bono monitoring station to provide an accurate assessment of the Project's environmental impacts.

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[244] *Id.* at p. 5.
[245] Shukla Comments at p. 14.
[246] *Id.* at p. 13.
[247] Shukla Comments at p. 13.
[248] *Id.* at pp. 15-16; Clark Comments at p. 5.
[249] *Id.* at at pp. 15-16; Clark Comments at p. 5.
[250] *Id.* at at p. 16.
[251] *Id.* at at p. 16.
[252] Clark Comments at p. 6.

D. The PSA Fails to Meaningfully Evaluate Localized Cumulative Impacts

To analyze localized cumulative air quality impacts during Project operation, the PSA modeled impacts associated with operation of the three geothermal facilities: Elmore North, Morton Bay, and Black Rock.[253] However, it did not include any data from existing geothermal powerplants, claiming that background concentrations from nearby monitoring stations represented conservative estimates of existing stationary sources.[254] This approach is fundamentally flawed as it fails to address the specific contributions and interactive effects of these emissions with the proposed Project.

By relying solely on background concentrations from nearby monitoring stations, the PSA overlooks the unique emissions profiles and localized impacts of the existing geothermal power plants. Each facility may have distinct operational characteristics, emission rates, and pollutant types that can significantly influence air quality in the vicinity.[255] Background monitoring data alone cannot capture these specific contributions, nor can it accurately reflect the cumulative impact of multiple sources in proximity.[256]

Furthermore, the PSA's method does not account for the interactive effects of emission from multiple geothermal facilities operating concurrently.[257] Pollutants can interact in the atmosphere, leading to complex chemical reactions that may compound air quality impacts.[258] Ignoring these interactions can result in an underestimation of the true cumulative impact on air quality and public health.

The PSA must take a more comprehensive approach to accurately assess the cumulative air quality impacts. This includes a detailed emission inventories for all nearby existing and proposed geothermal facilities, including the types and quantities of pollutants emitted.[259] Indeed, the ICAPCD has permits for these facilities that provide the necessary information.

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[253] PSA at p. 5.1-33 to 5.1-36.
[254] *Id.* at p. 5.1-34.
[255] Shukla Comments at pp. 21-24.
[256] *Id.* at pp. 21-22.
[257] *Id.* at pp. 23-24.
[258] *Id.* at at p. 24.
[259] *Id.* at at p. 24.

E. The PSA Fails to Evaluate the Cumulative Impacts of Emergency Generation

The proposed Project includes three diesel-fired generators intended for use during emergency situations.[260] Diesel generators emit harmful pollutants such as NOx and diesel particulate matter, which have significant health impacts, including respiratory and cardiovascular problems.[261] While the PSA analyzes the Project-specific impacts of operating these emergency generators, it neglects to assess whether cumulative emissions from these generators, combined with those from other geothermal facilities, is significant.

Existing permits for geothermal facilities in the area indicate that on-site emergency generators operate between 50 and 500 hours per year.[262] Additionally, new emergency generators are proposed for the Elmore North and Black Rock facilities.[263]

The emergency generators at nearby facilities may operate simultaneously with those of the proposed Project. Large-scale power outages caused by natural disasters, such as earthquakes, can trigger concurrent operation of emergency generators across multiple facilities when the main power supply is disrupted. Unexpected failures within the power grid can lead to temporary outages affecting extensive areas, necessitating the use of emergency generators. High demand for electricity during extreme weather conditions can also result in rolling blackouts or brownouts, compelling facilities to activate their emergency generators to ensure continuous operation.

Further compounding the PSA's omission is the fact that these facilities are in an area already overburdened by pollutants. The Project site is in an area designated as a disadvantaged community under SB 535, highlighting the need for environmental justice considerations.[264] Additionally, the Project area is designated as nonattainment for PM_{10}, meaning it already exceeds the permissible levels for particulate matter, further exacerbating the potential public health impacts.[265]

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[260] PSA at p. 3-9.
[261] *Id.* at p. 5.10-17.
[262] Clark Comments at p. 14.
[263] TN # 257470, California Energy Commission, Morton Bay Geothermal Project: Preliminary Staff Assessment (June 27, 2024) p. 3-8, *available at* https://efiling.energy.ca.gov/GetDocument.aspx?tn=257470&DocumentContentId=93344; TN # 257697, California Energy Commission, Black Rock Geothermal Project: Preliminary Staff Assessment (July 11, 2024) p. , available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=257697&DocumentContentId=93594 .
[264] Clark Comments at pp. 3-4, 14.
[265] *Id.* at pp. 14-15.

Given these factors, the PSA must be revised to analyze the cumulative impacts of emergency generation. This analysis is essential to ensure a thorough assessment of potential environmental and health risks posed by the combined emission from all relevant facilities, particularly in a region already facing significant environmental and public health challenges.

F. The PSA Underestimates Construction Vehicle Emissions

The PSA relies on trip generation and distribution rates provided by the Applicant to calculate emissions.[266] It assumes an even distribution of 26 truck trips per day over an 8-hour workday, resulting in approximately 3 truck trips per hour.[267] However, truck trips are likely to be clustered during specific hours, leading to higher congestion and emission during those periods.[268] The PSA also assumes that only 40% of worker trips would occur during peak hours. This assumption is overly conservative and inconsistent with the trip distribution of other construction projects.[269] A 50% distribution is more appropriate.[270] When these assumptions are correctly calibrated, the Project would result in an extra 13 daily trips per day during Project construction, causing increased emissions.[271] The PSA must be revised to correct these deficiencies and accurately account for the Project's construction emissions.

G. The PSA Fails to Mitigate Significant Construction NOx Emissions

The PSA reveals that NOx emissions from Project construction would exceed ICAPCD's significance threshold,[272] which the PSA selected as appropriate standard to evaluate the Project's emissions impacts.[273] Despite the exceedance, the PSA erroneously concludes that the impact is less than significant.[274] The PSA must propose feasible mitigation measures to reduce the impact to less than significant. Dr. Shukla identifies several mitigation measures to reduce the significant NOx impacts, including enhanced control technologies, construction schedule optimizations, alternative fuels and additives, enhanced maintenance and operator training, and emission offsets.[275] The PSA must be revised to analyze

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[266] Shukla Comments at pp. 30-33.
[267] PSA at p. 5.4-18.
[268] Shukla Comments at p. 30.
[269] *Id.* at pp. 31-32.
[270] *Ibid.*
[271] *Ibid.*
[272] Shukla Comments at p. 18.
[273] PSA at pp. 5.1-4, 5.1-18; 14 Cal. Code Regs. §§ 15064.7(c), 15064(b)(2).
[274] *Id.* at p. 5.1-17.
[275] Shukla Comments at pp. 19-20.

whether implementation of the proposed measures would reduce impacts to less than significant.

H. The PSA Proposes Ineffective Opacity-Based Air Quality Measures

The PSA identifies several mitigation measures and conditions of certification to mitigate air quality impacts and ensure conformance with applicable LORS, including AQ-12 and AQ-37.[276] AQ-12 prohibits the release or discharge of any air contaminant for three minutes in any one hour which is as dark, or darker than, Ringelmann Chart 1 or 20% opacity.[277] Similarly, AQ-37 prohibits all internal combustion engines from discharging any visible air contaminant, other than uncombined water vapor, for more than 3 minutes in any one hour, which is 20% opacity or greater.[278]

These measures rely on opacity, which is a measure of the amount of light blocked by particulate matter (such as smoke, dust or other pollutants) in the air.[279] This is used to evaluate the concentration and visibility impact of these contaminants, typically measured using EPA Methods 9 or 22, which are designed for smoke monitoring.[280]

According to Dr. Clark, there are several shortcomings with the measures that rely on opacity measurements. First, these methods require active monitoring of emissions from the facility, which might not be consistently enforced or feasible under all conditions.[281] Second, certified observers must be utilized, introducing potential issues with availability and uncertainty.[282] Third, plume opacity readings can be subjectively influenced by various factors, including particle density, refractive index, size distribution, color, plume background, path length, distance and relative elevation to stack exit, sun angle, and light conditions.[283] Finally, these methods require sufficient light to see the plume, rendering them ineffective at night.[284]

Given the limitations identified by Dr. Clark, the proposed measures would be inconsistent during the day and entirely ineffective at night.[285] These gaps fail to ensure air quality standards are consistently met, particularly in mitigating the

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[276] PSA at p. 5.1-38.
[277] *Id.* at p. 5.1-46.
[278] PSA at pp. 5.1-51 to 5.1-52.
[279] Clark Comments at p. 7.
[280] *Ibid.*
[281] *Ibid.*
[282] *Ibid.*
[283] *Ibid.*
[284] *Ibid.*
[285] *Ibid.*

migration of particle plumes offsite at night.[286] Since the facility will operate 24 hours a day, seven days a week,[287] the measures would only be partially effective.

To address this issue, Dr. Clark recommends revising the measures to require continuous monitoring with dust monitors immediately outside the facility and around its perimeter.[288] This would ensure more consistent and reliable monitoring of air quality impacts, regardless of time of day.[289]

GREENHOUSE GASES

A. The PSA Significantly Overestimates Avoided GHG Emissions

The PSA's estimate of avoided GHG emissions for the Project is fundamentally flawed due to the use of an inflated displacement factor rendering the PSA's conclusion that the Project's GHG impacts are less than significant unsupported by substantial evidence. The PSA employs a displacement factor of 0.373 metric tons of carbon dioxide equivalent ("$MTCO_2e$") per megawatt-hour ("MWh") to estimate the emissions avoided by the Project's electricity production.[290] This figure is derived from a CO_2 emissions factor of 822.5 pounds ("lbs") per MWh identified for combined cycle natural gas generators, as reported in a 2019 study published by the Commission on new utility-scale generation in California.[291] According to the report, the CO_2 emissions factor was based on data from Commission siting cases.[292]

Contrary to the PSA's claim that the displacement factor is conservatively low, substantial evidence indicates it is excessively high. This inflated factor significantly surpasses the actual GHG intensity of regional and statewide electricity supply, leading to an overestimated calculation of avoided emissions.

For example, in 2022, IID, the primary electricity supplier for the Project area, reported a GHG intensity of 585 lbs CO2e/MWh.[293] This translates to 0.265 MTCO2e/MWh, substantially lower than the PSA's displacement factor.[294] The IID

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[286] *Ibid.*
[287] PSA at p. 3-16.
[288] Clark Comments at pp. 7-8.
[289] *Ibid.*
[290] PSA at p. 5.3-11.
[291] *Ibid.*; *see also* California Energy Commission, Staff Report: Estimated Cost of New Utility-Scale Generation in California: 2018 Update (May 2019) p. B-24, *available at* https://www.energy.ca.gov/sites/default/files/2021-06/CEC-200-2019-005.pdf.
[292] *Id.* at p. B-22.
[293] Shukla Comments at pp. 3-4; California Energy Commission, 2022 Power Content Label: Imperial Irrigation District (2022) (hereinafter "IID 2022 PCL"), *available at* https://www.energy.ca.gov/filebrowser/download/6033.
[294] Shukla Comments at p. 5.

GHG emission intensity reflects the real-time mix of emission generators that are being displaced by renewable energy production.[295] This leads to a precise calculation of avoided emissions based on actual grid dynamics, which can vary throughout the day and across seasons.[296] Using IID's GHG intensity, Project would avoid only 325,5726.2 MTCO2/yr, far less than the PSA's estimate, resulting in an overestimation of approximately 131,424 MTCO2e/yr.

Moreover, the statewide average GHG intensity further undermines the PSA's displacement factor. In 2022, California utilities averaged a GHG intensity of approximately 422 lbs CO2e/MWh, or 0.1914 MTCO2e/MWh.[297] The statewide average emissions intensity includes a mix of all generation sources in the state, including coal, less efficient natural gas plants, renewables, nuclear, and other, providing a comprehensive picture of emission associated with electricity generation.[298] Applying the statewide average would yield even lower avoided emissions than the IID average, reinforcing that the PSA's displacement factor is excessively high.[299]

The significant discrepancies in the displacement factor render the PSA's conclusion that the Project's GHG impacts are less than significant unsupported by substantial evidence. The inflated displacement factor grossly overestimates avoided emissions, masking the true environmental impact of the Project. Therefore, the PSA's assertion that the Project's GHG impacts are less than significant is not substantiated by the available data.

B. The PSA Fails to Analyze Whether the Project Would Result in Net Additional GHG Emissions Over Its Lifetime

To determine whether the Project would have a significant GHG impact, the PSA evaluates whether the Project would result in any net additional GHG emissions.[300] The PSA calculates that the Project's facility-wide annual GHG emissions are 66,205 MTCO2e/yr, which includes both operational emissions and one-time construction amortized over the Project's 30-year lifespan.[301] The PSA also considers the amount of GHG emissions that would be avoided by producing electricity via this renewable resource.[302] Specifically, the PSA multiplies the annual MWh produced by the Project (1,226,400) by an avoided emissions displacement factor of 0.373 MTCO2e MWh/yr, resulting in an avoidance of over

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[295] *Id.* at p. 3.
[296] *Ibid.*
[297] IID 2022 PCL.
[298] Shukla Comments at p. 3.
[299] *Id.* at pp. 3-4.
[300] PSA at p. 5.3-9.
[301] *Id.* at p. 5.3-10.
[302] PSA at pp. 5.3-10 to 5.3-11.

457,000 MTCO2e/yr.[303] Consequently, the PSA concludes that the total net emissions are 389,795 MTCO2e/yr.[304]

However, the PSA's analysis is fundamentally flawed because it fails to account for the Project's lifetime emissions in the context of California's long-term GHG reduction goals.[305] State policy mandates that eligible renewable energy resources and zero-carbon resources supply 90% of all retails sales of electricity to California end-use customers by the end of 2035, 95% by 2040, and 100% by 2045.[306] If these targets are met, the proposed Project would result in no avoided emissions starting in 2045. This implies that for more than half of the Project's lifespan, there would be no avoided emission.[307] Additionally, as the state progresses towards its renewable energy goal, avoided emissions would proportionately decrease, further diminishing the Project's effectiveness in reducing GHG emissions.[308]

Therefore, the PSA's conclusion that the Project would have a net positive impact on GHG emission is misleading. An accurate assessment must consider the diminishing returns of avoided emissions over the Project's lifetime, aligning the analysis with California's evolving energy landscape and GHG reduction mandates.

C. The Project Would Result in Net Additional GHG Emissions Over the Project's Lifetime

Dr. Shukla performed a linear regression model to calculate the Project's lifetime GHG emissions consistent with state policy to achieve zero-carbon by 2045.[309] If IID's GHG intensity is used as the displacement factor and scaled consistent with state policy, the Project's total avoided emissions is 1,943,666 $MTCO_2e$, while the Project's total GHG emissions is 2,688,200 $MTCO_2e$.[310] Over the Project's 40-year lifespan, it would emit approximately 744,534 $MTCO_2e$ more than it offset.[311]

If the statewide average GHG intensity is used as a displacement factor and scaled consistent with state policy, the Project's total avoided emissions is 1,518,703 $MTCO_2e$, while the Project's total GHG emissions is 2,688,200 $MTCO_2e$.[312] Over the Project's 40-year lifespan, it would emit approximately 1,169,497 $MTCO_2e$ more

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[303] *Ibid.*
[304] *Id.* at p. 5.3-10.
[305] Shukla Comments at pp. 2-5.
[306] Senate Bill 100, De Leon, Chapter 312, Statutes of 2018; Executive Order B-55-18.
[307] Shukla Comments at p. 5.
[308] *Id.* at pp. 3-5.
[309] *Id.* at pp. 5-10.
[310] *Id.* at pp. 7-8.
[311] *Id.* at p. 8.
[312] *Id.* at pp. 8-10.

than it offset.[313] Both scenarios show a net increase in GHG emissions over the Project's lifespan.[314] Therefore, the Project would result in a potentially significant GHG impact.

PUBLIC HEALTH

A. The PSA Fails to Analyze Radon Impacts

Among the many contaminants that would be released by the proposed Project, radon is of particular concern.[315] Radon exposure poses significant health risks due to its radioactive nature.[316] The harmful effects of radon are particularly concerning because they often go unnoticed until serious health issues arise. The most significant health risk associated with radon exposure is an increased risk of lung cancer.[317] According to the EPA, radon is the number on cause of lung cancer among non-smokers, and the second leading cause of lung cancer overall.[318]

The PSA's claim that radon is not a TAC is incorrect.[319] The California Air Resources Board ("CARB") designates radon as a TAC pursuant to Health & Safety Code § 39657.[320] This designation underscores the recognized dangers of radon and the necessity to analyze its potential public health impacts.

Furthermore, the PSA claims OEHHA Guidelines do not provide methods for assessing radon emissions to ambient air.[321] While the guidelines may not offer a specific methodology for radon, they address radon within the broader framework of assessing TACs. Radon emissions must be quantified,[322] and reported in units of Curies per year (for annual average emissions) and in units of milliCuries per hour (for maximum hourly emissions).[323] This quantification is essential for accurate risk assessment and regulatory compliance.

The PSA also claims radon emissions do not pose an increased health risk because modeled radon concentrations at the maximally exposed individual receptor

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[313] *Id.* at p. 9.
[314] *Id.* at pp. 10-11.
[315] Clark Comments at p. 6.
[316] *Ibid.*
[317] *Ibid.*
[318] *Ibid.*
[319] PSA at p. 5.10-22.
[320] 17 Cal. Code Regs. § 93001.
[321] PSA at p. 5.10-22.
[322] Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program: Guidance Manual for Preparation of Health Risk Assessments Appendices A-F (Feb. 2015) p. A-18, *available at* https://oehha.ca.gov/media/downloads/crnr/2015gmappendicesaf.pdf.
[323] *Id.* at p. A-35.

("MEIR") fall within existing background levels of radon in the air in California.[324] This reliance on statewide background concentrations is misplaced.[325] As a threshold matter, the PSA fails to establish the specific baseline levels of radon in the Project area.[326] Even at the assumed levels, existing background levels of radon equate to 3 additional lung cancers per 1,000 people who smoke, or a risk of 3,000 per 1,000,000.[327] Moreover, radon levels in Imperial County are lower than the statewide average, as the EPA designates Imperial County as an area with low radon potential.[328]

Additionally, AQ-72 mandates that the Project test for radon in the first year of operation and every four years thereafter.[329] This is in line with nearby geothermal facilities that periodically test for radon.[330] This requirement reflects the acknowledged risk and the need for ongoing monitoring.

Finally, the PSA's analysis only accounts for impacts to residential receptors, neglecting workers who are potentially at greater risk due to prolonged exposure and proximity to the source.[331] This omission is critical as workers are directly exposed to emissions during Project operations.

Given these deficiencies, the PSA must be revised to include a detailed risk assessment of radon emissions specific to the Project. This assessment should ensure the safety of all potentially affected individuals, including workers. Ensuring comprehensive analysis and appropriate mitigation measures such as enhanced ventilation or monitoring systems is crucial for protecting public health.[332]

B. The PSA Fails to Meaningfully Analyze Cumulative Public Health Impacts

The PSA acknowledges multiple existing, pending, and proposed projects within a 6-mile radius of the Project site.[333] It asserts that cumulative public health impacts are typically not significant unless the emitting sources are extremely close to each other.[334] Despite identifying the Hudson Ranch geothermal powerplant

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[324] PSA at p. 5.10-22, fn. c.
[325] Clark Comments at p. 6; Shukla Comments at p. 28.
[326] Shukla Comments at p. 28.
[327] Clark Comments at p. 6.
[328] *Ibid.*
[329] PSA at p. 5.1-60.
[330] Clark Comments at pp. 6-7.
[331] *Id.* at p. 6.
[332] Shukla Comments at p. 29.
[333] PSA at p. 5.10-32.
[334] *Ibid.*

located 0.3 miles east of the Project site, the PSA concludes the proposed Project would not contribute to cumulative public health impacts.[335] This conclusion is flawed and lacks substantial evidence.

Given the proximity of Hudson Ranch, it is critical to assess the combined emissions from both the existing and proposed projects.[336] Proximity alone does not fully capture the potential for cumulative impacts. Instead, the intensity and nature of emissions from each source must be considered to determine their collective effect on public health.[337] The PSA's dismissal of potential cumulative impacts overlooks the fact that pollutants can disperse over greater distances, interact in complex ways, and still affect air quality and health outcomes.[338]

Moreover, the exclusion of existing facilities from a more detailed cumulative impact assessment is inconsistent with EPA guidance on air quality modeling.[339] The EPA states that sources which cause a significant concentration gradient in the vicinity of the source(s) under consideration for emissions limits are typically not adequately represented by background ambient monitoring.[340] For multi-source areas, such as the case here, the Guidelines recommend determining the appropriate background concentration by (1) identifying and characterizing contributions from nearby sources through explicit modeling, and (2) characterization of contributions from other sources through adequately representative ambient monitoring data.[341]

The EPA recommends that in most cases the nearby sources will be located within the first 10 to 20 kilometers (6.2 to 12.4 miles) from the source(s) under consideration.[342] Therefore, the modeling must also consider other existing and proposed facilities within 6 miles of the Project site including: JJ Elmore, JM Leathers, Vulcan, Hudson Ranch Power, Salton Sea Units 1-5, Morton Bay, and Black Rock.[343] At the bare minimum, the air quality model should include emissions from the Hudson Ranch geothermal powerplant. The omission of this particular nearby source is inexcusable given its proximity to the Project site and the fact that it emits substantial quantities of the same criteria pollutants as the

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[335] *Ibid.*
[336] Shukla Comments at pp. 25-26.
[337] *Ibid.*
[338] *Id.* at pp. 23-24.
[339] *Id.* at pp. 21-22.
[340] 40 C.F.R Pt. 51, App. W § 8.3.1.i., 8.3.1.3.
[341] *Id.* § 8.3.1.3.a.
[342] *Id.* § 8.3.3.b.iii.
[343] Shukla Comments at pp. 22-24.

proposed Project.[344] Detailed inventories of these facilities emissions can be found in their ICAPCD-issued permits.[345]

The PSA must provide a detailed analysis of the types and quantities of emissions from both the existing geothermal powerplant and the proposed Project. The analysis must address cumulative cancer and hazard risks.[346] This analysis should include an evaluation of how these emissions interact and their potential to exacerbate health risks for nearby sensitive receptors. Without such a comprehensive assessment, the PSA cannot accurately determine cumulative public health impacts.

In sum, the PSA's assertion that the proposed Project would not contribute to cumulative public health impacts is unsupported. A thorough analysis that considers the combined emissions and their interaction is essential to ensure an accurate evaluation of public health risks.

C. The PSA Lacks Substantial Evidence to Conclude Valley Fever Impacts Are Less Than Significant

Valley fever is an infectious disease caused by inhaling *Coccidioides* spores, which poses a significant health risk when soil containing these spores is disturbed.[347] Activities such as agricultural operations, dust storms or earthquakes can release these spores into the air.[348] The disease is endemic (native and common) to semiarid regions of the United States, including Imperial County.[349]

The PSA acknowledges that Project construction could expose workers and the public to the risk of Valley Fever.[350] However, it concludes health risks from Valley Fever are not a major concern due to the relatively low incidence rate in Imperial County compared to other areas of California and the proposed mitigation measures (AQ-SC3 and AQ-SC4), which are expected to minimize the risk of exposure to workers and the public.[351] As a result, the PSA finds the impact to be less than significant.[352]

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[344] *Ibid.*
[345] **Attachment G**, Authority to Construct/Permit to Operate Permits Issued by the Imperial County Air Pollution Control District for Hudson Ranch Power I (Aug. 2008).
[346] Shukla Comments at pp. 24-27.
[347] PSA at p. 5.10-6.
[348] Clark Comments at p. 9.
[349] *Ibid.*
[350] PSA at p. 5.10-20.
[351] *Id.* at p. 5.10-21.
[352] *Id.* at p. 5.10-16.

The PSA's focus on historical infection rates is flawed. While infections rates in Imperial County may be lower than other parts of the state, the PSA ignores the primary risk factor: exposure to dust.[353] Research has shown that large-scale renewable energy construction projects increase the incidence rate for Valley Fever proportionally to the number of disturbed soil acres.[354] The PSA does not specify the exact amount of soil to be distributed during Project construction, stating only that it would disturb a certain percentage of approximately 3 acres of topsoil.[355] The substantial amount of land disturbance suggests a potentially significant risk of Valley Fever exposure.

Moreover, the mitigation measures are inadequate. AQ-SC3 requires the preparation of a fugitive dust control plan that implements enhanced dust control measures.[356] AQ-SC4 mandates monitoring for visible dust plumes and implementation of additional mitigation measures.[357]

Valley Fever spores are small, have slow settling rates, and can remain airborne for long periods, traveling significant distance.[358] Invisible to the human eye, these spores can persist in seemingly clear air, rendering the visual monitoring specified in AQ-SC4 insufficient to protect site workers or the public.[359] Standard fugitive dust mitigation measures, like those proposed in AQ-SC3, do nothing to prevent the spread of the fungus and are not effective at controlling Valley Fever because they are largely focused on controlling visible dust or larger dust particles.[360] These measures fall short in protecting against Valley Fever.

Given these deficiencies, the PSA lacks substantial evidence to conclude Valey Fever impacts are less than significant. The PSA must be revised to address these critical issues and provide more effective measures to mitigate the risk of Valley Fever exposure.

To mitigate potentially significant Valley Fever impacts, Dr. Clark recommends pre-construction soil survey of the site to identify whether Valley Fever spores are present and implement measures to actively suppress spread. These measures include (1) active monitoring, (2) enhance dust control techniques, (3) prevention of spore spread outside endemic areas, and (4) improved surveillance for construction workers.[361]

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[353] Clark Comments at p. 9.
[354] *Id.* at pp. 9-11.
[355] PSA at p. 5.10-19.
[356] *Id.* at p. 5.1-39 to 5.1-41.
[357] *Id.* at p. 5.1-41.
[358] Clark Comments at pp. 11-12.
[359] *Ibid.*
[360] *Ibid.*
[361] *Id.* at pp. 12-14.

D. The PSA Fails to Adequately Analyze Fumigation Impacts

The PSA concludes that Project would not cause any fumigation impacts based on a fumigation analysis conducted by the Applicant using the AERSCREEN dispersion model.[362] The PSA's analysis inappropriately relies on a screening-level model, which does not adequately capture the complexity of coastal plume fumigation events.

Coastal plume fumigation occurs when emissions from a stack encounter the thermal internal boundary layer at a certain distance downwind, leading to limited diffusion and potentially resulting in high ground-level pollutant concentrations.[363] This phenomenon can persist as long as the conditions that cause it are present.[364] While heated air over the desert may generate higher wind speeds, the cooler temperatures over the Salton Sea lead to lower relative wind speeds in the vicinity of the Project site, increasing the risk of fumigation.[365]

Given the specific meteorological conditions at the Project sit, it is widely recognized within the air modeling community that high-resolution mesoscale prognostic meteorological data, such as that provided by MM5 or WRF models, offer a more accurate representation of wind patterns than screening-level or hourly meteorological data.[366] Therefore, the PSA's reliance on the screening-level analysis to conclude the impact is less than significant is misplaced.

HAZARDOUS MATERIALS / HAZARDOUS WASTE

"The Project site would be classified as a hazardous waste generator. Hazardous waste generated could include used lubricating oils, brine pond solids, geothermal scale, cooling tower debris and sludge, aerosol containers, solvents, paint, adhesives, and lead acid batteries. Additionally, the filter cake could be characterized at times as hazardous due to elevated concentrations of heavy metals."[367] The PSA estimates that approximately 5% of the filter cake will be characterized as hazardous for this reason.[368]

"If the filter cake is determined to be hazardous, it will be disposed of in the necessary manner, and if it is nonhazardous, the filter cake will be disposed of at a

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[362] PSA at p. 5.1-31.
[363] Clark Comments at p. 9.
[364] *Ibid.*
[365] *Ibid.*
[366] *Ibid.*
[367] PSA at p. 5.7-17.
[368] *Id.* at p. 5.12-1.

Class II regulated landfill."[369] "Any hazardous waste generated from maintenance activities on the wells and well pads and their associated piping would be transported back to the project site for proper storage and disposal. Such wastes would be stored onsite for less than 90 days and transported away by licensed hazardous waste hauler companies."[370]

The PSA's conclusion that the Project would have a less than significant impact related to hazards and hazardous materials/waste with the implementation of conditions of certification is not supported by substantial evidence.[371] First, the PSA fails to disclose the disposal facility for the Project's hazardous waste generated during construction and operations. It also does not discuss whether the Project's hazardous waste generated during operations will be recycled. Second, the analysis of cumulative impacts from the transportation and disposal of the Project's hazardous waste is deficient. The PSA must be revised to address these glaring omissions in the analysis and to ensure that the PSA's significance determination is supported by substantial evidence.

A. The PSA Fails to Disclose the Disposal Facility for Hazardous Wastes Generated During Construction and Operations and Omits Whether Hazardous Waste Will be Recycled During Operations

The PSA states that during construction, "[h]azardous wastes will be either recycled or disposed of in a licensed Class I disposal facility as appropriate."[372] However, the PSA fails to provide critical information about which facilities have the capacity and capability to dispose of and/or recycle the Project's hazardous waste. During operations, approximately 1,300 tons of hazardous filter cake will be generated each year, along with other hazardous wastes such as used lubricating oil, brine pond solids, geothermal scale, cooling tower debris and sludge, aerosol containers, solvents, paint, adhesives, laboratory analysis waste, and lead acid batteries.[373] While the PSA specifies that the DVCM Class II facility in Brawley, California, will dispose of *non-hazardous* filter cake wastes, it remains silent on where hazardous wastes will be transported, disposed of, or recycled during operations.[374]

The PSA must disclose the facility that will handle the disposal and recycling of the Project's hazardous wastes. This disclosure should include the location, capacity, and capability of these facilities to process the Project's hazardous waste.

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[369] TN # 254307, Preliminary Decision of Compliance (PDOC) Morton Bay (Jan. 2024) p. 5.
[370] PSA at p. 5.7-17.
[371] *Id.* at p. 5.7-27.
[372] *Id.* at p. 3-14.
[373] AFC at p. 2-31, 5.14-4.
[374] PSA at p. 5.12-2.

Additionally, the PSA must disclose, analyze, and mitigate any potentially significant impacts from transporting this hazardous waste to the facility, including air quality, GHG emissions, transportation, noise, environmental justice, and public safety.

Transporting the Project's hazardous waste for disposal may have significant impacts, particularly if the facility is far away, such as the Copper Mountain Landfill located at 34853 East County 12th Street in Wellton, Arizona, approximately 130 miles southeast of the Project site. Other projects in the area rely on this facility for hazardous waste disposal.[375] Truck trips to the Arizona facility to dispose of the Project's hazardous wastes "alone could significantly increase the criteria air pollutant and GHG emissions above the amounts estimated in the Staff Assessment."[376] In fact, Dr. Shukla estimates that the additional truck trips would generate 8.98kg of carbon dioxide, contributing to more severe air quality and GHG impacts.[377] Furthermore, if the filter cakes exceed Arizona's toxicity standards, the Project would need to arrange for its hazardous waste to be hauled to Idaho or Nevada, a scenario not addressed in the PSA.[378]

The PSA must be revised to provide detailed information regarding the disposal and/or recycling of the Project's hazardous waste generated during construction and operations. Based on this information, the air quality, GHG emissions, transportation, noise, environmental justice, and public safety sections in the PSA must also be revised to analyze the potentially significant impacts from the transportation of the Project's hazardous waste.

B. The Analysis of Cumulative Impacts from the Transportation and Disposal of the Project's Hazardous Waste is Deficient

The PSA concludes that "[n]o cumulative projects were identified at or immediately adjacent to the project, therefore there are no projects with the potential to combine cumulatively with the project relative to hazards, hazardous materials and hazardous waste."[379] However, the PSA improperly limits the geographic scope of the cumulative impacts by restricting the analysis "to the immediate vicinity surrounding the project."[380] The PSA lacks substantial evidence to support the conclusion that "there are no projects with the potential to combine

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[375] *See*, *e.g.,* County of Imperial, Draft Environmental Impact Report for the Energy Source Mineral ATLiS Project (June 2021) p. 4.7-13, *available at* https://www.icpds.com/assets/Energy-Source-Mineral-ATLiS-Project-DEIR-.pdf.
[376] Clark Comments at p. 15; Shukla Comments at pp. 33-36.
[377] Shukla Comments at pp. 35-36.
[378] *See* County of Imperial, Hell's Kitchen PowerCo 1 and LithiumCo 1 Project Findings of Fact, Statement of Overriding Considerations (Dec. 2023) p. 35.
[379] PSA at p. 5.7-25.
[380] *Id.* at p. 5.7-12.

cumulatively with the project relative to" "the generation and haul away of hazardous waste"[381]

As explained above, the PSA fails to disclose where the Project's hazardous wastes will be transported and disposed of during construction and operations. Other projects in the area rely on the Copper Mountain Landfill including Energy Source Mineral ATLiS Project.[382] In addition, eleven operating geothermal power plants likely utilize the Copper Mountain Landfill for their hazardous waste disposal. The PSA must disclose where the Project's hazardous waste will be disposed of and revise the cumulative impacts analysis to adequately evaluate the projects with the potential to combine cumulatively with this Project's impacts from the transportation and disposal of hazardous waste.

SOLID WASTE MANAGEMENT

"The primary solid waste anticipated during plant operation would be filter cake generated during the processing of geothermal fluids. After the steam separation, geothermal fluids would be treated through clarifiers where minerals contained in the fluid would be removed as a slurry. The solids slurry discharged from the clarifiers would be directed to a vacuum filtration system to produce filter cake."[383] According to the AFC, approximately 1,300 tons of hazardous filter cake and 24,000 tons of nonhazardous filter cake will be generated each year by the Project.[384] The largest nonhazardous waste stream will be filter cake generated during operations.[385] The PSA states that around 95% of the filter cake will be characterized as nonhazardous, with approximately 5% likely to be characterized as hazardous due to elevated concentrations of heavy metals.[386]

The PSA specifies that the filter cake generated during Project operation would be transported to the DVCM Class II facility located in Brawley, California.[387] The DVCM specializes in the disposal of geothermal industry-related wastes and is currently permitted to accept a maximum of 750 tons of solid waste per day.[388] As of January 2022, the last active cell had a remaining capacity of 1.3

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[381] *Id.* at p. 5.7-12; 5.7-25.
[382] *See*, *e.g.,* County of Imperial, *Draft Environmental Impact Report for the Energy Source Mineral ATLiS Project* at p. 4.7-13 (June 2021).
[383] PSA at p. 5.12-1.
[384] AFC at p. 2-31; PSA at p. 5.12-4.
[385] PSA at p. 3-14.
[386] *Id.* at p. 5.12-1.
[387] *Id.* at p. 5.12-2.
[388] *Ibid.*

million cubic yards.[389] However, in January 2022, Imperial County approved an expansion of the landfill to a capacity of 2.6 million cubic yards.[390]

The PSA's evaluation of the DVCM's capacity to handle nonhazardous filter cake generated from this Project, along with other geothermal projects, is critically flawed. First, the PSA impermissibly defers the impacts analysis regarding the disposal of nonhazardous filter cake waste at an alternative disposal facility in Arizona. Second, the proposed mitigation for this waste disposal is deferred because the measure relies on a future impact study, thereby minimizing the Project's environmental impacts. Finally, the PSA lacks substantial evidence to conclude cumulative solid waste impacts are less than significant because the Project's nonhazardous filter cake waste exceeds the DVCM's current capacity when combined with waste from the two other proposed geothermal facilities and the cumulative impacts may be even more severe when coupled with the LVSP.

A. The PSA Fails to Analyze the Impacts from Disposal of Nonhazardous Filter Cake Waste at the Arizona Facility and Defers Mitigation of These Impacts

During the operational phase for all three proposed geothermal projects (Elmore North, Morton Bay, and Black Rock), the annual cumulative tonnage of geothermal filter cake transported to the DVCM Class II landfill would be approximately 62,000 tons.[391] The 2022 annual tonnage noted for the DVCM facility was 44,424 tons.[392] This indicates that the cumulative geothermal filter cake tonnage would exceed the annual 2022 capacity of the DVCM.[393] Moreover, the DVCM is projected to reach capacity in 2025.[394]

Although the Imperial County Board of Supervisors approved the expansion of the DVCM landfill capacity on January 25, 2022,[395] it is planned for two (2) phases.[396] According to the EIR for the expansion project, Phase 1 (Cell 4A) would

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[389] *Ibid.*
[390] County of Imperial, Agenda (Jan. 25, 2022), *available a*t https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.
[391] PSA at p. 5.12-6.
[392] *Ibid.*
[393] *Ibid.*
[394] *Id.* at p. 5.12-2.
[395] County of Imperial, Agenda (Jan. 25, 2022), *available a*t https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.
[396] County of Imperial, Desert Valley Company Monofill Expansion Project, Cell 4 Final Environmental Impact Report Vol. 1 (Oct. 2021) p. 4-1, *available at* https://www.icpds.com/assets/DVCM-FEIR-Vol-1.pdf. Additionally, Cell 4A and Cell 4B would collectively provide up to 2.6 million cubic yards of additional waste disposal capacity at the DVCM. *Id*. at p. 1-2. However, Cell 4B will not be constructed until two years prior to Cell 4A reaching its

take approximately 12 months to complete, with construction assumed to start in 2023.[397] However, there is no evidence in the record demonstrating that construction for Cell 4A has commenced or will occur in the near future. Phase 2 (Cell 4B) is anticipated to begin around 2050, two years before Cell 4A reaches capacity.[398] However, absent an actual start date for construction of Cell 4A, the timing of Cell 4B remains speculative.

As an alternative, the Applicant identified the Copper Mountain Landfill in Yuma, Arizona, as a disposal option if the Cell 4 expansion is not completed in time.[399] The PSA concludes that the cumulative impact regarding the disposal of nonhazardous geothermal filter cake would be less than significant if the Cell 4 expansion is completed before the three proposed geothermal projects exhaust the current DVCM capacity.[400] Mitigation Measure SOLID WASTE-2 requires the Applicant to identify an alternative disposal facility if the DVCM cannot accept the nonhazardous geothermal filter cake and to analyze whether the estimated waste volume would create a significant impact on the disposal facility and the surrounding environment.[401]

The PSA impermissibly fails to analyze the alternative disposal facility impacts. "An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. [] The courts have looked [] for adequacy, completeness, and a good faith effort at full disclosure."[402] The impacts analysis in an EIR must disclose the "analytic route the ... agency traveled from evidence to action."[403] "An adequate description of adverse environmental effects is necessary to inform the critical discussion of mitigation measures and project alternatives at the core of the EIR."[404] The agency cannot cede all responsibility for assessing impacts to the project proponent.[405]

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capacity, which is estimated to be around 2050. *Id.* at p. 4-1. Cell 4A is projected to have a design capacity of approximately 1.3 million cubic yards. *Id.* at p. 4-7. The PSA should compare the Project's estimated volume of geothermal filter cake to the Cell 4A design capacity rather than the entire Cell 4 capacity as it did in the analysis at pages 5.12-4—5.

[397] *Ibid.*

[398] *Ibid.*

[399] PSA at p. 5.12-6.

[400] *Ibid.*

[401] *Id.* at p. 5.12-8.

[402] 14 Cal. Code Regs. § 15151.

[403] *Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515.

[404] *Sierra Club v. Cnty. of Fresno* (2018) 6 Cal.5th 502, 514.

[405] *Sundstrom v. Cnty. of Mendocino* (1988) 202 Cal.App.3d 296, 307 (held the conditions improperly delegated the County's legal responsibility to assess environmental impact by directing the applicant to conduct the hydrological studies subject to the approval of the Planning Commission staff).

Based on the information in the PSA, the three geothermal projects, once operational, will immediately exceed the capacity of the DVCM existing facility. The DVCM expansion project is speculative. Although permits were issued, there is no evidence that construction has started, and once construction begins, it will take at least one year to complete the first phase. It is therefore reasonably foreseeable that the alternative disposal facility in Arizona will need to be utilized by the Project once all three geothermal projects are operational.

The PSA must be revised to evaluate the impacts from transporting and disposing of the nonhazardous filter cake at the facility in Arizona. By omitting this impacts analysis, the PSA minimizes the Project's environmental impacts, contrary to CEQA's requirements to evaluate the 'whole of an action.'[406] The Copper Mountain Landfill is approximately 130 miles from the Project site, compared to the DVCM facility, which is less than 20 miles away. Transporting nonhazardous waste to the alternative facility would cause new or more severe air quality, GHG, public health, transportation, and environmental justice impacts due to additional truck trip distances. The PSA must also be revised to evaluate whether the Copper Mountain Landfill is permitted to accept the nonhazardous geothermal filter cake waste generated by the three geothermal projects and assess if the estimated waste volume for these three projects would result in significant cumulative impacts on the disposal facility and its surrounding environment.

Additionally, the PSA sets forth deferred mitigation in COC SOLID WASTE-2/MM SOLID WASTE-2, which violates CEQA. "Impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."[407] The PSA fails to analyze the impacts from disposal of the Project's nonhazardous filter cake at the Copper Mountain Landfill. Instead, it proposes COC SOLID WASTE-2/MM SOLID WASTE-2, which requires identification of an alternative disposal facility and mandates further environmental review if the DVCM can no longer accept nonhazardous filter cake. This measure impermissibly defers formulation of specific performance standards and provides no standards for determining whether mitigation will be required. No evidence is offered in the PSA to explain why the analysis and mitigation measure is deferred. COC SOLID WASTE-2/MM SOLID WASTE-2 is contrary to CEQA, and the PSA must be revised to include a thorough impacts analysis regarding the use of the Copper Mountain Landfill.

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[406] CEQA prohibits piecemeal review of the significant environmental impacts of a project. *See Bozung v. Local Agency Formation Com.* (1975) 13 Cal.3d 263, 283-284.
[407] *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-16; *Save Agoura Cornell Knoll v. City of Agoura Hills* (2020) 46 Cal.App.5th 665, 687.

B. The PSA Lacks Substantial Evidence to Conclude Cumulative Solid Waste Impacts Are Less Than Significant

According to the PSA, the Elmore North, Morton Bay, and Black Rock geothermal projects would collectively transport approximately 62,000 tons of filter cake to the DVCM annually.[408] However, in 2022, the DVCM's annual tonnage was 44,424 tons,[409] resulting in an exceedance of 17,576 tons. The PSA acknowledges this exceedance, noting that "[t]he annual cumulative geothermal filter cake tonnage would exceed the annual tonnage reported for DVCM in 2022."[410]

Despite this, the PSA concludes that the cumulative impact from disposal of the nonhazardous filter cake would be less than significant "…if the DVCM facility Cell 4 expansion is completed prior to the three proposed geothermal projects exhausting the current DVCM capacity."[411] This conclusion is unsupported because it relies on the assumption that the expansion project will be completed prior to operation of the three geothermal facilities.

The PSA fails to describe the status of the expansion project. Consequently, it is unclear whether the DVCM can accommodate nonhazardous waste from the three geothermal facilities. Without substantial evidence demonstrating that the Cell 4 expansion will be operational in time, the PSA's less-than-significant cumulative impact conclusion remains speculative and unsupported.

Furthermore, the PSA's cumulative impact analysis fails to consider the Project's impact in combination with the LVSP. As discussed in the general comment on the PSA's analysis of cumulative impacts above, the LVSP would permit development of additional geothermal power plants, which would also generate nonhazardous filter cake. The PSA must be revised to assess how the combined waste demands of all future probable projects would impact the capacity of the current DVCM facility, the proposed Cell 4 expansion project, and the alternative disposal facility in Arizona. Specifically, the PSA must analyze if the estimated waste volume from all future probable projects would create a significant cumulative impact to each disposal facility and the surrounding environment.

The PSA's current analysis is insufficient and lacks the necessary details to ensure proper waste management and environmental protection. A comprehensive and detailed evaluation is essential to provide a reliable and legally compliance assessment of cumulative impacts. The revised PSA must offer substantial

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[408] PSA at p. 5.12-6.
[409] *Ibid.*
[410] *Ibid.*
[411] *Ibid.*

evidence and clear analysis to support its conclusions and ensure that the proposed mitigation measures are effective and enforceable.

TRANSPORTATION

A. The PSA Lacks Substantial Evidence to Support Trip Generation Rates

To determine whether the Project would result in a significant VMT impact, the PSA estimates that the Project would generate 104 daily operational trips.[412] This estimate is based on 61 workers driving to and from the Project each day, with a 15% discount for carpooling, worker absences, and remote work.[413] Additionally, the PSA excludes all truck trips generated by delivery, haul, and maintenance trucks from the VMT analysis, claiming these trips would occur during off-peak hours.[414] The VMT analysis is deficient for two reasons.

First, the PSA fails to provide evidence supporting the 15% reduction in daily worker trips. Neither the Project application nor the Applicant's responses to data requests substantiate this reduction.[415] The data request responses briefly mention carpooling for construction trips, but do not address remote work or expected absences.[416] Additionally, the PSA's reference to construction activities when justifying the 15% discount is confusing and irrelevant.[417]

Third, the PSA's exclusion of truck trips from the VMT analysis is clearly erroneous. The primary goal of the VMT analysis is to account for the total number of miles traveled by vehicles associated with the project, regardless of the time of day these trips occur.[418] The threshold of significance for the Project's impact to VMT also does not distinguish off-peak truck trips from other trips in considering whether a project's estimated daily trips are less than 110.[419] Off-peak truck trips still contribute to total VMT and can have significant environmental impacts. Ignoring these trips results in an incomplete and inaccurate assessment of the Project's total VMT.

Moreover, the PSA fails to adequately describe the off-site truck classifications. This is a critical omission because the lead agency must analyze all

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[412] PSA at p. 5.14-14.
[413] *Ibid.*
[414] *Ibid.*
[415] *See* AFC at p. 5.12-11 to 5.12-13; TN # 252491-1, Morton Bay Geothermal Project Data Request Response Set 1 Part 1 (Oct. 3, 2023) p. 10-1.
[416] TN # 252490-1 at p. 10-1.
[417] PSA at p. 5.14-14.
[418] Pub. Res. Code § 21099.
[419] PSA at p. 5.14-7.

on-road passenger vehicles, including cars and light duty trucks.[420] According to the air quality spreadsheets, 66% of the delivery, haul, and maintenance trucks are light-duty.[421] When 124 daily light duty truck trips are added to worker trips, the Project's daily operational trips clearly exceed the selected screening threshold of 110.[422]

Given these defects, the PSA lacks substantial evidence to conclude that the Project's VMT impacts are less than significant. The PSA must be revised to include a detailed study of the Project's operational VMT impacts. A new VMT analysis would also necessitate recirculation of the PSA because it constitutes significant new information that was added after the close of the comment period, depriving the public of a meaningful opportunity to comment on substantial adverse project impacts, feasible mitigation measures, or alternatives.[423]

B. The PSA Lacks Substantial Evidence to Support the Selected VMT Screening Threshold

To evaluate whether the Project's VMT impacts a are significant, the PSA utilizes the Office of Planning and Research's ("OPR") screening threshold of 110 daily trips.[424] A lead agency's choice of appropriate thresholds of significance must be "based to the extent possible on scientific and factual data."[425] While lead agencies have discretion to use thresholds of significance recommended by other public agencies, the decision must be supported by substantial evidence.[426] The use of OPR's screening threshold for this Project is inappropriate for several reasons.

First, the screening threshold is for small projects, which typically generate fewer trips and have localized impacts.[427] A large geothermal facility involves a much larger scale of operations, including significantly higher numbers of workers, machinery, and delivery and maintenance trucks. This results in a much greater VMT impact that cannot be accurately captured by thresholds meant for small office projects. The inherent differences in scale and operational demands mean that

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[420] 14 Cal. Code Regs. § 15064.3(a).
[421] TN # 253224, Morton Bay Geothermal Project Air Quality Operational Emissions Spreadsheet (percentage determined based on the usage percentage of off-site light duty pick-up trucks combined with the off-site heavy-duty diesel haul trucks in Table 18).
[422] PSA at p. 5.14-6 to 5.14-7, 5.14-14.
[423] 14 Cal. Code Regs. § 15088.5(a); *Laurel Heights Improvement Ass'n v. Regents of Cal.* (1993) 6 Cal.4th 1112.
[424] PSA at p. 5.14-7.
[425] 14 Cal. Code Regs. § 15064(b)(1).
[426] 14 Cal. Code Regs. § 15064.7(c).
[427] Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA (Dec. 2018) p. 12, *available at* https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.

using the same threshold would underestimate the actual VMT impact of the geothermal facility.

Second, OPR's screening threshold is based on a study finding a linear relationship between gross floor area and trip generation rate for office buildings, where for the first 10,000 square feet of office space, approximately 110 trips are generated.[428] This threshold is not appropriate for a geothermal project given the fundamentally different operational dynamics of office buildings and industrial energy projects. Office buildings typically have predictable commuter patterns, while geothermal facilities have complex and variable traffic patterns due to shifts, equipment transport, and maintenance activities.

Given these deficiencies, the PSA lacks substantial evidence to support selection of OPR's screening threshold for the proposed Project. The PSA must be revised to include a detailed study of the Project's operational VMT impacts. A comprehensive analysis tailored to the specific characteristics of a large geothermal facility is necessary to accurately assess its true VMT impact.

C. The PSA Fails to Analyze Cumulative VMT Impacts

The PSA contains no discussion of potential cumulative VMT impacts. This is a critical omission given the deficiencies highlighted above, which are also present in the VMT analysis for the Elmore North and Black Rock projects. The PSA must analyze whether the incremental VMT effects of the proposed Project are cumulatively considerable when viewed in connection with the VMT impacts of other past, present, and probable future projects.

ENVIRONMENTAL JUSTICE

CalEnviroScreen indicates that Calipatria suffers from a pollution burden worse than 63% of census tracts in California.[429] The asthma burden is in the 99th percentile in census tract 06025010200, which includes "disadvantaged communities" in the Project's 6-mile radius.[430] The construction and operation of lithium and geothermal facilities in Imperial Valley could further degrade air quality through emissions of particulate matter, GHGs, and hydrogen chloride.[431] It is vital that the PSA analyze the cumulative impacts as "Lithium Valley" is

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[428] *Id*. at p. 12 fn. 19.
[429] California Environmental Protection Agency, CalEnviroScreen 4.0 2021.
[430] PSA at p. 6-10.
[431] Earthworks & Comite Civico Del Valle, Environmental Justice In California's Lithium Valley: Understanding the Potential Impacts of Direct Lithium Extraction from Geothermal Brine (Nov. 2023) p. 7 (hereinafter "Lithium Valley EJ Report", *available at* https://earthworks.org/wp-content/uploads/2023/10/California-Lithium-Valley-Report.pdf.

developed, considering emissions from vehicle trips, battery plants, and other associated infrastructure.[432]

Disadvantaged, high-poverty Latinx communities living near the Project already endure significant pollution from the Salton Sea and industrial agriculture. These communities experience high rates of asthma, likely to increase due to airborne dust from the receding Salton Sea's exposed lakebed.[433] The Project will only exacerbate existing environmental justice impacts. Given this context, the Commission must thoroughly assess the cumulative and disproportionate impacts on these vulnerable communities. Failure to do so will worsen existing health disparities and environmental injustices.

A. Environmental Justice Impacts Associated with Project Air Quality are Significant

The Environmental Justice section of the PSA relies on the conclusion that the Project's air quality impacts are "less than significant with mitigation incorporated."[434] This statement is not supported by substantial evidence. As demonstrated herein and in the expert consultant reports attached, the Project will result in significant, unmitigated air quality impacts that will adversely affect the surrounding community, which is already overburdened with air pollution, health risk, and environmental justice impacts.[435]

First, substantial evidence demonstrates that the Project will cause significant impacts associated with excess $PM_{2.5}$ emissions, which are not adequately mitigated to less than significant, contrary to the PSA's assertions.[436] Air quality modeling shows that the Project would exceed the more stringent $PM_{2.5}$ standard, resulting in significant environmental justice impacts. The PSA confirms that Project construction, combined with background PM2.5 concentrations, would exceed 9.0 $\mu g/m^3$.[437] Additionally, project operation, in combination with background concentrations, would also exceed this standard.[438] The Project would therefore: 1) cause or contribute to exceedances of health-based ambient air quality

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[432] *Ibid*.
[433] Farzan, S. F., Razafy, M., Eckel, S. P., Olmedo, L., Bejarano, E., & Johnston, J. E. (2019). Assessment of Respiratory Health Symptoms and Asthma in Children near a Drying Saline Lake. International Journal of Environmental Research and Public Health, 16(20), Article 20, *available at* https://doi.org/10.3390/ijerph16203828.
[434] PSA at p. 6-11.
[435] Clark Comments at pp. 3-4, 14-15.
[436] PSA at p. 6-11.
[437] *Id.* at p. 5.1-24.
[438] *Id.* at p. 5.1-27.

standards; and 2) cause disproportionate air quality and public health impacts on sensitive populations, resulting in significant environmental justice impacts.[439]

Second, substantial evidence in expert consultant reports demonstrates that the Project will cause significant air quality impacts associated with Valley Fever. The PSA acknowledges that Project construction could expose workers and the public to the risk of Valley Fever,[440] but concludes health risks from Valley Fever are not a major concern due to the relatively low incidence rate in Imperial County compared to other areas of California and the proposed mitigation measures (AQ-SC3 and AQ-SC4), which are expected to minimize the risk of exposure to workers and the public.[441] This finding is not supported by substantial evidence.

The PSA's focus on historical infection rates is flawed. While infections rates in Imperial County may be lower than other parts of the state, the PSA ignores the primary risk factor: exposure to dust.[442] Research has shown that large-scale renewable energy construction projects increase the incidence rate for Valley Fever proportionally to the number of disturbed soil acres.[443]

Disturbance of the soil on the Project site may result in significant health risk impacts from Valley Fever to workers and the surrounding community. Construction workers are at significant risk of developing Valley Fever.[444] Labor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations.[445] Many construction workers in California come from disadvantaged communities.[446]

Moreover, the potentially exposed population is much larger than onsite construction workers because the non-selective raising of dust during Project construction will carry the very small spores, 0.002-0.005 millimeters, into off-site areas, potentially exposing large non-construction worker populations.[447]

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[439] Shukla Comments at pp. 11-36; Clark Comments at pp. 3-4, 14-15.
[440] PSA at p. 5.10-20.
[441] *Id.* at 5.10-21.
[442] Clark Comments at pp. 7-8.
[443] *Id.* at p. 8.
[444] Clark Comments at p. 8.
[445] *Ibid.*
[446] See Luke, et al. UC Berkeley, Center for Labor Research and Education, *Diversity in California's Clean Energy Workforce: Access to Jobs for Disadvantaged Workers in Renewable Energy Construction* (August 2017), available at https://laborcenter.berkeley.edu/pdf/2017/Diversity-in-Californias-Clean-Energy-Workforce.pdf (last visited 5/22/23) (documenting "considerable ethnic and racial diversity" in enrollments in apprenticeship programs of the 16 union locals of electricians, ironworkers, and operators that have built most of the renewable energy power plants in California, including 43% of entry-level power plant construction workers in Kern County coming from communities that are designated as disadvantaged by Cal EPA).
[447] Clark Comments at p. 10.

Desert winds can raise significant amounts of dust, even when conventional dust control methods are used, often prompting alerts from air pollution control districts.[448] If these winds occurred during grading, cut and fill, or soil movement, or from bare graded soil surfaces (even if periodically wetted), significant amounts of PM_{10}, $PM_{2.5}$, and associated Valley Fever spores would be released.[449]

Many of the Project components are in the vicinity of sensitive receptors, including residential areas, resulting in significant public health impacts. Valley fever spores can be carried on the winds into surrounding areas.[450] Valley Fever spores, for example, have been documented to travel as much as 500 miles.[451] Offsite exposure to Valley Fever spores may have a more significant impact on disadvantaged environmental justice communities than others. For example, the CalEEMod emissions modeling Users Guide, prepared by the California Air Pollution Control Officers Association, explains that construction emissions, including Valley Fever spores, "can have a greater impact on low-income residents, who are more likely to live in older homes or apartments, with more air leakages that leave them exposed to outdoor air quality."[452] Thus, dust raised during construction could potentially expose a large number of people miles away, resulting in a significant environmental justice impact to the surrounding community.

The Commission must issue a revised PSA that thoroughly assesses the cumulative and disproportionate impact on these vulnerable communities. Failure to do so will worsen existing health disparities and environmental injustices.

B. Environmental Justice Impacts Associated with Project Hazards are Significant

The Environmental Justice section of the PSA relies on the conclusion that the Project will have a less than significant impact from solid waste management. This conclusion is not supported by substantial evidence. As demonstrated in these comments and in those of CURE's expert consultants, the solid waste burden, as well as transportation of solid waste associated with the Project, results in significant environmental impacts, including adverse effects on air quality, GHG, and health risk. The PSA's conclusions regarding environmental justice related to solid waste management are unsupported by substantial evidence. The significant

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[448] *Id.* at pp. 9-10.
[449] *Ibid.*
[450] *Id.* at pp. 7-10.
[451] Filip, Valley Fever Epidemic, Golden Phoenix Books, 2008, p. 24.
[452] California Air Pollution Control Officers Association, Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (Dec. 2021) p. 505, *available at* https://www.caleemod.com/documents/handbook/full_handbook.pdf.

impacts from solid waste and its transportation necessitate further analysis and mitigation. To protect public health and ensure environmental justice, the Commission must issue a revised and recirculated PSA that addresses this issue comprehensively, supported by robust and effective mitigation strategies.

WATER RESOURCES

Water supply within IID's service area is facing "unprecedented conditions"[453] due to "[p]rolonged drought in the Colorado River Basin and low runoff conditions accelerated by climate change [that] have led to historically low water levels in Lakes Powell and Mead. … While hydrology has improved in the Colorado River Basin, reservoir elevations are projected to continue to decline."[454]

In 2009, IID adopted an Interim Water Supply Policy for Non-Agricultural Projects ("IWSP") "to provide a mechanism to address new water supply requests for proposed projects being developed within the IID service area."[455] "The IWSP designates up to 25,000 acre-feet of IID's annual Colorado River water supply for any new projects, provides a mechanism and process to develop a water supply agreement for any appropriately permitted project, and establishes the framework and set of fees necessary to ensure the supplies used to meet any new demands do not adversely affect existing users by funding water conservation or augmentation projects."[456]

According to the PSA, "[a]s of January 2024, 6,380 AFY has already been committed by water agreement, leaving 18,620 AFY for all other non-agricultural projects. The combined annual operational water demand of the three BHER geothermal projects [is 13,165 AFY and] constitutes 71 percent of the remaining IWSP water intended for non-agricultural projects."[457] Within the next 20 years, the Imperial County Planning & Development Services ("ICPDS") "anticipates non-agricultural project water supply demand … is likely to exhaust the 18,620 AFY available under the IWSP…," and "[t]hus, the proposed Project's estimated water demand, combined with other development anticipated in the area is likely to

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[453] TN # 247861, Lithium Valley Commission, Report of the Blue Ribbon Commission on Lithium Extraction in California (Dec. 2022) p. 63 ("Lithium Extraction Report"), *available at* https://efiling.energy.ca.gov/GetDocument.aspx?tn=247861&DocumentContentId=82166.
[454] Bureau of Reclamation, IID 2024-2026 Temporary Colorado River System Water Conservation Project Draft Environmental Assessment LC-24-07 Lower Colorado Basin (June 2024) p. 4, *available at* https://mavensnotebook.com/wp-content/uploads/2024/06/USBR-Co-RIver-System-DEA.pdf.
[455] Imperial Irrigation District, Municipal, Industrial and Commercial Customers, https://www.iid.com/water/municipal-industrial-and-commercial-customers (last updated Feb. 1, 2023).
[456] *Ibid.*
[457] PSA at p. 5.15-14 (internal citations omitted).

adversely affect IID's ability to provide water to other users in IID's water service area unless mitigation is incorporated."[458]

According to the AFC, "Project operations require approximately 5,560 afy of water when operating at full plant load for uses including cooling tower makeup, plant wash down, and RO for potable use."[459] Additional IID canal freshwater will be required for startup, fire protection, and maintenance.[460] "Approximately 50% of the operational water required by the facility will be generated by steam condensed in the main condenser."[461]

The Project's operational water demand of approximately 5,560 AFY represents:

- 29.9% of the unallocated supply available for additional conservation and contracting under the IWSP for non-agricultural projects;

- 2.8% of forecasted future non-agricultural water demands planned in the Imperial IRWMP through 2055;

- "[A] substantial increase from the 10-year average historic average agricultural water use for 2013-2022 at the Project site, an increase in water use of 5,560 AFY at full build-out.[462]

A recent Lawrence Berkeley National Laboratory ("LBNL") report estimates that Salton Sea geothermal facilities "purchase an average of 16 AF each year for every [MW] of net generation capacity. The water demand of individual facilities ranges widely, from 0.4 to 32 AF per MW annually. … **[However, the MBGP] use[s] more water per MW than the range reported in the 2012 IRWMP**."[463]

The Project may result in significant impacts to water resources that must be adequately disclosed, analyzed, and mitigated in a revised PSA. The PSA's analysis is insufficient for several reasons. First, the water supply analysis lacks substantial evidence because it is limited to a 20-year period, while the Project will be operational for 40 years. Second, the estimated volume of freshwater for the cooling tower is not adequately supported in the WSA. Third, the WSA and PSA must

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[458] WSA at p. iii.
[459] AFC at p. 5.15-15.
[460] Lawrence Berkeley National Laboratory, Characterizing the Geothermal Lithium Resource at the Salton Sea (Nov. 22, 2023) p. 90 (hereinafter "LBNL Report"), *available at* https://escholarship.org/content/qt4x8868mf/qt4x8868mf.pdf?t=s4j82b.
[461] WSA at p. 7-1.
[462] *Id.* at p. 10-1.
[463] LBNL Report at p. 90.

disclose and analyze the sources of water for the Project. Fourth, the PSA fails to analyze impacts on groundwater resources due to accidental releases or leaks from the Project's pipelines. Fifth, flood risks are not adequately evaluated in the PSA. Sixth, the PSA improperly omits an analysis of the revised design of the brine pond. Seventh, the evaluation of long-term Colorado River water supplies is not adequate, failing to show that the Project's long-term water demands will be met. Eighth, the PSA omits a discussion regarding the Project's operational water use efficiency. Ninth, the cumulative impacts analysis on water supply and the Salton Sea is deficient. Tenth, the PSA fails to disclose any conservation programs or projects intended to mitigate the Project's water supply demand. Finally, MM WATER-9 must be revised to require a water storage tank to avoid evaporation loss over the open service water pond.

A. The Water Availability Analysis Lacks Substantial Evidence Because Only Half of the Project's Operational Life Is Evaluated

As set forth in Mr. Parker's comments, the water supply analysis lacks substantial relevant information about the water supply for the 40-year life of the Project.[464] The Project is expected to have a 40 year operational life, yet the WSA severely limited the analysis of water supply to a mere 20 year projection.[465] Commission staff previously asked the Applicant to "correct the project life to 40 years throughout the document and ensure that the water availability analysis reflects a 40-year operational period."[466] The Applicant rejected staff's request, explaining that "[t]he planning period for the WSA, as stipulated in Senate Bill 610, is 20 years."[467]

The WSA must be revised to analyze whether the total projected water supplies during normal, single dry, and multiple dry water years will meet the projected water demand for the entire life of the Project, i.e., 40 years. By restricting the analysis to only 20 years, the WSA does not support several of the conclusions with substantial evidence.

For example, the WSA concludes that IID can meet the water delivery demand "for the life of the proposed Project," yet the water supply scenarios only evaluates the first 20 years of the Project.[468] Additionally, the Commission and

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[464] Parker Comments at pp. 4-5.
[465] PSA at p. 3-27; WSA at p. iii.
[466] TN # 254419, Data Response Set 4 (Responses to Data Requests 1 to 43) (Feb. 12, 2024) p. 6-6.
[467] *Ibid*.
[468] WSA at p. 8-6 (emphasis added) ("These efficiencies combined with the conversion of some agricultural land uses to non-agricultural land uses (both solar and municipal), ensure that IID can continue to meet the water delivery demand of its existing and future agricultural and non-agricultural water users, including this Project for the next 20 years and for the life of the proposed Project under a water supply consistent with the district's full entitlement.").

ICPDS findings state "…that the IID projected water supply is sufficient to satisfy the demands of this proposed Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 20-year Water Supply Assessment period and for up to **30 years of the anticipated 40-year proposed Project life**."[469] This would mean that IID's water supplies may not accommodate the Project's water demand for 10 years during operations or 25% of the Project life. The water availability analysis must be revised in the PSA and WSA to ensure that sufficient supply is available for the entirety of the Project.

While Water Code § 10910 mandates a water supply assessment for a project to evaluate water supplies during a 20-year period, nothing prohibits the WSA from extending the time period for the analysis. In fact, the water supply assessment for the Energy Source Minerals, LLC ("ES Minerals") project, a commercial lithium hydroxide production plant, analyzed that project's water demand over a 30-year term.[470]

The WSA must be revised to assess the Project's impact on IID's projected water supply for the entire life of the Project, i.e., 40 years. By constraining the analysis to only 20 years, the WSA's conclusions, as well as the Commission and ICPDS findings, that IID has adequate water supply to serve the Project for its full operational life are unsupported by substantial evidence.

B. The WSA Fails to Provide Substantial Evidence for Freshwater Volume Estimates for the Cooling Tower

"On an annual average basis during operation, water needs from the IID canal are approximately 5,560 acre-feet per year (afy), approximately 50% of the total facility water needs."[471] "Approximately 50% of the operational water required by the facility will be generated by steam condensed in the main condenser."[472] For the cooling tower, the PSA states that the Project proposes to use mostly "condensed geothermal steam from the main condenser except during high ambient conditions when supplemental water will be used from the service water pond."[473] The WSA similarly explains that IID water will be used for the cooling tower "when evaporation is high," and estimates that the cooling tower will require a total of 1,122 AFY of raw water.[474]

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[469] *Id.* at p. 9-2 (emphasis added).
[470] Imperial County Planning & Development Services, Water Supply Assessment – ES Minerals (Apr. 23, 2021) p. 11, *available at* https://www.icpds.com/assets/hearings/02.-WSA,FIER,-MMRP,-CUP20-0008,-PM02485-Energy-Source-Mineral-ATLiS-PC-Pkg.pdf.
[471] AFC at p. 5.15-11.
[472] *Ibid.*
[473] *Id.* at p. 5.15-11.
[474] WSA at pp. 1-2; 7-1.

However, the estimated volume of freshwater needed for the Project's cooling tower is unsupported. The WSA and PSA acknowledge that IID water would be used instead of condensate "when evaporation is high" or "[d]uring high ambient conditions," but there is no analysis about the frequency of these conditions and either impact on IID water demand.[475] Appendix C details the typical weather in Niland, California, noting a "hot season" spanning from June to September (approximately 3.6 months) "with an average daily high temperature above 99 degrees Fahrenheit."[476] Despite this information, neither the PSA nor the WSA clarify whether such data or other evidence of ambient conditions in the Project area were considered in calculating the total freshwater needs for the cooling tower.

The PSA and WSA must be revised to adequately disclose and analyze the frequency of high ambient conditions. This analysis is crucial to substantiate the cooling tower's anticipated freshwater demands with substantial evidence. Without this information, the current estimates lack the necessary support and transparency required for a comprehensive environmental review.

C. The WSA and PSA Must Disclose and Analyze the Sources of Water for the Project

Mr. Parker explains that the IID water source for the Project's freshwater demand is not conclusively determined in the PSA or the WSA.[477] The discussion in the WSA states that IID will determine at an undefined future date whether the Project's IID water supply will be covered under IID's Schedule 7 General Industrial Use water rates[478] and/or the IWSP for Non-Agricultural Projects.[479] The WSA is also ambiguous as to whether the Project may be covered under both Schedule 7 General Industrial Use and the IWSP for Non-Agricultural Projects or one of those options.[480] On the one hand, the WSA analysis states that IID will determine whether the Project will utilize IWSP for Non-Agricultural Projects' water *in addition to* being covered under Schedule 7 General Industrial Use.[481] Discussion elsewhere in the WSA states that "in the event that Schedule 7 General Industrial Use water has exhausted its apportioned amount, the Applicants will rely on IID IWSP water to supply the Project,…."[482]

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[475] *Id.* at p. 1-2; PSA at p. 3-13.
[476] PSA, Appendix C at p. 1.
[477] Parker Comments at pp. 8-9.
[478] Imperial Irrigation District, Water Rates: Schedule No. 7 (effective August 1, 2009), *available at* https://www.iid.com/home/showdocument?id=4317.
[479] WSA at p. 6-1.
[480] *Id.* at pp. 6-1, 8-4, 9-2.
[481] *Id.* at p. 6-1.
[482] *Id.* at p. 8-4.

The evaluation in the PSA of available water supplies to serve the Project focuses entirely on the water set aside pursuant to the IWSP and does not disclose or analyze water supply impacts if the Project solely or also utilizes Schedule 7 General Industrial Use. While the WSA is vague and ambiguous about the Project's water supply, the PSA completely overlooks a potential water source for the Project in violation of CEQA's requirements. Information regarding the water source(s) for the Project is indispensable to a robust analysis of the Project's impacts on water supply. The PSA must be revised to clearly identify the source(s) of Project water and to adequately evaluate the impacts on IID's water supply from the Project's water demand.

Furthermore, as addressed in Mr. Parker's comments, the WSA briefly mentions that "[i]f commercially viable, MBGP would seek additional water through IID's Clearinghouse, consistent with any contractual requirements or limitations."[483] In *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, the court established that if a proposed development project requires a new or additional water supply, the lead agency under CEQA must identify and analyze the sources of that supply and consider the impacts of acquiring it.[484] The PSA does not even mention the IID Clearinghouse water as an alternative water source for the Project.

"The Clearinghouse is a mechanism to facilitate the movement of water between District Water Users," and "[w]ater made available to the Clearinghouse for transfer will be assigned to Clearinghouse accounts and water shall be transferred through the Clearinghouse pursuant to procedures developed and implemented under and pursuant to [the] Equitable Distribution Plan."[485] The PSA does not evaluate IID's Clearinghouse as an alternative water source. Moreover, Mr. Parker comments that "[t]he WSA cannot assume the IID's Clearinghouse is a secure source of alternative water—particularly given the amount of freshwater that this Project would require— without providing sufficient facts and analysis."[486]

D. The Project May Significantly Impact Groundwater Quality from Pipeline Leaks

The PSA explains that although the Project's wells, well pads, and pipelines (except those pipelines connecting to the powerplant) are licensed under the California Geologic Energy Management Division ("CalGEM"), the environmental

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[483] *Id.* at p. 1-2; Parker Comments at p. 9.
[484] *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 430-32.
[485] Imperial Irrigation District, Equitable Distribution Plan (July 26, 2023) pp. 7-8, *available at* https://www.iid.com/home/showpublisheddocument/20254/638313266942930000.
[486] Parker Comments at p. 9.

impacts from these Project features are to be "fully evaluated" in the PSA.[487] The Project's pipelines would involve construction of "12,032 linear feet of pipeline from production wells, [and] 27,758 linear feet of pipeline to injection wells,…."[488] Additionally, "foundations for production/injection pipelines [] would be installed to depths of 20 feet and 30 feet,…."[489] Depth to groundwater was encountered at eight feet below ground surface ("bgs") during the Project's geotechnical investigation.[490]

Dr. Malama comments that shallow groundwater and low permeability of the soils[491] "along the pipeline routes may cause ponding of fluids if leaks from the Project's fluid conveyance pipelines occur that could contaminate [] groundwater resources."[492] Based on estimations in the AFC that "[a] fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location,"[493] Dr. Malama concludes that a release of fluids at these volumes may result in a significant impact on groundwater resources that was not evaluated in the PSA.[494]

Moreover, the AFC provides a list of the chemical constituents in the Project's produced fluids as well as the condensate and injected geothermal fluids that is not disclosed or evaluated in the PSA.[495] The PSA also omits an analysis of the potentially significant impacts on groundwater from a release of fluids from the Project's pipelines. As discussed in Dr. Malama's comments, "[t]he pipeline fluids are brines with high sodium and chloride concentrations," as well as barium, lead, and/or cadmium, which could cause impacts on groundwater if leaks or releases occur from the Project's pipelines.[496] According to Dr. Malama, chloride toxicity can impact water quality, and "sodium can elevate soil pH and lead to accumulation of other toxic elements."[497] "Sodium is [also] a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004)."[498] Additionally, Dr. Malama states that pipeline fluids may contain other toxic metals like barium,

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[487] PSA at p. 5.15-1.
[488] *Ibid.*
[489] *Ibid.*
[490] *Id.* at p. 5.15-2.
[491] "The fine-grained deposits that are characteristic of the area have transmissivities of only 1,000 to 10,000 gallons per day per foot to depths of approximately 500 feet. At greater depths, the transmissivities are likely to be even less (Westec 1981). The low transmissivity of these deposits limits the ability of water to percolate downward into deeper aquifers." *Ibid.*
[492] Malama Comments at p. 2.
[493] AFC at p. 2-62.
[494] Malama Comments at p. 2.
[495] AFC at pp. 2-16—17; 2-20.
[496] Malama Comments at p. 3.
[497] *Ibid.*
[498] *Ibid.*

cadmium, and lead "such that fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater."[499]

Based on the foregoing, Dr. Malama concludes that "[g]iven the average daily volume flowrate of MBGP pipeline infrastructure and the constituents in the produced fluids and condensate and injected geothermal fluids, potential leakages from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area."[500] These impacts must be assessed in a revised PSA.

E. Flood Risks are Not Adequately Evaluated in the PSA

Mr. Parker comments that the PSA must be revised to adequately analyze the flood hazards and mitigate any significant impacts. As discussed by Mr. Parker in his comments, the revised analysis must not solely rely on stationarity to predict future storm and flood events.[501] According to Mr. Parker and as supported by several studies cited in his comments, "[t]he new climate normal in California is extreme weather events that produce more rainfall over shorter time periods and with less frequency, resulting in increased flood risks [internal citations omitted]."[502] Mr. Parker recommends that future climate scenarios be incorporated into the analysis to better predict extreme hydrologic variability.[503]

F. The PSA Improperly Omits an Analysis of the Revised Design of the Brine Pond

The PSA indicates that if the Applicant's LOMR is not approved by FEMA, the brine pond must be modified to mitigate the flood impacts.[504] However, the PSA fails to specify how the brine pond's design would be changed and does not analyze the potential significant environmental impacts of these design changes, as highlighted by Mr. Parker's comments.[505] Therefore, Mr. Parker concludes that the PSA must "be revised to provide an analysis regarding any proposed modifications to the brine pond, related impacts, and any measures to reduce significant impacts to less than significant levels."[506]

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[499] *Ibid.*
[500] *Ibid.*
[501] Parker Comments at p. 5.
[502] *Ibid.*
[503] *Ibid.*
[504] PSA at p. 5.15-13.
[505] Parker Comments at pp. 5-6.
[506] *Id.* at p. 6.

G. Reductions to the Colorado River Water Supply Are Not Adequately Evaluated

The discussion in the PSA and WSA concerning IID's long-term water supply lacks substantial evidence to support the conclusion that IID has adequate long-term water availability for the Project's projected water demand.[507] As discussed in Mr. Parker's comments, the WSA uses the same assumptions of water availability for this Project in a normal year as during a single-dry and multiple-dry year scenarios.[508] The WSA states that "[t]his is due to the small effect rainfall has on water availability in IID's arid environment along with IID's strong entitlements to the Colorado River water supply."[509] However, Mr. Parker comments that "the [global climate models'] projections of future basin hydrology show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability," which are not incorporated in the WSA's analysis.[510]

Table 11 in the WSA sets forth the "IID Historic and Forecast Net Consumptive Use for Normal Year, Single-Dry Year and Multiple-Dry Year Water Supply, 2003-2037, et seq."[511] The water volumes in Table 11 "assume[] full use of IID's quantified water supply,…."[512] Yet, Colorado River water allotments are operating under shortage conditions as of 2023 due to years of drought conditions and runoff declines in the upper basin, "creating long-term water supply uncertainties throughout the Basin states."[513] "IID recognizes the need for significant response actions to protect the long-term water supply certainty for the Imperial Valley as the Colorado River operates under these unprecedented conditions."[514]

The WSA identifies at least two scenarios that may result in reductions to the total water available to the Project.[515] First, the WSA explains that "[n]ew, non-agricultural projects may be susceptible to delivery cutbacks when an EDP Apportionment is exhausted,…."[516] Second, "[g]iven the prolonged drought conditions and recent communication to IID from the Department of the Interior [("DOI")], reductions to all basin contractors, including IID and its water customers,

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[507] WSA at p. 10-1; PSA at p. 5.15-13—14.
[508] *Id.* at p. 3-1; Parker Comments at pp. 3-4.
[509] WSA at p. 3-1.
[510] Parker Comments at p. 4.
[511] WSA at p. 4-1
[512] *Ibid.*
[513] *Id.* at p. 5-1.
[514] *Id.* at p. 5-5.
[515] *Id.* at p. 10-1.
[516] *Ibid.*

are increasingly likely."[517] As a condition of water service, the Project will be required to "acknowledge and accept [] that … IID may reduce the water service agreement amount, [] as a proportionate reduction of the total volume of water available to IID."[518] To mitigate the impacts from any such reductions, the WSA asserts that the Applicant would "work with IID to ensure any anticipated reduction can be managed via the means identified [in the WSA] or other equivalent measures."[519]

Mr. Parker's comments provide substantial evidence demonstrating that IID's water supply is likely to change significantly, specifically due to reduced Colorado River water availability causing regulatory cuts to IID's full entitlement.[520] Mr. Parker explains that a more robust analysis is necessary that "discuss[es] Colorado River projected future hydrology based on projections from global climate models…."[521] Mr. Parker discusses how "[t]ree-ring reconstructions of Colorado River streamflow extend the observed natural flow record based on stream gages up to 1200 years into the past and represent a much broader range of hydrologic variability and extremes than are contained in the observed hydrologic records."[522]

"[I]nstead the PSA and WSA rely on the assumption of stationarity,…."[523] Mr. Parker generally defines "stationarity" as the assumption "that the future would closely resemble the past and/or current conditions, basically relying on historical gaged hydrology."[524] For example, the discussion of "Climate Factors" in the WSA[525] incorporates monthly mean temperatures from 1924 to 2023.[526] As discussed in Mr. Parker's comments, CEC Staff raised a similar issue in its Data Requests Set 4, which addressed the WSA's assertion that IID is not dependent on local rainfall and IID water supply would not differ between normal and dry years.[527] CEC Staff stated that "the lack of regional precipitation over the greater Colorado River basin could affect the Colorado River flows and as a result IID's allocation of water supply," and therefore requested in Data Request No. 35 that the Applicant "consider a revision to Section 3 to recognize that regional weather patterns could impact IID's water supply."[528] The Applicant responded that "Section

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[517] *Ibid.*
[518] *Ibid.*
[519] *Ibid.*
[520] *See* Parker Comments at pp. 2-4.
[521] *Id.* at p. 2.
[522] *Ibid.*
[523] *Ibid.*
[524] *Ibid.*
[525] WSA at p. 1-1.
[526] Parker Comments at p. 2.
[527] TN # 253870, Data Requests Set 4 (Jan. 12, 2024) p. 12.
[528] *Id.* at p. 13.

3 of the WSA will be revised to acknowledge that regional weather patterns could impact IID's water supply," but the WSA was not revised accordingly.[529]

Mr. Parker discusses in detail several recent basin wide planning activities that "have analyzed scenarios of future hydrology derived from projections from global climate models [] with additional hydrologic modeling."[530] Mr. Parker summarizes these analyses as "indicat[ing] that the impact of warming combined with the variable precipitation leads to net declines in basin runoff over the next several decades, leading to further reduced Colorado River water availability."[531] Furthermore, "[s]everal reservoir and water management decisional documents and agreements[532] that govern the operation of Colorado River facilities and management of the Colorado River set to expire in 2026 are in the process of being renegotiated,…."[533] Mr. Parker estimates that "the quantity and allocation of future water supplies of the Colorado River will be less, perhaps significantly less than in the past."[534]

Mr. Parker's comments are also supported by the California Department of Water Resources' recent State Water Project Delivery Capability Report that was published in July of 2024 ("DWR Report").[535] Mr. Parker explains that the DWR Report "not only acknowledged the threats to current and future water supply conditions from climate change, but also developed an adjusted historical hydrologic conditions data set that incorporated recent climatic conditions."[536] The DWR Report found that "[a] shortcoming of using the historical hydrologic conditions data set to assess existing Project delivery capability is that the effect of climate change is not consistent throughout the modeled period."[537] Utilizing an adjusted hydrological conditions assessment, the DWR Report concluded that State Water Project "delivery capability and reliability could be reduced as much as 23 percent in 20 years due to changing flow patterns and extreme weather shifts."[538] Mr. Parker emphasizes that the findings in the DWR Report "underscore[e] the

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[529] TN # 254419, Morton Bay Geothermal Project Data Request Set #4 Response (Feb. 12, 2024) p. 6-5.
[530] Parker Comments at pp. 2-3.
[531] *Id.* at p. 3.
[532] "These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty)." *Ibid.*
[533] *Ibid.*
[534] *Ibid.*
[535] *Ibid.*
[536] *Ibid.*
[537] *Ibid.*
[538] *Ibid.*

importance of incorporating climatic conditions in water supply reliability assessments."[539]

In conclusion, Mr. Parker recommends that the WSA and PSA be revised to disclose "the impact that climate change could have on IID's water supply," and the impacts assessment "must be revised to incorporate the [global climate modeling] projections of future basin hydrology."[540] Mr. Parker concludes that "[t]hese projections would show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability."[541]

H. The PSA Omits Necessary Information Regarding the Project's Operational Water Use Efficiency

The WSA explains that "water users within the IID service area are subject to the statewide requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2."[542] As such, the MBGP, if approved, would be subject to the constitutional requirement to ensure the reasonable and beneficial use of Colorado River water, but this showing has not been made based on the information and analysis in the PSA. As explained by Mr. Parker, the MBGP PSA is silent as to why the BRGP "is more efficient (80%) when it comes to operational water generated by steam condensation, as compared to Morton Bay and Elmore North, which have an operational water use efficiency of 50% and have larger total operational water demands of approximately 11,100 and 13,000 AFY, respectively (see table below)."[543]

Comparison of Proposed Geothermal Power Plant Parameters – BHE Renewables			
Parameter	Black Rock	Elmore North	Morton Bay
Land use (acres)*	55	63	63
Cooling Tower(s)	1 seven-cell	1 fourteen-cell	1 fourteen -cell
Production Wells	5	9	9
Injection Wells	7	12	11
Operational Water Demands (AFY)	5,620	11,120	12,960
Operational water generated by steam condensation (Water Use Efficiency)	80%	50%	50%

[539] *Ibid.*
[540] *Id.* at p. 4.
[541] *Ibid.*
[542] WSA at p. 1-6.
[543] Parker Comments at p. 9.

Water Demands from IID (AFY)	1,125	6,480	5,560
MW Rating (Max/Net)	87/77	157/140	157/140

During the information gathering phase of the proceeding, the Applicant explained that a reduction to IID freshwater for dilution water or cooling water—the two primary freshwater uses by the Project—would not be feasible.[544] Mr. Parker comments that the Applicant's response suggests "that the Project has maximized its operational water use efficiency."[545] Whether the Project has in fact maximized its operational water use efficiency or if improvements can be made to reduce the Project's IID water demands must be evaluated in a revised PSA.[546] The PSA must also disclose and analyze whether any efficiencies adopted for BRGP to increase the operational water use generated by steam condensation may be utilized for the MBGP as well.

I. The PSA's Analysis of Cumulative Impacts on Water Supply Is Deficient

The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."[547] "Cumulative impacts may result from individually minor but collectively significant projects taking place over a period of time."[548] An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable."[549] A project's incremental contribution is cumulatively considerable if the incremental effects of the project are significant "when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."[550] An analysis of cumulative impacts should consider all sources of related impacts, not just similar sources or projects.[551]

In a water-constrained region facing prolonged drought conditions and increasing water shortages, it is imperative that a reasoned and adequate analysis of cumulative impacts on water supply is performed prior to approving any new geothermal power plants.[552] Here, however, the PSA fails to adequately identify

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[544] TN # 254419.
[545] Parker Comments at p. 9.
[546] *Ibid.*
[547] 14 Cal. Code Regs. §15355.
[548] *Id.* at § 15355(b).
[549] *Id.* at § 15130(a).
[550] *Id.* at § 15056(a)(3).
[551] *Id.* at § 15130(a)(1).
[552] Notably, the Lithium Valley Recommendation #10 is to "[r]equire and fund IID to conduct a water study of projected cumulative infrastructure development of geothermal power plants and DLE

and analyze the cumulative effects on water supply from other "past, present, and probable future projects,"[553] rendering the less-than-significant determination in the PSA unsupported. In Mr. Parker's comments, he identifies several projects that were omitted from the PSA's analysis of cumulative impacts on water resources without adequate justification.[554]

First, the analysis in the PSA does not evaluate several of the projects identified in the AFC's cumulative impacts analysis for water resources.[555] The analysis in the AFC identifies eight projects whereas the discussion in the PSA only considers two projects, i.e., Elmore North Geothermal Project and Black Rock Geothermal Project, plus the projects covered under the IWSP as of January 2024.[556] The deficiencies in the PSA's cumulative impacts analysis are also discussed in a letter dated July 23, 2024 from IID to the Commission related to the Elmore North Geothermal Project.[557] In its letter, IID states that the PSA must include a cumulative impacts analysis that utilizes "the recent existing and permitted projects identified earlier in this document under Table 1-2 Master Cumulative Project List, in addition to the three BHE geothermal projects."[558] The cumulative impacts analysis in the PSA must be revised to include an analysis of all of the projects included in the AFC's cumulative impacts analysis, which includes those projects identified in IID's correspondence to the Commission.[559]

Second, Mr. Parker states that past, present, and probable future projects related to lithium extraction must be evaluated in the cumulative impacts analysis for water supply.[560] Mr. Parker determines that lithium extraction "projects are intimately related to geothermal production, have substantial water demands, and would likely rely on the same sources of IID water supply, e.g., IWSP."[561] "According to the Lithium Valley Commission, proposed lithium production is projected to reach 210,000 metric tons of LCE per year,...."[562]

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facilities and related water use, sources, local beneficial uses, and availability. The State or other entity should also evaluate water quality." Lithium Extraction Report at p. 79.

[553] 14 Cal. Code Regs. § 15130(b)(1)(A).

[554] *See* Parker Comments at pp. 6-7.

[555] Parker Comments at p. 6; AFC at pp. 5.15-19—20.

[556] *Id.* The PSA and WSA explain that IID has committed 6,380 AFY of the 25,000 AFY available under the IWSP as of January 2024. PSA at p. 5.15-15. However, neither document specifies which projects are included in the 6,380 AFY estimate.

[557] TN # 257957 at p. 5.

[558] *Ibid.*

[559] *Ibid.*

[560] Parker Comments at p. 6-7.

[561] *Id.* at p. 6.

[562] Lithium Valley EJ Report at p. 26.

A recent LBNL report estimates that "[w]ater demand for lithium extraction is appreciable, representing an additional 3.5-4X the freshwater requirements of geothermal energy production alone from a given volume of brine, based on published estimates for facilities planned in the Salton Sea region."[563] Additional water is required for lithium production as compared to geothermal energy in part because there are "large upfront water needs for new facility construction and for ongoing operations."[564] According to the LBNL report, "[t]he Imperial Valley's Integrated Regional Water Management Plan (IRWMP) projected region-wide water needs for renewable energy production, including geothermal energy, to be 144,000 AF per year," which the report concludes "may be sufficient to accommodate the expected growth of geothermal but not that of lithium production."[565]

Third, Mr. Parker discusses the failure of the PSA to consider the 11 operating geothermal power plants in the analysis of cumulative impacts on water resources.[566] He explains that "[t]o the extent that the water demands of these existing projects (or any modifications) would impact cumulative water supply, these impacts must be disclosed and evaluated in the PSA."[567]

Finally, the PSA fails to adequately analyze the cumulative impacts associated with the LVSP. The LVSP encompasses a 51,786-acre Study Area within the basin of the Salton Sea in the Imperial Valley.[568] The LVSP would guide the development of renewable energy sources, including geothermal energy projects.[569] The PSA establishes that 6,380 AFY of IID water has been committed for non-agricultural projects as of January 2024 and 18,620 AFY remains for all other non-agricultural projects.[570] The combined estimated water supply for the Elmore North, Morton Bay, and Black Rock projects is 13,165 AFY (or nearly 71 percent of the IWSP designation), which would leave 5,455 AFY of available IWSP water supply.[571] An executed water supply agreement for just one more geothermal project under the IWSP could exceed IID's remaining water supply for non-agricultural projects given that both the Elmore North and Morton Bay projects will each utilize over 5,500 AFY. The likelihood of not just one, but several new geothermal projects is probable given the pending LVSP. Exceedance of the non-agricultural projects' water supply under the IWSP is therefore very probable when factoring in the water demands under the LVSP, plus the Project. The LVSP therefore must be considered in the PSA's cumulative impacts analysis.

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[563] LBNL Report at p. 99.
[564] *Id.* at p. 94.
[565] *Ibid.*
[566] PSA at p. 5.15-15; Parker Comments at p. 6.
[567] Parker Comments at p. 6.
[568] LVSP Baseline Report at p. 5.
[569] LVSP Initial Study at p. 2.
[570] PSA at p. 5.15-15.
[571] *Ibid.*

The PSA determines that there is an "estimated 2,950 MW power potential of the SSGF," but declines to analyze the cumulative impacts on water supply, claiming the specific projects are too speculative at this time.[572] Again, the analysis fails to account for the non-agricultural water demands under the LVSP, which is a probable future project. Developments pursuant to the LVSP, combined with the Project, would undoubtedly result in a cumulatively considerable impact to water supply, which the PSA fails to analyze. The PSA must be revised and recirculated to adequately analyze the Project's cumulative impacts on water supply.

J. The PSA's Analysis of Cumulative Impacts on the Salton Sea is Inadequate

A discussion of cumulative impacts must examine reasonable, feasible options for reducing or avoiding the project's contribution to significant cumulative environmental effects.[573] An EIR may find that a project's contribution to a significant cumulative impact will be mitigated through adoption of project-specific mitigation measures.[574] CEQA also requires that "[i]f a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed."[575]

Here, the PSA and WSA fail to analyze the cumulative impacts on the Salton Sea from reduced inflow conveyed to IID drains if IID imposes measures to satisfy non-agricultural water demand. The WSA states that tracking water yield from temporary land conversion from agricultural to non-agricultural land uses may be implemented to achieve non-agricultural water demands if the 25,000 AFY allotment under the IWSP is exhausted and IID exceeds its quantified 3.1 MAFY entitlement.[576] According to Mr. Parker, "survival of the Salton Sea is tied primarily to agricultural runoff and drainage," and this measure would result in reduced flows to the Salton Sea, causing potentially significant public health and environmental impacts."[577] Irrigation water provided through agricultural return flows supplies the Salton Sea such that "[a]ny IID Colorado River supply water

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[572] *Id.* at p. 5.15-15.
[573] 14 Cal. Code Regs. § 15130(b)(5).
[574] *Id.* at § 15130(a)(3).
[575] *Id.* at § 15126.4(a)(1)(D).
[576] WSA at p. 8-3. The WSA also states that, if necessary, conservation projects to expand the size of IID's water supply portfolio may be developed. *Ibid.* As to this option, Mr. Parker explains in his comments that "IID's 2012 Integrated Regional Water Management Plan includes conceptual projects to increase water supply," but "none of these projects have been evaluated beyond concept phase, with plans for additional analyses in the IID 2021 Water Conservation Plan (IID WRS 2021)." Parker Comments at p. 8.
[577] *Id.* at p. 7.

taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea, reducing the volume of Salton Sea water and increasing environmental impacts."[578]

These impacts are also discussed in the LBNL study, which explains:

> Changes in water availability may also impact the Salton Sea itself and, indirectly, the surrounding communities. Depending on how water withdrawal restrictions are implemented in the Colorado River basin and how many new geothermal and lithium extraction facilities are built, water available for agriculture in 2050 could be between 17-57% lower than it was in 2010. Such significant reductions in irrigation could have meaningful consequences for the health of the Salton Sea. The total water volume and areal extent of the Salton Sea may be further reduced, since agricultural irrigation runoff is the largest source of inflows (Hanak et al., 2018; Ajami, 2021). The shrinking of the Salton Sea that has led to the current environmental crisis is largely attributed to water conservation on agricultural land associated with the transfer of 0.5 MAF to Southern California cities. The future water projection assumes additional conservation of at least a similar magnitude, and possibly up to 1.5 MAF. Ongoing efforts to protect the Salton Sea should consider these potential changes to water runoff from irrigation.[579]

The PSA fails to disclose or analyze these impacts on the Salton Sea. In *Border Power Plant Working Grp. v. Department of Energy*, the court addressed a similar issue in the context of an environmental assessment ("EA") pursuant to the National Environmental Policy Act ("NEPA").[580] There, the court held that the federal agencies' determination that the construction of electricity transmission lines to connect Mexican power plants with the power grid in southern California would not have significant impact on the Salton Sea—an ecologically critical area—was arbitrary and capricious.[581] The court reasoned that the record established the utilities' actions would increase the Salton Sea's salinity, that the Salton Sea was already under threat from increasing salinity, and that extensive restoration efforts were underway to reduce the Salton Sea's existing salinity.[582] Likewise here, the PSA must be revised to include an analysis of the cumulative impacts on the Salton

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[578] *Id.* at p. 8.
[579] LBNL Report at p. 98/
[580] *Border Power Plant Working Grp. v. Dep't of Energy*, 260 F.Supp.2d 997 (S.D. Cal. 2003). "… CEQA was modeled on NEPA and California courts treat judicial and administrative interpretations of the federal act as persuasive authority in interpreting CEQA." *V Lions Farming, LLC v. Cnty. of Kern* (2024) 100 Cal.App.5th 412, 429.
[581] *Id.* at pp. 1022-1023.
[582] *Ibid.*

Sea due to decrease to inflow if IID must impose measures to meet non-agricultural water demand.

