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STATE OF CALIFORNIA
STATE ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

IN THE MATTER OF:

ELMORE NORTH GEOTHERMAL
PROJECT APPLICATION FOR
CERTIFICATION

Docket No. 23-AFC-02

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 Elmore North 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 Elmore North Geothermal Project (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 Elmore North Geothermal Project (July 22, 2024)
- Attach. D:** Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Timothy Parker, Parker Groundwater Hydrogeologic Consulting re: Review of Elmore North 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 Elmore North Geothermal Project Preliminary Staff Assessment (PSA) (July 29, 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 J.J. Elmore Geothermal Power Plant (1996)
- 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 Assessment¹ (“PSA”) for the Elmore North Geothermal Project (“Project” or “Elmore North”).

INTRODUCTION

The PSA prepared for the Project fails to comply with all applicable provisions of 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.

Elmore North 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 140-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 0.5-mile transmission line to deliver power to a new Imperial Irrigation District (“IID”) switching station to be built adjacent to the Project site.⁵

Construction and commissioning activities are expected to take approximately 29 months.⁶ These include 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

¹ TN # 256843, California Energy Commission, Elmore North Geothermal Project: Preliminary Staff Assessment (June 2024) (hereinafter “PSA”).

² Pub. Res. Code § 21000 *et seq.*

³ PSA at p. 1-1.

⁴ *Id.* at p. 1-1.

⁵ *Ibid.*

⁶ *Id.* at p. 3-17.

⁷ *Ibid.*

⁸ *Id.* at p. 3-27.

operation of the Project, in compliance with CEQA, the Warren-Alquist Act, and the 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.Sc., B.Sc., air quality and public health;¹¹
- Dr. James J. Clark, Ph.D., M.S., air quality and hazards;¹²
- Timothy Parker, PG, CEG, 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 included 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 the Project's water supply and all construction, operation, and decommissioning activities. It fails to describe

⁹ *Id.* 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 Elmore North 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 Elmore North 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 Elmore North Geothermal Project (July 22, 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 Elmore North Geothermal Project Preliminary Staff Assessment (PSA) (Aug. 29, 2024) (hereinafter "Parker Comments")

¹⁵ **Attachment E**, Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Bwalya Malama, Professor, California Polytechnic State University, San Luis Obispo, CA re: Review of Elmore North Geothermal Project Preliminary Staff Assessment (PSA) (July 29, 2024) (hereinafter "Malama Comments")

¹⁶ Pub. Res. Code § 21091(d); 14 Cal. Code Regs. §§ 15088(a), 15132.

the existing baseline for sensitive natural communities, special-status plants, and aquatic resources.

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 greenhouse gases (“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 water resources, the PSA’s 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.

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, Yuma Ridgway’s rail. With respect to geology, the PSA fails to adequately analyze seismic hazards, surface inundation and liquefaction.

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 is no other potentially feasible alternative 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

¹⁷ Pub. Res. Code §§ 25500-25543; 14 Cal. Code Regs. § 15251(j).

¹⁸ Pub. Res. Code § 21080.5(c); 14 Cal. Code Regs. § 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,

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 *Ibid.*

²⁹ *Id.* § 1742(d).

regional and local laws, ordinances, regulations and standards, and assess the 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

³⁰ *Id.* § 1742(d).

³¹ *Id.* § 1742(e).

³² *Id.* § 1742(b).

³³ *Id.* § 1745(c).

³⁴ *Id.* § 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 Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1392.

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

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 *Sierra Club*, 6 Cal.5th 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 *Ibid.*; 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.* § 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

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

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 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.* § 15144.

⁵⁵ *Id.* § 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.

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 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

⁵⁸ Pub. Res. Code § 21092.1.

⁵⁹ 14 Cal. Code Regs. § 15088.5.

⁶⁰ *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (1981) 122 Cal.App3d 813, 822.

⁶¹ 14 Cal. Code Regs. § 15130(a).

⁶² *Id.* § 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.

analysis, piecemeal approval of several projects with related impacts could lead to significant environmental harm.⁶⁴

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

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.

⁶⁵ 14 Cal. Code Regs. § 15355.

⁶⁶ *Id.* § 15355(a).

⁶⁷ *Id.* § 15355(b).

⁶⁸ *Id.* § 15130(a)(1).

⁶⁹ *Id.* §§ 15065(a)(3), 15130(b)(1)(A), 15355(b).

⁷⁰ *Id.* §§ 15130(b)(1)(A)-(B), 15130(b)(4)-(5).

⁷¹ *Id.* § 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).

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 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*

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.

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.

Water Agency, the court concluded that pending federal impact reviews rendered related projects probable future projects.⁸¹ In *Golden 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 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

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.

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_7UZ6v1SLrr6EHVNoqc6ranc5yNocSVW6dFO61Lcu87l2NnQXSTofwF-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_ZkJnuznnpnArgMDiXeM5qorf0.

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 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 ("SO₂") 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

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 Elmore North Geothermal Project Proceeding (Sept. 15, 2023) p. 6.

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 site. 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.

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).

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, 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 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

⁹⁰ PSA at p. 5.7-28.

⁹¹ *Id.* at p. 5.12-8.

⁹² *Id.* at pp. 5.2-177 to 5.2-178.

⁹³ *Id.* at pp. 5.2-178 to 5.2-179.

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:

- 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. 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

⁹⁴ *Id.* at pp. 5.15-39 to 5.15-41.

⁹⁵ *Id.* at pp. 5.8-28 to 5.8-29.

⁹⁶ *Id.* at pp. 5.2-181 to 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).

approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA.”¹⁰²

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

The mitigation measures outlined in the PSA are insufficient to ensure that future plans, reports, or studies will effectively mitigate the Project’s significant environmental impacts. CEQA mandates that “[f]ormulation of mitigation measures should not be deferred until some future time.”¹⁰³ “Deferred mitigation violates CEQA if it lacks performance standards to ensure the mitigation goal will be achieved.”¹⁰⁴ An EIR is deemed 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.”¹⁰⁵ “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.”¹⁰⁶

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 constituting improper deferral of environmental assessment.”¹⁰⁷ 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.¹⁰⁸ 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.¹⁰⁹ 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

¹⁰² *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307.

¹⁰³ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

¹⁰⁴ *Golden Door Properties, LLC v. Cnty. of San Diego* (2020) 50 Cal.App.5th 467, 520.

¹⁰⁵ *San Joaquin Raptor Rescue Ctr. v. Cnty. of Merced* (2007) 149 Cal.App.4th 645, 670, *as modified* (Apr. 11, 2007).

¹⁰⁶ *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307.

¹⁰⁷ *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.

¹⁰⁸ *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 306-07.

¹⁰⁹ *Id.* at p. 306.

feasible stage in the planning process.”¹¹⁰ 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.”¹¹¹ An agency cannot hide behind its failure to gather relevant data.¹¹²

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.”¹¹³ 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.”¹¹⁴ 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....”¹¹⁵

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, COC BIO-20/MM BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan after Project approval.¹¹⁶ 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

¹¹⁰ *Id.* at p. 307.

¹¹¹ *Ibid.*, citing to *Mount Sutro Defense Committee v. Regents of University of California* (1978) 77 Cal.App.3d 20, 35.

¹¹² *Ibid.*

¹¹³ *Communities for a Better Env’t v. City of Richmond* (2010) 184 Cal.App.4th 70, 93.

¹¹⁴ *Ibid.*

¹¹⁵ *Id.* at p. 95.

¹¹⁶ PSA at p. 5.2-178 to 5.2-180.

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.”¹¹⁷ 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. 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.”¹¹⁸

Second, the Facility Pond Wildlife Escape and Monitoring Plan required by 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.¹¹⁹ 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.”¹²⁰ The PSA does not provide any rationale 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.

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.¹²¹ 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

¹¹⁷ PSA at p. 5.2-180.

¹¹⁸ Cashen Comments at p. 33.

¹¹⁹ PSA at pp. 5.2-177 to 5.2-178.

¹²⁰ PSA at pp. 5.2-178 to 5.2-178.

¹²¹ Cashen Comments at p. 24.

standards for mitigation measures “was impractical or infeasible at the time the EIR was certified.”¹²² The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.¹²³ 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.¹²⁴ Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.¹²⁵

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 SOLID WASTE-2, which requires identification of an alternative disposal facility and mandates further environmental review if the DVCN can no longer accept nonhazardous filter cake. No evidence is offered in the PSA to explain why this analysis and mitigation measure is deferred. 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.¹²⁶ The PSA concludes that impacts to Important Farmlands would be significant and proposed LAND-3 to mitigate these impacts to less-than-significant levels.¹²⁷ This measure is “based on Imperial County’s Mitigation Monitoring and Reporting Program [(“MMRP”)] in the Final Programmatic Environmental Impact Report [(“PEIR”)] 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

¹²² *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.

¹²³ *Ibid.*

¹²⁴ *Endangered Habitats League, Inc. v. County of Orange*, (2005) 131 Cal.App.4th 777, 794.

¹²⁵ *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.

¹²⁶ PSA at p. 5.8-17.

¹²⁷ *Ibid.*

Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County.”¹²⁸

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.”¹²⁹ CEQA prohibits the deferred formulation of mitigation measures until a future time.¹³⁰ Mitigation measures must be known, feasible, and effective.¹³¹ 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.”¹³² However, the evidence revealed uncertainty as to the availability of water for purchase.¹³³ 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.”¹³⁴ 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.¹³⁵

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.¹³⁶ Rather, it requires that one of the mitigation options be “**implemented**” “prior to the issuance of a grading permit or building permit....”¹³⁷ 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 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.

¹²⁸ *Ibid.* (internal citation omitted).

¹²⁹ 14 Cal Code Regs. § 15126.4(a)(1)(B).

¹³⁰ *Ibid.*

¹³¹ *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727-28.

¹³² *Id.* at p. 709.

¹³³ *Id.* at p. 728.

¹³⁴ *Ibid.*

¹³⁵ *Ibid.*

¹³⁶ 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 at* <https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmrip.pdf>.

¹³⁷ *Ibid.*

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.¹³⁸ 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.¹³⁹ 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.¹⁴⁰

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.¹⁴¹

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 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.

¹³⁸ *Id.* § 15050(a).

¹³⁹ *Id.* § 15051.

¹⁴⁰ *Id.* § 15064(d).

¹⁴¹ Pub. Res. Code § 21081.6(c).

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.¹⁴²

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.¹⁴³

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 pipeline facilities, and associated transmission line activities (including the

¹⁴² 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.

¹⁴³ City of Dublin, Final Environmental Impact Report: At Dublin Project, Comment Letter #2 (Oct. 2018).

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 ENGP site.¹⁴⁴ 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.¹⁴⁵ 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.¹⁴⁶

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.”¹⁴⁷ CEQA prohibits segmenting the review of the significant environmental impacts.¹⁴⁸ 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.¹⁴⁹ Public agencies must interpret the project broadly to encompass the whole of the action and its environmental impacts.¹⁵⁰

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.¹⁵¹

¹⁴⁴ PSA at p. 3-10.

¹⁴⁵ PSA at p. 3-10.

¹⁴⁶ **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>.

¹⁴⁷ 14 Cal. Code Regs. § 15378(a).

¹⁴⁸ *Laurel Heights Improvement Assn.*, 47 Cal. 3d at 396; *see also* Pub. Res. Code § 21002.1(d).

¹⁴⁹ *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.

¹⁵⁰ 14 Cal. Code Regs. § 15378.

¹⁵¹ *See Citizens Assn. for Sensible Development of Bishop Area*, 172 Cal. App.3d 165-68.