IID requested the inclusion of this analysis in a letter dated August 24, 2023, submitted to the Commission in that proceeding.[583] IID explained in its letter that "[t]he impacts to the Salton Sea, due to loss or reduction of runoff caused by the proposed industrial use need to be analyzed in the environmental document. … An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea."[584] In its letter dated July 23, 2024 to the Commission regarding comments on the Elmore North Geothermal Project PSA, IID stated that an analysis of the impacts on the Salton Sea was submitted to IID on July 11, 2024 and should be included in that PSA.[585] The PSA must be revised to include a cumulative impacts analysis concerning the Salton Sea.

As set forth herein and in Mr. Parker's attached comments, there is substantial evidence that the Project could have substantial direct, indirect, and cumulative impacts on the Salton Sea. These impacts must be adequately evaluated in a revised and recirculated PSA.

K. The PSA Fails to Disclose the Conservation Programs or Conservation Projects to Mitigate the Project's Water Supply Demand

The WSA states that the "ICPDS estimates a cumulative, non-agricultural project water supply demand increase of up to 40,000 AFY within the foreseeable 20-year planning period, however, all new non-agricultural projects, including MBGP, are ***required*** to mitigate their respective water supply demand via conservation programs or conservation projects in order to receive future water apportionments."[586] Despite this requirement, the conservation programs or projects proposed to mitigate the water supply demand for this Project are not

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[583] TN # 251869, Letter to California Energy Commission from Imperial Irrigation District re: CEC Request for Agency Participation in Review of the Morton Bay Geothermal (23-AFC-01), Elmore North Geothermal (23-AFC-02), and Black Rock Geothermal (23-AFC-03) Projects (Aug. 24, 2023) p. 2.
[584] *Ibid.*
[585] TN # 257957 at p. 5.
[586] WSA at p. 10-1 (emphasis added).

detailed or analyzed in the PSA or WSA. The PSA must be revised to include and evaluate this information.

L. MM WATER-9 Must be Revised to Require a Water Storage Tank to Avoid Evaporation Loss Over the Open Service Water Pond

The PSA estimates that the service water pond would have an evaporative loss of 56.46 AFY, which the analysis concludes "seems significant enough to recover the water savings."[587] To mitigate this water loss, the PSA proposes MM WATER-9, which requires the installation of a floating cover over the pond.[588] However, during the workshop on August 1, 2024, the Applicant's consultant suggested removing the floating cover requirement, citing economic, environmental, and technical challenges associated with implementation.[589]

If the floating cover is expected to cause significant environmental effects, the PSA must disclose the impacts.[590] The potential consequences of the cover, including any adverse effects on water quality, habitat, or other environmental resources, need to be clearly outlined to ensure informed decision-making.

The PSA should also be revised to explore the use of an enclosed storage tank as an alternative to the floating cover. An enclosed storage tank could effectively mitigate the unnecessary water waste due to evaporative loss. Such a measure would align with Article X, Section 2, of the California Constitution, which requires that water be put to beneficial use. By considering this alternative, the Project could achieve greater water conservation without introducing potential negative impacts associated with a floating cover.

BIOLOGICAL RESOURCES

A. The PSA Fails to Adequately Analyze the Existing Environmental Setting for Biological Resources

CEQA requires that a lead agency include a description of the physical environmental conditions in the vicinity of the Project as they exist at the time environmental review commences.[591] As numerous courts have held, the impacts of

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[587] PSA at p. 5.15-14.
[588] *Ibid.*
[589] Comments by Jerry Salamy, Jacobs, during CEC Workshop, August 1, 2024.
[590] If a mitigation measure identified in an EIR would itself cause significant environmental impacts distinct from the significant effects caused by the project, those impacts must be discussed in the EIR, but in less detail than the project's significant impacts. 14 Cal. Code Regs. § 15126.4(a)(1)(D).
[591] 14 Cal. Code Regs. § 15125(a).

a project must be measured against the "real conditions on the ground."[592] The description of the environmental setting constitutes the baseline physical conditions by which a lead agency may assess the significance of a project's impacts.[593] Use of the proper baseline is critical to a meaningful assessment of a project's environmental impacts.[594] An agency's failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.

Baseline information on which a lead agency relies must be supported by substantial evidence.[595] The CEQA Guidelines define "substantial evidence" as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion."[596] "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts ... [U]nsubstantiated opinion or narrative [and] evidence which is clearly inaccurate or erroneous ... is not substantial evidence."[597]

1. The PSA Fails to Adequately Analyze the Existing Baseline for Sensitive Natural Communities

The PSA fails to adequately analyze the existing environmental setting with respect to iodine bush scrub (*Allenrolfea occidentalis*). CURE's expert biologist, Scott Cashen, identified a portion of the borrow pit site at Brandt Road as iodine bush scrub, but Project documents mistakenly classified it as "disturbed with vegetation."[598] This misclassification results in a failure to analyze the Project's impacts to iodine bush scrub against actual conditions. The PSA should be revised and recirculated to accurately characterize the existing environmental setting concerning iodine bush scrub, ensuring a proper assessment of the Project's impacts.

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[592] *Save Our Peninsula Com. v. Monterey Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 121-22; *City of Carmel-by-the Sea v. Bd. of Supervisors* (1986) 183 Cal.App.3d 229, 246.
[593] 14 Cal. Code Regs. § 15125(a).
[594] *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 320.
[595] *Id.* at 321 (stating "an agency enjoys the discretion to decide […] exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence"); *see Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.
[596] 14 Cal. Code Regs. §15384.
[597] Pub. Res. Code § 21082.2(c).
[598] Cashen Comments at p. 5; TN # 253188.

2. The PSA Fails to Adequately Analyze the Existing Baseline for Yuma Ridgway's Rail

The PSA's description of the environmental setting with respect to the Yuma Ridgway's rail is based on one source of information: the survey report submitted by the Applicant.[599] The survey report provides a map of the survey stations, and it identifies the survey stations where Yuma Ridgway's rails were detected.[600] Although least bitterns (a California Species of Special Concern) were detected during the surveys, the survey report does not identify the survey stations where this species was detected.[601] Mitigation measures in BIO-13 and BIO-14 are triggered by construction and operations activities within and adjacent to "rail habitat" (BIO-13) or "suitable rail habitat" (BIO-14).[602] The PSA does not identify where this rail habitat is located in relation to the Project's facilities, but the PSA states: "[i]mpacts that affect habitat suitability and occupancy of rail species at W Schrimpf Road and Morton Bay would be considered a significant impact."[603] This appears to suggest that staff believes the only location where the Project could affect rail habitat is where W Schrimpf Road meets Morton Bay. This is not correct and not supported by substantial evidence. As demonstrated in Mr. Cashen's comments, mitigation that is conditioned on the presence of "habitat" or "suitable habitat" is only effective if it incorporates robust data on occupancy.[604] While the Applicant's survey report provides important data pertaining to Yuma Ridgway's rail occupancy at the survey stations in 2022, they represent only a fraction of the available data.[605] Mr. Cashen provided substantial evidence demonstrating that the environmental setting analysis with respect to Yuma Ridgway's rail must be bolstered by additional data are available from the SBSSNWR,[606] the USGS,[607] and the University of Idaho.[608] These data are critical to Staff's ability to properly analyze the Project's direct and indirect impacts on the Yuma Ridgway's rail, least bittern, and other special-status marsh birds. Absent adequate analysis of the Yuma Ridgway's rail habitat and suitable rail habitat, impacts to Yuma Ridgway's rail are not adequately analyzed or mitigated in the PSA.

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[599] TN # 251679.
[600] *Id.*
[601] *Id.*; Cashen Comments at p. 7.
[602] PSA at p. 5.2-171.
[603] *Id.* at p. 5.2-100.
[604] Cashen Comments at p. 7.
[605] *Id.*
[606] Personal communication with Razia Shafique-Sabir, SSSBNWR, on 10 July 2024.
[607] *See* https://www.sciencebase.gov/catalog/item/62509e68d34e21f8276d174f
[608] TN 251679, p. 7: "One of the rails had a GPS transmitter and its movements are being monitored by our research team at the University of Idaho."

3. The PSA Fails to Adequately Analyze the Existing Baseline for Aquatic Resources

The PSA fails to adequately analyze the existing environmental setting with respect to aquatic resources. Mr. Cashen documented substantial evidence demonstrating that the aquatic resources information provided by the Applicant omits features that appear to qualify as waters of the state.[609] For example, the Applicant did not delineate the Invasive Southwest Riparian Woodland and Shrubland along Garst Road (where the gen-tie line would be located) as a potentially jurisdictional wetland feature[610], despite describing this feature as a semi-natural vegetation type that forms *in temporarily flooded areas* along rivers or streams or in depressions.[611] The PSA states that "[m]apped tamarisk thickets and cattail marsh areas are likely to be regulated by RWQCB as wetland waters of the state."[612] According to the Applicant, the single sample point in the tamarisk thickets along Garst Road contained hydrophytic vegetation, hydric soils, but not wetland hydrology.[613] This determination regarding lack of wetland hydrology conflicts with the U.S. Army Corps of Engineers' ("USACE") approved jurisdictional determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area in Red Hill Bay.[614] Several potentially jurisdictional aquatic resources were delineated.[615] The Project's gen-tie line ROW overlaps feature "PSSW-2."[616] Although the USACE determined this feature did not qualify as waters of the U.S., it qualifies as a state jurisdictional wetland because it contains wetland hydrology, hydrophytic vegetation, and hydric soils.[617]

Furthermore, the USACE Wetland Delineation Manual states the following regarding wetland hydrology indicators:

> "Hydrology indicators are often the most transitory of wetland indicators. Those involving direct observation of surface water or saturated soils are usually present only during the normal wet portion of the growing season and may be absent during the dry season or during drier-than-normal years … Therefore, *lack of an indicator is not evidence for the absence of wetland hydrology* … Determine whether the amount of rainfall that occurred in the

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609 Cashen Comments at p. 30.
610 TN # 252694, Figure 4D.
611 TN 249723 at 5.2-21.
612 PSA at p. 5.2-82.
613 TN # 252694, Appendix E, data form for sampling point S-5.
614 U.S. Army Corps of Engineers. 2020 Oct 19. Approved Jurisdictional Determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area. File No. SPL-2020-00457.
615 Cashen Comments at p. 30.
616 Cashen Comments at p. 30.
617 U.S. Army Corps of Engineers. 2020 Oct 19. Approved Jurisdictional Determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area. File No. SPL-2020-00457.

2-3 months preceding the site visit was normal, above normal, or below normal … if precipitation was below normal prior to the site visit, and the site contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation (e.g., no drainage ditches, dams, levees, water diversions, etc.), it should be identified as a wetland. If necessary, the site can be revisited during a period of normal rainfall and checked again for hydrology indicators."[618]

Here, the Applicant conducted the site visit in March 2022, after 14 months of below normal rainfall.[619] In the three months preceding the wetland delineation site visit (i.e., between January and March 2022), the Imperial CA climate station recorded only 0.04 inches of rain, while the mean ("average") rainfall between January and March at the climate station is 1.1 inches.[620] Therefore, in accordance with the USACE delineation procedures, the Riparian Woodland and Shrubland along Garst Road (and all other areas that contained hydrophytic vegetation and hydric soils) should have been delineated as a wetland.[621]

The PSA must be revised and recirculated to accurately characterize the existing environmental setting with respect to the potential water of the state within the Project area. This revision is crucial for accurately analyzing the Project's impacts and ensuring that all aquatic resources are properly considered in the environmental assessment.

B. The PSA Fails to Adequately Analyze the Project's Impacts to Biological and Hydrogeological Resources

1. The PSA Fails to Adequately Analyze Impacts Associated with the Floating Cover Required by Mitigation Measure WATER-9

CEQA requires agencies to analyze the significant impacts of mitigation.[622] CEQA requires that "[i]f a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed.[623] Here, the floating cover proposed for

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[618] U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. U.S. Army Engineer Research and
Development Center, Vicksburg, MS.
[619] Western Regional Climate Center. 2024. Total of Precipitation for the Imperial CA climate station (044223). [accessed 2024 Aug 27]. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4223/
[620] *Ibid.*
[621] Cashen Comments at p. 3.
[622] 14 Cal. Code Regs. § 15126.4(a)(1)(D).
[623] *Stevens v. City of Glendale* (1981) 125 Cal.App.3d 986.

Mitigation Measure WATER-9 will result in significant impacts associated with drowning impacts to wildlife. But, the PSA failed to adequately analyze this impact.

The PSA provides that WATER-9 is proposed to minimize evaporation loss by incorporating a floating cover over the open service water pond.[624] Further, COC WATER-9 Verification requires that "[n]o later than thirty (30) days prior to project construction, the project owner shall provide the CPM the specifications for the floating pond cover for review and approval. No later than thirty (30) days prior to power plant operation, the project owner shall provide to the CPM confirmation that the floating cover has been implemented."[625] A floating cover over the open service water pond will result in significant impacts to wildlife associated with animals becoming trapped and drowning in the pond.[626] The PSA recognizes that, "burrowing and flying animals, including bird and bat species, could bypass the fence and gain access to the brine pond. Though the storm water retention pond would only hold freshwater during flooding events, which would be periodic and incidental, it would be considered a significant impact if animals became trapped in the pond."[627] An enclosed storage tank would be a superior alternative to a floating cover to reduce evaporation, which is the goal of COC WATER-9, and would be superior in reducing trapping and drowning impacts to wildlife. The PSA should be revised and recirculated to adequately analyze environmental impacts associated with WATER-9 and should be revised to include an enclosed storage tank instead of a floating cover to "avoid loss of water supply due to evaporation."[628]

2. The PSA Fails to Adequately Analyze Impacts to Desert Pupfish

The Project results in significant impacts on desert pupfish[629], but the PSA concludes that impacts to desert pupfish would be less than significant with mitigation incorporated. [630] Mr. Cashen's comments provide substantial evidence demonstrating that this is unsupported.

Desert pupfish occur in the river deltas, irrigation ditches, and marshes along the edge of the Salton Sea.[631] The Applicant did not conduct surveys for the pupfish, but instead assumed the species is present in the Project area.[632] As demonstrated in Mr. Cashen's comments, the volume, depth, and quality of water in IID's drains are critical components of desert pupfish habitat. For example, when

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[624] PSA at p. 5.15-14.
[625] *Id.* at p. 5.15-22.
[626] *Id.* at p. 5.2-115.
[627] *Ibid.*
[628] *Id.* at p. 5.16-21.
[629] PSA at p. 8-5.
[630] *Id.* at pp. 1-4.
[631] *Id.* at p. 5.2-19.
[632] *Id.* at p. 5.2-7.

low water levels occur, desert pupfish become more susceptible to predation by birds and competition with exotic fish species.[633] Therefore, even if the Project does not directly impact canals and drains, taking agricultural fields out of production to enable construction of the Project could indirectly impact desert pupfish habitat by reducing the volume of water in drains that provide habitat for desert pupfish. The PSA provides the following discussion of this issue:

> "Reduced agricultural return flow associated with the project, and how it would affect desert pupfish habitat and vegetation communities, is currently underway with IID as part of the Water Supply Agreement and impact study analysis (TN254015; TN254603). However, annual flow in the canals and drains depends on IID water demands and is complicated by declines in water in the area due to climate fluctuations, agricultural conservation measures, cropping practices, and decrease inflows from Mexico. Though a conversion of one parcel to agricultural use may result in a small decline in agricultural drainage, that decline on water use is minimal. As such, indirect alterations to hydrology due to conversion of agricultural is considered less than significant."[634]

There are three main problems with the PSA's analysis. First, the PSA provides contradictory information. The PSA begins by stating that impact analysis is currently underway with IID as part of the Water Supply Agreement.[635] This indicates that the reduced agricultural return flows associated with the Project could affect desert pupfish habitat.[636] The PSA then, without the supporting impact analysis from IID, makes the determination that the impact would be less than significant.

Second, Staff's rationale that "conversion of one parcel" would have a minimal effect on pupfish habitat is unsupported.[637] Moreover, the Project does not consist of one parcel, but rather, numerous parcels (totaling over 1,300 acres) that would be taken out of agricultural production.[638]

Third, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the cumulative reduction in agricultural return flows due to the Project and other geothermal projects that have been proposed in the area (e.g., Black Rock Geothermal Project, Elmore North Geothermal Project, Energy Source

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[633] Cashen Comments at p. 6.
[634] PSA at p. 5.2-89.
[635] *Ibid.*; TN254015; TN254603.
[636] Cashen Comments at p. 6.
[637] *Ibid.*
[638] PSA at p. 5.15-1.

Mineral ATLIS Project, Hudson Ranch New Well 13-4 Project.[639] The cumulative reduction in agricultural return flows from these projects could have a significant impact on habitat for pupfish in IID drains and river deltas at the Salton Sea. On 24 Aug 2023, IID submitted a letter to the CEC stating the following:

> "Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 … An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea." (TN 251870)

The cumulative impacts analysis requested by IID was not provided by the Applicant, nor is it in the PSA. As a result, and for the reasons discussed above, direct, indirect, and cumulative impacts on the desert pupfish remain potentially significant and must be analyzed and mitigated in a revised PSA.

3. The PSA Fails to Adequately Analyze Impacts from Rodenticides

The PSA in BIO-2 provides, "Rodent baits with the active ingredients brodifacoum, bromadiolone, difethialone and difenacoum shall not be used without the CPM approval to control rodent populations. These ingredients are very toxic and persistent and have been found widely in non-target wildlife."[640] The PSA fails to justify why CPM approval of very toxic rodenticides would make the impacts on special-status wildlife less than significant.[641] Furthermore, the PSA provides no analysis of the rodenticides that do not contain brodifacoum, bromadiolone, difethialone and difenacoum, nor does the PSA establish that such rodenticides exists.[642] As a result, use of rodenticides at the Project site remains a potentially significant impact on special-status wildlife.[643]

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[639] Cashen Comments at p. 6.
[640] PSA at p. 149 -150.
[641] Cashen Comments at p. 48.
[642] *Ibid.*
[643] *Ibid.*

4. The PSA Fails to Adequately Analyze Impacts from Dewatering

The PSA provides that dewatering may be required because groundwater could be encountered during excavation activities and dewatering would be necessary.[644] The PSA provides that "[i]f dewatering is necessary, and the discharge is found to be uncontaminated, the project owner would be permitted to discharge this to waters of the U.S. under the Construction General Permit."[645]

The PSA does not discuss where specifically the water might be discharged, nor does it analyze how this discharge of water would affect special-status species and their habitat.[646] For example, discharge of high-velocity (> 1.0 foot per second) and presumably turbid water into areas occupied by desert pupfish would kill and injure pupfish, which are not adapted to those habitat conditions.[647] In addition, discharge of water in areas north or west of the proposed energy facility could scour vegetation and negatively impact water quality in habitat for the Yuma Ridgway's rail.[648] MM BIO-9 would not avoid these potentially significant impacts because it only applies to dewatering of irrigation drains or ponded water at the end of drains, not to dewatering that may be necessary to install the Project's foundation piers.[649]

5. The PSA Fails to Adequately Analyze Impacts to Ridgway Rail Habitat at the O-N Wetlands

The PSA discusses IID's O-N Drain Connector Project, which resulted in direct and indirect impacts to wetlands and severed the intermittent hydrological connection from those wetlands to Morton Bay.[650] The PSA acknowledges that IID is required to prepare a Restoration Plan (per the Consent Order issued by the EPA on May 23, 2022),[651] which requires removal of fill that directly impacted the wetlands and restoration of hydrology to indirectly impacted wetlands.[652] The PSA further acknowledges that the Applicant classified the land cover type in this

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[644] PSA at p. 5.15-9.
[645] *Ibid.*
[646] Cashen Comments at p. 8.
[647] ESA. 2017 Feb. Final Salton Sea Species Conservation Habitat: Desert Pupfish Adaptive Management and Monitoring Plan. [accessed 2024 Aug 27]. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Design-Build/Salton-Sea-Reports/10_Pupfish_Adapt_Mgmt_Monitoring_Plan_a_y19.pdf
[648] Cashen Comments at p. 8.
[649] *Id.*
[650] PSA at p. 5.2-81.
[651] U.S. Environmental Protection Agency. 2022 May 23. Administrative Order on Consent: Imperial Irrigation District. EPA Docket No. CWA-309[a]-22-002. [accessed 2024 Aug 26]. https://www.epa.gov/ca/cwa-309a-22-002-imperial-irrigation-district-imperial-ca-administrative-order-consent
[652] PSA at p. 5.2-81.

wetland area as "Disturbed with Vegetation."[653] The PSA fails to rectify this error (misclassification). As stated in the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* issued by the California Water Boards:

> "The wetland definition, like the federal definition, also incorporates the concept of 'normal circumstances.' This provides that if the wetland hydrology or hydrophytic vegetation normally present is physically altered by a natural, inadvertent or purposeful event, the area should be evaluated as it existed before the event."[654]

Thus, the wetlands impacted by the O-N Drain Connector Project should have been classified as wetlands (i.e., Emergent Marsh/Cattail Marsh), especially because restoration of the wetlands is a reasonably foreseeable future condition due to the EPA's Consent Order.[655]

> The PSA states the following regarding Project impacts to the wetlands: "CDFW also requested confirmation that the hydrologic connection for previously inundated area has been permanently severed (i.e., there is no plan for future inundation of dry areas). As discussed in the methods section under Aquatic Resources, the IID O-N Drain Connector project resulted in direct and indirect impacts to wetlands that would require restoration. Based on the project boundaries, staff concurs that these disturbed wetlands are not within potential disturbance areas and would not be impacted by the project. Access roads and berms separate the IID disturbed wetland area from the project site, and therefore would not result in any additional indirect impacts due to severed hydrology."[656]

Staff's determination regarding the Project's boundaries in relation to the wetlands is inconsistent with the map accompanying EPA's Consent Order. To the contrary, the Project involves construction of two production wells (MB-04 and MB-05), a well pad, the associated pipeline, and a portion of the gen-tie line in the wetlands.[657] There are no access roads or berms that separate the O-N wetland area from these Project features, as asserted in the PSA. Wells MB-06 and MB-07 are also in wetlands.[658]

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[653] *Id.*
[654] State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. p. 55.
[655] Cashen Comments at p. 9.
[656] PSA at p. 5.2-132.
[657] Cashen Comments at p. 9.
[658] *See* TN # 249725.

According to the AFC (TN 249723):

1) Construction of the well pads will involve clearing and grubbing, grading, construction of raised earthen berms, and construction of access roads. The well pads will be raised approximately 1.5 feet above the adjacent grade, and the high temperature well head valve area (commonly called the cellar) will be fenced. The well pads and associated access roads will be surfaced with paving or Class 2 road base material.
2) Construction of the pipeline will involve clearing and grubbing, and excavation for pipeline supports.
3) Construction of the gen-tie line will involve access road construction, clearing vegetation within the ROW and worksite, and 30 feet of excavation for the foundation of each power pole.

The PSA fails to analyze how these Project facilities would affect the O-N wetlands.

The Applicant's conducted Yuma Ridgway's rail surveys in the Project area during spring 2022. During all three survey replicates, Yuma Ridgway's rails were detected at the O-N wetlands.[659] This indicates that although the wetlands were disturbed by IID in fall 2019, the wetlands remained occupied by Yuma Ridgway's rails in 2022.[660]

The PSA does not discuss Project impacts to rail habitat at the O-N wetlands. The PSA, however, states: "[i]mpacts that affect habitat suitability and occupancy of rail species at W Schrimpf Road and Morton Bay would be considered a significant impact."[661] Construction of two production wells, a well pad, pipeline, access roads, and gen-tie line in the wetlands would have direct impacts on habitat for the Yuma Ridgway's rail. These Project facilities would also have indirect impacts on the habitat.[662] For example, construction of access roads for the gen-tie line, and for the wells and well pads, would eliminate, or severely alter, hydrologic connectivity with Morton Bay.[663] As stated in the PSA: "[a]ny action that restricts waterflow into or out of occupied marshes has the potential to adversely affect occupancy of marshland species."[664] Based on Mr. Cashen's review of the Applicant's site plans,[665] the Project's direct and indirect impacts would eliminate at least 50% of

[659] TN # 251679.
[660] Cashen Comments at p. 10.
[661] PSA at p. 5.2-100.
[662] Cashen Comments at p. 10.
[663] *Ibid.*
[664] PSA at p. 5.2-100.
[665] TN # 253188.

the rail habitat at the O-N wetlands, which is likely to negatively affect occupancy of the Yuma Ridgway's rail and other special-status marsh species.[666] Project impacts to the O-N wetlands remain significant and must be analyze and mitigated in a revised and recirculated PSA.

6. The PSA Fails to Adequately Analyze Impacts Associated with Night Lighting

The PSA lacks substantive analysis of night lighting associated with the Project, including photometric analysis demonstrating impacts to wildlife in areas surrounding the Project would be less than significant. Photometric analysis is necessary to analyze the intensity, distribution and spectral composition of light within the Project area so as to understand the Project's night lighting's impacts on nocturnal wildlife.[667] Further, photometric analysis is necessary because, in addition to the substrate receiving the light, the amount of ecological light pollution generated by the Project will be a function of several variables including the distribution, abundance, luminosity, height, angle, and type of light fixtures.[668]

The PSA fails to discuss how often night lighting would be used during the 29-month construction period, where night lighting might be used (e.g., geothermal plant site, drilling sites, pipeline route), the types of light fixtures that might be used, and how much light (luminous flux) would be required for safety and security.[669] A substantial amount of high-intensity lighting would be required for construction work involving potentially hazardous equipment and tools, especially at a relatively large construction site with hundreds of construction workers and numerous pieces of heavy equipment operating simultaneously.[670]

The PSA fails to identify how much night lighting would be installed at the construction laydown/parking areas and at the construction camps. Even if lighting is not installed at those locations, wildlife could be significantly impacted by vehicle headlights, flashlights, and other types of lights that cause dynamic light changes in nearby habitats.[671] Lights that go on and off at irregular intervals (e.g., vehicle headlights) disrupt the nocturnal behavior of some species and has the potential to affect population dynamics.[672] For example, dynamic light changes such as those generated by flashlights, car headlights, or motion detector lights caused green frogs (*Rana clamitans*) to produce fewer advertisement calls and move more

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[666] Cashen Comments at p. 10.
[667] *Id.* at p. 28.
[668] *Ibid.*
[669] Cashen Comments at p. 23.
[670] PSA at p. 3-17; *see also* AFC, Tables 2-9 and 2-10.
[671] Cashen Comments at p. 28.
[672] *Id.* at p. 27.

frequently.[673] In dark-adapted nocturnal frogs, returning the eyes to a dark-adapted state after photopigment bleaching caused by a brief, bright flash of light can take hours.[674]

One of the construction laydown/parking areas would be immediately south of the Hazard Unit, which is known to provide habitat for special-status species such as the Yuma Ridgway's rail.[675] Several additional laydown/parking areas would be located in the vicinity of Obsidian Butte, near wetland habitat where Yuma Ridgway's rails and California black rails have been detected.[676] Night lighting from the construction camps and laydown/parking areas could have a significant impact on rails in nearby habitats.[677] The PSA fails to adequately analyze or incorporate mitigation for this impact.

Further, the PSA provides that during the operational phase of the Project, lights would be shielded and pointed downwards to purportedly minimize "astronomical light pollution" but lights associated with Project operation would still result in significant levels of "ecological light pollution" (artificial light that alters the natural patterns of light and dark in ecosystems).[678] The PSA lacks substantial evidence to support its determinations regarding onsite lighting impacts to biological resources and does not provide photometric analysis demonstrating impacts to wildlife would be less than significant.

7. The PSA Fails to Adequately Analyze the Impacts Associated with Avian Collisions and Electrocutions

The PSA's analysis of impacts associated with the Project's gen-tie line focuses on the electrocution hazard to birds,[679] the PSA fails to include a robust analysis that power lines also pose a collision hazard.[680] While both collisions and electrocutions at power lines are significant threats to birds, substantially more birds are killed by collisions than by electrocutions.[681]

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[673] *Ibid.*
[674] *Ibid.*
[675] *Id.* at p. 28.
[676] California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024]. *See also* eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Jul 18]. https://ebird.org/explore
[677] Cashen Comments at p. 28.
[678] *Id.*
[679] PSA at p. 5.2-117.
[680] *Id.* at p. 5.2-140.
[681] Manville AM. 2005. Bird strikes and electrocutions at power lines, communication towers, and wind turbines: state of the art and state of the science–next steps toward mitigation. USDA Forest Service General Technical Report PSW-GTR-191. *See also* Loss SR, Will T, Marra PP. 2014. Refining

The PSA determined that impacts from operation of gen-tie lines would be reduced to less than significant through implementation of BIO-20.[682] BIO-20 states:

> The project owner shall prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. This plan shall incorporate Suggested Practices for *Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) guidelines and provide specific details on design, placement, and maintenance of line markers, as well as the associated analysis requested.[683]

The Avian Power Line Interaction Committee ("APLIC") has released two sets of guidelines to reduce avian fatalities caused by power lines: one that addresses avian electrocutions (APLIC 2006) and one that addresses avian collisions (APLIC 2012).[684] The 2012 APLIC guidelines discuss engineering aspects that can influence the risk of avian collisions with power lines. For example, power lines that parallel primary bird flight paths pose less risk than a perpendicular orientation. The core strategy for reducing the threat of new power lines involves spatial analysis, a field assessment, and an avian risk assessment.[685] For example, during the field assessment, data are collected on variables that affect the collision risk, such as the flight paths and core use areas of the site's bird species. These data are then used to help choose a power line route that would reduce the collision risk to birds. Although the PSA acknowledges that the Project site is located in an area with a high diversity and abundance of birds, and that the Project's gen-tie line would traverse the edge of a National Wildlife Refuge that provides important habitat for migratory birds along the Pacific Flyway,[686] there were no efforts to conduct the spatial analysis, field studies, and avian risk assessment recommended in the 2012 APLIC guidelines.

Any new power lines in the Project's Biological Study Area (TN 253188, Figure 5.2-4R) pose a significant collision risk to birds due its location in relation to the Pacific Flyway, Salton Sea, SBSSNWR, and agricultural areas (which provide

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estimates of bird collision and electrocution mortality at power lines in the United States. PloS one 9(7):e101565.

[682] PSA at p. 5.2-117.

[683] *Id.* at p. 5.2-180.

[684] Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

[685] *Id.* at pp 64 through 74.

[686] PSA at pp. 5.2-11, -12, -17, and -20.

foraging habitat for overwintering migratory birds and resident waterfowl).[687] However, the proposed gen-tie line would be especially hazardous to birds because it was sited without any consideration of avian flight paths. While BIO-20 requires an Avian Collision Deterrent Proposal and Monitoring Plan that incorporates the 2006 APLIC guidelines (for electrocutions), it does not require the Applicant to implement the 2012 APLIC guidelines (for collisions).

8. The PSA Fails to Adequately Analyze Impacts to Southwest Willow Flycatcher

The PSA determined that there is moderate potential for the southwestern willow flycatcher to nest and forage at the Project site.[688] The PSA further determined that Project could have significant direct and indirect impacts on the southwestern willow flycatcher and its habitat.[689] No surveys were conducted to determine the presence or absence of flycatchers in the Project study area.

The PSA incorporates BIO-12 and several other mitigation measures for the Project's direct and indirect impacts on the southwestern willow flycatcher.[690] BIO-12 requires a pre-activity survey for nesting birds no less than 7 and no more than 3 days prior to initiating project activities. If an active nest is detected, the Applicant's biologist would establish a 100-foot avoidance buffer around the nest.

BIO-12 does not ensure the Project's impacts to nesting flycatchers would be less than significant.[691] The southwestern willow flycatcher breeds in dense riparian habitats and there are some periods during which willow flycatchers do not sing.[692] As a result, detecting presence of the flycatcher can be difficult. The U.S. Geological Survey, Bureau of Reclamation, and U.S. Fish and Wildlife Service have developed a survey protocol for the southwestern willow flycatcher.[693] The survey protocol distinguishes between general surveys and project-related surveys. Project-related surveys are conducted to determine the presence or absence of willow flycatchers within a site when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management.

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[687] *Id. See also* Smith MA, Mahoney J, Knight EJ, Taylor L, and 9 others. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. [accessed 2024 Aug 29]. birdmigrationexplorer.org.
[688] PSA at Table 5.2-2.
[689] *Id.* at pp. 5.2-99 through -102.
[690] *Id.* at p. 5.2-169.
[691] Cashen Comments at p. 11.
[692] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38.
[693] *Id.*

The protocol for project-related surveys entails a minimum of 5 surveys using the call-playback technique.[694] These 5 surveys include one survey between May 15-31, two surveys between June 1-24, and two surveys between June 25-July 17.[695] In contrast, BIO-12 requires only a single survey that would not include implementation of the call-playback technique, and whose timing could coincide with the early or late part of the breeding cycle (depending on the Applicant's construction schedule). As stated in the survey protocol: "[a] single survey, or surveys conducted too early or late in the breeding cycle, do not provide definitive data and are of limited value."

The PSA correctly concludes that increased levels of human presence, noise, vibration, and fugitive dust may cause flycatchers to abandon their nests or breeding territories.[696] Southwestern willow flycatcher breeding territory sizes range from approximately 0.25 to 5.7 acres, with most in the range of 0.5 to 1.2 acres.[697] As a result, the 100-foot nest avoidance buffer (equivalent to 0.72 acres) required under BIO-12 does not ensure the Project would avoid disturbance activities within a flycatcher breeding territory.

The primary cause of the flycatcher's decline is loss and modification of habitat.[698] The PSA estimates the Project would impact 10.61 acres of tamarisk thickets (i.e., potential flycatcher breeding habitat), of which 5.43 acres would be permanently impacted.[699] It is unclear whether the PSA's impact estimates account for road construction (or widening) along the gen-tie and pipeline routes, or for vegetation (fuels) management in the gen-tie ROW.[700] The PSA does not incorporate compensatory mitigation for these impacts to flycatcher habitat. This issue is exacerbated by the PSA's failure to require the Applicant to undergo Section 7 consultation with the USFWS (regarding impacts to the flycatcher), and for the Applicant to obtain a consistency determination from the CDFW under Fish and Game Code section 2080.1.

Whereas BIO-17 requires compensation or restoration for the Project's permanent impacts to natural and semi-natural vegetation *communities* (including tamarisk thickets), it does not require compensation for impacts to *habitat*, which is defined as: "the resources and conditions present in an area that produce

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[694] Cashen Comments at p. 12.
[695] *Id.*
[696] PSA at p. 5.2-100.
[697] U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix +210 pp., Appendices A-O.
[698] U.S. Fish and Wildlife Service. 2014. Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 5-Year Review: Summary and Evaluation. Phoenix (AZ): U.S. Fish and Wildlife Service, Arizona Ecological Services.
[699] PSA at Table 5.2-5.
[700] Cashen Comments at p. 16, footnote 83.

occupancy—including survival and reproduction—by a given organism."[701] That is, presence of a vegetation community is not equivalent to presence of habitat. As discussed in Sogge et al. (2010), there are many tamarisk-dominated and native-dominated habitats in which flycatchers do not breed. Therefore, the value of any riparian compensation habitat to the flycatcher is site specific and will depend on the spatial, structural, and ecological characteristics of that particular habitat patch and the potential for flycatchers to colonize and maintain populations within it.[702] Consequently, the PSA cannot merely assume that preserving or restoring tamarisk thickets elsewhere would mitigate the Project's permanent impacts on flycatcher habitat. Similarly, although the PSA states that BIO-11 would mitigate the Project's temporary impacts to habitat, BIO-11 only requires revegetation of "temporarily disturbed areas not subject to long-term use or ongoing vegetation maintenance," and BIO-11 does not establish a timeline for completion of the revegetation efforts. [703]

9. The PSA's Noise Analysis is Inadequate for Relying on a Composite Noise Analysis

The PSA (p. 5.9-6) states the following regarding noise levels during construction of the Project:

> "Demolition and construction activities for the project would occur in five phases (demolition/site clearing, concrete pouring, steel erection, mechanical, and cleanup) and take approximately 29 months to complete. Each phase uses a combination of construction equipment. The noise level from each phase is between 78 and 89 dBA Leq at 50 feet. Demolition and site cleanup phases generate the highest noise level of 89 dBA Leq at 50 feet."

This information appears to have been derived from the "composite site noise level" data provided in AFC Table 5.7-5, which also provides data on noise levels from "loudest construction equipment."[704] For example, Table 5.7-5 indicates that a rock drill and truck would be the loudest pieces of construction equipment during the cleanup phase.[705] According to Table 5.7-5, these pieces of construction equipment would produce noise levels of 98 dBA and 91 dBA, respectively, resulting in a composite site noise level of 89 dBA.[706] The AFC does not explain how the composite site noise level data provided in Table 5.7-5 were calculated, including

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[701] *See* Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[702] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p
[703] Cashen Comments at p. 12.
[704] TN # 249723 at Table 5.7-5.
[705] Cashen Comments at p. 33.
[706] TN # 249723 at Table 5.7-5.

any assumptions that were built into the calculations.[707] As a result, the composite site noise level data provided in the AFC and PSA are not supported by substantial evidence in the record.[708]

Noise from multiple sources at the same location results in louder levels than a single source alone.[709] Because the decibel is measured on a logarithmic scale, noise levels cannot be added by standard addition.[710] Two noises of equal level (±1 dBA) combine to raise the noise level by 3 dBA.[711] When the two noises differ by 2 or 3 dBA, 2 dBA is added to the higher decibel value.[712] When the two noises differ by 4 to 9 dBA, 1 dBA is added to the higher decibel value.[713] Therefore, if the Project's rock drill and truck would produce noise levels of 98 dBA and 91 dBA, the combined noise level would be 99 dBA, *not* 89 dBA, as stated in the AFC and PSA.[714]

It is possible that the "composite site noise levels" provided in AFC Table 5.7-5 was derived from a noise model that incorporated a usage factor for each piece of construction equipment.[715] The usage factor value input into the model can have a substantial effect on the model's output. As a result, if the "composite site noise levels" provided in AFC Table 5.7-5 incorporated usage factors, the Applicant needs to provide and justify those usage factors.[716]

C. The PSA Fails to Adequately Analyze Cumulative Biological Resources Impacts

The PSA fails to adequately analyze cumulative impacts to biological resources associated with development in the region. The PSA's conclusion that "implementation of related projects and other anticipated growth in Imperial County would not combine with the proposed project to result in cumulatively considerable impacts on biological resources" is not supported by substantial evidence.[717] Substantial evidence in Mr. Cashen's expert comments attached demonstrate that reasonably foreseeable future projects would eliminate approximately 124,000 acres (27%) of habitat for special-status birds in the

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[707] Cashen Comments at p. 33.
[708] *Ibid.*
[709] *Ibid.*
[710] Cashen Comments at p. 33.
[711] *Ibid.*
[712] *Ibid.*
[713] *Ibid.*
[714] *Ibid.*
[715] *Ibid.*
[716] *Ibid.*
[717] *Id.* at p. 19.

Imperial Valley.[718] This constitutes a significant cumulative impact on special-status birds that depend on agricultural habitat in the Imperial Valley.[719]

The PSA's cumulative impact analysis related to biological resources is unsupported for the following reasons. First, the PSA utilizes two disparate geographic scales to analyze cumulative impacts including analysis of projects within six miles of the Project and impacts to habitat throughout all of Imperial County. Second, the PSA fails to analyze cumulatively significant impacts associated with habitat loss from conversion to industrial use associated with development under the LVSP Project. Third, the PSA fails to analyze cumulative impacts associated with the JJ Elmore Geothermal Project immediately south of the Project site.

1. The PSA Fails to Adequately Analyze Cumulatively Considerable Impacts in Imperial County

The PSA's cumulative impact analysis related to biological resources is unsupported because the PSA utilizes two disparate geographic scales to analyze cumulative impacts.[720] The PSA refers to the projects within six miles of the Project to analyze cumulative impacts, however, in analyzing impacts to habitat, the PSA considers the total amount of agricultural land throughout all of Imperial County.[721] Mr. Cashen clarifies that it is not possible to accurately analyze cumulative impacts by using one geographic scale (i.e., Imperial County) to analyze the abundance of remaining habitat, but a much smaller scale (i.e., 6-mile radius of the Project) to analyze other projects that would impact habitat.[722] To provide valid analysis, a revised and recirculated PSA must use a consistent geographic scale.[723] If the geographic scope is a 6-mile radius of the proposed Project, the Commission must revise and recirculate the PSA to identify the amount of agricultural land within a 6-mile radius of the proposed Project.[724] Conversely, if the geographic scope is Imperial County, a revised PSA must identify all past, present, and probable future projects in Imperial County. Regardless, the PSA's cumulative impact analysis is inadequate for failure to analyze all past, present, and future projects.

The PSA provides a list of Projects within 6 miles of the Project including, but not limited to, the following projects:

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[718] *Ibid.*
[719] *Ibid.*
[720] Cashen Comments at 21.
[721] *Ibid.*; PSA at p. 5.2-75, 5.2-138.
[722] Cashen Comments at p. 21.
[723] *Ibid.*
[724] Cashen Comments at p. 15; PSA at p. 5.2-75, 5.2-138.

- Calipal Solar Farm I (Wilkinson Solar Farm), Calipatria (Approved)
- Wilkinson Solar Farm/Lindsey Solar Farm, Niland (Pending Construction)
- Midway Solar Farm IV, Calipatria (Approved, not built)
- Wister Solar Energy Facility Project (Ormat Wister Solar), Niland (Under Construction)
- Energy Source Mineral ALTiS, Imperial County (Pending Construction)
- Morton Bay Geothermal Project, Imperial County (Pending Permit)
- Black Rock Geothermal Project, Imperial County (Pending Permit)
- Geo Hudson Ranch, McDonald Road and Davis Road (Approved)
- Nidar 100 MW Solar Project, Calipatria (Pending Entitlement)
- VEGA SES 2, 3, and 5 Solar Energy Project, Niland (Approved, not built)

This list, and the cumulative impact analysis which it undergirds, are insufficient to accurately analyze the Project's cumulative impacts. Mr. Cashen concludes that the PSA fails to provide a complete cumulative impact analysis for failing to identify the amount of agricultural land within a 6-mile radius of the proposed Project and for failing to identify all past, present, and probable future projects in Imperial County.

2. The PSA Fails to Adequately Analyze Cumulatively Considerable Impacts Associated with the Lithium Valley Specific Plan Project

The PSA fails to adequately analyze the cumulative impacts analysis associated with the proposed LVSP. The LVSP encompasses approximately 51,786 acres of land adjacent to the southeastern shore of the Salton Sea.[725] This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).[726] Under the LVSP, most of this land would (be converted to industrial uses.[727]

For many bird species, the Imperial Valley provides an important habitat for birds due to its geographic relationship with the Salton Sea.[728] Whereas the PSA is correct in stating that there are approximately 500,000 acres of total agricultural lands in Imperial County, in 2021 there were only 460,258 acres in Imperial Valley

[725] LVSP NOP; LVSP Initial Study.
[726] LVSP Baseline Report at Figure 2-4.
[727] LVSP NOP at p. Figure 2.
[728] Cashen Comments at p. 21.

(with the remainder in the Palo Verde and Bard/Winterhaven regions).[729] Of these 460,258 acres, 48,000 to 74,000 acres[730] would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.[731] California Ethanol Project will have a significant adverse impact on the Imperial Valley population of burrowing owls and other bird species that forage mainly in low-growing agricultural fields.[732] As stated in the Applicant's Water Supply Assessment, the Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands in Imperial Valley for solar energy development, with additional losses occurring as the result urban development.[733]

These developments pursuant to the LVSP, combined with the Project, result in a cumulatively considerable impact to biological resources which the PSA fails to analyze. As a result, the Commission failed to proceed in the manner required by law in analyzing the Project's cumulative impacts to biological resources in the PSA and lacks substantial evidence to support the PSA's conclusions regarding the Project's cumulative impacts to biological resources.

3. The PSA Fails to Adequately Analyze Cumulative Noise

The PSA provides that: "[c]umulative noise impacts are determined by the noise levels of two or more noise sources at a receptor. Adding two noise sources at a receptor would create a maximum noise level increase of three dBA above the loudest noise source."[734] The PSA provides a list of projects that staff identified as contributors to cumulative noise impacts at receptor sites SBR (located 2.5 miles southwest of the Project site) and R-1 (located 3.5 miles east of the Project site).[735]

The PSA's list of projects that would be contributors to cumulative noise impacts excludes many of the projects on the PSA's "Master Cumulative Project List" (PSA, Table 1-2). Projects excluded from consideration in the analysis of

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[729] Imperial County, 2021 Agricultural Crop & Livestock Report (2022), *available at* https://agcom.imperialcounty.org/wp-content/uploads/2022/10/2021-CR-Draft-Final.pdf.
[730] The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.
[731] This project remains active. *See* CE+P, CE+P to Partner with International Agribusiness Experts Booker Tate Ltd. on Sugar Valley Energy Sugarcane and Ethanol Production (Apr. 3, 2024), *available at* https://www.californiaethanolpower.com/news/ce-p-to-partner-with-international-agribusiness-experts-booker-tate-ltd-on-sugar-valley-energy-sugarcane-and-ethanol-production.
[732] Cashen Comments at p. 15; Letter from Kennon A. Corey to Armando G. Villa re: Notice of Preparation of a Draft Environmental Impact Report for the Sugarcane and Sweet Sorghum to Ethanol, Electricity and Bio-Methane Facility (Dec. 19, 2012).
[733] WSA at p. 8-3.
[734] PSA at p. 5.9-4
[735] *Id.* at p. 5.9-1.

cumulative noise impacts include the Energy Source Mineral ATLIS Project and the Hudson Ranch New Well 13-4 Project.[736] The PSA does not provide justification for excluding these three projects from the analysis of cumulative noise impacts.[737]

The Energy Source Mineral ATLIS Project is located immediately adjacent to the Project's laydown and parking area southwest of the intersection of McDonald Road and Davis Road.[738] The Hudson Ranch New Well 13-4 Project coincides with the Project's proposed borrow pit southeast of the intersection of Hazard Road and Davis Road (Figure X).[739] At a minimum, the following projects are located close enough to the proposed Project that they could contribute to cumulative noise impacts: (1) Energy Source Mineral ATLIS Project, (2) Hudson Ranch New Well 13-4 Project, (3) Hudson Ranch Power Plant (existing), (4) Elmore Geothermal Project (existing), (5) Cal Energy Generation Project (existing), (6) Vulcan Power Plant (existing), (7) Elmore North Geothermal Project, and (8) Black Rock Geothermal Project. The PSA provides no analysis of how noise from cumulative projects would impact special-status animals in the Project area.

D. The PSA Fails to Adequately Analyze Impacts to Wetlands

The PSA provides, absent substantial evidence, that Project activities that cause *elimination* of a wetland's hydrological, biogeochemical, vegetation and wildlife functions, which then results in indirect impacts to the Salton Sea, were classified as "temporary" Project impacts.[740] Specifically, the PSA provides:

> This analysis determined that there could be temporary/permanent impacts to 4.7/1.87 acres of impacts to tamarisk thickets (riparian habitat); 1.77/0 acres of impacts to Typha herbaceous alliance (cattail marsh); and 1.08/0 acres of impacts to open water. Tamarisk thickets (riparian) areas would be subject to temporary impacts from the construction laydown and parking, pipeline, and well pads. Permanent impacts to Tamarisk thickets would include pipeline installation. Cattail marsh would be subject to temporary impacts from the borrow pit and well pads. No permanent impacts to cattail marsh are anticipated. Open water would be subject to temporary impacts from the well pads. No permanent impacts to open water are anticipated … Temporary and permanent impacts to Tamarisk thickets, and temporary impacts to cattail marsh and open water, could include elimination or

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[736] Cashen Comments at p. 34.
[737] *Ibid.*
[738] County of Imperial. 2021 Sep. Final Environmental Impact Report for the Energy Source Mineral ATLIS Project. https://www.icpds.com/planning/environmental-impact-reports/final-eirs.
[739] County of Imperial. 2023 Apr. Initial Study and Mitigated Negative Declaration for the Hudson Ranch New Well 13-4 Project. https://ceqanet.opr.ca.gov/2023040436
[740] PSA at p. 5.2-133.

> alteration of hydrological, biogeochemical, vegetation and wildlife functions. Since the entire area drains into the Salton Sea, impacts to these water features could indirectly impact the sea as a result of alterations to the existing topographical and hydrological conditions."[741]

The PSA fails to provide any evidence to support the conclusion that Project activities that cause *elimination* of a wetland's hydrological, biogeochemical, vegetation and wildlife functions, which then results in indirect impacts to the Salton Sea, were classified as "temporary."[742] In addition, the PSA fails to identify the types of temporary impacts that would occur to wetlands (e.g., temporary alteration of hydrology, trampling of wetland plants, temporary placement of fill materials, etc.).[743] To the contrary, "elimination" of a resource generally indicates a permanent impact, yet the PSA fails to analyze the long-term permanent impacts of eliminating these sensitive and potentially jurisdictional water resources. These deficiencies preclude the ability to assess whether the "temporary" wetland impacts quantified in the PSA would in fact be temporary.[744] The PSA's analysis of impacts to jurisdictional wetlands is therefore not supported by substantial evidence. The PSA must be revised and recirculated to accurately reflect the temporary and permanent impacts from Project construction and operation to wetlands at the Project site.

The PSA provides conflicting information regarding whether state or federally protected wetlands will be impacted. The PSA provides the following:

> The applicant does not anticipate the project will impact any waters of the U.S. or state and did not provide any proposed measures. In the event that impacts to jurisdictional waters may occur, staff proposes BIO-22 (Provide Evidence of Applicable Jurisdictional Waters Permits) to minimize and offset direct and indirect impacts to state waters to less than significant levels and ensure compliance with U.S. Army Corps of Engineers, State Water Quality Control Board, and CDFW regulations that provide protection to aquatic resources. These measures include restoration up to 7.55 acres of temporarily impacted areas to pre-project conditions, and acquisition and enhancement of up to 1.87 acres of permanently impacted areas with in-kind waters within the Salton Sea watershed."[745]

The PSA's conclusions regarding Project impacts to wetlands are not supported by substantial evidence. The PSA provides conflicting information

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[741] PSA at p. 5.2-133.
[742] Cashen Comments at p. 21.
[743] *Id.*
[744] *Id.*
[745] PSA at p. 5.2-134.

regarding whether the Project would impact wetlands (or other jurisdictional waters), because it alternately determines that the Project would impact wetlands and then suggests that there is only a possibility that the Project would impact wetlands.[746] The Commission must revise and recirculate the PSA to clearly articulate the Project's impacts to wetlands. If Staff is unable to make concrete determinations on wetland impacts due to the Applicant's failure to provide the requisite information, a revised PSA must distinguish between impacts that appear imminent based on Staff's independent analysis, versus those that could occur due to Project design changes or other unforeseen circumstances.[747] Absent this determination, the PSA's conclusions regarding wetlands are not supported by substantial evidence.

Furthermore, as demonstrated in Mr. Cashen's comments on the PSA, the aquatic resources information provided in PSA and by the Applicant omits features that appear to qualify as waters of the state.[748] For example, the Applicant did not delineate the Invasive Southwest Riparian Woodland and Shrubland along Garst Road (where the gen-tie line would be located) as a potentially jurisdictional wetland feature (TN 252694, Figure 4D), despite describing this feature as a semi-natural vegetation type that forms *in temporarily flooded areas* along rivers or streams or in depressions (TN 249723).[749] The PSA states "[m]apped tamarisk thickets and cattail marsh areas are likely to be regulated by RWQCB as wetland waters of the state."[750] According to the Applicant, the single sample point in the tamarisk thickets along Garst Road contained hydrophytic vegetation, hydric soils, but not wetland hydrology.[751] This determination regarding lack of wetland hydrology conflicts with the USACE approved jurisdictional determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area in Red Hill Bay.[752] Several potentially jurisdictional aquatic resources were delineated. The Project's gen-tie line ROW overlaps feature "PSSW-2." Although the USACE determined this feature did not qualify as waters of the U.S., it qualifies as a state jurisdictional wetland because it contains wetland hydrology, hydrophytic vegetation, and hydric soils.[753]

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[746] *Id.*
[747] Cashen Comments at p. 21.
[748] *Id.* at p. 15.
[749] *Ibid.*
[750] PSA at p. p. 5.2-82.
[751] TN # 252694, Appendix E, data form for sampling point S-5.
[752] U.S. Army Corps of Engineers. 2020 Oct 19. Approved Jurisdictional Determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area. File No. SPL-2020-00457.
[753] *Id.*

Here, the Applicant conducted the site visit in March 2022, after 14 months of below normal rainfall.[754] In the three months preceding the wetland delineation site visit (i.e., between January and March 2022), the Imperial CA climate station recorded only 0.04 inches of rain, while the mean ("average") rainfall between January and March at the climate station is 1.1 inches.[755] Therefore, in accordance with the USACE delineation procedures, the Riparian Woodland and Shrubland along Garst Road (and all other areas that contained hydrophytic vegetation and hydric soils) should have been delineated as a wetland.[756]

E. The PSA Fails to Adequately Mitigate the Project's Significant Biological Resources Impacts

For the reasons stated herein, the Project will result in significant impacts to biological resources that must be adequately disclosed, analyzed, and mitigated in a revised PSA. An agency must mitigate "all significant environmental impacts to the greatest extent feasible."[757] Mitigation of impacts to the fullest extent feasible requires an agency to accurately quantify the severity of Project impacts, and because the PSA's inadequate analyses underestimate the severity of the Project's impacts, the Commission has failed to comply with CEQA and must revise and recirculate the PSA.

1. The PSA Fails to Adequately Mitigate Temporary Impacts to Avian Habitat

The PSA fails to adequately mitigate potentially significant impacts associated with temporary impacts to avian habitat from conversion of agricultural fields.[758] The PSA provides the following regarding the Project's temporary impacts to habitat for special-status birds: "[u]pon completion of construction, temporarily impacted agricultural fields would revert to previous uses."[759] This statement is not reflected in the Project Description or Staff's proposed Conditions of Certification.[760] Although BIO-11 requires a "plan" that identifies Project impact areas that would be converted back to their previous land use, it does not *require* any or all of the impacted agricultural fields to revert back to agricultural production. The result is that impacts to avian habitat associated with conversion of agricultural land even temporarily, will not be adequately mitigated.

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[754] Western Regional Climate Center. 2024. Total of Precipitation for the Imperial CA climate station (044223). [accessed 2024 Aug 27]. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4223
[755] *Ibid.*
[756] Cashen Comments at p. 15.
[757] 14 Cal. Code Regs. §§ 15090, 15091.
[758] Cashen Comments at p. 25.
[759] PSA at p. 5.2-97.
[760] Cashen Comments at p. 16.

2. The PSA Fails to Adequately Mitigate Permanent Impacts to Avian Habitat

Habitat loss is a potentially significant impact to special-status birds.[761] The PSA makes the determination that BIO-17 would mitigate the Project's permanent impacts on habitat.[762] BIO-17 states: "[p]ermanent impact to all natural and semi-natural vegetation communities, including but not limited to, tamarisk thickets, Typha herbaceous alliance, iodine bush shrub, and desert holly scrub, shall be compensated through habitat compensation and/or habitat restoration at a minimum of a 1:1 ratio."[763] Whereas this measure would mitigate the Project's impacts on vegetation communities, it would not sufficiently mitigate the Project's impacts on *habitat*.[764] Habitat is defined as: "the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism."[765] Substantial evidence, as presented in Mr. Cashen's expert comments, demonstrates that if the habitat compensation lands do not produce occupancy of the species impacted by the Project, the habitat impacts remain unmitigated.[766]

For example, Cashen's comments demonstrate that iodine bush scrub that is acquired under BIO-17 would have no habitat value to the snowy plover unless it has the same qualities as the iodine bush scrub impacted by the Project (e.g., low vegetative cover in close proximity to water with minimal human activity and within the geographic range of the species).[767] Permanent impacts associated with habitat loss are unmitigated and remain significant. A revised and recirculated PSA must adequately mitigate impacts associated with habitat loss for special-status birds.

3. The PSA Fails to Adequately Mitigate Significant Impacts from Night Lighting

The PSA includes the same typo as the AFC regarding Mitigation Measure VIS-2, which provides: "The applicant shall coordinate with the California Energy Commission and/or Imperial County on appropriate night lighting design and materials prior to final design. Lighting shall comply with Imperial County Municipal Code Section 91702.02(L), as feasible. (Jacobs 2023a, p. 5.13-29)."[768]

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[761] PSA at p. 5.2-106.
[762] *Id.* at p. 5.2-107.
[763] *Id.* at p. 5.2-176.
[764] Cashen Comments at p. 26.
[765] *See* Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[766] Cashen Comments at p. 26.
[767] *Ibid.*
[768] PSA at p. 5.15-32.

Imperial County Municipal Code Section 91702.02(L) does not exist. The code section goes up to the subsection (G). Compliance with the Imperial County Municipal Code as feasible does not ensure impacts would be less than significant, because the measure is neither binding nor extant.

CURE's Data Request Set 2 Data Request No. 210 requested that the Applicant "Provide a copy of Imperial County Municipal Code section 91702.02(L) referenced in the AFC. If this section of the code does not exist, identify the correct section of the code." The Commission failed to revise Mitigation Measure VIS-2 and fails to provide adequate mitigation for night lighting.

Further, providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan.[769] CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.[770] "Impermissible deferral of mitigation measures occur when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."[771] The CEQA Guidelines provide that "[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review…"[772] The PSA does not state why specifying these light pollution performance standards were impractical or infeasible at the time the PSA was drafted. In *Preserve Wild Santee v. City of Santee,* the city impermissibly deferred mitigation where the EIR did not state why specifying performance standards for mitigation measures "was impractical or infeasible at the time the EIR was certified."[773] The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.[774] Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any standards is inadequate.[775] Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.[776]

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[769] Cashen Comments at p. 24.
[770] 14 Cal. Code Regs. § 15126.4(a)(1)(B).
[771] *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.
[772] 14 Cal. Code Regs. § 15126.4(a)(1)(B).
[773] *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.
[774] *Ibid.*
[775] *Endangered Habitats League, Inc. v. County of Orange,* (2005) 131 Cal.App.4th 777, 794.
[776] *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.

Similarly, the provision in BIO-4 requiring only "the lowest illumination necessary for human safety" does not ensure impacts would be less than significant because the PSA does not quantify the illumination level necessary for human safety, nor does it identify how often lighting would be turned off because it "is not required" for safety purposes.[777] However, based on the PSA's Project Description, it appears night lighting required for human safety would be located throughout most of the Project site.[778]

4. The PSA Fails to Adequately Mitigate Significant Impacts from Pile Driving

The PSA identifies three methods for reducing the significant noise level of pile driving,[779] but it does not identify how much each method (e.g., use of impact cushions) would reduce the pile driving noise level.[780] These deficiencies preclude the ability to assess whether the methods adequately mitigate impacts from pile driving noise levels at habitat occupied by the Yuma Ridgway's rail, California black rail, and other special-status bird species.[781] Mitigation Measure NOISE-8 requires the Applicant to perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. But, the measure fails to establish permissible thresholds for noise levels generated pile driving.[782] Impacts to rails and other special-status bird species will therefore be significant. The revised PSA should disclose all feasible mitigation measures to reduce impacts to rails and special-status bird species.

5. The PSA Fails to Adequately Mitigate Significant Impacts to Nesting Birds

Substantial evidence demonstrates that the Project results in significant impacts to nesting birds requiring further mitigation. BIO-12 requires a pre-activity survey for nesting birds if Project construction or decommissioning activities must occur during the avian breeding season.[783] BIO-12 states: "Pre-activity surveys shall be conducted by the approved biologist at the appropriate time of day/night, during appropriate weather conditions."[784] This statement is too vague to ensure

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[777] Cashen Comments at p. 24.
[778] PSA at pp. 3-21 to 3-22.
[779] *Id.* at p. 5.9-7
[780] Cashen Comments at p. 5.
[781] *Ibid.*
[782] *Ibid.*
[783] PSA at p. 5.2-167.
[784] *Id.*

efficacy of the mitigation.[785] A revised PSA must define what would be considered the appropriate time of day and weather conditions.[786]

Mitigation Measure BIO-12 outlines the methods that should be used during the pre-activity survey.[787] However, given the density of vegetation in the tamarisk thickets in Red Hill Bay, substantial evidence demonstrates that it would be infeasible for a biologist to be able to locate all bird nests in that vegetation community, especially given the 7-day timeframe prescribed in BIO-12.[788] This issue should be addressed in a revised and recirculated PSA.

Further, Mitigation Measure BIO-12 provides: "[i]f an active nest is detected, a 100-foot avoidance buffer for passerines, and a 500-foot avoidance buffer for raptors or pelicans, shall be established and clearly delineated by staking, flagging, and/or signage."[789] The PSA must be revised to establish buffer size for the other types of birds that have the potential to nest in the Project area (e.g., Anseriformes, Charadriiformes, Trochiliformes, etc.) in order to accurately characterize and mitigate impacts.[790]

6. The PSA Fails to Adequately Mitigate Impacts to Nesting Ridgway's Rail

Substantial evidence demonstrates that Mitigation Measure BIO-13 would not adequately mitigate significant impacts to nest populations of Ridgway's Rail. BIO-13 provides:

> Construction and decommissioning activities within or adjacent to suitable habitat for Yuma Ridgway's rail (i.e., cattail marsh, Invasive Southwest Riparian Woodland and Shrubland, and North American Arid West Emergent Marsh) shall be scheduled to avoid the nesting and molting flightless season (i.e., February 15 – September 15) unless surveys verity [*sic*] that no nesting is occurring.[791]

This condition is vague and would not adequately ensure that impacts to the Yuma Ridgway's rail would be mitigated.[792] A revised PSA must establish what would be considered "adjacent" by providing a quantifiable distance.[793] The Yuma

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[785] Cashen Comments at p. 49.
[786] *Id.*
[787] PSA at pp. 5.2-167 to 5.2-168.
[788] Cashen Comments at p. 27.
[789] PSA at p. 5.2-168.
[790] Cashen Comments at p. 27.
[791] PSA at p. 5.2-170.
[792] Cashen Comments at p. 28.
[793] *Ibid.*

Ridgway's rail is a secretive bird that constructs well concealed nests.[794] As a result, it is extremely difficult to "verify" that no nesting is occurring.[795] When surveying for Ridgway's rails, biologists use behavioral cues (e.g., vocalizations in areas with concentrated rail activity) to infer nest locations.[796] A revised PSA must establish how the biologist would verify that no nesting is occurring and clarify whether BIO-13 requires implementation of the USFWS's (2017) *Yuma Ridgway's Rail Survey Protocol*.[797]

Pages 5.2-99 through 5.2-102 of the PSA provides analysis of impacts to the southwestern willow flycatcher, California black rail, Yuma Ridgway's rail, and Gila woodpecker (all federal or state listed species). The PSA refers to these birds as "marshland species." Among other impacts, the PSA states that construction noise could have a significant impact on marshland bird communication.[798] The PSA's analysis then focuses on the Yuma Ridgway's rail and two of staff's proposed COCs/MMs: BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring) and BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan).[799] The analysis concludes with a list of other COCs/MMs that would apply to marshland birds, and it provides staff's determination that "[w]ith the implementation of these COC/MM, impacts to marshland birds would be reduced to less than significant levels."[800]

A fundamental flaw with the PSA's analysis is that the southwestern willow flycatcher and Gila woodpecker are not marshland species.[801] The southwestern willow flycatcher is a riparian obligate that establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, generally near or adjacent to surface water or underlain by saturated soil.[802] The Gila woodpecker is associated with riparian woodlands, old-growth xeric-riparian wash woodlands, uplands with concentrations of large columnar cacti, dry subtropical forests, and urban residential areas.[803]

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[794] *Ibid.*
[795] Cashen Comments at p. 28.
[796] *Ibid.*
[797] *Ibid.*
[798] PSA at p. 5.2-100.
[799] *Id.* at p. 5.2-101.
[800] *Id.* at p. 5.2-102.
[801] Cashen Comments at 14.
[802] *Ibid.*; Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
[803] California Partners in Flight. 2009. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. [accessed 2024 Aug 29]. https://partnersinflight.org/wp-content/uploads/2024/05/desert.v-1.pdf.

BIO-13 requires: (a) pre-activity surveys and construction monitoring for Yuma Ridgway's rail within all project areas that contain suitable habitat and a 500-foot buffer from suitable habitat; (b) avoidance of construction activities within or adjacent to suitable habitat for Yuma Ridgway's rail during the nesting season, unless surveys verify that no nesting is occurring; and (c) reduced vehicle speed adjacent to rail habitat or burrowing owl habitat.[804] Thus, BIO-13 does not require focused surveys and construction monitoring for the southwestern willow flycatcher and Gila woodpecker.[805] Furthermore, because suitable habitat for the southwestern willow flycatcher and Gila woodpecker is not equivalent to suitable habitat for the Yuma Ridgway's rail, BIO-13 would not impose temporal restrictions on construction activities within or adjacent to habitat for the southwestern willow flycatcher and Gila woodpecker, nor would it impose vehicle restrictions adjacent to that habitat.

BIO-14 requires a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot from suitable rail habitat, and it establishes a noise threshold of 60 dBA for "marshland habitat" during the breeding season.[806] During the non-breeding season, BIO-14 requires a biological monitor if construction noise has the potential to exceed 80 dBA at "potential marshland habitat."[807] If disturbance to marshland species is observed during the non-breeding season, all work shall stop and USFWS and CDFW shall be contacted for further guidance.[808] Thus, BIO-14 has no noise thresholds or biological monitoring requirements for riparian woodlands that provide potential habitat for the southwestern willow flycatcher and Gila woodpecker.[809]

For these reasons, and those demonstrated in Mr. Cashen's expert comments, the PSA's determination that BIO-13 and BIO-14 would reduce impacts on the southwestern willow flycatcher and Gila woodpecker to less than significant levels is not supported by substantial evidence in the record.

7. The PSA Fails to Adequately Mitigate Significant Impacts to Redhead Ducks

The redhead (duck) is a California Species of Special Concern whose population has been steadily declining due to habitat loss.[810] Redheads usually nest

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[804] PSA at p. 5.2-17.
[805] Cashen Comments at p. 14.
[806] PSA at p. 5.2-172.
[807] *Ibid*.
[808] Cashen Comments at p. 14.
[809] Cashen Comments at p. 14.
[810] *Id.* at p. 17; Shuford WD, Gardali T, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate

in freshwater emergent wetlands where dense stands of cattails (*Typha* spp.) and tules (*Scirpus* spp.) are interspersed with areas of deep, open water.[811] Schrimpf Road Cove contains these habitat conditions.[812] While formerly common at the Salton Sea, the breeding population of redheads has dwindled to only a few breeding pairs.[813] Ebird data suggest Schrimpf Road Cove may be one of the few locations where redheads continue to nest at the Salton Sea.[814]

The Project may cause significant impacts on the redhead through: (1) habitat loss and fragmentation due to construction of the pipeline through wetland habitat along the southern side of Schrimpf Road Cove; (2) habitat degradation due to contaminants, and due to ongoing noise and human activity associated with the power plant, pipeline, and gen-tie line; and, (3) collisions with the gen-tie line.[815] The mitigation proposed in the PSA would not reduce these impacts to less than significant levels.[816] Specifically, the PSA does not require compensation for impacts to redhead habitat (or for redheads that are killed by the Project's gen-tie line), nor does it incorporate measures to prevent ongoing disturbance activities (e.g., noise and human activity) to redhead habitat during the operational phase of the Project.[817]

8. The PSA Fails to Adequately Mitigate Significant Impacts to Burrowing Owl

Substantial evidence demonstrates that Mitigation Measure BIO-15 is not sufficient to adequately reduce significant impacts to burrowing owls. BIO-15 provides: "[t]he DB(s) or Biological Monitor(s) shall monitor occupied burrowing owl burrows within 1,000 feet of project activities for at least 3 days prior to construction or decommissioning to determine baseline foraging behavior (i.e., behavior without construction)."[818] However, BIO-15 only requires pre-activity surveys in areas that would be subject to direct disturbance, and the burrowing owl surveys conducted by the Applicant only included surveys within a 200-meter (656-foot) buffer around the BSA.[819] Therefore, a revised PSA should establish an

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conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

[811] Cashen Comments at p. 17.

[812] *Ibid*.

[813] *Ibid.*

[814] eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Aug 31]. https://ebird.org/explore

[815] Cashen Comments at p. 17.

[816] *Ibid*.

[817] Cashen Comments at p. 17.

[818] PSA at p. 5.2-172.

[819] TN # 254835, Burrowing Owl Survey Report (Feb. 2024).

effective means for detecting occupied owl burrows that occur between 656 feet and 1,000 feet of project activities.[820]

Even with the implementation of Mitigation Measure BIO-16, the Project's impacts to burrowing owls remain significant.[821] BIO-16 requires the Applicant to prepare a Burrowing Owl Habitat Preservation and Enhancement Plan. According to BIO-16:

> The project owner shall enhance or create new burrows at a 2:1 ratio for any active burrow requiring exclusion, closure, and relocation due to project activities. Enhancement may include clearing of debris or enlarging existing mammal burrows. Mitigation lands should be on, adjacent to, or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls' presence.[822]

The PSA fails to demonstrate feasibility of this measure because it does not establish that it would be possible to conduct the mitigation on lands adjacent to, or proximate to, the impact sites.[823] Most of the burrowing owl burrows in the Project area occur along the banks of IID's drains and canals.[824] IID's comment letter to the Commission states: "[t]he proponents may not use IID's canal or drain banks to access the project site."[825] If IID will not allow use of the canal and drain banks to access the Project site, it may not allow those banks to be used as mitigation lands.[826] Although BIO-16 discusses other options for the mitigation lands, a revised PSA must identify the feasibility of having the mitigation on lands near the impact site(s) because the success of burrowing owl relocation projects is correlated with the distance between impacted burrows and replacement burrows.[827]

Further, BIO-16 provides: "[t]he project owner shall replace foraging habitat that is permanently destroyed shall be replaced [*sic*] at a 1:1 ratio. Foraging habitat shall be suitable for the protection of burrowing owls."[828] A revised PSA must identify the geographic limits for the replacement habitat.[829] In addition, a revised and recirculated PSA must establish whether the replacement habitat must be occupied by burrowing owls. Regions where birds were extirpated or nearly

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[820] Cashen Comments at p. 53.
[821] *Id.* at p. 54.
[822] PSA at p. 5.2-175.
[823] Cashen Comments at p. 53.
[824] *Ibid.*
[825] TN # 251869.
[826] Cashen Comments at p. 39.
[827] *Id.*; California Department of Fish and Game, Staff Report on Burrowing Owl Mitigation (Mar. 7, 2012) p. 10, *available at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843.
[828] PSA at p. 5.2-174.
[829] Cashen Comments at p. 38.

extirpated at the time of the first survey (1991–1993), were not repopulated by owls by the time of the second survey (2006–2007), despite the presence of apparently suitable habitat in those regions.[830] This demonstrates burrowing owls do not simply colonize (or recolonize) surrogate habitat after they are displaced from a project site.[831] Moreover, it demonstrates that the provision of unoccupied habitat does not mitigate the functions of the habitat that is eliminated.[832] Mitigation Measure BIO-16 is therefore not sufficient to adequately mitigate impacts to burrowing owls and must be revised in a recirculated PSA.

9. The PSA Fails to Adequately Mitigate Cumulative Impacts to Burrowing Owls

The PSA fails to adequately mitigate cumulative impacts to burrowing owls. The PSA's mitigation measures, and measures implemented for other cumulative projects in the region do not require compensatory mitigation for impacts to burrowing owl habitat. Mr. Cashen's comments provide substantial evidence that Imperial County rarely requires compensatory mitigation for impacts to burrowing owl habitat, and when compensatory mitigation is required, it compensates for only a fraction of the impacted habitat.[833] For example, Imperial County required the Mount Signal and Calexico Solar Farm Projects to provide 71.5 acres of compensatory mitigation in exchange for impacts to 4,144 acres of burrowing owl habitat.[834]

Habitat loss and degradation are the greatest threats to burrowing owls in California.[835] As a result, the cumulative loss of burrowing owl habitat in Imperial County constitutes a potentially significant cumulative impact that cannot be dismissed by the CEC. Indeed, contrary to the PSA's determination that there are no cumulatively considerable impacts (e.g., to the burrowing owl), there is substantial evidence that the burrowing owl population in Imperial County has experienced significant declines due to inadequate mitigation.[836]

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[830] *Id.* at p. 54.
[831] *Ibid.*
[832] *Ibid.*
[833] Cashen Comments at p. 54.
[834] County of Imperial, Draft Environmental Impact Report Mount Signal and Calexico Solar Farm Projects (Nov. 2011) pp. 4.4-38 to 4.4-47, *available at* https://www.icpds.com/assets/planning/final-environmental-impact-reports/mount-signal-solar-farm/cover.pdf.
[835] Cashen Comments at p. 24; California Bird Species of Special Concern (2008), *available at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10405&inline.
[836] Center for Biological Diversity et al, Petition Before the California Fish and Game Commission to List California Populations of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as Endangered or Threatened Under the California Endangered Species Act (Mar. 5, 2024), *available at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=221396&inline.

Further, even when appropriate mitigation measures have been adopted for a project, there often is insufficient oversight to ensure the mitigations measures are implemented successfully, or at all. For example, a report issued by the U.S. Government Accountability Office found that the USFWS lacks: (a) a systematic means of tracking the monitoring reports it requires in biological opinions and does not know the extent of compliance with these requirements; (b) a systematic method for tracking cumulative take of most listed species.[837]

10. The PSA Fails to Adequately Mitigate Impacts from Habitat Loss

Mitigation Measure BIO-17 does not adequately mitigate impacts associated with habitat loss. As demonstrated in Mr. Cashen's comments, the compensatory mitigation required under BIO-17 would only mitigate impacts to vegetation communities, which is not equivalent to habitat.[838] The high ecological value of the Project site is a function of its geographic location in relation to the Pacific Flyway, Salton Sea, Sonny Bono Salton Sea National Wildlife Refuge, and Imperial Wildlife Area.[839] However, the PSA does not establish any geographic limits on the location of the habitat compensation land required under BIO-17.[840] As a result, substantial evidence demonstrates that BIO-17 does not ensure significant impacts to habitat would be reduced to less than significant levels.[841] In order to ensure that all significant impacts associated with habitat loss are analyzed and that mitigation measures effectively reduce impacts to a less than significant level, a revised staff assessment should be prepared and circulated. The revised staff assessment should disclose all feasible mitigation measures to reduce impacts from habitat loss.

11. The PSA Improperly Defers Mitigation for Avian Collisions

BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan. [842] The preparation of this plan constitutes impermissibly deferred mitigation. In addition to deferring preparation of the overall plan, the PSA defers establishment of the "impact thresholds" (i.e., number of collision deaths) that would trigger the need for remedial actions.[843] The impact thresholds are the most critical component of the plan because they would be used to decide whether the Project is having a significant impact on bird populations, and

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[837] U.S. Government Accountability Office, Endangered Species Act: The U.S. Fish and Wildlife Service Has Incomplete Information about Effects on Listed Species from Section 7 Consultations. (May 2009), *available at* https://www.gao.gov/assets/gao-09-550.pdf.
[838] Cashen Comments at p. 26.
[839] PSA at pp. 5.2-16 to 5.2-17; Cashen Comments at p. 31.
[840] Cashen Comments at p. 31.
[841] *Ibid.*
[842] PSA at p. 5.2-178.
[843] *Ibid.*

thus whether remedial actions are necessary.[844] Absent this information preapproval, the Commission lacks substantial evidence to support the scientific basis for selecting avian collision impact thresholds.

Further, BIO-20 would not serve as sufficient mitigation to reduce avian collision impacts to less than significant. BIO-20 states: "[t]he project owner shall install a CPM-approved marker on the grounding wire of the proposed gen-tie lines. These markers shall be placed and maintained on the highest-bird-use portions of the proposed gen-tie lines."[845] Mr. Cashen's comments provided substantial evidence demonstrating that there are three problems with this measure. First, the PSA does not identify the "highest-bird-use portions" of the proposed gen-tie lines, nor does it identify how those portions would be identified.[846] Second, there is basis for only putting markers in the "highest-bird-use portions" of the gen-tie lines because the entire Project area is a high-use area for birds.[847] Mr. Cashen concludes that placing line markers at only select locations would be insufficient to prevent significant impacts to birds.[848] Indeed, even if line markers are installed along the entire gen-tie line, the impact on birds could remain significant.[849] Third, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.[850] During their November 9, 2023 site visit, representatives of CURE observed that the distribution lines along Garst Road have line markers, but half of the markers are broken.

Mr. Cashen's comments provide substantial evidence that the PSA does not provide an effective or enforceable mechanism to adequately mitigate significant impacts from avian collision. The PSA must be revised and recirculated to adequately mitigate impacts from avian collisions. The revised PSA should disclose all feasible mitigation measures to reduce avian collisions.

12. The PSA Fails to Adequately Mitigate Significant Impacts Associated with the Floating Cover Required by Mitigation Measure WATER-9

The Facility Pond Wildlife Escape and Monitoring Plan required by COC BIO-19 does not adequately mitigate impacts to biological resources from the floating cover required by COC WATER-9. Further, the Facility Pond Wildlife Escape and Monitoring Plan constitutes impermissibly deferred mitigation. As

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[844] Cashen Comments at p. 31.
[845] PSA at p. 5.2-179.
[846] *Ibid.;* Cashen Comments at p. 31.
[847] *Ibid.*
[848] Cashen Comments at p. 31.
[849] *Ibid.;* M. D'Amico et al., Bird Collisions With Power Lines: Prioritizing Species and Areas by Estimating Potential Population-Level Impacts, Diversity and Distributions 25(6):975-82 (2019), *available at* https://onlinelibrary.wiley.com/doi/epdf/10.1111/ddi.12903.
[850] Cashen Comments at p. 31.

demonstrated herein, impacts from the floating cover required in WATER-9 would result in significant impacts to biological resources, as a result of drownings. The PSA itself recognizes that "it would be considered a significant impact if animals became trapped in the pond."[851] The PSA in COC BIO-19 provides that "Monitoring would determine if wildlife are utilizing the ponds, and require corrective actions to prevent further injury or mortality to wildlife."[852] COC BIO-19 "would also require the applicant include design features for the service water pond and storm water retention pond that allow wildlife to escape if they gain access to the ponds."[853]

CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.[854] "Impermissible deferral of mitigation measures occur when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."[855] The CEQA Guidelines provide that "[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review…"[856] Here, COC BIO-19 proposes that:

> The project owner shall incorporate design features to allow escape of wildlife that may enter the ponds within the facility. These may include, but are not limited to, gradual slopes, side traction to facilitate upward movement, escape ramps, floating platforms, and/or wildlife ledges. Prior to construction of the facility ponds, the project owner will submit a Facility Pond Wildlife Escape and Monitoring Plan to CDFW for review and comment and to the CPM for review and approval. The plan will outline the wildlife escape methods, procedures for handling dead or injured wildlife, wildlife rehabilitation centers that take injured animals, and schedule for monitoring during the first year of pond operation.[857]

The PSA does not provide substantial evidence that COC BIO-19 would adequately reduce impacts to biological resources because the PSA does not provide any specificity regarding what design features would be included in the Facility Pond Wildlife Escape and Monitoring Plan to reduce impacts to wildlife. Further, COC BIO-19 constitutes impermissibly deferred mitigation. The PSA fails to demonstrate why the specific details of this mitigation measure (including which design features will be utilized) were impractical or infeasible to include during the

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[851] PSA at 5.2-115.
[852] *Ibid.*
[853] *Ibid.*
[854] 14 Cal. Code Regs. § 15126.4(a)(1)(B).
[855] *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.
[856] 14 Cal. Code Regs. § 15126.4(a)(1)(B).
[857] PSA at p. 5.2-177.

PSA review process. Absent this information, the public is denied the opportunity to participate in the review and verification of the efficacy of the design features in the Facility Pond Wildlife Escape and Monitoring Plan. For these reasons, the PSA should be revised to adequately analyze and mitigate impacts associated with COC WATER-9 and include the design features to be included in the Facility Pond Wildlife Escape and Monitoring Plan pursuant to COC BIO-19.

13. The PSA Fails to Adequately Mitigate Significant Impacts to Wetlands

The PSA fails to adequately mitigate significant impacts to wetlands for numerous reasons. BIO-22 states: "[t]he project owner shall acquire, in fee or in easement, a parcel or parcels of land for any permanent impacts, up to 58.78 acres, to compensate for impacts to state and federal jurisdictional waters."[858] Mr. Cashen determined that this suggests that BIO-22 is imposing a mitigation ratio of 1:1.[859]

The compensation ratio needed to mitigate the Project's impacts on aquatic resources and other sensitive natural communities depends on the functions that will be lost at the Project site in relation to the functions that will be "gained" at the mitigation site. This establishes the baseline ratio, which is almost never below 1:1. The ratio is then adjusted to account for: (1) the mitigation site location, (2) the mitigation strategy (i.e., preservation, creation, or enhancement), (3) uncertainty in the success of the mitigation program, (4) any habitat type conversion that would occur, (5) temporal loss, and (6) the extent of ecological buffers at the mitigation site.[860] The 1:1 ratio incorporated into BIO-22 fails to account for these variables. At a minimum, the 1:1 ratio does not mitigate impacts to less than significant levels because it does not account for temporal loss (i.e., the lag time between functions lost and functions gained)[861] or uncertainty (which is inherent in all mitigation efforts except those that involve purchasing credits at an approved mitigation bank).[862]

Mitigation Measure BIO-22 states (in part):

> "The project shall comply with all applicable laws and regulations regarding requirements of the United States Army Corps of Engineers and the Regional Water Quality Control Board for aspects of the project, if any, which fall

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[858] *Id.* at p. 5.2-183.
[859] Cashen Comments at p. 55.
[860] *See* State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. pp. 83 through 88. *See also* US Army Corps of Engineers, South Pacific Division. 2017. Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios.
[861] RRWP, p. 13.
[862] Cashen Comments at 55.

within those agencies' respective purview, including obtaining any permits required for the construction, as well as compliance with any additional conditions attached to any required permits and monitoring requirements (if any). Copies of all regulatory waters permits shall be submitted to the CPM prior to ground-disturbing activities in areas supporting jurisdictional waters.

Mr. Cashen provides substantial evidence demonstrating that there are several reasons why the approach proposed in BIO-22 would not ensure Project impacts to wetlands and other jurisdictional waters are reduced to less than significant levels, as explained below.[863]

First, although BIO-22 requires compensation for any permanent impacts to state and federal jurisdictional waters, it does not incorporate mitigation for the Project's temporary impacts to jurisdictional waters.[864] Although the PSA suggests BIO-22 includes restoration of aquatic resources subject to temporary impacts, there is no such provision in BIO-22.[865] The state and federal "no overall net loss" policy for wetlands includes temporal loss of wetland acres and functions.[866] Therefore, even if the Applicant restores the wetlands that are temporarily impacted by the Project, there would be an overall net loss.[867] Achieving "no net loss" for temporarily impacted wetlands generally requires either: (a) restoration and enhancement actions that provide "functional lift" (i.e., the ecological functions of the restored wetland are superior to those of the wetland prior to impacts); or (b) a wetland compensation ratio that exceeds 1:1.[868] None of the Conditions of Certification proposed in the PSA require enhancement actions to achieve functional lift of the impacted wetlands, and BIO-22 only requires a compensation ratio of 1:1 for the Project's permanent impacts to wetlands.[869] This issue is exacerbated by the PSA's failure to establish performance standards and monitoring requirements for wetlands that are restored as mitigation.

Second, requiring the Applicant to comply with state and federal regulatory requirements pertaining to wetlands is not mitigation as defined in the CEQA statutes. As the lead agency, the CEC is responsible for identifying the specific

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[863] *Ibid.*
[864] PSA at p. 5.2-133.
[865] Cashen Comments at p. 55.
[866] *Ibid.*
[867] *Ibid.*
[868] State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. 234 pp. *See also* US Army Corps of Engineers. 2015. Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE. pp. 16 through 18.
[869] Cashen Comments at p. 55.

mitigation needed to reduce the Project's wetland impacts to less-than-significant levels. The CEC cannot defer that responsibility to other agencies (i.e., USACE and RWQCB), as proposed in BIO-22.[870]

Third, compliance with regulatory permits provides no assurances that impacts to jurisdictional waters would be less than significant.[871] To the contrary, numerous studies have demonstrated that many compensatory mitigation projects permitted under Sections 401 and 404 of the Clean Water Act are not achieving the goal of "no overall net loss" of wetland acres and functions.[872] For example, Ambrose and Lee (2004) concluded: "the Section 401 program has failed to achieve the goal of no net loss of habitat functions, values and services."[873] Similarly, the National Academy of Sciences (2001) conducted a comprehensive review of compensatory wetland mitigation projects in the U.S. and found that the national "no net loss" goal is not being met because: (a) there is little monitoring of permit compliance, and (b) the permit conditions commonly used to establish mitigation success do not assure the establishment of wetland functions.[874] Ambrose et al. (2007) derived similar results after examining 143 projects permitted by the California State Water Resources Control Board. Specifically, they concluded: (a) only 46% of the projects fully complied with all permit conditions, and (b) very few wetland mitigation projects were successful, especially from the ecological perspective.[875] With respect to temporary impacts, Wagner (2021) found that 40% of the projects authorized by the Los Angeles District of the USACE in 2011 had temporary impacts in which vegetative cover did not recover to pre-impact levels.[876]

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[870] 14 Cal. Code Regs. § 15126.4.
[871] Cashen Comments at p. 58.
[872] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA. *See also* Environmental Law Institute. 2004. Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards. Report prepared for the US Environmental Protection Agency. 271 pp. *See also* Kihslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16.
[873] Ambrose RF, SF Lee. 2004. Guidance Document for Compensatory Mitigation Projects Permitted Under Clean Water Act Section 401 by the Los Angeles Regional Quality Control Board. p. 8.
[874] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA.
[875] Ambrose RF, JL Callaway, SF Lee. 2007. An Evaluation of Compensatory Mitigation Projects Permitted Under Clean Water Act Section 401 by the California State Water Resources Control Board, 1991-2002. xxiv + 396 pp.
[876] Wagner AJZ. 2021. Temporary Impacts to Wetlands in the Arid Southwestern United States Permitted by Section 404 of the Clean Water Act [dissertation]. [Los Angeles]: University of California.

For these reasons, a revised PSA must provide a detailed wetland mitigation plan that can be thoroughly vetted by the public before the Commission makes a determination on the Project.[877]

14. The PSA Fails to Adequately Mitigate Impacts from Construction Noise on Marshland Species

The PSA provides analysis of impacts to the southwestern willow flycatcher, California black rail, Yuma Ridgway's rail, and Gila woodpecker (all federal or state listed species) and refers to these birds as "marshland species."[878] Among other impacts, the PSA states that construction noise could have a significant impact on marshland bird communication.[879] The PSA's analysis then focuses on the Yuma Ridgway's rail and two of staff's proposed COCs/MMs: BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring) and BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan).[880] The analysis concludes with a list of other COCs/MMs that would apply to marshland birds, and it provides staff's determination that "[w]ith the implementation of these COC/MM, impacts to marshland birds would be reduced to less than significant levels."[881]

As demonstrated in Mr. Cashen's comments, a fundamental flaw with the PSA's analysis is that the southwestern willow flycatcher and Gila woodpecker are not marshland species.[882] The southwestern willow flycatcher is a riparian obligate that establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, generally near or adjacent to surface water or underlain by saturated soil.[883] The Gila woodpecker is associated with riparian woodlands, old-growth xeric-riparian wash woodlands, uplands with concentrations of large columnar cacti, dry subtropical forests, and urban residential areas.[884]

BIO-13 requires: (a) pre-activity surveys and construction monitoring for Yuma Ridgway's rail within all project areas that contain suitable habitat and a 500-foot buffer from suitable habitat; (b) avoidance of construction activities within

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[877] Cashen Comments at p. 31.
[878] PSA at p. 5.2-99.
[879] *Id.* at p. 5.2-100.
[880] *Id.* at p. 5.2-101.
[881] *Id.* at p. 5.2-102.
[882] Cashen Comments at p. 11.
[883] *Ibid.*; Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
[884] *Ibid.*; California Partners in Flight. 2009. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. [accessed 2024 Aug 29]. https://partnersinflight.org/wp-content/uploads/2024/05/desert.v-1.pdf.

or adjacent to suitable habitat for Yuma Ridgway's rail during the nesting season, unless surveys verify that no nesting is occurring; and (c) reduced vehicle speed adjacent to rail habitat or burrowing owl habitat.[885] Thus, BIO-13 does not require focused surveys and construction monitoring for the southwestern willow flycatcher and Gila woodpecker. Furthermore, because suitable habitat for the southwestern willow flycatcher and Gila woodpecker is not equivalent to suitable habitat for the Yuma Ridgway's rail, BIO-13 would not impose temporal restrictions on construction activities within or adjacent to habitat for the southwestern willow flycatcher and Gila woodpecker, nor would it impose vehicle restrictions adjacent to that habitat.[886]

BIO-14 requires a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot from suitable rail habitat, and it establishes a noise threshold of 60 dBA for "marshland habitat" during the breeding season. During the non-breeding season, BIO-14 requires a biological monitor if construction noise has the potential to exceed 80 dBA at "potential marshland habitat."[887] If disturbance to marshland species is observed during the non-breeding season, all work shall stop and USFWS and CDFW shall be contacted for further guidance. Thus, BIO-14 has no noise thresholds or biological monitoring requirements for riparian woodlands that provide potential habitat for the southwestern willow flycatcher and Gila woodpecker.

For these reasons, and those shown in Mr. Cashen's comments, the PSA's conclusion that BIO-13 and BIO-14 would reduce impacts on the southwestern willow flycatcher and Gila woodpecker to less than significant levels are not supported by substantial evidence in the record.

15. The PSA Fails to Adequately Mitigate Impacts from Operational Noise to Ridgway's Rail

The PSA fails to adequately mitigate impacts to Ridgway Rail species from significant noise associated with Project operation. BIO-14 states: "[t]he project owner, in coordination with the DB(s), shall prepare a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot [sic] from suitable rail habitat."[888] BIO-14 then establishes construction noise thresholds for the breeding and non-breeding seasons (60 dBA and 80 dBA, respectively).[889] Accordingly, a Marshland Species Noise Assessment and Abatement Plan would not

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[885] PSA at p. 5.2-171.
[886] Cashen Comments at p. 11.
[887] PSA at p. 5.2-172.
[888] *Id.* at p. 5.2-171.
[889] *Ibid.*

be required if construction activities would not occur within 500 feet of suitable rail habitat.[890]

Mr. Cashen's comments provide substantial evidence that this mitigation is inadequate for the following reasons. First, the PSA fails to recognize the possibility that construction activities more than 500 feet away from rail habitat could produce noise that would not attenuate to below the established thresholds by the time it reaches the rail habitat. For example, a bull dozer operating 600 feet from rail habitat would generate a noise level of 66.4 dBA at the rail habitat.[891] Under this scenario, the noise level in the marsh would exceed the 60-dBA threshold, but no Marshland Species Noise Assessment and Abatement Plan would have been required.[892]

Second, although BIO-14 is clearly designed to avoid significant noise impacts to rails, it focuses solely on noise generated by the Project—not the total noise level when other sources of noise are considered.[893] The Applicant's Yuma Ridgway's rail survey report states: "proximity of the 4 [Elmore North] survey points to a nearby facility made it difficult to hear any birds that were >50-100 m away."[894] This suggests that noise from the existing J.J. Elmore Power Plant, when combined with noise from the Project, could exceed the 60-dBA threshold, even if the Project's predicted noise level is less than 60 dBA.[895] Third, to avoid ambiguity in when the Plan would be required, BIO-14 needs to define the specific areas that provide "suitable rail habitat."[896]

BIO-14 states the following noise attenuation measures shall be implemented to minimize noise impacts on Yuma Ridgway's rail and other sensitive marshland species during the breeding season:

- "At least 30 days prior to any maintenance activities within 500-feet of marshland habitat, the project owner shall conduct a noise study to evaluate the maximum predicted noise level within rail habitat."
- "If the maximum predicted noise is less than 60 dBA Leq (Equivalent Continuous Level), no additional measures are required."[897]

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[890] Cashen Comments at p. 51.
[891] *See* AFC, Table 5.7.7.
[892] Cashen Comments at p. 52.
[893] *Ibid.*
[894] TN # 251679, Distribution and Occupancy of Yuma Ridgway's Rail Report – Public Version (Aug. 18, 2023) p. 8.
[895] Cashen Comments at p. 52.
[896] *Ibid.*
[897] PSA at p. 5.2-171.

Mitigation Measure BIO-14 cannot adequately mitigate impacts to Ridgway Rail species because the PSA fails to clarify whether the noise study would be required for any Project activities that could produce loud noise at rail habitat, or only maintenance activities (as stated in BIO-14).[898] In addition, the PSA fails to identify the "marshland habitat" that would be subject to the noise study.[899] This information must be included in a revised and recirculated PSA to ensure adequate mitigation for the Ridgway's Rail.