The court in *Laurel Heights Improvement Association v. Regents of University of 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.”¹⁵² “[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.”¹⁵³

BHER entered into an Engineering, Study, and Design Agreement (“Agreement”) with IID for the “Salton Sea Transmission Project” on November 1, 2022.¹⁵⁴ 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.¹⁵⁵ 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.¹⁵⁶ BHE Renewables, LLC will also undertake the environmental compliance analysis for the transmission project.¹⁵⁷ 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.¹⁵⁸ 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.¹⁵⁹ “These

¹⁵² *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).

¹⁵³ *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).

¹⁵⁴ Attachment F at p. 4.

¹⁵⁵ Attachment F at p. 4.

¹⁵⁶ Attachment F, attach. A at p. 15.

¹⁵⁷ *Ibid.*

¹⁵⁸ 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 PSA Comments”).

¹⁵⁹ Attachment F, attach. A at p. 15.

specific, pending plans distinguish cases rejecting piecemealing claims on the ground the future actions were too speculative.”¹⁶⁰

As to the second part 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.”¹⁶¹ 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.”¹⁶² In that case, the court evaluated whether the Newport Banning Ranch development project and the Sunset Ridge Park Project were separate actions.¹⁶³ 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.¹⁶⁴

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.¹⁶⁵ 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.¹⁶⁶

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

¹⁶⁰ *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1224.

¹⁶¹ *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).

¹⁶² *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1225.

¹⁶³ *Id.* at 1224-27.

¹⁶⁴ *Id.* at 1226.

¹⁶⁵ Attachment F at p. 2-6

¹⁶⁶ *Id.* at p. 5-6.

has been improperly segmented from this CEQA review.¹⁶⁷ In its letter, IID 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.”¹⁶⁸ 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.”¹⁶⁹ However, the PSA’s project description fails to satisfy this purpose. It inadequately describes key Project elements, including but not limited to: 1) water supply; 2) roads that may be built in the Red Hill Bay to allow “[p]lant operators [to] drive the pipeline routes daily to perform visual inspections;”¹⁷⁰ 3) restoration of the borrow pits; 4) the location of pile driving activities; and 5) the construction schedule. 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 Accurately Describe the Project’s Water Supply Requirements

The PSA contains conflicting information regarding the Project’s water supply and delivery requirements. Specifically, the PSA indicates that the Project requires 5,560 acre-feet per year (“AFY”) of water from N Lateral, Gate N 36,¹⁷¹ whereas the Water Supply Assessment (“WSA”) states the Project would require 6,480 AFY of water from the Vail 3 Lateral.¹⁷² This discrepancy suggests that the

¹⁶⁷ 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).

¹⁶⁸ IID PSA Comments at 1-2.

¹⁶⁹ PSA at p. 2-5.

¹⁷⁰ *Id.* at p. 3-24.

¹⁷¹ *Id.* at p. 3-12.

¹⁷² TN # 256894, Imperial County Planning and Services Department, SB 610 – Water Supply Assessment (June 13, 2024) p. 1-2 (hereinafter “WSA”); Cashen Comments at p. 1.

Project's water demand may have been significantly underestimated, leading to potentially significant impacts on water supply, hydrology, and biological resources.

Accurate determination of the Project's water needs is critical for maintaining adequate volume, depth, and quality of water in IID's drains, which are essential for supporting desert pupfish habitat.¹⁷³ Low water levels can increase the desert pupfish's susceptibility to predation by birds and competition with invasive fish species.¹⁷⁴ Moreover, ensuring a reliable water supply is vital for meeting habitat conservation objectives at both the Project site and at the Sonny Bono Salton Sea National Wildlife Refuge.¹⁷⁵

For instance, the Yuma Clapper Rail Recovery Plan emphasizes the importance of securing long-term water contracts to sustain the quality and quantity of water necessary for maintaining health cattail marsh habitats at the Sonny Bono Salton Sea NWR and Imperial State Wildlife Area.¹⁷⁶ The PSA must therefore be revised and recirculated PSA to address how the operational water demand of the three proposed geothermal projects (Elmore North, Morton Bay, and Black Rock) will impact the availability for habitat management in these critical areas. Due to the PSA's failure to accurately present the Project's water supply requirements, the potential impacts on biological and water resources have not been fully disclosed, analyzed, or mitigated. It is imperative that the PSA be revised to accurately reflect the Project's water needs and thoroughly assess the associated environmental impacts.

B. The PSA Fails to Describe How Plant Operators Will Drive the Pipeline Routes in Red Hill Bay

"Plant operators would drive the pipeline routes daily to perform visual inspections."¹⁷⁷ 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

¹⁷³ Cashen Comments at p. 11.

¹⁷⁴ Imperial Irrigation District, Water Conservation and Transfer Project Draft Habitat Conservation Plan: Draft Environmental Impact Report/Environmental Impact Statement, Vol. 2, appen. A to appen. C (Jan. 2022), *available at* <https://www.iid.com/water/library/qa-water-transfer/environmental-assessments-permits/draft-eir-eis>; *see also* Imperial Irrigation District, Draft Initial Study for the Red Hill Bay Wetlands Restoration Project (Nov. 2017), *available at* <https://ecos.fws.gov/ServCat/DownloadFile/161293>.

¹⁷⁵ *Id.* at pp. 4-40, -41, 4-84.

¹⁷⁶ U.S. Fish & Wildlife Service, Yuma Lapper Rail Recovery Plan: Draft First Revision (2009) p. iv, *available at* <https://www.govinfo.gov/content/pkg/GOVPUB-I49-PURL-gpo173951/pdf/GOVPUB-I49-PURL-gpo173951.pdf>.

¹⁷⁷ PSA at p. 3-24.

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.¹⁷⁸ 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).¹⁷⁹ 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.

C. The PSA Fails to Include 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 Morton Bay and Black Rock projects for four months.¹⁸⁰ 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.¹⁸¹ Because the metric Leq represents the average noise level over a period of time (usually 1 hour), and pile driving is an intermittent activity,¹⁸² the noise level (Lmax) of each pile drive would be substantially more than 104 dBA.¹⁸³ This omission is significant, as understanding the exact location and potential maximum noise levels is crucial for 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.

¹⁷⁸ Cashen Comments at p. 2.

¹⁷⁹ *Id.*

¹⁸⁰ PSA at p. 5.9-11.

¹⁸¹ *Id.* at p. 5.9-7.

¹⁸² *Id.* at p. 5.9-7.

¹⁸³ Cashen Comments at p. 3.

D. The PSA Fails to Adequately Describe Borrow Pit Restoration

The Project includes up to four borrow pits located throughout the Project area,¹⁸⁴ which would be utilized for the 29-month construction period.¹⁸⁵ Following their use, these borrow pits must be restored to preconstruction conditions.¹⁸⁶ The PSA provides that “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.”¹⁸⁷ 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”).¹⁸⁸ 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.

E. The PSA Fails to Adequately Describe the 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

¹⁸⁴ PSA at p. 5.4-36.

¹⁸⁵ *Id.* at p. 3-17.

¹⁸⁶ Pub. Res. Code § 2712.

¹⁸⁷ PSA at pp. 5.8-13 to 5.8-14 (internal citation omitted).

¹⁸⁸ *Id.* at p. 5.6-10.

winter daylight hours, for specialize work such as concrete pours, or for noisy construction activities.¹⁸⁹

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. However, the PSA later suggests that construction activity would typically occur for 13 hours per day, from between 7 am and 8 pm.¹⁹⁰ Adding further inconsistency, it states “[w]ell drilling operations are conducted 24 hours per day, seven days per week.”¹⁹¹ 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.¹⁹² 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).”¹⁹³ 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.¹⁹⁴

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.¹⁹⁵ 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).¹⁹⁶

The Commission must revise the PSA to provide consistent information on the Project’s construction schedule. This revision must address whether the

¹⁸⁹ *Id.* at pp. 3-17 to 3-18 (internal citations omitted).

¹⁹⁰ *Id.* at p. 3-18.

¹⁹¹ *Id.* at p. 3-19.

¹⁹² TN # 249737, Elmore North Geothermal Project Application for Certification Volume 1 (Apr. 18, 2023) p. 5.1-26 (hereinafter “AFC”).

¹⁹³ PSA at pp. 5.9-6, 6-17.

¹⁹⁴ Cashen Comments at p. 4.

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

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).¹⁹⁷

F. 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. 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.¹⁹⁸ 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.

G. 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.¹⁹⁹ 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."²⁰⁰ 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.

¹⁹⁷ *Id.*

¹⁹⁸ *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 654.

¹⁹⁹ *Nelson v. County of Kern* (2010) 190 Cal.App.4th 252, 272.

²⁰⁰ PSA at p. 3-29.

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;
- impact mitigation and monitoring;
- site remediation and/or restoration;
- exterior maintenance, including paint, landscaping and fencing;
- site security and lighting; and
- any contingencies.²⁰¹

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 the activities described in COM-15. CEQA requires the PSA to analyze the impacts of 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.²⁰² 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.

²⁰¹ *Id.* at p. 9-18.

²⁰² *Ibid.*

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 µg/m³ to 9.0 µg/m³, and is effective as of May 6, 2024.²⁰³ 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 ICAPCD rules.²⁰⁴ 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.”²⁰⁵ 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 2026.²⁰⁶ 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

²⁰³ *Id.* at p. 5.1-3.

²⁰⁴ *Ibid.*

²⁰⁵ 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>.

²⁰⁶ PSA at p. 5.1-3.

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.”²⁰⁷ The guidance underscores the necessity for projects in the permitting process to verify compliance with the new, more stringent standards. 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.²⁰⁸ The PSA confirms that Project construction, combined with background PM_{2.5} concentrations, would exceed 9.0 µg/m³.²⁰⁹ Project operation, in combination with background PM_{2.5} concentrations, would also exceed this standard.²¹⁰ 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-ampere 245 kV circuit breakers, to be constructed adjacent to the Project site.²¹¹ Construction activities will include installing foundations, ground wires, conductors, counterpoise/ground rods, assembling and erecting structures, and clearing, pulling and stringing lines.²¹² However, the PSA concedes that emissions from these construction activities were excluded from the air quality modeling.²¹³ The PSA asserts that air quality and GHG impacts from constructing the switching station are less than significant with mitigation, citing fewer ground

²⁰⁷ 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>.

²⁰⁸ Shukla Comments at pp. 20-21.

²⁰⁹ PSA at p. 5.1-24.

²¹⁰ *Id.* at p. 5.1-27.

²¹¹ *Id.* at p. 1-1.

²¹² *Id.* at p. 3-17.

²¹³ *Id.* at p. 5.1-17.

disturbance activities, a shorter construction duration, less equipment, and similar distances to sensitive receptors.²¹⁴

Additionally, the PSA does not quantify emissions from construction worker camps.²¹⁵ The temporary construction camps would require site surface preparation, including vegetation removal, excavation, minor grading, and gravel application.²¹⁶ It would also require the use of temporary power sources,²¹⁷ such as generators, which can contribute to GHG emissions and other pollutants. The PSA acknowledges that these elements may require mitigation to achieve less than significant impacts.²¹⁸

An EIR must be sufficiently detailed to enable decisionmakers to make informed judgments about the project's environmental impacts.²¹⁹ While exhaustive detail is not required, the EIR must be adequate, complete, and demonstrate a good faith effort at disclosure.²²⁰ The EIR fails to explain why it cannot quantify emissions from these components.²²¹ 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.²²²

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.²²³ Despite the meteorological station being 23.8 miles away, the PSA concludes the

²¹⁴ PSA at pp. 5.1-17, 5.3-9.

²¹⁵ *Ibid.*

²¹⁶ PSA at p. 5.8-7.

²¹⁷ *Id.* at p. 5.8-7.

²¹⁸ *Id.* at p. 5.1-38.

²¹⁹ 14 Cal. Code Regs. § 15151; *Napa Citizens for Honest Gov't v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 356.

²²⁰ *Ibid.*

²²¹ *See Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421 (requiring quantification of emissions when feasible).