Substantial evidence demonstrates that the effects of noise on wildlife depend on the nature of the noise stimulus.[900] Chronic and frequent noise can impair an animal's sensory capabilities, thereby masking biologically relevant sounds used for communication, detection of threats or prey, and spatial navigation.[901] Intermittent and unpredictable "impulse" noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.[902]

Several metrics can be used to characterize the noise environment.[903] Time-averaged values, such as equivalent continuous sound level (Leq), can be extremely informative to describe sounds that are chronic or frequent; however, Leq measurements do not properly characterize loud, infrequent sounds.[904] These infrequent impulse sounds are best characterized by the metric Lmax, which captures the highest instantaneous sound level measured during a specified period.[905] Pile driving and steam blows associated with the Project would produce impulse noise that could cause a Yuma Ridgway's rail (or other sensitive marsh birds) to flush from its nest or other cover, thereby making the bird and eggs more susceptible to predation (which is known to be a significant threat to Ridgway's rails).[906]

The PSA's proposal to use an hourly average noise level of 60 dBA Leq as the trigger for additional mitigation is not appropriate for the Project's pile driving and steam blows, which could cause noise levels of 104 dBA at 50 feet.[907] Because these activities would be infrequent and of short duration,[908] they (especially steam

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[898] Cashen Comments at p. 52.
[899] *Ibid.*
[900] *Ibid.*
[901] *Ibid.*
[902] *Ibid.*
[903] *Ibid.*
[904] *Id.* at p. 53.
[905] *Ibid.*
[906] *Ibid.*
[907] PSA at pp. 5.9-7 to 5.9-8; Cashen Comments at p. 53 ["The PSA indicates these activities could cause noise levels of 104 dBA Leq. Presumably the PSA means Lmax. If 104 dBA Leq is correct, the max value would be significantly higher that 104 dBA."].
[908] PSA at p. 5.9-7.

blows) are unlikely to surpass the 60 dBA *Leq* threshold established in BIO-14.[909] This would result in potentially significant impacts to the Yuma Ridgway's rail (or other sensitive marsh birds).[910]

16. The PSA Does Not Provide Adequate Mitigation to Reduce the Project's Noise Impacts

The PSA fails to adequately mitigate noise impacts to biological resources. The analysis in the Noise and Vibration chapter of the PSA is directed solely at human receptors, the nearest of which ("RHMP") is located 1.5 miles west of the Project site.[911] For example, the PSA states that at RHMP, noise levels from the loudest construction phase would be 45 dBA.[912] Despite providing an extensive discussion of how noise generated by the Project could significantly impact special-status species, the PSA provides no information on Project noise levels at areas occupied (or potentially occupied) by those species.[913] This deficiency impairs the ability to understand the significance of Project impacts on special-status species. It also hinders the ability to assess the probability that the Applicant would be able to successfully implement BIO-14 (requiring attenuation measures to prevent noise in excess of 60 dBA during the breeding season, and 80 dBA during the non-breeding season, at marshland habitat).[914]

To reduce noise-related impacts on wildlife, staff proposes NOISE-4 (Operational Noise Restrictions), NOISE-5 (Occupational Noise Survey), NOISE-6 (Construction and Demolition Noise Restrictions), NOISE-7 (Steam Blow Restrictions), and NOISE-8 (Pile Driving).[915] The PSA acknowledges these measures are proposed for human receptors, but it concludes the mitigation measures would also prevent significant noise impacts on special-status animals.[916] Mr. Cashen demonstrates that this conclusion is not supported by substantial evidence in the record.

The Biology chapter of the PSA states that NOISE-4: "would ensure operation of the project would not cause ambient noise levels from generating facility operations to exceed 43 dBA."[917] However, NOISE-4 actually states: "[t]he project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise levels

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[909] Cashen Comments at p. 53.
[910] *Ibid.*
[911] PSA at p. 5.9-1.
[912] *Id.* at p. 5.9-6.
[913] Cashen Comments at 35.
[914] *Ibid.*
[915] PSA at p. 5.2-93.
[916] *Id.* at pp. 5.2-93, -99, -110, -112, and -119.
[917] *Id.* at pp. 5.2-93, -99, -110, -112, and -119.

due to power plant operation to exceed 50 dBA Leq at RHMP."[918] The receptor RHMP is located 1.5 miles from the proposed power plant. Thus, NOISE-4 applies to power plant operational noise levels 1.5 miles from the Project site, not to the overall ambient noise levels from generating facility operations.[919] This is a significant error because NOISE-4 fails to mitigate potentially significant noise impacts on special-status animals that occupy habitats in the immediate vicinity of the generating facility.[920]

The Applicant's consultant detected Yuma Ridgway's rails at survey station MB-09 (TN 251679), which is located approximately 800 feet from the northwest corner of the proposed power plant (TN 253188). Therefore, if NOISE-4 allows operational noise to be 50 dBA Leq at RHMP, the noise level would be 69.9 dBA Leq at survey station MB-09.[921] This would exceed the breeding season noise impact threshold established in BIO-14.[922]

According to the PSA at page 5.2-118: "[d]uring normal steady-state operations, an 80 dBA threshold should not be exceeded beyond generating facility boundaries (TN250679)." The northwest boundary of the generating facility would be only a few feet from the marsh where the Applicant's consultant detected Yuma Ridgway's rails; the USGS has also detected rails at this marsh, and at habitat approximately 150 feet west of the generating facility's western boundary.[923] If noise at the generating facility boundaries is 80 dBA, it will be only slightly less than 80 dBA at adjacent marsh habitat occupied (or potentially occupied) by rails.[924] This provides additional evidence that operational noise from the Project would exceed the breeding season noise impact threshold established in BIO-14.[925]

NOISE-5 requires an occupational noise survey to identify any noise hazardous areas within the power plant.[926] NOISE-5 further requires a report of the survey results and, if necessary, proposed mitigation measures to be employed in order to comply with state and federal regulations pertaining to occupational noise.[927] NOISE-5 does not establish any restrictions on noise levels generated by

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[918] *Id.* at p. 5.9-15.
[919] Cashen Comments at p. 36.
[920] *Ibid.*
[921] *Ibid.*
[922] *Ibid.*
[923] TN 251679; *See also* Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49.
[924] Cashen Comments at p. 36.
[925] *Ibid.*
[926] PSA at p. 5.9-16.
[927] *Ibid.*

the power plant. Moreover, compliance with state and federal regulations regarding worker exposure to hazardous noise levels can be achieved through personal protective equipment. Therefore, NOISE-5 does not reduce noise-related impacts on birds or other wildlife.[928]

NOISE-6 sets temporal limitations on heavy equipment operation and noisy demolition and construction work relating to any project features, including linear facilities and pile driving.[929] NOISE-6 states that these noisy activities shall be restricted to between 7:00 a.m. and 7:00 p.m. on weekdays, and between 9:00 a.m. and 6:00 p.m. on Saturdays.[930] Construction would not be allowed on Sundays. As stated in the PSA:

> "Rails (including Yuma Ridgway's Rail and California black rail) primarily communicate during the first three hours of daylight (0.5 hours before civil sunrise through 2.5 hours after civil sunrise) and during the final three hours of daylight. The report further recommends that **loud noises in areas adjacent to occupied rail habitat should be avoided during those time windows each day**, especially during the courtship, pair-bonding, egg-laying, and incubation periods (1 March – 30 June)."[931]

The temporal limitations established in NOISE-6 would not be sufficient to avoid significant impacts to rails (and other special-status birds) because it allows noisy construction activities during the first and final 3 hours of daylight when rails communicate (Table 1). Furthermore, NOISE-6 lacks an appropriate mechanism for ensuring noisy construction activities would not impact special-status rail species because it defines "noisy" as "noise that has the potential to cause project-related noise complaints."[932] Because the nearest sensitive (human) receptor is located approximately 1.5 miles from the Project site,[933] it is unlikely that any Project construction activity, no matter how loud, would trigger a noise complaint and the restrictions established in NOISE-6.[934]

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[928] Cashen Comments at p. 37.
[929] PSA at p. 5.9-16.
[930] *Ibid.*
[931] PSA at p. 5.2-100. [emphasis added].
[932] *Id.* at p. 5.9-16.
[933] *Id.* at p. 5.9-1.
[934] Cashen Comments at p. 37.

Table 1. First and last three hours of daylight at the Morton Bay Project site in 2025.[935]

Date	First 3 hours (a.m.)	Final 3 hours (p.m.)
March 1	5:45 to 8:45	3:05 to 6:05
June 30	4:08 to 7:08	4:24 to 7:24
December 21	6:15 to 9:15	2:07 to 5:07

NOISE-7 requires the Applicant to limit noise from steam blows by requiring the use of a rock muffler or other forms of effective silencers.[936] NOISE-8 requires the Applicant to perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. However, neither measure establishes permissible thresholds for noise levels generated by steam blows and pile driving.[937] As a result, NOISE-7 and NOISE-8 would not ensure noise-related impacts on wildlife are less than significant.[938]

The PSA states: "[t]he project's operational noise levels would be 70 dBA Leq at 200 feet, assuming day-to-day operating conditions, including all equipment necessary to generate and transmit electricity to the grid."[939] This value was derived from the AFC, which identifies the noise modeling methods as "far field measurements of nominal 40 MW operations were acoustically scaled up to 140 MW (net) and the Project's cooling tower sound levels of 70 dBA at 200 ft were incorporated."[940] Therefore, it appears that the PSA's estimate of the Project's operational noise level only accounts for noise generated by the cooling tower. Other equipment at the geothermal plant site (including production wells) would produce noise. Sound is additive when the two sources of noise do not differ by more than 10 dB. Therefore, if other sources of noise are considered, the operational noise level of the Project could exceed the PSA's estimate of 70 dBA Leq at 200 feet.[941] The CEC must issue a revised and recirculated PSA that describes how Staff calculated the Project's operational noise level(s), and if necessary, that provides a revised noise-level estimate that incorporates other Project components that would produce noise.

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[935] U.S. Navy, Astronomical Applications Department. Civil Twilight for 2025. [accessed 2024 Jul 12]. https://aa.usno.navy.mil/calculated/rstt/year?ID=AA&year=2025&task=2&lat=33.1826&lon=-115.6017&label=Elmore+North&tz=8&tz_sign=-1&submit=Get+Data.
[936] PSA at p. 5.9-17.
[937] Cashen Comments at p. 37.
[938] *Ibid.*
[939] PSA at p. 5.9-8.
[940] AFC at p. 5.7-9 (TN 249737).
[941] Cashen Comments at p. 37.

In addition to NOISE-4 through NOISE-8, the PSA references BIO-14 as a measure that would mitigate noise impacts on wildlife. The PSA states:

> In addition, staff proposed BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) which would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decimals during the breeding season or 80 decimals during the nonbreeding season. With the implementation of these noise COC/MM, construction impacts to birds from noise would be reduced to less than significant.[942]

The PSA fails to provide evidence that the performance standards specified in BIO-14 would be feasible to achieve. The Applicant provided two different values for the sound level of the Project's steam blows. The AFC states that when vented through a rock muffler, the steam blows "were observed to vary between approximately 68 dBA at 300 feet to 71 dBA at 4,000 ft."[943] Response to CURE Data Request 236 states "[s]ilenced high pressure steam blows are likely on the order of 90 dBA at 100 feet."[944] If the Applicant's first value is used (71 dBA at 4,000 ft), it would take 14,193 feet for the sound to attenuate to 60 dBA and 1,419 feet to attenuate to 80 dBA.[945] If the Applicant's second value is used (90 dBA at 100 feet), it would take 3,162 feet to attenuate to 60 dBA and 316 feet to attenuate to 80 dBA.[946]

Habitat occupied by the Yuma's Ridgway's rail is located within 3,162 feet of the rock muffler.[947] Therefore, even if the lower steam blow value (90 dBA at 100 feet) is applied, the Project's steam blows would exceed the 60-dBA noise threshold established in BIO-14.[948] Although BIO-14 states: "[i]f necessary, additional noise reduction measures shall be implemented to reduce the maximum noise level to below 60 dBA at the edge of occupied habitat," the PSA fails to provide evidence that there are feasible options for achieving that standard.[949]

The severity of a noise impact on wildlife depends not only on the intensity and frequency (e.g., continuous or intermittent) of the noise stimulus, but also on how much the noise stimulus exceeds ambient conditions.[950] The PSA fails to

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[942] PSA at p. 5.2-119.
[943] AFC at p. 5.2-27. (TN 249723)
[944] TN # 254015.
[945] Omni Calculator. 2014 Jul 11. Distance Attenuation Calculator. [accessed 2024 Jul 16]. https://www.omnicalculator.com/physics/distance-attenuation#what-is-the-spl-sound-pressure-level
[946] Cashen Comments at p. 38.
[947] TN # 251679.
[948] Cashen Comments at p. 38.
[949] PSA at p. 5.2-172; Cashen Comments at p. 38.
[950] Cashen Comments at p. 38.

analyze, or incorporate mitigation for, potentially significant impacts on rails due to Project noise that exceeds ambient noise levels by more than 3 dBA.[951]

The Project includes installation of production and injection wells which would be installed in wetland areas where Yuma Ridgway's rails and least bitterns have been detected.[952] For example, Yuma Ridgway's rails were detected in marsh habitat where MB-04 and MB-05 would be located, and they were detected at the spare injection well location near the intersection of Garst Road and Red Hill Road.[953]

Construction of the geothermal wells and associated pipeline would generate noise during drilling, purging of the well, and production testing.[954] Once the well is operational, the pipeline generates flow noise, primarily at control valves and flow restricting devices, but also from traps installed within supply lines that automatically eject condensate along with a small amount of steam.[955] Although the PSA and AFC provide information on noise levels associated with drilling, neither document provides information on noise associated with purging of the well and production testing.[956] In addition, neither document provides information on the operational noise levels of the wells and associated pipeline. This is a significant deficiency because purging of the well and production testing can generate extremely loud noise levels.[957]

The PSA at page 5.2-101 states:

> "BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decimals during the breeding season or 80 decimals during the non-breeding season. BIO-14 would also ensure overall noise from operation of the Morton Bay power plant would not exceed 60 decimals during rail peak communication hours during the breeding season. These COC/MM would be applicable in areas adjacent to habitat for Yuma Ridgway rail and other marshland species, along W Schrimpf Road and Morton Bay, which includes the location of the generating facility, production wells and well pads, and gen-tie lines and poles."

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[951] *Ibid.*
[952] *Id.* at p. 39.
[953] *Ibid.*
[954] Hunt M. 1998. Environmental Noise Issues Associated with Geothermal Development. In: Proceedings of The 20th New Zealand Geothermal Workshop 1998. Geothermal Institute, University of Auckland.
[955] *Ibid.*
[956] Cashen Comments at p. 39.
[957] *Id.*

The PSA fails to demonstrate it would be possible for the Applicant to comply with these noise thresholds. Drilling activities at the well sites would produce a noise level of 83 dBA Leq at 50 feet.[958] Noise associated with purging of the wells and production testing may be substantially louder.[959] The MB-04, MB-05, and spare injection well sites would be located on top of habitat where Yuma Ridgway's rails were detected by the Applicant's consultant in 2022.[960] In addition, telemetry data collected by the USGS shows that the spare injection well pad site would overlap the home range of at least one rail.[961] If drilling activities produce an hourly average noise level of 83 dBA, and because the drilling activities would be conducted in areas known to be occupied by Yuma Ridgway's rails, there is no apparent way for the Applicant to comply with the noise thresholds established in BIO-14 and avoid significant impacts to the subspecies.

For these reasons, a revised PSA must provide a detailed analysis of noise impacts and adequate mitigation to address the significant impacts before the Commission makes a determination on the Project.

GEOLOGY

The PSA recognizes that geological hazards are high in this area, yet fails to adequately analyze seismic hazards. The PSA explains that "[t]he project site and project features, including the plant itself, wells, well pads, pipelines and gen-tie lines, are in one of the most seismically active portions of southern California. The region has experienced numerous earthquakes in the past and is likely to do so in the future."[962] As stated in the AFC, "[t]he primary geologic hazards at the site include strong ground motion from a seismic event centered on one of several nearby active faults. The site is within the Brawley Seismic Zone, which is a zone of transition between the northwest end of the Imperial Fault and the southwest end of the San Andreas Fault."[963]

Moreover, "[g]iven the depth below the ground surface and the thickness of liquefiable soil, the potential for surface expression of liquefaction is considered high."[964] "Liquefaction is a phenomenon in which saturated, cohesionless soils, such as sand and silt, temporarily lose their strength and liquefy when subjected to

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[958] PSA at p. 5.9-7.
[959] Hunt M. 1998. Environmental Noise Issues Associated with Geothermal Development. In: Proceedings of The 20th New Zealand Geothermal Workshop 1998. Geothermal Institute, University of Auckland.
[960] TN # 251679.
[961] Cashen Comments at p. 40.
[962] PSA at p. 5.6-6.
[963] AFC at p. 2-61.
[964] *Id.* at p. 5.4-7.

dynamic forces, such as intense and prolonged ground shaking. To be susceptible to liquefaction, potentially liquefiable soils must be saturated or nearly saturated. In general, liquefaction hazards are most severe in saturated soils within the upper 50 feet of the ground surface. The potential for liquefaction increases with shallower groundwater."[965] According to the Project's preliminary geotechnical report, all four conditions generally required for liquefaction to occur "exist to some degree" at the Project site.[966]

CEQA requires the lead agency to consider the whole of the action.[967] This means that the Project must be fully evaluated—even those Project features that are outside of the Commission's permitting authority such as the production and injection wells.[968] In addition to evaluating all Project elements, the PSA must also identify mitigation measures "that can and should be adopted by the agency with permitting authority" if "staff concludes mitigation is necessary to reduce an impact to less than significant,...."[969]

With regards to geologic hazards, the PSA concludes that the proposed conditions of certification "both mitigate environmental impacts [from geologic hazards] and ensure conformance with applicable LORS."[970] However, the PSA explains that "[a]dditional impacts associated with project components outside of Commission's jurisdiction, such as the well complex licensed by CalGEM, the temporary structures such as the laydown yard to be permitted by Imperial County, and the switchyard to be permitted by IID, require mitigation to be less than significant."[971] No mitigation measures for significant impacts on these Project components are identified or evaluated in the PSA.[972]

The PSA must conduct the required analysis and incorporate feasible mitigation measures to reduce significant geological hazards. First, the PSA must disclose the mineralogy of the Brawley Fault gouge to provide an adequate discussion of geologic hazards, as discussed in Dr. Malama's attached expert comments. Second, the PSA fails to analyze contamination of soil and groundwater from pipeline leaks. Third, Dr. Malama provides substantial evidence to demonstrate that impacts from soil erosion and liquefaction may be significant and unmitigated in the PSA. Fourth, the PSA fails to evaluate impacts from induced seismicity. Finally, the PSA lacks substantial evidence to conclude that the impacts

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[965] *Ibid.*
[966] AFC, Appendix 5.4 at p. 14.
[967] 14 Cal Code Regs. §§ 15003(h); 15378(a).
[968] PSA at p. 3-2.
[969] *Ibid.*
[970] *Id.* at p. 5.6-30.
[971] *Ibid.*
[972] *Ibid.*

of the Project on the safety of people or structures from strong seismic ground-shaking would be less-than-significant because the analysis omits a discussion of the Project's wells, well pads, and pipelines.

A. The PSA Must Disclose the Mineralogy of the Brawley Fault Gorge to Provide an Adequate Analysis of Geologic Hazards

Dr. Malama concludes that geologic hazards may be significant and unmitigated in the PSA.[973] He finds that the PSA fails to analyze potentially significant impacts from "[p]ore pressure buildup in the faults from subsurface migration of injected fluids [internal citation omitted] and their associated shear weakening…." He provides the following evidence:

> The mineralogy of fault gouge is of critical importance in determining mechanical and hydraulic behavior of the faults. Faults that are filled with clay-rich gouge tend be weak under shear stress and are more prone to failure in response to seismic activity (Morrow et al. 1984; Ikari et al., 2009). Additionally, clay-rich fault gouge tends to be of low permeability, making clay-filled faults hydraulic barriers that restrict regional subsurface fluid flow. The low permeability also has the effect of accentuating fluid pore pressure buildup within faults and fractures, which further lowers their shear strength (Ikari et al., 2009; Brodsky and Lajoie, 2013). As stated by Morrow et al. (1984) "Clay gouges typically support lower shear stresses than most granitic rocks during frictional sliding experiments particularly when saturated and have extremely low frictional resistance when pore fluid movement is restricted, and fluid pressures become greater than hydrostatic."[974]

During operations, the Project proposes to inject geothermal fluids to replenish the reservoir as well as produced brine for disposal that Dr. Malama states "can lead to pore pressure build up in the numerous faults and fractures that are present within the BSZ due to potential fluid migration from injection zones."[975] Specifically, "[i]f the faults in the BSZ are filled with clay-rich gouge, fluid injection in the area would weaken the faults under shear loading, making them more prone to failure in response to seismic activity,…."[976] Dr. Malama concludes that these factors "can result in potentially significant impacts on ground shaking and surface rupture risk that were not adequately examined in the PSA."[977]

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[973] Malama Comments at pp. 1-2.
[974] *Id.* at p. 1.
[975] *Ibid.*
[976] *Ibid.*
[977] *Ibid.*

Dr. Malama comments demonstrate that the PSA must be revised to disclose the mineralogy of the fault gouge in the faults of the Brawley Seismic Zone.[978] According to Dr. Malama, "[w]ithout this information, a full impacts assessment has not been performed to evaluate the potential destabilizing impact of fluid pore pressure build up and the associated shear weakening of BSZ faults."[979] Dr. Malama also notes that the Applicant's responses to data requests, along with the cited references, do not provide this information.[980] If faults around the Project site are clay filled, faults in the Brawley Seismic Zone would be prone to "shear failure and enhanced displacement" as a result of the migration of injected fluids from the Project yet these impacts have not been evaluated in the PSA.[981] Based on the substantial evidence provided in Dr. Malama's comments, the PSA must be revised to disclose the mineralogic composition of the Brawley Fault gouge and provide an adequate analysis of the seismic hazards at the Project site.

B. The PSA Fails to Analyze Contamination of Soils and Groundwater from Pipeline Leaks

Dr. Malama comments that the PSA omits an analysis of the impacts on soil and groundwater quality from accidental release or leaks from the Project's aboveground pipelines connecting to production and injection wells.[982] The Project will construct and operate approximately 12,032 linear feet of aboveground pipeline from production wells and around 27,758 linear feet of pipeline to injection wells.[983] According to Dr. Malama, leaks from Project pipelines may cause "ponding of fluids" "that could contaminate soil and groundwater resources" given the Project site's shallow groundwater and low soil permeability.[984] The PSA also discloses that "[a] fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location,"[985] which Dr. Malama determines could have a significant impact on soil and groundwater quality.[986]

The PSA omits information about the chemical composition of the produced fluids constituents and their concentrations or the condensate and injected geothermal fluid characterization, but this information was disclosed in the AFC.[987] With regards to geothermal fluids, the AFC also states, "Dissolved elements within the geothermal fluid consist primarily of chloride, sodium, calcium, and potassium.

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[978] *Id.* at p. 2.
[979] *Ibid.*
[980] *Ibid.*
[981] *Ibid.*
[982] *Id.* at pp. 2-3.
[983] PSA at p. 5.15-1.
[984] Malama Comments at p. 2.
[985] PSA at p. 2-62.
[986] Malama Comments at p. 2.
[987] AFC, Tables 2-2 and 2-3.

There are also significant amounts of zinc, manganese, iron, and silica dissolved in the geothermal fluids. The major component of non-condensable gases is carbon dioxide, which is naturally occurring from the diagenesis of minerals and rocks. There is a large variety of other components in the geothermal fluid, although the other components are less than 0.01% each."[988] Dr. Malama concludes that based on the pipeline flowrate and the constituents in the fluids, particularly high concentrations of sodium and chloride in the brine, "potential leakages from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area."[989] The PSA improperly omits this discussion from the impacts analysis.

The fluids transported in the Project's pipelines contain chemicals and contaminants that may result in significant impacts on groundwater and/or soils. Dr. Malama explains that "[s]odium is a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004). Sodium induced soil dispersion also results in the formation of dense, impermeable surface crusts that inhibit seedling emergence. Additionally, sodium can elevate soil pH and lead to accumulation of other toxic elements. Chloride toxicity can also degrade soil and water quality (Levy and Torrento, 1995; Ward and Carter, 2004). Barium, Lead and Cadmium (AFC Tables 2-2 and 2-3) are other potential toxic metals present in the produced fluids that could be released into the soils and groundwater at the project site."[990] Given the presence of these "toxic constituents" in the fluids transported by the pipelines, Dr. Malama finds "that [a] fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater," that is not disclosed, analyzed, or mitigated in the PSA.[991]

C. Impacts from Soil Erosion and Liquefaction May be Significant and Unmitigated Due to Pipeline Leaks

The preliminary geotechnical report for the Project concludes that "[t]he risk of liquefaction induced settlement is high."[992] The PSA nevertheless concludes that "…with the implementation of the seismic design criteria for ground failure and the anticipated project-specific recommendations in the final geotechnical engineering report, the project would not expose people or property to any significant direct or indirect impacts associated with geologic or seismic conditions onsite, including

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[988] *Id.* at p. 2-9.
[989] Malama Comments at p. 2.
[990] *Id.* at pp. 2-3.
[991] *Id.* at p. 3.
[992] AFC, Appendix 5.4 at Executive Summary.

liquefaction."[993] However, the seismic design guidelines per the current California Building Code ("CBC") do not apply to the Project's wells, well pads, and pipelines. Additionally, the Project's preliminary geotechnical report limited its investigation to the "proposed geothermal power plant" for which "[n]o geothermal wells are planned for the plant site."[994] Thus, the geotechnical report did not analyze geologic hazards by the Project's wells or other features outside of power plant boundaries. The PSA's less-than-significant determination as to the risks from soil erosion and liquefaction is therefore not supported by substantial evidence.

Dr. Malama's comments provide substantial evidence demonstrating that the construction and operation of the Project on geologic units and soil that will be degraded and eroded during construction activities is likely to result in potentially significant impacts from liquefaction due to pipeline leaks.[995] During construction activities, "clayey soils" on the Project site—and specifically where the Project pipelines will be constructed—will be "more prone to erosion due to soil structure degradation from heavy equipment…."[996] Dr. Malama comments that "[h]igh velocity fluids from a pipeline leak may cause soils in the vicinity of the pipeline infrastructure to liquify and undergo erosion in areas where soils were previously disturbed and degraded from construction activities," but the PSA omits an analysis regarding these potentially significant impacts from pipeline fluid leaks.[997] Also, soils are likely to become degraded "from repeated soil expansion and shrinkage cycles."[998] These cycles may result from repeated pipeline leaks because the soils are known "to undergo expansion upon imbibition of water and shrinkage upon drying,…."[999] Yet, as Dr. Malama comments, impacts from the "expansion and shrinkage cycle on soil structure that may result from repeated pipeline leaks and the resulting increased susceptibility of the soils to erosion" are not addressed in the PSA.[1000]

Furthermore, Dr. Malama explains that "liquefaction risk arises from the coupling of surface inundation from pipeline leaks with known high seismic activity in the area."[1001] According to the PSA, the daily pipeline peak flow is 815 gallons per minute and the PSA analysis determines that "[a] fluid release of 200 to 400 gallons would remain within a 20- to 30-foot radius of the leak location."[1002] Dr. Malama concludes that "[a]t a flow rate of 815 gpm and the AFC's own analysis of

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[993] PSA at p. 5.6-19.
[994] AFC, Appendix 5.4 at p. 2.
[995] Malama Comments at pp. 3-4.
[996] *Id.* at p. 3.
[997] *Ibid.*
[998] *Ibid.*
[999] *Ibid.*
[1000] *Ibid.*
[1001] *Id.* at p. 4.
[1002] *Ibid.*

the radius of the leak location, short duration of fluid release (a few minutes) from a pipeline leak would be sufficient to inundate a large soil surface and cause the soil to undergo expansion and lose internal cohesiveness, and behave like a liquid (Locat and Demers, 1988)."[1003] These potentially significant impacts from pipeline leaks are not disclosed or evaluated in the PSA.

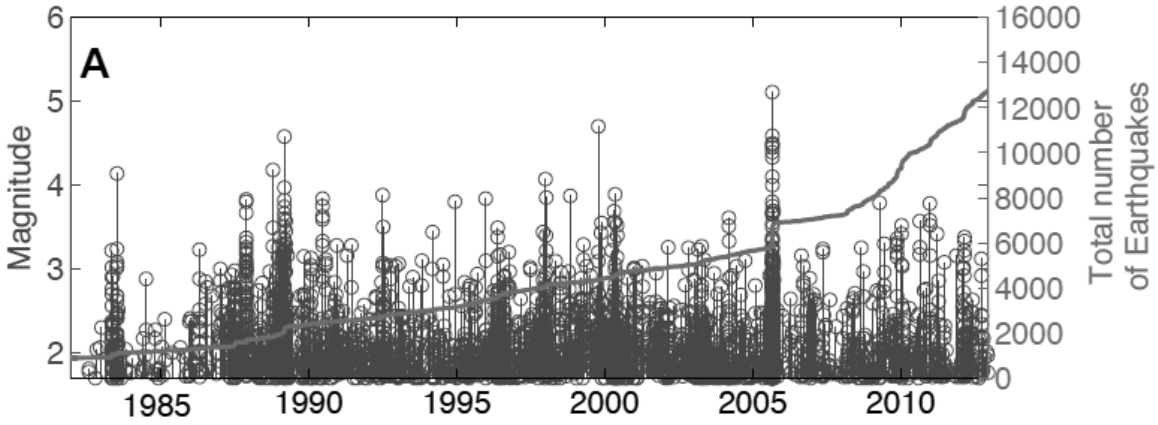
For the foregoing reasons, these geologic hazards from soil erosion, expansion, and liquefaction must be analyzed in a revised PSA and adequate mitigation must be adopted, as necessary.

D. The PSA Fails to Evaluate Impacts from Induced Seismicity

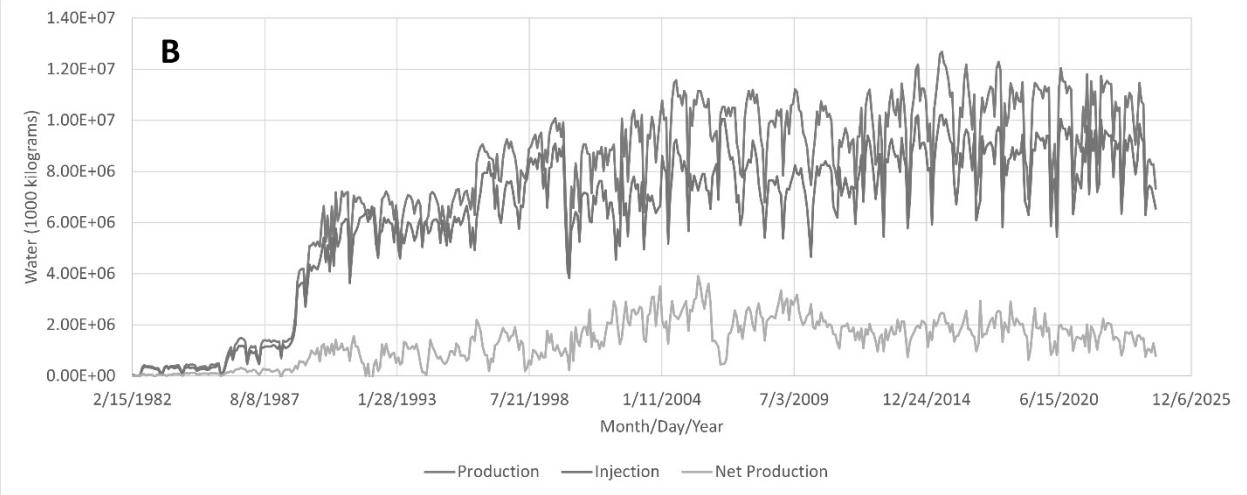
Dr. Malama concludes that the PSA must be revised to provide an analysis of the impact on the background seismicity of the Salton Sea Geothermal Field from the produced and injected fluids.[1004] Dr. Malama cites to several studies on induced seismicity from fluid injection.[1005] Several studies have found that fluid injection can "induce seismicity due to a decrease in the effective stress on faults resulting from increased pore pressure within faults [internal citation omitted."[1006] A 2011 study determined that earthquakes had clustered around injection wells based on data from seismic swarms in the Salton Trough (where the Project site is located).[1007] "The report also demonstrated that the seismicity rate in the Salton Trough was initially low during the period of low geothermal operations in the area before 1986 and that as operations expanded, a corresponding increase in seismicity was observed, which suggests a direct impact of fluid injection on area seismic activity."[1008] A 2013 study also found that data from the Salton Sea Geothermal Field "suggest[ed] that the increase in geothermal activity in the study area is correlated with a corresponding increase in the seismicity rate."[1009] The study "concluded that net production volume combined with injection information is a good predictor of the seismic response in the short term for a fully developed field."[1010]

The Figure below from Dr. Malama's comments is based on Salton Trough seismicity data and illustrates that "the number of earthquakes increased more than six times from the pre-1986 low background levels of less than 2000 to over 12,000 at the end of the study period."[1011]

[1003] *Ibid.*
[1004] Malama Comments at pp. 6-7.
[1005] *Ibid.*
[1006] *Id.* at p. 6.
[1007] *Ibid.*
[1008] *Ibid.*
[1009] *Ibid.*
[1010] *Ibid.*
[1011] *Ibid.*



Dr. Malama's comments also provide the Figure below, which shows the substantial increase in produced and injected water volumes from geothermal operations prior to 1986 to more recent years.[1012] Based on these Figures, Dr. Malama concludes that "[s]eismicity and water production/injection data show that some correlation exists between the increased geothermal activity [] in the project area and the increased rate of seismicity []."[1013]



For the Morton Bay Project, the AFC stated that each production well would produce approximately 1,186,000 pounds per hour of geothermal fluid to support a production demand of 10,676,000 pounds per hour, and that each injection well would have a capacity of 2.7 million pounds per hour.[1014] Based on these estimations, Dr. Malama calculates that the Project would generate an approximate

[1012] *Ibid.*
[1013] *Ibid.*
[1014] AFC at pp. 2-16; 2-6.

volume of 4.7 billion kg of produced water per year per well (assuming 24-hour operations for 365 days of the year) and the injection wells would inject a similar volume annually.[1015] Nevertheless, the PSA omits an analysis of the impact that the Project's produced and injected fluid volumes would have on background seismicity in the geothermal field.

For the foregoing reasons, Dr. Malama comments that the PSA must be revised to analyze the impact of the Project's volume of fluid injected into the reservoir from the eleven (11) injection wells and removed from the reservoir by the nine (9) production wells.[1016] The cumulative impact analysis must also be revised in the PSA to assess the impacts from induced seismicity from the two other geothermal projects (i.e., Elmore North and Black Rock), existing geothermal projects, and reasonably foreseeable future geothermal and lithium projects pursuant to the LVSP.

E. The PSA Lacks Substantial Evidence to Conclude That the Impacts of the Project on the Safety of People or Structures from Strong Seismic Ground-Shaking Would be Less-Than-Significant by Omitting Consideration of the Wells, Well Pads, and Pipelines

Although the production and injection wells, well pads, and aboveground pipelines are licensed under the authority of the CalGEM, the PSA states that "the environmental impact of these aspects of the project are ***fully*** evaluated" in the PSA "[b]ecause these extra-license components are part of the whole of the project,…."[1017] The PSA, however, fails to provide a complete analysis of the Project's impacts on the safety of people or structures from strong seismic ground shaking because the discussion omits consideration of the Project's wells, well pads, and pipelines.

The PSA concludes that Project could be impacted by strong seismic ground shaking during operations and maintenance activities but dismisses these impacts as less-than-significant upon incorporation of the CBC's seismic design guidelines and the future recommendations anticipated in the final geotechnical report.[1018] As explained above, the CBC guidelines do not apply to the Project's wells, well pads, and pipelines. In addition, the scope of the future geotechnical report will be limited to the plant facility, excluding the Project's wells, well pads, and pipelines. The PSA fails to provide any evidence that these measures would reduce the impacts from seismic ground shaking on these components. Consequently, the

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[1015] Malama Comments at p. 6.
[1016] *Id.* at p. 7.
[1017] PSA at p. 5.16-1 (emphasis added).
[1018] *Id.* at p. 5.6-17.

significant impacts on these Project features remain inadequately assessed and unmitigated in the PSA.

LAND USE, AGRICULTRE, AND FORESTRY

The PSA determines that the Project would permanently impact approximately 50.63 acres of Prime Farmland and 71.99 acres of Farmland of Statewide Importance, totaling 122.62 acres of Important Farmland, including the switching station shared with the Morton Bay and Black Rock projects.[1019] The PSA concludes that impacts on Important Farmlands would be significant and proposed COC LAND-3/MM LAND-3 is proposed to mitigate these impacts, which requires the Project owner to implement one of Imperial County's three mitigation options for conversion of Important Farmlands based on the County's MMRP in the Final PEIR for the Imperial County Renewable Energy and Transmission Element Update.[1020] These options include procuring Agricultural Conservation Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County.[1021]

As detailed in the general comment above on the PSA's cumulative impact analysis, CEQA prohibits the deferred formulation of mitigation measures until a future time.[1022] "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified."[1023] Specifically regarding the option to pay an Agricultural Benefit Fee to Imperial County, the court in *Kings County* established that where it is unclear whether funds as mitigation will actually be used to implement a mitigation measure, the use of such technique lacks substantial evidence under CEQA.[1024]

Here, the PSA fails to analyze the feasibility of each mitigation option under COC LAND-3/MM LAND-3, particularly regarding the payment of fees, and does not commit the Applicant to one of the mitigation options. The PSA therefore does not provide substantial evidence to demonstrate that the proposed mitigation for the Project's significant impact on Important Farmland is known, feasible, and effective.[1025] The MMRP in the County's PEIR also does not allow for the deferred selection of one of the available options.[1026] The PSA also does not explain why a

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[1019] PSA at p. 5.8-14.
[1020] *Ibid.*
[1021] *Ibid.*
[1022] 14 Cal Code Regs. § 15126.4(a)(1)(B).
[1023] *Ibid.*
[1024] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 709.
[1025] *Id.* at pp. 727-28.
[1026] Imperial County, Final Programmatic Environmental Impact Report: Imperial County Renewable Energy and Transmission Element Update (undated) p. 5-4 to 5-5 (emphasis added),

particular mitigation option could not be selected and evaluated at this time. Without any evidence to the contrary, the PSA has deferred the analysis of how the Project's significant impacts on agricultural lands will be mitigated, violating CEQA.

ALTERNATIVES

The PSA identifies the No Project Alternative as the environmentally superior alternative.[1027] Under CEQA, the PSA is required to include sufficient information to allow a "meaningful evaluation, analysis, and comparison" with the project. When none of the alternatives is clearly environmentally superior to the project, the EIR must explain the environmental advantages and disadvantages of each alternative compared to the project.[1028]

The PSA lacks substantial evidence to support the conclusion that "there are no other potentially feasible alternatives that could attain the project objectives while avoiding or substantially lessening any of the project's significant impacts" [1029] because the PSA states that "No potentially feasible alternatives were identified that would 1) attain the key project objectives to develop a baseload renewable electrical generating facility capable of satisfying the energy resource procurement requirements under the California Public Utilities Commission Mid-Term Reliability Decision for 2023–2026, and 2) avoid or substantially lessen any of the project's significant impacts. Therefore, no alternatives were fully analyzed and compared to the project other than the no project alternative."[1030]

This failure to analyze or identify potentially feasible alternatives constitutes a failure to proceed in a manner required by law. An agency may not rely on an unanalyzed theory that an alternative might not be environmentally superior to the project and must provide facts and analysis to support such a conclusion.[1031] The PSA fails to provide substantial evidence to support the determination that the No Project Alternative is the environmentally superior alternative. Therefore, the alternatives analysis is inadequate.

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*available a*t https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmrp.pdf.

[1027] PSA at p. 8-23.

[1028] 14 Cal. Code Regs. §15126.6(d).

[1029] *Id.* at p. 8-24.

[1030] PSA at p. 8-21.

[1031] *Habitat & Watershed Caretakers v City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1305; *see also Kings County Farm Bureau v City of Hanford* (1990) 221 Cal.App.3d 692, 737 (no evidence in record supported agency's claim that environmentally superior alternative was economically infeasible and did not need to be studied in EIR).

CONCLUSION

For the reasons discussed herein, the PSA is wholly inadequate under CEQA. It must be thoroughly revised to provide legally adequate analysis of, and mitigation for, all the Project's potentially significant impacts to the extent feasible. These revisions will necessarily require that the PSA be recirculated for additional public review. Until the PSA has been revised and recirculated, the Commission may not lawfully approve the Project.

Dated: September 4, 2024

Respectfully submitted,

Original Signed by:

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ATTACHMENT A

GROUP DELTA

September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attention: Mr. Andrew Graf

SUBJECT: Review of Preliminary Staff Assessment for Morton Bay Geothermal Project

Dear Mr. Graf,

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Dr. Komal Shukla has reviewed the materials related to the above-referenced project. This document serves as Dr. Shukla's comment letter regarding the Preliminary Staff Assessment (PSA) and the applicant's (Morton Bay Geothermal LLC) response to the California Unions for Reliable Energy's (CURE) comments on the preliminary determination of compliance for the Morton Bay Geothermal Project. Dr. Shukla's review does not imply validation of the conclusions or content within the reviewed documents. The absence of comments on specific items should not be interpreted as acceptance of those items.

PROJECT DESCRIPTION

According to the PSA, the Applicant proposes to site and construct the Morton Bay Geothermal Project (MBGP or Project) within the Salton Sea Known Geothermal Resource Area (KGRA) in Calipatria, Imperial County, California. Spanning approximately 63 acres of an unincorporated area, the MBGP envisions geothermal production wells, pipelines, fluid and steam handling facilities, a solid handling system, Class II surface impoundment, service water pond, retention basin, process fluid injection pumps, power distribution center, borrow pits, and injection wells. The MBGP targets a gross output of 157 megawatts (MW), with a net output of 140 MW. The project site is situated east of the Salton Sea and is bordered by an unnamed dirt road to the north, Cox Road to the west, Garst Road to the east, and West Sinclair Road to the south. In the Salton Sea Known Geothermal Resource Area, geothermal brine, exceeding 500 degrees Fahrenheit, is extracted from nine production wells around the power plant and transported via aboveground pipelines to the nearby steam handling system. The process involves producing high-pressure steam and flashing the remaining geothermal fluids at lower pressures to create standard and low pressure steam for the turbine. Dilution water is added for precipitation control. An atmospheric flash tank ensures pressure removal before entering clarifiers that remove suspended solids. Solids precipitation is crucial for transforming the geothermal fluid to chemical equilibrium. Different injection wells handle spent geothermal fluid, aerated

geothermal fluid, and condensate. Mixing fluids risks scaling and excess precipitation, threatening sustainable injection. The steam is sent to a triple condensing steam turbine, and condensed steam serves as cooling tower makeup water.

Dr. Komal Shukla from Group Delta Consultants, Inc. (Group Delta) has prepared this document after reviewing the PSA and provided comments on its findings and conclusions.

I. Insufficient GHG Emissions Analysis in the PSA Fails to Address Long-Term Implications

The Preliminary Staff Assessment (PSA) claims that the proposed project will not result in a net increase in greenhouse gas (GHG) emissions, citing its replacement of fossil fuel resources with clean energy. The PSA states that *"[s]ome of the renewable power generated by the proposed project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand[1]"* and that *"[t]his would avoid GHG that could otherwise be emitted by fuel-burning generators. The rate of GHG emissions avoided would vary with the mix of generators and imported electricity displaced by the incremental supply generated by the proposed project[2]"*

The PSA evaluation of the Project's GHG emissions impact presents a claim that the Project will result in no net increase in GHG emissions. This claim assumes that emissions will be avoided by replacing fossil fuel resources with cleaner energy sources. However, this analysis fails to account for the Project's lifetime GHG emissions and does not incorporate California's mandated transition to a cleaner energy grid under the SB 100 policy, which requires 100% of the state's electricity to come from renewable energy and zero-carbon resources by 2045.

Overview of the PSA's Assumptions

The PSA calculates avoided emissions from the Project using a displacement factor of 822.5 lbs. CO2e/MWh (0.373 MT of CO2 per MWh), assuming that a fossil fuel source with this emission intensity will be replaced. Using this factor, the Project's annual avoided emissions result in an estimated 457,447 MTCO2e (0.373 MTCO2e/MWh x 1,226,400 MWh/yr) per year over the Project's lifespan[3]. The PSA's analysis is flawed due to its reliance on a fixed displacement factor, which fails to account for California's clean energy transition. By neglecting the progressive reduction in grid emissions mandated by SB 100, the PSA overestimates the Project's environmental benefits and underestimates its potential to contribute to a net increase in GHG emissions.

[1] Section 5.3.2.2 on Pg.395. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470) (emphasis added).
[2] Pg.395. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470) (emphasis added).
[3] Pg.396. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

PSA's calculation is based on several problematic assumptions:

- **Constant Displacement Factor:** The PSA assumes a fixed displacement factor of 822.5 lbs. CO2e/MWh throughout the Project's 40-year lifespan. This methodology does not account for the substantial changes in California's energy mix over time, specifically the progressive shift towards cleaner energy sources. The displacement factor used in the PSA is reflects a high historical emission intensity for fossil fuels, which becomes increasingly outdated as the grid evolves to incorporate more renewable energy. The Project's reliance on this unrealistic factor leads to an overestimation of its environmental benefits.

- **Neglect of California's Clean Energy Transition:** The PSA inadequately considers the implications of California's SB 100 policy, which requires a transition to 100% renewable and zero-carbon energy by 2045. This policy will result in a significant reduction in the state's average emission factors over time, making the assumed displacement factor of 822.5 lbs. CO2e/MWh increasingly outdated and less applicable.

- **Inaccurate Displacement Factor:** The PSA relies on a displacement factor (DF) of 822.5 lbs. CO2e/MWh, which is based on natural gas. This displacement factor is not only outdated but also inaccurately reflects the emissions avoided by the project. By relying on this natural gas-based DF, the PSA significantly overstates the environmental benefits of the project.

  Correcting the DF with Current Data: The current displacement factor (DF) of 822.5 lbs. CO2e/MWh is based on natural gas, which was once the dominant marginal fuel in California. However, with the increased integration of renewable energy sources into the grid, the reliance on natural gas has decreased. This change should be reflected in the DF to accurately represent the emissions avoided by projects displacing marginal energy generation. The 2022 Power Content Label for the Imperial Irrigation District is published and displays the greenhouse gas emissions intensity (in lbs. CO2e/MWh) and the energy resource mix (Figure 1). It shows that the Imperial Irrigation District has an emissions intensity of 585 lbs. CO2e/MWh, compared to the 2022 California Utility Average of 422 lbs. CO2e/MWh.

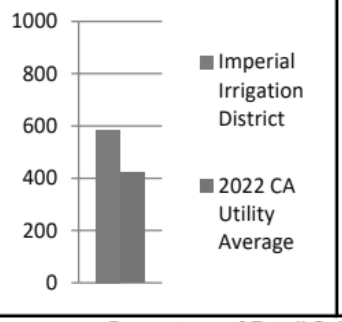
    - Imperial Irrigation District's Emissions Intensity (585 lbs CO2e/MWh): This figure represents the average greenhouse gas emissions for the district's energy mix. The IID GHG emissions intensity reflects the real-time mix of emission generators that are being displaced by renewable energy production from the Project. This leads to more precise calculation of avoided emissions based on actual grid dynamics, which can vary throughout the day and across seasons.

    - Statewide Average (422 lbs CO2e/MWh): Given that this is the average emissions intensity across California utilities, it captures a broader range of emission sources. The statewide average emissions intensity includes a mix of all generation sources in the state, including coal, less efficient natural gas plants, renewables, nuclear and other. This provides a more comprehensive picture of

emissions associated with electricity generation. Moreover, the grid's energy mix can vary significantly throughout the day and across different regions within the state, but the statewide average captures this variability and provides a more realistic estimate of the emissions associated with grid electricity.

2022 POWER CONTENT LABEL
Imperial Irrigation District
https://www.iid.com/energy/renewable-energy/power-content-label

Greenhouse Gas Emissions Intensity (lbs CO_2e/MWh)		Energy Resources	Imperial Irrigation District	2022 CA Power Mix
Imperial Irrigation District	2022 CA Utility Average	**Eligible Renewable**[1]	**37.7%**	**35.8%**
		Biomass & Biowaste	7.8%	2.1%
585	**422**	Geothermal	11.3%	4.7%
		Eligible Hydroelectric	6.6%	1.1%
		Solar	12.0%	17.0%
		Wind	0.0%	10.8%
		Coal	**0.0%**	**2.1%**
		Large Hydroelectric	**4.6%**	**9.2%**
		Natural Gas	**35.3%**	**36.4%**
		Nuclear	**3.4%**	**9.2%**
		Other	**0.0%**	**0.1%**
		Unspecified Power[2]	**19.0%**	**7.1%**
		TOTAL	**100.0%**	**100.0%**
Percentage of Retail Sales Covered by Retired Unbundled RECs[3]:			**0%**	



[1]The eligible renewable percentage above does not reflect RPS compliance, which is determined using a different methodology.
[2]Unspecified power is electricity that has been purchased through open market transactions and is not traceable to a specific generation source.
[3]Renewable energy credits (RECs) are tracking instruments issued for renewable generation. Unbundled renewable energy credits (RECs) represent renewable generation that was not delivered to serve retail sales. Unbundled RECs are not reflected in the power mix or GHG emissions intensities above.

For specific information about this electricity portfolio, contact:	**Imperial Irrigation District (800)303-7756**
For general information about the Power Content Label, visit:	https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure-program

Figure 1: IID and Statewide (California) displacement factors for GHG Intensity

Impact of Clean Energy Transition on Emissions

California's clean energy transition significantly changes the context for assessing both the Project's emissions and avoided emissions. The state's progressive goals—90% clean energy by 2035, 95% by 2040, and 100% by 2045—will drastically reduce the average emission intensity of the grid. This transition creates a dynamic where:

Life Cycle Analysis (LCA) of Project's Emissions: Detailed Analysis of Each Case

The annual emissions value of 67,205 MTCO2e/year reported in the PSA[4], reflects the maximum annual emissions expected from the Project. To calculate the total project emissions over its 40-year lifespan, we multiply the annual emissions by the number of years:

Annual Emissions: 66,205 MTCO2e/year
Project Lifetime: 40 years
Total Project Emissions = Annual Emissions * Project Lifetime
Total Project Emissions = 67,205 MTCO2e/year * 40 years = 2,688,200 MTCO2e

It is important to note that the 2,688,200 MTCO2e represents the lifetime emissions produced by the Project without acknowledging any reductions from displaced emissions due to the use of renewable energy. It is necessary to compare the total project emissions with the avoided emissions in each case.

The displacement factors in MTCO2e, computed for each year, are used to evaluate the overall emissions reduction throughout the project's lifespan. This analysis provides a comprehensive understanding of the project's environmental impact by capturing the annual reduction in CO_2 emissions. It evaluates how the displacement factor changes from 2025 to 2065.

- **2025-2034:** A linear reduction from 0% to 90% with an annual reduction rate of 9% per year.
- **2035-2045:** A linear reduction from 90% to 100% with an annual reduction rate of 0.91% per year.
- **2046-2065:** The displacement factor is set to 0 MTCO2e/MWh after achieving 100% reduction.
- **Unit Conversion:** To standardize the displacement factor in terms of metric tons of CO2 equivalent (MTCO2e), a conversion factor of 2204.62 pounds per metric ton is applied.

Case 1 - IID (Displacement Factor of 585 lbs CO2e/MWh)

Parameters

Initial Displacement Factor: 585 lbs CO2e/MWh
Reduction Period: 2025-2034 (0% to 90%), 2035-2045 (90% to 100%), 2046-2065 (100%)
Project Duration: 2025-2065 (40 years)
Annual Electricity Production: 1,226,400 MWh

2025-2034 (Linear Reduction from 0% to 90%):
Annual Reduction Rate = 90%/10 years = 9% per year
Displacement Factor converted to MTCO2e/MWh = 0.265 MTCO2e/MWh

[4] Table 5.3-1 on Pg. 395.

Annual Displacement Factors:
2025: 585 * (1 - 0)/2204.62 = 0.265 MTCO2e/MWh
2026: 585 * (1 - 0.09)/2204.62 = 0.241 MTCO2e/MWh
2027: 585 * (1 - 0.18)/2204.62 = 0.218 MTCO2e/MWh
2028: 585 * (1 - 0.27)/2204.62 = 0.194 MTCO2e/MWh
2029: 585 * (1 - 0.36)/2204.62 = 0.170 MTCO2e/MWh
2030: 585 * (1 - 0.45)/2204.62 = 0.146 MTCO2e/MWh
2031: 585 * (1 - 0.54)/2204.62 = 0.122 MTCO2e/MWh
2032: 585 * (1 - 0.63)/2204.62 = 0.098 MTCO2e/MWh
2033: 585 * (1 - 0.72)/2204.62 = 0.074 MTCO2e/MWh
2034: 585 * (1 - 0.81)/2204.62 = 0.050 MTCO2e/MWh

2035–2045 (Linear Reduction from 90% to 100%):
Annual Reduction Rate = 10%/11 years = 0.91% per year
2035: 585 * (1 - 0.90)/2204.62 = 0.027 MTCO2e/MWh
2036: 585 * (1 - 0.91)/2204.62 = 0.024 MTCO2e/MWh
2037: 585 * (1 - 0.92)/2204.62 = 0.021 MTCO2e/MWh
2038: 585 * (1 - 0.93)/2204.62 = 0.019 MTCO2e/MWh
2039: 585 * (1 - 0.94)/2204.62 = 0.016 MTCO2e/MWh
2040: 585 * (1 - 0.95)/2204.62 = 0.013 MTCO2e/MWh
2041: 585 * (1 - 0.96)/2204.62 = 0.011 MTCO2e/MWh
2042: 585 * (1 - 0.97)/2204.62 = 0.008 MTCO2e/MWh
2043: 585 * (1 - 0.98)/2204.62 = 0.005 MTCO2e/MWh
2044: 585 * (1 - 0.99)/2204.62 = 0.003 MTCO2e/MWh
2045: 585 * (1 - 1.00)/2204.62 = 0 MTCO2e/MWh

2046–2065 (100% Reduction):
Displacement Factor = 0 MTCO2e/MWh
Annual Avoided Emissions = 0 MTCO2e/yr
(2046–2065): 0 MTCO2e
Avoided emissions
2025: 0.265 * 1,226,400 = 324,996.0 MTCO2e
2026: 0.241 * 1,226,400 = 295,562.4 MTCO2e
2027: 0.218 * 1,226,400 = 267,355.2 MTCO2e
2028: 0.194 * 1,226,400 = 237,921.6 MTCO2e
2029: 0.170 * 1,226,400 = 208,488.0 MTCO2e
2030: 0.146 * 1,226,400 = 179,054.4 MTCO2e
2031: 0.122 * 1,226,400 = 149,620.8 MTCO2e
2032: 0.098 * 1,226,400 = 120,187.2 MTCO2e
2033: 0.074 * 1,226,400 = 90,753.6 MTCO2e
2034: 0.050 * 1,226,400 = 61,320.0 MTCO2e
2035: 0.027 * 1,226,400 = 33,112.8 MTCO2e
2036: 0.024 * 1,226,400 = 29,433.6 MTCO2e
2037: 0.021 * 1,226,400 = 25,754.4 MTCO2e

2038: 0.019 * 1,226,400 = 23,301.6 MTCO2e
2039: 0.016 * 1,226,400 = 19,622.4 MTCO2e
2040: 0.013 * 1,226,400 = 15,939.2 MTCO2e
2041: 0.011 * 1,226,400 = 13,490.4 MTCO2e
2042: 0.008 * 1,226,400 = 9,807.2 MTCO2e
2043: 0.005 * 1,226,400 = 6,132.0 MTCO2e
2044: 0.003 * 1,226,400 = 3,675.2 MTCO2e
(2046–2065): 0 MTCO2e

Year	Avoided Emissions (MTCO2e)	Net Emissions Difference (MTCO2e)
2025	324,996.0	-257,791.0
2026	295,562.4	-228,357.4
2027	267,355.2	-200,150.2
2028	237,921.6	-170,716.6
2029	208,488.0	-141,283.0
2030	179,054.4	-111,849.4
2031	149,620.8	-82,415.8
2032	120,187.2	-52,982.2
2033	90,753.6	-23,548.6
2034	61,320.0	5,885.0
2035	33,112.8	34,092.2
2036	29,433.6	37,771.4
2037	25,754.4	41,450.6
2038	23,301.6	43,903.4
2039	19,622.4	47,582.6
2040	15,939.2	51,265.8
2041	13,490.4	53,714.6
2042	9,807.2	57,397.8
2043	6,132.0	61,073.0
2044	3,675.2	63,529.8
2046-2065	0 (each year)	67,205.0 (each year)

Table 1: Net Emissions Difference for the Project Using IID Displacement Factor

Net Emissions

IID Average Displacement Factor:

- **Total Avoided Emissions:** 1,943,666.0 MTCO2e

- **Total Project Emissions:** 2,688,200 MTCO2e
- **Net Increase in Emissions:** 744,534.0 MTCO2e

Case - 2 Statewide (Displacement Factor of 422 lbs CO2e/MWh)

Parameters

Initial Displacement Factor: 422 lbs CO2e/MWh
Reduction Period: 2025–2034 (0% to 90%), 2035–2045 (90% to 100%), 2046–2065 (100%)
Project Duration: 2025–2065 (40 years)
Annual Electricity Production: 1,226,400 MWh

2025–2034 (Linear Reduction from 0% to 90%):
Annual Reduction Rate = 90%/10 years = 9% per year
Displacement Factor converted to MTCO2e/MWh = 0.191 MTCO2e/MWh

Annual Displacement Factors:
2025: 422 * (1 - 0)/2204.62 = 0.191 MTCO2e/MWh
2026: 422 * (1 - 0.09)/2204.62 = 0.173 MTCO2e/MWh
2027: 422 * (1 - 0.18)/2204.62 = 0.156 MTCO2e/MWh
2028: 422 * (1 - 0.27)/2204.62 = 0.139 MTCO2e/MWh
2029: 422 * (1 - 0.36)/2204.62 = 0.122 MTCO2e/MWh
2030: 422 * (1 - 0.45)/2204.62 = 0.104 MTCO2e/MWh
2031: 422 * (1 - 0.54)/2204.62 = 0.087 MTCO2e/MWh
2032: 422 * (1 - 0.63)/2204.62 = 0.070 MTCO2e/MWh
2033: 422 * (1 - 0.72)/2204.62 = 0.052 MTCO2e/MWh
2034: 422 * (1 - 0.81)/2204.62 = 0.035 MTCO2e/MWh

2035–2045 (Linear Reduction from 90% to 100%):
Annual Reduction Rate = 10%/11 years = 0.91% per year
Annual Displacement Factors:
2035: 422 * (1 - 0.90)/2204.62 = 0.019 MTCO2e/MWh
2036: 422 * (1 - 0.91)/2204.62 = 0.017 MTCO2e/MWh
2037: 422 * (1 - 0.92)/2204.62 = 0.015 MTCO2e/MWh
2038: 422 * (1 - 0.93)/2204.62 = 0.013 MTCO2e/MWh
2039: 422 * (1 - 0.94)/2204.62 = 0.012 MTCO2e/MWh
2040: 422 * (1 - 0.95)/2204.62 = 0.010 MTCO2e/MWh
2041: 422 * (1 - 0.96)/2204.62 = 0.008 MTCO2e/MWh
2042: 422 * (1 - 0.97)/2204.62 = 0.006 MTCO2e/MWh
2043: 422 * (1 - 0.98)/2204.62 = 0.005 MTCO2e/MWh
2044: 422 * (1 - 0.99)/2204.62 = 0.003 MTCO2e/MWh
2045: 422 * (1 - 1.00)/2204.62 = 0 MTCO2e/MWh

2046–2065 (100% Reduction):

Displacement Factor = 0 MTCO2e/MWh
Annual Avoided Emissions:
2025: 0.191 * 1,226,400 = 234,246.4 MTCO2e
2026: 0.173 * 1,226,400 = 212,443.2 MTCO2e
2027: 0.156 * 1,226,400 = 191,308.8 MTCO2e
2028: 0.139 * 1,226,400 = 169,174.4 MTCO2e
2029: 0.122 * 1,226,400 = 148,039.2 MTCO2e
2030: 0.104 * 1,226,400 = 127,545.6 MTCO2e
2031: 0.087 * 1,226,400 = 106,411.2 MTCO2e
2032: 0.070 * 1,226,400 = 85,276.8 MTCO2e
2033: 0.052 * 1,226,400 = 63,782.4 MTCO2e
2034: 0.035 * 1,226,400 = 42,649.6 MTCO2e
2035: 0.019 * 1,226,400 = 23,301.6 MTCO2e
2036: 0.017 * 1,226,400 = 20,848.8 MTCO2e
2037: 0.015 * 1,226,400 = 18,396.0 MTCO2e
2038: 0.013 * 1,226,400 = 15,943.2 MTCO2e
2039: 0.012 * 1,226,400 = 14,016.8 MTCO2e
2040: 0.010 * 1,226,400 = 11,564.0 MTCO2e
2041: 0.008 * 1,226,400 = 9,111.2 MTCO2e
2042: 0.006 * 1,226,400 = 6,658.4 MTCO2e
2043: 0.005 * 1,226,400 = 5,219.2 MTCO2e
2044: 0.003 * 1,226,400 = 2,766.4 MTCO2e
2045: 0 * 1,226,400 = 0 MTCO2e
2046–2065: 0 MTCO2e

Net Emissions

Statewide Average Displacement Factor:

- **Total Avoided Emissions:** 1,518,703.2 MTCO2e
- **Total Project Emissions:** 2,688,200 MTCO2e
- **Net Increase in Emissions:** 1,169,496.8MTCO2e

Year	Avoided Emissions (MTCO2e)	Net Emissions Difference (MTCO2e)
2025	234,246.4	-167,041.4
2026	212,443.2	-145,238.2
2027	191,308.8	-124,103.8
2028	169,174.4	-101,969.4
2029	148,039.2	-80,834.2
2030	127,545.6	-60,340.6
2031	106,411.2	-39,206.2
2032	85,276.8	-18,071.8
2033	63,782.4	-3,422.6
2034	42,649.6	24,555.4
2035	23,301.6	43,903.4
2036	20,848.8	46,356.2
2037	18,396.0	48,809.0
2038	15,943.2	51,261.8
2039	14,016.8	53,188.2
2040	11,564.0	55,641.0
2041	9,111.2	58,093.8
2042	6,658.4	60,546.6
2043	5,219.2	61,985.8
2044	2,766.4	64,438.6
2045-2065	0	67,205.0

Table 2: Net Emissions Difference for the Project Using Statewide Displacement Factor

Both case scenarios result in a net *increase* in GHG emissions over the project lifetime (Table 1 and Table 2). Even when accounting for avoided emissions due to displaced electricity generation, the Project's emissions, when evaluated using the regional and statewide displacement factors, exceed the avoided emissions, failing to achieve the intended environmental benefits. The Project's overall carbon footprint remains positive. The plot (Figure 2) shows that the project will contribute to an increase in net emissions over its lifespan (specifically after 2045). The Project's assertion of no net increase in GHG emissions is not supported when considering the Project's lifetime emissions and California's energy transition.

Given that the Project's GHG emissions would result in a net increase in GHG emissions, the PSA must identify mitigation measures to reduce the impact, such as those disclosed in the 2008 Technical Advisory[5] issued by the Governor's Office of Planning and Research and the guidance from the California Air Pollution Control Officers Association[6].

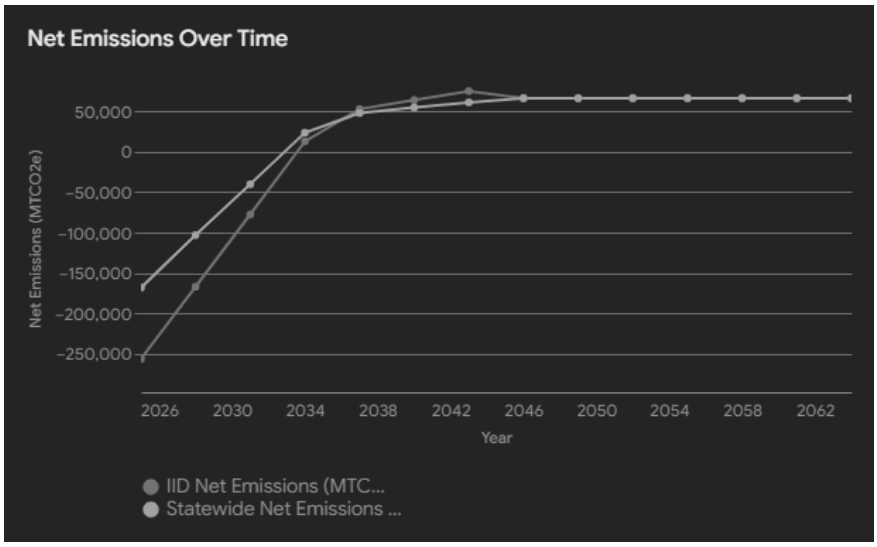


Figure 2: Net emissions increase over project's lifetime (2025-2065)

II. Project Fails to Account for Critical Emission Sources and Lacks Supporting Evidence

The PSA states that *"[c]onstruction emissions were estimated based on emissions factors from the California Emissions Estimation Model (CalEEMod) and EMFAC2021*."[7] The PSA also notes that *"[C]onstruction GHG emissions for the offsite switching station, offsite piping, laydown yards, and temporary worker housing were not included in the applicant's emissions calculations.*"[8] This exclusion is based on the assumption that these emissions are insignificant due to shorter construction times and reduced equipment usage.

- **Omitted Emissions Sources**:
    - **Offsite Switching Station**: Construction activities typically involve heavy machinery and equipment, which can be a significant contributor to GHG emissions. Excluding these emissions can result in an oversight of substantial sources of criteria pollutants, GHGs, and toxic air contaminants.

[5] https://opr.ca.gov/docs/june08-ceqa.pdf?.
[6] https://www.caleemod.com/documents/handbook/full_handbook.pdf.
[7]Refer to Para.3 on Pg.133. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470)
[8] Refer to Para.4 on Pg.394. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470)

- **Offsite Piping and Laydown Yards**: Similarly, to switching stations, these activities involve the transportation of construction equipment and materials, which can contribute additional emissions of criteria pollutants, GHGs, and toxic air contaminants.
- **Temporary Worker Housing**: While it may seem insignificant, construction-related temporary housing can add to overall emissions through energy use and resource consumption.

- **Lack of Supporting Evidence**: The PSA assumes that these emissions are minimal enough to be negated without providing quantifiable evidence. The assumption that shorter construction times and reduced equipment usage result in negligible emissions lacks empirical support and could greatly impact the overall emissions profile, especially if the emissions from these activities occur during the same time as other construction activities.

- **Clean Air Act (CAA) and National Ambient Air Quality Standards (NAAQS)**: These regulations require comprehensive accounting and monitoring of all emissions. Excluding potential sources undermines compliance with these standards and downplays the Project's environmental impact.

- **Potential Impact of Non-Quantified Emissions:** Incorporating criteria pollutant, GHG, and toxic air contaminant emissions from offsite switching stations, offsite piping, laydown yards, and temporary worker housing could lead to a substantial revision of the PSA's conclusions. Accounting for these emissions may reveal a greater likelihood surpassing applicable significance thresholds. Quantifying these emissions is essential for an accurate assessment of the Project's environmental impact.

- **Emissions Mitigation**: Implementing strategies to minimize emissions from geothermal activities.

III. Use of Distant Imperial County Airport Data Over Local Sonny Bono Station for Dispersion Modeling

In response to the PSA and the Applicant's claims[9] regarding the appropriateness of the meteorological data used in the air quality model, several key issues need to be addressed.

The Applicant's[10] response on use of meteorological is: "*Lastly, although the Imperial County Airport is located over 28 miles from the project site, there are no significant geographic features between the two locations, and both are located south/southeast of the Salton Sea.*"

[9] Pg. 3-4 Morton Bay Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-01 (TN #: 256747)
[10] Pg. 3 Morton Bay Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-01 (TN #: 256747)

"The lack of significant geographic features between the two locations is itself an indicator of representativeness of the Imperial County Airport meteorological data, but also leads to the expectation that wind speeds and wind directions in the project vicinity are like those incurred at the Imperial County Airport. This expected similarity is verified by comparing the wind rose for the Imperial County Airport (for years 2015 to 2018 and 2021) to the wind rose for the Sonny Bono monitoring station (for years 2020 to 2022). As shown in Figure 2 and Figure 3, attached hereto, both wind roses share the predominant wind directions from the west and southeast[11]."

- **Impact of Distance, Proximity, and Urbanization on Meteorological Data:** The Imperial County Airport, situated 28 miles away from the project site, introduces substantial uncertainty regarding the representativeness of the meteorological data due to the considerable distance (as discussed in the earlier comment letter[12]). Local meteorological conditions, especially in regions with distinct climatic and geographical features like the Salton Sea, can differ over such distances. Therefore, using data from a station so far from the project site inherently diminishes the accuracy of the dispersion model.

  In contrast, the Sonny Bono monitoring station, being less than 2 miles from the project site, offers a much more relevant and accurate source of meteorological data (as previously explained in CURE PDOC comments[13]). The proximity to the project site is a crucial for ensuring that the data accurately reflects local conditions (Figure 3). Using data from a nearby station significantly improves the reliability and precision of the model.

  Furthermore, the Imperial County Airport, being an urban site, does not accurately represent the conditions at the plant site. The area between the plant site and the Imperial County Airport includes two cities—Brawley and Imperial. These urban areas increase the surface roughness factor compared to the actual site, which is closer to the Sonny Bono station. The greater roughness factor in urban areas leads to different dispersion characteristics, highlighting how the data from the Imperial County Airport is unsuitable for the project site.

[11] Pg. 3 Morton Bay Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-01 (TN #: 256747).
[12] Exhibit A, Letter to Kelilah Federman, Adams Broadwell Joseph & Cardozo from Group Delta Consultants re: Comment Letter Morton Bay Geothermal Project Preliminary Determination of Compliance (Mar. 8, 2024).
[13] The CURE PDOC comments for the project (Transaction Number [TN] #256747) are available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=256747&DocumentContentId=92564.

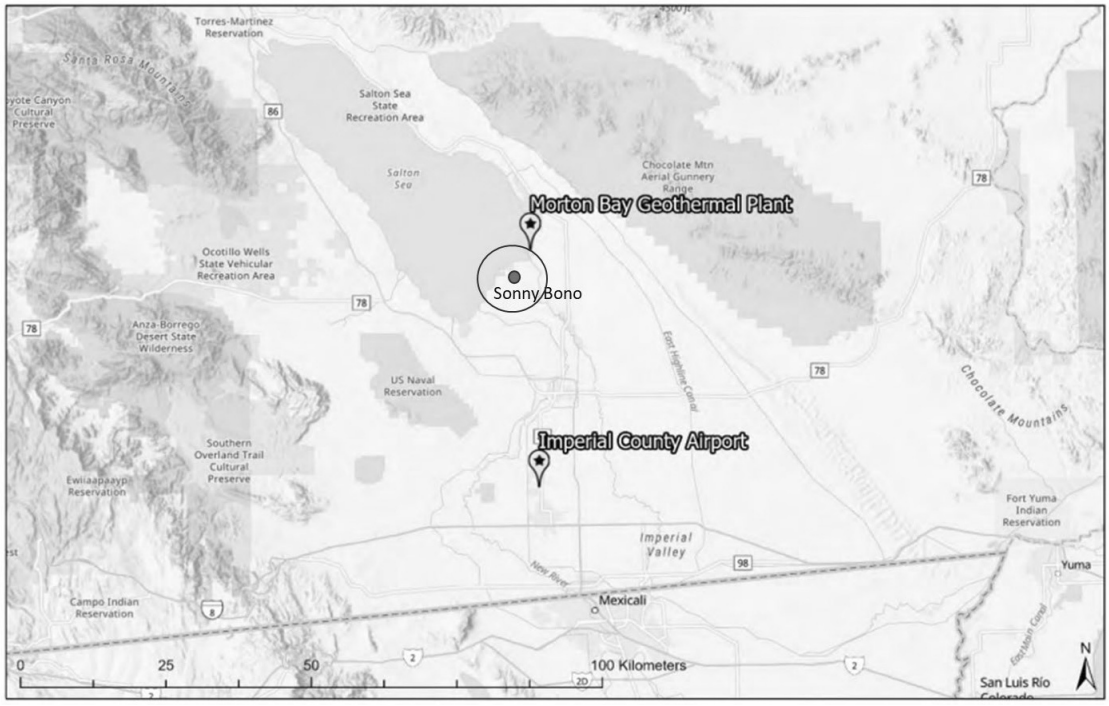


Figure 3: Topographical Map of Morton Bay Geothermal Project's Proximity to the Imperial County Airport and Sonny Bono

- **Shoreline Effect and Internal Boundary Layer Formation:** When winds travel from the sea to the plant site, an internal boundary layer forms due to the shoreline effect[14]. This suppresses the actual planetary boundary layer and can enhance pollutant concentrations compared to what would be calculated using data from a more distant station like the Imperial County Airport. The Sonny Bono station, located near the shoreline, captures this effect and provides more accurate data for the dispersion model.

- **Data Completeness and Spatial Representativeness:** Although only two years of data from the Sonny Bono station meet the EPA's 90 percent completeness requirement, this does not invalidate its use. The EPA guidelines permit the use of the most representative data available. Supplementing the two years of data from Sonny Bono with additional data or using statistical methods to address any gaps would yield a more accurate representation of the local conditions as opposed to relying on data from a more distant station. The Applicant's preference for ASOS station data due to fewer missing data points does not necessarily ensure better representation of the project site. Furthermore, the meteorological data relied upon by the Applicant and the PSA is inconsistent with EPA guidance, as data from the Imperial County Airport for the years

[14] Pandey et al., 2022 Evaluating AERMOD with measurements from a major U.S. airport located on a shoreline, Atmospheric Environment, https://www.sciencedirect.com/science/article/pii/S1352231022005714/pdfft?md5=f209d4042bb2ed551aafd4758b75785e&pid=1-s2.0-S1352231022005714-main.pdf.

2019 and 2020 was excluded for incompleteness as determined by the California Air Resources Board. The critical factor is the spatial representativeness of the data, not merely its completeness. A non-ASOS station closer to the project site can provide more accurate and relevant data despite having some missing data points.

- **Wind Rose Comparisons in Assessing Local Wind Patterns:** The Applicant's comparison of wind roses from the Imperial County Airport and the Sonny Bono station is flawed. The Imperial County Airport data indicates predominantly westerly and southwesterly winds (Figure 4), while the Sonny Bono station data indicates predominantly southeasterly winds (Figure 5). This substantial discrepancy in wind direction further demonstrates why the Imperial County Airport data is not representative of the project site. Wind roses provide a broad overview of wind patterns but do not capture the full range of local atmospheric dynamics. Relying solely on wind rose comparisons overlooks other critical factors such as temperature, humidity, and atmospheric stability, which can significantly impact dispersion modeling.

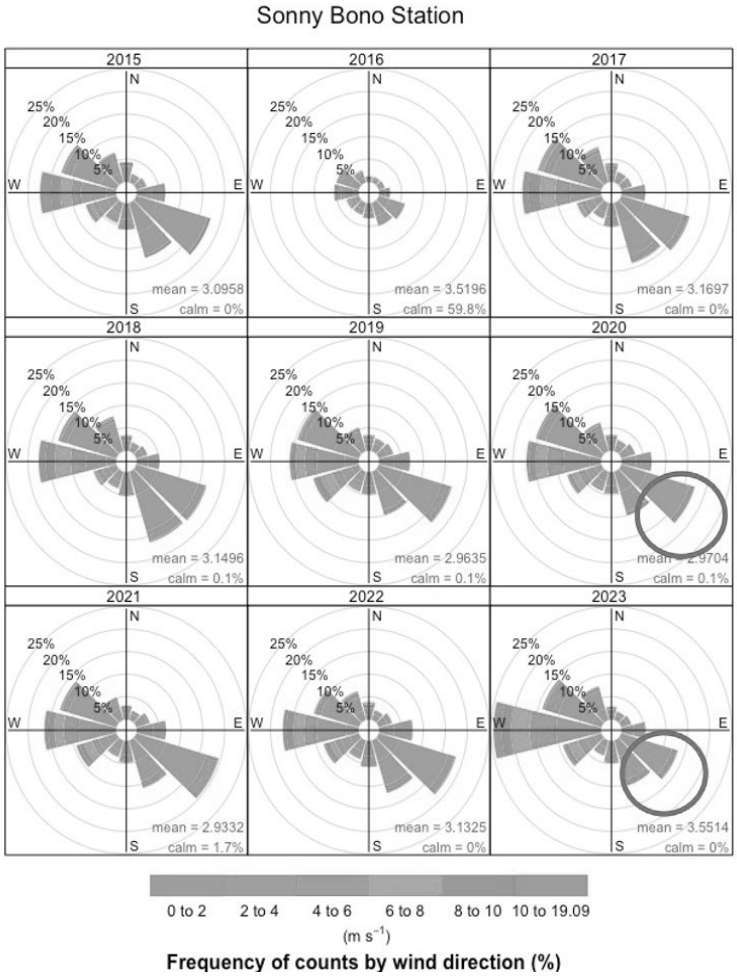


Figure 4: Wind Rose Plot Illustrating Wind Conditions at Sonny Bono Monitoring Station

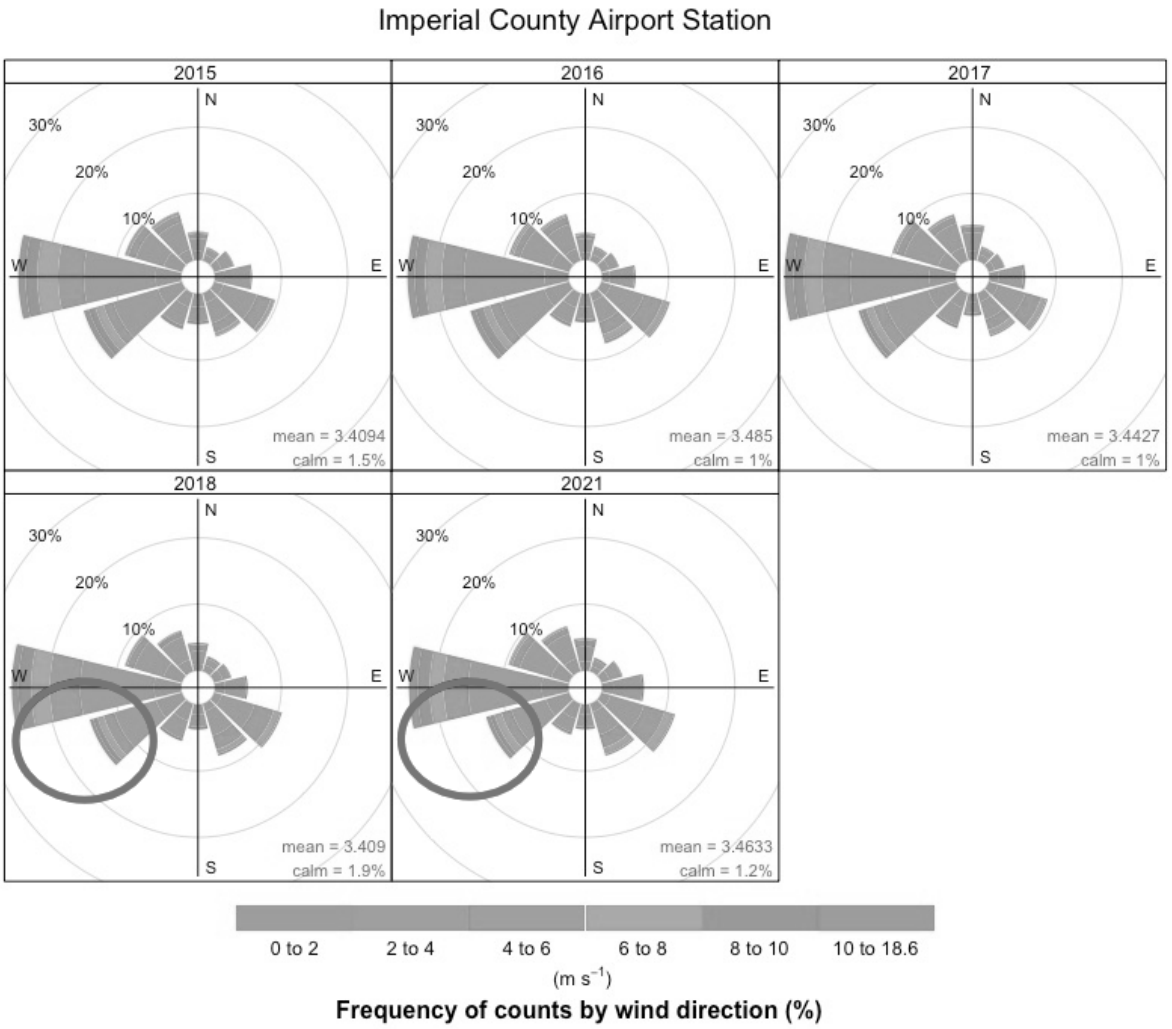


Figure 5: Wind Rose Plot Illustrating Wind Conditions at Imperial County Airport Station

Given these key points, relying on data from Imperial County Airport does not provide the most accurate and representative meteorological input for the dispersion model, even though there are no significant geographic barriers between the sites. The closer proximity of the Sonny Bono station, coupled with its location near the shoreline and its ability to account for the internal boundary layer effect, offers a more relevant and precise data source that should be prioritized to ensure the integrity and accuracy of the air quality model.

IV. Inadequate Analysis of Construction Impacts for the Proposed Switching Station

A new 230kV switching station, which will serve as the initial point of interconnection, is planned as part of the IID system upgrades. This station will be constructed approximately 2.3 miles from

MBGP[15], near and northwest of the intersection of Garst Road and West Sinclair Road (Figure 6). The applicant will be responsible for engineering, construction, ownership, operation, and maintenance of the gen-tie line between the proposed MBGP generator step-up transformer and the switching station.

The PSA exclusion of emissions from the switching station's construction are problematic. They justify this omission by citing the station's smaller footprint[16], lower ground disturbance, shorter construction duration, and fewer pieces of equipment, while also claiming similar receptor distances and the implementation of mitigation measures AQ-SC1 through AQ-SC5.

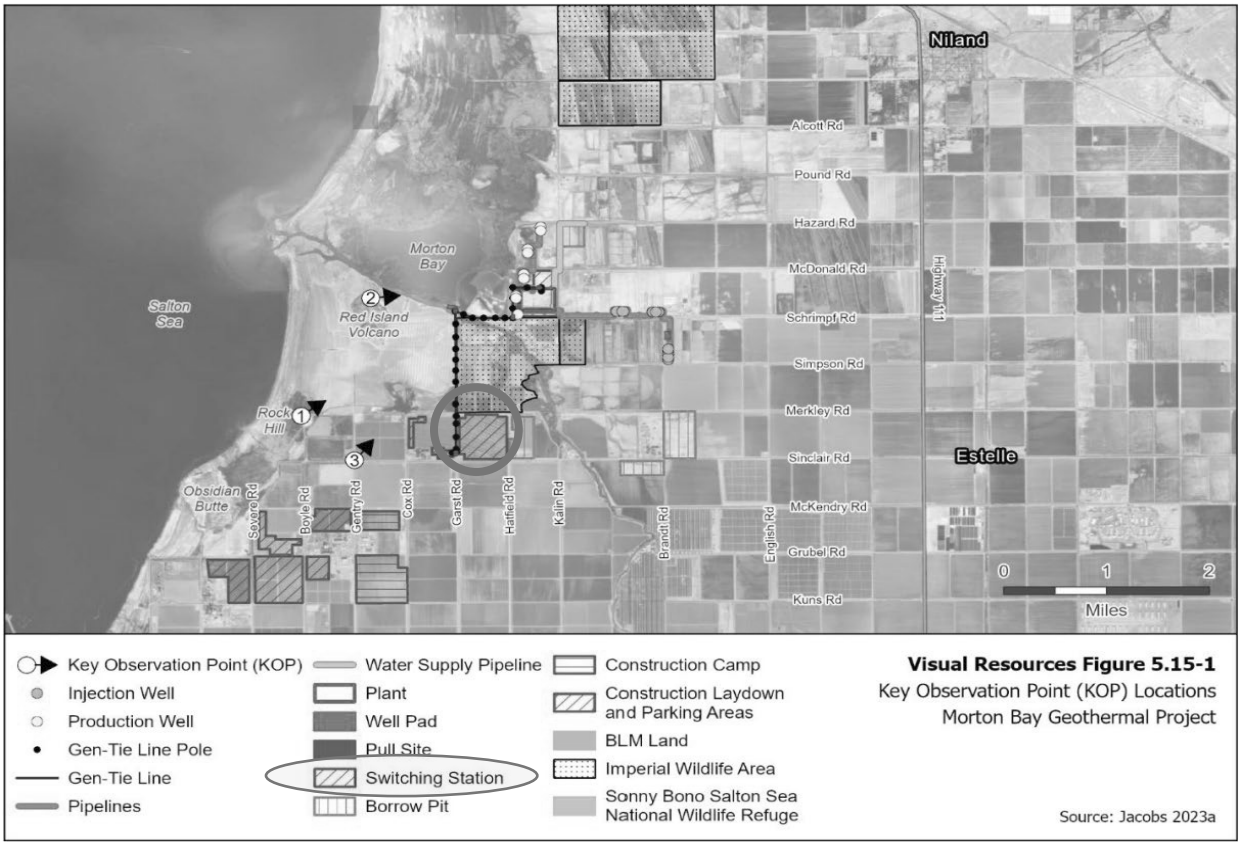


Figure 6: Map Illustrating the Location of the Project's Switching Station

- **Lack of Construction Duration and Inadequate Emissions Calculation**: The PSA fails to provide specific details on the switching station's construction duration which further undermines the validity of their emissions assessment. The 29-month timeline for the entire plant is misleading, and omission of the switching station construction emissions from calculations is a major oversight. The justification that these emissions are negligible

[15] Pg. 191, Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).
[16] Pg. 137, Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

due to a smaller footprint and fewer equipment lacks empirical support and underestimates potential impacts.

- **Unsubstantiated Comparisons**: Comparing emissions of the switching station to those of the main project without a thorough analysis is misleading. The substantial differences in construction scale and activity have not been adequately assessed.

- **Misrepresentation of Mitigation Measures and Overlooked Emission Types**: Relying on AQ-SC1 through AQ-SC5 without detailed emissions data is insufficient. The effectiveness of these measures cannot be properly evaluated without a comprehensive emissions inventory. Additionally, the assessment fails to account for all relevant emission types, including diesel combustion, dust, VOCs, and fugitive emissions, resulting in an incomplete evaluation of the environmental impact.

V. Critical Gaps in PSA's NOx Emissions Assessment: Inadequate Mitigation and Oversight of Effective Reduction Strategies

The average daily emissions shown in Table 3 indicate that construction emissions would be lower than the applicable ICAPCD significance thresholds for all criteria pollutants except for NOx.[17]

TABLE 5.1-6 CRITERIA POLLUTANT EMISSIONS FROM PROJECT CONSTRUCTION

Pollutant	Average Daily Emissions (lbs/day) [a]	Maximum Construction Emissions (tons/period)	ICAPCD Significance Thresholds for Construction-related Average Daily Emissions (lbs/day) [c]	Threshold Exceeded ?
ROG/VOC	46.1	15.4	75	No
CO	478	159	550	No
NOx	119	39.8	100	Yes
SOx	1.15	0.38	None	N/A
PM10[b]	23.1	7.71	150	No
PM2.5[b]	17.2	5.73	None	N/A

Notes:
[a] Average daily emissions are the total estimated construction emissions averaged over months in which heavy construction workdays is expected
[b] PM10 and PM2.5 estimates include both fugitive dust and exhaust emissions
[c] ICAPCD 2017, Table 4
Source: Jacobs 2023pp, CEC staff analysis

Table 3: Criteria Pollutant Emissions from Project Construction

[17]Refer to Table 5.1-6 on Pg.138. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

Proposed Mitigation Strategies for NOx Emissions During Construction:

Adopt Enhanced NOx Control Technologies:

- **Optimize Engine Warm-Up Time:**
  - Objective: Reduce the duration of high-emission warm-up periods for diesel engines. Despite the advanced emission control technologies in Tier 4 engines, minimizing warm-up times can further mitigate initial NOx emissions.
  - Expected Impact: A reduction in warm-up time from 15 to 10 minutes can decrease initial NOx emissions by approximately 5-10%.

- **Integrate Advanced NOx Abatement Systems:**
  - Objective: Install state-of-the-art NOx reduction systems, such as advanced Selective Catalytic Reduction (SCR) units, to augment the emission control capabilities of Tier 4 engines.
  - Expected Impact: The application of advanced SCR systems can reduce NOx emissions by an additional 30%. For instance, if current emissions are 10 tons per year, this could result in an extra reduction of up to 3 tons.

Optimize Construction Scheduling:

- **Stagger Equipment Operation:**
  - Objective: Coordinate the deployment of construction equipment to minimize the number of concurrently operating engines, thereby reducing overall NOx emissions.
  - Expected Impact: Limiting simultaneous engine operations could cut emissions by up to 50%, potentially reducing 5 tons of NOx from a projected 10 tons.

Utilize Alternative Fuels and Additives:

- **Switch to Low-NOx Fuels or NOx-Reducing Additives:**
  - Objective: Employ alternative fuels or incorporate NOx-reducing additives in diesel engines to diminish NOx emissions.
  - Expected Impact: The use of low-NOx fuels or additives can lower emissions by up to 30%, potentially achieving a 3-ton reduction from a total of 10 tons of NOx.

Enhance Maintenance Practices and Operator Training:

- **Implement Rigorous Maintenance Protocols:**
  - Objective: Ensure engines are maintained to operate at peak efficiency, thereby reducing NOx emissions.
- **Conduct Comprehensive Operator Training:**
  - Objective: Provide training to equipment operators on best practices for minimizing NOx emissions during operation.

- Expected Impact: Effective maintenance and operator training can reduce NOx emissions by 10-15%, potentially lowering emissions by 1-2 tons from a total of 10 tons.

VI. Inadequate Compliance with Revised PM2.5 NAAQS

The PSA's reliance on the 2012 PM2.5 NAAQS of 12.0 µg/m³, despite the U.S. EPA's 2024 revision to 9.0 µg/m³, fails to comply with the updated regulatory requirements.[18] The final rule for the revised standard, effective from May 6, 2024, mandates that all new permits adhere to the new PM2.5 NAAQS (Table 4 and Table 5 references the standard as 12.0 µg/m³ while impacting concentrations exceed 9.0 µg/m³).The PSA's claim that the project's permit application, completed before this effective date, is exempt from these new requirements is problematic. It fails to recognize that the revised standards apply to ongoing regulatory evaluations and new major sources, making the exclusion of these standards inappropriate.

TABLE 5.1-11 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	8.4	**474.7**	**483.1**	50	**966%**
	Annual	1.5	**48.6**	**50.1**	20	**251%**
PM2.5 [a]	24-hour	1.4	24.5	25.9	35	74%
	Annual	0.3	9.4	9.7	12	81%
CO	1-hour	146.8	5,726	5,873	23,000	26%
	8-hour	120.4	4,123	4,243	10,000	42%
NO_2 [b]	State 1-hour	61.8	105.0	166.8	339	49%
	Federal 1-hour	58.7	70.6	129.3	188	69%
	Annual	11.3	14.9	26.2	57	46%
SO_2 [c]	State 1-hour	0.34	22.5	22.9	655	3%
	Federal 1-hour	0.34	16.6	16.9	196	9%
	24-hour	0.18	7.1	7.3	105	7%
	Annual	0.1	1.1	1.2	80	2%

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] To compute the total impacts for the 24-hour PM2.5 NAAQS, staff conservatively combined the maximum modeled 24-hour PM2.5 impacts to the three-year average of 98th percentile PM2.5 background.

Table 4: Maximum Ambient Air Quality Impacts During Construction

[18]Refer to Table 5.1-2 on Pg.124. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

TABLE 5.1-12 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING OPERATION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	7.2	**474.7**	**481.9**	50	**964%**
	Annual	0.7	**48.6**	**49.3**	20	**247%**
PM2.5 [a]	24-hour	4.4	24.5	28.9	35	83%
	Annual	0.4	9.4	9.8	12	82%
CO	1-hour	1,326.6	5,726	7,053	23,000	31%
	8-hour	119.6	4,123	4,242	10,000	42%
NO_2 [b]	State 1-hour	138.7	105.0	243.7	339	72%
	Federal 1-hour	1.3	70.6	71.9	188	38%
	Annual	0.1	14.9	15.0	57	26%
SO_2 [c]	State 1-hour	0.001	22.5	22.5	655	3%
	Federal 1-hour	0.001	16.6	16.6	196	8%
	24-hour	0.00003	7.1	7.1	105	7%
	Annual	0.00000	1.1	1.1	80	1%

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] To compute the total impacts for the 24-hour PM2.5 NAAQS, staff conservatively combined the maximum modeled 24-hour PM2.5 impacts to the three-year average of 98th percentile PM2.5 background.

Table 5: Maximum Ambient Air Quality Impacts During Operation

VII. Inadequate Quantification and Modeling of Emissions: Omission of Hudson Ranch Power Plant from Cumulative Impact Analysis

- **Background Concentrations**: The PSA's reliance on background concentrations without explicitly quantifying emissions from nearby facilities (Figure 7), such as Hudson Ranch Power Plant, represents a significant oversight.[19] The PSA's assertion that the emissions from existing facilities are inherently captured in background data is inadequate and misleading. This approach fails to address the specific contributions and interactive effects of these emissions with the proposed project. A proper cumulative impact assessment should include detailed quantification and modeling of emissions from both existing and proposed facilities. The latest edition of the EPA's "Guidelines on Air Quality Models, 40 CFR 51 Appendix W" ("Guidelines")[20] advise modeling emissions from nearby sources not adequately represented by ambient monitoring data.[21] Typically, sources that cause a significant concentration gradient in the vicinity of the source(s) under consideration for emissions limits are not adequately represented by background ambient monitoring. For areas with multiple sources, like this case, the Guidelines advise determining the appropriate background concentration by (1) identifying and characterizing contributions from nearby sources through explicit modeling, and (2)

[19]Refer to Para.2 on Pg.154. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).
[20] 40 C.F.R Pt. 51, App. W; see also 82 Fed. Reg. 5182-235 (Jan. 17, 2017).
[21] 40 C.F.R Pt. 51, App. W § 8.3.1.

characterization of contributions from other sources through adequately representative ambient monitoring data[22]. At minimum, the air quality model should have incorporated emissions from the Hudson Ranch Power Plant, which shares common boundaries with Project. The omission of this nearby source, given the proximity and significant emissions of the same pollutants, is inexcusable. The Guidelines state that in most cases the nearby sources will be located within the first 10 to 20 kilometers (6.2 to 12.4 miles) from the source(s) under consideration. Without this, the analysis remains fundamentally incomplete and fails to provide a thorough evaluation of potential air quality impacts.

- **Existing Hudson Ranch Analysis:** A third-party analysis has been conducted on the Hudson Ranch Power Plant, which strongly suggests that the Morton Bay Project will affect nearby power generation.[23] As seen in Figure 8, the Morton Bay Project site is in close proximity to Hudson Ranch Power 1 (Running since 2012, (Table 6)) and a cumulative analysis needs to be performed to assess the overall impacts. Numerical simulations indicate that the Morton Bay Project is likely to cause reservoir pressure drawdown near Hudson Ranch.[24] The results from this existing analysis suggest a detrimental effect on the long-term productivity of both Hudson Ranch and Morton Bay.

  Given these findings, it is evident that the AERMOD air quality modeling and health impacts assessment for the Morton Bay Project should include emissions from the Hudson Ranch Power Plant. The failure to do so not only undermine the credibility of the environmental assessment but also neglects the potentially significant cumulative impacts that these two facilities could have on air quality and public health. Therefore, a comprehensive cumulative impact analysis is necessary to fully evaluate the environmental consequences and ensure that all relevant emissions sources are accounted for in the modeling process.

[22] Id. §§ 8.3.1.i., 8.3.1.3.
[23] Refer to Para.2 on Pg.10. Hudson Ranch Power 1 Comments – Morton Bay Geothermal Project Impact Screening Study, Docket Number: 23-AFC-01 (TN #: 254691).
[24] Refer to Para.1 on Pg.20. Hudson Ranch Power 1 Comments – Morton Bay Geothermal Project Impact Screening Study, Docket Number: 23-AFC-01 (TN #: 254691).

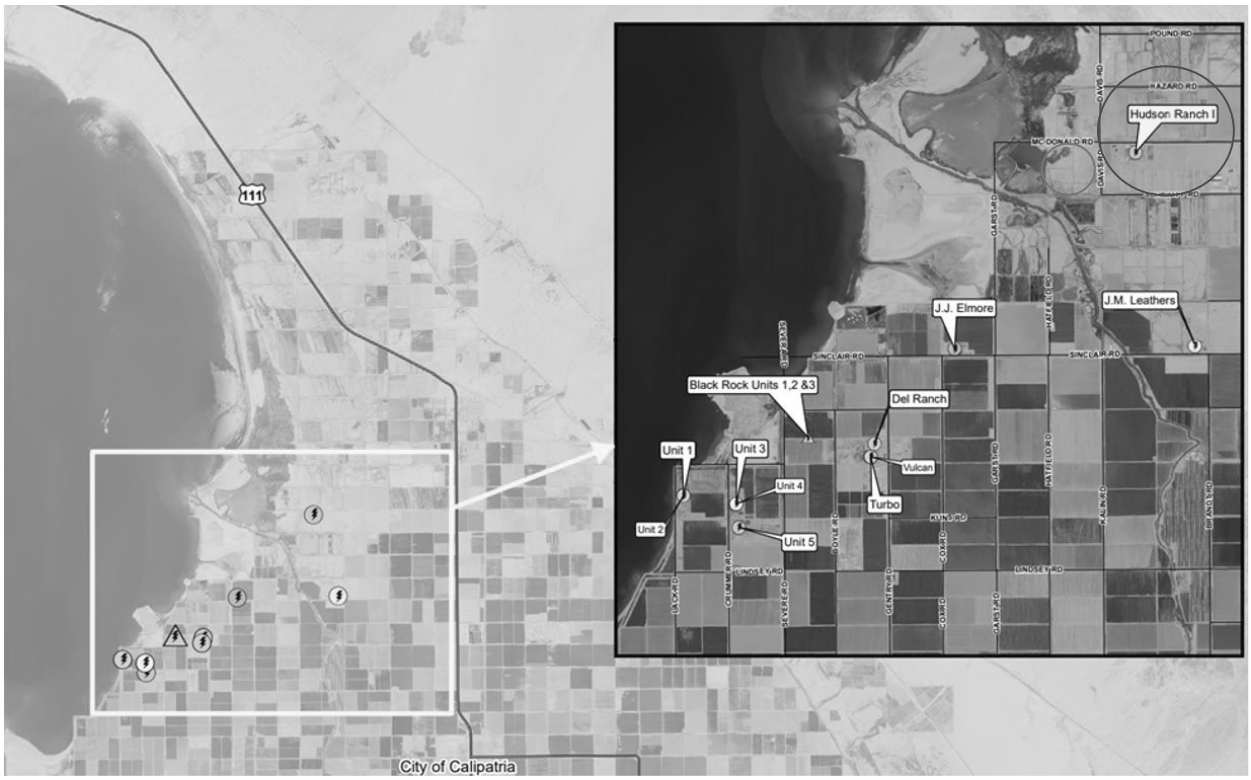


Figure 7: Morton Bay Circled in Red, Hudson Ranch Circled in Blue, and Other Geothermal Projects in Imperial County, California

The applicant's rationale (in response CURE's PDOC comments) for excluding J.L. Featherstone's (now known as Hudson Ranch) PM2.5 emissions from the cumulative impact analysis appears to be flawed and lacks a robust technical basis. Several key issues need to be addressed:

- **Proximity and Emissions Overlap:** The assertion that PM2.5 impacts from both the project and Hudson Ranch would not overlap due to their positioning and meteorological conditions is speculative and not supported by detailed modeling. The exclusion of Hudson Ranch's emissions assumes that the highest impacts from both facilities would not coincide. However, without explicit cumulative modeling, this assumption remains unverified. Given the proximity of these two facilities and their similar emission sources, there is a significant likelihood that their emissions could contribute cumulatively to PM2.5 concentrations in the same general area under certain meteorological conditions.

- **Averaging Periods and Overlap Potential:** The argument that PM2.5 impacts would need to overlap persistently for 24 hours or for most of the year to affect the modeled results oversimplifies the potential for cumulative impacts. The fact that PM2.5 standards are based on 24-hour and annual averages does not negate the potential for significant short-term cumulative impacts, particularly during periods of stagnant atmospheric conditions or when prevailing winds consistently direct emissions from both facilities toward the

same area[25]. These periods, even if not persistent over an entire year, could still result in elevated PM2.5 concentrations that exceed regulatory thresholds and pose health risks. The complexity of air dispersion and meteorological interactions requires detailed modeling to accurately assess potential cumulative impacts. The PSA's argument does not sufficiently address scenarios where PM2.5 impacts from different sources might intersect or combine in ways that are not immediately apparent. Even if the highest impacts from the project and nearby sources are expected to occur in different directions, detailed modeling is necessary to account for potential complex interactions and to ensure that all possible impact scenarios are considered. The lack of explicit modeling fails to address potential worst-case scenarios where combined impacts could lead to exceedances of air quality standards.

- **Guidelines on Cumulative Impact Analysis:** The decision to exclude nearby sources like Hudson Ranch from the cumulative impact analysis contradicts established guidelines, such as those outlined in the EPA's "Guidelines on Air Quality Models, 40 CFR 51 Appendix W." These guidelines recommend the inclusion of nearby sources, particularly those that are not adequately represented by ambient monitoring data and have the potential to contribute to significant concentration gradients. Given the proximity of Hudson Ranch and its similar PM2.5 emission profile, it is essential to model its emissions in conjunction with those of the proposed project to fully understand the potential cumulative impacts.

- **Need for Cumulative Modeling:** The claim that the inclusion of Hudson Ranch in the cumulative analysis is not warranted overlooks the purpose of such modeling[26], which is to provide a comprehensive assessment of all potential sources of pollution in the area.

Project Name/Location	Net Capacity (MW)	Commercial Operation Date
Elmore Backpressure Turbine	7	2019
Elmore	42	1989
Leathers	42	1990
Vulcan	38	1986
Del Ranch	42	1989
CE Turbo (backpressure turbine)	10	2000
Salton Sea 1	10	1982
Salton Sea 2	16	1990
Salton Sea 3	50	1989
Salton Sea 4	42	1996
Salton Sea 5	46	2000
Hudson Ranch Power 1	50	2012
Total Existing	**395**	

Table 6: Geothermal Power Plants Operating in the Salton Sea Area

[25]Refer to Para.2 on Pg.154. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).
[26]Refer to Para.2 on Pg.154. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

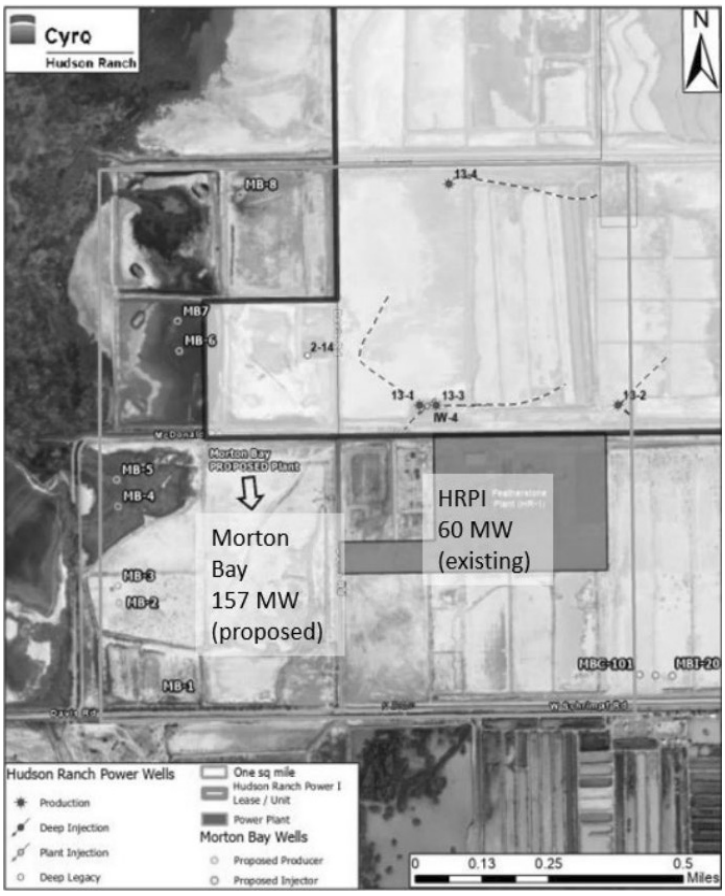


Figure 8: One Square Mile Encompassing Morton Bay (Proposed) and Hudson Ranch Power I Production Well Fields (Existing)

VIII. Deficiencies in Chronic Hazard Index Assessment

The PSA's evaluation of chronic hazards presents critical deficiencies, particularly in its assessment of arsenic exceedances, cumulative impacts, and associated wildlife risks. The over-reliance on qualitative assessments and the omission of detailed quantitative modeling substantially weakens the credibility of the impact analysis. According to Table 5.10-4, the applicant's Health Risk Assessment (HRA) reveals that the Chronic Hazard Index (HI) surpasses the threshold of one for PMI and MEIW receptor groups. Staff reviewed the HRA modeling files provided by the applicant, it is evident that arsenic is the primary toxic air contaminant (TAC) contributing to these chronic HI exceedances[27].

The PSA acknowledges that the applicant's HRA demonstrates exceedances of the Chronic Hazard Index, primarily due to arsenic emissions affecting the PMI and MEIW receptor groups[28].

[27]Refer to Para.1 on Pg.687. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).
[28]Refer to Para.1 on Pg.687. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

However, the PSA's dismissal of these exceedances as insignificant, based on assumptions that maximum impact areas are unlikely to be occupied by residents, workers, or the public, is methodologically unsound. This approach fails to consider several key aspects:

- **Scenario Overlap and Cumulative Impacts:** The assumption within the PSA that chronic hazard impacts from various emission sources are unlikely to overlap significantly is inadequately supported. This presumption neglects the necessity for detailed simulations and modeling to explore worst-case scenarios where emissions from multiple sources might converge, potentially exceeding air quality standards. The absence of such modeling could lead to a substantial underestimation of cumulative impacts. Comprehensive analysis of these interaction scenarios is essential for ensuring regulatory compliance and accurately characterizing air quality impacts, as highlighted in the applicant's HRA documentation.

IX. Insufficient Quantification of Cumulative Cancer Risks

The reported cancer risk at the PMI already surpasses the significance threshold, signaling a substantial potential health risk. The PSA's failure to consider cumulative impacts from existing sources, such as Hudson Ranch, constitutes a significant deficiency. Given that the cancer risk at the PMI is 20.4 in one million (Table 7)—well above the acceptable threshold—additional emissions from nearby facilities would likely exacerbate this risk further. While the reported cancer risks for workers (MEIW) and residents (MEIR) are 0.88 and 0.48 in one million, respectively, both of which are below the threshold, the cumulative effect of these risks, when combined with emissions from adjacent facilities, could easily push the aggregate cancer risk above the significance level, thereby increasing the overall health hazard.

- **Background Concentrations and Cumulative Impact:** The PSA asserts that emissions from existing facilities are already accounted for within the background concentrations and therefore do not require separate quantification. This approach is problematic as it fails to consider the additive effects of multiple emission sources. The presence of naturally occurring heavy metals, coupled with emissions from existing facilities, already contributes to background concentrations. Introducing additional emissions from the proposed project could elevate cumulative risks beyond acceptable levels. For instance, when considering emissions from Hudson Ranch, the cumulative cancer risk at the PMI could surpass the significance threshold, particularly given the elevated cancer risk already identified at this location.

- **Failure to Model Combined Effects:** The PSA's omission of detailed modeling to evaluate the combined effects of the proposed project in conjunction with existing sources significantly undermines the credibility of the risk assessment. The assumption that cumulative effects from existing sources are negligible or acceptable based solely on background levels lacks quantitative validation. Comprehensive simulations are required to thoroughly analyze how the emissions from the project and nearby facilities interact and affect the overall cancer risk. Without such detailed

modeling, the assessment remains incomplete, and the true cumulative impact on public health cannot be accurately determined.

TABLE 5.10-4 OPERATION – MODELED RECEPTOR MAXIMUM HEALTH RISK: CANCER RISK IMPACT (IN ONE MILLION) AND CHRONIC NON-CANCER HAZARD INDEX (HI) (UNITLESS)

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI) (unitless)
PMI[1]	**20.4[5]**	**1.41[5]**
MEIR[2]	0.48	0.03
MEIW[3]	0.88	**1.41[5]**
Maximally Exposed Sensitive Receptor[4]	0.48	0.03
SCAQMD Threshold	10	1

Notes:
[1] Point of maximum impact (PMI). It is right on the east of project fence line.
[2] Maximally exposed individual resident (MEIR). It is approximately 3.5 miles east of the project boundary.
[3] Maximally exposed individual worker (MEIW). It is located at the same location of PMI. Risks at the worker receptors include a Worker Adjustment Factor of 4.2 (7/5*24/8) to account for the hours a worker is present at a site.
[4] It is at the same location of MEIR.
[5] The scenario of facility wide impacts: routine operation year without startups and shutdowns. It is at the same location of PMI (right on the east of project fence line).
Source: Jacobs 2023ii, Table 5.9-9 and Table 5.9-10, Jacobs 2023rr, Table 6 and HRA modeling files provided by the applicant, ICAPCD 2024c, Table 11

Table 7: Modeled Receptor Maximum Health Risk: Cancer Risk Impact (In One Million) And Chronic Non-Cancer Hazard Index (HI) (Unitless)

- **Regulatory Standards and Public Health Concerns**: The PSA's reliance on qualitative arguments rather than cumulative risk modeling results in a failure to address regulatory requirements and public health concerns comprehensively. The cancer risk values at the PMI and other locations, while individually assessed, do not account for the potential increase when combined with emissions from existing facilities. The absence of this analysis creates a critical gap in understanding the full extent of health risks related to the project.

X. Overlooked Health Implications, Inadequate Modeling, and Mitigation Gaps in Evaluation of Radon Risks

The PSA states that "*Although radon is not a TAC and therefore not included in HRA, the applicant modeled radon concentration from the project's cooling tower at the MEIR, and showed is well within existing (background) levels of radon in air in California. Therefore, radon emissions from the proposed project do not represent an increased health risk*"[29]

[29]Refer to Table 5.10-3 on Pg.682. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

The PSA's dismissal of radon impacts requires rigorous reevaluation. The PSA's stance that radon, not being designated as a Toxic Air Contaminant (TAC) in California, need not be included in the Health Risk Assessment (HRA) aligns with current regulatory frameworks. However, this position fails to address critical issues that warrant closer scrutiny:

- **Radon as a Health Hazard:** Radon is a well-established health hazard, primarily due to its carcinogenic properties. Exposure to radon is a recognized risk factor for lung cancer, with background levels potentially posing significant health risks, depending on the concentration and duration of exposure. The PSA's exclusion of radon from the health impact analysis may lead to a substantial underestimation of the health risks associated with radon emissions from the proposed project. Given radon's known dangers, its potential impact should not be overlooked merely due to its absence from the TAC list.

- **Modeling and Background Levels:** The PSA asserts that radon concentrations from the project's cooling tower will remain within existing background levels in California. However, this statement inadequately addresses the potential cumulative effects of increased radon emissions. Background levels, while indicative of existing conditions, do not inherently equate to safety, especially when additional emissions from the project are considered. A comprehensive modeling approach should be employed, incorporating a detailed analysis of radon concentration increases relative to local background levels and evaluating the potential for elevated health risks. This is particularly crucial in regions where background radon levels are already elevated.

To effectively address potential cumulative effects of increased radon emissions, a detailed and systematic approach is necessary. This should include:

  - **Baseline Data Collection**: Comprehensive baseline data on existing radon levels should be gathered, and high-resolution mapping should be conducted to identify areas with elevated background radon levels.
  - **Emission Source Identification**: All potential sources of radon emissions within the project must be identified, with precise estimates of their emission rates.
  - **Advanced Dispersion Modeling**: Utilize advanced dispersion models, such as AERMOD, to predict radon concentrations and integrate these predictions with baseline data to assess cumulative concentrations.
  - **Temporal Analysis**: Conduct a temporal analysis to account for seasonal variations in radon levels.
  - **Health Risk Evaluation**: Evaluate health risks using established dose-response relationships, considering various exposure scenarios.
  - **Comparison with Health Guidelines**: Compare cumulative concentrations against established health guidelines, such as the EPA's threshold of 4 pCi/L.
  - **Mitigation Measures**: If significant risks are identified, implement mitigation measures such as enhanced ventilation, sealing techniques, continuous monitoring, and public education campaigns.

- **Absence of HRA Methods for Radon:** The PSA acknowledges the lack of specific HRA methodologies for radon, as it is not classified as a TAC. While this is consistent with existing OEHHA guidelines, it does not absolve the project from the responsibility of thoroughly evaluating radon emissions and their associated health risks. The absence of standardized assessment methods should not serve as a justification for ignoring potential risks. Instead, alternative risk assessment methodologies or qualitative assessments should be employed to provide a comprehensive understanding of radon-related health impacts.

  To fully assess the health risks associated with radon in the absence of specific HRA methods, the following alternative approaches should be adopted:

  - **Quantitative Risk Assessment (QRA)**: Calculate estimated radon exposure for different population groups based on predicted concentrations from the project, considering various scenarios, including worst-case conditions. Employ established dose-response models from recognized health organizations, such as the EPA and WHO, to estimate potential increases in lung cancer risk, providing a clear quantification of health impacts.
  - **Cumulative Risk Assessment (CRA)**: Evaluate the combined impact of radon emissions with other environmental pollutants present in the area, considering potential synergistic effects. This should include a comprehensive analysis of other radon sources, such as natural soil emissions and building materials.
  - **Geospatial Analysis**: Develop high-resolution maps to illustrate radon concentration gradients and identify hotspots using Geographic Information Systems (GIS). This analysis should be integrated with vulnerability assessments to prioritize areas and populations at greatest risk, such as schools, hospitals, and residential zones.
  - **Scenario Analysis**: Formulate multiple scenarios based on varying levels of radon emissions, meteorological conditions, and population behaviors to assess the range of potential exposures and health risks. Sensitivity analyses should also be conducted to identify key factors influencing radon exposure and associated risk outcomes, ensuring that the most critical variables are addressed in the assessment.

- **Potential Mitigation Measures**: If radon emissions are anticipated from the cooling tower or other components of the project, appropriate mitigation strategies must be identified and implemented. These measures could include improving ventilation systems, enhancing monitoring protocols, and implementing sealing techniques to minimize radon emissions and ensure that concentrations remain within safe limits.

XI. Underestimation of Construction Trip Generation and Its Impact on Traffic and Emissions: Reevaluation of Assumptions and Their Implications

The PSA significantly underestimates the trip generation rate during the construction phase, leading to an inaccurate assessment of traffic and emissions impacts, because it fails to consider potential peak periods and variability in construction activities. The PSA states that "*Estimates of regional project trip distribution were developed based on existing travel patterns in the area, and the location of complementary land uses. It is assumed that all construction workers would commute from residences located within Imperial County*."[30]

- **Truck Trips:** The PSA assumes a uniform distribution of 26 truck trips per day across an 8-hour workday, resulting in approximately 3 truck trips per hour. However, in reality, truck arrivals and departures are likely to be clustered during certain hours, leading to periods of higher congestion and increased emissions (close to 50% trucks entering and leaving during peak AM (6:00 – 9:00) and PM (3:00 – 6:00) hours. Trip generation estimates for these related projects are already developed. PSA can refer nationally recognized and recommended rates contained in "Trip Generation" manual, 10th edition, published by the Institute of Transportation Engineers (ITE)[31].

- **Passenger Car Equivalence (PCE):** The term "PCE" is a metric used in transportation engineering to compare the impact of different vehicle types (like trucks) to standard passenger cars in terms of road space usage and traffic flow. PCE values are assigned to various vehicle types to represent their equivalence to passenger cars under certain traffic conditions. For example, a truck might have a PCE of 2.5, meaning it has the same impact on traffic flow as 2.5 passenger cars. The PSA uses a PCE ratio of 1.5, which does not accurately represent the true impact of heavy trucks on traffic flow and emissions. The accurate PCE ratio, as published by various federal agencies is 2.0 or 3.0 for trucks to cars, which better reflects the real-world impact on traffic dynamics. (City of Fontana's "Truck Trip Generation Study"[32] and Caltrans assessment[33])

- **Trip Distribution Assumptions:** The PSA's assumptions about worker origins and the distribution of trips, such as 15% from Niland and 45% from Calipatria, lack supporting data. The absence of detailed information on workers' residential locations and commuting patterns introduces potential inaccuracies in the trip distribution model.

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[30] Pg. 751, Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).

[31] Trip Generation" manual - https://www.ite.org/technical-resources/topics/trip-and-parking-generation/resources/.

[32] City of Fontana's "Truck Trip Generation Study", August 2003. Here truck trips were converted into passenger car equivalent (PCE) trips using PCE factors, i.e., one 2-axle or 3-axle truck trip = 2 passenger car trips, and one 4+-axle truck trip = 3 passenger car trips (Refer study - TRAFFIC IMPACT STUDY WAREHOUSE DEVELOPMENT 11401 GREENSTONE AVENUE SANTA FE SPRINGS, CALIFORNIA).

[33] Caltrans report accessible at - https://files.ceqanet.opr.ca.gov/250143-2/attachment/2gQUJybglxesxZMTEFLsZqi2Bf0rKIMtwqrfCQQwbt8PLFgCioOM-X5yualcixzzE4NrtlmIDbKA52R80.

- **Impact on Emissions:** The potential underestimation of trip generation rates in the PSA could lead to a failure to account for the increased emissions associated with higher vehicle trips, particularly during peak hours. This underestimation could result in significantly elevated local emissions of pollutants like NOx, PM2.5, and CO, which could have adverse environmental and public health impacts.

- **Construction Period and Worker Trips (as shown PSA[34]):**
  - Estimated 29-month construction period.
  - Up to 560 workers per day, resulting in 1,120 daily trips.
  - Assumes 40% of trips occur during AM and PM peak hours

- **Truck Trips:**
  - 13 trucks per day during peak construction, resulting in 26 trips.
  - Truck trips converted to passenger car equivalence (PCE) using a ratio of 1.5, resulting in 39 trips.

- **Total Daily and Peak Hour Construction Trips:**
  - Total Daily Trips: 1,159 (1,120 worker trips + 39 truck trips in PCE).
  - Peak Hour Trips: 468 Trips (234 same for PM and AM).

The PSA has significantly underestimated the realistic trip generation rate for the construction phase of the project. This underestimation could lead to an inaccurate assessment of the project's impact on traffic congestion and emissions.

- **Underestimation of Worker Trips:** The assumption that only 40% of worker trips occur during peak hours is overly conservative. Peak hour traffic could be higher (50%) due to staggered shift changes and overlapping work schedules. Similar trip activities were also observed at different construction sites[35]. Average peak hour trips[36] during peak construction activities is to be taken to estimate correct emissions.

- **Revised Assumption:** Assuming 50% of worker trips during peak hours
  - Peak Hour Worker Trips=0.5×1,120=560 trips

- **Corrected Truck Trips and PCE ratio:** The PSA assumes the PCE ratio to be 1.5 which is not correct as a ratio of 2.0 has been published[37]. Instead of 12 out of 26, it should be 50% of the trucks i.e. 14.

- **Revised Assumption:** Assuming 20 trucks per day with a PCE of 2.0.

[34] Pg. 751, Morton Bay Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-01 (TN #: 257470).
[35] https://www.nrc.gov/docs/ML1104/ML110460575.pdf.
[36] Pge.11 Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.
[37] FHWA report at https://www.fhwa.dot.gov/reports/tswstudy/Vol3-Chapter9.pdf.

- Daily Truck Trips in PCE=26×2 = 52 trips.

- **Revised Daily Trips:** Using revised assumptions.
  - Total Daily Trips=1,120+52=1,172 trips
  - **Revised Peak Hour Trips:** Assuming 50% of worker trips and peak truck trips (during peak construction activities, peak hour trips are generally above 50% during AM and PM peak hours of total daily trips[38]. Total Peak Hour Trips=560 worker trips+26 truck trips in PCE=586 trips.

- **Emissions Factors**
  - NOx emissions standard for trucks is 0.2 grams per mile (g/mile), while for older models, the standard ranges from 1.0 to 0.5 g/mile[39].

- **Increased VMT Calculation:**
  - Original Daily VMT: Assuming an average trip length of 20 miles (as even the closest non-hazardous waste facility too is 22 miles away).
  - Original VMT=1,159×20=23,180 miles.
  - Revised Daily VMT: Revised VMT=1,172×20=23,440 miles.

- **NOx Emissions**
- **Original NOx Emissions:**
  - **Original Daily VMT:** 23,180 miles
  - **Average NOx Emission Factor for Trucks:** 0.2 grams per mile (g/mile)
  - **Total NOx Emissions:** Total NOx (Original)=23,180 miles×0.2 g/mile=4,636 grams

- **Revised NOx Emissions:**
  - **Revised Daily VMT:** 23,440 miles
  - **Average NOx Emission Factor for Trucks:** 0.2 grams per mile (g/mile)
  - **Total NOx Emissions:** Total NOx (Revised)=23,440 miles×0.2 g/mile=4,688 grams

- **Original Peak Hour NOx Emissions:**
  - **Original Peak Hour Trips:** 468
  - **Average Trip Length:** 20 miles
  - **Total VMT During Peak Hours (Original):** Original Peak Hour VMT=468×20=9,360 miles
  - **Total NOx Emissions During Peak Hours (Original):**
    Total NOx (Original Peak Hours) =9,360miles×0.2 g/mile=1,872 grams

- **Revised Peak Hour NOx Emissions:**
  - **Revised Peak Hour Trips:** 586
  - **Average Trip Length:** 20 miles

[38] Pge.11 Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.
[39] CARB data at https://ww2.arb.ca.gov/sites/default/files/2020-07/ldvtp88_ac.pdf.

- **Total VMT During Peak Hours (Revised):**
  Revised Peak Hour VMT=586×20=11,720 miles
- **Total NOx Emissions During Peak Hours (Revised):**
  Total NOx (Revised Peak Hours) =11,720 miles×0.2 g/mile=2,344 grams

Summary of Revised Analysis

- **Daily Emissions:**
  - **Original Total NOx Emissions:** 4.636 kg
  - **Revised Total NOx Emissions:** 4.688 kg
- **Peak Hour Emissions:**
  - **Original Peak Hour NOx Emissions:** 1.872 kg
  - **Revised Peak Hour NOx Emissions:** 2.344 kg

By adopting more realistic assumptions about trip generation rates and their distribution, the revised analysis highlights a significant increase in daily and peak hour emissions. The revised NOx emissions increase from 4.636 kg to 4.688 kg daily and from 1.872 kg to 2.344 kg during peak hours. This underscores the need for more accurate traffic and emissions modeling to ensure effective mitigation strategies and regulatory compliance. Accurate modeling will also help protect public health by better anticipating and mitigating the environmental impacts of construction activities.

XII. Inadequate Assessment of Air Quality and GHG Emissions from Filter Cake Transportation: Concerns and Recommendations

- **Characterization of Filter Cake:** The PSA asserts that 95% of the filter cake is classified as non-hazardous, with the remaining 5% deemed hazardous due to elevated heavy metal concentrations. However, the criteria used for this characterization are not clearly defined, raising concerns regarding the consistency and reliability of the testing methodologies.

- The assertion that "*the filter cake could be characterized at times as hazardous*" suggests a potential variability in the waste composition, which requires rigorous monitoring and management protocols.

- **Compliance with Regulations**: The PSA indicates that hazardous waste will be stored on-site for less than 90 days and eventually transported by licensed haulers. However, the PSA lacks detailed information regarding storage protocols, spill prevention measures, or the qualifications of the waste haulers. Although the PSA references the requirement for the facility operator to obtain a USEPA hazardous waste generator identification number, it fails to outline the steps for ensuring compliance or oversight mechanisms.

- **Disposal Capacity and Alternatives:** The PSA depends on the planned expansion of the DVCM facility to accommodate future waste if the Cell 4 expansion will be completed

before the current capacity is depleted. However, the assessment does not address contingency plans in the event of delays or if waste generation rates exceed the current predictions. Although an alternative disposal option at Copper Mountain Landfill in Yuma County, Arizona, is mentioned, the PSA provides no further elaboration. Additionally, it does not consider the potential impacts associated with transporting hazardous waste over long distances, such as increased emissions and heightened accident risk.

- **Cumulative Impact:** The cumulative impact analysis for the three proposed geothermal projects (ENGP, MBGP, and BRGP) on local landfill capacity is deemed less significant. However, this assessment assumes a perfect adherence with recycling protocols and fails to account for potential fluctuations in waste generation rates or unforeseen operational issues. Additionally, the PSA lacks a comprehensive evaluation of the air quality and greenhouse gas (GHG) emission impacts associated with the transportation of both hazardous and non-hazardous filter cake. The current plan to transport hazardous filter cake to Arizona and non-hazardous filter cake to the Desert Valley Company Monofil (DVCM) facility raises several concerns:

- **Long-Distance Transportation of Hazardous Filter Cake**: The PSA mentions that hazardous filter cake will be transported to a facility in Yuma County AZ, approximately 129 miles from the project site (Figure 9). This considerable distance significantly increases the vehicle miles traveled (VMT), which in turn leads to higher emissions of pollutants and GHGs.

Figure 9: Distance Between Project Site and Hazardous Waste Facility in Arizona

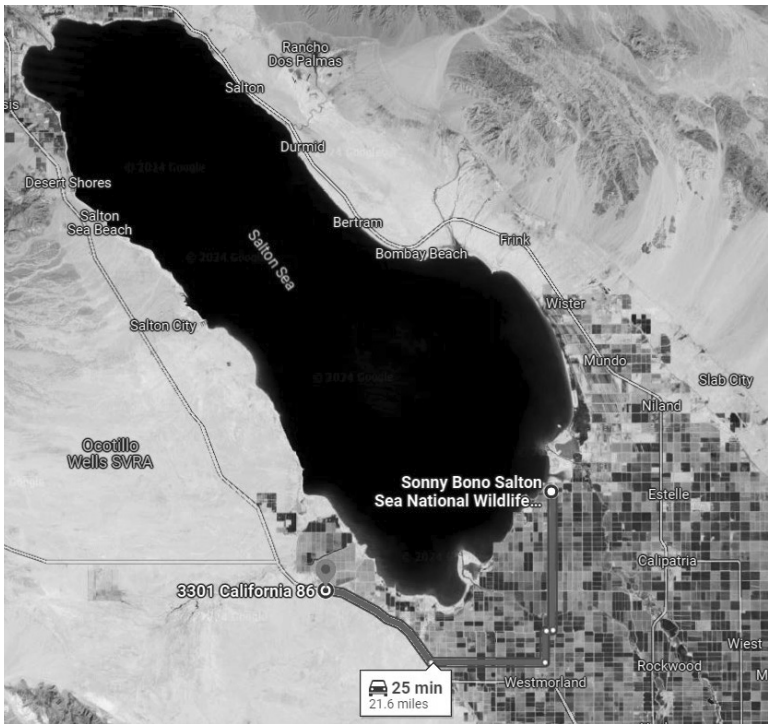


Figure 10: Distance Between MBGP Plant and the Desert Valley Company Monofil Disposal Site

Assuming a truck emits 1.161 grams of CO2 per mile[40], a single 129-mile trip would result in 149.769 grams of CO2 emissions. With multiple trips anticipated, the cumulative emissions would be substantial.

Current Capacity and Alternatives for Non-Hazardous Filter Cake

- **DVCM Facility Capacity**: The DVCM facility, located 22 miles from the project site, is currently operating at full capacity. While expansion plans are in place, depending solely on this facility without accounting for potential delays or increased waste generation rates is impractical.
- **Alternative Disposal Sites**: If the DVCM is unable to accommodate the waste, alternative disposal sites at greater distances must be considered, leading to increased vehicle miles traveled (VMT) and corresponding emissions.
- **Emission Analysis**: Although emissions for the 22-mile trip to DVCM (Figure 10) would be lower, they remain significant given the frequency and volume of waste transported. A similar calculation for a 22-mile trip would result in 25.542 grams of CO2 per trip.

Hazardous Filter Cake to Arizona (129 miles)

- **Assuming 5% of 24,000 tons (1,200 tons) are hazardous.**
- **A typical truck can carry 20 tons of waste.**
- **Total trips required**: 1,200 tons / 20 tons per trip = 60 trips.

[40] https://business.edf.org/insights/green-freight-math-how-to-calculate-emissions-for-a-truck-move/#:~:text=The%20average%20freight%20truck%20in,of%20CO2%20per%20ton%2Dmile.

- **CO2 emissions per trip (129 miles)**: 149.769 grams.
- **Total CO2 emissions for hazardous waste**: 60 trips * 149.769 grams = 8,986.14 grams (8.986 kg) of CO2.

Non-Hazardous Filter Cake to DVCM (22 miles)

- **Assuming 95% of 24,000 tons (22,800 tons) are non-hazardous.**
- **Total trips required**: 22,800 tons / 20 tons per trip = 1,140 trips.
- **CO2 emissions per trip (22 miles)**: 25.542 grams.
- **Total CO2 emissions for non-hazardous waste**: 1,140 trips * 25.542 grams = 29,112.48 grams (29.112 kg) of CO2.

Recommendations for a Realistic Assessment

- **Emission Calculations:** Provide comprehensive emission calculations for the transportation of both hazardous and non-hazardous filter cake. These calculations should include the distances to potential alternative disposal sites, the frequency of trips required and the resulting cumulative emissions. A detailed analysis is essential to accurately estimate the environmental impact associated with the project's transportation activities.
- **Evaluation of Alternative Disposal Sites:** Conduct a thorough feasibility assessment of and environmental impact analysis for the use of alternative disposal sites, particularly if the DVCM facility reaches capacity or experiences delays in the planned expansion. This evaluation should consider factors such as distance to alternative sites, available capacity, and the potential for increased emissions associated with longer transportation routes.
- **Mitigation Measures:** Propose and implement mitigation measures aimed at reducing emissions associated with transportation activities. These measures may include optimizing truck loads to reduce the number of trips, utilizing fuel-efficient or alternative fuel vehicles, and strategically scheduling trips to avoid peak traffic hours. These measures will help minimize the environmental impact and ensure a more sustainable approach to waste transportation.
- **Regulatory Compliance and Oversight:** Ensure that transportation and disposal of hazardous waste will be in accordance with all applicable federal, state, and local regulations. Establish stringent oversight mechanisms to monitor emissions and regularly the environmental impact of these activities. This oversight is crucial for maintaining regulatory compliance and protecting environmental and public health.

Conclusion

The facts identified and referenced in this comment letter led me to reasonably conclude that the Project could result in significant impacts if allowed to proceed.
Sincerely,

GROUP DELTA CONSULTANTS, INC.

Dr. Komal Shukla
Technical Director – Air Quality

Komal Shukla, Ph.D., M.Sc., B.Sc
Air Quality Scientist

GROUP DELTA

Education
Ph.D. in Photochemical Modeling of Air Pollution (Environmental Engineering), Indian Institute of Technology Delhi-IIT Delhi (Photochemical Modeling of Ground Level Ozone), Delhi, India; Visiting Ph.D. Student, Institute Fellow, Gees, University of Birmingham, UK; MPhil Environment and Sustainable Development, IESD, Banaras Hindu University, Varanasi, India; M.Sc. Environment Management, University School of Environment Management (Sustainable and Low Carbon Energy Plan for Delhi), Delhi, India; B.Sc Chemistry (with honors) in Chemistry, University of Delhi, India

Years of Experience: 7

Years with Group Delta: 1

Dr. Shukla has a Ph.D. in air quality and atmospheric phenomenon modeling, with a strong technical background in tropospheric chemistry, industrial and city level environmental solutions, regulatory and global model applications, trace gases and particulate matter impact on human health and climate, and observations data analytic. Dr. Shukla is an air quality emissions modeler with nearly a decade of technical and research experience. She served as an in-house lead in federal contract scientific projects supporting the EPA's mission. Related experience includes:

Litigation, Compliance, Environmental Justice, On-Road Emissions, Industrial Emissions, California: As Air Quality Modeling Scientist, Ms. Shukla completed two major projects, including: Project I: Source apportionment of ozone and particulate matter pollution using photochemical modeling techniques, and Project II: Transportation and near-road air quality and emissions projection.

Environment and Climate Change Canada (ECCC), Toronto, Canada: As Research Scientist (Air Quality Modeling and Compliance in Alberta), Ms. Shukla completed two significant projects, including: Project I: Developing a photo-chemical transport model to understand oil and sands region emissions in North America and Project II: Modeling applications in delineating chemistry of tropospheric tracers.

University of North Carolina, Institute of Environment, Chapel Hill, North Carolina: As Postdoctoral Research Associate (Air Quality – Nyserda Led Air Quality Model Development, Ms. Shukla worked on critical projects including: Project I: Air quality modeling of various city level sources and health exposure sciences in New York City, - funded by NYSERDA and Project II: TRECH project (https://www.hsph.harvard.edu/c-change/news/trechstudy/) - Transportation, Equity, Climate & Health CMAQ based modeling of vehicular emission and policy assessment on the East Coast.

Indian Institute of Technology Delhi (IIT Delhi), Delhi, India: As Research Associate, Ms. Shukla worked on Project I: Quantification and contribution of paddy stubble burning emissions in Haryana to estimate PM2.5 concentrations in its surrounding cities and Delhi. Role: Modelling meteorology and PM2.5 for north India using WRF-chem and Project II: A Systems Approach to Air Pollution in Delhi (ASAAP) mobility grant funded by GCRF and NERC. Role: Monitored outdoor PM2.5 concentrations at two flyovers in Delhi and assessed pavement dwellers exposure to air pollution of PM2.5 near heavily trafficked roads to see impact on dwellers.

Various Technical Skills
Languages: T and C Shell-script, MATLAB, Fortran, Python, NCL, R, and NETCDF satellite data retrievals and analysis
Models: WRF-Chem, GEM-MACH, CMAQ, GCAM, CTOOLS, AERMOD, CALPUFF, ADMS, MOVES, InMAP and COBRA.

GROUP DELTA

Photochemical pollutant and aerosol/dust modeling and urban air quality. Expertise in tropospheric chemistry, machine learning aided regression models, WRF-Chem/CMAQ (Chemical transport models), dispersion models.

Air Quality: CTOOLS/AERMOD/ADMS/R-LINE and satellite data assessment (OMI-AURA and MODIS). USEPA observation and meteorology handling, anthrapoegenic/energy emission inventory QA and preparation (MOVES), and impacts-benefits.

Select Research Papers:

- Shukla, K., Seppanen, C., Naess, B., Chang, C., Cooley, D., Maier, A., .. &Arunachalam, S. (2022). ZIP Code Level Estimation of Air Quality and Health Risk Due to Particulate Matter Pollution in New York City. Environmental Science & Technology.
- Shukla, K., Kumar, P., Mann, G. S., & Khare, M. (2020). Mapping spatial distribution of particulate matter using Kriging and Inverse Distance Weighting at supersites of megacity Delhi. Sustainable cities and society, 54, 101997.
- Shukla, K., Srivastava, P. K., Banerjee, T., & Aneja, V. P. (2017). Trend and variability of atmospheric ozone over middle lndo-Gangetic Plain: impacts of seasonality and precursor gases. Environmental Science and Pollution Research, 24(1), 164-179.
- Shukla, K., Dadheech, N., Kumar, P., & Khare, M. (2021). Regression-based flexible models for photochemical air pollutants in the national capital territory of megacity Delhi. Chemosphere, 272, 129611.
- Gulia, S., Khanna, 1., Shukla, K., & Khare, M. (2020). Ambient air pollutant monitoring and analysis protocol for low- and middle-income countries: An element of comprehensive urban air quality management framework. Atmospheric Environment, 222, 117120.
- Khare, M., & Shukla, K. (2020). Outdoor and Indoor Air Pollutant Exposure. In Environmental Pollutant Exposures and Public Health (pp. 95-114)
- Kumar, G. S., Sharma, A., Shukla, K., & Nema, A. K. (2020). Dynamic programming-based decision-making model for selecting optimal air pollution control technologies for an urban setting. In Smart Cities-Opportunities and Challenges (pp. 709-729). Springer, Singa pore.

Select Technical Conferences:

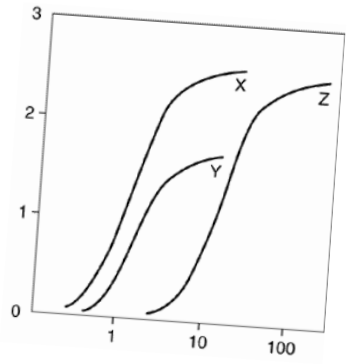
- Shukla, K., OJha, N., & Khare, M., (2019) Air Quality Simulations over Delhi Using WRF-Chem in Conference of Indian Aerosol Science and Technology Association 2018 "Aerosol lmpacts:Human Health to Climate Change" 2018 http://cas.iitd.ac.in/iasta20l8/pdf/
- Shukla, K., Xiaoming, C., OJha, N., & Khare, M., (2018), Air Quality Simulations over Delhi Using WRF-Chem: Effects of Lo- cal Pollution and Regional-Scale Transport , A42A-0l presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec. http://abstractsearch.agu.org/meetings/2018/FM/A42A-0l. htm1 (Talk)
- Shukla, K., & Khare M., (2019) Behaviour of Ground Level Ozone and Its Association with Precursors and Meteorology in Delhi, India, AS17-A023, Atmospheric Chemistry in Highly Polluted Environments: Emissions, Fates, and Impacts, AS17-A023 presented at 2019 16th Annual meeting AOGS, Singapore, 28th -2nd August (Poster)
- Shukla, K., Kumar, S., & Nema A., (2019) Environmental Characterization of Two Chromium-based Industrial Waste Contaminated Sites of India, accepted as BllH-2219, to be presented in presented at 2019 Fall Meeting, AGU, San Francisco, CA, USA 09-13 Dec. (Poster)
- Shukla, K., & Khare M., (2019), Behavioral Chemistry of ground level ozone formation in heavily polluted environment of Delhi city, accepted as A21G-2645, to be presented in presented at 2019 Fall Meeting, AGU, San Francisco, CA, USA 09-13 Dec.
- (Poster) Kumar. S, Sharma. A., Shukla K., Nema, A.K., (2019). Dynamic programming based decision-making model for selecting optimal air pollution control technologies for an urban setting. Presented at 1st smart cities conference, Delhi, India (Talk).

International Panelist

Air Pollution, Environmental Management and Policy Related Invited Talks:

- Minimizing air pollution in Delhi city, Pure Earth, NY, USA, Boston College, 2019
- Photochemical pollution in heavily polluted environments of India and China" in the Development of Traffic Pollution Dispersion Models based upon Artificial Intelligence Technology, Chang'an University, Xian, 2019, China
- Air Pollution Challenges and Mitigation Opportunities in Delhi, CADTIME, Newcastle University, 2019, UK
- Indoor Air Quality: Problems and Initiatives", 2nd Indian International National Conference on Air Quality Management (IICAQM 2017): Health and Exposure, Indian Institute of Technology Delhi, New Delhi 2017, India
- Tackling the Challenges of Air Pollution in India", Indian Institute of Public Administration, New Delhi, 2019, lndia

ATTACHMENT B



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September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attn: Mr. Andrew Graf

Subject: Comment Letter On Preliminary Staff Assessment for the Morton Bay Geothermal Project (CEC-700-2024-003-PSA).

Dear Mr. Graf:

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Clark and Associates (Clark) has reviewed materials related to the above referenced project.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the documentations reviewed. If I do not comment on a specific item, this does not constitute acceptance of the item.

Project Description:

According to the Preliminary Staff Assessment, docketed at California Energy Commission Docket No. 23-AFC 01, the Applicant proposes to site and construct the Morton Bay Geothermal Project (MBGP or the Project) within the Salton Sea Known Geothermal Resource Area (KGRA), in Imperial County, south of the Salton Sea. The Project would be located in an agricultural area approximately six (6) miles northwest of the town of Calipatria. The MBGP would consist of a 157-megawatt (MW) (140 MW net) electricity generating facility powered by steam sourced from super-heated geothermal brine. A new 3.2-mile transmission line would be constructed to deliver power to a new Imperial Irrigation District (IID) switching station that will be built adjacent to the proposed Elmore North Geothermal project site.

The Project elements include one steam turbine generator (STG) system; a geothermal fluid processing systems; a Class II surface impoundment (brine pond); a solids handling system; power distribution center (or control building); a service water pond; water service; parking areas, construction camps, borrow pits (partially shared); one 14-cell cooling tower; twenty (20) wells and 12 well pads; substation near northeast corner of the MBGP site; new switching station at Garst and Sinclair roads; production wells, injection wells, and pipelines; and a generation interconnection (gen-tie) line. The Project will be located on approximately 51 acres of a 160-acre parcel within the unincorporated area of Imperial County, California and which is bounded by McDonald Road to the north, Davis Road to the east, Schrimpf Road to the south, and the Salton Sea to the immediate west.

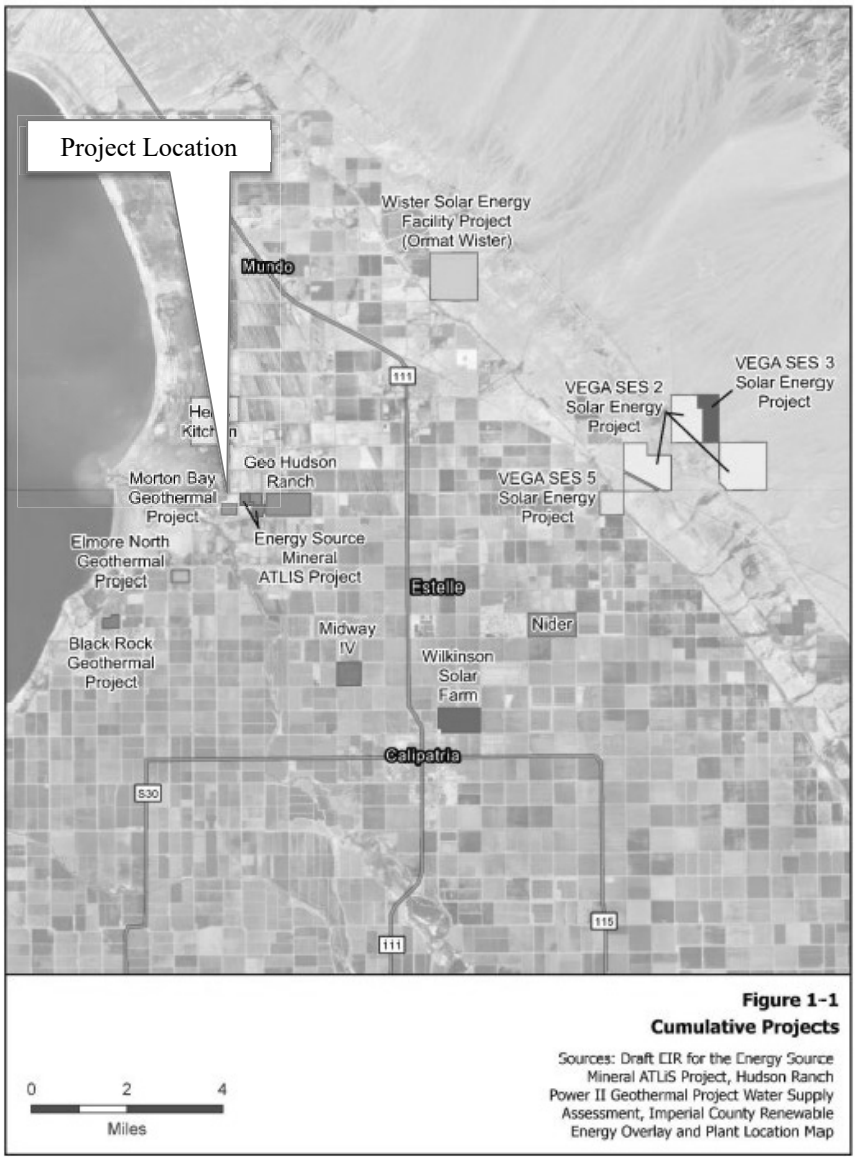


Figure 1: Project Location

The Project is in an area designated by the U.S. Environmental Protection Agency as nonattainment for ozone and by the California Air Resources Board as nonattainment for ozone and particulate matter with a diameter less than 10 microns (PM_{10}). According to the Preliminary Staff Assessment (PSA), the Project's potential operational impacts to air quality will be mitigated with the implementation of Air Quality Conditions of Certifications (COCs) and mitigation measures (MMs). The Staff Assessment concludes that after mitigation the Project would have *less than significant impacts for air quality and public health impacts*.

Site Location and Existing Air Quality Concerns

The facility would be located near the southern end of the Salton Sea, between the towns of Niland (four miles northeast of Project site) and Calipatria (six miles to the southeast) in Imperial County. Land uses in the surrounding area include existing geothermal power facilities, agriculture, and the Sonny Bono Salton Sea National Wildlife Refuge (Sonny Bono Refuge). The Sonny Bono Refuge headquarters is located 2.5 miles from the Project site. In addition to the Imperial Valley Air District being in in non-attainment for ozone concentrations based on the 8-hour Federal standard, non-attainment for ozone based on the 1-hour and 8-hour California standards, non-attainment for PM_{10} based on the California standard; the immediate vicinity of the Project Site has been identified as a disadvantaged community under Senate Bill 535. This designation requires that the State invest in improving public health, quality of life and economic opportunity in California's most burdened communities, and at the same time, reducing pollution that causes climate change. The investments are authorized by the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Nunez, 2016). Adding additional air pollutants to already impacted community will disproportionally affect the residents.

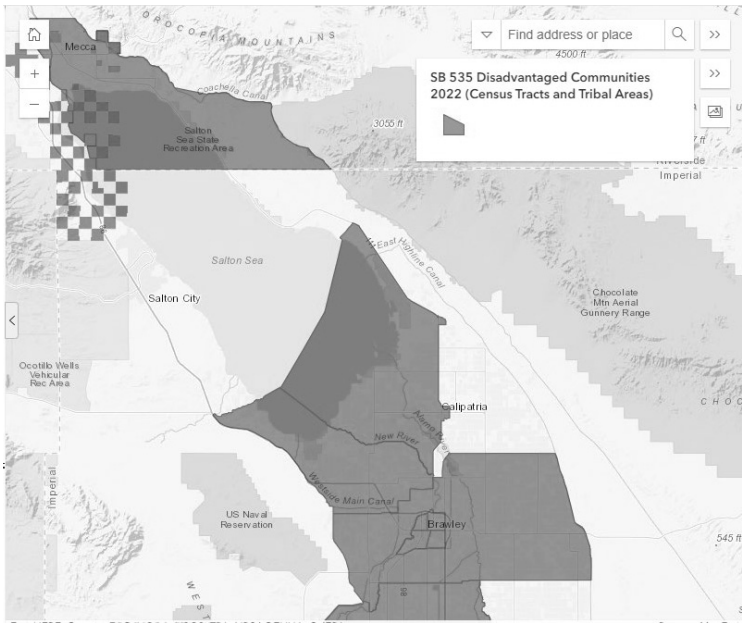


Figure 2: SB 535 Designated Communities

Specific Comments:

1. The Air Modeling Used As The Basis Of The Air Quality Analysis And Health Risk Assessment Contains Critical Flaws.

The PSA asserts that the air dispersion model and meteorological data used in the air dispersion analysis is the most representative, accurate, and reliable meteorological data available. However, this assertion does not fully consider the complexities and unique meteorological conditions of the Project site, particularly in relation to the Salton Sea.

According to U.S. EPA[1], dispersion modeling uses mathematical formulations to characterize the atmospheric processes that disperse pollutants emitted by a source. Dispersion models can be used to calculate the concentrations at selected downwind receptor locations (i.e., pollutants from sources are spread throughout the community and concentrations at each of the receptor location are calculated). Air dispersion modeling analyses are most reliable when they incorporate what the EPA refers to as preferred meteorological data, which includes the most recent five years of National

[1] U.S. EPA. 2021. Support Center For Regulatory Atmospheric Modeling (SCRAM). https://www.epa.gov/scram/air-quality-dispersion-modeling

Weather Service (NWS) data or at least one year of site-specific meteorological data. AERMOD, the model in question, is a Gaussian plume model highly dependent on the meteorological data utilized.

The topography and wind flow across the Salton Sea significantly impact the dispersion of pollutants emitted from the Project Site. According to a recent report[2], the Salton Sea occupies the deepest point of the Salton basin, surrounded by agricultural lands to the north and south of the sea, the Anza Desert immediately to its west, and bounded by the coastal Peninsular Ranges and the Transverse Ranges. To the south, the Salton basin opens up to the Imperial Valley.

The Project Site is located directly adjacent to the Salton Sea, but the Imperial County Airport NWS station, which provides the meteorological data used in the current model, is 28 miles south of the Project area. However, this approach may not accurately reflect the conditions at the Project site. As a large body of water, the Salton Sea creates a differential heating effect compared to the surrounding desert, leading to variations in wind speed. This can be seen when the wind data from the Imperial County Airport NWS station is compared to the Sono Bono Monitoring Station data.

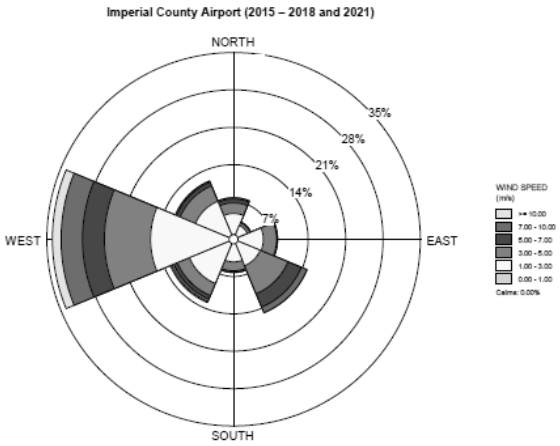


Figure 4: Wind Rose For Imperial County Airport

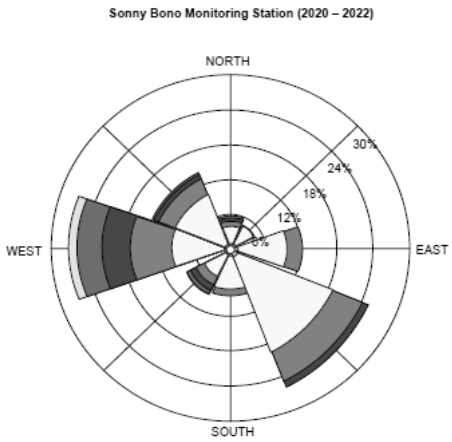


Figure 5: Wind Rose For Sonny Bono

Higher wind speeds over the heated desert and lower relative wind speeds over the cooler Salton Sea results in decreased dispersion near the Project site, increasing ground-level pollutant concentrations. Utilizing meteorological data from the Imperial County Airport NWS station fails to

[2] Evan, A.T. 2019. Downslope Winds And Dust Storms In The Salton Basin. *Monthly Weather Review* Vol 147: 2387-2402

capture these localized effects. As a result, the Staff Assessment severely underestimates the Project's air quality and public health risk impacts.

2. The Staff Assessment Fails to Account for Radon Risks In The Operational Health Risk Assessment (HRA).

The Staff Assessment asserts in Note C to Table 5.10-3 that "Radon is managed as a radiation health hazard under other programs, it has not been identified as a TAC in California. An outcome of not being a TAC is that there are no HRA methods in OEHHA guidelines for assessing radon emissions to ambient air. Although radon is not a TAC and therefore not included in HRA, the applicant modeled radon concentration from the project's cooling tower at the MEIR, and showed is well within existing (background) levels of radon in air in California. Therefore, radon emissions from the proposed project do not represent an increased health risk (Jacob 2024v)."

This assertion is incorrect and ignores the significant health risk from exposure to radon. Jacobs reliance on statewide average background levels of radon, assumed to be 0.49 pCi/L, is misleading. According to U.S. EPA, this ambient level would equate to 3 additional lung cancers per 1,000 people who smoke,[3] or a risk of 3,000 per 1,000,000. Furthermore, this citation ignores the U.S. EPA designation of Imperial County as a Zone 3 county, meaning it has low radon potential.[4] Introducing radon, a known human carcinogen, into an area with low radon potential must be quantitatively assessed to ensure the protection of workers, residents, and sensitive receptors in the vicinity of the Project Site. Radon is the number one cause of lung cancer among non-smokers, and second leading cause of lung cancer overall, according to U.S. EPA estimates.[5]

In the geothermal reservoir, radon (^{222}Rn) enters solution predominantly by alpha-recoil and remains dissolved until its decay. The maximum radon content is achieved when the rates of solution and decay are equal, which occurs if the residence time of water in the reservoir exceeds 25 days (^{222}Rn has a half-life of 3.8 days). Radon emissions from the nearby JJ Elmore geothermal facility[6] has been previously identified by the Imperial County Air Pollution Control District (ICAPCD) as a

[3] U.S. EPA. 2024. https://www.epa.gov/radon/health-risk-radon

[4] CDC. 2022. Special Report 247: California Indoor Radon Potential. California Department of Conservation California Geological Survey. Pg 57.

[5] U.S.EPA. 2024. Health Risk Of Radon. Accessed February 29, 2024. https://www.epa.gov/radon/health-risk-radon.

[6] ATC 1890.pdf

concern for turbine condenser, hot well condensate, cooling tower blowdown, and non-condensable gas emissions. For that facility, the ICAPCD required source testing and testing every 4-years following construction. In lieu of a specific regulated standard for exposure to radon, the As Low As Reasonably Achievable (ALARA) principle of radiation protection should be applied to the Project. This principle calls for monitoring exposure and implementing protective measures to minimize risk. In particular, workers involved in removing solid deposits from equipment must avoid inhaling dusts. The PSA should, at a minimum, perform a detailed risk assessment of radon emissions specific to the project site to ensure the safety of all potentially affected individuals.

3. The Staff Assessment's Choice Of Monitoring Methods For Dust And Cooling Tower Drift Will Not Accurately Assess The Concentration Of Particulates Emitted From The Site.

The Staff Assessment concludes that with implementation of Mitigation Measures (MM) and Air Quality Conditions of Certification (COCs), the air quality impacts will be less than significant. This statement, however, overlooks critical flaws in the methods for monitoring dust and cooling tower drift, particularly their limited effectiveness at night. The COCs related to dust and drift from the cooling towers (AQ-12 and AQ-37) rely on an opacity measure. Specifically, the standard being used is an opacity measurement of 20% or greater for a period aggregating more than three minutes in any one hour, typically performed using the U.S. EPA Methods 9 or 22, which are designed for smoke monitoring. There are several concerns with the use of these methods.

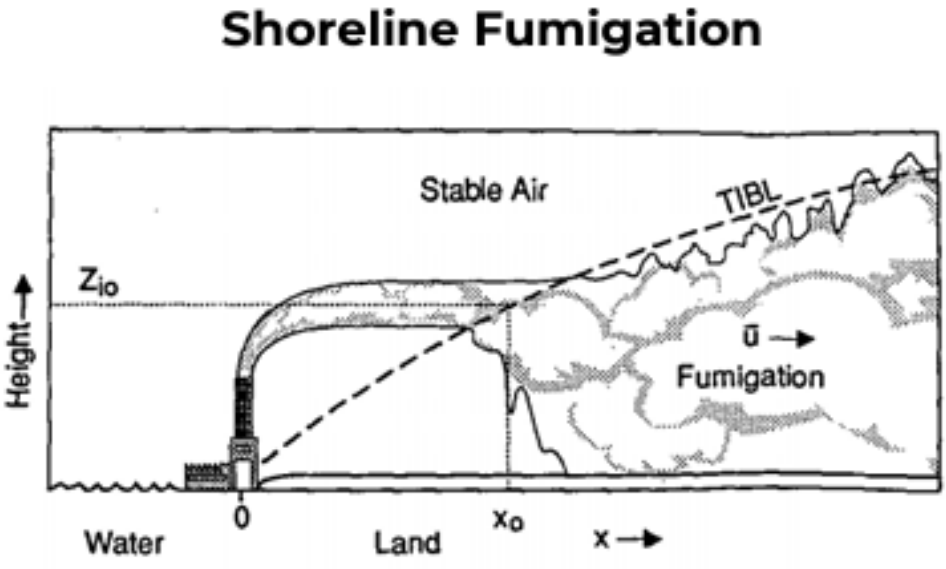
These methods require active monitoring of emissions from the facility. Certified observers must be utilized for these methods. Plume opacity readings can be subjectively influenced by various factors, including particle density, refractive index, size distribution, color, plume background, pathlength, distance and relative elevation to stack exit, sun angle, and lighting conditions. Finally, these methods require sufficient light to see the plume.

Given these limitations, the proposed COCs would not provide continuous analysis of conditions at the Project Site and would be ineffective during nighttime operations. To address these shortcomings, Staff should require active monitoring with dust monitors (particle measuring devices) immediately outside of the facility and around its perimeter. Continuous particle measures would offer several advantages. It provides round-the-clock data, including during nighttime when visibility-

based methods fail. It eliminates the subjectivity inherent in visual opacity readings, leading to more reliable and consistent data. It allows for real-time tracking of dust particle levels, enabling prompt corrective actions if thresholds are exceeded. And it offers robust data sets that can be used for repeatability test and to validate compliance with air quality standards. Incorporating active dust monitoring systems would ensure that air quality impacts are accurately assessed and mitigated, fulfilling the intent of the mitigation measures and conditions of compliance to protect public health and the environment.

4. The PSA States That The Fumigation Analysis For Inversion Breakup Conditions Is Adequate Even Though It Was Done With A Screening Level Model

On page 5.1-31 of the PSA under the Fumigation Impacts, Staff states that "applicant conducted fumigation analysis for inversion breakup conditions using the AERSCREEN (Version 15181) dispersion model. The applicant also assessed shoreline fumigation impacts as the nearest distance to the shoreline of any large bodies of water is within 3 kilometers with the Salton Sea located less than 1,000 m to the west and northwest of the project. The results of the applicant's fumigation analysis in AERSCREEN indicated no meteorological hours fit the fumigation criteria. Therefore, no fumigation impacts are expected to occur from the project (Jacobs 2023ii)."



Coastal fumigation phenomenon (from Luhar 1995)

Coastal plume fumigation results when a plume emitted from a stack and traveling with relatively little diffusion impacts the thermal internal boundary layer (TIBL) at some distance downwind. As long as this situation exists, fumigation may occur continuously and result in a high ground-level concentration. While heated air over the desert will create higher wind speeds the cooler temperature over the Sea creates lower relative wind speeds in in the vicinity of the Project Site. For the general case of land/sea breeze winds, it is generally recognized in the air modeling community that the use of a high resolution mesoscale prognostic meteorological data, such as MM5 or WRF, is preferred over screening level meteorological data or hourly meteorological data. The PSA must use a different dispersion model which incorporates a larger windfield, such as CalPuff with WRF meteorological data, to accurately assess the impact of the Salton Sea on the wind flow across the Project Site.

5. Valley Fever Impacts Are Potentially Significant And The Proposed Mitigation Measures Are Inadequate.

The Staff Assessment recognizes that construction of the Project could expose humans to the risk of Valley Fever and proposes mitigation measures to reduce Valley Fever impacts, but asserts that there is no issue with Valley Fever at the Project Site,[7] citing low infection rates in the county. However, this assertion ignores the significant potential for exposure to the causal agent, particularly among workers.

Dust exposure is a primary risk factor for contracting Valley Fever (via *Coccidiodes imimitis (cocci)* exposure). When soil containing the *cocci* spores are disturbed by construction activities, the fungal spores become airborne, exposing construction workers and other nearby sensitive receptors. Despite this well-documented risk, the Staff Assessment proposes inadequate mitigation measures such as watering of soils, wearing of masks if workers are concerned, and staying indoors during dust storms.[8] The last measure is clearly intended for residential exposure and fails to address the reality for workers.

This approach shifts the burden of protection from Valley Fever spores on the workers themselves. A more effective mitigation strategy would involve active sampling of the Project Site

[7] Staff Assessment page 5.10-6.

[8] Staff Assessment page 5.10-21.

prior to construction to determine the extent of Valley Fever spore presence, along with active monitoring and education for workers on the health impacts of Valley Fever.

The Valley Fever fungus lives in the top 2 to 12 inches of soil. When this soil is disturbed by activities such as digging, vehicles, construction activities, dust storms, or during earthquakes, the fungal spores become airborne. The most at-risk populations are construction and agricultural workers.[9] Here, construction workers are the very population that would be most directly exposed by the Project. A refereed journal article on occupational exposures notes that "[l]abor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations."[10]

The airborne release of Valley Fever spores is a reasonably foreseeable outcome of Project construction activities. A study in Antelope Valley identified a correlation between soil disturbance due to large-scale renewable energy construction projects, agricultural management practices and PM_{10} fugitive dust emissions with increased incidence of coccidioidomycosis.[11]

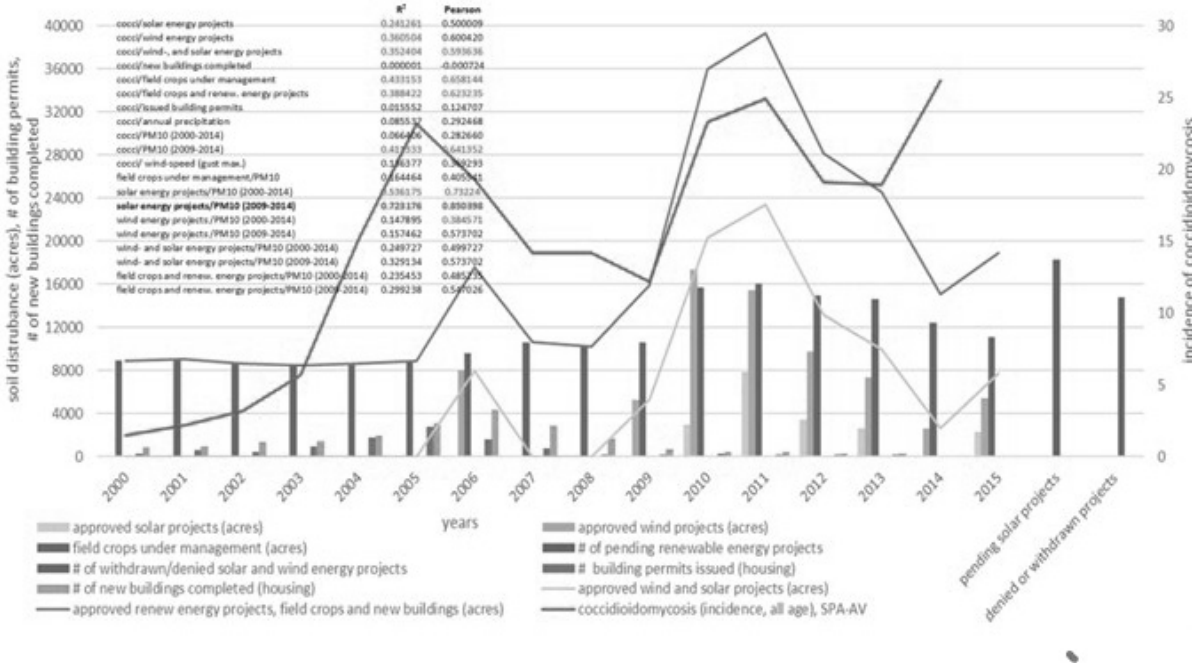


Figure 2: Valley Fever Incidence And Soil Disturbance

[9] Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, *American Journal of Public Health and the Nation's Health*, v. 58, no. 1, 1968, pp. 107–113, Table 3; available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1.

[10] *Ibid.*, p. 110.

[11] Colson. 2017. Large-Scale Land Development, Fugitive Dust, and Increased Coccidioidomycosis Incidence in the Antelope Valley of California, 1999-2014. https://knowthecause.com/wp-content/uploads/2017/03/Colson2017FugitiveDustCoccidiodes.pdf

As shown in the study, the incidence rate of Valley Fever increased with the number of acres of disturbed soil. The mass disturbance of soils during Project construction will create similar conditions to those detailed in the study by Colson. [12]

Windblown dust from Project-disturbed soils is a particular concern at this site due to desert winds, which occur in the area. Desert winds can raise significant amounts of dust, even when conventional dust control methods are used, often prompting alerts from air pollution control districts. If these winds occurred during grading, cut and fill, soil movement, or bare graded soil surfaces (even if periodically wetted), significant amounts of PM_{10}, $PM_{2.5}$, and associated Valley Fever spores, as well as silica dust, would be released.

Scientific research indicates outbreaks of Valley Fever occur in populations with intense exposure to aerosolized arthroconidia are at greater risk for infection, including agricultural or construction workers, or persons who participate in outdoor activities such as hunting or digging in the soil. Outbreaks have been linked to a variety of activities involving disturbance of impacted soils. [13,14,15] Given this direct correlation between soil disturbance and Valley Fever cases, the Staff must directly address the impacts that the project's construction phase will have on workers and the surrounding community, and identify feasible mitigation measures to reduce Valley Fever impacts.

The COCs outlined in the PSA as AQ-SC3 and AQ-SC4 focus on the visible emissions of dust from the Project construction site. Given the size of Valley Fever spores, relying on a visible emissions of dust. The spores which cause Valley Fever are too small to see with the naked eye (0.002–0.005 millimeters ("mm")). Standard fugitive dust mitigation measures are not adequate to protect construction workers and nearby sensitive receptors from the risk of exposure to Valley Fever spores. Conventional dust control measures do nothing to prevent the spread of *Coccidiodes*

[12] Colson. 2017. Large-Scale Land Development, Fugitive Dust, and Increased Coccidioidomycosis Incidence in the Antelope Valley of California, 1999-2014. https://knowthecause.com/wp-content/uploads/2017/03/Colson2017FugitiveDustCoccidiodes.pdf

[13] Brown. Et al. 2013. Coccidioidomycosis: epidemiology. *Clinical Epidemiology*. 5:185-197.

[14] Rafael Laniado-Laborin, Expanding Understanding of Epidemiology of Coccidioidomycosis in the Western Hemisphere, Annals of the New York Academy of Sciences, v. 111, 2007, pp. 20–22, available at https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1196/annals.1406.004; Frederick S. Fisher, Mark

W. Bultman, Suzanne M. Johnson, Demosthenes Pappagianis, and Erik Zaborsky, Coccidioides Niches and Habitat Parameters in the Southwestern United States, a Matter of Scale, Annals of the New York Academy of Sciences, v. 111, 2007, pp. 47–72 ("All of the examined soil locations are noteworthy as generally 50% of the individuals who were exposed to the dust or were excavating dirt at the sites were infected."), available at https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1196/annals.1406.031.

[15] Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, American Journal of Public Health and the Nation's Health, v. 58, no. 1, 1968, pp. 107–113, Table 3; available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1.

immitis, (*cocci*) and are not effective at controlling Valley Fever[16] because they largely focus on visible dust or larger dust particles—the PM_{10} fraction—not the very fine particles where the Valley Fever spores are found. This fact allows the spores to spread in over a much greater area than the dust particles. Standard Air Quality Mitigation Measures such as watering of soils would not provide sufficient protection to on-site workers nor would they prevent the spread of *Coccidiodes immitis* from the site to receptors farther away. Compliance with SCAQMD Rule 403 would still fail to prevent the exposure of workers on- and off-site to *Coccidiodes immitis* impacted soils. Sampling for and removal of impacted soils is the best solution to *Coccidiodes immitis* spores. Since *Coccidiodes immitis* resides in soils and are not subject to degradation, entrainment of the potentially impacted soils may cause additional issues to further development of the site.

The Staff should require that the Applicant perform a pre-construction soil survey of the site to identify whether *Coccidiodes immitis* spores are onsite and implement mitigation measures to actively suppress the spread of Valley Fever, including:

1. Active monitoring of dust using real time monitors during periods of soil disturbances. The use of U.S. EPA Method 9 and 22 would not be an acceptable substitute. Generation of dusts concentrations onsite beyond the background concentration of particulate matter at the upwind fenceline would require immediate dust suppression measures (e.g, active watering of dust plume). Monitors should be placed upwind and downwind of the construction area(s) to ensure that dust generation is documented and active control measures can be implemented prior to the dust plume leaving the site.
2. Control dust exposure:
    - Apply chemical stabilizers at least 24-hours prior to high wind event;
    - Apply water to all disturbed areas a minimum of three times per day. Watering frequency should be increased to a minimum of four times per day if there is any evidence of visible wind-driven fugitive dust;
    - Provide National Institute for Occupational Safety and Health (NIOSH)-approved respirators for workers with a prior history of Valley Fever.
    - Half-face respirators equipped with a minimum N-95 protection factor for use during worker collocation with surface disturbance activities. Half-face

[16] See, e.g., Cummings and others, 2010, p. 509; Schneider et al., 1997, p. 908 ("Primary prevention strategies (e.g., dust-control measures) for coccidioidomycosis in endemic areas have limited effectiveness.").

respirators equipped with N-100 or P-100 filters should be used during digging activities. Employees should wear respirators when working near earth-moving machinery.

- Prohibit eating and smoking at the worksite, and provide separate, clean eating areas with hand-washing facilities.
- Avoid outdoor construction operations during unusually windy conditions or in dust storms.
- Consider limiting outdoor construction during the fall to essential jobs only, as the risk of cocci infection is higher during this season.

3. Prevent transport of cocci outside endemic areas:
    - Thoroughly clean equipment, vehicles, and other items before they are moved off-site to other work locations.
    - Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate;
    - Load all haul trucks such that the freeboard is not less than six inches when material is transported on any paved public access road and apply water to the top of the load and cover haul trucks with a tarp or other suitable cover.
    - Provide workers with coveralls daily, lockers (or other systems for keeping work and street clothing and shoes separate), daily changing and showering facilities.
    - Clothing should be changed after work every day, preferably at the work site.
    - Train workers to recognize that cocci may be transported offsite on contaminated equipment, clothing, and shoes; alternatively, consider installing boot-washing.
    - Post warnings onsite and consider limiting access to visitors, especially those without adequate training and respiratory protection.
4. Improve medical surveillance for employees:
    - Employees should have prompt access to medical care, including suspected work-related illnesses and injuries.
    - Work with a medical professional to develop a protocol to medically evaluate employees who have symptoms of Valley Fever.
    - Consider preferentially contracting with 1-2 clinics in the area and communicate with the health care providers in those clinics to ensure that providers are aware

that Valley Fever has been reported in the area. This will increase the likelihood that ill workers will receive prompt, proper and consistent medical care.

- Respirator clearance should include medical evaluation for all new employees, annual re-evaluation for changes in medical status, and annual training, and fit-testing.
- Skin testing is not recommended for evaluation of Valley Fever.[17]
- If an employee is diagnosed with Valley Fever, a physician must determine if the employee should be taken off work, when they may return to work, and what type of work activities they may perform.

The mitigation measures identified in this comment, based on actual experience during construction of solar and wind projects in endemic areas, should be required for the Project.

6. The Staff Assessment Does Not Adequately Consider The Cumulative Impact From Diesel Back Up Generator Operations.

The Staff Assessment fails to consider the cumulative impact from diesel backup generator operations at nearby geothermal facilities. Based on a review of the authority to construct permits for geothermal projects within the vicinity of the Project Site, it is clear that a cumulative analysis of the cancer risk from exposure to diesel particulate matter (DPM) from the permitted operations is warranted. Permits[18] obtained from the District for the JJ Elmore, Vulcan, River Ranch, Salton Sea Units 1-5, and Hudson Ranch geothermal facilities all identify the presence of emergency generators operating on-site. The permitted operational time ranges from 50 to 500 hours per year. However, the cumulative emissions of air toxins, including volatile organic compounds (VOCs) such as benzene, toluene, and diesel particulate matter, have not been considered in combination with emergency generation proposed for the Project.

Given the designation of the area as a Disadvantaged Community under SB 535 and the non-attainment status of the Imperial Valley Airshed, the cumulative impacts of these emissions must be considered. The existing concentration gradient of pollutants in the community is a direct result of

[17] Short-term skin tests that produce results within 48 hours are now available. See Kerry Klein, NPR for Central California, New Valley Fever Skin Test Shows Promise, But Obstacles Remain, November 21, 2016; available at http://kvpr.org/post/new-valley-fever-skin-test-shows-promise-obstacles-remain.

[18] ATC 1890.pdf, ATC 1891.pdf, ATC 1927.pdf, ATC 2000.pdf, and ATC 3734.pdf.

ongoing emissions. Introducing additional geothermal plants with new DPM sources will only exacerbate this existing pollutant gradient. The Staff Assessment should include all stationary sources of DPM in its analysis to accurately assess the cumulative impacts of the Project on the region.

7. The Staff Assessment Fails To Adequately Address Transportation and Disposal Of Hazardous And Non-Hazardous Filter Cake Materials.

In the transportation section of the Staff Assessment, the Staff does not clarify how many of the delivery/haul/maintenance trucks include the disposal of hazardous and non-hazardous filter cakes. According to the Staff Assessment, "Any hazardous wastes (precipitated solids estimated to be approximately five percent of the filter cake, 95 percent non-hazardous is the goal) generated during construction will be collected in hazardous waste accumulation containers near the point of generation and moved to the contractor's 90-day hazardous waste storage area located onsite. The accumulated waste would subsequently be delivered to an authorized waste management facility. Hazardous wastes will be either recycled or disposed of in a licensed Class I disposal facility as appropriate."[19]

The Project is expected to generate 24,000 tons or 14,239 cubic yards of nonhazardous filter cake annually, which would be disposed of at the at the DVCM Class II facility. DVCM currently has a remaining capacity of 789,644 cubic yards (CalRecycle 2023b). The applicant identified the Copper Mountain Landfill in Yuma, Arizona as an alternative disposal option if the DVCM facility expansion is not completed in time. [20] The Copper Mountain Landfill is located at least 120 miles from the Project Site location.

The Staff Assessment's air quality, GHG, and hazard do not address the potential impacts of transporting non-hazardous wastes to an alternative site. As a result, the Staff Assessment underestimates the potential impacts on air quality, GHG generation, and hazardous waste impacts.

Additionally, the Staff Assessment is does not address disposal of hazardous wastes from the Project Site. Based on other geothermal projects in the area, it is my understanding that the Project's hazardous filter cake may be disposed of at the Copper Mountain Landfill in Yuma, Arizona. These truck trips alone could significantly increase the criteria air pollutant and GHG emissions above the amounts estimated in the Staff Assessment. The Staff must address these concerns prior to approving

[19] Staff Assessment. Pg 3-14.

[20] Staff Assessment. Pg 5.12-6

the Project.

8. The Staff Assessment Does Not Describe Emergency Response Capabilities for Hazardous Waste Incidents.

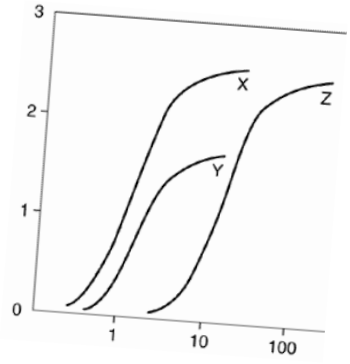
The Calipatria Fire Department (CFD) is listed as the primary emergency responder for the Project site, but the Staff Assessment fails to describe whether personnel are trained to deal with hazardous waste that will be generated and stored onsite. The Staff Assessment notes that the Project Site is located within the jurisdiction of Imperial County Fire Department (ICFD) and CFD. CFD's lone station at 125 North Park Avenue, Calipatria, California, is approximately 6 miles southeast of the Project and serves as the primary responding agency. However, the Staff Assessment does not include an evaluation of the CFD's or ICFD's abilities to handle release(s) of hazardous wastes from the Project Site or to triage workers potentially exposed to radioactive materials and hazardous wastes. This omission raises serious concerns about the preparedness and capability of emergency responders to manage potentially hazardous waste incidents effectively and safely.

To ensure safety of the workers and surrounding community, the Staff Assessment must be updated to include a detailed description of training and certification levels of CFD and ICFD personnel regarding hazardous waste management and emergency response, an assessment of CFD's and ICFD's equipment, resources, and readiness to respond to hazardous waste incidents, information on the protocols and agreements in place for coordination with other agencies in the event of a hazardous waste emergency, an up-to-date emergency response plan, and details on community safety measures. The CFD and ICFD should be consulted regarding the quantities and types of materials that will be stored, utilized, and/or generated on site consistent California Health & Safety Code Section 25501(h), i.e, a hazardous disclosure packet. Additionally, the disclosure packet should be updated annually to ensure that any changes in the quantities or types of waste being generated can be addressed by the Responding Agency This critical information will ensure that both workers and the community are adequately protected in the event of hazardous waste emergency and will provide a more comprehensive understanding of the Project's potential risks and the measures in place to mitigate them.

Conclusion

The facts identified and referenced in this comment letter lead me to reasonably conclude that the Project could result in significant impacts if allowed to proceed.

Sincerely,



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James J. J. Clark, Ph.D.

Principal Toxicologist

Toxicology/Exposure Assessment Modeling

Risk Assessment/Analysis/Dispersion Modeling

Education:

Ph.D., Environmental Health Science, University of California, 1995

M.S., Environmental Health Science, University of California, 1993

B.S., Biophysical and Biochemical Sciences, University of Houston, 1987

Professional Experience:

Dr. Clark is a well-recognized toxicologist, air modeler, and health scientist. He has 30 years of experience in researching the effects of environmental contaminants on human health including environmental fate and transport modeling (SCREEN3, AEROMOD, ISCST3, Johnson-Ettinger Vapor Intrusion Modeling, RESRAD, GENII); exposure assessment modeling (partitioning of contaminants in the environment as well as PBPK modeling); conducting and managing human health risk assessments for regulatory compliance and risk-based clean-up levels; and toxicological and medical literature research.

SELECTED AIR MODELING RESEARCH/PROJECTS

Client(s) - Confidential

Dr. Clark performed a historical dose reconstruction for community members from an active 700 acre petroleum refinery in Los Angeles. The analysis included a multi-year dispersion model was performed in general accordance with the methods outlined by the U.S. EPA and the SCAQMD for assessing the health impacts in Torrance, California. The results of the analysis are being used as the basis for injunctive relief for the communities surrounding the refinery.

Client(s) – Multiple

Indoor Air Evaluations, California: Performed multiple indoor air screening evaluations and risk characterizations consistent with California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) methodologies. Characterizations included the use of DTSC's

modified Johnson & Ettinger Model and USEPA models, as well as the attenuation factor model currently advocated by Cal/EPA's Office of Environmental Health and Hazard Assessment (OEHHA).

Client – Adams, Broadwell, Joseph Cardozo, P.C.

Dr. Clark has performed numerous air quality analyses and risk assessments of criteria pollutants, air toxins, and particulate matter emissions for sites undergoing evaluation via the California Environmental Quality Act (CEQA) process. The analyses include the evaluation of Initial Study (IS) and Environmental Impacts Reports (EIR) for each project to determine the significance of air quality, green house gas (GHG), and hazardous waste components of the projects. The analyses were compiled as comment letters for submittal to oversight agencies.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of criteria pollutants, air toxins, and particulate matter emissions from a carbon black production facility to determine the impacts on the surrounding communities. The results of the dispersion model were used to estimate acute and chronic exposure concentrations to multiple contaminants and were be incorporated into a comprehensive risk evaluation.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of air toxins and particulate matter emissions from a railroad tie manufacturing facility to determine the impacts on the surrounding communities. The results of the dispersion model have been used to estimate acute and chronic exposure concentrations to multiple contaminants and have been incorporated into a comprehensive risk evaluation.

PUBLIC HEALTH/TOXICOLOGY

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members from radiologically impacted material (RIM) releases from an adjacent landfill. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in North St. Louis County, Missouri.

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark managed the oversight of the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility for the City of Santa

Clarita. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Immanent and Substantial Endangerment Order. Dr. Clark assisted the impacted municipality with the development of remediation strategies, interaction with the responsible parties and stakeholders, as well as interfacing with the regulatory agency responsible for oversight of the site cleanup.

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members exposed to radioactive waste released into the environment from legacy storage facilities. The releases resulted in impacts to soils, sediments, surface waters, and groundwater in the vicinity of the sites. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in the community.

Client: Confidential

Dr. Clark performed a dose assessment of an individual occupationally exposed to metals and silica from fly ash who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding his exposure and later development of cancer.

Client: Brayton Purcell, Novato, California

Dr. Clark performed a toxicological assessment of residents exposed to methyl-tertiary butyl ether (MTBE) from leaking underground storage tanks (LUSTs) adjacent to the subject property. The symptomology of residents and guests of the subject property were evaluated against the known outcomes in published literature to exposure to MTBE. The study found that residents had been exposed to MTBE in their drinking water; that concentrations of MTBE detected at the site were above regulatory guidelines; and, that the symptoms and outcomes expressed by residents and guests were consistent with symptoms and outcomes documented in published literature.

Client: Confidential

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to hexavalent chromium who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding her exposure and later development of cancer.

Client: Covanta Energy, Westwood, California

Evaluated health risk from metals in biosolids applied as soil amendment on agricultural lands. The biosolids were created at a forest waste cogeneration facility using 96% whole tree wood chips and 4 percent green waste. Mass loading calculations were used to estimate Cr(VI) concentrations in agricultural soils based on a maximum loading rate of 40 tons of biomass per acre of agricultural soil. The results of the study were used by the Regulatory agency to determine that the application of biosolids did not constitute a health risk to workers applying the biosolids or to residences near the agricultural lands.

Client: Kaiser Venture Incorporated, Fontana, California

Prepared PBPK assessment of lead risk of receptors at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

RISK ASSESSMENTS/REMEDIAL INVESTIGATIONS

Kaiser Ventures Incorporated, Fontana, California

Prepared health risk assessment of semi-volatile organic chemicals and metals for a fifty-year old wastewater treatment facility used at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

ANR Freight - Los Angeles, California

Prepared a comprehensive Preliminary Endangerment Assessment (PEA) of petroleum hydrocarbon and metal contamination of a former freight depot. This evaluation was as the basis for reaching closure of the site with lead regulatory agency.

Kaiser Ventures Incorporated, Fontana, California

Prepared comprehensive health risk assessment of semi-volatile organic chemicals and metals for 23-acre parcel of a 1,100-acre former steel mill. The health risk assessment was used to determine clean up goals and as the basis for granting closure of the site by lead regulatory agency. Air dispersion modeling using ISCST3 was performed to determine downwind exposure point concentrations at sensitive receptors within a 1 kilometer radius of the site. The results of the health risk assessment were presented at a public meeting sponsored by the Department of Toxic Substances Control (DTSC) in the community potentially affected by the site.

Unocal Corporation - Los Angeles, California

Prepared comprehensive assessment of petroleum hydrocarbons and metals for a former petroleum service station located next to sensitive population center (elementary school). The assessment used a probabilistic approach to estimate risks to the community and was used as the basis for granting closure of the site by lead regulatory agency.

Client: Confidential, Los Angeles, California

Managed oversight of remedial investigation most contaminated heavy metal site in California. Lead concentrations in soil excess of 68,000,000 parts per billion (ppb) have been measured at the site. This State Superfund Site was a former hard chrome plating operation that operated for approximately 40-years.

Client: Confidential, San Francisco, California

Coordinator of regional monitoring program to determine background concentrations of metals in air. Acted as liaison with SCAQMD and CARB to perform co-location sampling and comparison of accepted regulatory method with ASTM methodology.

Client: Confidential, San Francisco, California

Analyzed historical air monitoring data for South Coast Air Basin in Southern California and potential health risks related to ambient concentrations of carcinogenic metals and volatile organic compounds. Identified and reviewed the available literature and calculated risks from toxins in South Coast Air Basin.

IT Corporation, North Carolina

Prepared comprehensive evaluation of potential exposure of workers to air-borne VOCs at hazardous waste storage facility under SUPERFUND cleanup decree. Assessment used in developing health based clean-up levels.

Professional Associations

American Public Health Association (APHA)
Association for Environmental Health and Sciences (AEHS)
American Chemical Society (ACS)
International Society of Environmental Forensics (ISEF)
Society of Environmental Toxicology and Chemistry (SETAC)

Publications and Presentations:

Books and Book Chapters

Sullivan, P., **J.J. J. Clark,** F.J. Agardy, and P.E. Rosenfeld. (2007). *Synthetic Toxins In The Food, Water and Air of American Cities*. Elsevier, Inc. Burlington, MA.

Sullivan, P. and **J.J. J. Clark**. 2006. *Choosing Safer Foods, A Guide To Minimizing Synthetic Chemicals In Your Diet*. Elsevier, Inc. Burlington, MA.

Sullivan, P., Agardy, F.J., and **J.J.J. Clark**. 2005. *The Environmental Science of Drinking Water*. Elsevier, Inc. Burlington, MA.

Sullivan, P.J., Agardy, F.J., **Clark, J.J.J.** 2002. *America's Threatened Drinking Water: Hazards and Solutions*. Trafford Publishing, Victoria B.C.

Clark, J.J.J. 2001. "TBA: Chemical Properties, Production & Use, Fate and Transport, Toxicology, Detection in Groundwater, and Regulatory Standards" in *Oxygenates in the Environment.* Art Diaz, Ed.. Oxford University Press: New York.

Clark, J.J.J. 2000. "Toxicology of Perchlorate" in *Perchlorate in the Environment.* Edward Urbansky, Ed. Kluwer/Plenum: New York.

Clark, J.J.J. 1995. Probabilistic Forecasting of Volatile Organic Compound Concentrations At The Soil Surface From Contaminated Groundwater. UMI.

Baker, J.; **Clark, J.J.J.**; Stanford, J.T. 1994. Ex Situ Remediation of Diesel Contaminated Railroad Sand by Soil Washing. Principles and Practices for Diesel Contaminated Soils, Volume III. P.T. Kostecki, E.J. Calabrese, and C.P.L. Barkan, eds. Amherst Scientific Publishers, Amherst, MA. pp 89-96.