²²² Shukla Comments at pp. 13-16.

²²³ PSA at p. 5.1-23.

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.²²⁴ 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.²²⁵ "Higher wind speeds over the heated desert and lower relative wind speeds over the cooler Salton Sea result in decreased dispersion near the Project site, increasing ground-level pollutant concentrations."²²⁶ 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.²²⁷ 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.²²⁸ 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.²²⁹

A comparison of wind rose data also reveals significant differences in wind patterns between the two sites.²³⁰ The airport wind rose shows predominantly westerly and southwesterly winds, whereas the Sonny Bono wind rose shows predominantly southeasterly winds.²³¹

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.²³² The critical factor when selecting meteorological data is spatial representativeness, not just completeness.²³³

²²⁴ PSA at p. 5.1-23.

²²⁵ Clark Comments at pp. 4-5; Shukla Comments at p. 13-14.

²²⁶ Clark Comments at pp. 4-5.

²²⁷ Shukla Comments at p. 14.

²²⁸ *Id.* at pp. 13-14.

²²⁹ *Ibid.*

²³⁰ *Id.* at pp. 14-16; Clark Comments at p. 5.

²³¹ Shukla Comments at pp. 14-16; Clark Comments at p. 5.

²³² Shukla Comments at p. 14.

²³³ *Ibid.*

For these reasons, and those explained in CURE's comments on the preliminary determination of compliance for the Elmore North, Morton Bay, and Black Rock facilities,²³⁴ 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.²³⁵ 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.

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.²³⁶ 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.²³⁷ 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.²³⁸ Background monitoring data alone cannot capture

²³⁴ TN # 254833, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Andrew J. Graf, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Elmore North Geothermal Power Generation Plant (Mar. 4, 2024); TN # 254968, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Kelilah D. Federman, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Morton Bay Geothermal Power Generation Plant (Mar. 11, 2024), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254968&DocumentContentId=90658>; TN # 255266, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Ariana Abedifard, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Black Rock Geothermal Power Generation Plant (Mar. 11, 2024), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=255266&DocumentContentId=90938>.

²³⁵ Clark Comments at p. 5.

²³⁶ PSA at p. 5.1-33 to 5.1-36.

²³⁷ *Id.* at p. 5.1-34.

²³⁸ Shukla Comments at pp. 21-23.

these specific contributions, nor can it accurately reflect the cumulative impact of multiple sources in proximity.²³⁹

Furthermore, the PSA's method does not account for the interactive effects of emission from multiple geothermal facilities operating concurrently.²⁴⁰ Pollutants can interact in the atmosphere, leading to complex chemical reactions that may compound air quality impacts.²⁴¹ 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.²⁴² Indeed, the ICAPCD has permits for these facilities that provide the necessary information.

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.²⁴³ Diesel generators emit harmful pollutants such as NOx and diesel particulate matter, which have significant health impacts, including respiratory and cardiovascular problems.²⁴⁴ 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.²⁴⁵ Additionally, new emergency generators are proposed for the Morton Bay and Black Rock facilities.²⁴⁶

²³⁹ *Ibid.*

²⁴⁰ *Id.* at p. 22.

²⁴¹ *Ibid.*

²⁴² *Id.* at pp. 22-23.

²⁴³ PSA at p. 3-9.

²⁴⁴ *Id.* at p. 5.10-17.

²⁴⁵ Clark Comments at p. 13.

²⁴⁶ 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. 3-9, *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=257697&DocumentContentId=93594>.

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.²⁴⁷ Additionally, the Project area is designated as nonattainment for PM₁₀, meaning it already exceeds the permissible levels for PM, further exacerbating the potential public health impacts.²⁴⁸

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. It assumes an even distribution of 26 truck trips per day over an 8-hour workday, resulting in approximately 3 truck trips per hour.²⁴⁹ However, truck trips are likely to be clustered during specific hours, leading to higher congestion and emission during those periods.²⁵⁰

The PSA also assumes that only 40% of worker trips would occur during peak hours.²⁵¹ This assumption is overly conservative and inconsistent with the trip

²⁴⁷ Clark Comments at p. 13.

²⁴⁸ *Ibid.*

²⁴⁹ PSA at p. 5.14-7 to 5.14-8.

²⁵⁰ Shukla Comments at pp. 27-29.

²⁵¹ PSA at p. 5.14-7.

distribution of other construction projects.²⁵² A 50% distribution is more appropriate.²⁵³

When these assumptions are correctly calibrated, the Project would result in an extra 20 daily trips per day during Project construction, causing increased emissions.²⁵⁴ 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,²⁵⁵ which the PSA selected as appropriate standard to evaluate the Project's emissions impacts.²⁵⁶ Despite the exceedance, the PSA erroneously concludes that the impact is less than significant.²⁵⁷ 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.²⁵⁸ The PSA must be revised to analyze 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-37.²⁵⁹ 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.²⁶⁰ 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.²⁶¹

²⁵² Shukla Comments at pp. 28-29.

²⁵³ *Ibid.*

²⁵⁴ *Id.* at pp. 29-30.

²⁵⁵ *Ibid.*

²⁵⁶ PSA at p. 5.1-4; 14 Cal. Code Regs. §§ 15064.7(c), 15064(b)(2).

²⁵⁷ PSA at p. 5.1-17 to 5.1-18.

²⁵⁸ Shukla Comments at pp. 18-19.

²⁵⁹ PSA at p. 5.1-38.

²⁶⁰ *Id.* at p. 5.1-46.

²⁶¹ *Id.* at p. 5.1-52.

These measures rely on opacity, which is a measure of the amount of light blocked by PM (such as smoke, dust or other pollutants) in the air.²⁶² 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.²⁶³

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.²⁶⁴ Second, certified observers must be utilized, introducing potential issues with availability and uncertainty.²⁶⁵ 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.²⁶⁶ Finally, these methods require sufficient light to see the plume, rendering them ineffective at night.²⁶⁷

Given the limitations identified by Dr. Clark, the proposed measures would be inconsistent during the day and entirely ineffective at night. These gaps fail to ensure air quality standards are consistently met, particularly in mitigating the migration of particle plumes offsite at night. Since the facility will operate 24 hours a day, seven days a week,²⁶⁸ 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.²⁶⁹ This would ensure more consistent and reliable monitoring of air quality impacts, regardless of time of day.

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

²⁶² Clark Comments at p. 5.

²⁶³ *Ibid.*

²⁶⁴ *Id.* at pp. 5-6.

²⁶⁵ *Id.* at p. 6.

²⁶⁶ *Ibid.*

²⁶⁷ *Ibid.*

²⁶⁸ PSA at p. 3-16.

²⁶⁹ Clark Comments at p. 6.

unsupported by substantial evidence. The PSA employs a displacement factor of 0.373 metric tons of carbon dioxide equivalent (“MTCO₂e”) per megawatt-hour (“MWh”) to estimate the emissions avoided by the Project’s electricity production.²⁷⁰ This figure is derived from a CO₂ 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.²⁷¹ According to the report, the CO₂ emissions factor was based on data from Commission siting cases.²⁷²

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, the IID, the primary electricity supplier for the Project area, reported a GHG intensity of 585 lbs CO₂e/MWh.²⁷³ This translates to 0.2655 MTCO₂e/MWh, substantially lower than the PSA’s displacement factor.²⁷⁴ The IID GHG emission intensity reflects the real-time mix of emission generators that are being displaced by renewable energy production.²⁷⁵ This leads to a precise calculation of avoided emissions based on actual grid dynamics, which can vary throughout the day and across seasons.²⁷⁶ Using IID’s GHG intensity, the 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.²⁷⁷ 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.²⁷⁸ Applying the statewide average would yield even lower avoided

²⁷⁰ PSA at p. 5.3-11.

²⁷¹ *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>.

²⁷² *Id.* at p. B-22.

²⁷³ Shukla Comments at p. 5; 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>.

²⁷⁴ Shukla Comments at p. 5.

²⁷⁵ *Id.* at p. 3.

²⁷⁶ *Ibid.*

²⁷⁷ IID 2022 PCL.

²⁷⁸ Shukla Comments at p. 3-4.

emissions than the IID average, reinforcing that the PSA's displacement factor is excessively high.²⁷⁹

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.²⁸⁰ The PSA calculates that the Project's facility-wide annual GHG emissions are 66,227 MTCO_{2e}/yr, which includes both operational emissions and one-time construction amortized over the Project's 30-year lifespan.²⁸¹ The PSA also considers the amount of GHG emissions that would be avoided by producing electricity via this renewable resource.²⁸² Specifically, the PSA multiplies the annual MWh produced by the Project (1,226,400) by an avoided emissions displacement factor of 0.373 MTCO_{2e} MWh/yr, resulting in an avoidance of over 457,000 MTCO_{2e}/yr.²⁸³ Consequently, the PSA concludes that the total net emissions are 390,773 MTCO_{2e}/yr.²⁸⁴

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.²⁸⁵ State policy mandates that eligible renewable energy resources and zero-carbon resources supply 90% of all retail sales of electricity to California end-use customers by the end of 2035, 95% by 2040, and 100% by 2045.²⁸⁶ 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.²⁸⁷ Additionally, as the state progresses towards its

²⁷⁹ *Id.* at p. 2-4.

²⁸⁰ PSA at p. 5.3-9.

²⁸¹ *Id.* at p. 5.3-10.

²⁸² *Id.* at pp. 5.3-10 to 5.3-11.

²⁸³ *Ibid.*

²⁸⁴ *Id.* at p. 5.3-10.

²⁸⁵ Shukla Comments at pp. 3-5.

²⁸⁶ Senate Bill 100, De Leon, Chapter 312, Statutes of 2018; Executive Order B-55-18.

²⁸⁷ Shukla Comments at p. 5.

renewable energy goal, avoided emissions would proportionately decrease, further diminishing the Project's effectiveness in reducing GHG emissions.²⁸⁸

Therefore, the PSA's conclusion that the Project would have a net positive impact on GHG emission is misleading. A more 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 analysis to calculate the Project's lifetime GHG emissions consistent with state policy to achieve zero-carbon by 2045.²⁸⁹ 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 2,649,080 MTCO_{2e}.²⁹⁰ Over the Project's 40-year lifespan, it would emit approximately 705,414 MTCO_{2e} more than it offset.²⁹¹

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 emissions are 2,649,080 MTCO_{2e}.²⁹² Over the Project's 40-year lifespan, it would emit approximately 1,208,714 MTCO_{2e} more than it offset.²⁹³ Both scenarios show a net increase in GHG emissions over the Project's lifespan.²⁹⁴

Dr. Shukla's analysis of lifetime GHG emissions demonstrates that the Project would result in a potentially significant GHG impact. Dr. Shukla recommends that the PSA identify mitigation measures to reduce this potentially significant impact, such as those disclosed the 2008 Technical Advisory issued by the Governor's Office of Planning and Research and the California Air Pollution Control Officers Association's GHG Handbook.

²⁸⁸ *Id.* at pp. 3-5.

²⁸⁹ *Id.* at p. 5-10.

²⁹⁰ *Id.* at p. 8.

²⁹¹ *Ibid.*

²⁹² *Id.* at p. 9.

²⁹³ *Ibid.*

²⁹⁴ *Ibid.*

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.²⁹⁵ Radon exposure poses significant health risks due to its radioactive nature.²⁹⁶ 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.²⁹⁷ According to the EPA, radon is the number one cause of lung cancer among non-smokers, and the second leading cause of lung cancer overall.²⁹⁸

The PSA's claim that radon is not a TAC is incorrect.²⁹⁹ The California Air Resources Board ("CARB") designates radon as a TAC pursuant to Health & Safety Code § 39657.³⁰⁰ 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.³⁰¹ 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,³⁰² and reported in units of Curies per year (for annual average emissions) and in units of milliCuries per hour (for maximum hourly emissions).³⁰³ 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 ("MEIR") fall within existing background levels of radon in the air in California.³⁰⁴ This reliance on statewide background concentrations is misplaced.³⁰⁵ As a threshold matter, the PSA fails to establish the specific baseline levels of radon in

²⁹⁵ Clark Comments at p. 6.

²⁹⁶ *Ibid.*

²⁹⁷ *Ibid.*

²⁹⁸ *Ibid.*

²⁹⁹ PSA at p. 5.10-23.

³⁰⁰ 17 Cal. Code Regs. § 93001.

³⁰¹ PSA at p. 5.10-23.

³⁰² 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/crn/2015gmappendicesaf.pdf>.

³⁰³ *Id.* at p. A-35.

³⁰⁴ PSA at p.

³⁰⁵ Clark Comments at pp. 6-7; Shukla Comments at pp. 25-26.

the Project area.³⁰⁶ 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 1,000,000.³⁰⁷ 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.³⁰⁸

Additionally, AQ-57 mandates that the Project test for radon in the first year of operation and every four years thereafter.³⁰⁹ This is in line with nearby geothermal facilities that periodically test for radon.³¹⁰ 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.³¹¹ 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.³¹²

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.³¹³ It asserts that cumulative public health impacts are typically not significant unless the emitting sources are extremely close to each other.³¹⁴ Despite identifying the J.J. Elmore geothermal powerplant located immediately south of the Project site, the PSA concludes the proposed Project would not contribute to cumulative public health impacts.³¹⁵ This conclusion is flawed and lacks substantial evidence.

³⁰⁶ Shukla Comments at p. 26.

³⁰⁷ Clark Comments at p. 7.

³⁰⁸ *Ibid.*

³⁰⁹ PSA at p. 5.1-60 to 5.1-61.

³¹⁰ Clark Comments at p. 7.

³¹¹ *Ibid.*

³¹² Shukla Comments at pp. 26-27.

³¹³ PSA at p. 5.10-32 to 5.10-33.

³¹⁴ *Id.* at p. 5.10-32.

³¹⁵ *Id.* at p. 5.10-33.

Given the proximity of J.J. Elmore, it is critical to assess the combined emissions from both the existing and proposed projects.³¹⁶ 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.³¹⁷ 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.³¹⁸

Moreover, the exclusion of existing facilities from a more detailed cumulative impact assessment is inconsistent with EPA guidance on air quality modeling.³¹⁹ 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.³²⁰ 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.³²¹

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.³²² 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.³²³ At the bare minimum, the air quality model should include emissions from the JJ Elmore geothermal power plant.³²⁴ 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 proposed Project.³²⁵ Detailed inventories of these facilities emissions can be found in their ICAPCD-issued permits.³²⁶

³¹⁶ Shukla Comments at pp. 13-16, 21-24.

³¹⁷ *Ibid.*

³¹⁸ *Ibid.*

³¹⁹ *Id.* at p. 21.

³²⁰ 40 C.F.R. Pt. 51, App. W § 8.3.1.i., 8.3.1.3.

³²¹ *Id.* § 8.3.1.3.a.

³²² *Id.* § 8.3.3.b.iii.

³²³ Shukla Comments at pp. 21-22.

³²⁴ *Ibid.*

³²⁵ *Id.*

³²⁶ **Attachment G**, Authority to Construct/Permit to Operate Permits Issued by the Imperial County Air Pollution Control District for J.J. Elmore Geothermal Power Plant (1996).

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.³²⁷ 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.³²⁸ Activities such as agricultural operations, dust storms or earthquakes can release these spores into the air.³²⁹ The disease is endemic (native and common) to semiarid regions of the United States, including Imperial County.³³⁰

The PSA acknowledges that Project construction could expose workers and the public to the risk of Valley Fever.³³¹ 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.³³² As a result, the PSA finds the impact to be less than significant.³³³

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.³³⁴ Research has shown that large-scale

³²⁷ Shukla Comments at pp. 21-23.

³²⁸ PSA at p. 5.10-6.

³²⁹ Clark Comments at p. 8.

³³⁰ *Ibid.*

³³¹ PSA at p. 5.10-20.

³³² *Id.* at p. 5.10-21.

³³³ *Id.* at p. 5.10-16.

³³⁴ Clark Comments at p. 8.

renewable energy construction projects increase the incidence rate for Valley Fever proportionally to the number of disturbed soil acres.³³⁵ The PSA does not specify the exact amount of soil to be distributed during Project construction, stating only that construction would disturb a certain percentage of approximately 3 acres of topsoil.³³⁶ 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.³³⁷ AQ-SC4 mandates monitoring for visible dust plumes and implementation of additional mitigation measures.³³⁸

Valley Fever spores are small, have slow settling rates, and can remain airborne for long periods, traveling significant distance.³³⁹ 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.³⁴⁰ 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.³⁴¹ These measures fall short in protecting against Valley Fever.

Given these deficiencies, the PSA lacks substantial evidence to conclude Valley 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.³⁴²

³³⁵ *Id.* at pp. 8-9.

³³⁶ PSA at p. 5.10-20.

³³⁷ *Id.* at pp. 5.1-39 to 5.1-41.

³³⁸ *Id.* at p. 5.1-41.

³³⁹ Clark Comments at p. 10.

³⁴⁰ *Ibid.*

³⁴¹ *Ibid.*

³⁴² *Id.* at pp. 10-12.

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.”³⁴³ The AFC estimates that approximately 5% of the filter cake will be characterized as hazardous for this reason.³⁴⁴

“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 Class II regulated landfill.”³⁴⁵ “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.”³⁴⁶

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.³⁴⁷ 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.”³⁴⁸ However, the PSA fails to provide critical information about which facilities have

³⁴³ *Id.* at p. 5.7-17.

³⁴⁴ AFC at p. 5.14-4.

³⁴⁵ TN # 254004, Preliminary Decision of Compliance (PDOC) Elmore North (Jan. 19, 2024) p. 5.

³⁴⁶ PSA at p. 5.7-17.

³⁴⁷ *Id.* at p. 5.7-27.

³⁴⁸ *Id.* at p. 3-14.

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.³⁴⁹ While the PSA specifies that the Desert Valley Company Monofill (“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.³⁵⁰

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. 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.³⁵¹ 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 that are not analyzed in the Staff Assessment.”³⁵² 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.³⁵³ 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.³⁵⁴

The PSA must be revised to provide detailed information regarding the disposal and/or recycling of the Project’s hazardous waste generated during

³⁴⁹ AFC at p. 2-30, 5.14-4.

³⁵⁰ PSA at p. 5.12-2.

³⁵¹ 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>.

³⁵² Clark Comments at p. 14; Shukla Comments at pp. 33-34.

³⁵³ Shukla Comments at pp. 33-34.

³⁵⁴ See County of Imperial, Hell’s Kitchen PowerCo 1 and LithiumCo 1 Project Findings of Fact, Statement of Overriding Considerations (Dec. 2023) p. 35.

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.”³⁵⁵ However, the PSA improperly limits the geographic scope of the cumulative impacts by restricting the analysis “to the immediate vicinity surrounding the project.”³⁵⁶ The PSA lacks substantial evidence to support the conclusion that “there are no projects with the potential to combine cumulatively with the project relative to” “the generation and haul away of hazardous waste”³⁵⁷

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.³⁵⁸ 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.”³⁵⁹ According to the AFC, approximately 1,300 tons of hazardous filter cake

³⁵⁵ PSA at pp. 5.7-25 to 5.7-26.

³⁵⁶ *Id.* at p. 5.7-12.

³⁵⁷ *Id.* at pp. 5.7-12; 5.7-26.

³⁵⁸ See, e.g., County of Imperial, *Draft Environmental Impact Report for the Energy Source Mineral ATLiS Project* at p. 4.7-13 (June 2021).

³⁵⁹ PSA at p. 5.12-1.

and 24,000 tons of nonhazardous filter cake will be generated each year by the Project.³⁶⁰ The largest nonhazardous waste stream will be filter cake generated during operations.³⁶¹ The PSA states that, as a “goal,” 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.³⁶²

The PSA specifies that the filter cake generated during Project operation would be transported to the DVCM Class II facility located in Brawley, California.³⁶³ 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.³⁶⁴ As of January 2022, the last active cell had a remaining capacity of 1.3 million cubic yards.³⁶⁵ However, in January 2022, Imperial County approved an expansion of the landfill to a capacity of 2.6 million cubic yards.³⁶⁶

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

³⁶⁰ AFC at p. 2-30.

³⁶¹ PSA at p. 3-14.

³⁶² *Ibid.*; *see also* PSA at p. 5.7-17.

³⁶³ *Id.* at p. 5.12-2.

³⁶⁴ *Ibid.*

³⁶⁵ *Ibid.*

³⁶⁶ County of Imperial, Agenda (Jan. 25, 2022), *available at* https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.

approximately 62,000 tons.³⁶⁷ The 2022 annual tonnage noted for the DVCM facility was 44,424 tons.³⁶⁸ This indicates that the cumulative geothermal filter cake tonnage would exceed the annual 2022 capacity of the DVCM.³⁶⁹ Moreover, the DVCM is projected to reach capacity in 2025.³⁷⁰

Although the Imperial County Board of Supervisors approved the expansion of the DVCM landfill capacity on January 25, 2022,³⁷¹ it is planned for two (2) phases.³⁷² According to the EIR for the expansion project, Phase 1 (Cell 4A) would take approximately 12 months to complete, with construction assumed to start in 2023.³⁷³ 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.³⁷⁴ 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.³⁷⁵ 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.³⁷⁶ 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

³⁶⁷ PSA at p. 5.12-6.

³⁶⁸ *Ibid.*

³⁶⁹ *Ibid.*

³⁷⁰ *Id.* at p. 5.12-2.

³⁷¹ County of Imperial, Agenda (Jan. 25, 2022), *available at*

https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.

³⁷² 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 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 page 5.12-5.

³⁷³ *Ibid.*

³⁷⁴ *Ibid.*

³⁷⁵ PSA at p. 5.12-6.

³⁷⁶ *Ibid.*

volume would create a significant impact on the disposal facility and the surrounding environment.³⁷⁷

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.”³⁷⁸ The impacts analysis in an EIR must disclose the “analytic route the ... agency traveled from evidence to action.”³⁷⁹ “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.”³⁸⁰ The agency cannot cede all responsibility for assessing impacts to the project proponent.³⁸¹

Based on the information in the PSA, the three geothermal projects, once operational, will ***immediately*** exceed the capacity of the DVCN existing facility. The DVCN 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.’³⁸² The Copper Mountain Landfill is approximately 130 miles from the Project site, compared to the DVCN 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

³⁷⁷ *Id.* at p. 5.12-8.

³⁷⁸ 14 Cal. Code Regs. § 15151.

³⁷⁹ *Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515.

³⁸⁰ *Sierra Club v. Cnty. of Fresno* (2018) 6 Cal.5th 502, 514.

³⁸¹ *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).

³⁸² 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.

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.”³⁸³ 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.

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.³⁸⁴ However, in 2022, the DVCM’s annual tonnage was 44,424 tons,³⁸⁵ 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.”³⁸⁶

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.”³⁸⁷ This conclusion is unsupported because

³⁸³ *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.

³⁸⁴ PSA at p. 5.12-6.

³⁸⁵ *Ibid.*

³⁸⁶ *Ibid.*

³⁸⁷ *Ibid.*

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 comments above regarding the PSA's inadequate cumulative impact analysis, 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 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.³⁸⁸ 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.³⁸⁹ Additionally, the PSA excludes all truck trips generated by delivery, haul, and maintenance

³⁸⁸ PSA at p. 5.14-13.