Journal and Proceeding Articles

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equialency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. Organohalogen Compounds, Volume 70 (2008) page 002254.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. Organohalogen Compounds, Volume 70 (2008) page 000527

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** (2007). "Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." *Environmental Research.* 105:194-199.

Rosenfeld, P.E., **Clark, J. J.,** Hensley, A.R., and Suffet, I.H. 2007. "The Use Of An Odor Wheel Classification For The Evaluation of Human Health Risk Criteria For Compost Facilities" Water Science & Technology. 55(5): 345-357.

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** 2006. "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants –

DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2005. "The Value Of An Odor Quality Classification Scheme For Compost Facility Evaluations" The U.S. Composting Council's 13th Annual Conference January 23 - 26, 2005, Crowne Plaza Riverwalk, San Antonio, TX.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2004. "The Value Of An Odor Quality Classification Scheme For Urban Odor" WEFTEC 2004. 77th Annual Technical Exhibition & Conference October 2 - 6, 2004, Ernest N. Morial Convention Center, New Orleans, Louisiana.

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Clark, J.J.J., Brown, A., Rodriguez, R. 1998. The Public Health Implications of MtBE and Perchlorate in Water: Risk Management Decisions for Water Purveyors. Proceedings of the National Ground Water Association, Anaheim, CA, June 3-4, 1998.

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ATTACHMENT C

September 1, 2024

Ms. Kelilah D. Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Preliminary Staff Assessment for the Morton Bay Geothermal Project

Dear Ms. Federman:

This letter contains my comments on the Preliminary Staff Assessment ("PSA") prepared by the California Energy Commission ("CEC") for the Morton Bay Geothermal Project ("Project"). BHE Renewables ("Applicant") proposes to construct and operate a 157-megawatt electricity generating facility on 51 acres of land southeast of the Salton Sea. In addition to the electricity generating facility, the Project involves the construction and operation of 20 wells; several miles of pipelines; a gen-tie line, substation, and switching station; a brine pond and service water pond; and several borrow pits, staging/parking areas, and construction camps.

I am an environmental biologist with 30 years of professional experience in wildlife biology and natural resources management. I have served as a biological resources expert for over 200 projects in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues; preparation and peer review of environmental compliance documents prepared pursuant to the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA"); and preparation of written comments that address deficiencies with CEQA and NEPA documents. My work has included written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A copy of my current curriculum vitae is attached hereto.

The comments herein are based on my review of the documents in the CEC's Docket Log (including the PSA, Application for Certification ["AFC"], and Data Responses); a review of scientific literature pertaining to biological resources that occur in the Project area; my work on other projects in Imperial Valley; and the knowledge and experience I have acquired during my 30-year career in the field of natural resources management.

PROJECT DESCRIPTION ISSUES

Well Pads

The PSA provides inconsistent information on the number of well pads associated with the Project. According to the Project Description chapter of the PSA, the Project would have 5 production well pads, 6 injection well pads, and 1 back-up injection well pad.[1] The Biological Resources chapter of the PSA states the Project would have 6 production well pads, 5 injection well pads, and 1 back-up injection well pad.[2] However, Figure 3-3 in the PSA depicts 5 production well pads, 3 injection well pads, 1 back-up production well pad, and 1 back-up injection well pad. This issue is exacerbated by the PSA's failure to provide a map that shows the Project's current footprint (i.e., all ground disturbance areas) in relation to land cover types (i.e., vegetation communities or habitat types). These deficiencies preclude the ability to validate the impact calculations provided in PSA Table 5.2-5 (*Temporary and Permanent Impacts to Vegetation Communities and Other Land Cover Types*).

Gen-tie Route

Figure 3-3 in the PSA depicts the Project's facilities, including the gen-tie line route along Garst Road. Figure 3-3 suggests the gen-tie line would be located on the west side of Garst Road, however, given the scale of the figure, it is impossible to determine where specifically the gen-tie line, power poles, and pull sites would be located. The Applicant's Revised General Arrangement Refinement package provides maps at a larger scale, but the larger-scale maps exclude all but the northernmost portion of the gen-tie route along Garst Road (*see* TN 253188, Figure 2-7aR). In contrast to what is suggested on PSA Figure 3-3, the Applicant's "Aquatic Resource Delineation Documentation" (TN 249725, AFC Appendix 5.2C, Figure 1D) suggests the gen-tie line would be located on the east side of Garst Road. Because the specific location of the gen-tie line has implications on impacts to sensitive biological resources, the PSA must provide large-scale maps that depict the specific locations of the gen-tie line, power poles, and pull sites.

Access Roads

The AFC states that development of the wells and well pads would entail construction of an *access road* that will be surfaced with paving or Class 2 road base material.[3] The AFC further states that: "[e]xisting maintenance roads and previously disturbed areas will be used during construction to the maximum extent practical within the pipeline ROW [right-of-way]. *Road improvements* may be required to enable the passage of construction vehicles."[4] For the gen-tie line, the AFC states: "[c]onstruction-related impacts associated with the construction of the gen-tie line from the MBGP plant site to the IID switching station primarily involve *access road construction*, ROW and worksite clearing, foundation installation …"[5]

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[1] PSA, p. 3-19.
[2] PSA, p. 5.2-2.
[3] TN 249723, p. 5.11-17.
[4] TN 249723, p. 5.11-18.
[5] TN 249723, p. 5.11-19.

The PSA at page 3-24 states: "[p]lant operators would drive the pipeline routes daily to perform visual inspections." There are no roads along substantial portions of the Project's pipeline and gen-tie line routes (TN 253188). In addition, several of the proposed wells and well pads are located in areas away from existing roads, and the Imperial Irrigation District ("IID") has stated "[t]he proponents may not use IID's canal or drain banks to access the project site."[6] Therefore, it appears that the Project would require a substantial amount of road construction.

The Project Description chapter of the PSA does not discuss the roads that would need to be constructed and improved to enable: (a) access to the wells, well pads, and gen-tie line ROW; and (b) plant operators to drive the pipeline routes for daily inspections. In addition, the Project's access roads are not depicted on any maps, nor or they accounted for in the PSA's assessment of impacts to sensitive biological resources.

In addition to failing to discuss road construction associated with the Project, the PSA does not discuss the amount of clearing that would be required within the gen-tie line ROW. This information is not provided in the AFC either; the AFC merely states: "IID requirements, the National Electrical Safety Code (NESC), and operational considerations determine the width of the ROW. Specific ROW requirements depend on the structure type, height, span, and conductor configuration."[7]

Information on the location(s) and amount of road construction, road improvements, and vegetation clearing (within the gen-tie line ROW) is critical to assessing the Project's direct and indirect impacts on sensitive biological resources. If road construction and improvements *will not* be conducted for the Project, the PSA must explain how the Applicant would be able to access remote work sites, and drive the pipeline route, without using IID's canal or drain banks for access, and without causing additional impacts beyond those addressed in the PSA.

Borrow Pits

The Project includes 4 borrow pit sites that total approximately 460 acres. These borrow pits would also be used by the Black Rock Geothermal Project and the Elmore North Geothermal Project. The Applicant estimates that 5 feet of excavation would occur at the borrow pit sites.[8] According to the PSA: "[b]orrow pits would provide fill for the project site if needed, although it is assumed that excavated materials from the project site would be suitable for backfill (Jacobs 2023a, pp. 2-41 and 5.11-19). Topsoil removed from the project site would be set aside and stockpiled at the borrow sites for use as topsoil in restoring the borrow sites to preconstruction conditions as much as possible (Jacobs 2023a, p. 5.11-20)."[9]

The PSA and AFC provide no indication that topsoil from the borrow pits would be stockpiled and salvaged to help restore the borrow pits upon completion of construction activities. Indeed,

[6] TN 251869.
[7] TN 249723, p. 2-45.
[8] Figures 2-7a through -7d in Elmore North Geothermal Project Data Request Response Set 1 Part 13 (TN #252490-13).
[9] PSA, p. 5.8-16.

the AFC (p. 5.11-21) states the following regarding impacts to the borrow pits: "[i]mpacts during excavation and export of material to the Project site may include alteration of the existing soil profile, increased soil erosion, and soil compaction. Alteration of the existing soil profiles, including mixing of soils and rock, will alter the physical, chemical, and biological characteristics of the native soils and underlying geology."

Each of the three plants will be located on approximately 51 acres (TN 257655). Collectively, this totals 153 acres of land that could potentially provide topsoil material for restoration of the borrow pits. Therefore, even if topsoil removed from the 3 project sites provides suitable material for restoration of the borrow pit sites, it appears there would be a deficit of approximately 307 acres of topsoil. Although the PSA states the borrow pits would be restored "as much as possible,"[10] it fails to discuss the fate of the borrow pit sites if it is not possible to fully restore them (e.g., due to the lack of topsoil).

Pile Driving

The PSA states that the Project's pile driving activities would generate noise levels of 104 dBA Leq at 50 feet, if unsilenced.[11] Because the metric Leq represents the average noise level over a period of time (usually 1 hour), and because pile driving is an intermittent activity,[12] the maximum noise level (Lmax) generated by each pile drive would be substantially more than 104 dBA. The PSA does not identify the maximum (Lmax) noise levels associated with Project construction and operation activities. This precludes assessment of the Applicant's ability to comply with COC/MM BIO-14, which establishes thresholds for the Project's maximum noise levels.

The PSA does not identify the specific locations where pile driving would occur. In addition, although the PSA identifies 3 methods for reducing the noise level of pile driving,[13] it does not identify how much each method (e.g., use of impact cushions) would reduce the pile driving noise level. These deficiencies preclude the ability to assess pile driving noise levels at habitat occupied by the Yuma Ridgway's rail, least bittern, and other special-status bird species.

ENVIRONMENTAL SETTING

Sensitive Natural Communities

The *Allenrolfea occidentalis* Shrubland Alliance (iodine bush scrub) is considered a sensitive natural community.[14] The PSA at page 5.2-5 states: "[o]ne [borrow pit] site at Brandt Road contains scattered iodine bush, one saltcedar tree (*Tamarix* sp.), and stacks of hay bales." The membership rules for the *Allenrolfea occidentalis* Shrubland Alliance are: > 2% absolute cover in the shrub canopy, and no other species with greater or equal cover.[15] Based on the PSA's

[10] PSA, p. 5.8-16.
[11] PSA, p. 5.9-7.
[12] *Id*.
[13] *Id*.
[14] PSA, p. 5.2-9.
[15] Sawyer JO, Keeler-Wolf T, Evens JM. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society in collaboration with California Department of Fish and Game. Sacramento, California. p. 335.

description and imagery available from Google Earth, a portion of the borrow pit site at Brandt Road should have been classified as iodine bush scrub (but was instead classified as "disturbed with vegetation").[16] As a result, the PSA does not accurately quantify Project impacts to the *Allenrolfea occidentalis* Shrubland Alliance.

Special-Status Plants

The PSA states that the Applicant's biologists conducted botanical surveys in accordance with the 2018 California Department of Fish and Wildlife ("CDFW") and 1996 U.S. Fish and Wildlife Service ("USFWS") protocols.[17] This statement is not supported by sufficient evidence. The CDFW survey protocol states "[i]t is appropriate to conduct a botanical field survey when: Natural (or naturalized) vegetation occurs in an area that may be directly or indirectly affected by a project (project area), and it is unknown whether or not special status plants or sensitive natural communities occur in the project area."[18]

The AFC states that botanical surveys were conducted by driving 15 to 20 miles per hour along dirt and paved roads throughout the entire Biological Study Area ("BSA"), and when *natural communities* with potentially suitable habitat for special-status plants were encountered, the botanists conducted surveys in accordance with the CDFW and USFWS protocols.[19] This suggests the botanists did not survey areas with "naturalized" vegetation in accordance with the CDFW protocol. However, because the AFC does not identify the areas where the botanists got out of their vehicle(s) to conduct protocol-level surveys, CURE Data Request 267 asked the Applicant to identify the areas that were surveyed according to the protocols.[20] The Applicant's response did not provide the requested information; the response states:

> "Botanists used professional judgement when necessary to conduct pedestrian surveys in potentially suitable special-status plant habitat, including natural vegetation types … Natural vegetation and land cover types are defined as unmodified by human activities (NatureServe 2004). Natural vegetation types within the BSA include Barren, Invasive Southwest Riparian Woodland and Shrubland, North American Arid West Emergent Marsh, and North American Warm Desert Playa."[21]

The Applicant's response confirms that the botanists did not survey all areas with *naturalized* vegetation that may be directly or indirectly affected by the Project, as recommended in the CDFW protocol. In addition, the response confirms that the botanists did not survey areas that were classified as "Disturbed with Vegetation," which includes the 20-acre wetland south of McDonald Road where the Applicant proposes two production wells (MB-04 and MB-05) and other facilities (TN 253188, Figure 5.2-4R and Figure DA4.0-1aR). Special-status plants have the potential to occur in that wetland.

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[16] TN 253188.
[17] PSA, pp. 5.2-5 and -23.
[18] California Department of Fish and Wildlife. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. p. 4.
[19] AFC, p. 5.2-14.
[20] TN 254603.
[21] *Id*.

In November 2023, the Applicant revised the boundaries of some Project components. The revised Project boundaries are shown in Figure 1-4R of the Morton Bay Geothermal Project Revised General Arrangement Refinement Package (TN 253188). One of the revisions included placement of a construction laydown and parking area on an approximately 36-acre parcel southwest of the intersection of Davis Road and McDonald Road. This parcel was previously managed as waterfowl habitat (open water) but has been drained. Based on Google Earth imagery, it appears that patches of native or naturalized vegetation have subsequently colonized the parcel. The Yuma Ridgway's rail survey report that was prepared for the Project (TN 251679) describes land cover at the parcel as "comprised of fragmented areas of bare ground and woody shrubs." The parcel lies outside of the Project's BSA, and thus was not surveyed for special-status plants or other sensitive biological resources.[22] This deficiency has implications on the PSA's ability to provide an accurate description of the Project's environmental setting and impacts.

Habitat Mapping

The AFC states that habitat mapping was conducted in CEC-mandated Project buffers (one mile for the geothermal plant area and 1,000 feet for well pads, pipelines, auxiliary features, and linear features).[23] The AFC further states that special-status species within a one-mile buffer of the Project could be subject to impacts from construction and operation of the Project.[24] Therefore, the potential for the Project to have significant indirect impacts on special-status species is partially dependent on the types and configuration of habitats within the one-mile buffer.

Neither the PSA nor the AFC provides a map depicting all of the habitats within the CEC-mandated Project buffers.[25] Indeed, the map provided by the Applicant (TN 253188, Figure 5.2-4R) only depicts land cover and vegetation types within the Project footprint, pipeline right-of-way ("ROW"), and within a 150-foot buffer of the proposed well pads. This precludes the ability to assess indirect impacts to special-status species that may occur in habitats surrounding the Project site. For example, Yuma's Ridgway's rails were detected in unmapped habitat areas south of W Schrimpf Road (TN 251679). The subspecies is also known to occur in (unmapped) habitat immediately west of the proposed geothermal plant area.[26] The lack of a map that depicts habitats within the Project buffers precludes understanding of other areas that could contain rails or other special-status species, which in turn affects the ability to assess the adequacy and feasibility of the COCs/MMs in the PSA.

[22] AFC, Figure 5.2-4.
[23] AFC, p. 5.2-13.
[24] AFC, p. 5.2-9.
[25] *See* Figure 1-4R in the Morton Bay Geothermal Project Revised General Arrangement Refinement Package (TN 253188)
[26] Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49 p.

Yuma Ridgway's Rail and Other Special-status Marsh Species

The PSA's description of the environmental setting with respect to the Yuma Ridgway's rail is based on one source of information: the survey report submitted by the Applicant (TN251679). The survey report provides a map of the survey stations, and it identifies the survey stations where Yuma Ridgway's rails were detected. Although least bitterns (a California Species of Special Concern) were detected during the surveys, the survey report does not identify the survey stations where this species was detected. This precludes the ability to assess the sufficiency of BIO-13, BIO-14, and other COCs/MMs for "marshland species" (which includes the least bittern).

The mitigation measures incorporated into BIO-13 and BIO-14 are triggered by construction and operations activities within and adjacent to "rail habitat" (BIO-13) or "suitable rail habitat" (BIO-14). The PSA does not identify where this rail habitat is located in relation to the Project's facilities, nor is it possible for the public to understand where the habitat might be located because there is no map of habitats within the Project buffers.

Page 5.2-100 of the PSA states: "[i]mpacts that affect habitat suitability and occupancy of rail species at W Schrimpf Road and Morton Bay would be considered a significant impact." This suggests that the only location where the Project could affect rail habitat is where W Schrimpf Road meets Morton Bay, which is incorrect. Perhaps CEC Staff ("Staff") meant habitat adjacent to W Schrimpf Road and habitat around Morton Bay, but this needs to be clarified so the public understands all the locations whether the Project could impact habitat suitability and occupancy of rail species.

Habitat is defined by occupancy of the organism. Therefore, mitigation that is conditioned on the presence of "habitat" or "suitable habitat" is only effective if it incorporates comprehensive data on occupancy. While the Applicant's survey report provides valuable data pertaining to Yuma Ridgway's rail occupancy at the 24 survey stations in 2022, those data represent only a fraction of the available data. At a minimum, additional data are available from the Sonny Bono Salton Sea National Wildlife Wildlife Refuge ("SBSSNWR"),[27] the USGS,[28] and the University of Idaho.[29] These data are critical to Staff's ability to properly analyze the Project's direct and indirect impacts on the Yuma Ridgeway's rail, least bittern, and other special-status marsh birds.

PROJECT IMPACTS

The PSA Fails to Adequately Analyze Impacts on IID Drains and Canals

CEC Staff ("Staff") used the Applicant's GIS data to analyze impacts to vegetation communities and land cover types.[30] Based on that analysis, Staff determined the Project could temporarily impact 18.95 acres of drains and canals, and permanently impact 1.05 acres of drains and

[27] Personal communication with Razia Shafique-Sabir, SSSBNWR, on 10 July 2024.
[28] *See* https://www.sciencebase.gov/catalog/item/62509e68d34e21f8276d174f
[29] TN 251679, p. 7: "One of the rails had a GPS transmitter and its movements are being monitored by our research team at the University of Idaho."
[30] PSA, p. 5.2-124.

canals.[31] This is reflected in Table 5.2-5 of the PSA, which quantifies impacts to the land cover types in the Project area. However, the footnote to Table 5.2-5 states the following: "[t]his analysis concludes that canals and drains would not be impacted. Temporary and permanent impacts to canals and drains are shown for informational purposes." The contradictory information provided in the PSA makes it impossible to understand whether the Project would impact drains and canals. As the PSA acknowledges, some of the drains and canals serve an important function in providing habitat for the desert pupfish, Yuma Ridgway's rail, least bittern, burrowing owl, and other special-status species.

The ROW for the Project's pipelines and gen-tie line cross numerous drains and canals. At some locations, the pipeline(s) changes direction near a drain or canal. Presumably, these locations would require piers (support structures) that involve 20 feet of excavation to install the piers.[32] According to the AFC, access roads would be constructed (or widened) in the pipeline and gen-tie line ROWs. The PSA does not discuss how the pipelines and access roads would cross drains and canals without causing impacts to those features.

Desert Pupfish

Desert pupfish occur in the river deltas, irrigation ditches, and marshes along the edge of the Salton Sea.[33] The Applicant did not conduct surveys for the pupfish, but instead elected to assume presence of the species in the Project area.[34]

The volume, depth, and quality of water in IID's drains are critical components of desert pupfish habitat. For example, when low water levels occur, desert pupfish become more susceptible to predation by birds and competition with exotic fish species.[35] Therefore, even if the Project does not directly impact canals and drains, taking agricultural fields out of production to enable construction of the Project could indirectly impact desert pupfish habitat by reducing the volume of water in drains that provide habitat for desert pupfish. The PSA provides the following discussion of this issue:

> "Reduced agricultural return flow associated with the project, and how it would affect desert pupfish habitat and vegetation communities, is currently underway with IID as part of the Water Supply Agreement and impact study analysis (TN254015; TN254603). However, annual flow in the canals and drains depends on IID water demands and is complicated by declines in water in the area due to climate fluctuations, agricultural conservation measures, cropping practices, and decrease inflows from Mexico. Though a conversion of one parcel to agricultural use may result in a small decline in agricultural drainage, that decline on water

[31] *Id.*
[32] AFC, Figure 2-7a.
[33] PSA, p. 5.2-19.
[34] PSA, p. 5.2-7.
[35] CH2MHILL. 2002. Draft EIR/EIS for the IID Water Conservation and Transfer Project/Draft Habitat Conservation Plan. Vol 2, Appendix A to Appendix C. https://www.iid.com/water/library/qsa-water-transfer/environmental-assessments-permits/draft-eir-eis. *See also* Imperial Irrigation District. 2017 Nov. Draft Initial Study for the Red Hill Bay Wetlands Restoration Project. https://ecos.fws.gov/ServCat/DownloadFile/161293

> use is minimal. As such, indirect alterations to hydrology due to conversion of agricultural is considered less than significant."[36]

There are three main problems with the PSA's analysis. First, the PSA provides contradictory information. The PSA begins by stating that impact analysis is currently underway with IID as part of the Water Supply Agreement. This indicates that the reduced agricultural return flows associated with the Project could affect desert pupfish habitat. The PSA then, without the supporting impact analysis from IID, makes the determination that the impact would be less than significant.

Second, Staff's rationale that "conversion of one parcel" would have a minimal effect on pupfish habitat is unsupported. Moreover, the Project does not consist of one parcel, but rather, numerous parcels (totaling over 1,300 acres) that would be taken out of agricultural production.[37]

Third, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the cumulative reduction in agricultural return flows due to the Project and other geothermal projects that have been proposed in the area (e.g., Black Rock Geothermal Project, Elmore North Geothermal Project, Energy Source Mineral ATLIS Project, Hudson Ranch New Well 13-4 Project,[38] and Hell's Kitchen Project). The cumulative reduction in agricultural return flows from these projects could have a significant impact on habitat for pupfish in IID drains and river deltas at the Salton Sea. On 24 Aug 2023, IID submitted a letter to the CEC stating the following:

> "Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 … An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea." (TN 251870)

The cumulative impacts analysis requested by IID was not provided by the Applicant, nor is it in the PSA. As a result, and for the reasons discussed above, direct, indirect, and cumulative impacts on the desert pupfish remain potentially significant.

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[36] PSA, p. 5.2-89.
[37] PSA, p. 5.15-1. *See also* IID Interactive GIS Water Service Area Map. https://mygis.iid.com/portal/apps/webappviewer/index.html?id=a33cfeb3714f4eb8a1c85320613a2d1b
[38] Referred to as "Geo Hudson Ranch (HR1)" in the PSA.

Impacts from Dewatering

The PSA at page 5.16-9 states:

> "According to the application's project description, soil would be disturbed to a maximum depth of 30 feet below grade while installing foundation piers using drilling equipment (Jacobs 2023a). It is therefore likely that groundwater could be encountered during excavation activities and dewatering would be necessary. If dewatering is necessary, and the discharge is found to be uncontaminated, the project owner would be permitted to discharge this to waters of the U.S. under the Construction General Permit."

The PSA does not discuss where specifically the water might be discharged, nor does it analyze how this discharge of water would affect special-status species and their habitat. For example, discharge of high-velocity (> 1.0 foot per second) and presumably turbid water into areas occupied by desert pupfish would kill and injure pupfish, which are not adapted to those water conditions.[39] In addition, discharge of water in areas north or west of the proposed energy facility could: (a) scour vegetation and negatively impact water quality in habitat occupied by special-status species, and (b) flood nest sites of the Yuma Ridgway's rail, least bittern, redhead, and western snowy plover (among other special-status species). Staff's proposed COC/MM BIO-9 would not avoid these potentially significant impacts because BIO-9 only applies to dewatering of irrigation drains or ponded water at the end of drains, not to dewatering that may be necessary to install the Project's foundation piers.

Wetlands Impacted by IID's O-N Drain Connector Project

The PSA discusses IID's O-N Drain Connector Project, which resulted in direct and indirect impacts to wetlands and severed the intermittent hydrological connection from those wetlands to Morton Bay.[40] The PSA acknowledges that IID is required to prepare a Restoration Plan (per the Consent Order issued by the EPA on May 23, 2022),[41] which requires removal of fill that directly impacted the wetlands and restoration of hydrology to indirectly impacted wetlands.[42] The PSA further acknowledges that the Applicant classified the land cover type in this wetland area as "Disturbed with Vegetation."[43] The PSA fails to rectify this error (misclassification). As stated in the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* issued by the California Water Boards:

> "The wetland definition, like the federal definition, also incorporates the concept of 'normal circumstances.' This provides that if the wetland hydrology or hydrophytic vegetation normally present is physically altered by a natural,

[39] ESA. 2017 Feb. Final Salton Sea Species Conservation Habitat: Desert Pupfish Adaptive Management and Monitoring Plan. [accessed 2024 Aug 27]. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Design-Build/Salton-Sea-Reports/10_Pupfish_Adapt_Mgmt_Monitoring_Plan_a_y19.pdf
[40] PSA, p. 5.2-81.
[41] *See* TN 252694, Attachment 3.
[42] PSA, p. 5.2-81.
[43] *Id.*

> inadvertent or purposeful event, the area should be evaluated as it existed before the event."[44]

Thus, the wetlands impacted by the O-N Drain Connector Project should have been classified as wetlands (i.e., Emergent Marsh/Cattail Marsh), especially because restoration of the wetlands is a reasonably foreseeable future condition due to the EPA's Consent Order.

The PSA states the following regarding Project impacts to the wetlands:

> "CDFW also requested confirmation that the hydrologic connection for previously inundated area has been permanently severed (i.e., there is no plan for future inundation of dry areas). As discussed in the methods section under Aquatic Resources, the IID O-N Drain Connector project resulted in direct and indirect impacts to wetlands that would require restoration. Based on the project boundaries, staff concurs that these disturbed wetlands are not within potential disturbance areas and would not be impacted by the project. Access roads and berms separate the IID disturbed wetland area from the project site, and therefore would not result in any additional indirect impacts due to severed hydrology."[45]

Staff's determination regarding the Project's boundaries in relation to the wetlands (hereafter "O-N wetlands") is inconsistent with the map accompanying EPA's Consent Order. To the contrary, the Project involves construction of two production wells (MB-04 and MB-05), a well pad, the associated pipeline, and a portion of the gen-tie line in the wetlands (Figure 1, below). There are no access roads or berms that separate the O-N wetland area from these Project features, as asserted in the PSA.

According to the AFC (TN 249723):

1) Construction of the well pads will involve clearing and grubbing, grading, construction of raised earthen berms, and construction of access roads. The well pads will be raised approximately 1.5 feet above the adjacent grade, and the high temperature well head valve area (commonly called the cellar) will be fenced. The well pads and associated access roads will be surfaced with paving or Class 2 road base material.
2) Construction of the pipeline will involve clearing and grubbing, and excavation for pipeline supports.
3) Construction of the gen-tie line will involve access road construction, clearing vegetation within the ROW and worksite, and 30 feet of excavation for the foundation of each power pole.

Installation of these Project facilities in the O-N wetlands would prevent IID from being able to restore the wetlands. The PSA fails to analyze the implications of this conflict, including how it might affect the Project's currently proposed footprint.

[44] State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. p. 55.
[45] PSA, p. 5.2-132.

The Applicant's consultant conducted Yuma Ridgway's rail surveys in the Project area during spring 2022. During all three survey replicates, Yuma Ridgway's rails were detected at the O-N wetlands (TN 251679). This indicates that although the wetlands were disturbed by IID in fall 2019, the wetlands remained occupied by Yuma Ridgway's rails in 2022.

The PSA does not specifically discuss Project impacts to rail habitat at the O-N wetlands. The PSA, however, states: "[i]mpacts that affect habitat suitability and occupancy of rail species at W Schrimpf Road and Morton Bay would be considered a significant impact."[46] Construction of two production wells, a well pad, pipeline, access roads, and gen-tie line in the wetlands would have direct impacts on habitat for the Yuma Ridgway's rail. These Project facilities would also have indirect impacts on the habitat. For example, construction of access roads for the gen-tie line, and for the wells and well pads, would eliminate, or severely alter, hydrologic connectivity with Morton Bay. As stated in the PSA: "[a]ny action that restricts waterflow into or out of occupied marshes has the potential to adversely affect occupancy of marshland species."[47] Based on my review of the Applicant's site plans (TN 253188), the Project's direct and indirect impacts would eliminate at least 50% of the rail habitat at the O-N wetlands, which is likely to negatively affect occupancy of the Yuma Ridgway's rail and other special-status marsh species.

[46] PSA, p. 5.2-100.
[47] PSA, p. 5.2-100.

Figure 1. Wetlands impacted (within red line) by IID's O-N Connector Project in relation to Project facilities. Red arrows point to road segments that must be removed to restore hydrologic connectivity with Morton Bay.[48]

[48] Adapted from TN 253188, Figure DA4.0-1aR and TN 252694, Attachment 3.

Construction Noise Impacts on Marshland Species

Pages 5.2-99 through 5.2-102 of the PSA provides analysis of impacts to the southwestern willow flycatcher, California black rail, Yuma Ridgway's rail, and Gila woodpecker (all federal or state listed species). The PSA refers to these birds as "marshland species." Among other impacts, the PSA states that construction noise could have a significant impact on marshland bird communication.[49] The PSA's analysis then focuses on the Yuma Ridgway's rail and two of staff's proposed COCs/MMs: BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring) and BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan).[50] The PSA's analysis concludes with a list of other COCs/MMs that would apply to marshland birds, and it provides Staff's determination that "[w]ith the implementation of these COC/MM, impacts to marshland birds would be reduced to less than significant levels."[51]

A fundamental flaw with the PSA's analysis is that the southwestern willow flycatcher and Gila woodpecker are not marshland species. The southwestern willow flycatcher is a riparian obligate that establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, generally near or adjacent to surface water or underlain by saturated soil.[52] The Gila woodpecker is associated with riparian woodlands, old-growth xeric-riparian wash woodlands, uplands with concentrations of large columnar cacti, dry subtropical forests, and urban residential areas.[53]

BIO-13 requires: (a) pre-activity surveys and construction monitoring for Yuma Ridgway's rail within all project areas that contain suitable habitat and the surrounding 500-foot buffer; (b) avoidance of construction activities within or adjacent to suitable habitat for Yuma Ridgway's rail during the nesting season, unless surveys verify that no nesting is occurring; and (c) reduced vehicle speed adjacent to rail habitat or burrowing owl habitat. Thus, BIO-13 does not require focused surveys and construction monitoring for the southwestern willow flycatcher and Gila woodpecker, two of the species that BIO-13 is supposed to mitigate. Furthermore, because suitable habitat for the southwestern willow flycatcher and Gila woodpecker is not equivalent to suitable habitat for the Yuma Ridgway's rail, BIO-13 would not impose temporal restrictions on construction activities within or adjacent to habitat for the southwestern willow flycatcher and Gila woodpecker, nor would it impose vehicle restrictions adjacent to that habitat.

BIO-14 requires a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot from suitable rail habitat, and it establishes a noise threshold of 60 dBA for "marshland habitat" during the breeding season. During the non-breeding season, BIO-14 requires a biological monitor if construction noise has the potential to exceed 80 dBA at

[49] PSA, p. 5.2-100.
[50] PSA, p. 5.2-101.
[51] PSA. p. 5.2-102.
[52] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
[53] California Partners in Flight. 2009. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. [accessed 2024 Aug 29]. https://partnersinflight.org/wp-content/uploads/2024/05/desert.v-1.pdf

"potential marshland habitat." If disturbance to marshland species is observed during the non-breeding season, all work shall stop and USFWS and CDFW shall be contacted for further guidance. Thus, BIO-14 has no noise thresholds or biological monitoring requirements for riparian woodlands that provide potential habitat for the southwestern willow flycatcher and Gila woodpecker.

For these reasons, the PSA's determination that BIO-13 and BIO-14 would reduce impacts on the southwestern willow flycatcher and Gila woodpecker to less than significant levels is not justified.

Southwestern Willow Flycatcher

The PSA determined that there is moderate potential for the southwestern willow flycatcher to nest and forage at the Project site.[54] The PSA further determined that the Project could have significant direct and indirect impacts on the southwestern willow flycatcher and its habitat.[55] No surveys were conducted to determine the presence or absence of flycatchers in the Project study area.

The PSA incorporates BIO-12 and several other mitigation measures for the Project's direct and indirect impacts on the southwestern willow flycatcher. BIO-12 requires a pre-activity survey for nesting birds no less than 7 and no more than 3 days prior to initiating project activities. If an active nest is detected, the Applicant's biologist would establish a 100-foot avoidance buffer around the nest.

BIO-12 does not ensure the Project's impacts to nesting flycatchers would be less than significant. The southwestern willow flycatcher breeds in dense riparian habitats and there are some periods during which willow flycatchers do not sing.[56] As a result, detecting presence of the flycatcher can be difficult. The U.S. Geological Survey, Bureau of Reclamation, and U.S. Fish and Wildlife Service have developed a survey protocol for the southwestern willow flycatcher.[57] The survey protocol distinguishes between general surveys and project-related surveys. Project-related surveys are conducted to determine the presence or absence of willow flycatchers within a site when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management.

The protocol for project-related surveys entails a minimum of 5 surveys using the call-playback technique. These 5 surveys include one survey between May 15-31, two surveys between June 1-24, and two surveys between June 25-July 17.[58] In contrast, BIO-12 requires only a single survey that would not include implementation of the call-playback technique, and whose timing could coincide with the early or late part of the breeding cycle (depending on the Applicant's construction schedule). As stated in the southwestern willow flycatcher survey protocol: "[a]

[54] PSA, Table 5.2-2.
[55] PSA, pp. 5.2-99 through -102.
[56] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
[57] *Id.*
[58] *Id.*

single survey, or surveys conducted too early or late in the breeding cycle, do not provide definitive data and are of limited value."[59]

The PSA correctly concludes that increased levels of human presence, noise, vibration, and fugitive dust may cause flycatchers to abandon their nests or breeding territories.[60] Southwestern willow flycatcher breeding territory sizes range from approximately 0.25 to 5.7 acres, with most in the range of 0.5 to 1.2 acres.[61] As a result, the 100-foot nest avoidance buffer (equivalent to 0.72 acres) required under BIO-12 does not ensure the Project would avoid disturbance activities within a flycatcher breeding territory.

The primary cause of the flycatcher's decline is loss and modification of habitat.[62] The PSA estimates the Project would impact 10.61 acres of tamarisk thickets (i.e., potential flycatcher breeding habitat), of which 5.43 acres would be permanently impacted.[63,64] The PSA does not incorporate compensatory mitigation for these impacts to flycatcher habitat. This issue is exacerbated by the PSA's failure to require the Applicant to undergo Section 7 consultation with the USFWS (for impacts to federally listed species), and for the Applicant to obtain a consistency determination from the CDFW under Fish and Game Code section 2080.1 (for impacts to state listed species).

Whereas BIO-17 requires compensation or restoration for the Project's permanent impacts to natural and semi-natural vegetation *communities* (including tamarisk thickets), it does not require compensation for impacts to *habitat*. Habitat is dictated by numerous biotic and abiotic factors beyond vegetation. Therefore, presence of a vegetation community is not equivalent to presence of habitat.[65] As discussed in Sogge et al. (2010), there are many tamarisk-dominated and native-dominated habitats in which flycatchers do not breed.[66] Therefore, the value of any riparian compensation habitat to the flycatcher is site specific and will depend on the spatial, structural, and ecological characteristics of that particular habitat patch and the potential for flycatchers to colonize and maintain populations within it.[67] Consequently, the PSA cannot merely assume that preserving or restoring tamarisk thickets elsewhere would mitigate the Project's permanent impacts on flycatcher habitat. Similarly, although the PSA states that BIO-11 would mitigate the Project's temporary impacts to habitat, BIO-11 only requires revegetation of "temporarily disturbed areas not subject to long-term use or ongoing vegetation maintenance." The PSA does not incorporate alternative mitigation for temporarily disturbed areas that are subject to these

[59] *Id.*
[60] PSA, p. 5.2-100.
[61] U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix +210 pp., Appendices A-O.
[62] U.S. Fish and Wildlife Service. 2014. Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 5-Year Review: Summary and Evaluation. Phoenix (AZ): U.S. Fish and Wildlife Service, Arizona Ecological Services.
[63] PSA, Table 5.2-5.
[64] It is unclear whether the PSA's impact estimates account for road construction (or widening) along the gen-tie and pipeline routes, or for vegetation (fuels) management in the gen-tie ROW.
[65] *See* Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[66] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
[67] Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

conditions (e.g., ongoing vegetation maintenance), nor does the PSA establish a timeline for completion of the revegetation efforts under BIO-11.

For the reasons discussed above, the Project's impacts on the southwestern willow flycatcher would remain potentially significant.

Redhead

Immediately west of the Project's proposed geothermal energy facility is a wetland area referred to as Schrimpf Road Cove. The pipeline from the Project's spare production well would pass through the emergent vegetation along the south side of the cove.[68] The Project's gen-tie line would run parallel to this pipeline (TN 253188).

The redhead (duck) is a California Species of Special Concern whose population has been steadily declining due to habitat loss.[69] Redheads usually nest in freshwater emergent wetlands where dense stands of cattails (*Typha* spp.) and tules (*Scirpus* spp.) are interspersed with areas of deep, open water. Schrimpf Road Cove contains these habitat conditions. While formerly common at the Salton Sea, the breeding population of redheads has dwindled to only a few breeding pairs.[70] Ebird data suggest Schrimpf Road Cove may be one of the few locations where redheads continue to nest at the Salton Sea.[71] The Project may cause significant impacts on the redhead through: (1) habitat loss and fragmentation due to construction of the pipeline through wetland habitat along the south side of Schrimpf Road Cove; (2) habitat degradation due to contaminants, and due to ongoing noise and human activity associated with the power plant, pipeline, and gen-tie line; and, (3) collisions with the gen-tie line. The mitigation proposed in the PSA would not reduce these impacts to less than significant levels. Specifically, the PSA does not require compensation for impacts to redhead habitat (or for redheads that are killed by the Project's gen-tie line), nor does it incorporate measures to prevent ongoing disturbance activities (e.g., noise and human activity) to redhead habitat during the operational phase of the Project.

Western Snowy Plover

The PSA determined there is a high potential for western snowy plovers to forage and nest in the Project area.[72] Snowy plovers nest on sandy, gravelly, or friable soil near water and with minimal to no vegetation.[73] Based on my review of eBird data and Google Earth imagery, there is potential nesting habitat for snowy plovers at Schrimpf Road Cove, and in the vicinity of the proposed production wells north of the power plant.

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[68] TN 249725, Appendix 5.2C, Figures 1E and 1F.
[69] Shuford WD, Gardali T, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
[70] *Id.*
[71] eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Aug 31]. https://ebird.org/explore
[72] PSA, Table 5.2-2.
[73] PSA, p. 5.2-102.

Disturbance by humans is a key factor in degrading or eliminating snowy plover nesting habitat.[74] Humans negatively impact plovers by causing: (1) destruction of nests and chicks; (2) increased disturbance leading to reduced incubation or brooding constancy; and (3) decreased foraging opportunities by adults and chicks.[75] Direct mortality can occur when humans step on, or drive over, chicks or eggs.[76] More commonly, indirect mortality occurs because high levels of human activity hinder normal brooding, foraging, and sheltering activities. Snowy plover chicks are precocial (well-developed). After hatching, the male bird cares for the chicks for approximately 28 days.[77] However, the chicks quickly must learn how to feed themselves, balance thermoregulatory needs, and avoid predators without assistance. Human activities can be especially detrimental to survivorship during this critical period in the species' life cycle. When a brooding adult is disturbed, it often leaves chicks exposed, and hence vulnerable to predation, inclement weather, and reduced foraging time.[78] Human activity may also cause brood movement, resulting in the separation of one or more chicks from the rest of the brood.[79] In addition, movement into adjacent territories can result in attacks on the young by other adult plovers, resulting in chick death and abandonment.[80] Because anthropogenic disturbance is the primary threat to the western snowy plover, numerous biologists have concluded that protecting occupied sites from human disturbance may be essential to the conservation of the species.[81]

The PSA states the following regarding impacts to the snowy plover:

> "Direct and indirect impacts to this species is described previously for Common Protected Birds. Direct impacts to bird species would occur if nests or eggs were destroyed during construction activities; degradation of nesting or foraging habitat; and if nests or breeding territories were abandoned due to increased levels of human presence, noise, vibration, and fugitive dust. Indirect impacts could include the loss of habitat due to the colonization of invasive or noxious weeds and long-term alterations to supporting habitat."[82]

The PSA incorporates BIO-12 to reduce impacts to snowy plover nests during construction of the Project. COC/MM BIO-12 does not mitigate potentially significant impacts to snowy plovers

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[74] MacDonald B, Longcore T, Dark S. 2010. Habitat suitability modeling for Western Snowy Plover in Central California. The Urban Wildlands Group, Los Angeles, California, 129 pp.
[75] Colwell MA, Millett CB, Meyer JJ, Hall JN, Hurley SJ, McAllister SE, Transou AN, LeValley RR. 2005. Snowy Plover reproductive success in beach and river habitats. Journal of Field Ornithology 76(4):373-382. *See also* United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus)*. Sacramento, California. xiv + 751.
[76] *Id.*
[77] Colwell MA, Hurley SJ, Hall JN, Dinsmore SJ. 2007. Age-Related Survival and Behavior of Snowy Plover Chicks. Condor 109(3):638-647.
[78] *Id.*
[79] Ruhlen TD, Abbott S, Stenzel LE, Page GW. 2003. Evidence that human disturbance reduces snowy plover chick survival. Journal of Field Ornithology 74(3):300-304.
[80] *Id.*
[81] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus)*. Sacramento, California. xiv + 751. *See also* Brindock KM, MA Colwell. 2011. Habitat Selection by Western Snowy Plovers During the Nonbreeding Season. Journal of Wildlife Management 75(4):786-793.
[82] PSA, p. 5.2-102.

because it only requires pre-activity surveys for nesting birds prior to *project construction or decommissioning activities* conducted during the avian breeding season. Thus, there is no mitigation for impacts to snowy plovers during the operational phase of the Project when "[p]lant operators would drive the pipeline routes daily to perform visual inspections."[83] These daily inspections of the pipeline route could have significant direct and indirect impacts on snowy plovers (e.g., through vehicle strikes and brood separation).

Furthermore, the avoidance buffers required under BIO-12 may not be sufficient to prevent significant impacts to snowy plovers during Project construction and decommissioning. BIO-12 states: "[i]f an active nest is detected, a 100-foot avoidance buffer for passerines, and a 500-foot avoidance buffer for raptors or pelicans, shall be established and clearly delineated by staking, flagging, and/or signage." BIO-12 fails to identify the buffer size that would be established for nests of the snowy plover (which is neither a passerine nor a raptor).[84]

Page et al. (1977) observed western snowy plovers' response to human disturbance at 2 coastal beaches where normal beach use ranged from light to heavy.[85] When humans approached western snowy plovers, adults left their nests 78 percent of the time when people were within 50 meters (164 feet) and 34 percent of the time when people were over 100 meters (328 feet). Muir and Colwell (2010) studied the response of incubating plovers to an observer approaching the nests. Incubating plovers ceased incubation and left nests when an observer approached to within a mean distance of 80 ± 33 meters.[86] This led Muir and Colwell to conclude that fencing erected to minimize human disturbance should be placed such that people cannot approach closer than 100 meters (328 feet). Based on these research studies, the avoidance buffers prescribed in BIO-12 must be at least 100 meters (328 feet) for snowy plover nests.

California Black Rail

The California black rail is listed as threatened under the California Endangered Species Act ("CESA"), and it is a fully protected species under California Fish and Game Code. The California black rail is known to occur at the Hazard Tract and at other marsh habitats in the Project area.[87] As the PSA acknowledges, the California black rail is sensitive to human disturbance and the species will abandon its nest if disturbed before completing a clutch.[88] Disturbance that causes a California black rail to abandon its nest constitutes "take," which is not authorized for fully protected species, except for 5 types of projects. The Project is not one of those 5 types of projects.[89] This means that any Project activities that directly or indirectly cause take of a California black rail would violate California law, and that under CESA, any impacts to

[83] PSA, p. 3-24.
[84] The snowy plover is in the order Charadriiformes.
[85] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus)*. Sacramento, California. p 60.
[86] Muir JT, Cowell MA. 2010. Snowy Plovers Select Open Habitats for Courtship Scrapes and Nests. Condor 112(3):507-510.
[87] Personal communication on 10 Jul 2024 with Razia Shafique-Sabir, Deputy Project Leader and Biologist at SBSSNWR.
[88] PSA, p. 5.2-63.
[89] California Department of Fish and Wildlife. 2024. Fully Protected Animals. [accessed 2024 Jul 23]. https://wildlife.ca.gov/Conservation/Fully-Protected

the species must be "fully mitigated" through measures that are: (a) roughly proportional in extent to the impact, and (b) capable of successful implementation.[90]

The PSA fails to incorporate mitigation that would prevent take of California black rails and that would ensure any impacts on the species are fully mitigated. Disturbance activities associated with the Project (e.g., noise, light, and human activity) have the potential to cause significant impacts on the California black rail. The PSA incorporates two mitigation measures for these disturbance activities: BIO-13 and BIO-14. However, both of these measures are specifically focused on impacts to the Yuma Ridgway's rail. Whereas habitat of the two rail species often overlaps, Staff cannot assume that implementation of the Yuma Ridgway's rail mitigation in BIO-13 and BIO-14 would also mitigate impacts on the California black rail. For example, although BIO-13 requires pre-activity surveys and construction monitoring for Yuma Ridgway's rail, no surveys or construction monitoring is required for the California black rail. As a result, and because the PSA does not incorporate mitigation to "fully mitigate" impacts on the black rail (e.g., to offset habitat degradation caused by the Project's noise, light, and human activity), impacts on the California black rail remain potentially significant.

Other Special-Status Birds

The PSA provides a list of special-status bird species that "were considered for this analysis as having a moderate or higher potential to nest and forage in the project area."[91] However, the PSA's subsequent analysis of Project impacts only addresses some (about half) of the species.[92] The following species were excluded from the PSA's analysis, without justification:

- Redhead
- Northern harrier
- White-tailed kite
- Gull-billed tern
- Yellow-breasted chat
- Least bittern
- Loggerhead shrike
- Black skimmer
- Yellow-headed blackbird

The PSA then provides a list of special-status bird species that are "known winter residents at the Salton Sea, and were considered for this analysis as having a moderate or higher potential to forage in the project area, but are not known to nest in the area."[93] The PSA does not provide species-specific analysis of impacts to these species. Instead, the PSA inappropriately concludes that the only impact to winter residents would be a trivial loss of agricultural foraging habitat, which would be less than significant. Even if this conclusion was justified (I believe it is not), the PSA fails to analyze other potentially significant impacts to winter residents. For example,

[90] Cal. Fish & Game Code § 2081.
[91] PSA, p. 5.2-94.
[92] *See* PSA, p. 5.2-99 through 5.2-108.
[93] PSA, p. 5.2-95.

sandhill cranes are notoriously susceptible to collisions with power lines.[94] The greater sandhill crane is listed as threatened under the California Endangered Species Act and it is a "Fully Protected" species under California Fish and Game Code. As a fully protected species, there is no permissible take of the greater sandhill crane. The PSA provides no analysis of how big of a threat the Project's gen-tie line poses to sandhill cranes.

For many bird species, the Imperial Valley provides important habitat for birds due to its geographic relationship with the Salton Sea. For example, cultivated landscapes in the Imperial Valley provide wintering habitat for up to 50 percent of the *global population* of mountain plovers.[95] Agricultural fields in Imperial Valley are also known to be a core wintering area for sandhill cranes,[96] long-billed curlews,[97] and white-faced ibis.[98]

The PSA acknowledges that the removal of foraging habitat for special-status species would typically be considered a significant impact, directly through the removal of vegetation that could support food and prey species, and indirectly due to the long-term alteration of available habitat.[99] The PSA then states that the Project's impacts to foraging habitat "would result in a small reduction compared to the 500,000 acres total agricultural lands in Imperial County."[100] For this reason, the PSA makes the determination that impacts to foraging habitat for special-status bird species would be less than significant at both the Project and cumulative project level. The PSA makes the same determination with respect to Project impacts on bats and wildlife movement.

Cumulative Impacts to Foraging Habitat

The PSA's analysis of cumulative impacts is fatally flawed because it applies two different geographic scales to the analysis. Specifically, the PSA's analysis considers the cumulative impacts from other projects within 6 miles of the proposed Project.[101] However, in analyzing impacts to habitat, the PSA considers the total amount of agricultural land throughout all of Imperial County. It is not possible to accurately analyze cumulative impacts by using one geographic scale (i.e., Imperial County) to analyze the abundance of remaining habitat, but a

[94] Ward JP, Anderson SH. 1992. Sandhill crane collisions with power lines in southcentral Nebraska. Proceedings of the North American Crane Workshop. 327.
[95] Wunder MB, Knopf FL. 2003. The Imperial Valley of California is critical to wintering Mountain Plovers. J. Field Ornithol. 74:74-80. *See also* Shuford WD, Gardali T, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
[96] Shuford WD, Warnock N, Molina KC, Mulrooney B, Black AE. 2000. Avifauna of the Salton Sea: Abundance, distribution, and annual phenology. Contribution No. 931 of Point Reyes Bird Observatory. Final report for EPA Contract No. R826552-01-0 to the Salton Sea Authority, 78401 Highway 111, Suite T, La Quinta, CA 92253.
[97] Fellows SD, Jones SL. 2009. Status assessment and conservation action plan for the Long-billed Curlew (*Numenius americanus*). U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication, FWS/BTP-R6012- 2009, Washington, D.C.
[98] Shuford WD, Hickey CM, Safran RJ, Page GW. 1996. A review of the status of the White-faced Ibis in winter in California. Western Birds 27:169-96.
[99] PSA, p. 5.2-107.
[100] PSA, p. 5.2-107.
[101] PSA, p. 5.2-75.

much smaller scale (i.e., 6-mile radius of the Project) to analyze other projects that would impact habitat. To provide valid analysis, the CEC must issue a revised and recirculated PSA that applies a consistent geographic scale to the cumulative impacts analysis. If the geographic scope is a 6-mile radius of the proposed Project, Staff must identify the amount of agricultural land within a 6-mile radius of the proposed Project. Conversely, if the geographic scope is Imperial County, Staff must identify habitat impacts from all past, present, and probable future projects in Imperial County.

Another fatal flaw with the PSA's cumulative impacts analysis it that it excludes impacts from the Lithium Valley Specific Plan Project ("LVSPP"). The LVSPP encompasses approximately 51,786 acres of land adjacent to the southeastern shore of the Salton Sea.[102] This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).[103] Under the LVSPP, most of this land would (or could) be converted to industrial uses.[104]

Busse et al. (2023) analyzed changes to IID water allocations in Imperial County due to geothermal expansion and lithium production. They estimated that water allocations to agriculture would drop from 2.2 million acre-feet per year ("MAFY") in 2022, to potentially as low as 1.1 MAFY in 2050.[105] Assuming a direct correlation between water allocations to agriculture and amount of agricultural foraging habitat, the amount of agricultural foraging habitat available to birds could be cut in half by 2050.

Whereas the PSA is correct in stating that there are approximately 500,000 acres of total agricultural lands in Imperial County, in 2021 there were only 460,258 acres in Imperial Valley (with the remainder in the Palo Verde and Bard/Winterhaven regions).[106] Of these 460,258 acres, 48,000 to 74,000 acres[107] would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.[108] The California Ethanol Project will have a significant adverse impact on the Imperial Valley population of burrowing owls and other bird species that forage mainly in low-growing agricultural fields.[109] As stated in the Applicant's Water Supply Assessment (TN 256894), the Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands in Imperial Valley for solar energy development, with additional losses occurring as the result urban development. Based on this information, reasonably foreseeable future projects would

[102] Dudek. 2023 Dec. Initial Study for the Imperial County Lithium Valley Specific Plan.
[103] Rick Engineering Company. 2024 Feb. Lithium Valley Final Baseline Report. Figure 2-4.
[104] Imperial County, Planning & Development Services Department. 2023. Notice of Preparation to prepare a Program Environmental Impact Report (PEIR) for the proposed Lithium Valley Specific Plan Project. Figure 2.
[105] Busse MM, Stokes-Draut J, Camarillo MK, Millstein D, Slattery M, McKibben M, Dobson P, Stringfellow W. 2023. Environmental Impact Assessment of Lithium Recovery from Geothermal Brines in the SS-KGRA: An Overview. GRC Transactions, Vol. 47. https://escholarship.org/content/qt6689d2tg/qt6689d2tg.pdf?t=s8sl5e
[106] Imperial County. 2022. 2021 Agricultural Crop & Livestock Report. [accessed 2024 Jul 13]. https://agcom.imperialcounty.org/wp-content/uploads/2022/10/2021-CR-Draft-Final.pdf
[107] The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.
[108] This project remains active. *See* CE+P. 2023 Apr 3. CE+P to Partner with International Agribusiness Experts Booker Tate Ltd. on Sugar Valley Energy Sugarcane and Ethanol Production [news release]. [accessed 2024 Jul 12]. https://www.californiaethanolpower.com/news/ce-p-to-partner-with-international-agribusiness-experts-booker-tate-ltd-on-sugar-valley-energy-sugarcane-and-ethanol-production.
[109] Letter from Kennon A. Corey to Armando G. Villa re: Notice of Preparation of a Draft Environmental Impact Report for the Sugarcane and Sweet Sorghum to Ethanol, Electricity and Bio-Methane Facility, December 19, 2012.

result in the loss of approximately 124,000 acres (27%) of habitat for special-status birds in the Imperial Valley. This constitutes a significant cumulative impact.

The PSA asserts that mitigation implemented for other projects would avoid the potential for cumulatively considerable impacts. The PSA states:

> "Determinations regarding the significance of impacts of the related projects on biological resources would be made on a case-by-case basis. If necessary, the applicants of the related projects would be required to implement appropriate mitigation measures. Therefore, implementation of related projects and other anticipated growth in Imperial County would not combine with the proposed project to result in cumulatively considerable impacts on biological resources. With the implementation of these COC/MM, cumulative impacts to the region would be reduced to less than significant."[110]

There are two main problems with the PSA's reasoning. First, although individual projects may be required to mitigate for significant impacts on a project-by-project basis, they often result in residual impacts. Residual impacts also occur when the lead agency determines that a project would have impacts, but that those impacts are less than significant. When residual impacts from related projects are combined, they can create a significant cumulative impact. This is exemplified by residual impacts to burrowing owls from cumulative projects identified in the PSA:[111]

1. The FEIR for the Energy Source Mineral ATLIS Project did not include compensatory habitat mitigation for impacts to approximately 30 acres of burrowing owl habitat, despite presence of burrowing owls on the project site.[112]
2. The IS/MND for the Hudson Ranch New Well 13-4 Project (called "Geo Hudson Ranch" in the PSA) determined that "loss of burrowing owl foraging habitat would be less than significant given the abundance of suitable foraging habitat in the lands surrounding the project site and throughout the region." No habitat compensation was required.[113]
3. The FEIR for the VEGA SES 2, 3, and 5 Solar Energy Project did not require compensatory habitat mitigation for impacts to burrowing owls and numerous other special-status species that occur, or potentially occur, at the project site.[114]
4. The FEIR for the Hell's Kitchen determined the project would remove potential breeding habitat for burrowing owls; however, compensatory habitat mitigation was not required.[115]

[110] PSA, p. 5.2-140.
[111] PSA, Table 1-2.
[112] County of Imperial. 2021 Sep. Final Environmental Impact Report for the Energy Source Mineral ATLIS Project. https://www.icpds.com/planning/environmental-impact-reports/final-eirs
[113] County of Imperial. 2023 Apr. Initial Study and Mitigated Negative Declaration for the Hudson Ranch New Well 13-4 Project. https://ceqanet.opr.ca.gov/2023040436
[114] County of Imperial. 2023 Aug. Final Environmental Impact Report for the VEGA SES 2, 3 and 5 Solar Energy Project. https://www.icpds.com/planning/environmental-impact-reports/final-eirs
[115] County of Imperial. 2023 Dec. Final Environmental Impact Report for the Hell's Kitchen PowerCo 1 and LithiumCo 1 Project. https://www.icpds.com/planning/environmental-impact-reports/final-eirs

Thus, none of these projects provided compensatory mitigation for impacts to burrowing owl habitat. Indeed, it is my experience that Imperial County (as the CEQA lead agency) rarely requires compensatory mitigation for impacts to burrowing owl habitat, and when compensatory mitigation is required, it compensates for only a fraction of the impacted habitat. For example, Imperial County required the Mount Signal and Calexico Solar Farm Projects to provide 71.5 acres of compensatory mitigation in exchange for impacts to 4,144 acres of burrowing owl habitat.[116] Habitat loss and degradation are the greatest threats to burrowing owls in California.[117] As a result, the cumulative loss of burrowing owl habitat in Imperial County constitutes a potentially significant cumulative impact that cannot be dismissed by the CEC. Indeed, contrary to the PSA's determination that there are no cumulatively considerable impacts (e.g., to the burrowing owl), there is substantial evidence that the burrowing owl population in Imperial County has experienced significant declines due to inadequate mitigation.[118]

Second, even when appropriate mitigation measures have been adopted for a project, there often is insufficient oversight to ensure the mitigation measures are implemented successfully, or at all. For example, a report issued by the U.S. Government Accountability Office found that the USFWS lacks: (a) a systematic means of tracking the monitoring reports it requires in biological opinions and does not know the extent of compliance with these requirements; (b) a systematic method for tracking cumulative take of most listed species.[119]

Two co-investigators and I reviewed CEQA documents associated with approximately 75 projects that had burrowing owl mitigation requirements.[120] We then conducted an in-depth assessment of the fate of burrowing owl mitigation at 3 of the project sites, one of which was the Abengoa Mojave Solar Project, for which the CEC was the lead agency. Our key findings were as follows:

1. Lead agencies did not have a reliable system in place to track required mitigation.
2. Lead agencies lack transparency and accountability.
3. Lead agencies failed to incorporate appropriate mitigation measures.
4. Lead agencies continue to apply outdated mitigation guidelines.
5. Lead agencies fail to incorporate specific and enforceable mitigation measures.

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[116] County of Imperial. 2011 Nov. Draft Environmental Impact Report for the Mount Signal and Calexico Solar Farm Projects. pp. 4.4-38 and -47.

[117] Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

[118] Center for Biological Diversity and six others. 2024 Mar 5. Petition Before the California Fish and Game Commission to List California Populations of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as Endangered or Threatened Under the California Endangered Species Act. [accessed 2024 Jul 22]. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=221396&inline

[119] U.S. Government Accountability Office. 2009 May. Endangered Species Act: The U.S. Fish and Wildlife Service Has Incomplete Information about Effects on Listed Species from Section 7 Consultations. GAO-09-550. [accessed 2024 Jul 23]. https://www.gao.gov/products/gao-09-550

[120] Cashen S, Menzel S, Portman C. 2017 Oct 25. Burrowing Owl Mitigation in California. Technical Report prepared for the Burrowing Owl Preservation Society. 42 p.

6. CEQA documents improperly deferred mitigation.
7. CEQA documents failed to establish appropriate performance standards for burrowing owl mitigation measures.
8. Habitat-based mitigation being incorporated into CEQA documents is insufficient to stem the decline of California's burrowing owl population.
9. CEQA has proven to be an inadequate mechanism for conserving burrowing owls and their habitat.

Overall, we found that none of the projects fully complied with their burrowing owl mitigation requirements. With respect to the Abengoa Mojave Solar Project, we found numerous instances of non-compliance with the burrowing owl mitigation measures adopted in the Commission Decision (TN 58496). These included, but were not limited to, the following:

1. The Project proponent failed to prepare a Burrowing Owl Monitoring and Mitigation Plan ("Plan") prior to conducting preconstruction surveys, as required in the CEC's Conditions of Certification (TN 58496). Although the developer's consultant prepared a draft version of the Plan after completion of the preconstruction surveys, there was no evidence the Plan had been prepared in consultation with the CPM and California Department of Fish and Game, as required.
2. The CEC was unable to provide evidence that a final Burrowing Owl Monitoring and Mitigation Plan was ever prepared or implemented.
3. Although the CEC incorporated enforcement mechanisms for the burrowing owl mitigation, several of the mitigation measures were never implemented. For example, although preconstruction burrowing owl surveys were required as mitigation, those surveys were not conducted across significant portions of the project site prior to clearing, grubbing, and grading.
4. No artificial burrows were installed in accordance with the Commission Decision.
5. The developer was required to provide 118.2 acres of compensatory habitat as mitigation for impacts to approximately 1,765 acres of burrowing owl habitat. Mitigation imposed by the CEC stated: "[c]ompensatory habitat shall be suitable for occupation by burrowing owls and preserved and managed in perpetuity for this purpose." Portions of the habitat compensation lands mitigation acquired by the developer appeared to be unsuitable for occupation by burrowing owls due to relatively dense shrub cover, and at the time of our assessment (2017), there were no records of burrowing owls occurring at the compensation site.

Project Impacts to Avian Habitat

Temporary Impacts

The PSA states the following regarding the Project's temporary impacts to habitat for special-status birds: "[u]pon completion of construction, temporarily impacted agricultural fields would

revert to previous uses."[121] This statement is not reflected in the PSA's Project Description or Staff's proposed Conditions of Certification. Although BIO-11 requires a "plan" that identifies Project impact areas that would be converted back to their previous land use, it does not *require* any or all of the impacted agricultural fields to revert back to agricultural production. Furthermore, the Land Use chapter of the PSA suggests it may not be possible to fully restore the borrow pits, and that all temporary work areas may be "left in [unspecified] conditions requested by the landowner."[122] As a result, the PSA's assertion that the Project's borrow pits, construction camps, and laydown and parking areas would have only a temporary impact on habitat for special-status birds is not supported by evidence.

Permanent Impacts

The PSA identifies habitat loss as a potentially significant impact to special-status birds. The PSA then makes the determination that BIO-17 would mitigate the Project's permanent impacts on habitat.[123] BIO-17 states: "[p]ermanent impact to all natural and semi-natural vegetation communities, including but not limited to, tamarisk thickets, Typha herbaceous alliance, iodine bush shrub, and desert holly scrub, shall be compensated through habitat compensation and/or habitat restoration at a minimum of a 1:1 ratio." Whereas this measure would mitigate the Project's impacts on vegetation communities, it would not necessarily mitigate the Project's impacts on *habitat*. Habitat is defined as: "the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism."[124] Therefore, if the habitat compensation lands do not produce occupancy of the species impacted by the Project, the habitat impacts remain unmitigated. For example, iodine bush scrub that is acquired under BIO-17 would have no habitat value to the snowy plover unless it has the same qualities as the iodine bush scrub impacted by the Project (e.g., low vegetative cover in close proximity to water, with minimal human activity, and within the geographic range of the species).

The PSA does not impose any geographic limits on the location of the compensation land required under BIO-17. This is a significant omission because many of the special-status species that would experience habitat loss due to the Project have very narrow geographic ranges (e.g., Yuma Ridgway's rail, snowy plover, black skimmer, redhead). This issue is exacerbated by the following clause in BIO-17: "[c]onservation or restoration lands can be included with Burrowing Owl Habitat Preservation and Enhancement lands (BIO-16) if it can be shown that these areas also provide equivalent coverage of one or more natural and semi-natural vegetation communities impacted by the project." This suggests that although the Project would impact multiple vegetation communities, it would be permissible for the Applicant to provide compensation for only one of the impacted communities.

The Applicant's Yuma Ridgway's rail survey report (TN 251679) provides indisputable evidence that the Project would have direct impacts on habitat occupied by the subspecies. Based on my review of scientific literature, I believe there is substantial evidence that the

[121] PSA, p. 5.2-97.
[122] PSA, p. 5.8-15.
[123] PSA, pp. 5.2-107 and -108.
[124] *See* Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

Project's indirect impacts (e.g., ongoing noise and human activity) would result in the functional loss of additional habitat. None of the COCs/MMs in the PSA ensure these impacts would be reduced to less than significant levels. Furthermore, because the Yuma Ridgway's rail is protected under the California Endangered Species Act ("CESA"), all impacts to the subspecies must be fully mitigated. CESA's full mitigation standard includes consideration of the timing of the impacts in relation to the mitigation. In this case, BIO-17 allows the Applicant to impact rail habitat well before any habitat compensation is provided. Fully mitigating this temporal habitat loss requires habitat compensation land that is ecologically superior to the habitat lost (e.g., in habitat quality or size). Because the compensation ratio in BIO-17 is only 1:1, and because BIO-17 does not require consideration of habitat quality at the compensation site, impacts to the Yuma Ridgway's rail are not fully mitigated.

Night Lighting

Construction Lighting

The PSA's description of night lighting during construction of the Project is limited to the statement that "[a]rea lighting during construction will be strategically located for safety and security."[125] This statement is vague and does not provide the information needed to assess the significance of lighting impacts on wildlife. The PSA fails to discuss how often night lighting would be used during the 29-month construction period, where night lighting might be used (e.g., geothermal plant site, drilling sites, pipeline route), the types of light fixtures that might be used, and how much light (luminous flux) would be required for safety and security. In general, a substantial amount of high-intensity lighting would be required for construction work involving potentially hazardous equipment and tools, especially at a relatively large construction site with hundreds of construction workers and numerous pieces of heavy equipment operating simultaneously.[126]

The PSA fails to identify how much night lighting would be installed at the construction laydown/parking areas and at the construction camps. Even if lighting is not installed at those locations, wildlife could be significantly impacted by vehicle headlights, flashlights, and other types of lights that cause dynamic light changes in nearby habitats.[127] Lights that go on and off at irregular intervals (e.g., vehicle headlights) disrupt the nocturnal behavior of some species and has the potential to affect population dynamics. For example, Baker and Richardson (2006) found that dynamic light changes such as those generated by flashlights, car headlights, or motion detector lights caused green frogs (*Rana clamitans*) to produce fewer advertisement calls and move more frequently.[128] In dark-adapted nocturnal frogs, returning the eyes to a dark-

[125] PSA, p. 3-18.
[126] PSA, p. 3-17. *See also*, AFC, Tables 2-9 and 2-10. (TN 249737)
[127] Longcore T, Rich C. 2016. Artificial night lighting and protected lands: Ecological effects and management approaches. Natural Resource Report NPS/NRSS/NSNS/NRR—2016/1213. National Park Service, Fort Collins, Colorado.
[128] Baker BJ, Richardson JM. 2006. The effect of artificial light on male breeding-season behaviour in green frogs, *Rana clamitans melanota*. Canadian Journal of Zoology 84(10):1528-1532.

adapted state after photopigment bleaching caused by a brief, bright flash of light can take hours.[129]

One of the construction laydown/parking areas would be immediately south of the Hazard Tract, which is known to provide habitat for special-status species such as the Yuma Ridgway's rail. Several additional laydown/parking areas would be located in the vicinity of Obsidian Butte, near wetland habitat where Yuma Ridgway's rails and California black rails have been detected.[130] Night lighting from the construction camps and laydown/parking areas could have a significant impact on rails in nearby habitats. The PSA fails to incorporate mitigation for this impact.

Operational Lighting

The PSA provides the following analysis of lighting impacts during the operational phase of the Project:

> "Lighting would be shielded and pointed downward and away from the habitat outside of the project area to minimize impacts to nesting birds and other nearby wildlife, and to reduce the potential for avian and bat attraction and collision. All lighting that is not required to be on during nighttime hours would be controlled with sensors or switches operated such that the lighting would be on only when needed. Implementation of these applicant-proposed design measures would allow areas surrounding the project to remain un-illuminated (dark) most of the time, thereby minimizing the amount of lighting potentially visible off site and minimizing the potential for lighting impacts to proximate wildlife. These features have been incorporated into VIS-2 as described in Section 5.15 Visual Resources and BIO-4 (General Conservation Measures). With implementation of lighting COC/MM, impacts to special-status wildlife would be reduced to less than significant."[131]

Whereas shielding lights and pointing them downward would minimize "astronomical light pollution" (whereby stars and other celestial bodies are washed out by light that is either directed or reflected upward), it could still result in significant levels of "ecological light pollution" (artificial light that alters the natural patterns of light and dark in ecosystems).[132]

In addition to the substrate receiving the light, the amount of ecological light pollution generated by the Project will be a function of several variables including the distribution, abundance, luminosity, height, angle, and type of light fixtures. The PSA lacks information on most of these variables and does not provide photometric analysis demonstrating impacts to wildlife in areas

[129] Buchanan BW. 2006. Observed and potential effects of artificial night lighting on anuran amphibians. Pages 192–220 *in* C. Rich and T. Longcore, editors. Ecological consequences of artificial night lighting. Island Press, Washington, D.C.
[130] California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024]. *See also* eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Jul 18]. https://ebird.org/explore
[131] PSA, p. 5.2-117.
[132] Longcore T, Rich C. 2004. Ecological Light Pollution. Frontiers in Ecology and the Environment 2:191-198.

surrounding the Project would be less than significant. Photometric analysis has been provided for other projects under the CEC's jurisdiction,[133] and it is necessary to analyze the intensity, distribution and spectral composition of light within the Project area so as to understand the Project's lighting impacts on wildlife.

Providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan. Similarly, the provision in BIO-4 requiring only "the lowest illumination necessary for human safety" does not ensure impacts would be less than significant because the PSA does not quantify the illumination level necessary for human safety, nor does it identify how often lighting would be turned off because it "is not required" for safety purposes. However, based on the PSA's Project Description, it appears night lighting required for human safety would be located throughout most of the Project site.[134]

Impacts to Aquatic Resources

The PSA at page 5.2-81 states:

> "The aquatic resource delineation identified approximately 18.148 acres of wetlands (two palustrine emergent and three palustrine scrub-shrub), 34.341 acres of other waters (two salt flats, an excavated salt flat, an excavated pond, an excavated lake, and Morton Bay) and 1.416 acres (1,598 linear feet) of watercourses (one perennial and one intermittent) in the study area, finding no aquatic resources within potential disturbance areas."

The statement that there are "no aquatic resources within potential disturbance areas" is inconsistent with information provided by the Applicant. The Applicant produced two documents that provide the results of the aquatic resources delineation: (1) the "Aquatic Resource Delineation Documentation" (AFC Appendix 5.2C, TN 249725); and (2) the "Approved Jurisdictional Determination Request" (TN 252694), which was submitted to the USACE. These documents are very similar, except one was submitted to the CEC (with the AFC) and the other was submitted to the USACE. TN 249725 provides maps of the Project footprint in relation to the delineated aquatic resources. TN 252694 provides the same maps, but omits the Project footprint and some of the aquatic resources that were depicted on the maps in TN 249725. Both sets of maps were created before the Applicant refined the Project footprint (TN 253188). This makes it difficult to determine which portions of the current Project footprint coincide with aquatic resources. However, comparison of the aquatic resources maps with the maps in the Applicant's Revised General Arrangement Refinement package (TN 253188) reveal the following:

1) The spare production well pad site and associated pipeline would impact aquatic resources (TN 249725, Appendix 5.2C, Figure 1E; TN 253188, Figure 2-7aR). The gen-tie line and associated pull site may also impact aquatic resources at this location, but I am unable to make a definitive determination in this regard because the maps provide

[133] For example, see Willow Rock Energy Storage Center SAFC Volume II-Appendix 513A-514A, Appendix 5.13B. (TN 254810)
[134] PSA, pp. 3-21 and 3-22.

inconsistent information on the location of the gen-tie pole (TN 253188, Figure 2-7aR and Figure DA4.0-1aR).

2) Production wells MB-06, MB-07 and the associated well pad and pipeline would be located in an area containing an aquatic resource labeled PUBFx-2 (TN 249725, Appendix 5.2C Figure 1J; TN 253188, Figure DA4.0-1aR).

3) A large emergent wetland is located between the proposed energy facility and McDonald Road. Although this wetland was directly and indirectly impacted by IID during construction of the O-N Connector Project, the wetland will be restored per the terms of the EPA's Consent Order. The Project includes installation of two wells (MB-04 and MB-05), a well pad, pipeline, gen-tie pole, and associated access roads through the wetland (TN 253188, Figure DA4.0-1aR). However, the wetland was not delineated as an aquatic resource in either TN 249725 or TN 252694. The Applicant's consultant had one sample point (S-25) at the extreme edge of the wetland and outside of the Aquatic Resources Study Area (TN 252694, Figure 4F). No sampling was conducted in any other portions of the wetland. The data sheet provided in TN 252694 indicates sample point S-25 is within a wetland, and that it had hydrophytic vegetation, hydric soils, and wetland hydrology. The data sheet provided in TN 249725 is nearly identical, but it indicates sample point S-25 did not have wetland hydrology and therefore is not a wetland (although the second page of the data sheet indicates wetland hydrology was indeed present). As discussed previously, the wetland that was impacted by the O-N Connector Project did not have "normal circumstances" (i.e., because IID altered, but must restore, the wetland hydrology), and therefore should have been evaluated as it existed before IID altered the hydrology. All of this evidence points to the fact that the wetland south of McDonald Road is a state and federally jurisdictional wetland.

4) The aquatic resources maps in TN 249725 depict 3.43 acres of "Riparian Habitat," some of which would be impacted by the Project's pipeline (TN 249725, Figures 1E and 1F). This riparian habitat was omitted from the Applicant's map of Land Cover and Vegetation Types (TN 253188, Figure 5.2-4R), and from the aquatic resources maps in TN 252694 (Figures 4E and 4F). The PSA does not appear to account for Project impacts to the riparian habitat depicted in TN 249725. This is a significant omission, not only because the Applicant determined the riparian vegetation is "regulated habitat,"[135] but also because the riparian habitat along this segment of the Project's pipeline is known to be occupied by Yuma Ridgway's rails.[136]

5) There is no explanation for why some of the wetland vegetation that borders Schrimpf Road Cove was not delineated as a jurisdictional feature in TN 249725 (Figure 2, below). Notably, no wetland sampling was done at this location to justify the delineation.

[135] TN 249725, Appendix 5.2C, Figures 1E through 1I.
[136] *See Figure 27 in:* Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49 p.

The aquatic resources information provided by the Applicant omits features that appear to qualify as waters of the state. For example, the Applicant did not delineate the Invasive Southwest Riparian Woodland and Shrubland along Garst Road (where the gen-tie line would be located) as a potentially jurisdictional wetland feature (TN 252694, Figure 4D), despite describing that feature as a semi-natural vegetation type that forms *in temporarily flooded areas* along rivers or streams or in depressions (TN 249723). The PSA states (p. 5.2-82): "[m]apped tamarisk thickets and cattail marsh areas are likely to be regulated by RWQCB as wetland waters of the state." According to the Applicant, the single sample point in the tamarisk thickets along Garst Road contained hydrophytic vegetation, hydric soils, but not wetland hydrology (TN 252694, Appendix E, data form for sampling point S-5). This determination regarding lack of wetland hydrology conflicts with the U.S. Army Corps of Engineers' ("USACE") approved jurisdictional determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area in Red Hill Bay.[137] Several potentially jurisdictional aquatic resources were delineated. The Project's gen-tie line ROW overlaps feature "PSSW-2." Although the USACE determined this feature did not qualify as waters of the U.S., it qualifies as a state jurisdictional wetland because it contains wetland hydrology, hydrophytic vegetation, and hydric soils.[138]

Furthermore, the U.S. Army Corps of Engineers ("USACE") Wetland Delineation Manual states the following regarding wetland hydrology indicators:

> "Hydrology indicators are often the most transitory of wetland indicators. Those involving direct observation of surface water or saturated soils are usually present only during the normal wet portion of the growing season and may be absent during the dry season or during drier-than-normal years … Therefore, *lack of an indicator is not evidence for the absence of wetland hydrology* … Determine whether the amount of rainfall that occurred in the 2-3 months preceding the site visit was normal, above normal, or below normal … if precipitation was below normal prior to the site visit, and the site contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation (e.g., no drainage ditches, dams, levees, water diversions, etc.), it should be identified as a wetland. If necessary, the site can be revisited during a period of normal rainfall and checked again for hydrology indicators."[139]

In this case, the Applicant conducted the site visit in March 2022, after 14 months of below normal rainfall.[140] In the three months preceding the wetland delineation site visit (i.e., between January and March 2022), the Imperial CA climate station recorded only 0.04 inches of rain, while the mean ("average") rainfall between January and March at the climate station is 1.1 inches.[141] Therefore, in accordance with the USACE delineation procedures, the Riparian

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[137] U.S. Army Corps of Engineers. 2020 Oct 19. Approved Jurisdictional Determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area. File No. SPL-2020-00457.
[138] *Id.*
[139] U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. U.S. Army Engineer Research and Development Center, Vicksburg, MS.
[140] Western Regional Climate Center. 2024. Total of Precipitation for the Imperial CA climate station (044223). [accessed 2024 Aug 27]. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4223
[141] *Id.*

Woodland and Shrubland along Garst Road (and all other areas that contained hydrophytic vegetation and hydric soils) should have been delineated as a wetland.

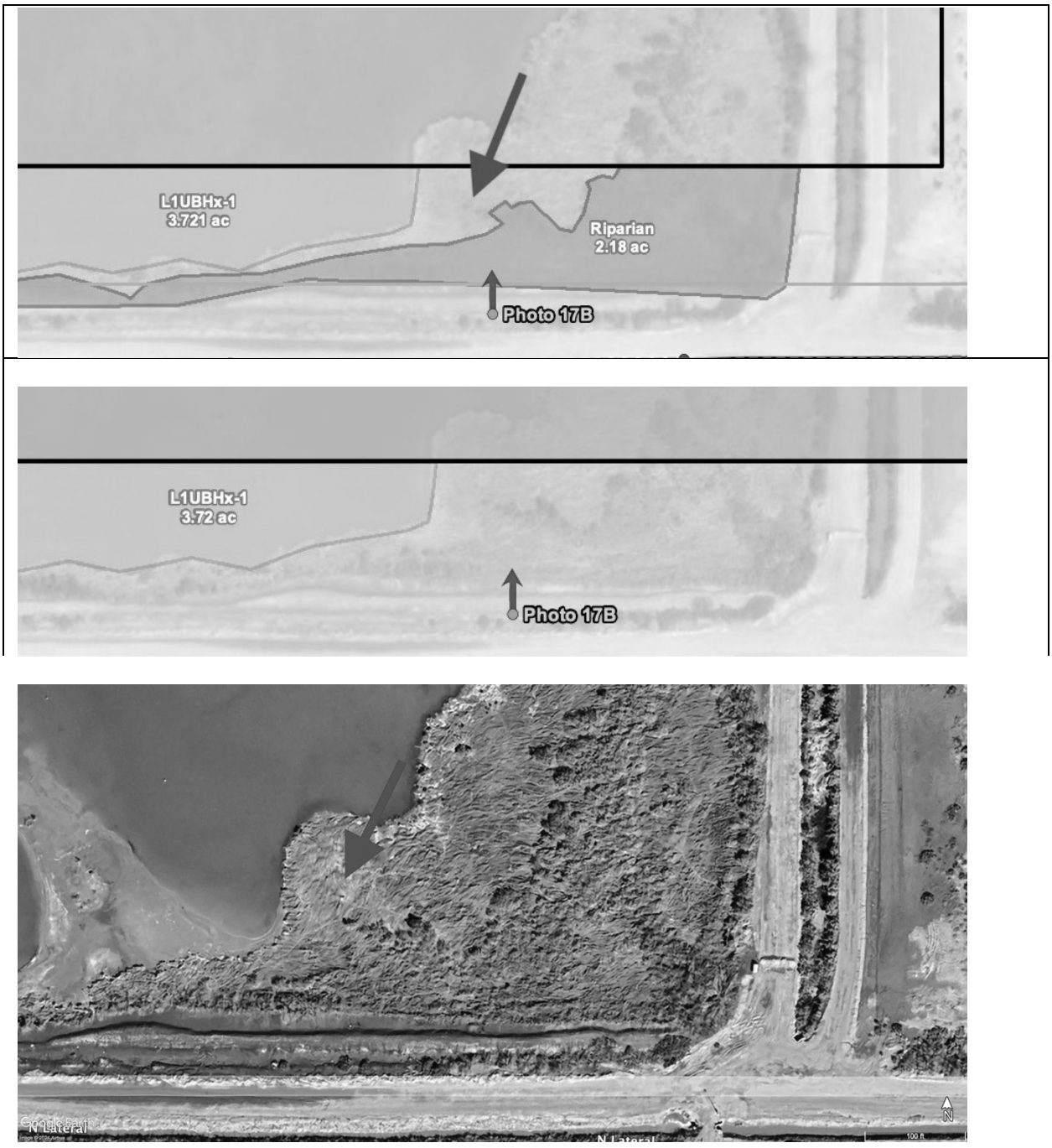

Figure 2. Top image was provided in the Applicant's *Aquatic Resource Delineation Documentation* (TN 249725). Gap (blue arrow) between the delineated resources ("L1UBHx-1" and "Riparian") is hydrologically connected to these two resources and thus should have been delineated. Middle image omitting the riparian resources was provided in the Applicant's *Approved Jurisdictional Determination Request* (TN 252694). Blue arrow in bottom image shows emergent vegetation and corresponds to the blue arrow in the top image.

Noise Impacts

The PSA (p. 5.9-6) states the following regarding noise levels during construction of the Project:

> "Demolition and construction activities for the project would occur in five phases (demolition/site clearing, concrete pouring, steel erection, mechanical, and cleanup) and take approximately 29 months to complete. Each phase uses a combination of construction equipment. The noise level from each phase is between 78 and 89 dBA Leq at 50 feet. Demolition and site cleanup phases generate the highest noise level of 89 dBA Leq at 50 feet."

This information appears to have been derived from the "composite site noise level" data provided in AFC Table 5.7-5 (TN 249723), which also provides data on noise levels from "loudest construction equipment." For example, Table 5.7-5 indicates that a rock drill and truck would be the loudest pieces of construction equipment during the cleanup phase. According to Table 5.7-5, these pieces of construction equipment would produce noise levels of 98 dBA and 91 dBA, respectively, resulting in a composite site noise level of 89 dBA. The AFC does not explain how the composite site noise level data provided in Table 5.7-5 were calculated, including any assumptions that were built into the calculations.[142] As a result, the composite site noise level data provided in the AFC and PSA are unsubstantiated.

Noise from multiple sources at the same location results in louder levels than a single source alone. Because the decibel is measured on a logarithmic scale, noise levels cannot be added by standard addition. Two noises of equal level (±1 dBA) combine to raise the noise level by 3 dBA. When the two noises differ by 2 or 3 dBA, 2 dBA is added to the higher decibel value. When the two noises differ by 4 to 9 dBA, 1 dBA is added to the higher decibel value. Therefore, if the Project's rock drill and truck would produce noise levels of 98 dBA and 91 dBA, the combined noise level would be 99 dBA, *not* 89 dBA as stated in the AFC and PSA.

It's possible that the "composite site noise levels" provided in AFC Table 5.7-5 was derived from a noise model that incorporated a usage factor for each piece of construction equipment.[143] The usage factor value input into the model can have a substantial effect on the model's output. As a result, if the "composite site noise levels" provided in AFC Table 5.7-5 incorporated usage factors, the Applicant needs to provide and justify those usage factors.

<u>Cumulative Noise Impacts</u>

The PSA (p. 5.9-4) states: "[c]umulative noise impacts are determined by the noise levels of two or more noise sources at a receptor. Adding two noise sources at a receptor would create a

[142] The AFC cites EPA (1971) and Barnes et al. (1976) as the sources of the data provided in Table 5.7-5. The "loudest construction equipment" data provided in Table 5.7-5 is consistent with the data in EPA (1971). It is unclear if the "composite site noise level" provided in Table 5.7-5 was derived from EPA (1971) or Barnes et al. (1976). The latter document is not available online and I did not find composite site noise level data in EPA (1971).
[143] The usage factor is the amount of time that the equipment is predicted to produce noise, expressed in percent. For example, a usage factor of 0.40 means the equipment is predicted to operate 40% (24 min) of every construction hour.

maximum noise level increase of three dBA above the loudest noise source." The PSA provides a list of projects that staff identified as contributors to cumulative noise impacts at receptor sites SBR (located 2.5 miles southwest of the Project site) and R-1 (located 3.5 miles east of the Project site).[144]

The PSA's list of projects that would be contributors to cumulative noise impacts excludes many of the projects on the PSA's "Master Cumulative Project List" (PSA, Table 1-2). Projects excluded from consideration in the analysis of cumulative noise impacts include the Energy Source Mineral ATLIS Project, the Hudson Ranch New Well 13-4 Project,[145] and the Hell's Kitchen Project. The PSA does not provide justification for excluding these three projects from the analysis of cumulative noise impacts.

The Energy Source Mineral ATLIS Project is located immediately adjacent to the Project's laydown and parking area southwest of the intersection of McDonald Road and Davis Road.[146] The Hudson Ranch New Well 13-4 Project coincides with the Project's proposed borrow pit southeast of the intersection of Hazard Road and Davis Road (Figure 3, below).[147] The Shared PowerCo 1 and Lithium Co 1 Facility for the Hell's Kitchen Project is located approximately 0.55 miles north of Project's northernmost well pad (for production wells MB-08 and MB-09).[148] In addition, a portion of the gen-tie line for the Hell's Kitchen Project would overlap with the proposed Project's fresh water line. At a minimum, the following projects are located close enough to the proposed Project that they could contribute to cumulative noise impacts: (1) Energy Source Mineral ATLIS Project, (2) Hudson Ranch New Well 13-4 Project, (3) Hudson Ranch Power Plant (existing), (4) Hell's Kitchen Project, (5) Elmore Geothermal Project (existing), (6) Cal Energy Generation Project (existing), (7) Vulcan Power Plant (existing), (8) Elmore North Geothermal Project, and (9) Black Rock Geothermal Project. The PSA provides no analysis of how noise from cumulative projects would impact special-status animals in the Project area.

[144] Receptor locations described on PSA, p. 5.9-1.
[145] Referred to as "Geo Hudson Ranch (HR1)" in the PSA.
[146] County of Imperial. 2021 Sep. Final Environmental Impact Report for the Energy Source Mineral ATLIS Project. https://www.icpds.com/planning/environmental-impact-reports/final-eirs
[147] County of Imperial. 2023 Apr. Initial Study and Mitigated Negative Declaration for the Hudson Ranch New Well 13-4 Project. https://ceqanet.opr.ca.gov/2023040436
[148] County of Imperial. 2023 Aug. Draft Environmental Impact Report for the Hell's Kitchen PowerCo 1 and LithiumCo 1 Project. https://www.icpds.com/planning/environmental-impact-reports/draft-eirs

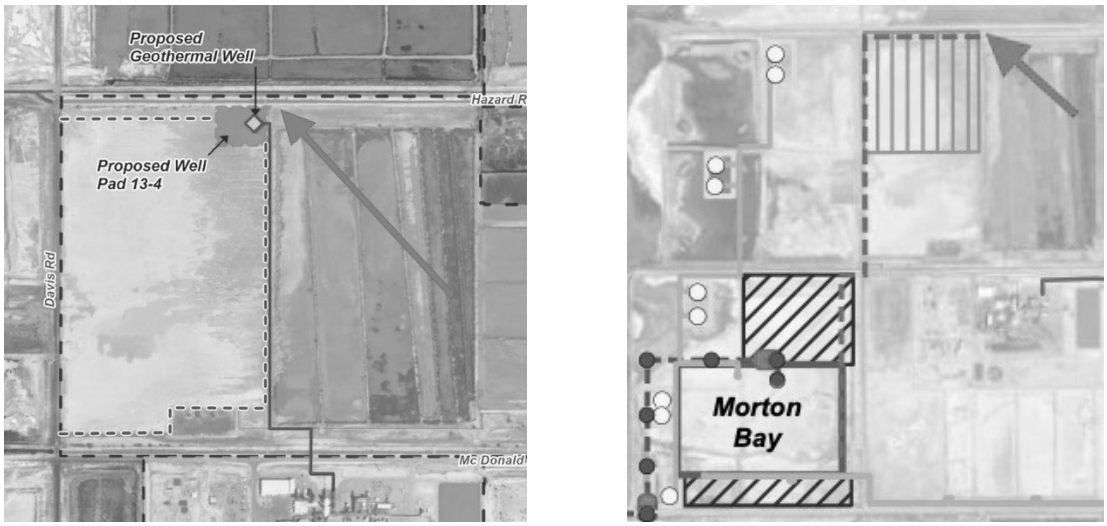

Figure 3. Hudson Ranch New Well 13-4 Project site (left image) in relation to Project borrow pit (right image). Red arrow points to northwest corner of the parcel for reference.

Project Noise Impacts

The analysis in the Noise and Vibration chapter of the PSA is directed solely at human receptors, the nearest of which ("RHMP") is located 1.5 miles west of the Project site.[149] For example, the PSA states that at RHMP, noise levels from the loudest construction phase would be 45 dBA.[150] Despite providing an extensive discussion of how noise generated by the Project could significantly impact special-status species, the PSA provides no information on Project noise levels at areas occupied (or potentially occupied) by those species. This deficiency impairs the ability to understand the significance of Project impacts on special-status species. It also hinders the ability to assess the probability that the Applicant would be able to successfully implement BIO-14 (requiring attenuation measures to prevent noise in excess of 60 dBA during the breeding season, and 80 dBA during the non-breeding season, at marshland habitat).

To reduce noise-related impacts on wildlife, staff proposes NOISE-4 (Operational Noise Restrictions), NOISE-5 (Occupational Noise Survey), NOISE-6 (Construction and Demolition Noise Restrictions), NOISE-7 (Steam Blow Restrictions), and NOISE-8 (Pile Driving). The PSA acknowledges these measures are proposed for human receptors, but it concludes the mitigation measures would also prevent significant noise impacts on special-status animals.[151] As discussed below, the PSA conclusion is unfounded.

The Biology chapter of the PSA states that NOISE-4: "would ensure operation of the project would not cause ambient noise levels from generating facility operations to exceed 43 dBA."[152] However, NOISE-4 actually states: "[t]he project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not

[149] PSA, p. 5.9-1.
[150] PSA, p. 5.9-6.
[151] PSA, pp. 5.2-93, -99, -110, -112, and -119.
[152] PSA, pp. 5.2-93, -99, -110, -112, and -119.

cause noise levels due to power plant operation to exceed 50 dBA Leq at RHMP." The receptor RHMP is located 1.5 miles from the proposed power plant. Thus, NOISE-4 applies to power plant operational noise levels 1.5 miles from the Project site, not to the overall ambient noise levels from generating facility operations. This is a fatal error because it fails to mitigate potentially significant noise impacts on special-status animals that occupy habitats in the immediate vicinity of the generating facility.

The Applicant's consultant detected Yuma Ridgway's rails at survey station MB-09 (TN 251679), which is located approximately 800 feet from the northwest corner of the proposed power plant (TN 253188). Therefore, if NOISE-4 allows operational noise to be 50 dBA Leq at RHMP, the noise level would be 69.9 dBA Leq at survey station MB-09. This would exceed the breeding season noise impact threshold established in BIO-14.

According to the PSA at page 5.2-118: "[d]uring normal steady-state operations, an 80 dBA threshold should not be exceeded beyond generating facility boundaries (TN250679)." The northwest boundary of the generating facility would be only a few feet from the marsh where the Applicant's consultant detected Yuma Ridgway's rails; the USGS has also detected rails at this marsh, and at habitat approximately 150 feet west of the generating facility's western boundary.[153] If noise at the generating facility boundaries is 80 dBA, it will be only slightly less than 80 dBA at adjacent marsh habitat occupied (or potentially occupied) by rails. This provides additional evidence that operational noise from the Project would exceed the breeding season noise impact threshold established in BIO-14.

NOISE-5 requires an occupational noise survey to identify any noise hazardous areas within the power plant. NOISE-5 further requires a report of the survey results and, if necessary, proposed mitigation measures to be employed in order to comply with state and federal regulations pertaining to occupational noise. NOISE-5 does not establish any restrictions on noise levels generated by the power plant. Moreover, compliance with state and federal regulations regarding worker exposure to hazardous noise levels can be achieved through personal protective equipment. Therefore, NOISE-5 does not reduce noise-related impacts on birds or other wildlife.

NOISE-6 sets temporal limitations on heavy equipment operation and noisy demolition and construction work relating to any project features, including linear facilities and pile driving. NOISE-6 states that these noisy activities shall be restricted to between 7:00 a.m. and 7:00 p.m. on weekdays, and between 9:00 a.m. and 6:00 p.m. on Saturdays. Construction would not be allowed on Sundays. As stated in the PSA:

> "Rails (including Yuma Ridgway's Rail and California black rail) primarily communicate during the first three hours of daylight (0.5 hours before civil sunrise through 2.5 hours after civil sunrise) and during the final three hours of daylight. The report further recommends that **loud noises in areas adjacent to occupied rail habitat should be avoided during those time windows each day**,

[153] TN 251679. *See also* Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49 p.

especially during the courtship, pair-bonding, egg-laying, and incubation periods (1 March – 30 June)."[154]

The temporal limitations established in NOISE-6 would not be sufficient to avoid significant impacts to rails (and other special-status birds) because it allows noisy construction activities during the first and final 3 hours of daylight when rails communicate (Table 1, below). Furthermore, NOISE-6 lacks an appropriate mechanism for ensuring noisy construction activities would not impact special-status rail species because it defines "noisy" as "noise that has the potential to cause project-related noise complaints."[155] Because the nearest sensitive (human) receptor is located approximately 1.5 miles from the Project site,[156] it is unlikely that any Project construction activity, no matter how loud, would trigger a noise complaint and the restrictions established in NOISE-6.