³⁸⁹ *Ibid.*

trucks from the VMT analysis, claiming these trips would occur during off-peak hours.³⁹⁰ 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.³⁹¹ The data request responses briefly mention carpooling for construction trips, but do not address remote work or expected absences.³⁹² Additionally, the PSA's reference to construction activities when justifying the 15% discount is confusing and irrelevant.³⁹³

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.³⁹⁴ 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 110.³⁹⁵ 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 on-road passenger vehicles, including cars and light duty trucks.³⁹⁶ According to the air quality spreadsheets, 66% of the delivery, haul, and maintenance trucks are light-duty.³⁹⁷ 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 110.³⁹⁸

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

³⁹⁰ *Ibid.*

³⁹¹ See AFC at pp. 5.12-11 to 5.12-13; TN # 252490-1, Elmore North Geothermal Project Data Request Responses Set 1 Part 1 (Oct. 3, 2023) p. 10-1.

³⁹² TN # 252490-1 at p. 10-1.

³⁹³ PSA at p. 5.14-13.

³⁹⁴ Pub. Res. Code § 21099.

³⁹⁵ PSA at p. 5.14-7.

³⁹⁶ 14 Cal. Code Regs. § 15064.3(a).

³⁹⁷ TN # 253218, Elmore North Geothermal Project Air Quality Operational Emissions Spreadsheet (Nov. 17, 2023) (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).

³⁹⁸ PSA at pp. 5.14-6 to 5.14-7, 5.14-14.

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.³⁹⁹

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

To evaluate whether the Project's VMT impacts are significant, the PSA utilizes the Office of Planning and Research's ("OPR") screening threshold of 110 daily trips.⁴⁰⁰ A lead agency's choice of appropriate thresholds of significance must be "based to the extent possible on scientific and factual data."⁴⁰¹ While lead agencies have discretion to use thresholds of significance recommended by other public agencies, the decision must be supported by substantial evidence.⁴⁰² 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.⁴⁰³ 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 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.⁴⁰⁴ 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.

³⁹⁹ 14 Cal. Code Regs. § 15088.5(a); *Laurel Heights Improvement Ass'n v. Regents of Cal.* (1993) 6 Cal.4th 1112.

⁴⁰⁰ PSA at p. 5.14-6 to 5.14-7.

⁴⁰¹ 14 Cal. Code Regs. § 15064(b)(1).

⁴⁰² *Id.* § 15064.7(c).

⁴⁰³ 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.

⁴⁰⁴ *Id.* at p. 12, fn. 19.

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 Morton Bay 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.⁴⁰⁵ The asthma burden is in the 99th percentile in census tract 06025010200, which includes “disadvantaged communities” in the Project's 6-mile radius.⁴⁰⁶ The construction and operation of lithium and geothermal facilities in Imperial Valley could further degrade air quality through emissions of PM, GHGs, and hydrogen chloride.⁴⁰⁷ It is vital that the PSA analyze the cumulative impacts as “Lithium Valley” is developed, considering emissions from vehicle trips, battery plants, and other associated infrastructure.⁴⁰⁸

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.⁴⁰⁹ The Project will only exacerbate existing environmental justice impacts. Given this context, the

⁴⁰⁵ California Environmental Protection Agency, CalEnviroScreen 4.0 2021.

⁴⁰⁶ PSA at p. 6-10.

⁴⁰⁷ Earthworks & Comité 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>).

⁴⁰⁸ *Ibid.*

⁴⁰⁹ 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>.

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."⁴¹⁰ 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.⁴¹¹

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.⁴¹² 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 PM_{2.5} concentrations, would exceed 9.0 µg/m³.⁴¹³ Additionally, project operation, in combination with background concentrations, would also exceed this standard.⁴¹⁴ The Project would therefore: 1) cause or contribute to exceedances of health-based ambient air quality standards; and 2) cause disproportionate air quality and public health impacts on sensitive populations, resulting in significant environmental justice impacts.⁴¹⁵

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,⁴¹⁶ 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-

⁴¹⁰ PSA at p. 6-11.

⁴¹¹ Clark Comments at p. 3, 13.

⁴¹² PSA at p. 6-11.

⁴¹³ *Id.* at p. 5.1-24.

⁴¹⁴ *Id.* at p. 5.1-27.

⁴¹⁵ Clark Comments at p. 3, 13.

⁴¹⁶ PSA at p. 5.10-20.

SC3 and AQ-SC4), which are expected to minimize the risk of exposure to workers and the public.⁴¹⁷ 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.⁴¹⁸ 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.⁴¹⁹

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.⁴²⁰ Labor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations.⁴²¹ Many construction workers in California come from disadvantaged communities.⁴²²

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.⁴²³ Desert winds can raise significant amounts of dust, even when conventional dust control methods are used, often prompting alerts from air pollution control districts.⁴²⁴ 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 PM₁₀, PM_{2.5}, and associated Valley Fever spores would be released.⁴²⁵

Many of the Project components are in the vicinity of sensitive receptors, including residential areas, resulting in significant public health impacts. Valley

⁴¹⁷ PSA at p. 5.10-21.

⁴¹⁸ Clark Comments at pp. 7-8.

⁴¹⁹ *Id.* at p. 8.

⁴²⁰ *Ibid.*

⁴²¹ *Ibid.*

⁴²² 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).

⁴²³ Clark Comments at p. 10.

⁴²⁴ *Id.* at pp. 9-10.

⁴²⁵ *Ibid.*

fever spores can be carried on the winds into surrounding areas.⁴²⁶ Valley Fever spores, for example, have been documented to travel as much as 500 miles.⁴²⁷ 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.”⁴²⁸ 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 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 these issues comprehensively, supported by robust and effective mitigation strategies.

⁴²⁶ Clark Comments at p. 7-10.

⁴²⁷ Filip, Valley Fever Epidemic, Golden Phoenix Books (2008) p. 24.

⁴²⁸ 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.

WATER RESOURCES

Water supply within IID's service area is facing "unprecedented conditions"⁴²⁹ 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."⁴³⁰

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."⁴³¹ "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."⁴³²

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."⁴³³ 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 adversely affect IID's ability to provide water to other users in IID's water service area unless mitigation is incorporated."⁴³⁴

⁴²⁹ 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>.

⁴³⁰ 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>.

⁴³¹ Imperial Irrigation District, Municipal, Industrial and Commercial Customers, <https://www.iid.com/water/municipal-industrial-and-commercial-customers> (last updated Feb. 1, 2023).

⁴³² *Ibid.*

⁴³³ PSA at pp. 5.16-7, 5.16-13 (internal citations omitted).

⁴³⁴ WSA at p. iii.

According to the AFC, “Project operations require approximately 6,480 afy of water when operating at full plant load for uses including cooling tower makeup, plant wash down, and RO for potable use.”⁴³⁵ Additional IID canal freshwater will be required for startup, fire protection, and maintenance.⁴³⁶ “Approximately 50% of the operational water required by the facility will be generated by steam condensed in the main condenser.”⁴³⁷

The Project’s operational water demand of approximately 6,480 AFY represents:

- 34.8% of the unallocated supply available for additional conservation and contracting under the IWSP for non-agricultural projects;
- 3.2% of forecasted future non-agricultural water demands planned in the Imperial IRWMP through 2055;
- 1,061% increase from the 10-year average historic average agricultural water use for 2013-2022 at the Project site, an increase in water use of 5,922 AFY at full build-out.⁴³⁸

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 ENGP] use[s] more water per MW than the range reported in the 2012 IRWMP.**”⁴³⁹

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 only half of the Project’s operational life is evaluated. Second, the estimated volume of freshwater for the cooling tower is not adequately supported in the WSA. Third, the WSA and PSA must disclose and analyze the sources of water for the Project. Fourth, the Project may significantly increase flood risks, which requires thorough analysis and mitigation. Fifth, the PSA improperly omits an analysis of the revised design of the brine pond. Sixth, the evaluation of long-term

⁴³⁵ AFC at p. 5.15-13.

⁴³⁶ 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>.

⁴³⁷ WSA at p. 7-1.

⁴³⁸ WSA at p. 10-1.

⁴³⁹ LBNL Report at p. 90.

Colorado River water supplies is not adequate, failing to show that the Project's long-term water demands will be met. Seventh, the PSA omits necessary information regarding the Project's operational water use efficiency. Eighth, the cumulative impacts analysis on water supply and the Salton Sea is deficient. Ninth, 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.⁴⁴⁰ 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.⁴⁴¹ 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."⁴⁴² The Applicant rejected staff's request, explaining that "[t]he planning period for the WSA, as stipulated in Senate Bill 610, is 20 years."⁴⁴³

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.⁴⁴⁴ Additionally, the Commission and 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

⁴⁴⁰ Parker Comments at p. 3-4.

⁴⁴¹ PSA at p. 3-27; WSA at p. iii.

⁴⁴² TN # 254505, Data Response Set 4 (Responses to Data Requests 1 to 43) (Feb. 16, 2024) p. 19.

⁴⁴³ *Ibid.*

⁴⁴⁴ 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.").

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.**⁴⁴⁵ 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.⁴⁴⁶

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 6,480 acre-feet per year at design conditions, which is approximately 50% of the total facility water needs.”⁴⁴⁷ “Approximately 50% of the operational water required by the facility will be generated by steam condensed in the main condenser.”⁴⁴⁸ For the cooling tower, the Project proposes to use mostly “condensate for makeup water and will only be relying on IID water [] when evaporation is high.”⁴⁴⁹ The WSA estimates that the cooling tower will require a total of 1,142 AFY of raw water.⁴⁵⁰

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

⁴⁴⁵ WSA at p. 9-2 (emphasis added).

⁴⁴⁶ 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>.

⁴⁴⁷ AFC at p. 5.15-9.

⁴⁴⁸ *Ibid.*

⁴⁴⁹ WSA at p. 1-2.

⁴⁵⁰ *Id.* at p. 7-1.

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.⁴⁵¹ 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.”⁴⁵² 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.⁴⁵³ 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 rates⁴⁵⁴ and/or the IWSP for Non-Agricultural Projects.⁴⁵⁵ 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.⁴⁵⁶ 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.⁴⁵⁷ 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,....”⁴⁵⁸

⁴⁵¹ *Id.* at p. 1-2; PSA at p. 3-13.

⁴⁵² PSA, appen. C at p. 1.

⁴⁵³ Parker Comments at p. 9.

⁴⁵⁴ Imperial Irrigation District, Water Rates: Schedule No. 7 (effective August 1, 2009), *available at* <https://www.iid.com/home/showdocument?id=4317>.

⁴⁵⁵ WSA at p. 6-1.

⁴⁵⁶ *Id.* at pp. 6-1, 8-4, 9-2.

⁴⁵⁷ *Id.* at p. 6-1.

⁴⁵⁸ *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, ENGP would seek additional water through IID's Clearinghouse, consistent with any contractual requirements or limitations."⁴⁵⁹ 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.⁴⁶⁰ 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."⁴⁶¹ 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."⁴⁶²

D. The Project May Significantly Increase Flood Risks

Flooding at and around the Project's production wells, well pads, and pipelines may be significant, yet these impacts are not adequately analyzed and mitigated in the PSA. The Applicant is requesting a Letter of Map Revision

⁴⁵⁹ *Id.* at p. 1-2; Parker Comments at p. 9.

⁴⁶⁰ *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 430-32.

⁴⁶¹ Imperial Irrigation District, Equitable Distribution Plan (July 26, 2023) pp. 7-8, *available at* <https://www.iid.com/home/showpublisheddocument/20254/638313266942930000>.

⁴⁶² Parker Comments at p. 9.