Table 1. First and last three hours of daylight at the Morton Bay Project site in 2025.[157]

Date	First 3 hours (a.m.)	Final 3 hours (p.m.)
March 1	5:45 to 8:45	3:05 to 6:05
June 30	4:08 to 7:08	4:24 to 7:24
December 21	6:15 to 9:15	2:07 to 5:07

NOISE-7 requires the Applicant to limit noise from steam blows by requiring the use of a rock muffler or other forms of effective silencers. NOISE-8 requires the Applicant to perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. However, neither measure establishes permissible thresholds for noise levels generated by steam blows and pile driving. As a result, NOISE-7 and NOISE-8 would not ensure noise-related impacts on wildlife are less than significant.

The PSA states: "[t]he project's operational noise levels would be 70 dBA Leq at 200 feet, assuming day-to-day operating conditions, including all equipment necessary to generate and transmit electricity to the grid."[158] This value was derived from the AFC, which identifies the noise modeling methods as "far field measurements of nominal 40 MW operations were acoustically scaled up to 140 MW (net) and the Project's cooling tower sound levels of 70 dBA at 200 ft were incorporated."[159] The AFC does not provide evidence substantiating the "70 dBA at 200 feet" value as being an accurate prediction of the noise level from the Project's cooling tower. Nevertheless, it appears that the PSA's estimate of the Project's operational noise level only accounts for noise generated by the cooling tower. Other equipment at the geothermal plant site (including production wells) would produce noise. Sound is additive when the two sources of noise do not differ by more than 10 dB. Therefore, if other sources of noise are considered,

[154] PSA, p. 5.2-100. [emphasis added].
[155] PSA, p. 5.9-16.
[156] PSA, p. 5.9-1.
[157] U.S. Navy, Astronomical Applications Department. Civil Twilight for 2025. [accessed 2024 Jul 12]. https://aa.usno.navy.mil/calculated/rstt/year?ID=AA&year=2025&task=2&lat=33.1826&lon=-115.6017&label=Elmore+North&tz=8&tz_sign=-1&submit=Get+Data.
[158] PSA, p. 5.9-8.
[159] AFC, p. 5.7-9 (TN 249737).

the operational noise level of the Project could exceed the PSA's estimate of 70 dBA Leq at 200 feet.

Statements such as: (1) "[i]t is expected that during normal steady-state operations the 80 dBA threshold will not be exceeded beyond plant boundaries;"[160] and (2) "[s]ilenced high pressure steam blows are likely on the order of 90 dBA at 100 feet"[161] suggest at least some level of uncertainty regarding the Project's noise levels. The reason(s) for the uncertainty need to be explained, and the noise estimates should be accompanied by confidence intervals that depict the possible range of noise levels.

Some of the noise values provided in the AFC have considerable variation. For example, the AFC states:

> "Sound levels during 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 dBA at 4,000 feet. As these events are infrequent, temporary, and finite, they are not expected to pose a significant impact."[162]

A sound level of 71 dBA at 4,000 feet is over 18 times louder than a sound level of 68 dBA at 300 feet. The AFC does not explain where the two values came from and thus why they differ significantly. In addition, it is unclear whether the two values represent: (a) the range of sound levels observed at other facilities, or (b) the range of sound levels that would be generated by the Project's steam venting, depending on the specific maintenance activities. The CEC must issue a revised and recirculated PSA that thoroughly describes how the Project's operational noise level(s) were calculated, including any assumptions that were built into the calculations.

In addition to NOISE-4 through NOISE-8, the PSA references BIO-14 as a measure that would mitigate noise impacts on wildlife. The PSA states:

> "In addition, staff proposed BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) which would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decimals during the breeding season or 80 decimals during the nonbreeding season. With the implementation of these noise COC/MM, construction impacts to birds from noise would be reduced to less than significant."[163]

The PSA fails to provide evidence that the performance standards specified in BIO-14 would be feasible to achieve. The Applicant has provided different values for the sound level of the Project's steam blows. However, if the steam blow is 71 dBA at 4,000 ft,[164] it would take 14,193

[160] TN 250677, Data Adequacy Supplement, Set 2.
[161] TN 254015, Response to CURE Data Request 236.
[162] AFC, pp. 5.7-9 and -10.
[163] PSA, p. 5.2-119.
[164] AFC, pp. 5.7-9 and -10.

feet for the sound to attenuate to 60 dBA and 1,419 feet to attenuate to 80 dBA.[165] If the steam blow is 90 dBA at 100 feet,[166] it would take 3,162 feet to attenuate to 60 dBA and 316 feet to attenuate to 80 dBA.

Habitat occupied by the Yuma's Ridgway's rail is located well within 3,162 feet of the rock muffler.[167] Therefore, even if the lower steam blow value (90 dBA at 100 feet) is applied, the Project's steam blows would exceed the 60-dBA noise threshold established in BIO-14. Although BIO-14 states: "[i]f necessary, additional noise reduction measures shall be implemented to reduce the maximum noise level to below 60 dBA at the edge of occupied habitat," the PSA fails to provide evidence that there are feasible options for achieving that standard, especially given that the steam blow has already been "silenced" by the rock muffler.[168]

The severity of a noise impact on wildlife depends not only on the intensity and frequency (e.g., continuous or intermittent) of the noise stimulus, but also on how much the noise stimulus exceeds ambient conditions.[169] For example, Barber et al. (2009) reported that noise levels 3 dBA above background (ambient) levels can result in wildlife having a 50 percent reduced listening area[170] and a 30 percent reduced alerting distance.[171] A noise level that is 10 dBA above the background level can result in a 90 percent reduced alerting distance. In its analysis of impacts of human disturbance on the conspecific California Ridgway's rail, the USFWS determined that adverse impacts to the species would occur if a project's noise levels exceeded the ambient noise level by 3 dBA.[172] The PSA fails to analyze, or incorporate mitigation for, potentially significant impacts on rails due to Project noise that exceeds ambient noise levels by more than 3 dBA.

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[165] Omni Calculator. 2014 Jul 11. Distance Attenuation Calculator. [accessed 2024 Jul 16]. https://www.omnicalculator.com/physics/distance-attenuation#what-is-the-spl-sound-pressure-level

[166] TN 254015, Response to CURE Data Request 236.

[167] TN 251679 and TN 251679. *See also* Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49 p.

[168] If a steam blow is 71 dBA at 4,000 feet, it would be 78 dBA at 1,700 feet. Noise barriers have the potential to reduce received sound levels by 5 to 15 dB, depending on barrier height, length, and distance from both source and receiver. *See* Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report 0123. p. 16.

[169] Barber JR, Crooks KR, Fristrup KM. 2009. The costs of chronic noise exposure for terrestrial organisms. Trends in ecology & evolution 25(3):180-189. *See also* Francis CD, Barber JR. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. Frontiers in Ecology and the Environment 11(6):305-313. *See also* Dooling RJ, Popper AN. 2007. The effects of highway noise on birds. California Department of Transportation Division of Environmental Analysis 74, Sacramento, CA.

[170] Defined as "the area of a circle whose radius is the alerting distance. Listening area is the same as the 'active space' of a vocalization, with a listener replacing the signaler as the focus, and is pertinent for organisms that are searching for sounds." (Barber et al. 2009)

[171] Defined as "the maximum distance at which a signal can be perceived. Alerting distance is pertinent in biological contexts where sounds are monitored to detect potential threats." (Barber et al. 2009)

[172] *For example, see* U.S. Fish and Wildlife Service. 2020 Sep 30. Formal Section 7 Consultation on the Lower Walnut Creek Restoration Project, Contra Costa County, California (Corps File No: 2019-00431S). Reference No: 08FBDT00-2020-F-0038.

Well Noise

The Project includes installation of production and injection wells at various locations. Some of these wells would be installed in wetland areas where Yuma Ridgway's rails and least bitterns have been detected. For example, Yuma Ridgway's rails were detected in marsh habitat where MB-04 and MB-05 would be located, and they were detected at the spare production well location near the intersection of Garst Road and Red Hill Road.

Construction of the geothermal wells and associated pipeline would generate noise during drilling, purging of the well, and production testing.[173] Once the well is operational, the pipeline generates flow noise, primarily at control valves and flow restricting devices, but also from traps installed within supply lines that automatically eject condensate along with a small amount of steam.[174] Although the PSA and AFC provide information on noise levels associated with drilling, neither document provides information on noise associated with purging of the well and production testing. In addition, neither document provides information on the operational noise levels of the wells and associated pipeline. This is a significant deficiency because purging of the well and production testing can generate extremely loud noise levels.[175]

The PSA at page 5.2-101 states:

> "BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decimals during the breeding season or 80 decimals during the non-breeding season. BIO-14 would also ensure overall noise from operation of the Morton Bay power plant would not exceed 60 decimals during rail peak communication hours during the breeding season. These COC/MM would be applicable in areas adjacent to habitat for Yuma Ridgway rail and other marshland species, along W Schrimpf Road and Morton Bay, which includes the location of the generating facility, production wells and well pads, and gen-tie lines and poles."

The PSA fails to demonstrate it would be possible for the Applicant to comply with these noise thresholds. Drilling activities at the well sites would produce a noise level of 83 dBA Leq at 50 feet.[176] Noise associated with purging of the wells and production testing may be substantially louder.[177] The MB-04, MB-05, and spare production well sites would be located on top of habitat where Yuma Ridgway's rails were detected by the Applicant's consultant in 2022 (TN 251679). In addition, telemetry data collected by the USGS shows that the spare production well pad site would overlap the home range of at least one rail (Figure 4, below).[178] If drilling

[173] Hunt M. 1998. Environmental Noise Issues Associated with Geothermal Development. In: Proceedings of The 20th New Zealand Geothermal Workshop 1998. Geothermal Institute, University of Auckland.
[174] *Id.*
[175] *Id.*
[176] PSA, p. 5.9-7.
[177] Hunt M. 1998. Environmental Noise Issues Associated with Geothermal Development. In: Proceedings of The 20th New Zealand Geothermal Workshop 1998. Geothermal Institute, University of Auckland.
[178] *See also* Ricca MA, Overton CT, Anderson TW, Merritt A, Harrity E, Matchett E, Casazza ML. 2022. Yuma Ridgway's rail selenium exposure and occupancy within managed and unmanaged emergent marshes at the Salton Sea: U.S. Geological Survey Open-File Report 2022–1045, 49 p.

activities produce an hourly average noise level of 83 dBA, and because the drilling activities would be conducted in areas known to be occupied by Yuma Ridgway's rails, there is no apparent way for the Applicant to comply with the noise thresholds established in BIO-14 and avoid significant impacts to the subspecies.

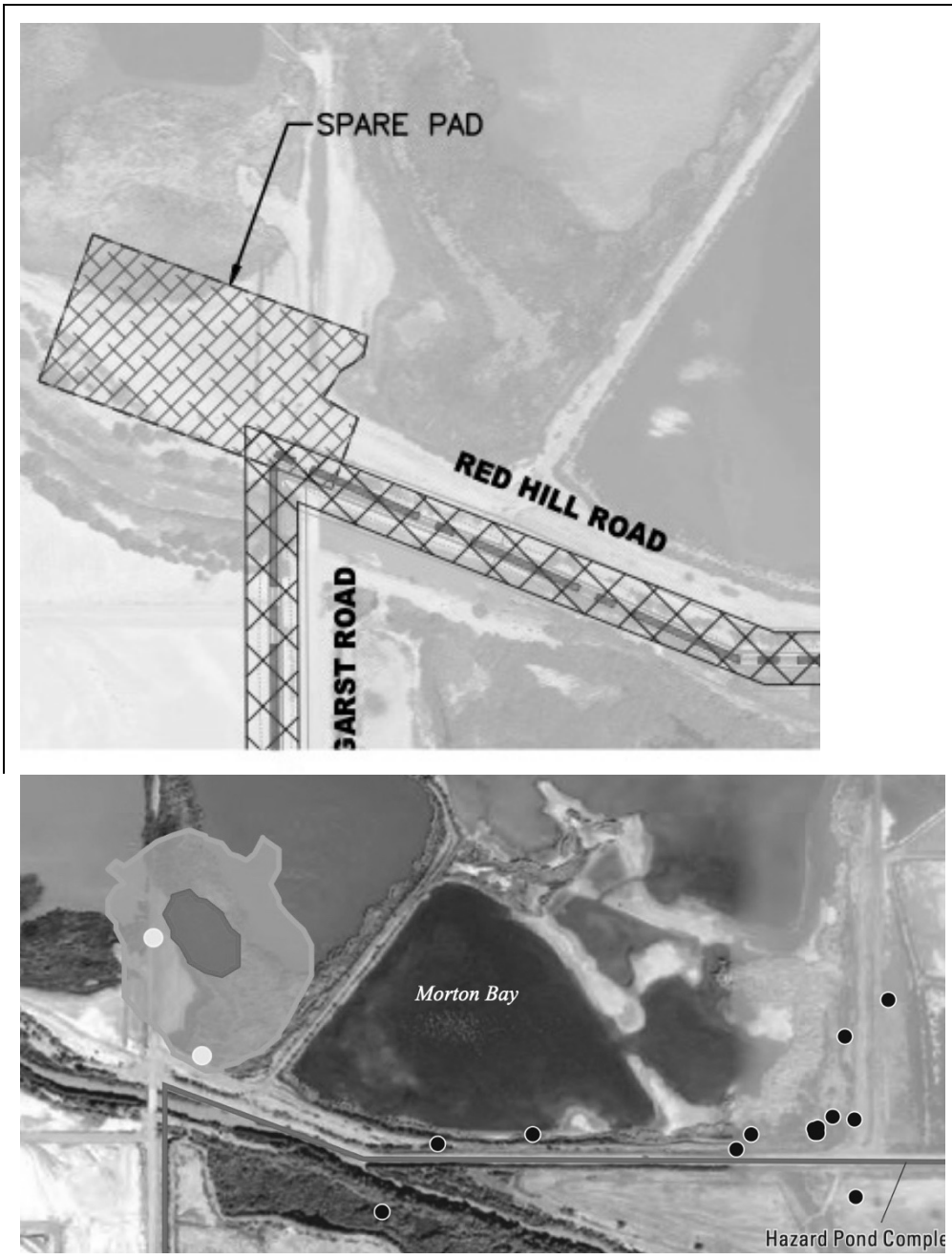

Figure 4. Location of the proposed spare well pad and gen-tie line (top image) in relation to two Yuma Ridgway's rails tracked by the USGS (bottom image). Red and green areas represent 50-percent and 95-percent isopleths for bird with >100 relocations. Black dots represent individual relocation data for a bird with <100 relocations. Yellow dots correspond to approximate locations of survey stations MB-01 and MB-02 where Yuma Ridgway's rails were detected by the Applicant's consultant (TN 251679).

Avian Collisions and Electrocutions

The PSA's analysis of impacts associated with the Project's gen-tie line focuses on the electrocution hazard to birds,[179] although Staff appears to recognize that power lines also pose a collision hazard.[180] While both collisions and electrocutions at power lines are significant threats to birds, substantially more birds are killed by collisions than by electrocutions.[181]

The PSA determined that impacts from operation of gen-tie lines would be reduced to less than significant through implementation of BIO-20.[182] BIO-20 states:

> "The project owner shall prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. This plan shall incorporate Suggested Practices for *Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) guidelines and provide specific details on design, placement, and maintenance of line markers, as well as the associated analysis requested."

The Avian Power Line Interaction Committee ("APLIC") has released two sets of guidelines to reduce avian fatalities caused by power lines: one that addresses avian electrocutions (APLIC 2006) and one that addresses avian collisions (APLIC 2012).[183] While BIO-20 requires an Avian Collision Deterrent Proposal and Monitoring Plan that incorporates the 2006 APLIC guidelines (for electrocutions), it does not require the Applicant to implement the 2012 APLIC guidelines (for collisions). The 2012 APLIC guidelines discuss engineering aspects that can influence the risk of avian collisions with power lines. For example, power lines that parallel primary bird flight paths pose less risk than a perpendicular orientation. The core strategy for reducing the threat of new power lines involves spatial analysis, a field assessment, and an avian risk assessment.[184] For example, during the field assessment, data are collected on variables that affect the collision risk, such as the flight paths and core use areas of the site's bird species. These data are then used with data from the spatial analysis to help choose a power line route that would reduce the collision risk to birds. Although the PSA acknowledges that the Project site is located in an area with a high diversity and abundance of birds, and that the Project's gen-tie line would traverse the edge of a National Wildlife Refuge that provides important habitat for

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[179] PSA, p. 5.2-117.

[180] PSA, p. 5.2-140: "*The Morton Bay, Elmore North, and Black Rock projects would minimize potential avian collision and electrocution with staff's proposed BIO-20 (Avian Collision Deterrent Proposal and Monitoring Plan).*"

[181] Manville AM. 2005. Bird strikes and electrocutions at power lines, communication towers, and wind turbines: state of the art and state of the science–next steps toward mitigation. USDA Forest Service General Technical Report PSW-GTR-191. *See also* Loss SR, Will T, Marra PP. 2014. Refining estimates of bird collision and electrocution mortality at power lines in the United States. PloS one 9(7):e101565.

[182] PSA, p. 5.2-117.

[183] Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf

[184] *Id*, pp 64 through 74.

migratory birds along the Pacific Flyway,[185] there were no efforts to conduct the spatial analysis, field studies, and avian risk assessment recommended in the 2012 APLIC guidelines.

Any new power lines in the Project's Biological Study Area pose a significant collision risk to birds due its location in relation to the Pacific Flyway, Salton Sea, SBSSNWR, and agricultural areas (which provide foraging habitat for overwintering migratory birds and resident waterfowl).[186] However, the proposed gen-tie line would be especially hazardous to birds for two reasons. First, it would contain a shield wire (TN 249723), which is the wire most frequently associated with bird collisions due to its small diameter and elevated position on the transmission line.[187] Second, it was sited without any consideration of avian flight paths. In general, long-distance migrants fly at high altitudes and are only vulnerable to collisions when weather forces them to fly at low altitudes, and when they descend to, or ascend from, stopover points. Consequently, resident birds (summer, winter, or year-round) that occupy habitats near power lines tend to be more vulnerable. Resident birds that make daily flights between foraging and roosting (or resting) areas most vulnerable, especially when there is only a short distance between these two habitat areas.[188] These birds are more likely to encounter power lines because the flights are typically at low altitudes. As stated in the 2012 APLIC guidelines: "[t]he critical questions are how often, and in what numbers, do birds fly across a power line during their daily routines?"

The Project's gen-tie line would traverse a portion of the northern border, and the entire western border, of the Hazard Tract. This would pose a very significant collision threat to resident birds, many of which make daily flights among the Hazard Tract, Salton Sea, and Morton Bay. Smallwood (2023) reported the following after conducting a site visit in September 2023:

> "Beginning in the evening hours and continuing after dark, thousands of birds flew from the Hazard Tract of the Imperial Wildlife Area and headed over Morton Bay and the ENGP site to the Salton Sea, although some birds flew the reverse direction. The most abundant of these birds was white-faced ibis (Photo 35), followed by cattle egrets (Photo 36), various species of gull and waterfowl. Other species flying over this area included terns, mourning doves, white-winged doves and shorebirds. As shown in Photos 25 – 29, flights of these birds are already rendered hazardous by the existing electric distribution lines along Garst Road. These lines are marked, but half of the markers are broken. Furthermore, the markers would do little to alert night-flying birds of the lines' hazards. The proposed gen-tie would increase the number of cables in the airspace used by birds, and it would increase their height domain and extend their hazard from Garst Road to the west along the border between the ENGP site and Morton Bay."[189]

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[185] PSA, pp. 5.2-11, -12, -17, and -20.
[186] *Id. See also* Smith MA, Mahoney J, Knight EJ, Taylor L, and 9 others. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. [accessed 2024 Aug 29]. birdmigrationexplorer.org.
[187] Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. Available at: <https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf>.
[188] *Id*.
[189] Smallwood KS. 2023 Nov 5. Letter report to K. Federman, Adams Broadwell Joseph & Cardozo. 33 pp.

Consistency with Applicable LORS

The PSA concludes that the Project is consistent with Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System) and the National Wildlife Refuge System Improvement Act of 1997. The PSA states: "[t]he NWR does not have a comprehensive conservation plan completed at the time of this AFC. The proposed project would include COC/MM to reduce impacts to any portion of the National Wildlife Refuge System and ensure compliance (Section 5.2.2.2)."[190] The statement that the NWR does not have a comprehensive conservation plan is false. In March 2014, the USFWS released the Final Comprehensive Conservation Plan ("CCP") for the Sonny Bono Salton Sea NWR and Coachella Valley NWR.[191] The CCP is designed to guide the management of the Refuges over the next 15 years (i.e., through 2029).[192] A revised and recirculated PSA needs to address how the Project would affect the USFWS's ability to achieve the various goals and objectives discussed in the CCP.

The PSA fails to explain why the proposed COCs/MMs would enable compliance with Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997, both of which focus on: (a) the conservation of fish, wildlife, plants and their habitats; and (b) ensuring that the biological integrity, diversity, and environmental health of the System are maintained. The Project includes geothermal wells, well pads, a pipeline ROW, and gen-tie line segment along the border of the SBSSNWR, while the power plant would be located approximately 500 feet from the border. In addition, the gen-tie line segment along Garst Road would go through the SBSSNWR.

Even with successful implementation of the COCs/MMs proposed in the PSA, the Project would result in indirect impacts (e.g., noise, power line collisions) on the SBSSNWR. These impacts would negatively affect the biological integrity of the NWR and the conservation of fish, wildlife, plants and their habitats. While some wildlife-dependent recreational activities are compatible with Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997, geothermal development activities are not.

The USFWS's ability to achieve habitat objectives at the Sonny Bono Salton Sea NWR is dependent on the availability of water from IID.[193] In addition, one of the recovery criteria in the Yuma Clapper Rail Recovery Plan is: "Long-term contracts providing for a quality and quantity of water to support the Yuma clapper rail habitats at the Salton Sea are in place. The amount and quality of the water supply should be sufficient to maintain healthy cattail marsh habitat at Sonny Bono Salton Sea NWR and Imperial State Wildlife Area."[194] Consequently, a revised and recirculated PSA should discuss how the operational water demand of the three proposed geothermal projects (Elmore North, Morton Bay, and Black Rock) would affect the availability

[190] PSA, Table 5.2-6.
[191] U.S. Fish and Wildlife Service. 2016 Mar. Final Comprehensive Conservation Plan for the Sonny Bono Salton Sea NWR and Coachella Valley NWR. Sacramento: U.S. Fish and Wildlife Service.
[192] *Id*, p. 1-1.
[193] *Id,* 4-40, -41, 4-84.
[194] U.S. Fish and Wildlife Service. 2009. Yuma Clapper Rail (*Rallus longirostris yumanensis*) Recovery Plan. Draft First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico. p. vi.

of water for habitat management at the Sonny Bono Salton Sea NWR and Imperial Wildlife Area.

Salton Sea Reclamation Act

The PSA determined the Project would be consistent with the Salton Sea Reclamation Act of 1998. The PSA states: "[t]he proposed project would include COC/MM to reduce impacts to any waters of the U.S. to a less than significant level and ensure compliance (Section 5.2.2.2)." This statement is not accompanied by analysis. As stated in PSA Table 5.2-6, two of the goals of the Salton Sea Reclamation Act are to stabilize the overall salinity of the Salton Sea and stabilize the surface elevation of the Salton Sea. Achieving these goals is dependent on the ability to restore the amount of freshwater flowing into the Sea. The Project does nothing to help achieve stabilize the salinity and surface elevation of the Sea. To the contrary, it would only exacerbate the problem. As discussed in IID's comment letter to the CEC:

> "Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 … An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea." (TN 251870)

Fish and Game Code Sections 3511, 4700, 5050, and 5515

The PSA determined the Project would be consistent with California Fish and Game Code provisions for "Fully Protected" species. The PSA's rationale was: "[t]he proposed project would include COC/MM to reduce impacts to FP animal species to a less than significant level and ensure compliance (Section 5.2.2.2)." The PSA's rationale is misdirected. The standard for compliance with California Fish and Game Code regulations pertaining to fully protected species is much higher than the CEQA standard for mitigation. The PSA must not only ensure that the Project impacts are less than significant, but also that the Project does not result in *any* "take" of a fully protected species. The COCs/MMs in the PSA allow the Applicant to construct wells and well pads on top of habitat for fully protected species, to construct power lines in the flight paths of fully protected species, and generate deleterious noise levels in habitats occupied by fully protected species. As a result, there is substantial evidence that the Project is likely to cause "take" of a fully protected species.

CONDITIONS OF CERTIFICATION AND MITIGATION MEASURES

Many of the Conditions of Certification ("COCs")/Mitigation Measures ("MMs") proposed in the PSA require the Applicant to develop a "plan" for mitigating the Project's significant impacts. This approach constitutes deferred mitigation. The following COCs/MMs require formulation of mitigation plans:

- BIO-9 (Desert Pupfish Protection and Relocation Plan)
- BIO-10 (Invasive Species Management Plan)
- BIO-11 (Closure, Revegetation, and Rehabilitation Plan)
- BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring Plan)
- BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan)
- BIO-15 (Burrowing Owl Exclusion Plan)
- BIO-16 (Burrowing Owl Habitat Preservation and Enhancement Plan)
- BIO-17 (Habitat Restoration and Compensation Plan)
- BIO-19 (Facility Pond Wildlife Escape and Monitoring Plan)
- BIO-20 (Avian Collision Deterrent Proposal and Monitoring Plan)
- BIO-21 (Biological Resources Mitigation Implementation and Monitoring Plan)

Deferring mitigation plans until after completion of the environmental review process—as proposed in the PSA—does not ensure Project impacts would be reduced to less than significant levels. As discussed previously, deferring the Burrowing Owl Monitoring and Mitigation Plan for the Abengoa Mojave Solar Project resulted in significant impacts on the burrowing owl. In addition, deferring the mitigation plans precludes the ability to evaluate the sufficiency of those plans, and thus, whether they would mitigate Project impacts to less than significant levels. It also effectively robs the public and natural resource agencies from being able to submit informed comments pertaining to the mitigation measures, and from having those comments vetted during the environmental review process.

CEQA specifically prohibits deferral of mitigation measures. However, the specific details of a mitigation measure may be developed after project approval if the lead agency: (1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard and that will be considered, analyzed, and potentially incorporated in the mitigation measure, and (4) demonstrates in the record that a detailed description of the mitigation measure(s) was impractical or infeasible during the Project's environmental review phase.[195] The PSA fails to satisfy these requirements for the following reasons:

1) The PSA does not commit the CEC to the mitigation. Preparation of a "plan" is not mitigation as defined in the CEQA statutes. In some instances, the COCs /MMs defer to other parties to decide whether mitigation should be implemented. For example, in BIO-20, mitigation decisions pertaining to avian collisions are deferred to an undefined "working group of interested agency personnel."
2) The PSA fails to adopt specific performance standards for the mitigation. In most instances, the PSA either defers formulation of the performance standards (e.g., BIO-11,

[195] Cal Code Regs. tit. 14 § 15126.4.

BIO-16, BIO-17, BIO-21), or requires no performance standards whatsoever for the mitigation (e.g., BIO-9).

3) Most of the COCs/MMs describe the types of actions that could be implemented as mitigation. However, without accompanying performance standards, it is difficult to evaluate whether the actions would be effective. In some instances, the COCs/MMs add an additional layer of deferred mitigation. For example, BIO-16 identifies burrow enhancement and "consolidating and enlarging conservation areas known to support burrowing owl populations" as two means of mitigating the Project's impacts on burrowing owl burrows. However, BIO-16 then states: "[i]f these two options are not available, the mitigation land requirement shall be increased in consultation with CDFW." BIO-16 does not identify how much the mitigation land requirement would be increased, nor does it provide a range of values that enable the public to understand how much (or little) it might increase.

4) Finally, the PSA fails to demonstrate that a detailed description of the COCs/MMs was impractical or infeasible during the Project's environmental review phase. For example, the foundation of BIO-14 is conducting a noise study to evaluate the maximum predicted noise level within rail habitat. The results of the study would then trigger development of noise attenuation measures, if needed to prevent potentially significant noise levels at the habitat. The only information needed to conduct the noise study required under BIO-14 is data on ambient noise levels at rail habitats (easily collected with a sound meter); construction equipment noise levels (already known); and construction locations (known since release of Applicant's Refinement Package [TN 253188] in November 2023). Therefore, it was practical and feasible for the Applicant to conduct the noise study prior to release of the PSA. Deferring the noise study until after the CEC's decision on the Project not only deprives the public and CEC from knowing how much the Project would alter noise levels at rail habitat, but also whether it will be possible for the Applicant to comply with the noise thresholds established in BIO-14.

BIO-2: Rodenticides

The PSA states (p. 5.2-84) that the Applicant has mentioned the potential use of rodenticides and herbicides. The PSA further states (p. 5.2-113):

> "Rodenticides could directly impact Yuma hispid cotton rat through ingestion, resulting in mortality of individuals, which could also result in mortality to young that are unable to survive on their own. Wildlife that that prey on rodents, such as birds of prey, wolverines, or desert kit fox, could be exposed to lethal doses of rodenticides through ingestion of contaminated prey items. To ensure impacts to sensitive wildlife species are minimized **BIO-2** (Pesticide Application Requirements) would require licensed applicators and employing best management practices during herbicide use. The applicant would only use herbicides and best management practices that have been approved by CEC and CDFW for use based on evaluations of toxicity, solubility, soil adsorption potential, and persistence in water and soil. In addition, the applicant would use employees or contractors with required applicator licenses/certificates to apply

herbicides. With the implementation of these COC/MM, potential impacts to sensitive wildlife species would be reduced to less than significant."

BIO-2 states: "Rodent baits with the active ingredients brodifacoum, bromadiolone, difethialone and difenacoum shall not be used without the CPM approval to control rodent populations. These ingredients are very toxic and persistent and have been found widely in non-target wildlife." The PSA fails to justify why CPM approval of very toxic rodenticides would make the impacts on special-status wildlife less than significant. Furthermore, the PSA provides no analysis of the rodenticides that do not contain brodifacoum, bromadiolone, difethialone and difenacoum, nor does the PSA establish that such rodenticides exists. As a result, use of rodenticides at the Project site remains a potentially significant impact on special-status wildlife.

BIO-4: General Conservation Measures

I have three comments pertaining to BIO-4. First, BIO-4 states: "Gen-tie towers shall be well away from IID canals, or the Alamo River, and conductors shall be positioned to avoid aquatic resource impacts." This condition is vague due to the PSA's failure to quantify "well away from." Currently, the Applicant is proposing to install three gen-tie towers immediately adjacent to the Alamo River (TN 253188, Figure DA4.0-1aR). Presumably, staff would not consider these three towers "well away" from the Alamo River, which means they would need to be relocated. However, relocating the towers may cause impacts that were not disclosed or analyzed in the PSA. Foundations for the gen-tie line towers (power poles) will be installed at a depth of 30 feet.[196] This could affect stability of the Alamo River bank if the towers are not relocated.

Similarly, the Applicant is proposing to install gen-tie towers in areas containing aquatic resources, including: (a) one tower in the O-N marsh east of Hatfield Road, and (b) multiple towers adjacent to the Vail 3 Drain, managed wetlands east of Garst Road, and tamarisk thickets west of Garst Road.[197] Due to the aquatic resources on both sides of Garst Road, it does not appear feasible for the Applicant to adhere to BIO-4 (regarding location of gen-tie towers).

Second, BIO-4 states: "Project activities shall be conducted in a manner that prevents the introduction, transfer, and spread of invasive species, including plants (e.g., weeds) … Prevention Best Management Practices and guidelines for invasive plants can be found on the California Invasive Plant Council's website at: https://www.cal-ipc.org/solutions/prevention/." The document referenced in BIO-4 is 50 pages long and contains numerous BMPs. To minimize the potential for the Project to cause significant impacts associated with the introduction and spread of invasive plants, the PSA must identify the specific BMPs that the Applicant would be required to implement. Furthermore, the PSA needs to establish performance standards and monitoring requirements for invasive plants in Project areas that have been subject to Project ground disturbance activities.

[196] PSA, p. 15-1 (Water Resources page 1). (The page numbers in both the Visual Resources and Water Resources chapters of the PSA begin with 15).
[197] The PSA at page 5.2-82 determined that the tamarisk thickets are likely to be regulated by RWQCB as wetland waters of the state.

Third, BIO-4 states: "[a]ny soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to plants and wildlife." The PSA fails to identify the specific dust suppressant products that would be permissible. Most dust suppressant products, including varieties that are "non-toxic" to humans, can have adverse effects on the environment.[198] For example, most "non-toxic" dust suppressant products are comprised primarily of salts, which could exacerbate water quality issues that exist in the Project area.

BIO-12: Conduct Pre-Activity Surveys for Nesting Birds

BIO-12 requires a pre-activity survey for nesting birds if Project construction or decommissioning activities must occur during the avian breeding season. BIO-12 states: "[p]re-activity surveys shall be conducted by the approved biologist at the appropriate time of day/night, during appropriate weather conditions." This statement is too vague to ensure efficacy of the mitigation. BIO-12 must define what would be considered the appropriate time of day and weather conditions.

BIO-12 outlines the methods that should be used during the pre-activity survey. However, given the density of vegetation in the tamarisk thickets and emergent marshes, it appears infeasible for a biologist to be able to locate all bird nests in those vegetation communities, especially given the 7-day timeframe prescribed in BIO-12.

Most marsh birds (e.g., Yuma Ridgway's rail, Virginia rail, California black rail, and least bittern, among others) construct concealed nests that are nearly impossible to find, especially without damaging the nest. Although BIO-12 states "surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior (e.g., copulation, carrying of food or nest materials, nest building, [etc.]," these indirect cues of nesting rails are generally not evident to surveyors due to the habitat and behavior of the species. For example, the Yuma Ridgway's rail is a secretive marsh bird that is more often heard than seen. As a prey species, Yuma Ridgway's rails tend to remain hidden in dense vegetation and they do not usually perch above the ground. Their bodies are laterally compressed, and they can steer right and left, which enables them to move efficiently through cattails and other emergent vegetation without detection. When alarmed (e.g., by a bird surveyor), they will run into vegetative cover with their bodies held horizontal (for concealment).[199] California black rails are even more difficult to detect and monitor for indirect cues of nesting. The CDFW describes this species as "rarely seen,"[200] which is consistent with my experience during many years of marsh bird surveys. On one occasion when I was conducting California black rail surveys for the Point Reyes Bird Observatory (now called Point Blue Conservation Science), a black rail briefly flew above the marsh plain in response to a playback recording. However, on all other occasions, no amount of playback recordings could force the birds to reveal themselves (although they would sometimes vocalize in response to the recordings).

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[198] US Army Corps of Engineers. 2007. Environmental Evaluation of Dust Stabilizer Products. Vicksburg, Miss: US Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory. 58 pp.

[199] U.S. Fish and Wildlife Service. 2009. Yuma Clapper Rail (*Rallus longirostris yumanensis*) Recovery Plan. Draft First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico.

[200] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1711&inline=1

Playback recording are often the only effective technique to determine presence of rail species.[201] However, playback surveys cannot be used to confirm absence of the target species, nor can they be used to identify the precise location of a nest. For example, Conway et al. (1993) found that most radio-marked Yuma clapper rails (now called Ridgway's rail) did not respond to the playback recordings (year-round response rate averaged 19.2%), especially outside of the early breeding season.[202] Other rail species also have low response rates, ranging from 13% to 50%, depending on the season and other variables.[203] After assessing observer detection probability, Conway et al. (2004) concluded that as many as 15 replicate surveys may be needed to attain >90% detection probability of black rails within potential wetland habitat.[204]

Although playback recording surveys can be a relatively effective technique for determining presence of rails—if multiple survey replicates are conducted at the appropriate time of day and year—they have drawbacks. For example, one of the problems with playback recording surveys is that they attract birds towards the surveyor.[205] On several occasions, I have conducted playback recording surveys, got no vocal response, but as the survey was terminating, a bird (usually a Virginia rail and never a black rail) would reveal itself within a few feet of my survey station. While such incidents make it easy to confirm presence of the target species, they make it impossible to determine where the bird came from, and thus, inferences on where a nest site might be located.[206]

The scientific information above has three major implications on the adequacy of the PSA's COCs/MMS. First, the single survey required under BIO-12 would not be effective in locating rail species and preventing significant impacts to their nests. Even if multiple surveys are conducted, those surveys would be ineffective unless playback recordings are used during the appropriate time of day and year. Second, even if numerous playback recording surveys are conducted, there is no way to "verify that no nesting is occurring," as suggested in BIO-13 (which allows rail habitat removal during the nesting season if the Applicant first verifies that no nesting is occurring). Third, because there is no way to verify absence of rails and their nests, any construction activities in rail habitat have the potential to cause "take." This issue is compounded by the fact the Yuma Ridgway's rail and California black rail are fully protected species under California Fish and Game Code. This means that the PSA must incorporate mitigation that not only ensures impacts are less than significant (under CEQA), but that the Project causes no "take" whatsoever of either species. The COCs/MMs proposed in the PSA are grossly insufficient in that regard: the CEC cannot authorize construction activities in or near habitats known to be occupied by the Yuma Ridgway's rail (and potentially California black rail), during the breeding season, without causing "take."

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[201] Legare ML, Eddleman WR, Buckley PA, Kelly C. 1999. The effectiveness of tape playback in estimating Black Rail density. The Journal of wildlife management 1:116-125.
[202] Conway CJ, Eddleman WR, Anderson SH, Hanebury LR. 1993. Seasonal changes in Yuma clapper rail vocalization rate and habitat use. The Journal of wildlife management 1:282-290.
[203] Conway CJ, Sulzman C, Raulston BE. 2004. Factors affecting detection probability of California Black Rails. The Journal of Wildlife Management 68(2):360-370.
[204] *Id.*
[205] *Id.*
[206] If a rail is repeatedly detected at the same location during multiple surveys, the surveyor can infer that the bird is occupying a nesting territory in that area.

Nest Buffers

BIO-12 states: "[i]f an active nest is detected, a 100-foot avoidance buffer for passerines, and a 500-foot avoidance buffer for raptors or pelicans, shall be established and clearly delineated by staking, flagging, and/or signage." BIO-12 must establish buffer sizes not only for passerines and raptors, but for all types of birds that have the potential to nest in the Project area (e.g., Anseriformes, Charadriiformes, Trochiliformes, etc.).

BIO-13: Yuma Ridgway's Rail Survey, Management, and Monitoring

BIO-13 states:

> "Construction and decommissioning activities within or adjacent to suitable habitat for Yuma Ridgway's rail (i.e., cattail marsh, Invasive Southwest Riparian Woodland and Shrubland, and North American Arid West Emergent Marsh) shall be scheduled to avoid the nesting and molting flightless season (i.e., February 15 – September 15) unless surveys verity [*sic*] that no nesting is occurring."

This condition is vague and therefore does not ensure impacts to the Yuma Ridgway's rail would be minimized. A revised and recirculated PSA must establish what would be considered "adjacent" by providing a quantifiable distance.

As discussed previously, the Yuma Ridgway's rail is a secretive bird that constructs well concealed nests. As a result, it is impossible to "verify" that no nesting is occurring. Should Staff continue to believe that it is appropriate to allow construction and decommissioning activities in wetland habitats during the breeding season, the PSA must establish how the biologist would verify that no nesting is occurring and clarify whether BIO-13 requires implementation of the USFWS's (2017) *Yuma Ridgway's Rail Survey Protocol*.[207]

BIO-14: Yuma Ridgway Rail Species Noise Assessment and Abatement Plan

BIO-14 states: "[t]he project owner, in coordination with the DB(s), shall prepare a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot [sic] from suitable rail habitat." BIO-14 then establishes construction noise thresholds for the breeding and non-breeding seasons (60 dBA and 80 dBA, respectively). Accordingly, a Marshland Species Noise Assessment and Abatement Plan would not be required if construction activities would not occur within 500 feet of suitable rail habitat. There are three problems with this portion of BIO-14. First, the PSA fails to define what should be considered "suitable rail habitat." As a result, the Applicant would be allowed to decide what it wants to consider suitable rail habitat (which is not a reliable approach). A map of suitable rail habitat should be prepared by a bona fide expert, and that map should be appended to BIO-14. Although some habitat mapping was conducted for the Applicant's rail surveys (TN 251679), the mapping was confined to a pre-defined survey area. Consequently, all potential habitat areas within 500 feet of the proposed construction sites have not been mapped (e.g., none of the habitat within the Hazard Tract was mapped).

[207] https://www.fws.gov/sites/default/files/documents/yuma-ridway%27s-rail-survey-protocol-2017.pdf

Second, the PSA fails to recognize the possibility that construction activities more than 500 feet away from rail habitat could produce noise that would not attenuate to below the established thresholds by the time it reaches the rail habitat. For example, a dozer generating a noise level of 88 dBA at 50 feet, would generate a noise level of 68 dBA at 500 feet.[208] Under this scenario, the noise level in the marsh would exceed the 60-dBA threshold, but no Marshland Species Noise Assessment and Abatement Plan would have been required.

Third, although BIO-14 is clearly designed to avoid significant noise impacts to rails, it focuses solely on noise generated by the Project—not the total noise level at marsh habitat when additional sources of noise are considered. The Applicant's Yuma Ridgway's rail survey report indicates that existing geothermal power plants in the area (e.g., Elmore and Hudson Ranch) generated noise substantial enough to hamper the rail surveys at some locations. This suggests that noise from the existing power plants, when combined with noise from the Project, could exceed the 60-dBA threshold, even if the Project's predicted noise level is less than 60 dBA.

BIO-14 states that the following noise attenuation measures shall be implemented to minimize noise impacts on Yuma Ridgway's rail and other sensitive marshland species during the breeding season:

- "At least 30 days prior to any maintenance activities within 500-feet of marshland habitat, the project owner shall conduct a noise study to evaluate the maximum predicted noise level within rail habitat."
- "If the maximum predicted noise is less than 60 dBA Leq (Equivalent Continuous Level), no additional measures are required."

BIO-14 must clarify whether the noise study would be required for any Project activities that could produce loud noise at rail habitat, or only "maintenance activities" (as stated in BIO-14). In addition, BIO-14 needs to identify the "marshland habitat" that would be subject to the noise study, and it must clarify what metric should be used to measure the "maximum predicted noise." The 60-dBA threshold established in BIO-14 is confusing because the metric Leq is a measure of the average noise level, not the maximum noise level.

The effects of noise on wildlife depend on the nature of the noise stimulus.[209] Chronic and frequent noise can impair an animal's sensory capabilities, thereby masking biologically relevant sounds used for communication, detection of threats or prey, and spatial navigation.[210] Intermittent and unpredictable "impulse" noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.[211]

Several metrics can be used to characterize the noise environment. Time-averaged values, such as equivalent continuous sound level (Leq), can be extremely informative to describe sounds that

[208] *See* AFC, Table 5.7-7.
[209] Francis CD, Barber JR. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. Frontiers in Ecology and the Environment 11(6):305-313.
[210] *Id. See also* Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. Ornithological Monographs 74:6-22.
[211] *Id, See also* Wright MD, Goodman P, Cameron TC. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl 60:150-167.

are chronic or frequent; however, Leq measurements do not properly characterize loud, infrequent sounds. These infrequent impulse sounds are best characterized by the metric Lmax, which captures the highest instantaneous sound level measured during a specified period. Pile driving and steam blows associated with the Project would produce impulse noise that could cause a Yuma Ridgway's rail (or other sensitive marsh bird) to flush from its nest or other cover, thereby making the bird and eggs more susceptible to predation (which is known to be a significant threat to Ridgway's rails). The PSA's proposal to use an hourly average noise level (60 dBA Leq) as the trigger for additional mitigation is not appropriate for the Project's pile driving and steam blows, which could cause noise levels of 104 dBA at 50 feet.[212] Because these activities would be infrequent and of short duration,[213] they are unlikely to surpass the 60-dBA Leq threshold established in BIO-14. This would result in potentially significant impacts to the Yuma Ridgway's rail (or other sensitive marsh birds). Consequently, the metric used for the 60-dBA (breeding season) and 80-dBA (non-breeding season) thresholds referenced in BIO-14 must be changed from Leq to Lmax. In addition, to enable proper understanding of the Project's noise levels, the PSA needs to clarify: (a) whether the 104 dBA generated by pile driving and steam blows is the Lmax or Leq value; and (b) how long a steam blow from the Project would last.

BIO-15: Burrowing Owl Surveys, Monitoring, Prevention, and Relocation

BIO-15 states: "[t]he DB(s) or Biological Monitor(s) shall monitor occupied burrowing owl burrows within 1,000 feet of project activities for at least 3 days prior to construction or decommissioning to determine baseline foraging behavior (i.e., behavior without construction)." However, BIO-15 only requires pre-activity surveys in areas that would be subject to direct disturbance, and the burrowing owl surveys conducted by the Applicant only included surveys within a 200-meter (656-foot) buffer around the BSA (TN 254834). Therefore, the PSA must establish a means for detecting occupied owl burrows that occur between 656 feet and 1,000 feet of project activities.

BIO-16: Burrowing Owl Habitat Preservation and Enhancement

BIO-16 requires the Applicant to prepare a Burrowing Owl Habitat Preservation and Enhancement Plan. According to BIO-16:

> "The project owner shall enhance or create new burrows at a 2:1 ratio for any active burrow requiring exclusion, closure, and relocation due to project activities. Enhancement may include clearing of debris or enlarging existing mammal burrows. Mitigation lands should be on, adjacent to, or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls' presence."

The PSA fails to demonstrate feasibility of this measure because it does not establish that it would be possible to conduct the mitigation on lands adjacent to, or proximate to, the impact sites. Most of the burrowing owl burrows in the Project area occur along the banks of IID's drains and canals. IID's comment letter to the CEC states: "[t]he proponents may not use IID's

[212] PSA, p. 5.9-7. The PSA indicates these activities could cause noise levels of 104 dBA Leq. Presumably the PSA means Lmax. If 104 dBA Leq is correct, the Lmax value would be significantly higher that 104 dBA.
[213] PSA, p. 5.9-7.

canal or drain banks to access the project site." (TN 251870) If IID will not allow use of the canal and drain banks to access the Project site, it may not allow those banks to be used as mitigation lands, especially because this would place a regulatory burden on IID. Although BIO-16 discusses other options for the mitigation lands, the FSA must identify the feasibility of having the mitigation on lands near the impact site(s). This is important because the success of burrowing owl relocation projects is correlated with the distance between impacted burrows and replacement burrows.[214]

BIO-16 states: "[t]he project owner shall replace foraging habitat that is permanently destroyed shall be replaced [*sic*] at a 1:1 ratio. Foraging habitat shall be suitable for the protection of burrowing owls." The FSA must identify the geographic limits for the replacement habitat. In addition, the FSA must establish whether the replacement habitat must be occupied by burrowing owls. This is important because burrowing owls exhibit high fidelity to breeding sites.[215] During 2006–2007, Wilkerson and Siegel (2010) surveyed the entire breeding range of the species in California, except the Channel Islands.[216] The survey replicated the statewide survey conducted between 1991 and 1993, and thus it provided important information on changes in the burrowing owl population throughout the state. Regions where birds were extirpated or nearly extirpated at the time of the first survey (1991–1993), were not repopulated by owls by the time of the second survey (2006–2007), despite the presence of apparently suitable habitat in those regions. This demonstrates burrowing owls do not simply colonize (or recolonize) surrogate habitat after they are displaced from a project site, and thus, the provision of unoccupied habitat does not mitigate the functions of the habitat that is eliminated.

BIO-17: Habitat Conservation or Restoration Plan

The compensatory mitigation required under BIO-17 would mitigate impacts to vegetation communities, which is not equivalent to habitat. The high ecological value of the Project site is a function of its geographic location in relation to the Pacific Flyway, Salton Sea, Sonny Bono Salton Sea National Wildlife Refuge, and Imperial Wildlife Area.[217] However, the PSA does not establish any geographic limits on the location of the habitat compensation land required under BIO-17. As a result, BIO-17 does not ensure significant impacts to habitat would be reduced to less than significant levels.

BIO-20: Avian Collision Deterrent Proposal and Monitoring Plan

BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan. In addition to deferring preparation of the overall plan, the PSA defers establishment of the "impact thresholds" (i.e., number of collision deaths) that would trigger the need for remedial actions. The impact thresholds are the most critical component of the plan because they would be used to decide whether the Project is having a significant impact on bird populations, and thus

[214] California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 10.
[215] Rosenburg DK, Haley KL. 2004. The Ecology of Burrowing Owls in the Agroecosystem of the Imperial Valley, California. Studies in Avian Biology 27:120-135.
[216] Wilkerson RL, RB Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. Bird Populations 10:1-36.
[217] PSA, pp. 5.2-16 and -17.

whether remedial actions are necessary. As a result, the CEC must issue a revised and recirculated PSA that identifies the proposed impact thresholds, and it must provide the scientific basis for selecting those thresholds so they can be thoroughly vetted by the public.

BIO-20 states: "[t]he project owner shall install a CPM-approved marker on the grounding wire of the proposed gen-tie lines. These markers shall be placed and maintained on the highest-bird-use portions of the proposed gen-tie lines." There are five problems with this measure. First, the PSA does not identify the "highest-bird-use portions" of the proposed gen-tie lines, nor does it identify how those portions would be identified. Second, there is no justification for only putting markers in the "highest-bird-use portions" of the gen-tie lines because the entire Project area is a high-use area for birds.[218] As a result, placing line markers at only select locations would be insufficient to prevent significant impacts to birds. Indeed, even if line markers are installed along the entire gen-tie line, the impact on birds could remain significant.[219] Third, commercially available line marker devices vary in efficacy, depending on site-specific conditions and the species that may encounter the lines.[220] BIO-20 does not require consideration of these variables. Fourth, line marker devices are not effective for birds that regularly fly at night. As stated on page 5.2-6 of the PSA: "Yuma Ridgway rails disperse at night and collide with fences and transmission lines." Therefore, line markers would not prevent significant impacts to the Yuma Ridgway rail. Fifth, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.

BIO-22: Jurisdictional Waters

The Applicant's field delineation identified approximately 58.78 acres of aquatic resources potentially under the jurisdiction of USACE and RWQCB in the study area.[221] Consequently, BIO-22 states: "[t]he project owner shall acquire, in fee or in easement, a parcel or parcels of land for any permanent impacts, up to 58.78 acres, to compensate for impacts to state and federal jurisdictional waters." This suggests that BIO-22 is imposing a mitigation ratio of 1:1.

The compensation ratio needed to mitigate the Project's impacts on aquatic resources and other sensitive natural communities depends on the functions that will be lost at the Project site in relation to the functions that will be "gained" at the mitigation site. This establishes the baseline ratio, which is almost never below 1:1. The ratio is then adjusted to account for: (1) the mitigation site location, (2) the mitigation strategy (i.e., preservation, creation, or enhancement), (3) uncertainty in the success of the mitigation program, (4) any habitat type conversion that

[218] PSA, pp. 5.2-11, -12, -17, and -20. *See also* Smith MA, Mahoney J, Knight EJ, Taylor L, and 9 others. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. [accessed 2024 Aug 29]. birdmigrationexplorer.org.
[219] Barrientos R, Ponce C, Palacin C, Martin CA, Martin B, Alonso JC. 2012. Wire Marking Results in a Small but Significant Reduction in Avian Mortality at Power Lines: A BACI Designed Study. PLoS ONE 7(3):e32569.
[220] Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf
[221] PSA, p. 5.2-183.

would occur, (5) temporal loss, and (6) the extent of ecological buffers at the mitigation site.[222] The 1:1 ratio incorporated into BIO-22 fails to account for these variables. At a minimum, the 1:1 ratio does not mitigate impacts to less than significant levels because it does not account for temporal loss (i.e., the lag time between functions lost and functions gained) or uncertainty (which is inherent in all mitigation efforts except those that involve purchasing credits at an approved mitigation bank).[223]

BIO-22 states (in part):

> "The project shall comply with all applicable laws and regulations regarding requirements of the United States Army Corps of Engineers and the Regional Water Quality Control Board for aspects of the project, if any, which fall within those agencies' respective purview, including obtaining any permits required for the construction, as well as compliance with any additional conditions attached to any required permits and monitoring requirements (if any). Copies of all regulatory waters permits shall be submitted to the CPM prior to ground-disturbing activities in areas supporting jurisdictional waters.

There are several reasons why the approach proposed in BIO-22 would not ensure Project impacts to wetlands and other jurisdictional waters are reduced to less than significant levels, as explained below.

First, although BIO-22 requires compensation for any permanent impacts to state and federal jurisdictional waters, it does not incorporate mitigation for the Project's temporary impacts to jurisdictional waters.[224] The state and federal "no overall net loss" policy for wetlands includes temporal loss of wetland acres and functions. Therefore, even if the Applicant restores the wetlands that are temporarily impacted by the Project, there would be an overall net loss. Achieving "no net loss" for temporarily impacted wetlands generally requires either: (a) restoration and enhancement actions that provide "functional lift" (i.e., the ecological functions of the restored wetland are superior to those of the wetland prior to impacts); or (b) a wetland compensation ratio that exceeds 1:1.[225] None of the Conditions of Certification proposed in the PSA require enhancement actions to achieve functional lift of the impacted wetlands, and BIO-22 only requires a compensation ratio of 1:1 for the Project's permanent impacts to wetlands. This issue is exacerbated by the PSA's failure to establish performance standards and monitoring requirements for wetlands that are restored as mitigation.

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[222] *See* State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. pp. 83 through 88. *See also* US Army Corps of Engineers, South Pacific Division. 2017. Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios.

[223] *Ibid.*

[224] PSA, p. 5.2-133. Although the PSA suggests BIO-22 includes restoration of aquatic resources subject to temporary impacts, there is no such provision in BIO-22.

[225] State Water Resources Control Board. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Staff Report Including the Substitute Environmental Documentation. 234 pp. *See also* US Army Corps of Engineers. 2015. Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE. pp. 16 through 18.

Second, requiring the Applicant to comply with state and federal regulatory requirements pertaining to wetlands is not mitigation as defined in the CEQA statutes. As the lead agency, the CEC is responsible for identifying the specific mitigation needed to reduce the Project's wetland impacts to less-than-significant levels. The CEC cannot defer that responsibility to other agencies (i.e., USACE and RWQCB), as proposed in BIO-22. In its comment letter to the lead agency for another project, the RWQCB (Lahontan Region) stated:

> "It is inappropriate to rely upon agency regulations for determining that impacts will be at insignificant levels…Water Board staff strongly discourages the County [of Kern] from attempting to defer to the later preparation of Waste Discharge Requirements (WDRs) permits to address the above issues. Such an approach would constitute deferment of mitigation. In the event that this occurs, the Water Board may require substantial modifications to the Project during the course of permitting review to ensure all water quality impacts [are] adequately mitigated. Water Board staff encourages the Project proponents to initiate detailed plans early in the process to allow for full and adequate review of the Project to address the above issues. This planning should be concurrent with the CEQA process as opposed to a sequential permitting approach."[226]

The RWQCB (San Francisco Bay Region) raised similar issues in its comment letter on yet another project:

> "CEQA requires that mitigation measures for each significant environmental effect be adequate, timely, and resolved by the lead agency. In an adequate CEQA document, mitigation measures must be feasible and fully enforceable through permit conditions, agreements, or other legally binding instruments (CEQA Guidelines Section 15126.4). Mitigation measures to be identified at some future time are not acceptable. It has been determined by court ruling that such mitigation measures would be improperly exempted from the process of public and governmental scrutiny which is required under the California Environmental Quality Act. The current text of the DEIR does not demonstrate that it is feasible to mitigate all potentially significant impacts to wetlands that may result from project implementation to a less than significant level. Impacts to the jurisdictional waters at the project site, as well as proposed mitigation measures of such impacts, will require review under CEQA before the Water Board can issue permits for those proposed impacts."[227]

Third, compliance with regulatory permits provides no assurances that impacts to jurisdictional waters would be less than significant. To the contrary, numerous studies have demonstrated that many compensatory mitigation projects permitted under Sections 401 and 404 of the Clean

[226] Kern County. 2011 Oct. Final Environmental Impact Report: RE Distributed Solar Projects, Chapter 7-4 (part 1), Comment Letter #8.
[227] City of Dublin. 2018 Oct. Final EIR for the At Dublin Project, Comment Letter #2.

Water Act are not achieving the goal of "no overall net loss" of wetland acres and functions.[228] For example, Ambrose and Lee (2004) concluded: "the Section 401 program has failed to achieve the goal of no net loss of habitat functions, values and services."[229] Similarly, the National Academy of Sciences (2001) conducted a comprehensive review of compensatory wetland mitigation projects in the U.S. and found that the national "no net loss" goal is not being met because: (a) there is little monitoring of permit compliance, and (b) the permit conditions commonly used to establish mitigation success do not assure the establishment of wetland functions.[230] Ambrose et al. (2007) derived similar results after examining 143 projects permitted by the California State Water Resources Control Board. Specifically, they concluded: (a) only 46% of the projects fully complied with all permit conditions, and (b) very few wetland mitigation projects were successful, especially from the ecological perspective.[231] With respect to temporary impacts, Wagner (2021) found that 40% of the projects authorized by the Los Angeles District of the USACE in 2011 had temporary impacts in which vegetative cover did not recover to pre-impact levels.[232]

For these reasons, the PSA must provide a detailed wetland mitigation plan that can be vetted by the public before the CEC makes a decision on the Project.

This concludes my comments on the PSA.

Sincerely,

Scott Cashen, M.S.
Senior Biologist

[228] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA. *See also* Environmental Law Institute. 2004. Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards. Report prepared for the US Environmental Protection Agency. 271 pp. *See also* Kihslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16.
[229] Ambrose RF, SF Lee. 2004. Guidance Document for Compensatory Mitigation Projects Permitted Under Clean Water Act Section 401 by the Los Angeles Regional Quality Control Board. p. 8.
[230] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA.
[231] Ambrose RF, JL Callaway, SF Lee. 2007. An Evaluation of Compensatory Mitigation Projects Permitted Under Clean Water Act Section 401 by the California State Water Resources Control Board, 1991-2002. xxiv + 396 pp.
[232] Wagner AJZ. 2021. Temporary Impacts to Wetlands in the Arid Southwestern United States Permitted by Section 404 of the Clean Water Act [dissertation]. [Los Angeles]: University of California.

Scott Cashen, M.S.
Senior Wildlife Biologist

Scott Cashen has 28 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 100 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)
Thesis: *Avian Use of Restored Wetlands in Pennsylvania*
B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 125 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Report). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calexico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy
- Ocotillo Wind Energy Project
- SD County Wind Energy
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other Development Projects

- Cal-Am Desalination Project
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (*CA State Parks*)
- "KV" Spotted Owl and Northern Goshawk Inventory: (*USFS, Plumas NF*)
- Amphibian Inventory Project: (*USFS, Plumas NF*)
- San Mateo Creek Steelhead Restoration Project: (*Trout Unlimited and CA Coastal Conservancy, Orange County*)
- Delta Meadows State Park Special-Status Species Inventory: (*CA State Parks, Locke*)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (*Sacramento County*)
- Placer County Vernal Pool Study – (*Placer County*)
- Weidemann Ranch Mitigation Project – (*Toll Brothers, Inc., San Ramon*)
- Ion Communities Biological Resource Assessments – (*Ion Communities, Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – (*The Wyro Company, Rio Vista*)

Forestry

- Forest Health Improvement Projects – (*CalFire, SD and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – (*SDG&E, San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project – (*San Diego County/NRCS*)
- Hillslope Monitoring Project – (*CalFire, throughout California*)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations ("BA/BE")

- Aquatic Species BA/BE – Reliable Power Project (*SFPUC*)
- Terrestrial Species BA/BE – Reliable Power Project (*SFPUC*)
- Management Indicator Species Report – Reliable Power Project (*SFPUC*)
- Migratory Bird Report – Reliable Power Project (*SFPUC*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SFPUC*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SFPUC*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)
- Draft EIR (Vegetation and Special-Status Plants) - Wildland Fire Resiliency Program (*Midpeninsula Regional Open Space District*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory *(CA State Parks: Locke)*
- Study design and lead bird surveyor - Placer County Vernal Pool Study *(Placer County: throughout Placer County)*
- Surveyor - Willow flycatcher habitat mapping *(USFS: Plumas NF)*
- Surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects *(Ducks Unlimited/USGS: San Pablo Bay)*
- Study design and Lead Investigator - Bird use of restored wetlands research *(Pennsylvania Game Commission: throughout Pennsylvania)*
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County *(HCV Associates: Napa)*
- Surveyor - Baseline inventory of bird abundance following diesel spill *(LFR Levine-Fricke: Suisun Bay)*

- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site *(City of Fairfield: Fairfield, CA)*
- Surveyor - Burrowing owl relocation and monitoring *(US Navy: Dixon, CA)*
- Surveyor - Pre-construction burrowing owl surveys *(various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County)*
- Surveyor - Backcountry bird inventory *(National Park Service: Eagle, Alaska)*
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor – Pre-construction surveys for nesting birds (*various clients and locations)*

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys *(USFS: Plumas NF)*
- Surveyor - Foothill yellow-legged frog surveys *(PG&E: North Fork Feather River)*
- Surveyor - Mountain yellow-legged frog surveys *(El Dorado Irrigation District: Desolation Wilderness)*
- Crew Leader - Bullfrog eradication *(Trout Unlimited: Cleveland NF)*

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys *(USFS: Plumas NF)*
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping *(City of Fairfield: Fairfield, CA)*
- GPS Specialist - Salmonid spawning habitat mapping *(CDFG: Sacramento River)*
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use *(CA Coastal Conservancy: Gualala River estuary)*
- Crew Leader - Exotic species identification and eradication *(Trout Unlimited: Cleveland NF)*

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)

- Scientific Advisor –Study on red panda occupancy and abundance in eastern Nepal *(The Red Panda Network: CA and Nepal)*
- Surveyor - Forest carnivore surveys *(University of CA: Tahoe NF)*
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals *(US Navy: Skagg's Island, CA)*
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units *(CDF: San Diego, San Bernardino, and Riverside Counties)*
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups)*
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites *(SDG&E: San Diego County)*
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan *(Trout Unlimited: Cleveland NF)*
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park *(County of Sacramento: Sacramento, CA)*
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property *(Yuba County, CA)*
- Lead Investigator - Wildlife Strike Hazard Management Plan *(HCV Associates: Napa)*
- Lead Investigator - Del Rio Hills Biological Resource Assessment *(The Wyro Company: Rio Vista, CA)*
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model *(University of California: Tahoe NF)*

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects *(SD and Riverside Counties)*
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project *(San Diego)*
- Crew Leader - Hillslope Monitoring Program *(CalFire: throughout California)*
- Consulting Forester – Forest inventories and timber harvest projects *(various clients throughout California)*

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society

Cal Alumni Foresters

Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*

Scientific Advisor – *Mt. Diablo Audubon Society*

Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). Conflicts in Conservation: Navigating Towards Solutions. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. Journal of Forestry.

ATTACHMENT D

August 29, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Attn: Ms. Tara Rengifo

Subject: Morton Bay Geothermal Project (MBGP) Water Resources Evaluation

Dear Ms. Rengifo,

The Morton Bay Geothermal Project ("MBGP") proposed by Morton Bay Geothermal, LLC, an indirect, wholly owned subsidiary of BHE Renewables, LLC ("BHER") is located within the Salton Sea Known Geothermal Resource Area ("KGRA") and briefly described below, is subject to the California Energy Commission's ("CEC") Application for Certification ("AFC") process. CEC has the exclusive authority to certify all thermal power plants 50 megawatts (MW) and larger and related facilities proposed for construction in California. The AFC process is a certified regulatory program under CEQA and as a certified regulatory program, the CEC does not prepare EIRs in an AFC proceeding, but instead prepares environmental assessment documents that are functionally equivalent to EIRs, known as 'staff assessments' and 'preliminary staff assessments' ("PSA").

The MBGP is proposed on a 51-acre portion of an approximately 160-acre parcel on the southeastern shore of the Salton Sea, and would have a maximum continuous rating of approximately 157megawatts (MW) gross, with an expected net output of roughly 140 MW. The project includes geothermal production wells, pipelines, fluid and steam handling facilities, a solids handling system, a Class II surface impoundment, a service water pond, a stormwater retention basin, process fluid injection pumps, a power distribution center, borrow pits, and injection wells. The main components of MBGP include a steam turbine generator system, geothermal fluid processing system, a single 14-cell cooling tower, 20 wells (including production and injection wells) and 9 associated well pads, and a connection to an Imperial Irrigation District lateral to be constructed as part of the project.

The scope of the Parker Groundwater review is limited to issues related to surface water and water supply and has involved a detailed review of the MBGP Staff Assessment (TN257470) and revised Water Supply Assessment (WSA) (TN 256893).

I. Reductions to the Colorado River Water Resources Supply are Not Adequately Analyzed in the PSA and WSA

The PSA summarizes CEC staff's concerns as to whether the proposed project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years, considering effects of changing climate over the past 10-20 years on the Colorado River water supply. "During the water resources impact evaluation, California Energy Commission (CEC) staff expressed concerns regarding IID's ability to supply water for the MBGP, as well as the total water demand for all three geothermal projects proposed by the applicant (13,165 AFY). Staff's concern is based on IID's standing policy to supply water to non-agricultural projects, as well as the existing trends of diminishing supply and increasing demands on Colorado River water resources, threatening mandatory rationing in the future. … CEC staff has expressed these concerns in several communications and data requests. In a meeting on March 7, 2024, IID reassured CEC staff that the obligations to water agreements for the three BHER geothermal projects would be fulfilled (CEC 2024i)." (PSA 5.15-13—14 – note pages in the PSA are misnumbered as Water Resources is actually Section 5-16).

A. The Analysis Omits Consideration of Future Hydrology of the Colorado River Based on Climate Projections

Neither the MBGP PSA or the MBGP WSA discuss Colorado River projected future hydrology based on projections from global climate models (GCMs) (Ajami, H., 2021 ; Gangopadhyay, S., and McGuire, M., 2021 ; Hoerling et al., 2024 ; Lukas et al., 2020; Reclamation 2018, 2021a, 2021b), and instead the PSA and WSA rely on the assumption of stationarity, that the future would closely resemble the past and/or current conditions, basically relying on historical gaged hydrology. For example, under "Climate Factors" in the WSA, the discussion focuses on climate characteristics and monthly mean temperatures from 1924-2023. (WSA p. 1-8). However, starting in the 1970s, and especially after 2000, much longer records of streamflow obtained from paleohydrology have provided an expanded perspective on past hydrologic variability beyond that available in the gaged hydrology. (Lukas et al. 2020).

Tree-ring reconstructions of Colorado River streamflow extend the observed natural flow record based on stream gages up to 1200 years into the past and represent a much broader range of hydrologic variability and extremes than are contained in the observed hydrologic records (Lukas et al. 2020). Most notably, several paleo-droughts prior to 1900 were more severe and longer-term than the worst-case droughts since 1900 in historical records. These droughts were considered "megadroughts" and could recur in the future due to natural climate

variability alone, but their recurrence risk is much increased by anthropogenic warming. Significantly, the century-scale mean and variability of Colorado River Basin hydroclimate has not been stationary over time and in fact has had extreme variability. (Lukas et al. 2020).

Recent basin wide planning activities (e.g., Reclamation 2012, Reclamation 2018, Gangopadhyay et al. 2021) and broader-scale Reclamation assessments (Reclamation 2021a and 2021b) have analyzed scenarios of future hydrology derived from projections from GCMs with additional hydrologic modeling. All GCM projections of future climate regardless of emissions scenario indicate further increases in temperatures of the basin, and this warming by itself will increase evapotranspiration (ET) and reduce basin runoff, by an estimated 4-9% per degree F of warming. (Lukas et al., 2020). While precipitation is the most important driver of runoff on a year-to-year basis, the majority (65-90%) of the GCM projections of future basin hydrology indicate that the impact of warming combined with the variable precipitation leads to net declines in basin runoff over the next several decades, leading to further reduced Colorado River water availability.

Several reservoir and water management decisional documents and agreements that govern the operation of Colorado River facilities and management of the Colorado River set to expire in 2026 are in the process of being renegotiated. These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty). Basically, the quantity and allocation of future water supplies of the Colorado River will be less, perhaps significantly less than in the past.

The California Department of Water Resources (DWR) published a new State Water Project (SWP) Delivery Capability Report in July 2024 (DWR, 2024) that not only acknowledged the threats to current and future water supply conditions from climate change, but also developed an adjusted historical hydrologic conditions data set that incorporated recent climatic conditions. (DWR, 2024). The report expressly recognized that “A shortcoming of using the historical hydrologic conditions data set to assess existing Project delivery capability is that the effect of climate change is not consistent throughout the modeled period.” (DWR, 2024).

In its adjusted hydrologic conditions assessment, DWR recognized that standard deviations of precipitation and rim inflow from most of the rim watersheds in the early periods of the past 100 years differed significantly from the last 30 years. (DWR, 2024). As a result, DWR developed a hydrologic data set for the entire modeled period that represents current hydrology, applying a dataset of adjusted

historical hydrologic conditions to provide a reasonable representation of recent climatic conditions and serve as a basis for creating future climate change scenarios. The report indicates that SWP delivery capability and reliability could be reduced as much as 23 percent in 20 years due to changing flow patterns and extreme weather shifts – underscoring the importance of incorporating climatic conditions in water supply reliability assessments. (DWR, 2024).

The analysis in the WSA, however, relies on the same assumptions of water availability for this Project in a normal year as well as during a single-dry and multiple-dry year scenarios. (WSA p. 3-1). According to the WSA, "This is due to the small effect rainfall has on water availability in IID's arid environment along with IID's strong entitlements to the Colorado River water supply." (WSA p. 3-1). CEC staff previously asked the Applicant in Data Requests Set 4 (TN 253870) to revise this section in the WSA given the impact that regional weather patterns could have on IID's water supply. The Applicant responded that the WSA would be revised to acknowledge this impact, but this information and analysis is still missing from the WSA. (TN 254419).

As discussed above, not only must the WSA and PSA acknowledge the impact that climate change could have on IID's water supply, but the analysis must be revised to incorporate the GCM projections of future basin hydrology. These projections would show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability. The WSA and PSA therefore must be revised to consider these climate projections in the analysis of the Project's impacts on water supply.

II. The WSA Lacks the Information Necessary to Demonstrate that Projected Water Supplies are Sufficient to Meet the Project's Water Demand for the Life of the Project

The planned operational life of a 40-year project is identified in numerous passages in the PSA (e.g., pages 3-27, 5.2-114), which could be extended, but the water availability analysis in the WSA does not reflect a 40-year operational period and instead only evaluates the Project's water supply for half of the life of the Project, i.e., 20 years. In response to CEC data requests requesting that the WSA reflects a 40-year operational period, the applicant responded that the planning period for the WSA, as stipulated in Senate Bill 610, is 20 years. (TN 254419). Accordingly, the WSA was not revised to evaluate water supply for the entire Project life.

Even though the WSA only analyzed a 20 year term, the WSA at 8-6 concludes that IID is able to meet the water delivery demand "for the life of the proposed Project…". Additionally, CEC and ICPDS conclude that "Based on the Application for Certification (AFC) and subsequent filings and information prepared for this

proposed Project, CEC/ICPDS hereby finds that the IID projected water supply is sufficient to satisfy the demands of this Proposed Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 20-year Water Supply Assessment period and for up to 30 years of the anticipated 40 -year proposed Project life." (WSA at 9-2) Neither the PSA nor the WSA provide any evidence, information, or an analysis to support the conclusion that IID can meet the Project's water demand for the life of the Project. It must also be noted that the CEC and ICPDS finding only determined that there was sufficient water supply for 30 years of the 40-year life of the project.

An adequate and complete evaluation of the Project's water supply impacts for the life of the Project is necessary and feasible, as demonstrated by other geothermal project WSAs. For example, the ES Minerals ATLiS WSA assessed a 30-year period. The WSA must be revised to determine the water supply availability of the Proposed Project for its entire 40-year period.

III. Stormwater and Flood Risks

The Project may result in significant impacts related to stormwater and flood risks for two reasons discussed below.

A. The Analysis of Flood Risks in the PSA Fails to Adequately Consider Changing Climate Conditions

The new climate normal in California is extreme weather events that produce more rainfall over shorter time periods and with less frequency, resulting in increased flood risks (Ajami, H., 2021 ; Gangopadhyay, S., and McGuire, M., 2021 ; Hoerling et al., 2024 ; Lukas et al., 2020; Reclamation 2018, 2021a, 2021b). "While the Imperial Valley is not projected to see a significant change in annual precipitation over the next 50 to 100 years, even modest changes could have significant effects on the region's ecosystems. Additionally, precipitation events are anticipated to occur less frequently but become more intense as part of the new climate normal (e.g., fewer days of rain but greater amounts of rain during each storm)." (Ascent Environmental, 2021). Historic records relying on stationarity to predict storm and flood events can no longer be relied on for predicting future storm and flood events. Additional analysis must be provided in a revised PSA to further assess flood risks using future climate scenarios instead of relying on stationarity. Stationarity assumes the future would closely resemble the past conditions fully relying on historical gaged hydrology. As mentioned previously, much longer records of streamflow obtained from paleohydrology have provided an expanded perspective on past extreme hydrologic variability not available in the gaged hydrology (Lukas et al., 2020). This includes increased flood risks from extreme storm events like Hurricane Hilary, which was projected to produce two- to three-inches basin wide

with pockets of 10-inches of precipitation. Although the storm ultimately took a different path, during the three days of the storm, some 11,400 IID customers were temporarily without power at some point, with varying lengths of duration. Other areas like Cathedral City were underwater, Interstate 10 was closed for hours from flooding, and areas northeast and northwest of the Imperial Valley saw rainfall totaling more than 10.5 inches. (Brown et al., 2023). The PSA must be revised to disclose and analyze flood risks using reasonable future climate scenarios emphasizing the hydrology of the last 20 to 30 years instead of relying on stationarity.

B. The PSA Contains Deficient Information about the Revised Brine Pond

The applicant has applied to FEMA to revise the 100-year floodplain area to exclude the location of the proposed brine pond, but if this map revision is not approved by FEMA, the PSA explains that the design of the brine pond would need to be modified to mitigate the potential flood impact and comply with CCR Title 27 requirements. (PSA 5.15-19). The PSA does not indicate that FEMA approved the map revision. Since the PSA indicates that if the Applicant's LOMR is not approved by FEMA the brine pond must be modified to mitigate the flood impacts, the PSA must disclose how the brine pond's design would be changed and analyze the potential significant environmental impacts of these design changes. The PSA must therefore be revised to provide an analysis regarding any proposed modifications to the brine pond, related impacts, and any measures to reduce significant impacts to less than significant levels.

IV. The PSA's Cumulative Impacts' Analysis Is Too Narrow

The MBGP PSA analysis only included the estimated water supply for the two other geothermal projects, i.e., Elmore North and Black Rock. (PSA 5.15-14). "The combined water supply of all three projects represents 70.7% of the unallocated water supply available for additional conservation and contracting under the IWSP for nonagricultural projects," according to the WSA (WSA 10-1). In addition to the three geothermal projects, the PSA acknowledges that "there are 11 operating geothermal power plants," and "it is expected that other geothermal projects are likely to be developed in the future," but does not analyze the cumulative impacts from these projects "[s]ince specific projects are speculative at this time, …." (PSA 5.15-15).

Other closely related past, present, and reasonably foreseeable probable future projects must be evaluated as part of a revised PSA cumulative impacts analysis for water supply. In a July 23 letter on the Elmore North Geothermal Project PSA (TN 257957), IID requested that the Elmore North PSA's claim that "specific projects are speculative" be deleted and that "A cumulative impact analysis should be made

using the recent existing and permitted projects identified … under Table 1-2 Master Cumulative Project List, in addition to the three BHE geothermal projects." (TN 257957). The projects include EnergySource Minerals (Atlis) and Hudson Ranch Geothermal. Moreover, the AFC's cumulative impacts analysis evaluated eight projects, which are not all included in the PSA's analysis. (AFC 5.15-20-21). The cumulative impacts analysis for water supply in the PSA must be expanded to evaluate all past, present, and probable future projects.

Additionally, the 11 geothermal power plants referenced in the PSA are operating and therefore have established water demands. To the extent that the water demands of these existing projects (or any modifications) would impact cumulative water supply, these impacts must be disclosed and evaluated in the PSA.

The analysis of cumulative impacts on water supply must also be revised to include present and probable future lithium extraction projects, as these projects are intimately related to geothermal production, have substantial water demands, and would likely rely on the same sources of IID water supply, e.g., IWSP. The projected growth and associated water demand has been summarized in three separate reports:

- Dobson et al., 2023. Characterizing the Geothermal Lithium Resource at the Salton Sea. https://escholarship.org/content/qt4x8868mf/qt4x8868mf.pdf?t=s4j82b

- Earthworks, 2023. Environmental Justice In California's Lithium Valley, Understanding the potential impacts of direct lithium extraction from geothermal brine. A document for community education, November 2023. https://earthworks.org/wp-content/uploads/2023/10/California-Lithium-Valley-Report.pdf

- Paz et al., 2022. Report of the Blue Ribbon Commission on Lithium Extraction in California, Pursuant to Assembly Bill 1657 (E. Garcia, Chapter 271, Statutes of 2020). https://efiling.energy.ca.gov/getdocument.aspx?tn=247861

"Water demand for lithium extraction is appreciable, representing an additional 3.5-4X the freshwater requirements of geothermal energy production alone from a given volume of brine, based on published estimates for facilities planned in the Salton Sea region." (Dobson et al., 2023). Proposed lithium production is projected to reach 210,000 metric tons of LCE per year, meaning water demand would exceed available non-agricultural supply as currently planned by IID (Paz et al. 2022). The "Report of the Blue Ribbon Commission on Lithium Extraction in California" concludes, "Given the uncertainty of water supply to the region as a result of the

current drought and impacts of global warming, the project developers will need to work with IID to address their plans for water use." (Paz et al. 2022).

V. The PSA Lacks an Analysis of the Potentially Significant Impacts from IID's Proposed Measures to Meet New Non-Agricultural Demands

The WSA explains that "[i]n the event that IID has issued water supply agreements that exhaust the 25 KAFY IWSP set aside for conservation, and it becomes apparent that IID delivery demands due to non-agriculture use are going to cause the district to exceed its quantified 3.1 MAFY entitlement less QSA/Transfer Agreements obligations, IID has identified options to meet these new non-agricultural demands. These options include (1) tracking water yield from temporary land conversion from agricultural to non-agricultural land uses (renewable solar energy); and (2) only if necessary, developing conservation projects to expand the size of the district's water supply portfolio." (WSA 8-3).

Neither the PSA nor the WSA evaluate the environmental effects from these conservation measures to lessen the Project's potentially significant cumulative impacts on water supply. With regards to the first factor, additional water supply planned by IID through agricultural water conservation would reduce flows to the Salton Sea, causing environmental impacts and potential increased health impacts from more exposed soils and dust generation, as survival of the Salton Sea is tied primarily to agricultural runoff and drainage from major agricultural regions in the basin and their associated water management decisions. (Ajami, 2021). "Depending on how water withdrawal restrictions are implemented in the Colorado River basin and how many new geothermal and lithium extraction facilities are built, water available for agriculture in 2050 could be between 17-57% lower than it was in 2010. Such significant reductions in irrigation could have meaningful consequences for the health of the Salton Sea. The total water volume and areal extent of the Salton Sea may be further reduced, since agricultural irrigation runoff is the largest source of inflows (Hanak et al., 2018; Ajami, 2021). The shrinking of the Salton Sea that has led to the current environmental crisis is largely attributed to water conservation on agricultural land associated with the transfer of 0.5 MAF to Southern California cities." (Dobson et al., 2023).

Currently, the majority of IID Colorado River water supply is used for agricultural irrigation, and a portion of that irrigation water provides water supply to the Salton Sea through agricultural return flows (Hanak et al., 2018; Ajami, 2021). Any IID Colorado River supply water taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea, reducing the volume of Salton Sea water and increasing environmental impacts. Therefore, if geothermal projects result in reduced agricultural irrigation, there will be cumulative reductions in return flows to the Salton Sea.

As to the second factor, IID's 2012 Integrated Regional Water Management Plan includes conceptual projects to increase water supply, however, our current understanding is that none of these projects have been evaluated beyond concept phase, with plans for additional analyses in the IID 2021 Water Conservation Plan (IID WRS 2021).

VI. The PSA Does Not Clearly Identify the Sources of Water for the Project

The source of the IID water supply for the Project is not clearly described in the WSA. The WSA is vague as to whether the Proposed Project may be covered under Schedule 7 General Industrial Use water and/or Interim Water Supply Policy (IWSP) for Non-Agricultural Projects water. The WSA states, "The Project's water delivery will be covered under the Schedule 7 General Industrial Use. In the event that IID determines that the proposed Project is to utilize IWSP for Non-Agricultural Projects water, the Applicant will also need to enter into an IWSP Water Supply Agreement with IID. In which case, the proposed Project would use 29.9% of the 18,620 AFY of IWSP water." (WSA 9-2). The WSA also explains, "IID will determine whether the Project should obtain water under IID's Interim Water Supply Policy (IWSP) for non-agricultural projects in addition to Schedule 7 General Industrial Water." (WSA 6-1). These statements make clear that a decision about whether the Project's water will be supplied from the IWSP and/or Schedule 7 General Industrial Water has not yet been evaluated and determined. The PSA and WSA must set forth an analysis demonstrating what each coverage would mean in terms of water availability/certainty of supply and associated impacts. These omissions must be resolved in a revised PSA in order to assess the sufficiency and reliability of the proposed IID water supply.

Furthermore, should reductions to IID's water supply be ordered or directed from a governmental authority having appropriate jurisdiction, the MBGP may be required to reduce its water use by a proportionate reduction of the total volume of water available to IID (WSA Page 1-2, 10-1). The WSA states, "Any reductions in water would come at the cost of generation loss. In general terms, a 10% reduction in water supply (a reduction of approximately 648 AFY of water use) will likely result in an estimated reduction in electrical output by 10%, or approximately 14 megawatts (net)." (WSA p. 1-2). Note that this appears to be in error, as 10% of 5,560 AFY is 556 AFY reduction.

To address these impacts, the WSA states that "If commercially viable, MBGP would seek additional water through IID's Clearinghouse, consistent with any contractual requirements or limitations." (WSA p. 1-2). This alternative water source is also not mentioned in the PSA's analysis. The WSA cannot assume the IID's Clearinghouse is a secure source of alternative water—particularly given the

amount of freshwater that this Project would require— without providing sufficient facts and analysis.

VII. Operational Water Use Efficiency

In comparing geothermal plant parameters, the Black Rock facility with a total operational water demand, i.e., IID water and steam, of approximately 5,600 AFY is more efficient (80%) when it comes to operational water generated by steam condensation, as compared to Morton Bay and Elmore North, which have an operational water use efficiency of 50% and have larger total operational water demands of approximately 11,100 and 13,000 AFY, respectively (see table below). Notably, in response to CEC staff's data request regarding how the Project would manage water supply reductions, the Applicant explained that "The two primary water uses by the project are dilution water for the brine reinjection process and a smaller amount for cooling tower makeup water. A reduction in the dilution water needs is not feasible as it would likely result in significant scaling of the piping and injection wells that could result in a forced outage to remove the scale from piping and/or redrilling of the injection wells. Eliminating the cooling water use would result in a reduction in heat rejection capacity of the plant, causing a reduction in electrical generation during warm ambient conditions." (TN 254419). Thus, it seems to be the Applicant's position that the Project has maximized its operational water use efficiency.

Water users within the IID service area are subject to the statewide requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2. (WSA p. 1-6). For this reason, the PSA must discuss whether the operational water use efficiency of the proposed Morton Bay Geothermal Plant can be improved and IID water demands reduced, particularly given the greater operations water use efficiency of Black Rock.

Comparison of Proposed Geothermal Power Plant Parameters – BHW Renewables

Parameter	Black Rock	Elmore North	Morton Bay
Land use (acres)*	55	63	63
Cooling Tower(s)	1 seven-cell	1 fourteen-cell	1 fourteen - cell
Production Wells	5	9	9
Injection Wells	7	12	11
Operational Water Demands (AFY)	5,620	11,120	12,960
Operational water generated by steam condensation (Water Use Efficiency)	80%	50%	50%
Water Demands from IID (AFY)	1,125	6,480	5,560
MW Rating (Max/Net)	87/77	157/140	157/140

Summary and Conclusions

Parker Groundwater conducted a review of issues limited to and focused on surface water and water supply that involved a detailed review of the MBGP Staff Assessment (TN257470) and revised Water Supply Assessment (WSA). (TN 256893). Results of the reviews found that the Colorado River water supply reliability and uncertainty upon which IID relies solely to meet demands is a paramount concern considering current and projected future hydrology and climate condition.

Furthermore, the MBGP WSA only considered a 20-year future projection of the water supply availability for the Proposed Project. Since the Proposed Project life is 40 years, the analysis is inadequate, and other projects have looked at longer future projections.

Potential cumulative impacts considered were narrow and limited. The cumulative impacts' analysis is inadequate and should be expanded to include all renewable energy projects that rely on IWSP water in the area as well as lithium extraction projects. Additionally, the IID's proposed agricultural water conservation measures to reduce the Proposed Project's potentially significant impacts on IID water supply must also be evaluated as these measures may significantly impact the water supply for the Salton Sea, which is already in an environmentally critical condition. Finally, the Project's water supply is not clearly stated and fully evaluated in the PSA, and the impacts from utilized the identified alternative source of Project water is not analyzed in the PSA.

Please contact me if you have questions.

Timothy K. Parker, PG, CEG, CHG
Principal Hydrogeologist

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TIMOTHY K. PARKER, PG, CEG, CHG

Principal Hydrogeologist/Senior Facilitator

KEY COMPETENCIES

Mr. Parker has more than 35 years of professional geologic, engineering geologic and hydrogeologic experience developing and implementing comprehensive sustainable groundwater management program plans implementation for water supply and water systems. His experience includes water supply assessments, water policy analysis, strategic water resources planning, well installation and evaluation, regional and project scale groundwater characterization and monitoring for quantity and quality, groundwater recharge & storage projects, stakeholder facilitation and capacity building, and litigation support. He has worked in the public sector including California Department of Toxic Substances Control, CA Geological Survey, and Department of Water Resources, and in the private sector his consulting work has supported large and small municipal and industrial clients, which has required interaction with federal and state regulatory agencies, and direct and facilitated communications with the general public.

PROJECTS

Water Supply Assessment, Kern County, CA, Confidential Industrial Client, 2020-2021

Principal Hydrogeologist

Performed an assessment of a groundwater basin for a confidential industrial client to determine the groundwater basin quantity and water quality trends and reliability to deliver the required supply for an industrial facility expansion. Addressed the current and projected demands in relation to statutory, regulatory and sustainability requirements, to evaluate and validate a long-term water supply for the proposed facility and the expansion.

Water Supply Assessment, Queretaro, Mexico, MX, Confidential Industrial Client, 2020-2021

Principal Hydrogeologist

Performed a water supply assessment of a multiple groundwater basin area for a confidential industrial client real property acquisition to determine groundwater trends and reliability to deliver the required supply for a proposed new industrial facility. Based on a determination of groundwater depletion, reviewed well construction and condition, repair and maintenance records, water level trends and water quality data. Made recommendations for further analysis and data collection including well testing and meeting with local government for additional reports and data.

SPECIAL COMPETENCIES

Integrated Water Resources and Groundwater Management
Water Policy Analysis
Strategic Water Resources Planning
Groundwater Sustainability Plan Development and Program Implementation
Groundwater Recharge & Storage Projects
Environmental Review
Litigation Support
Facilitation of Complex Issues

TOTAL YEARS OF EXPERIENCE

+35

EDUCATION

BS, Geology
University of California, Davis, CA, United States

PROFESSIONAL LICENSES

Professional Geologist 5594, California
Certified Engineering Geologist 1926, California
Certified Hydrogeologist 12, California

PROFESSIONAL ASSOCATIONS

National Groundwater Monitoring Network - Committee Member
Association of California Water Agencies Groundwater Committee – Member, Groundwater Committee Member
National Ground Water Association - Director and Scientist and Engineer Section Past Chair
Groundwater Resources Association of California - Legislative Committee Member, Director Emeritus
International Association of Hydrogeologists U.S. National Chapter - President

Petaluma Valley, Santa Rosa Plain and Sonoma Valley Groundwater Sustainability Planning and Program Implementation, Sonoma County, CA, Sonoma Water, 2005-Present

Principal Hydrogeologist

The project involves Groundwater Sustainability Plan (GSP) Scoping and Preparation for Three Basins providing technical support to develop Groundwater Sustainability Agency (GSA) scoping documents, work plans and preparation of GSPs for three California Sustainable Groundwater Management Act (SGMA) basins in Sonoma County (Petaluma Valley, Santa Rosa Plain and Sonoma Valley). The scoping documents and work plans were used to apply for Proposition 1 grant applications and to guide the GSP preparation process. Technical support services include providing presentations at advisory committee meetings, preparing technical documents and GSP subsections. Additionally, prepared AB3030/SB1938 voluntary groundwater management plan and program implementation consulting services for the Sonoma Valley, beginning in 2005, and for the Santa Rosa Plain beginning in 2009.

Sonoma Valley Groundwater Basin Technical Assistance, Planning and Facilitation Services, Sonoma County, CA, Sonoma Water, 2017-Present

Principal Hydrogeologist

The project involves Groundwater Sustainability Plan (GSP) Scoping and Preparation for Three Basins providing technical support to develop Groundwater Sustainability Agency (GSA) scoping documents, work plans and preparation of GSPs for three California Sustainable Groundwater Management Act (SGMA) basins in Sonoma County (Petaluma Valley, Santa Rosa Plain and Sonoma Valley). The scoping documents and work plans were used to apply for Proposition 1 grant applications and to guide the GSP preparation process. Technical support services include providing presentations at advisory committee meetings, preparing technical documents and GSP subsections. Additionally, prepared AB3030/SB1938 voluntary groundwater management plan and program implementation consulting services for the Sonoma Valley, beginning in 2005, and for the Santa Rosa Plain beginning in 2009.

Salinas Valley Groundwater Basin Technical Analysis of Basin Yield and Sustainability, Litigation Support, M.R. Wolfe & Associates, 2014-2020

Principal Hydrogeologist

Provided technical assessment of groundwater reports related to the safe and sustainable yield and groundwater conditions within the Salinas Valley groundwater basin, to support critical analysis of the County General Plan and developments as they were proposed for discretionary permits. The General Plan was challenged on the basis of incorrect land use assumptions, groundwater conditions and cumulative impacts, which resulted in the County having to develop a new groundwater model with a peer review technical advisory committee for oversight. Provides continuing review on as-needed basis of development proposals and provides input on the potential cumulative impacts from the new proposed developments.

Groundwater Consulting and Litigation Support, Indian Wells Valley Groundwater Basin, CA, Indian Wells Valley Water District, 2010-Present

Principal Hydrogeologist

Provides technical support on groundwater related work for the Water District including hydrogeologic assessments. District Member of Indian Wells Valley Groundwater Authority GSA Technical Advisory Committee provided input and review on the development of the groundwater sustainability plan, and now with GSP implementation. Assisting with implementation of a brackish groundwater resources feasibility study project being developed as one of the alternatives in the groundwater sustainability plan to help spatial spread out the pumping centers in the basin, and soften the landing of major pumpers on achieving sustainability goals under SGMA. Providing technical hydrogeologic support and analysis on basin water rights adjudication. Provided technical input and facilitated development of a revised groundwater management plan and basin objectives for the Cooperative Groundwater Management Group. Completed a Water Supply Improvement Plan to redistribute pumping stresses spatially in the Indian Wells Valley.

California Statewide Airborne Electromagnetics (AEM) Surveys and Stanford Groundwater Architecture Project (GAP), California Department of Water Resources , 2018-Present
Project Director, Licensed Geologist and QA/QC Manager

The DWR is conducting AEM surveys at a screening level to map aquifers in all SGMA high and medium priority basins over the next three to five years. Ramboll is the lead contractor working closely with SkyTEM and GEI to conduct the AEM surveys, including AEM interpretation and resistivity to lithology transform end products, working with a team of groundwater professionals from DWR, other state and federal agencies. Tim is the California licensed professional responsible for the AEM work and is the QA/QC manager for the individual basin surveys as a contract employee to Ramboll.
The Stanford Groundwater Architecture Project (GAP) was an ambitious two-year project, including Stanford University, Denmark University of Aarhus, California Department of Water Resources, California State Water Resources Control Board, Kingdom of Denmark and three local public water agencies in California to develop a template for the optimal workflow for use in the statewide aerial electromagnetics (AEM) data acquisition and to development of refined hydrogeologic conceptual models and as the foundation for the statewide AEM surveys, a key step in the implementation of SGMA. This includes not only the deployment of the AEM technology to acquire AEM data, but also designing the supporting computational infrastructure for data analysis, interpretation, and archiving. The GAP involved basic research to discover new methods of data analysis, inversion, and interpretation appropriate for the specific geologic environment and management needs of California. The project involved three pilots (Indian Wells Valley, Paso Robles and Butte County), of which Tim provided hydrogeologic analysis on two of the pilot basins

SELECTED PUBLICATIONS

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ISMAR9 Call to Action: Sustainable Groundwater Management Policy Directives, Principal Author, 2016.

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"Challenges with Data and Statewide Standardization: From the Ground Down," Sustainable Groundwater Management on the Central Coast Workshop, San Luis Obispo County, January 2017.

"Highlights from Groundwater Fact Finding Trip to Denmark – California Connections," San Luis Obispo County, January 2017.

"Managed Aquifer Recharge," Drought Summit, Irrigation Association & National Ground Water Association, Las Vegas, Nevada, December 2016.

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"Sustainable Groundwater Management – A New Law in California," International Association of Hydrogeologists Congress – Montpelier, France – September 2016.

ATTACHMENT E

September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Attn: Ms. Tara Rengifo

Subject: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA)

Dear Ms. Rengifo,

These comments pertain to section 5.6: Geology, Paleontology, and Minerals, and section 5.16: Water Resources in the Morton Bay Geothermal Project (MBGP) Preliminary Staff Assessment (PSA).

Background

The MBGP site is located on the southeastern shore of the Salton Sea, in the Salton Sea Known Geothermal Resource Area (KGRA), a feature that lies within the Salton Trough. The Salton Trough is a seismically active rift valley. The project will include twenty wells and 12 well pads, with production wells (nine), injection wells (eleven), and a system of aboveground pipelines to connect the MBGP with the production and injection wells. Additionally, a buried pipeline will be installed to transfer freshwater from Imperial Irrigation District transfer point to the MBGP service water pond. As stated in the MBGP PSA (TN# 257470, page 5.6-3), the Salton Trough, within which the project site is located, is a tectonically active pull-apart basin, one of the most seismically active portions of southern California, made up of numerous fault systems, many of which have not been fully characterized. Hence, seismic hazards at the project site include seismic shaking and ground rupture along fault traces and liquefaction induced by strong ground shaking. These comments pertain to section 5.6: Geology, Paleontology, and Minerals, and section 5.16: Water Resources.

I. Critical Information about the Mineralogy and Hydraulic Properties of the Brawley Seismic Zone is Not Included in the PSA

The proposed plant site, wells, well pads, and pipelines are within the Brawley seismic zone (BSZ), which is composed of numerous northwest-southeast trending strike-slip faults and northeast-southwest cross-cutting high angle normal faults, with recent earthquake activity. The mineralogy of fault gouge is of critical importance in determining mechanical and hydraulic behavior of the faults. Faults that are filled with clay-rich gouge tend be weak under shear stress and are more prone to failure in response to seismic activity (Morrow et al. 1984; Ikari et al., 2009). Additionally, clay-rich fault gouge tends to be of low permeability, making clay-filled faults hydraulic barriers that restrict regional subsurface fluid flow. The low permeability also has the effect of accentuating fluid pore pressure buildup within faults and fractures, which further lowers their shear strength (Ikari et al., 2009; Brodsky and Lajoie, 2013). As stated by Morrow et al. (1984) "Clay gouges typically support lower shear stresses than most granitic rocks during frictional sliding experiments particularly when saturated and have extremely low frictional resistance when pore fluid movement is restricted, and fluid pressures become greater than hydrostatic." Fluid injection for the return of geothermal fluids (spent brine, aerated fluid, and steam condensate) via Class V injection wells to replenish the reservoir (MBGP PSA (TN# 257470) pages 3-11, 3-12) and for disposal of produced brine (via Class II wells) can lead to pore pressure build up in the numerous faults and fractures that are present within the BSZ due to potential fluid migration from injection zones. If the faults in the BSZ are filled with clay-rich gouge, fluid injection in the area would weaken the faults under shear loading, making them more prone to failure in response to seismic activity, which can result in potentially significant impacts on ground shaking and surface rupture risk that were

not adequately examined in the PSA (Wang et al., 1980; Summers and Byerlee, 1977; Byerlee 1978, Morrow et al., 1981).

The PSA must disclose the mineralogy of the fault gouge in the faults of the BSZ. Without this information, a full impacts assessment has not been performed to evaluate the potential destabilizing impact of fluid pore pressure build up and the associated shear weakening of BSZ faults. The MBGP PSA (TN# 257470) and the references cited by the Applicant in response to CURE's Data Requests, i.e., Hulen et al., 2002, 2003, (TN 253374) do not address fault gouge mineralogy because they focus on characterizing the geothermal resource. Pore pressure buildup in the faults from subsurface migration of injected fluids (TN# 257470, page 3-11) and their associated shear weakening is a potentially significant impact that has not been evaluated in the PSA. If the faults in the BSZ are filled with clay-rich gouge, the faults in the BSZ would be more prone to shear failure and enhanced displacement (Ikari et al., 2009) due to subsurface migration of fluids returned to geothermal reservoirs via project injection wells.

II. The PSA Does Not Properly Evaluate Impacts on Soil and Groundwater from Pipeline Leaks

The PSA fails to adequately analyze potentially significant impacts on soil and groundwater due to contamination from pipeline leaks. The project includes a total of about 7.54 miles of aboveground geothermal fluid conveyance pipelines connecting the powerplant to the production (12,032 feet) and injection (27,758 feet) wells (TN# 257470, page 5.15-1). The PSA explains, "Aboveground pipelines would transport the geothermal fluids from the production wells to the geothermal Resource Production Facility (RPF) and spent geothermal fluids would be transported also by aboveground pipelines to Environmental Protection Agency classified Class V injection wells and returned to the geothermal reservoir." (PSA, page 5.12-1). Shallow groundwater (8 feet below the ground surface) and low permeability (up to 10,000 gallons per day per foot) of the soils (TN# 257470, page 5.15-2) along the pipeline routes may cause ponding of fluids if leaks from the Project's fluid conveyance pipelines occur that could contaminate soil and groundwater resources. Moreover, the MBGP AFC specified that "A fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location." (TN 249723, page 2-62) This volume of fluid release would have an appreciable impact even at relatively small volumes.

The AFC on page 2-9 explained that "Dissolved elements within the geothermal fluid consist primarily of chloride, sodium, calcium, and potassium. There are also significant amounts of zinc, manganese, iron, and silica dissolved in the geothermal fluids. The major component of non-condensable gases is carbon dioxide, which is naturally occurring from the diagenesis of minerals and rocks. There is a large variety of other components in the geothermal fluid, although the other components are less than 0.01% each." As excerpted below, Table 2-2 in the AFC provides a list of the expected chemical composition of the produced fluids constituents and their concentrations and Table 2-3 in the AFC contains the condensate and injected geothermal fluid characterization (AFC on pages 2-16-17, 2-20) The PSA, however, does not disclose this information or analyze the potentially significant impacts on soil and groundwater from an accidental release or leakage of fluids from the Project's pipeline infrastructure.

Given the average daily volume flowrate of MBGP pipeline infrastructure and the constituents in the produced fluids and condensate and injected geothermal fluids, potential leakages from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area. The pipeline fluids are brines with high sodium and chloride concentrations. Sodium is a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004). Sodium induced soil dispersion also results in the formation of dense, impermeable surface crusts that inhibit seedling emergence.

Additionally, sodium can elevate soil pH and lead to accumulation of other toxic elements. Chloride toxicity can also degrade soil and water quality (Levy and Torrento, 1995; Ward and Carter, 2004). Barium, Lead and Cadmium (AFC Tables 2-2 and 2-3) are other potential toxic metals present in the produced fluids that could be released into the soils and groundwater at the project site. These toxic constituents are present in the produced fluids transported by the pipeline system such that fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater.

Table 2-2. Expected Chemical Composition of Produced Fluids Constituent Concentration

Chemical	Milligrams per Kilograms
Hydrogen (H^{+})	NA
Beryllium (Be^{+2})	ND
Ammonium (NH_4^{+})	350 (for NH3)
Sodium (Na^{+})	56,700
Magnesium (Mg^{+2})	40
Aluminum (Al^{+3})	ND
Potassium (K^{+})	16,620
Calcium (Ca^{+2})	29,530
Chromium (Cr^{+3})	ND
Manganese (Mn^{+2})	1,310
Iron (Fe^{+2})	1,350
Nickel (Ni^{+2})	ND
Copper (Cu^{+2})	40
Zinc (Zn^{+2})	490
Rubidium (Rb^{+})	NA
Strontium (Sr^{+2})	NA
Silver (Ag^{+})	NA
Cadmium (Cd^{+2})	2

Table 2-3. Condensate and Injected Geothermal Fluid Characterization

Constituent	Condensate (mg/L)	Spent Geothermal Fluid (mg/kg)	Aerated Fluid (mg/L)
Beryllium	NA	NA	-
Ammonia	773	NA	-
Sodium	NA	66,354	75,800
Magnesium	13	47	48
Aluminum	NA	NA	-
Potassium	NA	18,821	22,400
Calcium	81	35,149	41,500
Chromium	NA	0.6	NA
Manganese	NA	1,581	NA
Iron	0.1	1,713	NA
Nickel	NA	0.3	NA
Copper	NA	4	NA
Zinc	NA	561	437
Rubidium	NA	NA	NA
Strontium	NA	555	NA
Silver	NA	1.0	0.03
Cadmium	NA	3	0.9
Antimony	NA	NA	NA
Cesium	NA	NA	NA
Barium	NA	221	109
Mercury	NA	NA	0.0004
Lead	NA	122	94
Bicarbonate	NA	NA	NA
Nitrate	499	NA	NA
Fluoride	NA	37	NA
Sulfate	750	144	NA
Chloride	391	185,099	213,600
Arsenic	NA	19	8
Selenium	NA	NA	0.03
Bromine	NA	NA	NA
Iodine	NA	NA	NA
Silica	NA	166	NA
Carbon Dioxide	NA	NA	NA
Boron	NA	420	NA
Hydrogen Sulfide	NA	NA	NA
Benzene	NA	NA	NA
Total Dissolved Solids	2,024	326,163	369,400
pH	6.4	4.9	5

III. Leaks from the Project's Pipelines May Increase Soil Erosion and Liquefaction Risks

The PSA fails to adequately analyze potentially significant impacts of Project pipeline leaks on coupled effects of soil erosion, expansion of clays, and liquefaction. The preliminary geotechnical report for the Project concludes that "[t]he risk of liquefaction induced settlement is high." (AFC, Appendix 5.4) The

PSA nevertheless concludes that with the implementation of seismic design criteria and project-specific recommendations in the final geotechnical engineering report, liquefaction risks would be less than significant (PSA, page 5.6-18). However, the Project's preliminary geotechnical report did not analyze geotechnical hazards associated with fluid leaks from the Project pipelines. (AFC, Appendix 5.4, page 2)

Project area soils where the production and injection wells and pipelines will be installed (see Figure 1) may be subject to erosion, expansion, and liquefaction from fluid leaks from pipeline infrastructure. The soils impacted by the MBGP are clayey, similar to those impacted by the Elmore North Geothermal Project and would be more prone to erosion due to soil structure degradation from heavy equipment during the project construction phase. High velocity fluids from a pipeline leak may cause soils in the vicinity of the pipeline infrastructure to liquify and undergo erosion in areas where soils were previously disturbed and degraded from construction activities. An analysis of the impacts from pipeline fluid leaks resulting in soil erosion is not included in the PSA and may be significant.

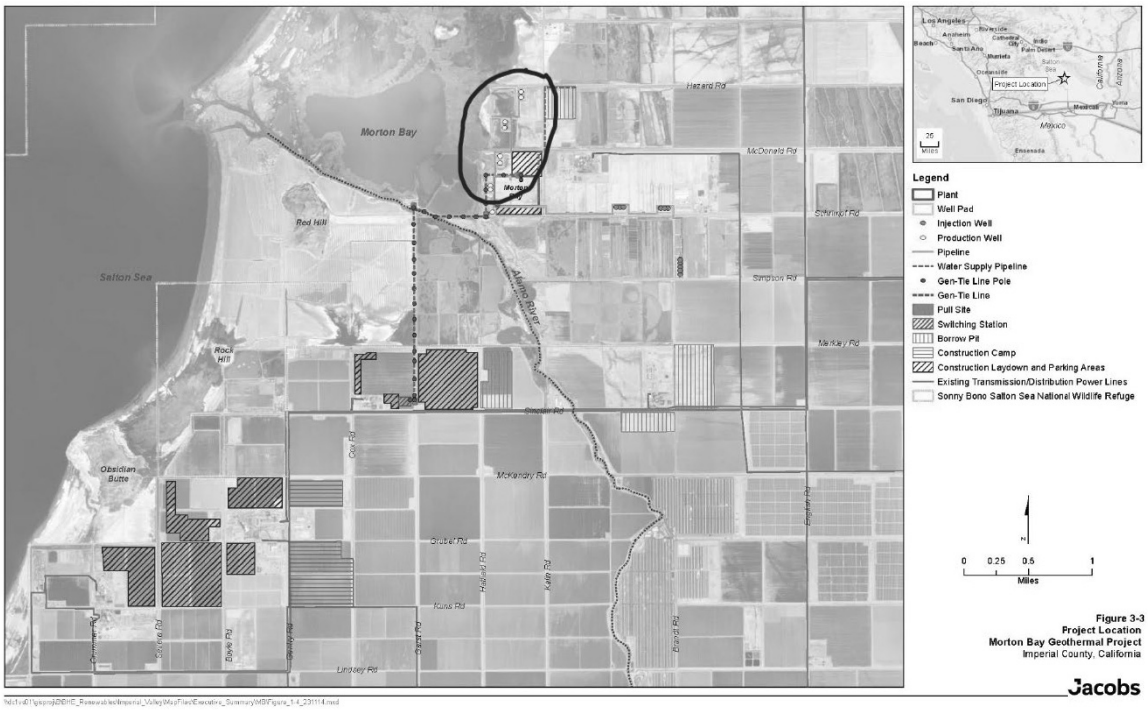

Figure 1. Site map showing location of plant and production wells circled in black (reproduced from MBGP PSA Figure 3.3)

Soil structure degradation by machinery is likely to occur with the Project during construction activities as well as from repeated soil expansion and shrinkage cycles. The soils in the project area are known (Imperial clay, see this link and the map reproduced herein as Figure 2) to undergo expansion upon imbibition of water and shrinkage upon drying, which is likely to occur under repeated pipeline leaks. The impact of expansion and shrinkage cycles on soil structure that may result from repeated pipeline leaks and the resulting increased susceptibility of the soils to erosion are not sufficiently analyzed in the PSA.

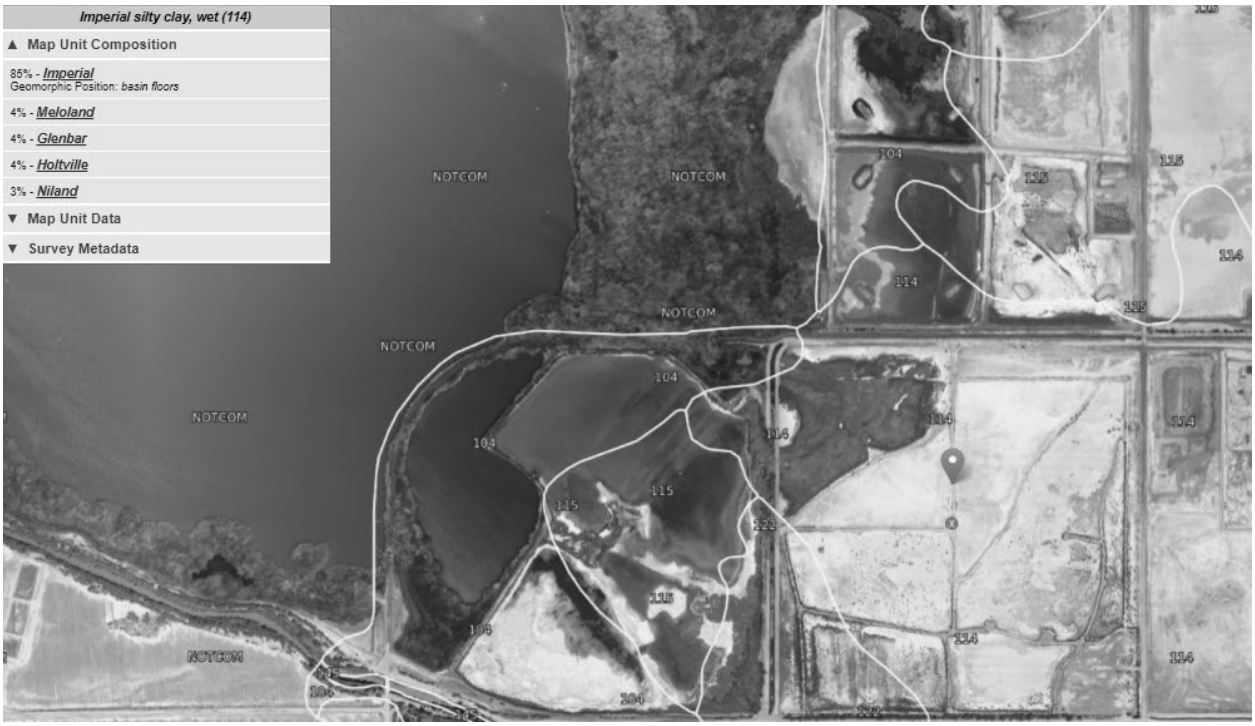

Figure 2. Map from SoilWeb showing the site map soils for the MBGP as dominated by Imperial clay.

The liquefaction risk arises from the coupling of surface inundation from pipeline leaks with known high seismic activity in the area. As stated in the previous section, the project includes a total of about 7.54 miles of aboveground geothermal fluid conveyance pipelines connecting the powerplant to the production (12,032 feet) and injection (27,758 feet) wells (TN# 257470, page 5.15-1). The MBGP PSA (TN# 257470, page 3-12) estimates that the daily pipeline peak flow, that ultimately is the injection wells, is 815 gallons per minute (gpm). Additionally, the MBGP AFC estimates that "[a] fluid release of 200 to 400 gallons would remain within a 20- to 30-foot radius of the leak location." (TN 249723, page 2-62). At a flow rate of 815 gpm and the AFC's own analysis of the radius of the leak location, short duration of fluid release (a few minutes) from a pipeline leak would be sufficient to inundate a large soil surface and cause the soil to undergo expansion and lose internal cohesiveness, and behave like a liquid (Locat and Demers, 1988). The seminal work of Locat and Demers (1988) demonstrates that soils inundated with fluids tend to lose their internal cohesiveness and transition into viscous fluid-like behavior. The potentially significant liquefaction risk associated with leaks from this pipeline infrastructure is not assessed.

IV. The PSA Does not Evaluate Induced Seismicity

The proposed project includes fluid injection as a major component for both disposal of spent geothermal fluid and replenishment of the reservoir fluids. According to Brodsky and Lajoie (2013) fluid injection has been shown to induce seismicity due to a decrease in the effective stress on faults resulting from increased pore pressure within faults (Ikari et al., 2009). Using data from seismic swarms in the Salton Trough, which encompasses the project site, Chen and Shearer (2011) demonstrated that earthquakes tend to cluster around injection wells. The report also demonstrated that the seismicity rate in the Salton Trough was initially low during the period of low geothermal operations in the area before 1986 and that as operations expanded, a corresponding increase in seismicity was observed, which suggests a direct impact of fluid injection on area seismic activity. Figure 3 shows seismicity rate data from Brodsky and Lajoie (2013) for the study period of 1982 to 2013. The data show that the number of earthquakes

increased more than six times from the pre-1986 low background levels of less than 2000 to over 12,000 at the end of the study period.

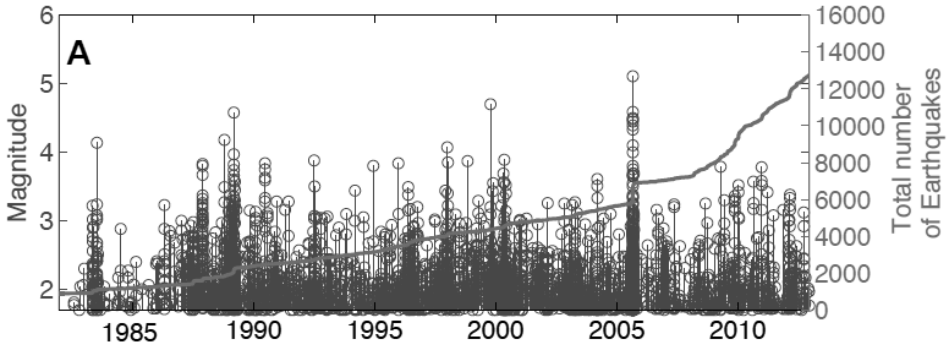

Figure 3. Salton Trough seismicity data showing the number (green curve) of earthquakes greater than magnitude 1.5 (blue circles) over the period 1982 to 2013. The data shows increasing seismicity over the study period above pre-1986 background rates of less than 2000 earthquakes to over 12,000 at the end of the study period (after Brodsky and Lajoie, 2013).

Water production and injection data, shown in Figure 4, show an increase in geothermal operations after 1986, with amounts of produced and injected water more than doubling from lows of less than 2 billion kilograms (kg) during the pre-1986 period to averaging 10 billion kg of produced water and 8 billion kg of injected water. Seismicity and water production/injection data show that some correlation exists between the increased geothermal activity (Figure 4) in the project area and the increased rate of seismicity (Figure 1). Using these data from the Salton Sea Geothermal Field (SSGF), Brodsky and Lajoie (2013) concluded that net production volume combined with injection information is a good predictor of the seismic response in the short term for a fully developed field. The data, according to Brodsky and Lajoie (2013), suggest that the increase in geothermal activity in the study area is correlated with a corresponding increase in the seismicity rate.

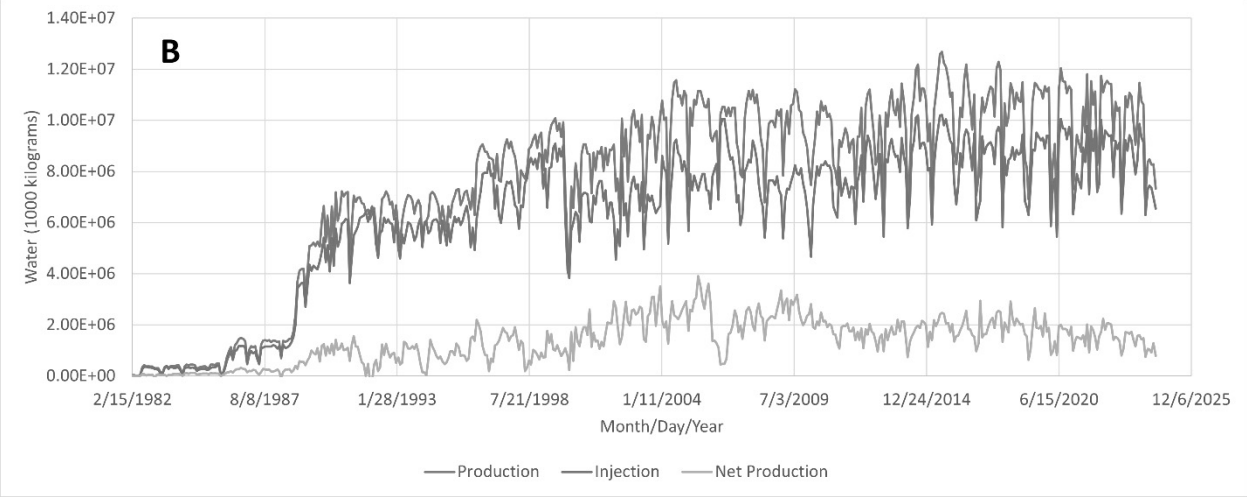

Figure 4. Water (Geothermal fluid) production, injection, and net production shown in 1000 kilograms from 1982 to the present (2024). The net production is the difference between production and injection mass of water (data from the California Department of Conservation).

The proposed MBGP comprises 11 injection wells on six well pads (PSA, pages 3-19) with one additional backup injection well. The project will also have nine production wells on five well pads. As stated in the project Application document ((MBGP AFC, TN# 249723), each production well will produce approximately 1,186,000 pounds per hour of geothermal fluid to support a production demand of 10,676,000 pounds per hour. (TN# 249723 on page 2-16). The injection wells each have injection capacities of 2.7 million pounds per hour (TN# 249723 on page 2-6). Using these production rates from the MBGP, the projected increase in produced water (geothermal fluid) per year per well would be 4.7 billion kg (assuming 24-hour operations for 365 days). Similar amounts of fluids will be injected per MBGP injection well. The PSA does not provide an assessment of the impact of the produced and injected fluid volumes on the background seismicity of the Salton Sea Geothermal Field.

The MBGP PSA must be revised to include an evaluation of the impact the addition of 11 injection wells and nine production wells with the fluid production and injection capacities stated in the AFC would have on the background seismicity of the project area as well as the cumulative impacts from induced seismicity given the other two geothermal projects, existing geothermal operations, and reasonably foreseeable future geothermal and lithium projects under the Lithium Valley Specific Plan.

Sincerely,
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Recoverable Signature

X Bwalya Malama

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Signed by: Bwalya Malama

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EDUCATION

Ph.D. in **Hydrology**, with minor in **Mathematics**, University of Arizona, 2006
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Physical Geology (GEOL 201)
Introduction to Earth Science (ERSC 144)
Introduction to Soil Science (SS 120)
Undergraduate Seminar (NR 363)

Geological Engineering, Montana Tech
Hydrogeology for engineers
Numerical methods for groundwater flow modeling
Advanced hydrogeology.

Geosciences, Boise State University
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Pima Community College, Tucson, Arizona
College Algebra; Trigonometry; Statistics.

Mining and Geological Engineering, University of Arizona (Graduate instructor)
Underground Mine Ventilation.

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1. Solum, J., **Malama, B.,** (2022) *Estimating Canopy-Scale Evapotranspiration from Localized Sap Flow Measurements*, Water 14(11), 1812. https://doi.org/10.3390/w14111812
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1. **Malama, B.** (2022) *Field Observations of Transient Stream Drawdown Response to Groundwater Pumping*, AGU Fall Meeting, December 15, Chicago, Ill.
2. **Malama, B., (2022)** *Transient Electrokinetic Response of a Shallow Aquifer-Aquitard System to Groundwater Pumping*, NGWA Groundwater Week, December 6, Las Vegas, NV.
3. **Malama, B.,** Ying-Fan Lin (2021) *The Stream Depletion Model Paradox: a First Solution, Recent Advances, and Implications for Groundwater Sustainability*, AGU Fall Meeting
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9. Pritchard-Peterson, D., **Malama, B.** (2017) *Field Investigation of Stream-Aquifer Interactions - A Case Study*, AGU Fall Meeting, December, New Orleans, LA.
10. Aurelius, S., Platt, D.C., **Malama, B.** (2017) *Characterization of California Central Coast Aquifers using Pneumatic Slug Tests*, AGU Fall Meeting, December, New Orleans, LA.
11. **Malama, B.** (2017) *The Stream Depletion Model Paradox - A First Solution*, AGU Fall Meeting, December, New Orleans, LA.
12. **Malama, B.,** Abere, M., Montgomery, M. (2016) *Characterizing Multi-layered Coastal Aquifer using Pneumatic Slug Tests*, AGU Fall Meeting, December, San Francisco, CA.

13. Mishra, P.K., Alves Silva, L.P., **Malama, B.** (2015) *Semi-analytical model for slug test in unconfined aquifers*, AGU Fall Meeting, December, San Francisco, CA.
14. **Malama, B.** (2014) *Transient Streaming Potentials under Varying Pore-water Ionic Strength*, AGU Fall Meeting, December, San Francisco, CA.
15. Kuhlman, K.L., **Malama, B.**, Heath, J.E., Gardner, W.P., Robinson, D.G. (2013) *Multi-porosity transport of natural tracers in a fractured system*, AGU Fall Meeting, San Francisco, CA.
16. **Malama, B. (2013)** *Transient streaming potentials associated with brine flow in rock salt*, AGU Fall Meeting, San Francisco, CA.
17. **Malama, B. (2013)** *Transient streaming potentials: a proxy for hydraulic head? Results from lab-scale pumping test simulations*, NGWA Ground Water Summit, San Antonio TX.
18. **Malama, B.** (2012) *Modeling transient streaming potentials in coupled saturated-unsaturated zone flow to a pumping well*, AGU Fall Meeting, San Francisco, CA.
19. **Malama, B.** (2012) *Estimation of the electrokinetic coupling coefficient and hydraulic conductivity from streaming potential measurements in a falling-head permeameter*, NGWA Ground Water Summit, Garden Grove, CA.
20. **Malama, B.** (2011) *Aquifer characterization using transient streaming potentials generated by flow during pumping tests - New developments*, AGU Fall Meeting, San Francisco, CA.
21. **Malama, B.** Lee, M. (2011) *Application of multirate mass transfer model to radionuclide transport in Culebra Dolomite core*, in Proceeding of the International Symposium on Radiation Safety Management, November 2-4, 2011, Gyeongju, Republic of Korea.
22. **Malama, B.** (2010) *Hydraulic characterization of the shallow subsurface in the Butte--Silver Bow area in southwestern Montana, using pneumatic slug tests*, AGU Fall Meeting, San Francisco, CA.
23. **Malama, B.** Kuhlman, K.L., Revil, A., (2009) *Modeling aquifers using transient streaming potentials*, submitted to AGU Fall Meeting, San Francisco, CA.
24. Thoma, M., **Malama, B.**, Barrash, W., Bohling, G., Butler Jr., J.J. (2009) *A general model for using slug tests in unconfined aquifers: Assessment of skin effects*, AGU Fall Meeting, San Francisco, CA.
25. **Malama, B.**, Revil, A., Kuhlman, K. L., (2008) *A semi-analytical solution for transient streaming potentials associated with confined aquifer pumping tests*, AGU Fall Meeting, San Francisco, CA.
26. Thoma, M., **Malama, B.**, Bradford, J., Barrash, W., Johnson, B., Hinz, E., Murray, S. (2008) *Using Ground Penetrating Radar to Monitor Transient Unconfined Aquifer Response to Pumping*, AGU Fall Meeting, San Francisco, CA.
27. **Malama, B.**, Kuhlman, K. L., Barrash, W. (2007) *Leakage theory for unconfined aquifers*, AGU Joint Assembly, Acapulco, Mexico.
28. **Malama, B.**, Barrash, W. (2006) *Solute Transport in a Medium with Spatially Variable Porosity*, AGU Fall Meeting, San Francisco, CA.
29. **Malama, B.** Neuman, S.P. (2004) *Inverse stochastic moment analysis of transient flow in randomly heterogeneous media*, AGU Fall meeting, San Francisco, CA.

30. **Malama, B.**, Kulatilake, P.H.S.W., Park, J. (2003) *A New Rock Mass Strength Criterion for Biaxial Loading Conditions*, 39th US Rock Mechanics Symposium, MIT.

MANUSCRIPTS IN PREPARATION

1. **Malama, B.,** Ying-Fan Lin, Hwa-Lung Yu, Hua-Ting Tseng, and Sam Greene (2022) *Transient Theory of Pumping Induced Depletion and Drawdown of a Stream with Finite Channel Storage*, Hydrology and Earth System Sciences, EGU (submitted)
2. **Malama, B.,** Iason Pitsillides, Braden Povah, *Transient Electrokinetic Response of a Shallow Aquifer-Aquitard System to Groundwater Pumping.*
3. **Malama, B.**, Whetsler, B, *Finite Element Modeling of a Coastal California Aquifer.*

SUPERVISED STUDENT THESES & PROJECTS

1. Pritchard-Peterson, Devin (2018) *Field Investigation of Stream-Aquifer Interactions: A Case Study in Coastal California*, Master of Science in Forestry Sciences, Thesis.
2. Solum, James (2020) *Estimating Evapotranspiration of a Riparian Forest using Sap Flow Measurements*, Master of Science in Forestry Sciences, Thesis.
3. Whetsler, Brian (2020) *A Groundwater Model of the San Luis Obispo Valley Basin using COMSOL Multiphysics*, Master of Science in Environmental Science and Management, Project Report.
4. Carlson, Alexandra (2020) *Preliminary Survey of Herbicide Environmental Fate and Transport in California and the Morro Bay Watershed*, Master of Science in Environmental Science and Management, Project Report.
5. Sinnott, Tyler K. (2020) *Eelgrass (zostera marina) Population Decline in Morro Bay, CA: A Meta-Analysis of Herbicide Application in San Luis Obispo County and Morro Bay Watershed*, Master of Science in Environmental Science and Management, Project Report.
6. Momberger, Claire J. (2020) *A Hydrologic model of the northern limb of the San Luis Obispo Valley aquifer by use of COMSOL Multiphysics Simulation Software*, Master of Science in Environmental Science and Management, Project Report.

TECHNICAL REPORTS

1. Malama, B. (2021) *A Review of the Cat Canyon Aquifer Exemption Expansion Application*, Technical Report for the Environmental Defense Center.
2. Malama, B. (2021) *A Review of Temperature Logs from Cat Canyon Wells for Evidence of Leakage*, Technical Report for the Environmental Defense Center.
3. Malama, B., Solum, T., Nicholson, B. (2020) *Results of Direct-Push Exploratory Borehole Drilling at the Kendall Site for the Santa Rosa Creek Flow Enhancement Pilot Project*, Technical Report for Central Coast Salmon Enhancement.
4. Malama, B., Appel, C., Lazcano, C. (2019) *Survey of Soil Health Characteristics Necessary to Support Native Plant Species at the Santa Susana Field Site*, Technical Report for NASA.

GRANTS

1. Moore Foundation (2022), $500K (Co-PI, Pending)
2. NSF-MRI: Acquisition of a Sciex ZenoTOF 7600 Liquid Chromatograph Mass Spectrometer (LC-MS) for Studying a Broad Spectrum of Complex Organic Compounds, (2022) $774,276 (Co-PI, Not funded)
3. Cal Fire: Study in the Soquel Demonstration State Forest, (2021-2024), $499,513 (Co-PI, **Funded**)
4. CSU-ARI: Watershed and soil response to wildfire at Swanton Pacific Ranch (2021-2024), $182,469 (Co-PI, **Funded**)
5. Coastal Research Institute: Monitoring the seawater-freshwater interface in coastal aquifers (2022-2023), $18,000 (PI, **Funded**)
6. U.S. Dept of Energy via University of Wisconsin-Madison: Caprock CO2 and Brine Leakage Detection via Self Potential & Oscillatory Hydraulic Testing, (2021) $117K (PI, Not funded)
7. ARI, The Effects of Soil Health Management Practices on Water Quality in Coastal Orchards (Co-PI, 2020-2023), $30,000 (**Funded**)
8. USDA- NLGCA, Capacity Development and Curriculum Enhancement for a Professional Graduate Program (2023-2025), $149,987 (Not funded)
9. Cal Poly Strategic Research Initiatives (2020), $500,000 (Not funded)
10. Central Coast Salmon Enhancement (2019-2020), $26,593 (**Funded**)
11. CDFA – Healthy Soils (Co-PI, 2018-2020), $206,771 (**Funded**)
12. NASA (2018), $50,317 (**Funded**)
13. California Department of Pesticide Regulation (2017), $500,000 (Not funded)
14. National Science Foundation (2017), $297,389 (Not funded)
15. California Department of Water Resources (2017), $35,801 (**Funded**)
16. California Department of Food and Agriculture – FREP (2017), $222,253 (Not Funded)
17. ARI Campus (2017), $75,000 (Not funded)
18. RSCA Grant (2017), $14,000 (**Funded**)
19. RSCA Grant (2016), $12,000 (**Funded**)
20. USDOE-UFD (2016), $800,000 (Not funded)
21. USDA-NIFA Exploratory Research (2016), $100,000 (Not funded)
22. CDFA-FREP (2016), $100,000 (Not funded)
23. ARI Seed Grant (2015), $5000 (**Funded**)
24. ARI New Investigator (2015), $39,663 (**Funded**)
25. McIntire-Stennis (2015), $29,927 (**Funded**)
26. USDOE-UFD (2015), $800,000 (Not funded)

SERVICE

Semester Conversion Taskforce, CAFES Faculty Representative
Academic Senate
GEGB, CAFES Representative
MS ESM Department Committee
Graduate Coordinator, MS Ag Soil Science Specialization
Chair, Search Committee, Digital Soil Mapping
Search Committee, Soil Ecology Position
Search Committee, Soil Fertility/Health Position
Supervising Graduate Students
Convener and Chair of several American Geophysical Union (AGU) oral and poster sessions
Served as MS Committee Member Forestry Science Graduate

Member AGU Groundwater Technical Committee
Served on Graduate Committee at Montana Tech of the University of Montana
Served on Multiple Masters Student Thesis committees

PRIVATE CONSULTING PROJECTS (Founder ***AquiFAnalytics, LLC*** 2014)
Environmental Defense Council, Santa Barbara, CA (2021), $7200
Sandia National Laboratories, Albuquerque, NM (2019), $8140
Cleath-Harris Geologists, San Luis Obispo, CA (2015-2017), $5000
Sandia National Laboratories, Carlsbad, NM (2014-2017), $50,000

COMPUTATIONAL SKILLS

Numerical Methods: Finite element and Finite difference methods.
Programming: C++, MATLAB, Python, FORTRAN.
Modeling: COMSOL Multiphysics, MODFLOW, TOUGH, AQTESOLV.

PROFESSIONAL MEMBERSHIPS
American Geophysical Union (AGU)
National Ground Water Association (NGWA)
Groundwater Resources Association of California (GRAC).

ATTACHMENT F

DISTRICT WATER POWER

IID

www.iid.com

A century of service.

Since 1911

September 22, 2023

Sheila Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037
Email: ssannadan@adamsbroadwell.com

Re: **Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023.**

Dear Ms. Sannadon,

By separate California Public Records Act requests dated August 9, 10 and 15, 2023, you have requested,

> "…. a copy of any and all records" related to the Black Rock, Morton Bay and Elmore North Geothermal Project.

The Imperial Irrigation District has determined that your request seeks both disclosable and exempt records. Included with this letter are non-exempt records. As noted, additional records exist which we have determined to be either protected trade secrets of BHE Renewables, LLC and thus exempt pursuant to Government Code Section 7927.705 and Evidence Code Section 1060. Additional records relating to electrical production systems development, obtained in confidence from BHE Renewables, LLC, are deemed exempt pursuant to the provisions of Government Code Section 7927.300.

Finally, we are in the process of gathering a significant number of additional documents that relate solely to IID rights-of-way over BHE owned lands. If you wish copies of such documents please advise.

Thank you.

Sincerely,

Geoffrey P. Holbrook
General Counsel

ENGINEERING, STUDY, AND DESIGN AGREEMENT

BETWEEN

IMPERIAL IRRIGATION DISTRICT

AND

BHE Renewables, LLC

for the

Salton Sea Transmission Project

ENGINEERING, STUDY, AND DESIGN AGREEMENT

THIS ENGINEERING, STUDY, AND DESIGN AGREEMENT ("Agreement") is made and entered into this 1 day of November, 2022 ("Effective Date"), by and between BHE Renewables, LLC, a Delaware limited liability company ("Transmission Customer") and Imperial Irrigation District, an irrigation and electric district organized and existing under the laws of the State of California, ("Transmission Provider"). Transmission Customer and Transmission Provider each may be referred to individually as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, Transmission Customer is proposing to develop Generating Facilities, consistent with the Interconnection Requests submitted by Transmission Customer dated December 23, 2021 (Black Rock) and December 27, 2021 (Elmore North & Morton Bay) in accordance with Transmission Provider's Generation Interconnection Procedures ("GIP") set forth in Attachment J of Transmission Provider's Open Access Transmission Tariff ("OATT");

WHEREAS, the Transmission Customer desires to wheel power from its Generating Facilities through the Transmission Provider's Transmission System ("Transmission Provider's System") for the purposes of making wholesale sales of electricity;

WHEREAS, Transmission Customer has submitted a Transmission Service request to Transmission Provider pursuant to Transmission Provider's Open Access Transmission Tariff ("OATT" or "Tariff") dated August 30, 2022 and intends to effectuate transmission wheeling service through an appropriate transmission service agreement pursuant to Transmission Provider's OATT to facilitate transmission of power from its Generating Facilities for the purposes of making wholesale sales of electricity, including from Transmission Provider's System to the California Independent System Operator Corporation ("CAISO") Controlled Grid;

WHEREAS, a new transmission line ("Project") is necessary to address Transmission Customer's Transmission Service request and in order for Transmission Customer's Generating Facilities to interconnect to the CAISO Controlled Grid, through which Transmission Customer wishes to make wholesale sales of electricity;

WHEREAS, Transmission Customer has requested performance of preliminary, engineering, study and design activities, necessary for development of the Project, as further set forth on Attachment A;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, including the foregoing which are part of this Agreement and not mere recitals, the Parties agree as follows:

1. **Capitalized Terms.** Unless specifically defined herein, capitalized terms shall have the meanings indicated in Transmission Provider's OATT.

2. **Authorization of Work.** Transmission Provider authorizes Transmission Customer to perform or have performed the engineering, study, and design activities ("Work") described in Attachment A.

3. **Responsibilities of Transmission Provider.** Transmission Provider shall:

a. Designate an Owner Representative, who shall act as a single point of contact on behalf of Transmission Provider with respect to the prosecution and scheduling of the Work and any issues relating to this Agreement. Transmission Provider may designate a new Owner Representative from time to time by a Notice delivered to Transmission Customer.

b. In accordance with and subject to the terms of this Agreement, diligently, duly and properly perform, complete and pay for the Work as further set forth in Attachment C and all of its other obligations set forth in this Agreement;

c. Notwithstanding the provisions of the Transmission Provider's OATT, the Transmission Provider is not required to provide or offer any service that the Transmission Provider determines, in its sole discretion, it is incapable of providing; provided, however, Transmission Provider shall be required to provide the services enumerated in this Agreement where indicated herein.

4. **Responsibilities of the Transmission Customer.** Transmission Customer shall:

a. Adhere to the obligations set forth under Transmission Provider's OATT for Transmission Customers and Interconnection Customers, as applicable, and meet any associated milestones;

b. Pay the actual costs incurred by Transmission Provider associated with all Work identified in this Agreement, including but not limited to those specified in Attachment C, and actual costs incurred by or on behalf of Transmission Provider in meeting Transmission Provider's responsibilities set forth in Section 3. An estimated deposit and payment schedule is attached hereto as Attachment B. The Parties agree that the amounts set forth in Attachment B shall be considered as estimates only and shall not be deemed to modify this Section 4.

c. Cooperate with Transmission Provider in meeting the obligations set forth in Section 3.

d. Diligently, duly, and properly perform and complete all of its obligations under this Agreement.

5. **No Impact of Agreement on Queue Position or In-Service Date.** This Agreement does not alter Transmission Customer's transmission or interconnection Queue Position or In-Service Date.

6. **Opportunity to Self-Engineer, Study and Design Build.** Notwithstanding anything contrary in the provisions set forth in Sections 2 and Section 3, Transmission Customer elects to and shall undertake the Work outlined in Attachment A to this Agreement. In order for Transmission Customer to undertake the Work outlined in Attachment A, Transmission Customer must follow the following requirements:

a. Transmission Customer shall utilize prudent industry practices in accordance with Transmission Customers' internal standards and Transmission Provider's requirements in solicitation of vendors for the Work. Transmission Provider shall have the opportunity to review and comment on the solicitation.

b. Transmission Customer shall perform or require that its authorized vendors and subcontractors perform, the Work in accordance with engineering design, safety and technical standards, Good Utility Practice, Applicable Law (including applicable Federal Energy Regulatory Commission ("FERC"), North American Electric Reliability Corporation ("NERC"), and Western Electricity Coordinating Council ("WECC") requirements, and any applicable state, local, or regulatory requirements), applicable permits, and any specifications provided by Transmission Provider to Transmission Customer.

c. Transmission Customer shall require from vendors that Transmission Provider receive copies of all products that are the result of the Work and rights to use the products of the Work or the results of the Work without restriction.

d. Copies of competitive bids shall be provided by Transmission Customer to Transmission Provider. In coordination with Transmission Provider, Transmission Customer shall select the bid that is the lowest price bid, that meets the standards and specifications required by Transmission Provider and is capable of being delivered by the date agreed upon by Transmission Provider and Transmission Customer.

e. Transmission Provider shall consider, but is not required to accept, previous competitive bids for approval that have been received from Transmission Customer's contractors related to recent and ongoing work occurring for BHE Renewables.

7. No Obligation to Secure Permits. In meeting its obligations under this Agreement, Transmission Provider shall not be obligated to secure any permits on behalf of the Project. Transmission Provider will cooperate with reasonable requests for information required to support permitting.

8. Subcontracting. The Parties acknowledge and agree that either Party shall be entitled to engage subcontractors in respect of the performance of the Work or any portion thereof; provided that the use of any subcontractor shall not: (a) relieve either Party of its duties, responsibilities, obligations or liabilities hereunder, including but not limited to Transmission Customer's competitive bid obligations as outlined in Section 6, (b) relieve either Party of its responsibility for the performance of any Work for which it is responsible as reflected in Attachment A and C that is rendered by any such subcontractor, or (c) create any relationship between the other Party and any subcontractor. The Parties shall be solely responsible for the acts, omissions or defaults of its subcontractors. No subcontractor is intended to be nor shall be deemed a third-party beneficiary of this Agreement. The Parties acknowledge that Transmission Customer is required to comply with all applicable requirements for it to solicit competitively subcontracted for Work.

9. Failure of Transmission Customer to Meet Obligations under this Agreement. If Transmission Customer fails to meet its obligations under this Agreement, the following terms apply:

a. Transmission Provider may cease to perform Work, and may at its sole discretion, terminate this Agreement upon written notice if Transmission Customer has, after written notice from Transmission Provider and the opportunity to cure for five (5) business days: (i) failed to meet any milestones or comply with any prerequisites specified in the OATT, or (ii) fails to adhere to its obligations as set forth herein.

b. If for any reason Transmission Customer fails to make a payment to Transmission Provider on or before the due dates specified in Attachment B, Transmission Provider will notify Transmission Customer of such failure in writing and shall not be obligated to proceed with the performance of Work until such payment is made. If Transmission Customer does not make the required payment within thirty (30) calendar days of the notice of failure to make timely payment, Transmission Provider may, in its sole discretion, terminate this Agreement.

c. Transmission Provider shall notify Transmission Customer in writing within five (5) business days of it learning if Transmission Provider learns that the costs incurred under this Agreement are likely to exceed the amounts specified in Attachment B. In such notification, Transmission Provider shall provide Transmission Customer with a revised Attachment B, outlining the new estimated costs. If Transmission Customer does not dispute in writing the reasons for the increased payments, Transmission Customer shall pay Transmission Provider the increased payment amounts outlined in revised Attachment B within thirty (30) calendar days

of Transmission Provider's notification. If Transmission Customer does not pay Transmission Provider the increased payment amounts outlined in the revised Attachment B within thirty (30) calendar days of Transmission Provider's notification, Transmission Provider shall not be obligated to proceed with the performance of Work and may, in its sole discretion, immediately terminate this Agreement. Alternatively, if Transmission Customer disputes in writing the reasons for or any portion of the increased payment amounts within fifteen (15) calendar days from Transmission Provider's notification, the Parties shall promptly meet and attempt to resolve the dispute. In the event the Parties are unable to resolve the dispute within thirty (30) calendar days from receipt of Transmission Customer's written dispute, Transmission Provider will cease all Work under this Agreement and this Agreement shall terminate immediately upon written notice by Transmission Provider.

10. Intention to Execute GIA. Transmission Customer intends to enter into a Generator Interconnection Agreement ("GIA") with respect to the Generating Facilities. The GIA will identify the facilities and costs resulting from the last stage of the study process pursuant to the GIP, and will address construction of the facilities and any engineering, design and procurement activities identified as necessary for the interconnection. The GIA will also account for Work already undertaken and payments already made pursuant to this Agreement. If Transmission Customer is unable to enter into an GIA with respect to the Generating Facilities, or if Transmission Customer's GIA with Transmission Provider terminates at any time during the term of this Agreement, Transmission Provider may provide Notice to Transmission Customer terminating this Agreement.

11. Transmission Provider Not Liable for Delays. Transmission Provider shall use reasonable efforts to complete the Work identified in Attachment C; however, in no event shall Transmission Provider be responsible under the terms of this Agreement for any delay in completion of the Work identified in Attachment C of this Agreement to the extent such delay constitutes Force Majeure as defined in this Agreement, except to the extent such delay stems from Transmission Provider's acts or omissions, or to the extent that such delay is caused by the actions or omissions of the Transmission Customer.

12. Termination of Agreement. Subject to Section 13 below, this Agreement shall terminate upon the earliest of the following to occur: (i) written notice provided by Transmission Provider to Transmission Customer pursuant to Section 9 or 10 herein; or (ii) Transmission Customer withdraws or is deemed to have withdrawn its Interconnection Request associated with the Project under the terms of Transmission Provider's OATT. Following termination, Transmission Provider promptly shall provide Transmission Customer with a reconciliation invoice.

13. Survival of Obligation to Pay and Reconciliation. Transmission Customer's obligations to pay Transmission Provider for costs incurred or irrevocably committed to be incurred pursuant to this Agreement will survive termination of this Agreement for any reason.

a. Excess Payments. In the event Transmission Customer's payments paid in accordance with Attachment B to this Agreement, including any revisions to Attachment B as provided in Section 9 herein, exceeds the amount of Transmission Provider's actual costs incurred or irrevocably committed to be incurred pursuant to this Agreement, Transmission Provider shall credit in the final reconciliation invoice provided in accordance with Section 12 or return the excess amounts within thirty (30) days of the submission of such financial reconciliation invoice.

b. Deficient Payments. In the event Transmission Customer's payments paid in accordance with Attachment B to this Agreement, including any revisions to Attachment B as provided in Section 9 herein, are less than the amount of Transmission Provider's actual costs incurred or irrevocably committed to be incurred pursuant to this Agreement, then Transmission Customer shall pay the difference within thirty (30) days of the date of receipt of the final reconciliation invoice provided in accordance with Section 12 of this Agreement.

14. Ownership. IID solely shall own the Project, including all appurtenant equipment, rights, and associated ROWs. Subject to any contractual arrangements with Transmission Customer, IID shall have full rights to use for its own purposes and to make transmission rights of the Project available for use under IID's OATT.

15. Transmission Service Agreement. IID and Transmission Customer shall in good faith negotiate and enter into an appropriate transmission service agreement under IID's OATT for Transmission Customer's use of requested capacity of the Project.

16. Indemnification. Transmission Customer and Transmission Provider shall at all times indemnify, defend, and hold each other (and their respective employees, agents, and Boards) harmless from, any and all suits, causes of action, claims, charges, damages, demands, judgments, civil fines, penalties, costs and expenses (including without limitation, attorneys' fees, and costs of experts and consultants), or losses of any kind or nature whatsoever including, without limitation, business interruption, impairment of contract, death, bodily injury or personal injury to any person, damage or destruction or loss of use to or of any property (financial, physical, or intellectual) by or to third parties, arising by reason of or incident to or directly or indirectly related to such Party's acts, errors or omissions, performance or nonperformance of any of its obligations under this Agreement on behalf of Transmission Customer, except in the case of sole negligence or intentional wrongdoing by the other Party.

17. Limitation of Liability; Release. Except for damages from willful misconduct or gross negligence, Transmission Provider's liability for any action arising out of its activities or non-performance relating to this Agreement shall be limited to the amounts expended by Transmission Customer in performing under this Agreement. UNDER NO CIRCUMSTANCES SHALL TRANSMISSION PROVIDER (OR ITS BOARD, EMPLOYEES, OR AGENTS) BE LIABLE FOR ANY OF TRANSMISSION CUSTOMER'S

ECONOMIC LOSSES, COSTS OR DAMAGES, INCLUDING BUT NOT LIMITED TO SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES.

18. **Disclaimer of Warranty.** Transmission Provider and Transmission Customer warrant that the Work they perform hereunder shall be consistent with Good Utility Practice. TRANSMISSION PROVIDER DISCLAIMS ALL OTHER WARRANTIES IN CONNECTION WITH THE ENGINEERING AND PROCUREMENT SERVICES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILTIY, FITNESS FOR PARTICULAR PURPOSE, AND ALL SIMILAR WARRANTIES. Transmission Provider's undertaking and completion of any Work under this Agreement shall not be construed as: (a) confirming or endorsing the design, or as any warranty of safety, durability, reliability or suitability of Transmission Customer's Project or installation thereof for any use, including the use intended by the Transmission Customer; and (b) a guarantee of an GIA nor any approval of the proposed Project.

19. **Representations, Warranties, and Covenants.** Each Party makes the following representations, warranties and covenants:

a. Good Standing. Such Party is duly organized, validly existing and in good standing under the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business in the state or states in which it is located, and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this Agreement and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this Agreement.

b. Authority. Such Party has the right, power and authority to enter into this Agreement, to become a Party hereto and to perform its obligations hereunder. This Agreement is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

c. **No Conflict**. The execution, delivery and performance of this Agreement does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of the Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.

d. **Consent and Approval**. The Party has obtained each consent, approval, authorization, order, or acceptance by any Governmental Authority that is required of it in connection with the execution, delivery

and performance of this Agreement, and it will provide to any Governmental Authority notice of any actions under this Agreement that are required by Applicable Laws and Regulations.

20. **Force Majeure.** Neither the Transmission Provider nor the Transmission Customer will be considered in default as to any obligation under this Agreement if prevented from fulfilling the obligation due to an event of Force Majeure. The term "Force Majeure" shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include a Party's act of negligence or intentional wrongdoing. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations under this Agreement. Telephone notices given pursuant to this section shall be confirmed in writing as soon as reasonably possible. The Party claiming Force Majeure shall give timely written notice to the other Party that the Force Majeure event that prevented the fulfillment of obligations of this Agreement are no longer present and work has resumed on those obligations.

21. **Governing Law.** This Agreement shall be governed by, interpreted and enforced in accordance with the laws of the State of California, as if executed and to be performed wholly within the State of California, and without regard to principles of conflicts of law. TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS CONTRACT. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. IF A WAIVER OF JURY TRIAL IS DEEMED BY ANY COURT OF COMPETENT JURISDICTION TO NOT BE ENFORCEABLE FOR ANY REASON, THEN TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO AGREE TO BINDING ARBITRATION. SUCH ARBITRATION SHALL BE IN ACCORDANCE WITH SECTIONS 12.2 AND 12.3 OF TRANSMISSION PROVIDER'S TARIFF.

22. **Venue.** Any action or proceeding arising out of or relating to this Agreement shall be brought in State court located in the County of Imperial, California and/or Federal court located in the County of San Diego or County of Imperial, California. Each Party irrevocably agree to submit to the exclusive jurisdiction of such courts in the State of California for the purpose of litigating any dispute arising out of or relating to this Agreement and waive any defense of *forum non conveniens* (or a similar doctrine pertaining to venue).

23. **Notices.**

a. Representatives and Addresses. All notices, requests, demands, and other communications required or permitted under this Agreement

shall be in writing, unless otherwise agreed by the Parties, and shall be delivered in person or sent by certified mail, postage prepaid, by overnight delivery, or by electronic mail or electronic facsimile transmission, and addressed as follows:

When delivered to Transmission Provider:
Imperial Irrigation District
Attention: General Counsel
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
gpholbrook@iid.com
with copies to:

Imperial Irrigation District
Attention: General Manager
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
ebmartinez@iid.com

Imperial Irrigation District
Attention: Energy Contract Administration
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
energycontracts@iid.com

When delivered to Transmission Customer:
BHE Renewables
Attn: General Counsel
4214 NW Urbandale Dr
Urbandale, IA 50322
generalcounsel@bherenewables.com

Changed Representatives and Addresses. Either Party may, from time to time, change its representative(s) or address for the purpose of notices to that Party by a similar notice specifying a new representative or address, but no such change shall be deemed to have been given until such notice is actually received by the Party being so notified.

24. Miscellaneous

a. Binding Effect. This Agreement and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

b. Conflicts. In the event of a conflict between the body of this Agreement and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this Agreement shall prevail and be deemed the final intent of the Parties.

c. Rules of Interpretation. This Agreement, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this Agreement, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this Agreement), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any Applicable Laws and Regulations means such Applicable Laws and Regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Attachment is to an Attachment to this Agreement; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this Agreement as a whole and not to any particular Section or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including". Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against any Party, but shall be construed in the manner that most accurately reflects the Parties' intent as of the date they executed this Agreement.

d. Entire Agreement. This Agreement constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants that constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

e. No Third-Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are

solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

f. Waiver. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Any waiver of this Agreement shall, if requested, be provided in writing.

g. Headings. The descriptive headings of the various sections of this Agreement have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this Agreement.

h. Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

i. Amendment. The Parties may by mutual agreement amend this Agreement by a written instrument duly executed by the Parties. No amendment shall be effective if executed otherwise.

j. No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

k. Severability. If any provision in this Agreement is finally determined to be invalid, void or unenforceable by any court or other Governmental Authority having jurisdiction, such determination shall not invalidate, void or make unenforceable any other provision, agreement or covenant of this Agreement.

25. Assignment. Neither Party shall assign this Agreement without prior written consent of the other Party, which consent shall not be unreasonably withheld. Subject to the foregoing restriction on assignment, this Agreement shall be fully binding upon, inure to the benefit of, and be enforceable by the Parties and their respective successors and assigns.

26. Transmission Provider's Tariff. This Agreement is subject to Transmission Provider's Tariff, as may be amended from time-to-time.

[Signature page(s) follow]

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the Effective Date.

TRANSMISSION PROVIDER:

Imperial Irrigation District

By: James C. Hanks

Date: 11/1/2022

TRANSMISSION CUSTOMER:

BHE Renewables, LLC

By: _____
Authorized Representative

Name: Steve Rowley

Title: VP - Renewable Development & Energy Markets

Date: October 6, 2022

ATTACHMENT A
ENGINEERING, STUDY, AND DESIGN
TO BE PERFORMED BY TRANSMISSION CUSTOMER
("STATEMENT OF WORK")

The Parties agree that the Work to be performed by Transmission Customer under this Agreement shall include the following tasks:

1) Final determination of the transmission line route, which will be the basis for securing future property, lease rights, licenses, permits, easements, rights of ways, privileges, appurtenances and other rights required of the Project. Final determination is subject to IID's review and approval.

2) Transmission Customer will undertake the environmental compliance analysis for the Project which shall include any new, relocated, modified or reconstructed IID facilities required for and by the Project (which can consist of but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.), that meet the requirements of the California Environmental Quality Act ("CEQA"), Cal. Pub. Res. Code §§ 21000, et seq. and, if applicable, the National Environmental Policy Act ("NEPA"), 42 U.S.C. 4321 et seq., regarding the identification and mitigation of the environmental impacts of the Project.

3) Preliminary design of the Project, using engineering methods accepted in the electric utility industry. This includes preliminary transmission line design (plan and profile), preliminary one-line diagrams and general plans for new Switching Station, preliminary one-line diagrams and general plans for existing IID substations, and any preliminary drawings as required by Southern California Edison ("SCE"). Preliminary designs must be submitted to IID for review and approval.

4) Acquire and secure property, lease rights, licenses, permits, easements, rights of ways, privileges, appurtenances and other rights (collectively "Rights") as determined by final transmission line route and preliminary engineering design. Said Rights shall be under IID's sole possession and shall include right to construct, reconstruct, operate, maintain, and patrol the transmission line. Any Rights acquired and secured to accommodate the Project, as determined by final transmission line route and engineering design must be conveyed to IID at no cost.

5) Detailed design and procurement of the Project, using engineering methods accepted in the electric utility industry. Must follow IID engineering standards. All designs must be reviewed and approved by IID. The following outlines a high-level scope of the Project and are

subject to change as details arise and are mutually agreed to by the Parties.

New 230kV transmission line running west of the Salton Sea from the new collector station to Coachella Valley, Coachella Valley to Ramon, and Ramon to Devers (SCE). Approximate total length 100-115 miles. The Project is expected to include but not be limited to:

- A new 230kV Collector Station (potentially located on customer parcel)
- New single circuit 230kV transmission heading west in the direction of the 161kV L-Line.
- When the new 230kV line intersects the L-Line, old double pole 161kV structures to be demolished and replaced with double circuit single pole steel structures to run both 161 and 230kV circuits. This will continue the entire route to Coachella Valley Sub.
- The new steel double circuit construction would be built to 230kV specifications, including the 161kV L-line side for future proofing.
- Coachella Valley Sub would have to be expanded to accommodate at least two 230kV circuits (1 extra bay).
- New 230kV transmission to run parallel with KN/KS lines from Coachella Valley to Ramon.
- Ramon sub would have to be expanded to accommodate at least two 230kV circuits.
- 230kV Transmission between Ramon and Devers utilizing existing corridor.

Project high level cost estimate: **$300M–$350M.**

ATTACHMENT B
REQUIRED DEPOSITS AND
PAYMENT SCHEDULE

30 Days after Effective Date	$250,000

ATTACHMENT C
ENGINEERING, STUDY, AND DESIGN
TO BE PERFORMED BY TRANSMISSION PROVIDER
("STATEMENT OF WORK")

The Parties agree that the Work to be performed by Transmission Provider under this Agreement shall include the following tasks:

Support Transmission Customer with Environmental Analysis for the Project and work in good faith to determine the Lead Agency or Responsible Agency, as appropriate, for the EIR. Transmission Provider will act as cooperating agency and work with the identified Federal lead agency for NEPA analysis, should this be required for completion of the Project.

Participate in meetings with Transmission Customer and Transmission Customer's contractors to review Project design and provide review of compliance with Transmission Provider's design standards.

Support Transmission Customer with outreach to landowners, tribal nations and land owned by the United States government.

Vargas, Donald A

From: Vargas, Donald A
Sent: Thursday, August 24, 2023 4:57 PM
To: 'Salamy, Jerry'
Cc: Hutchinson, Kevan P; Gamboa-Arce, Justina
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Hi Jerry,

The person that can help you on this matter is Justina Gamboa-Arce, she can be reached at (760) 339-9085 or at jgamboaarce@iid.com. I am cc'ing Ms. Gamboa-Arce to apprise her of this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 4:50 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Donald,

Can you point me to where I can find a project specific Salton Sea Impact assessment a project requesting a water supply from IID.

Thanks,
Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 3:01 PM

To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: [EXTERNAL] RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Thank you Jerry.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 2:29 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

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Hi Donald,

The August 31st informational hearing starts 5 PM at the Calipatria High School or online via Zoom. See the attached notice from the CEC for more information.

Thanks,
Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 1:49 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Jerry,

What time does the public information hearing start?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Monday, March 6, 2023 12:55 PM
To: Vargas, Donald A
Cc: Greene, Wendy (BHE Renewables); Hutchinson, Kevan P; Kemp, Michael
Subject: RE: Salton Sea Transmission EIR/EIS Template

Thanks for the quick response, Donald, noted. We will let Jacobs know and keep you apprised as things move along.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, March 6, 2023 2:45 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>; Kemp, Michael <MPKemp@IID.com>
Subject: [INTERNET] RE: Salton Sea Transmission EIR/EIS Template

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Hi Dustin,

IID does not have a specific EIR/EIS document template that it prefers. As long as it meets CEQA and NEPA requirements we have no concerns with your consultant, Jacobs, using their standard template.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Monday, March 6, 2023 12:04 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>
Subject: Salton Sea Transmission EIR/EIS Template

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Hello Donald,
Hope all is well. We were discussing the project with our environmental consultant this morning and they had a question regarding the EIR/EIS document. Do you have a specific template that you would like it delivered to you in or is IID open on what the template should be? We do not have a specific preference and will defer to Jacobs standard template if IID does not have a preference.

Thanks. Dustin

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, July 31, 2023 2:02 PM
To: 'Jon.Trujillo@calenergy.com'
Cc: Silva, Lauren; 'Brooke Langle'; 'Sukumaran, Anoop (BHE Renewables'; Romero, Angelina; 'Bhangoo, Manjot (BHE Renewables'; 'Salamy, Jerry/SAC'; 'Otten, Jessica'; Romero, Angelina; Hutchinson, Kevan P
Subject: RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jon,

I forgot to mention in my previous email that I would appreciate it if you update me every six weeks to make sure that we're aligned on the CEC permitting and notify me at certain milestones within the process. It doesn't have to be a formal meeting, an e-mail will suffice.

Thank you again,
Donald

From: Vargas, Donald A
Sent: Monday, July 31, 2023 1:17 PM
To: 'Trujillo, Jon (BHE Renewables)' <Jon.Trujillo@calenergy.com>
Cc: Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jon,

Thanks for the explanation. Much appreciated.

Best regards,
Donald

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 10:28 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

Jacobs is performing permitting support for both sides of the project, which makes it a little confusing.

Jerry Salamy and his team (Jacobs) are supporting geothermal permitting (power plants, wells/well pads, pipelines, water lines, and gen-tie lines). CEC is the lead for power plants, gen-ties and water supply lines. Imperial County under CUPs is lead for well pads, wells and pipelines.

Jessica Otten and her team (Jacobs as well) are supporting IID's network upgrades (transmission line, substation upgrades, and a new switching station) with IID and BLM/BOR as leads for CEQA and NEPA.

Thank you,
Jon

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 10:08 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

You don't often get email from dvargas@iid.com. Learn why this is important

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Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines?
However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
Safety First, Last and Always

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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making

responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Wednesday, August 23, 2023 10:43 AM
To: 'Salamy, Jerry'
Cc: Madams, Sarah; Hutchinson, Kevan P
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jerry,

Understood. I'll consult IID Energy Business & Regulatory Compliance Programs Manager and/or IID General Counsel to see if they have any concerns.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Wednesday, August 23, 2023 10:34 AM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Hi Donald,

I asked the CEC about inviting Imperial County and they responded with "When we met with Jim last week, I thought he might have something to add to the discussion."

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, August 22, 2023 2:57 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

It's not a problem, it's just disconcerting since at this point, which is determining a description of the switching station for purposes of the CEC environmental document, does not involve County Planning.
So yes, I would appreciate it if you ask the CEC the motive for inviting County Planning.

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Tuesday, August 22, 2023 2:49 PM
To: Vargas, Donald A <DVargas@IID.com>
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

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Hi Donald,

I don't know why Jim was invited by the CEC. I can ask the CEC. Can you let me know if this is a problem for IID?

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, August 22, 2023 12:42 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Hi Jerry,

Do you know why Jim Minnick, Imperial County Planning & Development Services Director, is being invited to this meeting?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: eFiling@energy.ca.gov
Sent: Thursday, August 24, 2023 4:08 PM
To: Vargas, Donald A
Subject: Your 1 Comment(s) approved and published

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Dear Imperial Irrigation District,

The following 1 Comment(s) that you submitted to the California Energy Commission (Docket Number **23-AFC-02**) were approved and published to the California Energy Commission website:

- Docket Number: 23-AFC-02
  Project Title: Elmore North Geothermal Project (ENGP)
  TN Number: 251870
  Title: Imperial Irrigation District Comments - per CEC Request for Agency Review of ENGP Project
  Description:
  Filer: System
  Organization: Imperial Irrigation District
  Role: Public Agency
  Submission Date: 8/24/2023 3:44:57 PM
  Docketed Date: 8/24/2023
  Subject(s):
  Submission Type: Comment
  Page(s): 3

Thank you,
08/24/2023 16:07:43.236

For e-filing help or questions, send an e-mail to e-FilingHelp@energy.ca.gov, or call 916-654-5076.

For e-commenting help or questions, send an e-mail to e-CommentingHelp@energy.ca.gov, or call 800-822-6228 or 916-654-4489.

This is an automated e-mail message. Replies to this message will not be read or replied to. Instead e-mail this address with your questions or comments.

CALIFORNIA
ENERGY COMMISSION

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State of California, Gavin Newsom, Governor

1516 Ninth Street
Sacramento, Ca 95814

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Vargas, Donald A

From: Gamboa-Arce, Justina
Sent: Friday, August 25, 2023 8:15 AM
To: Salamy, Jerry
Cc: Hutchinson, Kevan P; Vargas, Donald A; Shields, Tina L; Pacheco, Mike
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Jerry,

Aside from the links provided in IID's comment letter, another resource the BHE Renewables team may access regarding Salton Sea impact assessment is IID's Final EIR/EIS on the QSA Conservation and Transfer Project which is located at this link: Final EIR/EIS | Imperial Irrigation District (iid.com).

IID is also in the process of completing another environmental assessment for additional water conservation (and impacts to drains and Salton Sea) but it is not advanced at any level that may be shared until likely first quarter of 2024.

Guidance strictly related to the requirements may be found as follows:

The requirements for project assessment are noted in **Section 4.0 CEQA Compliance** of IID's Interim Water Supply Policy: Microsoft Word - Interim Water Supply Policy-100109Rev.DOC (iid.com).

Additionally, the 2009 Negative Declaration adopted by IID for the 2009 IWSP clearly notes the 2009 environmental document does not assess the potential effects on the environment of specific new water supply. This is noted specifically under **Section 2.4 Environmental Considerations for New Development Projects Requiring IWSP Water Supplies and Water Supply Projects**.

I hope these documents are useful. Feel free to contact me should you have any other inquiries.

Best Regards-
Justina Gamboa-Arce

From: Vargas, Donald A
Sent: Thursday, 24 August, 2023 4:57 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Hutchinson, Kevan P <KPHutchinson@IID.com>; Gamboa-Arce, Justina <jgamboaarce@IID.com>
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Hi Jerry,

The person that can help you on this matter is Justina Gamboa-Arce, she can be reached at (760) 339-9085 or at jgamboaarce@iid.com. I am cc'ing Ms. Gamboa-Arce to apprise her of this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 4:50 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Donald,

Can you point me to where I can find a project specific Salton Sea Impact assessment a project requesting a water supply from IID.

Thanks,
Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 3:01 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: [EXTERNAL] RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Thank you Jerry.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 2:29 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

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Hi Donald,

The August 31st informational hearing starts 5 PM at the Calipatria High School or online via Zoom. See the attached notice from the CEC for more information.

Thanks,
Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 1:49 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Jerry,

What time does the public information hearing start?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Vargas, Donald A
Sent: Friday, July 28, 2023 11:13 AM
To: 'dustin.vandiepen@bherenewables.com'
Cc: 'Otten, Jessica'
Subject: RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good day Dustin,

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 4:17 PM
To: Vargas, Donald A
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables); Madams, Sarah; Xayachack, Lindsey; Trujillo, Jon (BHE Renewables); Otten, Jessica; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

We only included the switching station in the BHER Applications for Certification. Perhaps it would be easier to schedule an hour or so on a Teams call to walk through the AFC sections to identify how the switching station was included in these CEQA environmental documents. I am available from noon to 5 pm tomorrow (August 1st) if you would like me to schedule a call.

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 1:14 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good afternoon Jerry,

Thanks for the additional clarification. Sorry to be a nuisance but could you indicate on what page in the Application for Certification I can find the environmental assessment of the construction of the new switching station and the new transmission line from the switching station to the "L" line. I've looked through the document and can't seem to find it.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 10:22 AM
To: Vargas, Donald A <DVargas@IID.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good Morning Jon and Donald,

All three BHER Applications for Certification included an environmental/societal impact assessment from the construction/operation of new switching station near Garst and Sinclair roads. Jacobs included the new switching station into each project's Application for Certification to ensure that if one or more of the projects experienced delays during the CEC licensing process, that project and the new switching station would have CEQA coverage sufficient to allow construction to commence.

Jon was correct regarding our estimated schedule for the Preliminary Staff Assessment public comment period. As you know, the CEC's Application for Certification process has several public review/comment periods for their environmental documents.

Please don't hesitate to call if you would like more information.

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 10:08 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry <Jerry.Salamy@jacobs.com>; Otten, Jessica <Jessica.Otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables)

<Manjot.Bhangoo@calenergy.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

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333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines?
However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, August 28, 2023 9:39 AM
To: Trujillo, Jon (BHE Renewables); 'Salamy, Jerry'
Cc: Silva, Lauren; Romero, Angelina; Gamboa-Arce, Justina; Hutchinson, Kevan P
Subject: IID Distribution-Rated Electrical Service for BHER Geothermal Projects

Good day,

Per our discussion at today's IID-BHER Geothermal Power Plants CEC Permitting Update meeting, the contact person for IID distribution-rated electrical service is:

Alfredo Ornelas
(760) 482-3408
amornelas@IID.com

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, July 31, 2023 10:08 AM
To: 'Trujillo, Jon (BHE Renewables)'; Salamy, Jerry/SAC; Otten, Jessica
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables)
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

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Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

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Safety First, Last and Always

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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Wednesday, August 9, 2023 5:12 PM
To: 'Salamy, Jerry'
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables); Madams, Sarah; Xayachack, Lindsey; Trujillo, Jon (BHE Renewables); Otten, Jessica; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Categories: 4Response Request

Hi Jerry,

I'm available on the 14th from 8:00am -10:00am then from 11:00am-12:00noon and on the 15th from 10:00am-12:00noon.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Wednesday, August 9, 2023 4:28 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

I passed off the request the IID Switching Station CEQA coverage to the CEC PM (Eric Veerkamp). Eric suggested a call to ensure they provide IID with the necessary CEQA coverage. What is your availability on morning of Monday or Tuesday (August 14th and 15th).

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 5:00 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jerry,

Sure, I'm available from 2pm to 4pm.

Thanks,

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333 E. Barioni Blvd.
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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 4:17 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

We only included the switching station in the BHER Applications for Certification. Perhaps it would be easier to schedule an hour or so on a Teams call to walk through the AFC sections to identify how the switching station was included in these CEQA environmental documents. I am available from noon to 5 pm tomorrow (August 1st) if you would like me to schedule a call.

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 1:14 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good afternoon Jerry,

Thanks for the additional clarification. Sorry to be a nuisance but could you indicate on what page in the Application for Certification I can find the environmental assessment of the construction of the new switching station and the new transmission line from the switching station to the "L" line. I've looked through the document and can't seem to find it.

Thank you,

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333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 10:22 AM
To: Vargas, Donald A <DVargas@IID.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good Morning Jon and Donald,

All three BHER Applications for Certification included an environmental/societal impact assessment from the construction/operation of new switching station near Garst and Sinclair roads. Jacobs included the new switching station into each project's Application for Certification to ensure that if one or more of the projects experienced delays during the CEC licensing process, that project and the new switching station would have CEQA coverage sufficient to allow construction to commence.

Jon was correct regarding our estimated schedule for the Preliminary Staff Assessment public comment period. As you know, the CEC's Application for Certification process has several public review/comment periods for their environmental documents.

Please don't hesitate to call if you would like more information.

Thanks,

Jerry Salamy | Jacobs | Project Manager
M:+916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 10:08 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry <Jerry.Salamy@jacobs.com>; Otten, Jessica <Jessica.Otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

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Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables)

<Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

[CAUTION] This email originated from outside of the IID. Do not reply, click on any links or open any attachments unless you trust the sender and know the content is safe.

Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines?
However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
Safety First, Last and Always

BHE RENEWABLES.

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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Look closely at the SENDER address. Do not open ATTACHMENTS unless expected. Check for INDICATORS of phishing. Hover over LINKS before clicking. Learn to spot a phishing message

Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

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Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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IID

www.iid.com

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Since 1911

August 24, 2023

California Energy Commission
Docket Unit, MS-4
Docket No. 23-AFC-01, 23-AFC-02, 230-AFC-03
715 P Street
Sacramento, CA 95814-6408

SUBJECT: CEC Request for Agency Participation in the Review of the Morton Bay Geothermal (23-AFC-01), Elmore North Geothermal (23-AFC-02), and Black Rock Geothermal (23-AFC-03) Projects

Dear Commissioners:

On April 18, 2023, BHE Renewables, LLC filed Applications for Certification (AFC) through the CEC to construct and operate three geothermal electrical generating facilities. The proposed Morton Bay Geothermal would have a maximum rating of 157 MW (expected net output of 140 MW) and a water supply demand of 5,560 acre-feet per year. The proposed Elmore North Geothermal would have a maximum rating of 157 MW (expected net output of 140 MW) and a water supply demand of 6,480 acre-feet per year. The proposed Black Rock Geothermal would have a maximum rating of 87 MW (expected net output of 77 MW) and a water supply demand of 1,125 acre-feet per year.

Please accept this communication as Imperial Irrigation Districts' initial comments in anticipation of the environmental scoping meeting that has been scheduled for August 31, 2023. We acknowledge that the deadline for comments is non-specific because the regulations state that agency comments shall be filed at the conclusion of evidentiary hearings, and that said hearing dates have yet to be determined but can be roughly noted as the end of February, 2024.

1) **Discussion of those aspects of the proposed sites and related facilities for which IID would have jurisdiction, but for the exclusive jurisdiction of the CEC to certify those sites and related facilities:**

   Water Facilities- *IID Water Department facilities will be impacted. IID owns, manages and operates numerous canals, drains and respective rights-of-way adjacent to, and in the vicinity of, the proposed project site. The proponents may not use IID's canal or drain banks to access the project site. To determine magnitude of impacts and reduce impacts to IID Water Department facilities the project's plans are to be submitted to IID Water Department Engineering Services Section prior to final project design.*

   Energy Facilities- *The distribution rated services will go through the CSP application process. Studies will be required for the proposed loads. Once the study is done, any system upgrades will be the responsibility of the project proponent. The CSP application is available for download at http://www.iid.com/home/showdocument?id=12923), in addition IID Energy Department will need electrical one-lines, electrical loads, and panel specifications. Please*

provide the specifications as early as possible because they are long lead items and we want to make sure we approve the panels before they are purchased.

2) **A determination of the completeness of the list in the AFC's of the laws, regulations, ordinances, or standards that IID administers or enforces and would be applicable to the proposed sites and related facilities but for the CEC's exclusive jurisdiction:**

In order to obtain a water supply from IID for a non-agricultural project such as proposed under the AFC's, the project proponent will be required to comply with all applicable IID policies and regulations and would be required to enter into a water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project be adequately assessed, appropriate mitigation developed, if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies. An adequate Salton Sea Impact assessment will be necessary as it relates to the projects requested water supply[1].

3) **A description of the nature and scope of the requirements that the applicant would need to meet to satisfy the substantive requirements for your agency, but for the CEC's exclusive jurisdiction, and an identification of any analyses that the CEC should perform to determine whether these substantive requirements can be met:**

---

[1] **Water Resources Section - Salton Sea Impact Assessment.**
The project proponent is requesting, under these three applications, a cumulative water supply from IID of 13,165 AFY. The impacts to the Salton Sea, due to loss or reduction of runoff caused by the proposed industrial use need to be analyzed in the environmental document. Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081.

An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.
The following are access links to the documents mentioned:

- The HCP is part of the IID Water Conservation and Transfer Project, Final EIR/EIS and can be found at Water/Library/QSA-Water-Transfer/Environmenta-Assessment/Permits/Final EIREIS; Volume II, Appendix A Species Covered by the HCP. The HCP in the Draft EIR/EIS may contain small changes from the final version of the EIR/EIS. It is in a different appendix in the draft that the final EIR/EIS (Appendix C). Until the final HCP/Natural Community Conservation Plan is approved, IID uses the draft HCP in the draft document, which can be accessed at Water/Library/QSA-Water-Transfer/Environmental-Assessment).
- The Biological Opinion (federal ESA permit) is at https://www.iid.com/Imperial-Irrigation-District/Salton-Sea-Areas.
- The CESA 2081 (the water transfer operates under this state ESA permit until the NCCP is approved) can be found at https://www.iid.com/water/library/qsa-water-transfer/environmental-assessments-permits/cesa-compliance.

The MMRP (Mitigation Monitoring and Report Program) is at https://www.iid.com/Water/Library/QSA-Water-Transfer/Mitigation.

Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

If IID implements a water allocation or apportionment program pursuant to the IID Equitable Distribution Plan, or any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the respective project's water as an industrial water user. For more information on how to obtain a water supply agreement, please visit IID's website at https://www.iid.com/water/municipal-industrial-and-commercial-customers or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com."

Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA) documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

4) **An analysis of whether there is a reasonable likelihood that the proposed projects will be able to comply with your agency's applicable substantive requirements:**
IID works closely with project proponents to address developer water supply requests in the context of existing policies and current water supply and demand conditions. Water supply analyses and more comprehensive demand planning occurs through the CEQA process and in Water Supply Assessments, for which Imperial County is the lead agency.

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, February 13, 2023 8:09 AM
To: Van Diepen, Dustin (BHE Renewables)
Cc: Romero, Angelina; Kemp, Michael; Goodsell, Jennifer M; Asbury, Jamie; Smelser, Matthew H; Greene, Wendy (BHE Renewables); Hutchinson, Kevan P
Subject: RE: Transmission Line Permitting

Good morning Dustin,

That sounds great. I look forward to working with you on this endeavor.

Best regards,
Donald

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Friday, February 10, 2023 2:59 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <arromero@IID.com>; Kemp, Michael <MPKemp@IID.com>; Goodsell, Jennifer M <jmgoodsell@IID.com>; Asbury, Jamie <jlasbury@IID.com>; Smelser, Matthew H <mhsmelser@IID.com>; Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>
Subject: RE: Transmission Line Permitting

Donald,
Thank you for getting back to me so quickly on this. That was not how I interpreted it when we discussed previously but BHER is more than happy to take on the scope as you have it defined below. I will work with our environmental consultant to reset expectations on our side and keep you in the loop as things progress.

Have a good weekend.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Wednesday, February 8, 2023 3:48 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Romero, Angelina <arromero@IID.com>; Kemp, Michael <MPKemp@IID.com>; Goodsell, Jennifer M <jmgoodsell@IID.com>; Asbury, Jamie <jlasbury@IID.com>; Smelser, Matthew H <mhsmelser@IID.com>
Subject: [INTERNET] RE: Transmission Line Permitting

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Hello Dustin,

It is was my understanding that BHER environmental consultants would provide the draft EIR/EIS, related documentation and agency coordination and not just prepare the technical reports and the other tasks that you mention. IID's role in acting as the lead agency would be to oversee the work the BHER environmental consultants would be doing in drafting the EIR/EIS and

approve (certify) the final EIR/EIS. If that not your understanding of this matter, I suggest a follow-up meeting be scheduled to clarify this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

Donald Vargas
Compliance Administrator II
Regulatory & Environmental Compliance Section
General Services Department
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E-mail: dvargas@iid.com

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Wednesday, February 8, 2023 1:02 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <arromero@IID.com>
Subject: Transmission Line Permitting

[CAUTION] This email originated from outside of the IID. Do not reply, click on any links or open any attachments unless you trust the sender and know the content is safe.

Hello Donald,
Now that IID has committed to serving as lead agency on CEQA for the transmission line, I have a couple of additional questions I would like to get your feedback on. Since BHER is electing to construct the transmission line, it is my thought that we would still manage the project permitting as if BHER was going to be the owner, even though IID ultimately will be. My intent would be to continue to engage Jacobs as my environmental consultant and they would perform the following tasks in support of an EIR/EIS:

- Preparation of the narrative project description
- Preparation of technical studies (Biological, Cultural, Historical and Visual Resources)
- Respond to information requests throughout the CEQA/NEPA process
- Review and provide comments on the EIR/EIS document

IID or your consultant would be responsible for assembling the final report and agency coordination but Jacobs would be responsible for supporting the technical studies that need to occur for the document. Is this something you are accepting of? I've already received approval from IID to utilize Jacobs so I am not requesting that, I just want to ensure that you are ok with this process. I am looking to get Jacobs biologists onsite in March to conduct the spring surveys.

I have Jacobs updating the full proposal but can send that to you once I receive so you can review the entire scope if you desire.

Thanks. Dustin

Vargas, Donald A

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Wednesday, May 3, 2023 7:29 AM
To: Vargas, Donald A
Cc: Romero, Angelina; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: BHER-IID Transmission Line

Good Morning Donald,
I will send out an invite for the 1-130 PM Pacific slot on May 9.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, May 2, 2023 1:12 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Romero, Angelina <arromero@IID.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [INTERNET] RE: BHER-IID Transmission Line

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Hello Dustin,

I'm available from 1:00 PM to 1:30 PM on May 9th. Since May 12th is IID's Friday off do you have any other suggested dates?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251

IID
A century of service.

Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
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From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Tuesday, May 2, 2023 11:03 AM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <arromero@IID.com>
Subject: BHER-IID Transmission Line

[CAUTION] This email originated from outside of the IID. Do not reply, click on any links or open any attachments unless you trust the sender and know the content is safe.

Hello Donald,
I have been having a lot of discussions with our environmental consultant, Jacobs, recently. Last week I brought them to site to show them most of the route and help with the desktop studies they are currently working on. We continue to progress with obtaining survey permissions that will allow for onsite environmental surveys to commence. I realize that IID environmental prefers a more hands off approach with Jacobs completing the EIR/EIS and submitting to IID for review and comment, however, I would like to take some time to make introductions to the team in the event you have any questions or concerns as things continue to progress.

Do you have any availability from noon to 1:30 PM Pacific May 9 or after 1PM Pacific on May 12 that we could pencil in a half hour to make introductions?

Thanks. Dustin

ATTACHMENT G

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606
FAX: (760) 353-9904

AIR POLLUTION CONTROL DISTRICT

P# 3734

August 20, 2008

Mr. Eric Spomer
Hudson Ranch Power I, LLC
2602 McKinney Ave., Suite 200
Dallas, TX 75204

Dear Mr. Spomer

The Imperial County Air Pollution Control District has received a signed application from Hudson Ranch Power I, LLC, for the construction and operation of a 49.9 MW capacity geothermal power plant and well field, which will be located southwest of the City of Niland. A check in the sum of $157.00 was received to cover the application fees.

This application has been reviewed and deemed complete. The ICAPCD reserves the right to request further information during the engineering evaluation process in case it is necessary.

If you have any questions or comments regarding the content of this letter, please feel free to contact the undersigned at (760) 482-4606.

Sincerely,

Cesar Flores
Air Pollution Control Engineer

Cc: Mr. John Featherstone, GM-Engineer and Operations

Mailed to both

ATTACHMENT 1

APPLICATION FOR AUTHORITY TO CONSTRUCT

HUDSON RANCH POWER I LLC

HUDSON RANCH I GEOTHERMAL PROJECT
POWER PLANT AND DEVELOPMENT ACTIVITIES

ATTACHMENT 1

APPLICATION FOR AUTHORITY TO CONSTRUCT

HUDSON RANCH POWER I LLC

HUDSON RANCH I GEOTHERMAL PROJECT
POWER PLANT AND DEVELOPMENT ACTIVITIES

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ATTACHMENT 1

APPLICATION FOR AUTHORITY TO CONSTRUCT

HUDSON RANCH POWER I LLC

HUDSON RANCH I GEOTHERMAL PROJECT
POWER PLANT AND DEVELOPMENT ACTIVITIES

INTRODUCTION

Hudson Ranch Power I LLC (Hudson Ranch I) proposes to construct and operate the Hudson Ranch I Geothermal Project (Project), a 49.9 MW geothermal power plant and well field project within the Salton Sea Known Geothermal Resource Area (KGRA) in Imperial County, California. The Project is located on private land west-southwest of the City of Niland in Sections 13 and 24 of Township 11 South, Range 13 East; and in Sections 7 and 18 of Township 11 South, Range 14 East, Niland Quadrangle (see Figure 1 and Figure 2).

The Imperial County Air Pollution Control District (ICAPCD) has previously approved Authority to Construct #3734 for the construction of two well pads and the drilling and testing of seven geothermal wells which are intended to become the four geothermal production wells and three geothermal brine injection wells required to support the Project. This application for an Authority to Construct is for the balance of the development Project equipment and the development Project operations.

The Imperial County Planning & Development Services Department (ICDPDS) has issued Conditional Use Permit (CUP) #07-0019 for the Project. Pursuant to the California Environmental Quality Act, Initial Study #07-0032 was prepared by the ICDPDS and a Negative Declaration approved for the Project.

EQUIPMENT AND SYSTEM DESCRIPTIONS

The Project consists of the following proposed equipment:

- the Brine Processing Facility (BPF), consisting of:
  - up to four geothermal production wells and associated pipelines;
  - up to three geothermal injection wells and associated pipelines;
  - brine handling facilities;
  - steam handling facilities (flash tanks, vent tanks and associated facilities);
  - a solids handling system (clarifiers, thickener and associated facilities);
  - a cement-lined brine pond; and
  - a cooling tower blowdown/condensate/aerated brine injection well.
- the Turbine-Generator Facility (TGF), consisting of:
  - a 49.9 MW (net) condensing turbine/generator set;
  - a geothermal noncondensible gas removal and hydrogen sulfide emission abatement system;
  - a heat rejection system (steam condenser and cooling tower);

  - an electrical substation and several power distribution centers;
  - two 2,500 kW 100 percent redundant emergency standby diesel engine/"black start" generators to provide electrical power to re-start power plant operations following plant trips (shut-downs) or other outages;
  - a 360 kW emergency standby fire pump diesel engine; and
  - a 800 kW emergency standby diesel engine/generator to supply electrical power for plant auxiliaries when the plant trips.
- common facilities within the TGF area:
  - a control building and warehouse;
  - a service water pond; and
  - other ancillary facilities.
- an approximately 4.5 mile-long 230 kV interconnection transmission line extending from the facility switchyard to the Imperial Irrigation District's (IID's) transmission line system at the intersection of English Road and Hoober Road; and
- a water conveyance system to bring canal water from the IID "O" lateral.

With the exception of the production and injection wells and pipelines, the interconnection transmission line and the water conveyance system, all the Project facilities would be located on a 65-acre parcel located in the north half of the northwest quarter of Section 24, T11S, R13E; SBB&M (see Figure 3). Within this parcel is the approximately 40-acre power plant site and an approximately 20-acre temporary construction equipment laydown, fabrication and construction parking area which would be used during site construction (see Figure 4).

Brine Processing Facility (BPF)

The BPF includes the geothermal wells and associated pipelines, the brine and steam handling facilities, the solids handling system, a brine pond and a fresh water pond (see Figure 4).

Four geothermal production wells and three geothermal brine injection wells are expected to be required to support the Project. The four geothermal production wells would be directionally drilled from Well Site 1, and the three geothermal injection wells would be directionally drilled from Well Site 2 (see Figure 3). One additional injection well would be drilled on either Well Site 1 or Well Site 2 for the injection of cooling tower blowdown/condensate/aerated brines back into the geothermal reservoir. Above-ground pipelines would be constructed to interconnect the production and injection wells with the power plant site facilities (see Figure 3).

The production wellheads would consist of control valves and redundant isolation valves. Injection pumps located at the power plant site would pump the geothermal injection fluid through the injection pipeline system, providing sufficient pressure to inject the polished geothermal brine back into the geothermal reservoir.

Process flow diagrams are provided to illustrate fluid movement through the BPF (see Figure 5 and Figure 6). Geothermal fluid produced from the production wells would be delivered to the power plant site through the pipelines to the brine and steam handling facilities. The geothermal fluid would be flashed in the steam handling facilities (flash tanks, vent tanks and associated facilities) at successively lower pressures to produce high pressure (HP), standard pressure (SP),

and low pressure (LP) steam that would be delivered to the TGF. The chemically stabilized separated brine would flow from the BPF into the solids handling system (clarifiers, thickener and associated facilities) where solids are removed. Two booster and two main injection pumps would be used to pump the spent brine from the secondary clarifier of the BPF to the injection wells via the aboveground brine injection pipelines for subsurface injection.

A cement-lined brine pond would be constructed within the BPF. The brine pond would be sized to accommodate up to three hours of brine that could be discharged to the brine pond during system upset conditions plus two feet of freeboard. During such upset conditions, brine that overflows from the clarifiers and the thickener, and condensate from the steam vent tanks, would be directed to this pond for temporary containment. Once the BPF is up and running again, the liquid in the brine pond would be processed through the thickener and delivered to the main injection pumps or pumped to the cooling tower blowdown/condensate/aerated brine injection well for subsurface injection.

Reject water from the reverse osmosis system would also be directed to the brine pond. The brine pond may also collect brine from the production wells when they are flow-tested after drilling and from the production wells when brine is initially introduced into the facility during startup. This liquid would be pumped to the thickener and then discharged into an injection well after startup is complete.

Turbine Generator Facility (TGF)

The TGF includes a 49.9 MW (net) condensing turbine/generator set, a noncondensible gas removal and emission abatement system, and a heat rejection system (i.e., condenser and cooling tower). Common facilities within the TGF area include a control building, a warehouse, a service water pond, and other ancillary facilities. The TGF also includes a 230 kV switchyard and several power distribution centers.

A process flow diagram is provided to illustrate fluid movement through the TGF (see Figure 6). The turbine generator system would consist of a condensing turbine generator set with three steam entry pressures (HP, SP and LP). The turbine would be directly coupled to a totally enclosed water and air-cooled (TEWAC) synchronous-type generator. The turbine-generator unit would be fully equipped with all the necessary auxiliary systems for turbine control and speed protection, lubricating oil, gland sealing, generator excitation, and cooling.

Two 2,500 kW 100 percent redundant emergency diesel engine/"black start" generators would be installed to provide electrical power to "black start" (re-start) power plant operations following plant trips or shut-downs. A 800 kW emergency diesel engine/generator would be installed to provide backup electrical power for critical plant control and operating equipment when line power is interrupted, and a 360 kW emergency diesel engine fire-water pump would also be installed to provide backup for the fire-fighting water system. The diesel engines would meet the applicable U.S. Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) air pollutant emission limits. Each of the diesel engines would be tested for less than 50 hours per year.

The heat rejection system would be comprised of a shell-and-tube type condenser, a counterflow cooling tower, and a noncondensible gas (NCG) removal system. Steam from the turbine would be condensed in the condenser. Condensate from the condenser would be transferred to the cooling tower, cooled and returned to the condenser. Gases that accumulate in the condenser would be evacuated by the NCG removal system. NCGs would be pressurized and vented to a hydrogen sulfide (H2S) abatement system. The projected composition of the NCG expected to be produced in the geothermal fluid is summarized in Table 1.