(“LOMR”) from the Federal Emergency Management Agency (“FEMA”) to remap the floodplain area.⁴⁶³ Several of the Project’s proposed production wells, well pads, and pipelines are currently within a FEMA Zone A, 100-year flood zone as generally indicated on the map below in the red circle.⁴⁶⁴ “Flood hazard areas identified on the [FEMA] Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are [labeled as “Zone A,” in relevant part, and] defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year.”⁴⁶⁵



These Project features will remain in the mapped FEMA 100-year floodplain even if the Applicant’s LOMR request is approved and this development would increase impervious surfaces in an area with high flood risks, thus exacerbating

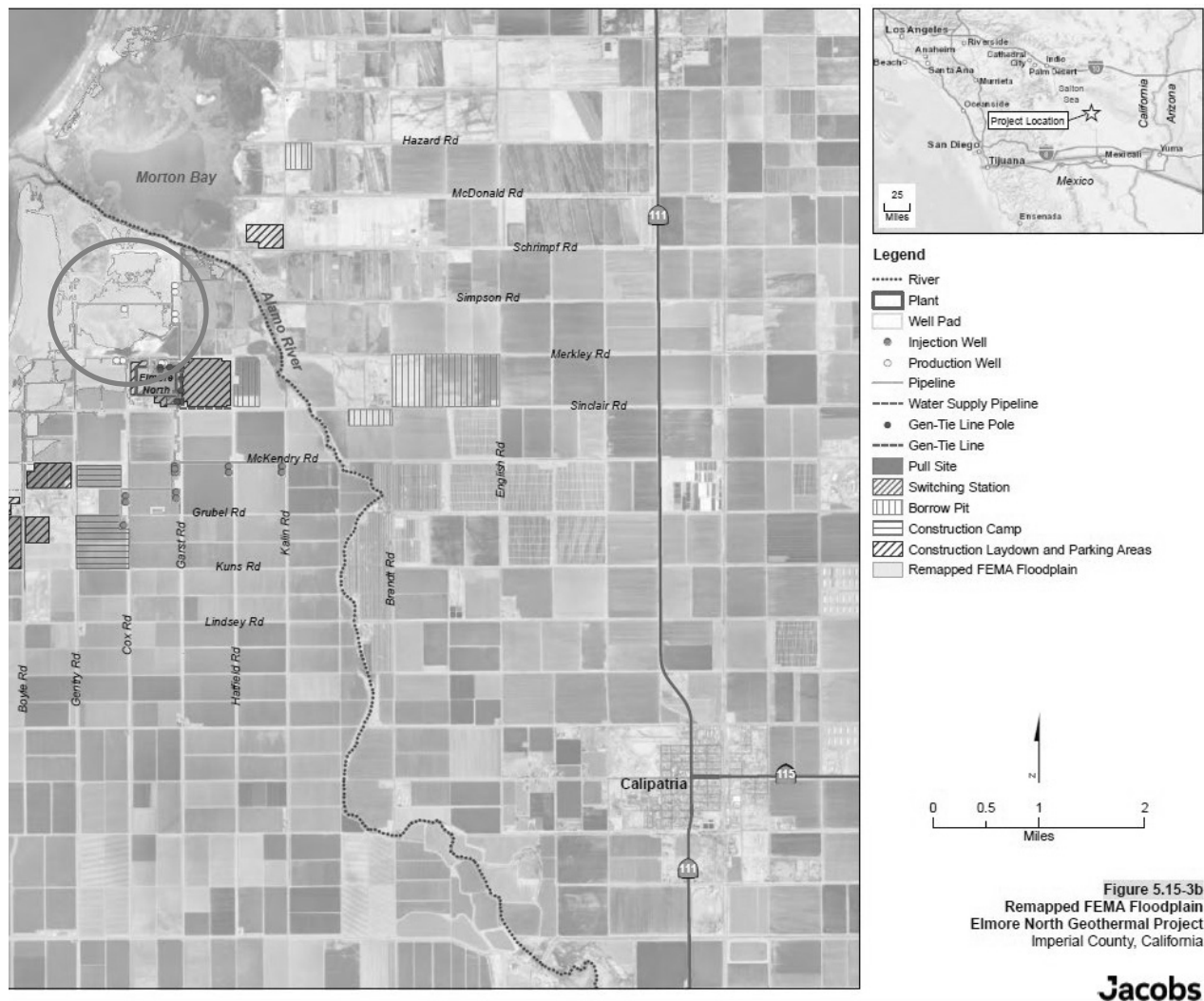
⁴⁶³ PSA at p. 2-38.

⁴⁶⁴ Federal Emergency Management Agency, FEMA Flood Map Service Center: Search By Address, <https://msc.fema.gov/portal/search?AddressQuery=sonny%20bono%20sea%20national%20wildlife%20refuge> (last visited July 29, 2024) (hereinafter “FEMA Flood Map Service Center”).

⁴⁶⁵ Federal Emergency Management Agency, Flood Zones, <https://www.fema.gov/glossary/flood-zones> (last updated July 8, 2020).

⁴⁶⁶ See FEMA Flood Map Service Center.

existing conditions.⁴⁶⁷ The overlap between these Project components and the remapped FEMA floodplain is shown in the red circle on the below map.⁴⁶⁸



Moreover, the AFC analyzes the soils on the Project site and found that these areas “will be located in poorly drained soils.”⁴⁶⁹ The AFC concludes that “[t]his area is poorly suited to urban development because of the high water table, *flood*

⁴⁶⁷ AFC, Figure 5.15-3b. See *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 388 (upheld as a reasonable construction of CEQA certain portions of CEQA Guidelines section 15126.2(a) “to the extent they call for evaluating a project’s potentially significant exacerbating effects on existing environmental hazards – effects that arise because the project brings ‘development and people into the area affected.’”).

⁴⁶⁸ *Ibid.*

⁴⁶⁹ AFC at p. 5.11-15; see also Malama Comments at p. 2.

hazard, and salinity.”⁴⁷⁰ The determination in the AFC is consistent with Dr. Malama’s finding that the Project’s production wells and well pads “would be located in areas dominated by poorly drained soils with high flood risk.”⁴⁷¹ Dr. Malama explains that flood hazards in this area are high “because of (1) shallow groundwater, which means the surface water has nowhere to go if it infiltrates, and (2) clayey soils with low infiltration rates, meaning surface water cannot infiltrate fast enough before ponding (and flooding) happens at the surface.”⁴⁷² Additionally, Dr. Malama comments that because the groundwater recharge is very slow, according to the PSA, risks of surface inundation and flooding would be “exacerbate[d] ... because of increased potential for surface water ponding due to limited infiltration.”⁴⁷³ Dr Malama concludes that “[t]he construction of new, additional impervious surfaces (e.g., Project well pads) in areas of high flood risk would increase the impacts from flooding.”⁴⁷⁴

The PSA defers formulation of mitigation measures until recommendations are made in the geotechnical report, once finalized.⁴⁷⁵ It is unlikely that the final geotechnical report will provide the requisite analysis or mitigation for flood hazards around these wells, well pads, and pipelines because the preliminary geotechnical report in AFC Appendix 5.4 limited the analysis to “selected locations” at the plant site.⁴⁷⁶ The at-issue wells, well pads, and pipelines are in a different area within the Project site and therefore are not evaluated in the geotechnical report. The flood risks in these areas remain potentially significant and unmitigated.

Finally, the PSA states that “to protect the power plant site from flooding, a berm would be constructed and be of adequate height, according to Imperial County requirements, to provide flood protection based on the request for base flood determination, submitted to Imperial County and FEMA.”⁴⁷⁷ However, the Project’s production wells, well pads, and pipelines are located outside of the proposed berm and thus “there is no mitigation proposed for significant impacts from flooding in these areas,” according to Dr. Malama.⁴⁷⁸ Dr. Malama recommends engineering controls to mitigate flood risks in these areas.⁴⁷⁹

⁴⁷⁰ *Ibid.* (emphasis added).

⁴⁷¹ Malama Comments at p. 2.

⁴⁷² *Ibid.*

⁴⁷³ *Ibid.*

⁴⁷⁴ *Ibid.*

⁴⁷⁵ *Ibid.*

⁴⁷⁶ AFC, appen. 5.4 at p. 1.

⁴⁷⁷ PSA at p. 5.16-3.

⁴⁷⁸ AFC at p. 5.11-15; Malama Comments at p. 2.

⁴⁷⁹ Malama Comments at p. 2.

For the foregoing reasons, the PSA must be revised to adequately analyze the flood hazards and mitigate any significant impacts. As discussed by Mr. Parker, the revised analysis must not solely rely on stationarity to predict future storm and flood events.⁴⁸⁰ Mr. Parker recommends that future climate scenarios be incorporated into the analysis to better predict extreme hydrologic variability.⁴⁸¹ 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....”⁴⁸² Mr. Parker recommends that future climate scenarios be incorporated into the analysis to better predict extreme hydrologic variability.⁴⁸³

E. 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.⁴⁸⁴ 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.⁴⁸⁵ 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.”⁴⁸⁶

F. 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.⁴⁸⁷ 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.⁴⁸⁸ 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

⁴⁸⁰ Parker Comments at pp. 5-6.

⁴⁸¹ *Id.* at p. 5.

⁴⁸² *Ibid.*

⁴⁸³ *Id.* at p. 6.

⁴⁸⁴ PSA at p. 5.16-18.

⁴⁸⁵ Parker Comments at p. 6.

⁴⁸⁶ *Ibid.*

⁴⁸⁷ WSA at p. 10-1.

⁴⁸⁸ *Id.* at p. 3-1; Parker Comments at p. 4.

the Colorado River water supply.”⁴⁸⁹ 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.⁴⁹⁰

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.”⁴⁹¹ The water volumes included in Table 11 “assume[] full use of IID’s quantified water supply,....”⁴⁹² 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.”⁴⁹³ “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.”⁴⁹⁴

The WSA identifies at least two scenarios that may result in reductions to the total water available to the Project.⁴⁹⁵ First, the WSA explains that “[n]ew, non-agricultural projects may be susceptible to delivery cutbacks when an EDP Apportionment is exhausted,....”⁴⁹⁶ 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, are increasingly likely.”⁴⁹⁷ 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.”⁴⁹⁸ 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.”⁴⁹⁹

Mr. Parker’s comments provide substantial evidence demonstrating that IID’s water supply is likely to change significantly, specifically due to reduced

⁴⁸⁹ *Ibid.*

⁴⁹⁰ Parker Comments at p. 3.

⁴⁹¹ WSA at p. 4-1

⁴⁹² *Ibid.*

⁴⁹³ *Id.* at p. 5-1.

⁴⁹⁴ *Id.* at p. 5-5.

⁴⁹⁵ *Id.* at p. 10-1.

⁴⁹⁶ *Ibid.*

⁴⁹⁷ *Ibid.*

⁴⁹⁸ *Ibid.*

⁴⁹⁹ *Ibid.*

Colorado River water availability causing regulatory cuts to IID's full entitlement.⁵⁰⁰ 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...."⁵⁰¹ 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."⁵⁰²

"[I]nstead the PSA and WSA rely on the assumption of stationarity,...."⁵⁰³ 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."⁵⁰⁴ For example, the discussion of "Climate Factors" in the WSA⁵⁰⁵ incorporates monthly mean temperatures from 1924 to 2023.⁵⁰⁶ 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.⁵⁰⁷ 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."⁵⁰⁸ The Applicant responded that "Section 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.⁵⁰⁹

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."⁵¹⁰ 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."⁵¹¹

⁵⁰⁰ See Parker Comments at pp. 2-4.

⁵⁰¹ *Id.* at p. 2.

⁵⁰² *Ibid.*

⁵⁰³ *Ibid.*

⁵⁰⁴ *Ibid.*

⁵⁰⁵ WSA at p. 1-6.

⁵⁰⁶ Parker Comments at p. 2.

⁵⁰⁷ TN 254505 at p. 18.

⁵⁰⁸ *Ibid.*

⁵⁰⁹ *Ibid.*

⁵¹⁰ Parker Comments at p. 3.

⁵¹¹ *Ibid.*

Furthermore, “[s]everal reservoir and water management decisional documents and agreements⁵¹² 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,....”⁵¹³ 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.”⁵¹⁴

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”).⁵¹⁵ 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.”⁵¹⁶ 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.”⁵¹⁷ 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.”⁵¹⁸ Mr. Parker emphasizes that the findings in the DWR Report “underscore[e] the importance of incorporating climatic conditions in water supply reliability assessments.”⁵¹⁹

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.”⁵²⁰ 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.”⁵²¹

⁵¹² “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.*

⁵¹³ *Ibid.*

⁵¹⁴ *Ibid.*

⁵¹⁵ *Ibid.*

⁵¹⁶ *Ibid.*

⁵¹⁷ *Ibid.*

⁵¹⁸ *Id.* at pp. 3-4.

⁵¹⁹ *Id.* at p. 4.

⁵²⁰ *Ibid.*

⁵²¹ *Ibid.*

G. 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.”⁵²² As such, the ENGP, 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 s, the ENGP 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).”⁵²³

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%
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 “ENGP has been designed for optimal water efficiency....”⁵²⁴ Mr. Parker comments that the Applicant’s response suggests “that the Project has maximized its operational water use efficiency.”⁵²⁵ Whether the Project has in fact maximized its operational water use efficiency or if improvements can be made to

⁵²² WSA at p. 1-10.

⁵²³ Parker Comments at p. 10.

⁵²⁴ TN # 254419.

⁵²⁵ Parker Comments at p. 10.

reduce the Project's IID water demands must be evaluated in a revised PSA.⁵²⁶ 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 ENGP as well.

H. 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."⁵²⁷ "Cumulative impacts may result from individually minor but collectively significant projects taking place over a period of time."⁵²⁸ An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable."⁵²⁹ 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."⁵³⁰ An analysis of cumulative impacts should consider all sources of related impacts, not just similar sources or projects.⁵³¹

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.⁵³² Here, however, the PSA fails to adequately identify and analyze the cumulative effects on water supply from other "past, present, and probable future projects,"⁵³³ 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.⁵³⁴

⁵²⁶ *Ibid.*

⁵²⁷ 14 Cal. Code Regs. §15355.

⁵²⁸ *Id.* § 15355(b).

⁵²⁹ *Id.* § 15130(a).

⁵³⁰ *Id.* § 15056(a)(3).

⁵³¹ *Id.* § 15130(a)(1).

⁵³² 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 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.

⁵³³ 14 Cal. Code Regs. § 15130(b)(1)(A).

⁵³⁴ *See* Parker Comments at pp. 6-7.

First, as Mr. Parker discusses, the analysis in the PSA does not evaluate several of the projects identified in the AFC's cumulative impacts analysis for water resources.⁵³⁵ The analysis in the AFC identifies eight projects whereas the discussion in the PSA only considers two projects, i.e., Morton Bay Geothermal Project and Black Rock Geothermal Project, plus the projects covered under the IWSP as of January 2024.⁵³⁶ The deficiencies in the PSA's cumulative impacts analysis addressed in Mr. Parker's comments are also discussed in a letter dated July 23, 2024 from IID to the Commission.⁵³⁷ 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."⁵³⁸ 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 recent correspondence to the Commission.⁵³⁹

Second, Mr. Parker explains that "past, present, and probable future projects" related to lithium extraction must be evaluated in the cumulative impacts analysis for water supply.⁵⁴⁰ 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."⁵⁴¹ "According to the Lithium Valley Commission, proposed lithium production is projected to reach 210,000 metric tons of LCE per year,...."⁵⁴²

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."⁵⁴³ 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."⁵⁴⁴ According to the LBNL report, "[t]he Imperial Valley's Integrated Regional Water Management Plan (IRWMP) projected region-wide water

⁵³⁵ *Ibid.*; AFC at pp. 5.15-17—18.

⁵³⁶ *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. 5.16-14. However, neither document specifies which projects are included in the 6,380 AFY estimate.

⁵³⁷ IID PSA Comments at p. 5.

⁵³⁸ *Ibid.*

⁵³⁹ Parker Comments at p. 7.

⁵⁴⁰ *Ibid.*

⁵⁴¹ *Ibid.*

⁵⁴² Lithium Valley EJ Report at p. 26.

⁵⁴³ LBNL Report at p. 99.

⁵⁴⁴ *Id.* at p. 94.

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.”⁵⁴⁵

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.⁵⁴⁶ He explains that since these plants are operational, their respective “water demands [] should be disclosed and evaluated in the PSA’s cumulative impacts analysis for water resources.”⁵⁴⁷

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.⁵⁴⁸ The LVSP would guide the development of renewable energy sources, including geothermal energy projects.⁵⁴⁹ 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.⁵⁵⁰ 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.⁵⁵¹ 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.

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.⁵⁵² 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

⁵⁴⁵ *Ibid.*

⁵⁴⁶ PSA at p. 5.16-14.

⁵⁴⁷ Parker Comments at p. 7.

⁵⁴⁸ LVSP Baseline Report at p. 5.

⁵⁴⁹ LVSP Initial Study at p. 2.

⁵⁵⁰ PSA at p. 5.16-14.

⁵⁵¹ *Ibid.*

⁵⁵² *Id.* at pp. 5.16-14 to 5.16-15.

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.

I. 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.⁵⁵³ An EIR may find that a project's contribution to a significant cumulative impact will be mitigated through adoption of project-specific mitigation measures.⁵⁵⁴ 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."⁵⁵⁵

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.⁵⁵⁶ 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 environmental impacts and potential increased health impacts from more exposed soils and dust generation,...."⁵⁵⁷ Irrigation water provided through agricultural return flows supplies the Salton Sea such that "[a]ny IID Colorado River supply water taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea...."⁵⁵⁸

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

⁵⁵³ 14 Cal. Code Regs. § 15130(b)(5).

⁵⁵⁴ *Id.* § 15130(a)(3).

⁵⁵⁵ *Id.* § 15126.4(a)(1)(D).

⁵⁵⁶ 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.

⁵⁵⁷ *Ibid.*

⁵⁵⁸ *Id.* at p. 7.

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.⁵⁵⁹

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”).⁵⁶⁰ 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.⁵⁶¹ 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.⁵⁶² Likewise here, the PSA must be revised to include an analysis of the cumulative impacts on the Salton Sea due to decrease to inflow if IID must impose measures to meet non-agricultural water demand.

⁵⁵⁹ LBNL Report at p. 98.

⁵⁶⁰ *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.

⁵⁶¹ *Id.* at p. 1022-23.

⁵⁶² *Ibid.*

IID requested the inclusion of this analysis in a letter dated August 24, 2023, submitted to the Commission in this proceeding.⁵⁶³ 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.”⁵⁶⁴ In its letter dated July 23, 2024 to the Commission regarding comments on the 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 the PSA.⁵⁶⁵ 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.

J. 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 ENGP, are **required** to mitigate their respective water supply demand via conservation programs or conservation projects in order to receive future water apportionments.”⁵⁶⁶ Despite this requirement, the conservation programs or projects proposed to mitigate the water supply demand for this Project are not detailed or analyzed in the PSA or WSA. The PSA must be revised to include and evaluate this information.

⁵⁶³ TN # 251870, 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.

⁵⁶⁴ *Ibid.*

⁵⁶⁵ IID PSA Comments at p. 5.

⁵⁶⁶ WSA at p. 10-1 (emphasis added).

K. 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.”⁵⁶⁷ To mitigate this water loss, the PSA proposes MM WATER-9, which requires the installation of a floating cover over the pond.⁵⁶⁸ 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.⁵⁶⁹

If the floating cover is expected to cause significant environmental effects, the PSA must disclose the impacts.⁵⁷⁰ 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.⁵⁷¹ As numerous courts have held, the impacts of a project must be measured against the “real conditions on the ground.”⁵⁷² The description of the environmental setting constitutes the baseline physical conditions

⁵⁶⁷ PSA at p. 5.16-13.

⁵⁶⁸ *Ibid.*

⁵⁶⁹ Comments by Jerry Salamy, Jacobs, during CEC Workshop, August 1, 2024.

⁵⁷⁰ 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 C.C.R. § 15126.4(a)(1)(D).

⁵⁷¹ 14 Cal. Code Regs. § 15125(a).

⁵⁷² *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.

by which a lead agency may assess the significance of a project's impacts.⁵⁷³ Use of the proper baseline is critical to a meaningful assessment of a project's environmental impacts.⁵⁷⁴ 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.⁵⁷⁵ 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."⁵⁷⁶ "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts ... [U]nsupported opinion or narrative [and] evidence which is clearly inaccurate or erroneous ... is not substantial evidence."⁵⁷⁷

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, Mr. 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."⁵⁷⁸ 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.

⁵⁷³ 14 Cal. Code Regs. § 15125(a).

⁵⁷⁴ *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 320.

⁵⁷⁵ *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.

⁵⁷⁶ 14 Cal. Code Regs. §15384.

⁵⁷⁷ Pub. Res. Code § 21082.2(c).

⁵⁷⁸ Cashen Comments at p. 3; TN # 252553, Data Request Response Set 1 Figure DRR 25 Land Cover and Vegetation Types (Oct. 9, 2023).

2. The PSA Fails to Adequately Analyze the Existing Baseline for Special-Status Plants

The PSA fails to adequately analyze the existing environmental setting with respect to special status plants. It claims that the Applicant’s biologists conducted botanical surveys following California Department of Fish and Wildlife (“CDFW”) and U.S. Fish and Wildlife Service (“USFWS”) protocols.⁵⁷⁹ However, this statement lacks supporting evidence.

The CDFW survey protocol states that a botanical field survey is appropriate when natural (or naturalized) vegetation in a project area may be affected, and it is unknown whether special status plants or sensitive natural communities exist there.⁵⁸⁰

The AFC mentions 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”).⁵⁸¹ When potentially suitable habitat for special-status plants were encountered, botanists conducted surveys in accordance with the CDFW and USFWS protocols. However, this approach suggests that areas with “naturalized” vegetation might not have been surveyed as required by CDFW protocol.⁵⁸² Since the AFC does not specify where botanists conducted protocol-level survey, CURE Data Request 270 asked the Applicant to identify these areas.⁵⁸³

Further, in November 2023, the Applicant revised the boundaries of some Project components, as shown in Figure 1-4R of the Elmore North Geothermal Project Revised General Arrangement Refinement Package.⁵⁸⁴ 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.⁵⁸⁵ This parcel, previously managed as waterfowl habitat (open water) but later drained,⁵⁸⁶ appears to have been colonized by patches of native or naturalized vegetation.⁵⁸⁷ The Yuma Ridgway’s rail survey report that was prepared for the Project describes land cover at the parcel as “comprised of

⁵⁷⁹ PSA at pp. 5.2-5, 5.2-22.

⁵⁸⁰ California Department of Fish and Wildlife, *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (Mar. 2018) p. 4, available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline>.

⁵⁸¹ AFC at p. 5.2-12.

⁵⁸² Cashen Comments at p. 5.

⁵⁸³ TN # 254078, California Unions for Reliable Energy Data Requests Set 4 (Jan. 22, 2024) p. 8.

⁵⁸⁴ TN # 253187, Revised General Arrangement Refinement (Nov. 17, 2023) p. 4.

⁵⁸⁵ *Ibid.*

⁵⁸⁶ Cashen Comments at p. 6.

⁵⁸⁷ *Ibid Id.*

fragmented areas of bare ground and woody shrubs.”⁵⁸⁸ This parcel lies outside of the Project’s BSA and was not surveyed for special-status plants or other sensitive biological resources.⁵⁸⁹ This deficiency significantly affects the PSA’s accuracy in describing the Project’s environmental setting and impacts.⁵⁹⁰ Without adequate surveys for special-status plants and other sensitive biological resources, the Commission lacks substantial evidence to base its findings and conclusions.