Table 1: Hudson Ranch Expected Non Condensable Gases Composition

Non-Condensable Gases (NCG):	**Nominal Case**	**Design Case**
	Total Mass Flow Composition (mg/kg)	
Carbon Dioxide (CO_2)	3,000	4,000
Hydrogen Sulfide (H2S)	14	19
Ammonia (NH3)	500	600
Methane (CH4)	3.6	5.0
Nitrogen (N2)	3.1	5.0
Hydrogen (H2)	0.23	0.50
Argon (Ar)	0.03	0.03
Benzene (C6H6)	0.10	0.14
Total	**3,521**	**4,630**
* Based on the Leathers and Elmore geothermal project area production wells.		

The H2S abatement system used to control the H2S emissions in the NCGs would be the Biox® process. The Biox® process consists of using an oxidizing biocide in contact with the cooling tower circulating water to convert dissolved hydrogen sulfide to water-soluble sulfates. Biocide assisted oxidation prevents secondary emissions of hydrogen sulfide from cooling towers that utilize steam condensate for makeup water. The Biox® process would also be utilized to control primary hydrogen sulfide vent gas emissions by bubbling the off-gas from the condenser into the tower catch basin. The Biox® system is expected to remove at least 95 percent of the H2S in the non-condensable gases and at least 98 percent of the H2S in the portion of the condensate used as cooling tower makeup water.

A potential source of particulate emissions from the Project is the cooling tower. Particulate emissions from the cooling towers would be minimized by maintaining a low total dissolved solids (TDS) concentration in the circulating water and by controlling cooling tower drift losses to not more than 0.0006 percent of the total circulation rate using high efficiency drift eliminators. Blowdown from the cooling tower would ultimately be injected into the dedicated cooling tower blowdown/condensate/aerated brine injection well.

During plant start-up, a plant trip or load rejection, steam to the turbine would be diverted to a rock muffler for venting as is currently being done at the existing geothermal power plants in the Salton Sea KGRA. During this time, H2S, C6H6 and other NCG would be released unabated to the atmosphere.

APPLICABLE REGULATIONS

The following Imperial County Air Pollution Control District (ICAPCD) regulations apply to the proposed Project.

Rule 201 Permits Required

Except as exempted, new or modified sources which may emit or control air contaminants must obtain written authorization from the ICAPCD prior to construction.

Rule 207 New and Modified Stationary Source Review

Rule 207 limits the permitted increases of air pollutants that could interfere with the attainment or maintenance of ambient air quality standards.

- Rule 207.C.1.a requires Best Available Control Technology (BACT) for equipment with the potential to emit 25 pounds per day or more of any nonattainment pollutant or their precursors. Ozone and fine particulate matter (PM10) are nonattainment pollutants in Imperial County, and reactive organic compounds [ROCs, which are most non-methane hydrocarbons], nitrogen oxides [NOx] and sulfur oxides [SOx] are precursors to ozone [ROCs] and PM10 [ROCs, NOx and SOx].)
- Rule 207.C.1.c requires Best Available Control Technology (BACT) for equipment with the potential to emit 55 pounds per day or more of hydrogen sulfide (H2S).
- Rule 207.C.1.c requires Best Available Control Technology (BACT) for equipment with the potential to emit 550 pounds per day or more of carbon monoxide (CO) in attainment areas.
- Rule 207.C.2.a requires offsets for all emissions of ROCs, PM10, NOx or SOx from a source that individually exceed 137 pounds per day of that air pollutant.
- Rule 207.C.f allows the Air Pollution Control Officer to exempt equipment from the requirements of Rule 207.C.2 if used exclusively as emergency standby equipment for non-utility electrical power generation and not used in conjunction with any utility voluntary demand reduction program, provided that operation for maintenance purposes is limited to 100 hours per year, and operation for other than maintenance purposes is limited to Actual Interruptions of Power by the serving utility.

Rule 208 Permit to Operate

The ICAPCD may inspect and evaluate the new equipment prior to allowing the project to operate under its Permit to Operate.

Rule 400 Fuel Burning Equipment – Oxides of Nitrogen

This rule requires that the discharge of NOx from fuel burning equipment not exceed 140 lb/hour. Rule 400 also requires that all fuel burning equipment demonstrate compliance through compliance testing once every 12 months, except that equipment that operates less than 100 hours per 12 month period and emits less than 5 tons NOx shall be tested not less than every 36 months.

Rule 401 Opacity of Emissions

The opacity of the emissions for a new source, other than uncombined water vapor, may not be as dark or darker as designated as No. 1 on the Ringlemann Chart (20% opacity) for more than 3 minutes in an hour. Water vapor emissions are exempted from the requirements of Rule 401.

Rule 403 General Limitations on the Discharge of Air Contaminants

The limitation in Rule 403 establishes maximum emission rates for particulate matter that vary according to the weight of the materials processed and maximum rates for the discharge of air contaminants that vary according to the volume of dry gases discharged.

Rule 405 Sulfur Compounds Emission Standards, Limitations and Prohibitions

Rule 405 prohibits the discharge into the atmosphere emissions of sulfur compounds, calculated as sulfur dioxide, in excess of 0.2 percent by volume, measured at the point of discharge.

Rule 800-805 Fugitive Dust Requirements for Control of Fine Particulate Matter (PM10)

These rules control fugitive dust emissions from construction and earthmoving activities, from carry out and track out, from open areas, and paved and unpaved roads.

Rule 900 - Procedures for Issuing Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990

Sources subject to Rule 900 include major sources. Rule 900.B.20 defines "major source" as a stationary source which has the potential to emit a regulated air pollutant or a hazardous air pollutant (HAP) in quantities equal to or exceeding the lesser of any of the following thresholds:

- 100 tons per year (tpy) of any regulated air pollutant;
- 10 tpy of one HAP or 25 tpy of two or more HAPs; or
- Any lesser quantity threshold promulgated by the U.S. EPA.

Rule 1101 New Source Performance Standards (NSPS)

Rule 1101 adopts by reference and incorporates the provisions of Part 60, Chapter I, Title 40 of the Code of Federal Regulations (40 CFR Part 60) into the Rules and Regulations of the Imperial County Air Pollution Control District, and incorporates in its entirety Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines) applies to only stationary diesel engines which were ordered after July 11, 2005 and were manufactured after April 1, 2006 (if not a fire water pump engine) or after July 1, 2006 (if a fire water pump engine). Owners and operators of stationary emergency diesel engines of 2007 model year and later subject to 40 CFR Part 60, Subpart IIII must:

- Comply with the emission standards for new nonroad diesel engines in 40 CFR 60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary diesel engines;
- Operate and maintain the diesel engines according to the manufacturer's written instructions over the entire life of each engine;
- Use fuel which meets the minimum standards set forth in the regulations;
- Install a non-resettable hour meter prior to startup of each engine;
- Limit maintenance checks and readiness testing of each engine to 100 hours per year (there is no time limit on the use of an emergency engine in emergency situations); and
- Keep records of the operation of each engine in emergency and non-emergency service that are recorded through the non-resettable hour meter, including recording the time of operation of each engine and the reason each engine was in operation during that time.

Rule 1002 California Airborne Toxic Control Measures (ATCM)

These regulations adopt the following California Code of Regulations (CCR) titles applicable to the proposed project:

Section 93114 – Standards for Non-vehicular Diesel Fuel

Requires 15 ppm sulfur diesel fuel for use in all non-vehicular engines except locomotives and marine engines.

Section 93115 – Airborne Toxic Control Measures (ATCM) for Stationary Compression Ignition Engines.

Requires that new stationary emergency standby diesel-fueled engines >50 bhp that operate no more than 50 hours per year for maintenance and testing emit diesel PM at a rate less than or equal to 0.15 g/bhp-hr and meet the standards for off-road engines in Title 13, CCR Section 2423. Lower emissions rates for PM apply to engines that operate between 50 and 100 hours per year. Requires that new direct-drive stationary emergency standby diesel-fueled fire pump engines >50 bhp that operate no more than the number of hours necessary to comply with NFPA 25 and meet the applicable Tier standards for off-road engines in Title 13, CCR Section 2423 three years after the effective date of the applicable Tier standard. The ATCM does not limit emissions during emergency use and compliance testing.

Rule 1003 Hexavalent Chromium Emissions from Cooling Towers

Rule 1003 applies to all cooling towers, and requires that no hexavalent chromium-containing water treatment compounds shall be added to the cooling tower circulating water. Rule 1003 also requires that the circulation water be tested to determine the concentration of hexavalent chromium every six months, although the Air Pollution Control Officer may, upon the written request of the owner or operator, grant an exemption from the periodic water testing requirements if hexavalent chromium-containing water treatment chemicals have not been used for at least one year prior to the adoption date of this rule.

POTENTIAL TO EMIT AND ABATED EMISSIONS FROM PROJECT OPERATIONS

Project operations would create new sources of

- Hydrogen sulfide (H2S), ROCs (benzene (C6H6)) and hazardous air pollutant (HAP) (C6H6) emissions from the geothermal noncondensible gases through the power plant cooling towers;
- Particulates from the cooling tower; and
- NOx, ROCs, CO, PM and HAPs from testing of the black start diesel generators and the emergency standby diesel engines.

Table 2 through Table 6 below provide summaries of the hourly, daily and annual potential to emit and abated emission rates for each of these emission sources. Table 8 and Table 9 provide the hourly, daily and annual summaries of the potential to emit and abated emission rates for the Facility, respectively. APPENDIX A provides detailed calculations of the Project operation potentials to emit and abated emission rates.

Cooling Tower Noncondensible Gas Emissions

During normal warm-weather power plant operations, all of the non-condensable gases (NCGs) produced by the geothermal production wells would be delivered to the cooling tower, either from the condenser, dissolved in the condensate used as the cooling tower makeup water, or from the condenser NCG removal system, which would be pressurized and vented to the cooling tower hydrogen sulfide (H2S) abatement system. (During cooler weather, when less than the total amount of condensate produced would be required for cooling tower makeup water, the excess condensate [and dissolved NCGs] would be injected into the geothermal reservoir through the cooling tower blowdown/condensate/aerated brine injection well.)

Using the design case concentrations of the constituents expected in the NCG, as summarized in Table 1, the design total geothermal fluid flow of 4,000,000 lbs/hr, and the conservative assumption that none of the H2S or C6H6 (ROC) would remain dissolved in the geothermal brine, Table 2 provides the hourly, daily and annual produced (unabated) H2S and C6H6 rates.

Table 2: Noncondensible Gases Produced (Unabated) to the Cooling Tower

Unabated Production Rates	H2S	PM10	ROC	C6H6	NH3
Cooling Tower NCGs (lbs/hr)	76.00	0.00	0.56	0.56	12.00
Cooling Tower NCGs (lbs/day)	1,824.00	0.00	13.44	13.44	288.00
Cooling Tower NCGs (tons/yr)	332.88	0.00	2.45	2.45	52.56

The produced benzene would be emitted through the cooling tower unabated. The produced H2S would be abated by the Biox® process, which uses an oxidizing biocide in contact with the cooling tower circulating water to convert dissolved hydrogen sulfide to water-soluble sulfates. The Biox® process would also be utilized to control primary hydrogen sulfide vent gas emissions by bubbling the condenser off-gas into the cooling tower catch basin. The Biox®

system is expected to remove at least 95 percent of the H2S in the condenser off-gas and at least 98 percent of the H2S in the portion of the condensate used as cooling tower makeup water. Assuming that all of the condensate is used for cooling tower makeup water (which would normally be restricted to the high temperature summer months), and operations of 24 hours per day and 365 days per year, Table 3 provides the hourly, daily and annual abated cooling tower H2S and C6H6 emission rates.

Table 3: Cooling Tower Abated Noncondensible Gas Emission Rates

Abated Emission Rates	H2S	PM10	ROC	C6H6	NH3
Cooling Tower NCGs (lbs/hr)	3.17	0.00	0.56	0.56	12.00
Cooling Tower NCGs (lbs/day)	76.10	0.00	13.44	13.44	288.00
Cooling Tower NCGs (tons/yr)	13.89	0.00	2.45	2.45	52.56

An estimated 90 percent of the ammonia in the brine from the production wells would partition to and stay with the brine in the separators and be injected directly back into the geothermal reservoir with the brine. The remaining 10 percent of the ammonia would be carried over to the cooling tower in the condensate (90 percent) or the NGC stream (10 percent). Ninety-five percent of this 10 percent of the ammonia in the brine from the production wells would remain dissolved in the cooling tower blowdown water and be injected into the geothermal reservoir, leaving only five percent of the ammonia delivered to the cooling tower to be emitted unabated through the cooling tower. Assuming operations of 24 hours per day and 365 days per year, Table 3 also provides the hourly, daily and annual abated cooling tower ammonia emission rates.

Cooling Tower Particulates

The Project cooling tower would circulate up to 80,000 gallons per minute (20,016 tons per hour) of cooling water. During all but the summer months the cooling tower makeup water would consist entirely of steam condensate with a very low total dissolved solids (TDS) concentration, and the resulting TDS concentration of the cooling water circulating in the cooling tower would be 500 ppm by weight or less. During the higher temperature summer months, the quantity of steam condensate produced by the power plant would be insufficient to supply all of the required cooling tower makeup water. Higher TDS canal water obtained from the Imperial Irrigation District "O" Lateral would be used as supplemental cooling tower makeup water. During these months the TDS concentration of the cooling water circulating in the cooling tower would be up to 2,000 ppm by weight.

High efficiency cooling tower drift eliminators would limit the liquid drift rate to 0.0006 percent or less of the circulating cooling water rate. Conservatively assuming that all of the aerosols which form when the emitted cooling tower liquid drift evaporates are PM10 or smaller, then the hourly PM10 potential to emit would be 0.48 lbs/hr (in the summer – the winter potential to emit would be 0.12 lbs/hr). The cooling tower operates 24 hours per day, so the daily PM10 potential to emit would be 11.53 lbs/day (in the summer – the winter potential to emit would be 2.88 lbs/day) (see APPENDIX A). Assuming operations 365 days per year and four months of summer supplemental cooling water, the 12-month rolling average PM10 potential to emit would be the sum of the summer and winter "seasonal" potentials to emit (see Table 4).

Table 4: Cooling Tower Particulate Potential to Emit

Potential To Emit	H2S	PM10	ROC	C6H6	NH3
Cooling Tower Particulates (lbs/hr)	0.00	0.48	0.00	0.00	0.00
Cooling Tower Particulates (lbs/day)	0.00	11.53	0.00	0.00	0.00
Cooling Tower Particulates (tons/yr)	0.00	1.05	0.00	0.00	0.00

Testing of Emergency Diesel Engine/"Black Start" Generators

Each of the two 100 percent redundant 2,500 kW (3,353 bhp) diesel "black start" generator engines would meet the applicable California Air Resources Board (CARB) Tier 2 stationary compression ignition engine exhaust emission standards for non-methane hydrocarbons (NMHC)+NOx (6.4 grams per kilowatt-hour), CO (3.5 g/kW-hr) and PM (0.20 g/kW-hr) applicable to engines of this size purchased between 2006 and 2010.

These diesel engines would also comply with the California Air Resources Board "Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines" for new stationary emergency standby diesel-fueled compression ignition engines >50 bhp (PM≤0.15 g/bhp-hr). As required by the ATCM, these diesel engines would also burn CARB diesel fuel (≤15 ppm sulfur). In compliance with the ATCM, these diesel engines would be tested for a total of less than 50 hours per year (for up to one hour per day).

Assuming testing operations of up to one hour per day and less than 50 hours per year, Table 5 provides the hourly, daily and annual air pollutant potential to emit for each of the emergency diesel engine/"black start" generators.

Table 5: Emergency Standby Diesel Engine/"Black Start" Generator Testing Potential to Emit

Potential To Emit (each of two)	PM10	ROC	CO	NOx	SO2
Emergency Diesel Engine/Black Start Generator (lbs/hr)	1.11	0.33	19.29	34.94	0.03
Emergency Diesel Engine/Black Start Generator (lbs/day)	1.11	0.33	19.29	34.94	0.03
Emergency Diesel Engine/Black Start Generator (tons/yr)	0.03	0.01	0.48	0.87	0.00

Diesel engines also emit a mixture of Hazardous Air Pollutants (HAPs). As calculated in APPENDIX A, each of these emergency diesel engine/"black start" generators would emit less than 0.001 tons/yr of HAPs.

Testing of Emergency Standby Diesel Generator Engine

The 800 kW (1,073 bhp) emergency standby diesel generator engine would meet the applicable CARB Tier 3 stationary compression ignition engine exhaust emission standards for non-methane hydrocarbons (NMHC)+NOx (4.0 grams per kilowatt-hour), CO (3.5 g/kW-hr) and PM (0.20 g/kW-hr) applicable to engines of this size purchased between 2005 and 2010.

This diesel engine would also comply with the California Air Resources Board "Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines" for new stationary

emergency standby diesel-fueled compression ignition engines >50 bhp (PM≤0.15 g/bhp-hr). As required by the ATCM, this diesel engine would also burn CARB diesel fuel (≤15 ppm sulfur). In compliance with the ATCM, this diesel engine would be tested for a total of less than 50 hours per year (for up to one hour per day).

Assuming testing operations of up to one hour per day and less than 50 hours per year, Table 6 provides the hourly, daily and annual air pollutant potential to emit for testing of the emergency standby diesel generator engine.

Table 6: Emergency Standby Diesel Generator Engine Potential to Emit

Potential To Emit	PM10	ROC	CO	NOx	SO2
Emergency Standby Diesel Engine/Generator	0.3548	0.1067	6.1728	11.1808	0.0109
Emergency Standby Diesel Engine/Generator	0.3548	0.1067	6.1728	11.1808	0.0109
Emergency Standby Diesel Engine/Generator	0.0089	0.0027	0.1543	0.2795	0.0003

As calculated in APPENDIX A, this emergency standby diesel generator engine would emit less than 0.0001 tons/yr of HAPs.

Testing of Direct-Drive Emergency Standby Fire Pump Diesel Engine

The 360 kW (483 bhp) direct-drive emergency standby fire pump diesel engine would meet the applicable CARB Tier 3 stationary compression ignition engine exhaust emission standards for non-methane hydrocarbons (NMHC)+NOx (4.0 grams per kilowatt-hour), CO (3.5 g/kW-hr) and PM (0.20 g/kW-hr) applicable to engines of this size purchased between 2009 and 2013 (delayed three years from 2006 and 2010).

This diesel engine would also comply with the California Air Resources Board "Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines" by burning CARB diesel fuel (≤15 ppm sulfur). In compliance with the ATCM, this diesel engine would be tested in compliance with the testing requirements of NFPA 25.

Assuming testing operations of up to one hour per day and less than 50 hours per year, Table 6 provides the hourly, daily and annual air pollutant potential to emit for testing of this direct drive emergency standby fire pump diesel engine.

Table 7: Emergency Standby Fire Pump Diesel Engine Potential to Emit

Potential To Emit	PM10	ROC	CO	NOx	SO2
Emergency Standby Fire Pump Diesel Engine	0.2129	0.0300	2.7778	3.1446	0.0049
Emergency Standby Fire Pump Diesel Engine	0.2129	0.0300	2.7778	3.1446	0.0049
Emergency Standby Fire Pump Diesel Engine	0.0053	0.0007	0.0694	0.0786	0.0001

As calculated in APPENDIX A, this emergency standby fire pump diesel engine would emit less than 0.0001 tons/yr of HAPs.

Summary of Facility Potential to Emit/Abated Emissions

Table 8 provides a summary of the Facility potential to emit, assuming:

- normal operation of the brine processing facility and the turbine generating facility (cooling tower) at the maximum operating rate (without the proposed abatement of the H2S in the cooling tower); and
- testing of the emergency engines, all on the same day, for no more than one hour each, for less than fifty hours per year.

Table 9 provides the same summary for the abated Facility emissions of H2S through the cooling tower.

Table 8: Facility Potential to Emit

Description	Facility Potential to Emit							
	PM10	SO2	CO	NOx	ROC	H2S	NH3	C6H6
Hourly PTE (lbs):	3.27	0.084	47.53	84.21	1.36	76.0	12	0.56
Daily PTE (lbs):	14.31	0.084	47.53	84.21	14.24	1,824.0	288	13.44
Annual PTE (tons):	1.12	0.002	1.19	2.11	2.47	332.9	53	2.45

Table 9: Facility Abated Emissions

Description	Facility Abated Emissions							
	PM10	SO2	CO	NOx	ROC	H2S	NH3	C6H6
Hourly Emissions (lbs):	3.27	0.084	47.53	84.21	1.36	3.2	12	0.56
Daily Emissions (lbs):	14.31	0.084	47.53	84.21	14.24	76.1	288	13.44
Annual Emissions (tons):	1.12	0.002	1.19	2.11	2.47	13.9	53	2.45

POTENTIAL NONCONDENSIBLE GAS EMISSIONS FROM THE ROCK MUFFLER DURING PLANT OUTAGES AND START-UP

During plant start-up and outages (such as during a plant trip or load rejection), produced geothermal steam would be diverted to a rock muffler for venting of the steam, H2S, C6H6 and other NCGs unabated to the atmosphere.

When the plant trips or rejects load, the geothermal steam is immediately diverted to the rock muffler for discharge to the atmosphere. If the plant outage is expected to be short (approximately one to two hours or less), the geothermal wells would be kept flowing at approximately full flow so that the plant could be quickly restored to full power. If the plant outage is expected to take longer than one to two hours, the wells would be immediately reduced to approximately half flow rate. If the plant outage is expected to last more than 24 to 48 hours, the wells would be immediately reduced to their minimum stable flow rate, which is estimated to be between one-half and one-quarter of the full flow rate. If the plant outage is expected to last more than 48 to 96 hours, the wells would be immediately shut-in.

For any well flow condition short of shut-in, the plant could be restarted with only minimal discharge of geothermal steam to the atmosphere through the rock muffler. During a "cold" plant start-up (when the wells have been completely shut-in), the flow of geothermal fluid and steam from each of the well(s) would be slowly increased, and the resulting steam and geothermal fluid directed to the BPF and TGF to slowly bring these facilities up to nominal operating pressures and temperatures. During this time a fraction of the produced geothermal steam may be discharged to the atmosphere though the rock muffler. Once the power plant is operating nominally, all of the steam would be diverted from the rock muffler to the turbine. The time it would take to reach this point is dependent on the production curves of the individual wells and the final start-up procedures for the power plant, but is expected to take about six hours.

The maximum hourly emissions of H2S, C6H6 (ROC) and ammonia from the rock muffler would be equal to the maximum unabated hourly potential to emit for each of these NCGs (see Table 10).

Assuming that the well flow rates are immediately reduced to one-half flow rate and maintained at this condition for the next 24 hours, the maximum daily emissions of H2S, C6H6 (ROC) and ammonia from the rock muffler would be equal to twelve times the maximum unabated hourly potential to emit for each of these NCGs (see Table 10).

Conservatively assuming that there are annually no more than four plant outages, each requiring continuing well flows at half rate for up to 24-hours, Table 10 provides the hourly, daily and annual rock muffler potential to emit for each of these NCGs.

Table 10: Rock Muffler Noncondensible Gas Potential to Emit

Potential To Emit	H2S	PM10	ROC	C6H6	NH3
Rock Muffler NCGs (lbs/hr)	76.00	0.00	0.40	0.40	240.00
Rock Muffler NCGs (lbs/day)	912.00	0.00	4.80	4.80	2,880.00
Rock Muffler NCGs (tons/yr)	1.82	0.00	0.01	0.01	5.76

POTENTIAL EMISSIONS FROM CONSTRUCTION ACTIVITIES

Construction of the Power Plant, Access Roads and Pipelines

Construction of the power plant, new access roads and pipelines would produce fugitive dust from site grading and other construction-related surface disturbing activities. Construction of the power plant would directly disturb about 40 acres of land, and another 20 acres would be disturbed for the adjacent equipment laydown, fabrication and construction parking area (although the equipment laydown, fabrication and construction parking area would be reclaimed following the completion of construction). Because five or more acres of land would be disturbed by the construction activity, consistent with Rule 801.E.1.c, Hudson Ranch would develop and implement a dust control plan. The dust control plan, which would be made available to the ICAPCD upon request, would comply with the requirements of Rule 801.F.

All surface-disturbing activities would implement appropriate techniques to comply with ICAPCD Rule 801 (Construction and Earthmoving Activities), Rule 803 (Carry-Out and Track-Out), Rule 804 (Open Areas) and Rule 805 (Paved and Unpaved Roads). These could include watering the construction area at least twice a day; increasing watering frequency when winds exceeded 15 mph; limiting vehicular speed to 15 mph on internal dirt roads and areas; and using gravel on roads and at ramps at paved road entrances.

Existing access roads (paved, graveled or dirt) would be utilized to access the power plant site. New roads built for pipeline construction and maintenance would be maintained, and pipeline construction would not require grading of the pipeline routes.

Drilling and Testing of the Cooling Tower Blowdown/Condensate/Aerated Brine Injection Well

The cooling tower blowdown/condensate/aerated brine injection well would be drilled by a contractor using a drilling rig powered by diesel engines registered through portable equipment permits issued by the California Air Resources Board (ARB). Alternatively, all rig engines used on site for drilling each geothermal well would be listed on a stationary source permit applied for and issued directly to the drilling company by the ICAPCD. This application for an Authority to Construct is not a request for an Authority to Construct for the drill rig engines used to drill the cooling tower blowdown/condensate/aerated brine injection well.

Some hydrogen sulfide would be emitted to the atmosphere if the well is flow tested once drilling is complete. The amount of hydrogen sulfide emitted into the atmosphere would be small, as any well flow test would be of short duration and at a low flow rate, as the well is intended for low volume injection of the cooling tower blowdown, excess steam condensate and aerated brine from the brine storage basin. Conservatively assuming that all of the hydrogen sulfide in the geothermal fluid is released to the atmosphere upon flashing, a well flow test conducted at rate of 250,000 lbs/hr would emit hydrogen sulfide at a rate of 3.5 lbs/hr.

COMPLIANCE WITH APPLICABLE REGULATIONS

Rule 201 Permits Required

The Project is a new facility that would emit air contaminants and thus requires an Authority to Construct from the ICAPCD.

Rule 207 New and Modified Stationary Source Review

Rule 207.C.1.a requires Best Available Control Technology (BACT) for equipment with the potential to emit 25 pounds per day or more of any nonattainment pollutant or its precursors.

The potential to emit either PM10 or ROCs from the cooling tower, rock muffler or any of the diesel engines would not exceed 25 lb/day and would not require the implementation of BACT (see Table 2, Table 4, Table 5, and Table 6).

Rule 207.C.1.c requires Best Available Control Technology (BACT) for equipment with the potential to emit 55 pounds per day or more of hydrogen sulfide.

The cooling tower has the potential to emit hydrogen sulfide in excess of 55 lbs/day (see Table 2). The produced H2S discharged to the cooling tower would be abated by the Biox® process, which has been previously accepted by the ICAPCD as BACT for the abatement of hydrogen sulfide from cooling towers in geothermal applications. The Biox® process would remove at least 95 percent of the H2S in the non-condensable gases delivered to the cooling tower and at least 98 percent of the H2S in the condensate used as cooling tower makeup water. This would result in an overall abatement of the hydrogen sulfide discharged to the cooling tower in excess of 95 percent.

The rock muffler has the potential to emit hydrogen sulfide in excess of 55 lbs/day (see Table 2). ICAPCD regulations (Rule 101 – Definitions) define Best Available Control Technology (BACT) as follows:

For any emissions unit the more stringent of:

1. The most effective emission control device, emission limit, or technique which has been achieved in practice for such class or category of source unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not achievable.

2. Any other alternative emission control device, emission control technique, basic equipment, fuel, or process determined to be technologically feasible and cost-effective by the Air Pollution Control Officer. Cost-effectiveness analyses shall be performed in accordance with methodology and criteria specified in the Best Available Control Technology Guideline for the South Coast Air Quality

Management District, or an alternative methodology and criteria acceptable to the Air Pollution Control Officer.

3. Under no circumstances shall BACT be determined to be less stringent than the emission control required by any applicable provision of laws or regulations of the District, State and Federal government, or the most stringent emissions limitation which is contained in the implementation plan of any State, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not technologically achievable. In no event shall the application of BACT result in the emissions of any pollutant which exceeds the emissions allowed by any applicable New Source Performance Standard (40 CFR, par 60) or National Emission Standard for Hazardous Air Pollutants (40 CFR, part 61).

The techniques developed by the geothermal industry to abate emissions of H2S during discharges to rock mufflers and well flow tests rely on the absorption of H2S into the liquid phase, followed by oxidation of the H2S and precipitation of oxides of sulfur through reaction with an oxidizing agent. Absorption of H2S into the liquid phase during discharges to rock mufflers or well flow testing is typically accomplished by the treatment of the produced fluid with sodium hydroxide (NaOH) (or the separated steam with water and NaOH) to raise the pH of the fluid to increase the solubility of the H2S. Oxidation of the H2S is then accomplished through treatment with either hydrogen peroxide (H2O2) or ferrous sulfate (Fe2SO4).

However, none of these techniques to abate the emissions of H2S during discharges to rock mufflers or well flow tests have been able to be applied to, or "achieved in practice" for, the abatement of H2S emissions from the rock muffler discharges or flow testing of the hypersaline geothermal brines produced from the Salton Sea KGRA. The addition of NaOH to the hypersaline geothermal brines would immediately initiate the precipitation of many compounds, producing substantial quantities of likely hazardous wastes which would fill and clog the muffler or test equipment and damage well bores and geothermal reservoir fractures. The addition of H2O2 to the brine would also immediately react with the dissolved Fe^{+2}, oxidizing it to Fe^{+3} and immediately precipitating Fe(OH)3. The addition of NaOH to the separated steam phase would also not be effective in controlling H2S emissions without the addition of substantial quantities of water because the H2S is no longer dissolved in the liquid. Further, the steam contains brine carryover, from which the same compounds would precipitate, and the process produces substantial quantities of highly alkaline waste water, which cannot be injected into the residual geothermal brine stream without the substantial risk of the precipitation of the same compounds.

Hudson Ranch is proposing to minimize the emissions of H2S during discharges to the rock muffler by limiting the quantity and duration of each discharge and reducing the discharge flow rate to the rock muffler as rapidly as is feasible.

No other alternative emission control device, emission control technique, basic equipment or process has been developed which may be technologically feasible and cost-effective. No emission control for these emissions is required by any applicable provision of laws or regulations of the District, State and Federal government, and there are no emissions limitations applicable to these emissions which are contained in the implementation plan of the State. There are also no applicable emission limits in any New Source Performance Standard (40 CFR, part 60) or National Emission Standard for Hazardous Air Pollutants (40 CFR, part 61).

Rule 207.C.2.a requires offsets for all emissions of nonattainment air pollutants (NOx, ROCs, and PM10) from a source that exceed 137 pounds per day. The Facility would not emit any nonattainment air pollutant (NOx, ROCs, or PM10) in excess of 137 pounds per day (see Table 9), so no offsets for these air pollutants would be required for the Facility.

Rule 207.C.2.f allows the Air Pollution Control Officer to exempt emergency engines from the offset requirements of Rule 207.C.2 provided that operation for maintenance purposes shall be limited to 100 hours per year, and operation for other than maintenance purposes shall be limited to actual interruptions of power by the serving utility. The four Facility emergency engines would conform to these requirements and would qualify for this exemption.

Rule 208 Permit to Operate

The ICAPCD may inspect and evaluate the new equipment prior to allowing the project to operate under its Permit to Operate. The Project would be available to the ICAPCD for inspection once it is constructed and commences operation.

Rule 400 Fuel Burning Equipment – Oxides of Nitrogen

Each of the emergency diesel engine/"black start" generators would emit less than 35 lbs/hour of NOx (see Table 5), far less than the standard of 140 lb/hour of NOx. Each of these engines would also operate less than 100 hours per 12 month period and emit less than 5 tons of NOx annually, and so would be able to be tested not less than every 36 months.

The emergency standby diesel engine would emit less than 11.2 lb/hour of NOx (see Table 6), far less than the standard of 140 lb/hour of NOx. This engine would also operate less than 100 hours per 12 month period and emit less than 5 tons of NOx annually, and so would be able to be tested not less than every 36 months.

The emergency standby diesel fire pump engine would emit less than 3.2 lb/hour of NOx (see Table 7), far less than the standard of 140 lb/hour of NOx. This engine would also operate less than 100 hours per 12 month period and emit less than 5 tons of NOx annually, and so would be able to be tested not less than every 36 months.

Rule 401 Opacity of Emissions

The cooling tower and rock muffler water vapor emissions are exempted from the requirements of Rule 401. The emissions of particulates from each of the black start and emergency standby diesel engines would be in compliance with the California diesel particulate ATCM, and thus would have an opacity substantially lighter than the No. 1 on the Ringlemann Chart (20 percent opacity) required by Rule 401.

Rule 403 General Limitations on the Discharge of Air Contaminants

Rule 403 prohibits emission of particulate matter in excess of the emission rates in Table 403-1. The weight of the cooling water circulating through the cooling tower is slightly over 40,000,000 lbs/hr. In Table 403-1, the maximum discharge of particulate matter for any process that handles more than 1,000,000 lbs/hr is 30.0 lbs/hr. The particulate emissions from the cooling tower would be 0.48 lbs/hr (see Table 4), substantially less than the 30.0 lbs/day limit.

Rule 403 also prohibits emission of air contaminants in excess of the rates in Table 403-2. The dry volume of gas (air) flowing through the cooling tower is estimated at 9,570,000 dry standard cubic feet per minute (dscfm). In Table 403-2, the maximum concentration of particulate matter in the discharge of any process that handles more than 2,472,000 dscfm is 0.0100 grains/dscf. The concentration of particulate matter in the cooling tower is calculated at less than 0.000006 gr/dscf (see Table 11).

Table 11: Calculated Maximum Contaminant Concentrations

Description	Maximum Concentration of Air Contaminants			
	PM	PM10	H2S	H2S
Cooling Tower emissions (lbs/hr):	0.48	0.48	3.2	
Rock Muffler emissions (lbs/hr):				76.0
Cooling Tower emissions (grains/min):	56.0	56.0		
Cooling Tower dscfm:	9,570,000	9,570,000		
Cooling Tower Air Contaminant Concentrations (grains/dscf):	0.0000059	0.0000059		
Concentration Limitation - Rule 403.B.2:	0.0100	0.0100		
(Exceeded?)	NO	NO		
Molecular Weight of Hydrogen Sulfide:			34.08	34.08
Molecular Weight of Sulfur Dioxide:			64.06	64.06
Sulfur Dioxide equivalent mass emission rate (lbs/hr):			5.96	142.86
Cooling Tower/Rock Muffler acfm:			10,500,000	2,220,079
Sulfur Dioxide Density (cu.ft./lb):			5.9	5.9
Sulfur Dioxide Volume Flow Rate (acfm):			0.5860653	14.0475861
Sulfur Dioxide Concentration (%):			0.00001%	0.00063%
Sulfur Dioxide Concentration Limit (%) (Rule 405B.1.a):			0.20000%	0.20000%
(Exceeded?)			NO	NO

Rule 405 Sulfur Compounds Emission Standards, Limitations and Prohibitions

Rule 405 prohibits the discharge into the atmosphere emissions of sulfur compounds, calculated as sulfur dioxide, in excess of 0.2 percent by volume, measured at the point of discharge. The maximum concentration of hydrogen sulfide, calculated as sulfur dioxide, in the geothermal noncondensible gases which would be discharged through the cooling tower would be less than 0.00001 percent (see Table 11). The maximum concentration of hydrogen sulfide, calculated as sulfur dioxide, in the geothermal noncondensible gases which would be discharged through the rock muffler would be less than 0.0001 percent (see Table 11).

Rule 800-805 Fugitive Dust Requirements for Control of Fine Particulate Matter (PM10)

These rules control fugitive dust emissions from construction and earthmoving activities, from carry out and track out, from open areas, and paved and unpaved roads. Prior to construction Hudson Ranch would prepare a dust control plan and provide 10-day advance notice to the ICAPCD. During construction Hudson Ranch would water disturbed lands to reduce dust emissions. After construction fugitive dust from open areas would be controlled through application and maintenance of water or dust suppressant(s) to all unvegetated areas, establishing vegetation on previously disturbed areas, or paving, applying and maintaining gravel, or applying and maintaining chemical stabilizers/suppressants.

Rule 900 Procedures for Issuing Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990

The Facility would not emit 100 tons per year (tpy) or more of any regulated air pollutant (see Table 9). The Facility emits benzene, which is a hazardous air pollutant (HAP), and a mixture of HAPs from the diesel engines (see APPENDIX A). However, since the total HAP emissions from the Facility would be substantially less that 10 tpy, the Facility would not be a major source subject to Rule 900 (see Table 12)

Table 12: Calculated Hazardous Air Pollutant Emissions

Emission Source	Hazardous Air Pollutant Emissions (tons/yr)		
	Diesel HAPs	C6H6	Totals
Cooling Tower Noncondensible Gas Emissions		2.45280	2.45280
Rock Muffler		0.01344	0.01344
Cooling Tower Particulate Emissions			0.00000
Emergency Diesel Engine/Black Start Generator	0.00074		0.00074
Emergency Diesel Engine/Black Start Generator (redundant)	0.00074		0.00074
Emergency Standby Fire Pump Diesel Engine	0.00917		0.00917
Emergency Standby Diesel Engine/Generator	0.01528		0.01528
Totals:	0.02593	2.46624	2.49217

Rule 1101 New Source Performance Standards (NSPS)

All of the stationary emergency engines proposed for the Facility would be new diesel engines, and therefore would be subject to the requirements of 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). Hudson Ranch will comply with the requirements of this NSPS by:

- Operating and maintaining the diesel engines according to the manufacturer's written instructions over the entire life of each engine;
- Using fuel which meets the minimum standards set forth in the regulations;
- Installing a non-resettable hour meter prior to startup of the engine;
- Limiting maintenance checks and readiness testing of each engine to less than 50 hours per year; and
- Keeping records of the operation of each engine in emergency and non-emergency service that are recorded through the non-resettable hour meter, including recording the time of operation of each engine and the reason each engine was in operation during that time.

Rule 1002 California Airborne Toxic Control Measures (ATCMs)

Hudson Ranch will comply with the California Air Resources Board "Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines" for new stationary emergency standby diesel-fueled compression ignition engines >50 bhp by:

- Limiting the testing of each engine to less than 50 hours per year;
- Limiting the operation of each engine (other than for testing) to only emergencies; and
- Limiting the fuel used to only CARB diesel fuel ($\leq$15 ppm sulfur).

Rule 1003 Hexavalent Chromium Emissions from Cooling Towers

The new cooling tower cells would not be made of wood, and no additives containing hexavalent chromium would be used. Therefore, the Facility would be eligible for exemption from testing requirements, and with this application requests this exemption.

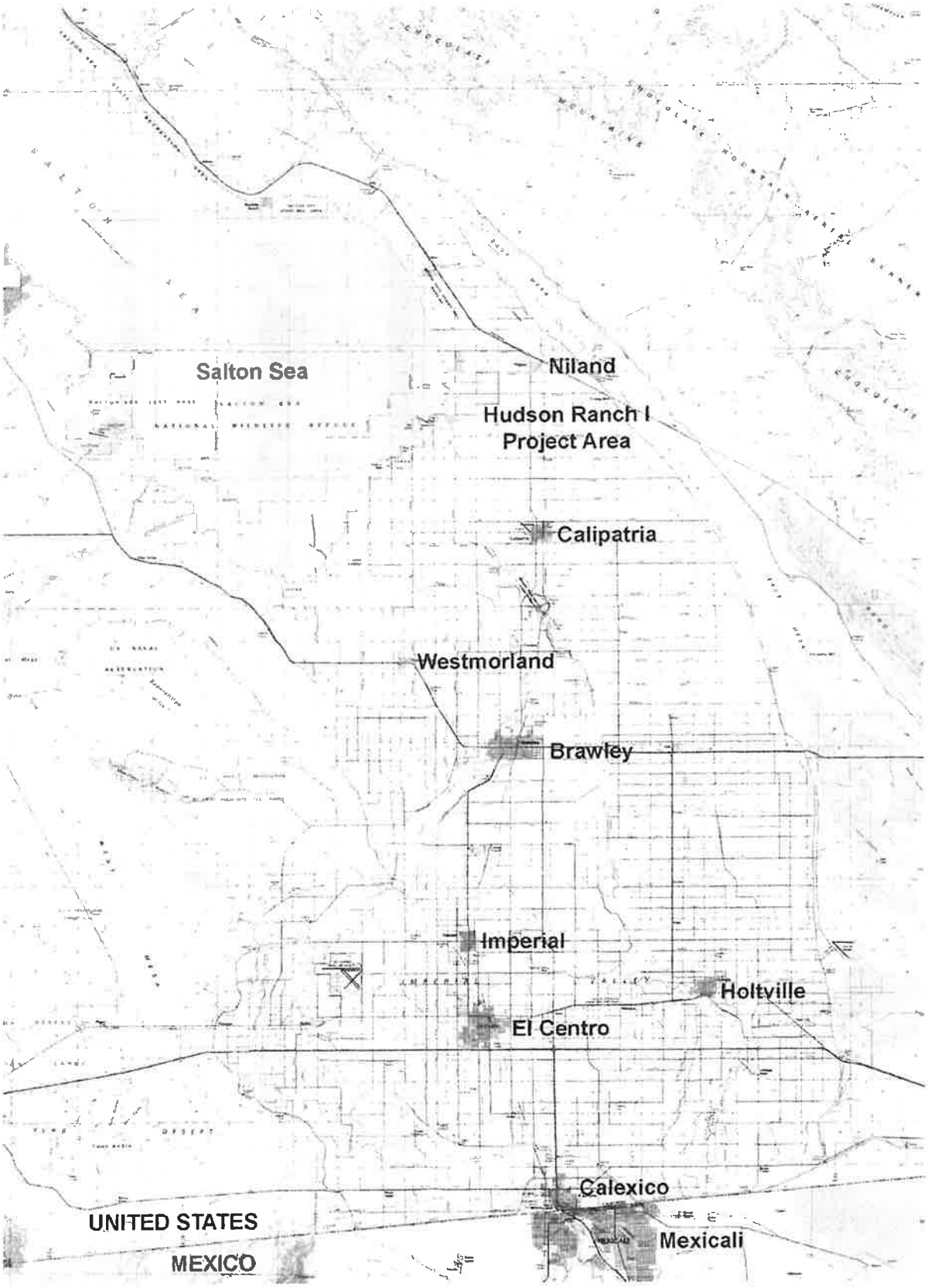

Figure 1: Location Map Hudson Ranch I Geothermal Project Area

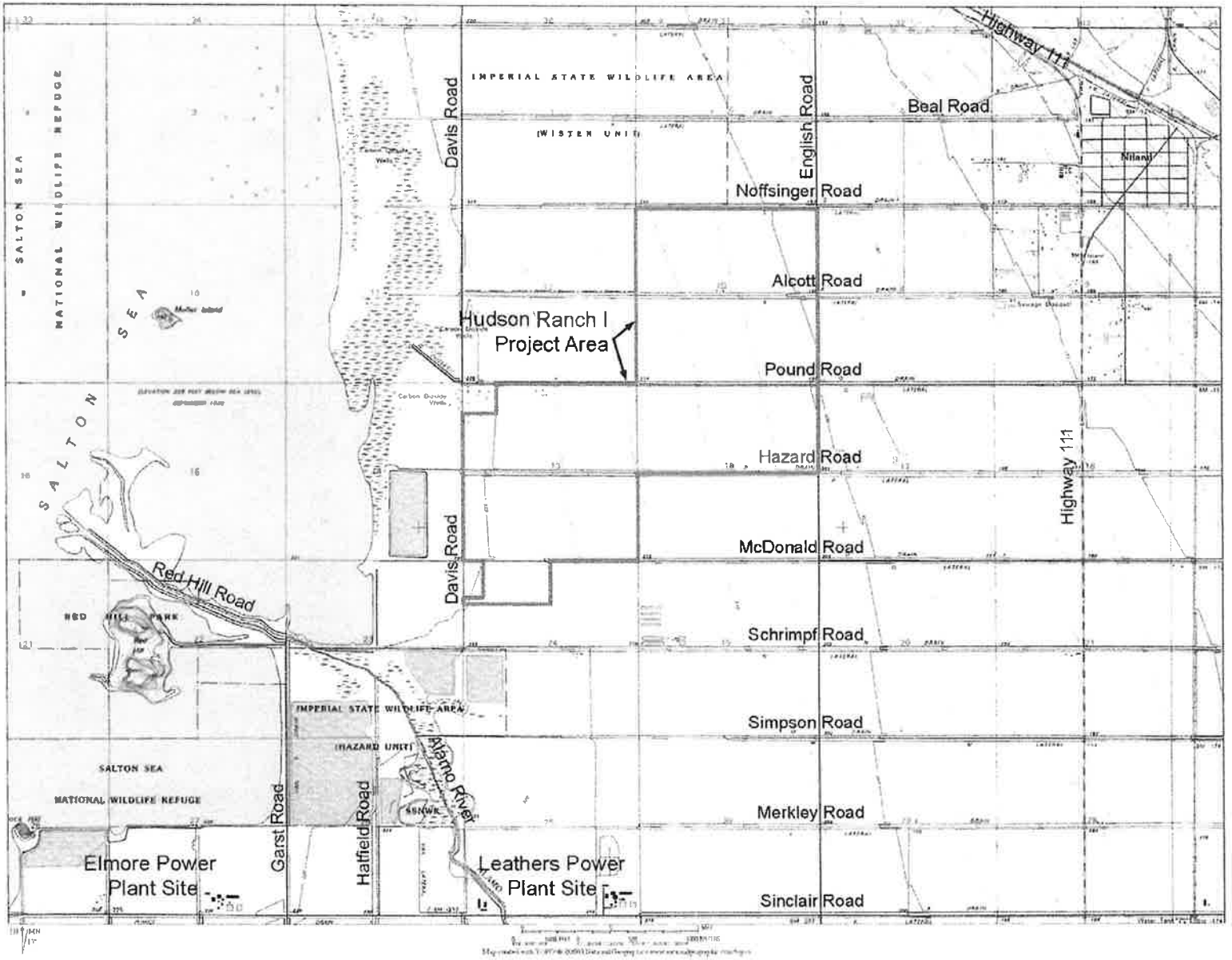

Figure 2: Project Area on Topographic Map - Hudson Ranch I Geothermal Project

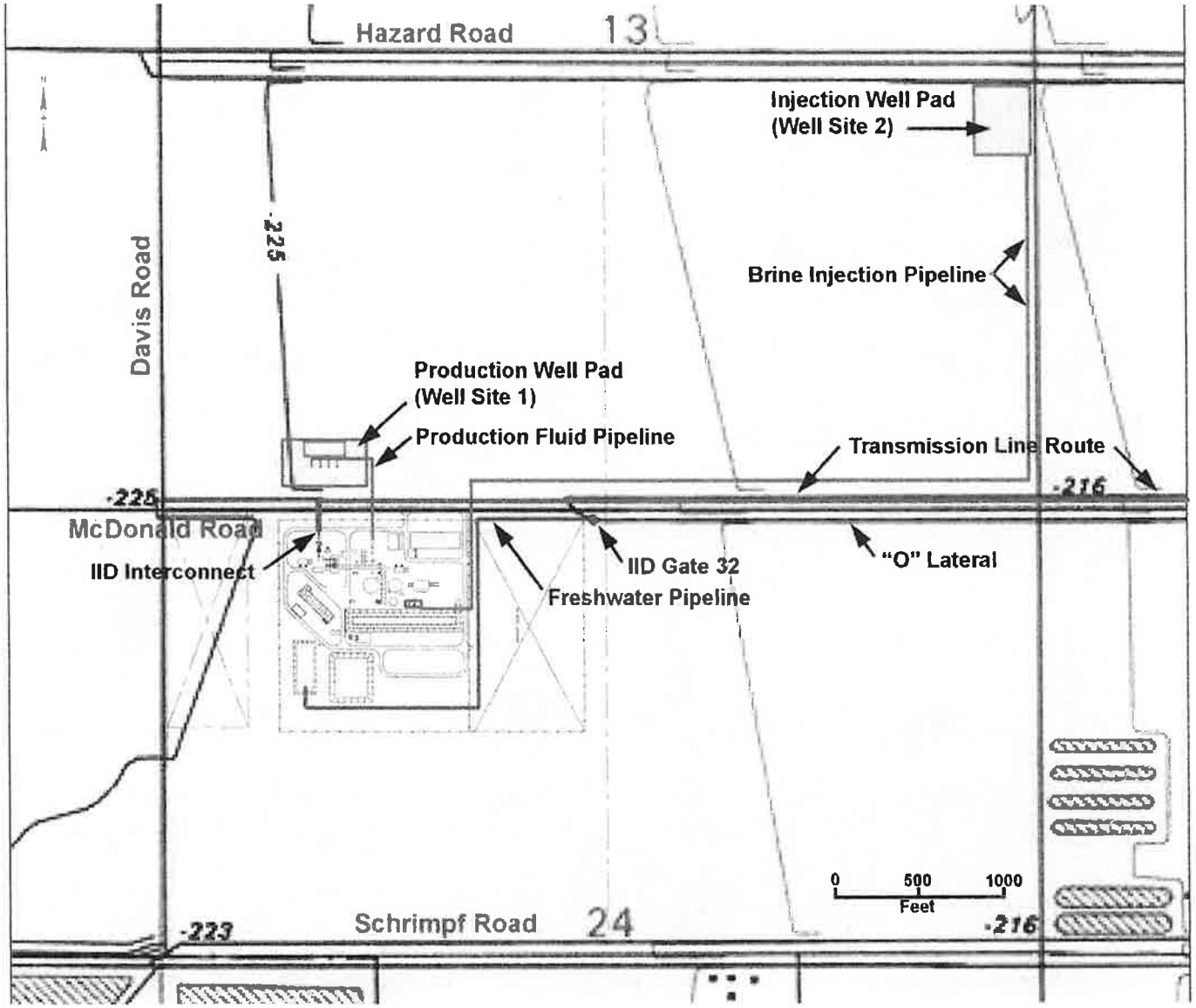

Figure 4: Proposed Well Sites and Pipeline Routes - Hudson Ranch I Geothermal Project

APPENDIX A – DETAILED CALCULATIONS FOR THE FACILITY AND EMISSION UNIT POTENTIALS TO EMIT AND ABATED EMISSION RATES

APPENDIX A - NCG SOURCES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT NCG SOURCES

Emission Source	Throughput				Daily Hours	Annual Hours	Emission Factors (lb/unit)				
	Hourly	Daily	Annually	Units			H2S	PM10	ROC	C6H6	NH3
Cooling Tower Noncondensible Gas Emissions	See Source Notes			hr	24	8,760	76.0000		0.5600	0.5600	12.0000
Rock Muffler	2,000	24,000	96,000	tons			0.0380		0.0003	0.0003	0.1200

ABATED EMISSIONS	HUDSON RANCH I GEOTHERMAL PROJECT NCG SOURCES

Emission Source	Throughput				Daily Hours	Annual Hours	Emission Factors (lb/unit)				
	Hourly	Daily	Annually	Units			H2S	PM10	ROC	C6H6	NH3
Cooling Tower Noncondensible Gas Emissions	See Source Notes			hr	24	8,760	3.1707		0.5600	0.5600	12.0000
Rock Muffler	2,000	24,000	96,000	tons			0.0380		0.0003	0.0003	0.1200

APPENDIX A - NCG SOURCES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT NCG SOURCES

Emission Source	Potential to Emit (lbs/hr)					Potential to Emit (lbs/day)					Potential to Emit (tons/yr)				
	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3
Cooling Tower Noncondensible Gas Emissions	76.00	0.00	0.56	0.56	12.00	1,824.00	0.00	13.44	13.44	288.00	332.88	0.00	2.45	2.45	52.56
Rock Muffler	76.00	0.00	0.56	0.56	240.00	912.00	0.00	6.72	6.72	2,880.00	1.82	0.00	0.01	0.01	5.76

ABATED EMISSIONS	HUDSON RANCH I GEOTHERMAL PROJECT NCG SOURCES

Emission Source	Potential to Emit (lbs/hr)					Potential to Emit (lbs/day)					Potential to Emit (tons/yr)				
	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3
Cooling Tower Noncondensible Gas Emissions	3.17	0.00	0.56	0.56	12.00	76.10	0.00	13.44	13.44	288.00	13.89	0.00	2.45	2.45	52.56
Rock Muffler	76.00	0.00	0.56	0.56	240.00	912.00	0.00	6.72	6.72	2,880.00	1.82	0.00	0.01	0.01	5.76

APPENDIX A - COOLING TOWER PARTICULATES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT PLANT SOURCES

Emission Source	Throughput				Daily Hours	Annual Hours	Emission Factors (lb/unit)				
	Hourly	Daily	Annually	Units			H2S	PM10	ROC	C6H6	NH3
Cooling Tower Particulate Emissions (Winter)	20,016	480,384	116,893,440	tons	24	5,840		0.000006			
Cooling Tower Particulate Emissions (Summer)	20,016	480,384	58,446,720	tons	24	2,920		0.000024			
Cooling Tower Particulate Emissions	**20,016**	**480,384**	**175,340,160**	**tons**	**24**	**8,760**					

APPENDIX A - COOLING TOWER PARTICULATES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT PLANT SOURCES

Emission Source	Potential to Emit (lbs/hr)					Potential to Emit (lbs/day)					Potential to Emit (tons/yr)				
	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3	H2S	PM10	ROC	C6H6	NH3
Cooling Tower Particulate Emissions (Winter)		0.1201					2.88					0.35			
Cooling Tower Particulate Emissions (Summer)		0.4804					11.53					0.70			
Cooling Tower Particulate Emissions		**0.4804**					**11.53**					**1.05**			

APPENDIX A - COMBUSTION SOURCES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT PLANT SOURCES

Emission Source	Throughput				Daily Hours	Annual Hours	Emission Factors (lb/unit)				
	Hourly	Daily	Annually	Units			PM10	ROC	CO	NOx	SO2
Emergency Diesel Engine/Black Start Generator	2,500	2,500	125,000	kw-hr	1	50	0.000443	0.000133	0.007716	0.013976	0.000014
Emergency Diesel Engine/Black Start Generator (redundant)	2,500	2,500	125,000	kw-hr	1	50	0.000443	0.000133	0.007716	0.013976	0.000014
Emergency Standby Fire Pump Diesel Engine	360	360	18,000	kw-hr	1	50	0.000591	0.000083	0.007716	0.008735	0.000014
Emergency Standby Diesel Engine/Generator	800	800	40,000	kw-hr	1	50	0.000443	0.000133	0.007716	0.013976	0.000014
Project Total:											

APPENDIX A - COMBUSTION SOURCES

POTENTIAL TO EMIT	HUDSON RANCH I GEOTHERMAL PROJECT PLANT SOURCES

Emission Source	Potential to Emit (lbs/hr)					Potential to Emit (lbs/day)					Potential to Emit (tons/yr)				
	PM10	ROC	CO	NOx	SO2	PM10	ROC	CO	NOx	SO2	PM10	ROC	CO	NOx	SO2
Emergency Diesel Engine/Black Start Generator	1.11	0.33	19.29	34.94	0.03	1.11	0.33	19.29	34.94	0.03	0.0277	0.0083	0.4823	0.8735	0.0009
Emergency Diesel Engine/Black Start Generator (redundant)	1.11	0.33	19.29	34.94	0.03	1.11	0.33	19.29	34.94	0.03	0.0277	0.0083	0.4823	0.8735	0.0009
Emergency Standby Fire Pump Diesel Engine	0.21	0.03	2.78	3.14	0.00	0.21	0.03	2.78	3.14	0.00	0.0053	0.0007	0.0694	0.0786	0.0001
Emergency Standby Diesel Engine/Generator	0.35	0.11	6.17	11.18	0.01	0.35	0.11	6.17	11.18	0.01	0.0089	0.0027	0.1543	0.2795	0.0003
Project Total:	**2.78**	**0.80**	**47.53**	**84.21**	**0.08**	**2.78**	**0.80**	**47.53**	**84.21**	**0.08**	**0.0696**	**0.0201**	**1.1883**	**2.1051**	**0.0021**

APPENDIX A - SOURCE NOTES

HUDSON RANCH GEOTHERMAL DEVELOPMENT PROJECT - POTENTIAL TO EMIT NOTES

Cooling Tower Noncondensible Gas Emissions

(Source: Engineering Estimates)

Total geothermal brine production rate	4,000,000	lbs/hr
Noncondesable gas concentration in the brine	4,630.0	ppm
Noncondesable gas production rate	18,520.0	lbs/hr
Hydrogen Sulfide (H2S) concentration in geothermal brine (Conservative Design Concentration)	19.0	ppm
H2S production rate	76.0	lbs/hr
Partition to brine	0.0%	
Brine H2S production rate	0.0	lbs/hr
Abatement efficiency (injection into reservoir)	100.0%	
H2S Discharge to atmosphere from brine	0.0	lbs/hr
Partition to steam	100.0%	
Steam H2S production rate	76.0	lbs/hr
Partition to NCG gas stream (Engineering Estimate)	72.4%	
NCG H2S production rate	55.0	lbs/hr
Abatement efficiency (Biox® system)	95.0%	
H2S Discharge to atmosphere from NCG gas stream	2.8	lbs/hr
Partition to steam condensate (Engineering Estimate)	27.6%	
Steam condensate H2S production rate	21.0	lbs/hr
Abatement efficiency (Biox® system)	98.0%	
H2S Discharge to atmosphere from steam condensate	0.4	lbs/hr
Cooling tower total H2S emission rate	3.2	lbs/hr
Benzene (C6H6) concentration in geothermal brine	0.14	ppm
C6H6 production rate	0.6	lbs/hr
Partition to brine	0.0%	
Brine C6H6 production rate	0.0	lbs/hr
Abatement efficiency (injection into reservoir)	100.0%	
C6H6 Discharge to atmosphere from brine	0.0	lbs/hr
Partition to steam	100.0%	
Steam C6H6 production rate	0.6	lbs/hr
Partition to NCG gas stream (Engineering Estimate)	100.0%	
NCG C6H6 production rate	0.6	lbs/hr
Abatement efficiency (injection into reservoir with cooling tower blowdown)	0.0%	
C6H6 Discharge to atmosphere from NCG gas stream	0.6	lbs/hr
Partition to steam condensate (Engineering Estimate)	0.0%	
Steam condensate C6H6 production rate	0.0	lbs/hr
Abatement efficiency (injection into reservoir with cooling tower blowdown)	0.0%	
C6H6 Discharge to atmosphere from condensate	0.0	lbs/hr
Cooling tower total C6H6 emission rate	0.6	lbs/hr

APPENDIX A - SOURCE NOTES

HUDSON RANCH GEOTHERMAL DEVELOPMENT PROJECT - POTENTIAL TO EMIT NOTES

	Ammonia (NH3) concentration in geothermal brine	600.0	ppm
	NH3 production rate	2,400.0	lbs/hr
	Partition to brine	90.0%	
	Brine NH3 production rate	2,160.0	lbs/hr
*	Abatement efficiency (injection into reservoir)	100.0%	
	NH3 Discharge to atmosphere from brine	0.0	lbs/hr
*	Partition to steam	10.0%	
	Steam NH3 production rate	240.0	lbs/hr
*	Partition to NCG gas stream from condenser	10.0%	
	NCG NH3 production rate	24.0	lbs/hr
*	Abatement efficiency (injection into reservoir with cooling tower blowdown)	95.0%	
	NH3 Discharge to atmosphere from NCG gas stream	1.2	lbs/hr
*	Partition to steam condensate from condenser	90.0%	
	NCG NH3 production rate	216.0	lbs/hr
*	Abatement efficiency (injection into reservoir with cooling tower blowdown)	95.0%	
	NH3 Discharge to atmosphere from condensate	10.8	lbs/hr
	Cooling tower NH3 emission rate	12.0	lbs/hr

Cooling Tower Particulate Emissions (Winter)
Cooling Tower Particulate Emissions (Summer)

(Source: AP-42 (5th Ed. - 01/95) Section 13.4 (Wet Cooling Towers) Table 13.4-1 (Particulate Emissions Factors for Wet Cooling Towers))

Percentage total liquid drift	0.0006	percent
Maximum circulating cooling water rate per tower	20,016	tons per hour
Liquid drift rate	0.000006	lbs total liquid drift/lb of circulating cooling water
Liquid drift rate	0.012000	lbs total liquid drift/ton of circulating cooling water
TDS concentration of circulating water (winter - condensate only)	500	ppm
TDS concentration of circulating water (summer - condensate and IID water)	2,000	ppm
TDS concentration of circulating water (winter - condensate only)	0.0005	lbs TDS/lb circulating cooling water
TDS concentration of circulating water (summer - condensate and IID water)	0.0020	lbs TDS/lb circulating cooling water
Winter PM10 Emission Factor/PM Emission Factor = EF_{PM10}	0.000006	lbs TDS emitted/ton circulating cooling water
Summer PM10 Emission Factor/PM Emission Factor = EF_{PM10}	0.000024	lbs TDS emitted/ton circulating cooling water

APPENDIX A - SOURCE NOTES

HUDSON RANCH GEOTHERMAL DEVELOPMENT PROJECT - POTENTIAL TO EMIT NOTES

Rock Muffler

Total geothermal brine production rate	4,000,000	lbs/hr
Total geothermal brine production rate	2,000	tons/hr
Plant outage brine production rate during first 24 hours	1,000	tons/hr
Maximum daily hours of brine production during outage	24	hours
Maximum geothermal brine discharged per day during plant outage	24,000	tons/day
Estimated 24-hour plant trips per year	4	trips
Geothermal fluid discharged per year	96,000	tons/yr
(Source: Engineering Estimates)		
Hydrogen Sulfide (H2S) concentration in geothermal brine (Conservative Design Concentration)	19.0	ppm
Abatement efficiency	0.00%	
H2S Emission Factor = EF_{H2S}	0.038000	lbs/ton
Benzene (C6H6) concentration in geothermal brine	0.1	ppm
Abatement efficiency	0.00%	
C6H6 Emission Factor = EF_{C6H6}	0.000280	lbs/ton
Ammonia (NH3) concentration in geothermal brine	600.0	ppm
Abatement efficiency	90.00%	
NH3 Emission Factor = EF_{NH3}	0.120000	lbs/ton

Emergency Diesel Engine/Black Start Generator
Emergency Diesel Engine/Black Start Generator (redundant)

(Source: CARB TIER 2 and ACTM Standards)		
Engine rating	3,353	bph
Engine rating	2,500	kW
Conversion - kW =	1.341	bph
Conversion - lb =	453.6	g
Fuel Consumption	0.340	lb/bhp-hr
Fuel Consumption	0.456	lb/kW-hr
CARB Diesel Fuel Sulfur Standard	15	ppm
CARB Diesel Fuel Sulfur Standard	0.000015	part/part
Factor for conversion of S to SO2	1.9979	
NMHC+NOx Emission Factor (Tier 2)	6.40	g/kW-hr
CO Emission Factor (Tier 2)	3.50	g/kW-hr
PM Emission Factor (ACTM)	0.15	g/bhp-hr
PM Emission Factor (ACTM)	0.201153	g/kW-hr
NMHC+NOx Emission Factor (Tier 2)	0.014109	lb/kW-hr
NMHC/NOx Ratio (assumption based on manufacturer's test data)	0.94%	
ROC Emission Factor = EF_{NMHC}	0.000133	lb/kW-hr
NOx Emission Factor = EF_{NOx}	0.013976	lb/kW-hr
CO Emission Factor = EF_{CO}	0.007716	lb/kW-hr
PM10 Emission Factor = EF_{PM10}	0.000443	lb/kW-hr
SO2 Emission Factor = EF_{SO2}	0.000014	lb/kW-hr

APPENDIX A - SOURCE NOTES

HUDSON RANCH GEOTHERMAL DEVELOPMENT PROJECT - POTENTIAL TO EMIT NOTES

Emergency Standby Fire Pump Diesel Engine

(Source: CARB TIER 3 and ACTM Standards)

Engine rating	483	hp
Engine rating	360	kW
Conversion - kW =	1.341	hp
Conversion - lb =	453.6	g
Fuel Consumption	0.340	lb/bhp-hr
Fuel Consumption	0.456	lb/kW-hr
CARB Diesel Fuel Standard	15	ppm
CARB Diesel Fuel Standard	0.000015	
Factor for conversion of S to SO2	1.9979	
NMHC+NOx Emission Factor (Tier 3)	4.00	g/kW-hr
CO Emission Factor (Tier 3)	3.50	g/kW-hr
PM Emission Factor (ACTM)	0.2	g/bhp-hr
PM Emission Factor (ACTM)	0.268204	g/kW-hr
NMHC+NOx Emission Factor (Tier 3)	0.008818	lb/kW-hr
NMHC/NOx Ratio (assumption based on manufacturer's test data)	0.94%	
ROC Emission Factor = EF_{NMHC}	0.000083	lb/kW-hr
NOx Emission Factor = EF_{NOx}	0.008735	lb/kW-hr
CO Emission Factor = EF_{CO}	0.007716	lb/kW-hr
PM10 Emission Factor = EF_{PM10}	0.000591	lb/kW-hr
SO2 Emission Factor = EF_{SO2}	0.000014	lb/kW-hr

Emergency Standby Diesel Engine/Generator

(Source: CARB TIER 2 and ACTM Standards)

Engine rating	1,073	hp
Engine rating	800	kW
Conversion - kW =	1,341	hp
Conversion - lb =	453.6	g
Fuel Consumption	0.340	lb/bhp-hr
Fuel Consumption	0.456	lb/kW-hr
CARB Diesel Fuel Standard	15	ppm
CARB Diesel Fuel Standard	0.000015	
Factor for conversion of S to SO2	1.9979	
NMHC+NOx Emission Factor (Tier 2)	6.40	g/kW-hr
CO Emission Factor (Tier 2)	3.50	g/kW-hr
PM Emission Factor (ACTM)	0.15	g/bhp-hr
PM Emission Factor (ACTM)	0.201153	g/kW-hr
NMHC+NOx Emission Factor (Tier 2)	0.014109	lb/kW-hr
NMHC/NOx Ratio (assumption based on manufacturer's test data)	0.94%	
ROC Emission Factor = EF_{NMHC}	0.000133	lb/kW-hr
NOx Emission Factor = EF_{NOx}	0.013976	lb/kW-hr
CO Emission Factor = EF_{CO}	0.007716	lb/kW-hr
PM10 Emission Factor = EF_{PM10}	0.000443	lb/kW-hr
SO2 Emission Factor = EF_{SO2}	0.000014	lb/kW-hr

APPENDIX A - DIESEL HAPS

AP-42 3.4 Large Stationary Diesel Engines			Annual HAP Emissions	
Compound	Emission Rate for Diesel HAPs	Ratio of Diesel HAPs to Diesel PM	Emergency Diesel Engine/Black Start Generator	Emergency Diesel Engine/Black Start Generator (redundant)
	(lbs/hp-hr)		(tons/yr)	
Diesel Particulate Matter	5.73E-02	1.00E+00	2.77E-02	2.77E-02
Benzene	7.76E-04	1.35E-02	3.75E-04	3.75E-04
Toluene	2.81E-04	4.90E-03	1.36E-04	1.36E-04
Xylene	1.93E-04	3.37E-03	9.34E-05	9.34E-05
1,3-Butadiene	3.91E-05	6.82E-04	1.89E-05	1.89E-05
Formaldehyde	7.89E-05	1.38E-03	3.82E-05	3.82E-05
Acetaldehyde	2.52E-05	4.40E-04	1.22E-05	1.22E-05
Acrolein	7.88E-06	1.38E-04	3.81E-06	3.81E-06
Naphthalene	1.30E-04	2.27E-03	6.29E-05	6.29E-05
		HAP Totals:	**7.41E-04**	**7.41E-04**

AP-42 3.3 Industrial Diesel Engines			Annual HAP Emissions	
Compound	Emission Rate for Diesel HAPs	Ratio of Diesel HAPs to Diesel PM	Emergency Standby Fire Pump Diesel Engine	Emergency Standby Diesel Engine/Generator
	(lbs/hp-hr)		(tons/yr)	
Diesel Particulate Matter	2.20E-03	1.00E+00	5.32E-03	8.87E-03
Benzene	9.33E-04	4.24E-01	2.26E-03	3.76E-03
Toluene	4.09E-04	1.86E-01	9.89E-04	1.65E-03
Xylene	2.85E-04	1.30E-01	6.89E-04	1.15E-03
1,3-Butadiene	3.91E-05	1.78E-02	9.46E-05	1.58E-04
Formaldehyde	1.18E-03	5.36E-01	2.85E-03	4.76E-03
Acetaldehyde	7.67E-04	3.49E-01	1.86E-03	3.09E-03
Acrolein	9.25E-05	4.20E-02	2.24E-04	3.73E-04
Naphthalene	8.48E-05	3.85E-02	2.05E-04	3.42E-04
		HAP Totals:	**9.17E-03**	**1.53E-02**

Cesar Flores

From: "Dwight L. Carey" <dlcarey@emacorp.com>
To: "Cesar Flores" <cesarflores@imperialcounty.net>
Cc: "Eric Spomer" <EricS@CatalystRC.Com>; "John Featherstone" <jfeatherstone@sbcglobal.net>; "Doug Powell" <powell-d@comcast.net>; "Terry Thomas" <trthomas@emacorp.com>
Sent: Thursday, August 14, 2008 2:49 PM
Subject: Permit #3731 - Status of Drill Rig

Cesar:

As discussed, the drill rig used to drill the first two Hudson Ranch I Project wells started drilling the first Hudson Ranch well on January 1, 2008 and completed that well on March 23, 2008. The drill rig was then moved over to the second well location on the same well pad. It began drilling the second well on April 11, 2008 and completed that well on June 11, 2008. The drill rig was then released by Hudson Ranch, and has been removed from the Hudson Ranch well pad. (We understand that it has been moved out of Imperial County.) The drill rig owner provided Hudson Ranch with copies of certificates which documented that all three of the drill rig diesel engine/generators were registered with CARB under PERP.

Let me know if you need more information or have any other questions.

--
Dwight L. Carey, D.Env., Principal
Environmental Management Associates, Inc.
588 Explorer Street, Brea, California 92821-3108
Phone: 714.529.3695; Fax: 714.529.8543; Cell: 714.267.9906

THIS INFORMATION IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL, AND EXEMPT FROM DISCLOSURE.

Hudson Ranch Power I LLC
2602 McKinney Avenue, Suite 200
Dallas, TX 75204
Phone (214) 880-3400
Fax (214) 880-3499

RECEIVED
AUG 01 2008
POLLUTION
DISTRICT

July 29, 2008

Mr. Brad Poiriez
Air Pollution Control Officer
Imperial County Air Pollution Control District
150 South Ninth Street
El Centro, CA 92243

Re: Permit #3734 – Report for Second Quarter 2008

Dear Mr. Poiriez:

Condition E.1. of ATC/PTO # 3734 requires that "The Permittee shall submit to the ICAPCD a quarterly report within 30 days of the preceding quarter of the drilling activities, well pad construction and well testing, including the estimated H2S emission during every well testing. The following is Hudson Ranch I LLC's report for the second quarter of 2008 for this permit.

The drilling of the second Hudson Ranch geothermal well, "Hudson Ranch 13-3," began on April 3 and was completed on June 11, 2008. The drilling rig was moved off of Well Site #1 and the well test equipment was erected. Flow testing of well Hudson Ranch 13-3 into well Hudson Ranch 13-1 began on June 29, 2008 and was continuing through the end of the quarter. Preliminary results of analyses of noncondensible gas samples indicate that hydrogen sulfide emissions during the flow test were about 9.0 lbs/hr, below the permit limit of 10.5 lbs/hr.

Respectfully,

Eric L. Spomer
HUDSON RANCH POWER I LLC
Authorized Representative

cc: Doug Powell
John Featherstone
Dwight Carey, Environmental Management Associates, Inc.

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606
FAX: (760) 353-9904

AIR POLLUTION CONTROL DISTRICT

August 22, 2007

Hudson Ranch I Geothermal Project
2602 McKinney Ave. Ste. 200
Dallas, TX 75204

Dear Mr. John Featherstone:

Enclosed please find Conditions for Authority to Construct **#3734** for a Well Pad Construction and Geothermal Well Testing located at West Southwest of Niland: section 13 and 24: T. 11s and 18, T. 11 S. R. 14E.

Please sign and date copy of Authority to Construct and return the yellow copy to our office.

It is the responsibility of the permit holder to notify this office for an inspection of the permitted equipment once it is operating. A Permit to operate will not be issued until the permitted equipment has been observed under operation, and determined to comply with all applicable Rules, Regulations and Permit Conditions.

If you have any questions regarding this permit, please do not hesitate to call **Cesar Flores at 760-482-4606.**

Sincerely,

Norma A. Amavizca
Office Assistant III

Enclosures

August 21, 2007

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT
Authority to Construct and Permit to Operate
Geothermal Exploration Wells

Permit:	**3734**
Source Name:	Hudson Ranch I Geothermal Project
Company Name:	Hudson Ranch Power I LLC
Address:	2602 McKinney Ave., Suite 200, Dallas, TX 75204
Application Type:	Well Pad Construction and Geothermal Well Testing
Nature of Business:	Geothermal Power Plant
Primary SIC:	4911 Electric Power
Other SCC:	20101001 Geothermal
Location:	West-southwest of Niland; section 13 and 24; T.11 S and 18, T. 11 S., R. 14E.
Responsible Person:	Eric Spomer (Authorize Representative)
Contact Person at Location	John Featherstone (GM Engineer & Operations)
Telephone Number:	(760) 960-2113
Permit Reviewer:	Cesar Flores (APC Engineer)

1. Introduction

Hudson Ranch Power I LLC (Hudson Ranch I) has proposed to construct and operate a well field project within the Salton Sea Known Geothermal Resource Area (KGRA) in Imperial County, California. The Project area is located on private land southwest of the City of Niland in Sections 13 and 24 of Township 11 South, Range 13 East; and in Section 7 and 18 of Township 11 South, Range 14 East, Niland Quadrangle (see attachment 1).

The Project area consists of approximately 1,607 acres of private land leased by the geothermal mineral rights holders to CHAR LLC and about 65 acres of fee land (see Figure 2 and Figure 3). The land within the project area is either currently barren or periodically flooded and used by private "duck clubs".

The current application is only for the construction of seven well pads and the geothermal well testing activities. The geothermal wells will be drilled by a contractor using a drilling rig powered by diesel engines registered through portable equipment permits issued by the California Air Resources Board. The rig engines used on the drilling site will be included in this stationary source permit as part of the emission inventory.

2. Background

Hudson Ranch-I has proposed to drill and test up to seven geothermal exploration wells. Four of the proposed wells will be located on a single production well site assigned as site 1. Three of the exploration wells will be located on a second proposed injection well site (Site 2) that would be constructed on lands under geothermal lease to affiliates of Hudson Ranch-I. An injection well for condensate and brine will be drilled on or near the production well pad, see attachment.

Each well site will include lined containment basins for the storage of the waste drilling mud. Part of the project activities includes the improvements or construction as necessary, of required access roads, and well testing equipment for each well for the continuous monitoring of well pressure, temperature and other data in each well.

2.1 Site Access

Primary highway access to the Project area will be via State Highway 111 to McDonald Road. Temporary access to the proposed production well island (Site 1) for well drilling will be off of Davis Road. Permanent access to the production well island will subsequently be constructed for development operations off of McDonald Road. Access to the injection well island (Site 2) will be constructed off of Hazard Road. Encroachment permits for ingress and egress and channel

crossing will be obtained from the Imperial County Public Works Department and Imperial Irrigation District, as required, for subsequent well testing operations.

Existing access roads will be utilized to the extent practical. The access roads will be constructed or improved with gravel and or maintained as needed to safely accommodate the traffic required for the exploration well drilling activities. Road beds will typically be a minimum ten feet wide. The well sites were selected, in part, to minimize surface disturbance, reduce the potential for fugitive dust emissions, and make the best use or the existing access within the limitations of testing the targeted geothermal resource.

2.2 Site Preparation Activities

Well Site 1 will be approximately 500 feet by 300 feet for a total surface area of 3.4 acres. The Site 2 will be approximately 450 feet by 300 feet for a total surface area of about 3.1 acres. The well pad preparation will include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation. Each site will be prepared to create a level pad for the drill rig, and a graded surface for the support equipment. Runoff from undisturbed areas around the constructed sites will be directed into ditches and energy dissipaters around the site, consistent with Imperial County, IID and CRWQCB Colorado River Basing Region, best management practices for storm water. All machinery, drilling platforms, oil and fuel storage will be in areas tributary to the containment basin in order to prevent the movement of storm water from these areas off of the constructed site. The site will be graded to direct runoff from the pad into the cellar which will be pumped as necessary.

Containment basins will be constructed at each site for the containment and temporary storage of waste drilling mud and storm water runoff from the constructed site. Each containment basin will hold roughly 420,000 gallons. The basins will be lined in accordance with CRWQCB requirements.

2.3 Water Requirements and Sources

Water required for road grading, construction, and dust control will typically average less than 50,000 gallons per day. Water will be obtained from local irrigation canals or laterals in conformance with IID water acquisition requirements. Water will be picked up form the source and delivered to each construction location or drilling site by a water truck which will be capable of carrying approximately 4,000 gallons per load. Alternatively, a temporary pipeline from the respective irrigation canal could be used to deliver water to a construction or drilling site. Any temporary water pipeline will be laid on the surface immediately adjacent to the access road to the site.

2.4 Geothermal Well Testing

The exploratory geothermal wells are designed to drill into the geothermal reservoir and flow test it, to confirm the characteristics of the geothermal reservoir and determine the potentiality of the geothermal resource and the feasibility of the project.

Once each geothermal well has been completed, they will be tested with one or more short term flow tests. Usually there are one or more long term flow test that last from 24 to 48 hours. In the short term flow test the fluids is performed in a flash tank and fluids are sent to baker tanks. The long term flow test consist in flow the well in steps production rates from 250,000 lbs/hr to as much as 750,000 lbs/hr through a steam separator and surface test and monitoring facilities into the flash tank. The geothermal steam and noncondensable gases separated from the geothermal fluid in the separator and flash tank are discharged into portable baker tanks, and then pumped for re-injection back to the geothermal reservoir through the re-injection well.

During the flow testing temperatures, pressures, flow rates and geochemistry is monitored. Surface test facilities also include injection pumps, coiled tubing, nitrogen tanks, filtration units, instruments, sampling equipment and diesel engines registered under ARB/PERP to be use to pump the re-injection of the geothermal brine.

3. Air Emissions and Potential to Emit from construction and well testing

Construction of the well pads and access will produce fugitive dust from site grading and other construction related surface disturbing activities. Construction of the well pads would disturb about 6.5 acres. All surface disturbing activities would implement appropriate techniques to comply with ICAPCD Regulation VIII to apply BACT to limit dust emissions. These will include watering the construction area at least twice a day; increasing watering frequency when winds exceed 15 mph; limiting vehicular speed to 15 mph on dirt roads and using gravel ramps in roads entrances.

Existing access roads (paved, graveled or dirt) will be utilized to the extent practical. Any new access required for the Project well pads would be constructed adjacent to the edges of the agricultural fields and parallel to irrigation canals and drains that traverse the Project area.

3.1 Hydrogen Sulfide Emissions

Hydrogen Sulfide (H_2S) will be emitted to the atmosphere during the well flow test whenever the geothermal fluid was flashed in the flash tank and the resulting geothermal steam and noncondensable gases released to the atmosphere. The

amount of H_2S emitted to the air will depend on the length of the well test, well flow rate, and the concentration of the H_2S in the noncondensable gases. The wells of Hudson Ranch I Geothermal Project will in the same geothermal reservoir of Leathers and Elmore geothermal power plants production wells. Based in the data from Leathers and Elmore geothermal noncondensable gas analysis the expected H_2S concentration will be around 14 ppm. Conservatively, assuming that all of the hydrogen sulfide in the geothermal fluid is released to the atmosphere upon flashing, a well flowing at rate of 750,000 lb/hr would emit 10.5 lbs/hr of H_2S. If the source test is prolonged to the maximum time of 24 hours the daily total H_2S emission will be around 252 pounds per day.

4. Applicable Regulations (APCD Requirements)

Rules	Title	Requirements
201	Permit Required	Written authorization must be obtained before construction, modification or reconstruction of a new source.
207C	NSR	No net increase in emissions from new stationary sources which emit or have the potential to emit 137 pounds/day or more of non-attainment pollutants or precursors.
207C.1.c	NSR	BACT shall be applied to any new emissions or modified emission unit with the potential to emit equal to or greater than 55 lb/day of reduced sulfur compounds.
401	Opacity of Emissions	Limits discharges darker in shade than No. 1 on the Ringelmann chart or 20% opacity, for periods aggregating more than three minutes in any one hour.
403	General Limitations of the Discharge of Air Contaminants	Limits particulate matter emissions in excess of the rates shown in Table 403-1.
405	Sulfur Compounds Emission Standards	A person shall not discharge into atmosphere from any single source of emissions, sulfur compounds, calculated as sulfur dioxide in excess of 0.2 percent by volume.
800	Fugitive dust requirements for control of PM_{10}	Contains Reasonably Available Control Measures (RACM) to reduce fugitive PM_{10} emissions.
93115 ATCM	Operation Standards for Prime CI engines	The new Air Toxins Control Measure (ATCM) has specific operating standards for CI engines.

4.1 New Source Review (NSR)

The requirements of NSR are applicable to Hudson Ranch I Geothermal Project. The ICAPCD NSR (Rule 207) is applicable to all sources in Imperial County. This

regulation requires new sources with potential emissions greater than the threshold limits to obtain emissions offsets.

4.2 NESHAP Applicability (40 CFR 61 and 63)

The National Emission Standard for Hazardous Air Pollutants (NESHAP) has been incorporated into the APCD regulations under Regulation X, Rule 1001. NESHAP only applies to hazardous air pollutants (HAPs) major sources. A HAPs major source is defined as one that emits, or has the potential to emit, 25 ton per year total HAPs, and/or 10 tons per year of any single HAP. Hudson Ranch I Geothermal Wells Construction and Testing Project is not a HAP major source.

4.3 93115-ATCM

The new Air Toxic Control Measure (ATCM) has specific operating standards for diesel engines rated at 50hp or greater. For new emergency standby diesel fueled IC engines are subject to the following requirements :(93115.e.2.A.3); In-use standby diesel fueled IC engines are subject to the following requirements: (93115.e.2.B.3). In-use stationary prime diesel fueled IC engines are subject to the following requirements: (93115.e.2.D.1.a and b).

5. BACT

BACT pursuant Rule 101 is defining as:

a. The most effective emission control devise, emission limit or technique which has been achieved in practice for such class or category of source unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not achievable.

b. Any other alternative emission control device, emission control technique, basic equipment, fuel, or process determined to be technologically feasible and cost-effective by the Air Pollution Control Officer. Cost-effectiveness analysis shall be performed in accordance with methodology and criteria specified in the Best Available Control Technology Guideline for the South Coast Air Quality Management District, or an alternative methodology and criteria acceptable to the air pollution control officer.

c. Under no circumstances shall BACT be determined to be less stringent than the emission control required by any applicable provision of laws or regulations of the District, State and Federal Government, or the most stringent than the emission control required by any applicable provision of laws or regulations of the District, State and Federal government, or the most stringent emissions limitation which is contained in the implementation plan of any State, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not technologically achievable. In no event shall

the application of BACT result in the emissions of any pollutant which exceeds the emissions allowed by any applicable New Source Performance Standard (40 CFR, part 60) or National Emission Standard for Hazardous Air Pollutants (40 CFR, Part 61).

Rule 207.C.1.c, requires BACT for equipment with the potential to emit 55 pounds per day or more of hydrogen sulfide. The hydrogen sulfide emission during well test operations is estimated in 252 lbs/day.

The current technologies developed by the geothermal industry to abate H_2S emissions are designed for H_2S in the gas phase. The technologies that the geothermal industry currently is utilizing are the Bioreactors, thermo-oxidizers and absorption of the H_2S in an oxidative solution (Stretford system).

These technologies work only when the hydrogen sulfide is in the gas stream or noncondensable gases. None of these technologies can be used in a well testing to control H_2S, due to during the well testing the steam and the gases are not separated in the centrifugal separator. The separation can only occur by the condensation of the steam in a surface condenser, this process can be possible only in an established power plant.

Based in the BACT analysis presented above, Hudson Ranch I Geothermal Project demonstrates to the satisfaction of the APCD that H_2S control during the well testing is not technologically achievable.

Rule 405, Sulfur Compounds Emission Standards, Limitations and Prohibitions, prohibits the discharge into the atmosphere emissions of sulfur compounds, calculated as sulfur dioxide, in excess of 0.2 percent by volume.

During the well testing the maximum geothermal brine flow rate will be up to 750,000 lbs/hr. The H_2S concentration in the geothermal brine is expected to be around 14 ppmw. Assuming that all the H_2S from the geothermal brine is released into the air in the mixture of noncondensable gases and steam during the flashing, the expected H_2S emission will be of 10.5 lbs/hr or 252 lb/day. In a regular geothermal steam flashing rate of 25.4% will be produced 190,000 lbs/hr of steam/gases with a final concentration of H_2S of 55.3 ppmw (29.3 ppmv) or 0.0054 percent by volume measured as SO2. This concentration will be way below the 0.2 percent of reduced sulfur compounds threshold stipulated in rule 405, been this project in compliance with this local rule.

Rule 800, Fugitive Dust Requirements for Control of Fine Particulate Matter. This Section of Rules control fugitive dust emissions from construction and earthmoving activities, from carry out and track out, from open areas, and paved and unpaved roads. Prior to construction Hudson Ranch-I will prepare a dust control plan and provide 10-day advance notice to the ICAPCD. During construction, all surface disturbing activities Hudson Ranch-I will add water to the

disturbed areas to control dust emissions. After construction Hudson Ranch-I will implement appropriate techniques to comply with the dust control plan and Rule 800 by applying BACT to limit fugitive dust from open areas, the control includes watering the construction areas at least twice a day; increasing watering frequency when winds exceed 15 mph; limiting vehicular speed to 15 mph on dirt roads and using gravel ramps in roads entrances, maintenance of water or dust suppressants to all unvegetated areas, establishing vegetation on previously disturbed areas, or paving and applying gravel base. Existing access roads (paved, graveled or dirt) will be utilized to the extent practical.

AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE CONDITIONS

Hudson Ranch Power I, LLC
2602 McKinney Ave., Suite 200
Dallas, TX 75204

A. GENERAL CONDITIONS PERMIT # 3734

1. The well pads shall be constructed and operated in substantial compliance with the project description, and operating parameters of Application (FR#549035) dated July 31, 2007, except as may be modified by more stringent requirements of law or these conditions.

2. Operation of all equipment shall be in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

3. Operation of all equipment shall be in compliance with applicable APCD Rules and Regulations.

4. This permit does not authorize the emissions of air contaminants in excess of those allowed by the USEPA (title 40 of the Code of Federal Regulation), the State of California Division 26, and Part 4, Chapter 3 of the Health and Safety Code, or the APCD (Rules and Regulations).

5. This permit cannot be considered permission to violate applicable existing laws, regulations, rules or statues of other governmental agencies.

6. No air contaminant shall be released into the atmosphere which causes a public nuisance. (Rule 407).

7. All equipment shall be maintained in good operating conditions and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere.

8. Disturbances of soil related to any construction, demolition, excavation, or other earthmoving activities shall comply with the requirements for fugitive dust control. (Rule 801).

9. Any unpaved and paved road, and open areas subject to be disturbed by vehicles traffic shall comply with the requirements for fugitive dust control. (Rule 805).

10. The permittee shall prevent or cleanup any carry-out or track-out. (Rule 803).

11. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann Chart 1 or 20% opacity. (Rule 401).

B. The Geothermal Well Field Facility shall not exceed the following emission limits:

Table 1 Hudson Ranch I Geothermal Project

Pollutant	Emission Limits (lb/hr)	Emission Limits (lb/day)
Hydrogen Sulfide	10.5	252

Emission limits were setup based in the data from Elmore and Leathers CalEnergy Power Plants.

C. COMBUSTION ENGINES

1. All the portable registered equipment shall be in compliance with all applicable Rules and Regulations of the State Portable Equipment Registration program (PERP).

D. NOTIFICATION:

1. Breakdowns

Hudson Ranch Power I, LLC shall notify the ICAPCD (per Rule 111) of any upset conditions, breakdown or scheduled maintenance which cause a violation of emission limitations prescribed by District Rules and Regulations, or by State law. The District shall be notified within as reasonably possible as but no later than two (2) hours after its detection. The completion of corrective measures or the shut down of emitting equipment is required within 24 hours of occurrence of a breakdown condition, unless an Emergency Variance has been obtained. Venting due to plant startup, load rejection, or well testing is not considered breakdown condition.

2. Modification

The Permittee shall notify the District of any material physical change, change in method of operation, or addition to the facility that results in a net emission increase or decrease of any regulated pollutant.

E. REPORTS

1. The Permittee shall submit to the ICAPCD a quarterly report within 30 days of the preceding quarter of the drilling activities, well pad construction and well testing, including the estimated H2S emission during every well testing.

F. PERMIT FEES

1. Rule 302. Geothermal Schedule for year 2007. (Geothermal Exploratory or Test Well $ 186/Well).

Seven (7) Exploratory or Test Well	$ 1,302.00
One (1) Injection Well	$ 186.00
Total Fees 2007	$ 1,488.00
Prorated Fee	$ 620.00

G. RECOMMENDATIONS

Hudson Ranch Power I, LLC it is recommended to be granted with an Authority to Construct Permit for the two well pads (Sit 1 and Site 2), due to this project was found to be in compliance with the ICAPC Rules and Regulations.

Hudson Ranch Power I LLC
2602 McKinney Avenue, Suite 200
Dallas, TX 75204
Phone (214) 880-3400
Fax (214) 880-3499

RECEIVED
AUG 14 2008
AIR POLLUTION CONTROL DISTRICT

Via FedEx

August 13, 2008

Mr. Brad Poiriez
Air Pollution Control Officer
Imperial County Air Pollution Control District
150 S. 9th Street
El Centro, CA 92243

Subject: Application for Authority to Construct for the Hudson Ranch I Geothermal Project Power Plant and Development Activities

Dear Mr. Poiriez:

Enclosed please find an application from Hudson Ranch Power I LLC (Hudson Ranch I) for an Authority to Construct for the power plant and other development activities associated with the Hudson Ranch I Geothermal Project. The enclosed application consists of a completed Authority to Construct Application form; a check for $157.00 for the application processing fee; and an attachment to the Authority to Construct Application form which provides a complete description of the proposed project equipment and systems, the applicable District regulations, the calculated potential to emit and abated emissions, and a discussion of the Project's compliance with the applicable District regulations.

The Imperial County Air Pollution Control District (ICAPCD) has previously approved Authority to Construct #3734 for the construction of two well pads and the drilling and testing of seven geothermal wells which are intended to become the four geothermal production wells and three geothermal brine injection wells required to support the Project. This application for an Authority to Construct is for the balance of the development Project equipment and the development Project operations.

The Hudson Ranch I Geothermal Project (Project) is a 49.9 MW geothermal power plant and well field project proposed on private land located west-southwest of the town of Niland in Sections 13 and 24 of Township 11 South, Range 13 East; and in Sections 7 and 18 of Township 11 South, Range 14 East, Niland Quadrangle. Project operations would create new sources of hydrogen sulfide (H2S), ROCs (benzene (C6H6)) and hazardous air pollutant (HAP) (C6H6) emissions from the geothermal noncondensible gases emitted through the power plant

cooling tower; fine particulates (PM10) from the cooling tower; and NOx, ROCs, CO, PM10 and HAPs from testing of the emergency black start diesel generators and the emergency standby diesel engines. However, the Project is a minor source of air pollutants, with only the potential to emit hydrogen sulfide exceeding the District's 25 pound per day threshold for the implementation of BACT. (The produced H2S discharged to the cooling tower would be abated by the Biox® process, which would result in excess of 95 percent abatement of the hydrogen sulfide discharged to the cooling tower.) The Facility would also not require any offsets, as no nonattainment air pollutants would be emitted in excess of 137 pounds per day.

The Imperial County Planning & Development Services Department (ICDPDS) has issued Conditional Use Permit (CUP) #07-0019 for the Project. Pursuant to the California Environmental Quality Act, Initial Study #07-0032 was prepared by the ICDPDS and a Negative Declaration approved for the Project. Because the Facility potential to emit NOx, ROC, CO, SOx, CO and PM10 are each less than 100 pounds per day, we also understand that the requirements of District Rule 206.C.2, relating to notification and publication of the Air Pollution Control Officer`s preliminary decisions, do not apply to the Project.

Hudson Ranch I would appreciate whatever actions the District may take to timely complete your review and approve this permit application so that construction of the Facility may commence as soon as possible. Please feel free to call our permit consultant, Dwight L. Carey of Environmental Management Associates, Inc., at 714.529.3695, or me if you have any questions or need more information to facilitate your review of this application and approval of the permit.

Respectfully,

HUDSON RANCH POWER I LLC

Eric Spomer
Authorized Representative

Enclosure:

cc: Doug Powell, Hudson Ranch I (w/ Enclosure)
John Featherstone, Hudson Ranch I (w/ Enclosure)
Dwight Carey, Environmental Management Associates, Inc. (w/ Enclosure)

ATTACHMENT H

Supporting reference documents for the Comments of the California Unions for Reliable Energy on the Preliminary Staff Assessment and its technical expert reports can be accessed at the following Dropbox link: https://www.dropbox.com/scl/fo/86xgn27e6zzfh4wi5x06p/ALXnBmGTYEimDCNBOvsUb6M?rlkey=x02qhg8lcopb9wi5iyqka4t4x&e=1&st=qm1rrmbg&dl=0.

We request that these documents be included in the official record of proceedings and can provide hard copies upon request.