The PSA must be revised and recirculated to include comprehensive surveys and analyses of all areas with natural or naturalized vegetation potentially affected by the Project. This revision is essential to provide an accurate description of the Project’s environmental setting and impacts.

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, as it lacks mapping of these resources. In fact, the Applicant did not map any aquatic resources in the proposed disturbance areas.⁵⁹¹ The Applicant’s wetland delineation excluded Red Hill Bay, where 4 well pads and a portion of the pipeline are proposed to be located.⁵⁹² The PSA notes that Commission Staff observed aquatic resources outside the Project area, including an inundated area with patches of cattails on the east side of Garst Road.⁵⁹³ However, neither the PSA nor the Applicant have addressed aquatic resources on the *west side* of Garst Road, in Red Hill Bay.⁵⁹⁴

In 2020, the U.S. Army Corps of Engineers (“USACE”) issued an approved jurisdictional determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area in Red Hill Bay,⁵⁹⁵ delineating several potential jurisdictional aquatic resources.⁵⁹⁶ The Project’s pipeline overlaps feature “PSSW-2.”⁵⁹⁷ Although the USACE determined this feature did not qualify as waters of the

⁵⁸⁸ TN # 251683, Distribution and Occupancy of Yuma Ridgway’s Rails Within Proposed Geothermal Development Areas in Imperial Valley, California (Sept. 7, 2022).

⁵⁸⁹ AFC, Figure 5.3-4.

⁵⁹⁰ Cashen Comments at p. 6.

⁵⁹¹ *Ibid.*

⁵⁹² PSA at pp. 5.2-14 to 5.2-15.

⁵⁹³ *Ibid.*

⁵⁹⁴ Cashen Comments at p. 6.

⁵⁹⁵ U.S. Army Corps of Engineers, Approved Jurisdictional Determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area, File No. SPL-2020-00457 (Oct. 19, 2020).

⁵⁹⁶ Cashen Comments at p. 6.

⁵⁹⁷ *Ibid.*

United States, it likely qualifies as waters of the state due to its wetland hydrology, hydrophytic vegetation, and hydric soils.⁵⁹⁸ The PSA's failure to investigate and disclose the status of the potential jurisdictional aquatic resources in Red Hill Bay is a major omission in the PSA and the Applicant's wetland delineation study.

In addition, portions of the Project's easternmost well pads and associated pipelines appear to overlap with a feature called "Ditch-3."⁵⁹⁹ Despite being artificially created, this feature may qualify as waters of the state because it is over one acre in size and does not appear to have been created for a purpose listed in section II.3.d of the State's wetland definition.⁶⁰⁰

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.

4. The PSA Fails to Establish the Existing Baseline for Special-Status Species Because the PSA Lacks Habitat Mapping for All Affected Areas

The PSA provides that "Habitat, land cover, and vegetation community mapping was conducted within a one-mile radius of the generating facility and within 1,000 feet of the well pads, pipelines, auxiliary features, and linear features, where access was permitted (TN249737)."⁶⁰¹ Similarly, the AFC acknowledges that special-status species within a one-mile buffer of the Project could be impacted by its construction and operation.⁶⁰² However, the specific habitats within this one-mile buffer remain undisclosed.

For example, AFC Figure 5.2-4 only depicts the land cover and vegetation types within the Biological Study Area, which is considerably smaller than the Project's buffer zones.⁶⁰³ The potential for the Project to have significant indirect impacts on special-status species is dependent on the types and configuration of habitats within the one-mile buffer.⁶⁰⁴ Both the PSA and the AFC fail to provide a

⁵⁹⁸ *Ibid.*

⁵⁹⁹ *Ibid.*

⁶⁰⁰ *Ibid.*; State Water Resources Control Board, State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (2021) p. 234 (hereinafter "SWRCB Wetland Policy", *available at* https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf).

⁶⁰¹ PSA at p. 5.2-77.

⁶⁰² AFC at p. 5.2-5.

⁶⁰³ Cashen Comments at p. 7.

⁶⁰⁴ *Ibid.*

map detailing the habitats, land covers, and vegetation communities within the Project's buffer, hindering the assessment of indirect impacts on special-status species.⁶⁰⁵ Without this information, the PSA's conclusions about the potential presence and Project impacts on special status species lacks substantial evidence.

Further, the PSA's omission of habitat descriptions and mapping adjacent to the laydown and parking areas along Severe Road precludes understanding of the special-status species that could inhabit those areas. This, in turn, precludes the ability to assess the adequacy of the PSA's impact analyses and proposed mitigation measures.⁶⁰⁶

The Project also includes several Project components immediately south and west of the Hazard Unit of the Imperial Wildlife Area.⁶⁰⁷ The PSA provides conflicting information about the habitat within the Hazard Unit. The PSA first states: "[o]n the east side of Garst Road, the Hazard Unit is inundated with patches of cattails (*Typha* sp.) scattered throughout the water."⁶⁰⁸ However, it later notes: "[t]he area on the east side of Garst Road was not within the proposed development area and was therefore not assessed for potential [Yuma Ridgway's rail] habitat. This area east of Garst Road consists of the 272-acre Hazard Unit managed by the NWR for waterfowl hunting. In spring and summer 2022, this area had no water, but consisted of large patches of dead cattails."⁶⁰⁹ This information is not supported by substantial evidence. The Hazard Tract is not solely composed of areas with open water and cattails managed for waterfowl hunting; it also includes managed shallow seasonal wetlands, cattail marshes are managed for the Yuma Ridgway's rail, enhanced riparian habitat, and permanent open water wetlands.⁶¹⁰ Hunting is prohibited in several of these areas.⁶¹¹

Similarly, the PSA's failure to describe and map habitats in the Hazard Unit obstructs the understanding of the special-status species that could inhabit these areas.⁶¹² It also precludes the public from understanding which portions of the Hazard Unit are considered "suitable habitat" for the Yuma Ridgway's rail. This is

⁶⁰⁵ *Ibid.*

⁶⁰⁶ *Id.* at p. 6.

⁶⁰⁷ PSA, Figure 3-3.

⁶⁰⁸ PSA at pp. 5.2-11 to 5.2-12.

⁶⁰⁹ *Id.* at p. 5.2-79 (internal citation omitted).

⁶¹⁰ Cashen Comments at p. 7; U.S. Fish and Wildlife Service, Final Comprehensive Conservation Plan for the Sonny Bono Salton Sea NWR and Coachella Valley NWR (Mar. 2016) p. 3-45 (Figure 3-3), available at <https://ecos.fws.gov/ServCat/DownloadFile/215082>.

⁶¹¹ U.S. Fish and Wildlife Service, Sonny Bono Salton Sea National Wildlife Refuge: Hazard and Union Hunting Areas (Sep. 2020), available at https://www.fws.gov/sites/default/files/documents/FINALhuntingmapANDregs2020_508.pdf.

⁶¹² Cashen Comments at p. 8.

a critical deficiency because it affects implementation of BIO-13 and BIO-14, both of which have actions that are triggered by Project activities within 500 feet of “suitable habitat” for the Yuma Ridgway’s rail.⁶¹³ The PSA’s environmental setting discussion is therefore unsupported for failure to provide adequate analysis supported by habitat mapping.

B. The PSA Fails to Adequately Analyze the Project’s Impacts to Biological and Hydrological Resources

1. The PSA Fails to Adequately Analyze Impacts Associated with Desert Pupfish

Desert pupfish (*Cyprinodon macularius*) is a federal and state endangered species.⁶¹⁴ Desert pupfish are known to occur in IID drains and they presumed present in the Project area.⁶¹⁵ Several of the Project’s facilities (including the geothermal plant) would be located in an agricultural field south of Red Hill Bay. Irrigation runoff from fields directly south of Red Hill Bay is pumped over a berm into Red Hill Bay. The pumped water creates a wetted area, which has contained desert pupfish. A survey in the end of May 2023 yielded over 400 desert pupfish, mostly juveniles, in the main connector channel of the Red Hill Bay Drains.⁶¹⁶

The PSA provides:

Desert pupfish occupied drains in the project area include east-west irrigation canals along Hazard Road, McDonald Road, and Sinclair Road; parallel to eastwest Cox Road/Gentry Road between Garst Road and Rock Hill; and north-south irrigation canals along Cox Road/Lindsey Road, Boyle Road, Severe Road, Crummer Road, and Lack Road (TN251682 Figure DA 5.2-1c). Red Hill Bay Drains, which occurs between the proposed generating facility to the south and the production wells to the north, is an important area for desert pupfish.⁶¹⁷

The volume, depth, and quality of water in IID’s drains are critical components of desert pupfish habitat.⁶¹⁸ When low water levels occur, desert pupfish become more susceptible to predation by birds and competition with exotic

⁶¹³ *Ibid.*

⁶¹⁴ PSA at p. 5.2-55.

⁶¹⁵ TN # 250678, Data Adequacy Supplement Set 2 (June 20, 2023) p. 7.

⁶¹⁶ PSA at p. 5.2-88.

⁶¹⁷ *Ibid.*

⁶¹⁸ Cashen Comments at p. 10.

fish species.⁶¹⁹ Therefore, even if the Project does not directly impact canals and drains, substantial evidence demonstrates that 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.⁶²⁰

The PSA provides that impact analysis is currently underway with IID as part of the Water Supply Agreement.⁶²¹ Specifically, the PSA states: “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.”⁶²² This indicates that the reduced agricultural return flows associated with the Project could affect desert pupfish habitat.⁶²³ The PSA, without providing substantial evidence to support the conclusion, makes the determination that the impact would be less than significant. Mr. Parker in his comments on the PSA provided substantial evidence that temporary land conversion from agricultural to non-agricultural land “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....”⁶²⁴ This is because “irrigation water provides water supply to the Salton Sea through agricultural return flows” such that “[a]ny IID Colorado River supply water taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea....”

The PSA provides, that “[t]hough 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.”⁶²⁵ The conclusion that “conversion of one parcel” would have a minimal effect on pupfish habitat in Red Hill Bay is unsupported and is inconsistent with information provided by the Applicant.⁶²⁶ The Applicant’s response to CURE Data Request 280 (TN 254602) states that: “Figure DRR-280 identifies all project components along with existing agricultural return

⁶¹⁹ *Ibid.*

⁶²⁰ *Ibid.*

⁶²¹ PSA at p. 5.2-89.

⁶²² *Ibid.*

⁶²³ Cashen Comments at p. 10.

⁶²⁴ Parker Comments at p. 9.

⁶²⁵ PSA at p. 5.2-89.

⁶²⁶ Cashen Comments at p. 11.

flows. Flows from the plant site drain towards Red Hill Bay. Flow directions from all other project components are as shown.” Figure DRR-280 shows the following:

1. The Red Hill Bay Drains are supplied by agricultural return flows from 4 parcels between Cox Road (to the north), Sinclair Road (to the south), Gentry Road (to the west) and an unnamed road west of the Alamo River (to the east).
2. Return flows from agricultural parcels immediately south of Sinclair Road enter Vail Drains 2 through 4A. These drains feed into the Pumice Drain, which subsequently drains into an area between Obsidian Butte and Rock Hill (i.e., outside of Red Hill Bay).⁶²⁷
3. Return flows from agricultural parcels further south drain west towards the Salton Sea.
4. Return flows from agricultural parcels east of the Alamo River drain west into either the Alamo River or Morton Bay.

Thus, contrary to the PSA’s determination, substantial evidence demonstrates that there are only 4 agricultural parcels that supply return flows to the Red Hill Bay drains.⁶²⁸ The Project would impact 2.5 of the 4 parcels that provide drain water for pupfish in Red Hill Bay.⁶²⁹ One of the parcels would be permanently impacted by construction of the geothermal plant and switching station.⁶³⁰ An additional parcel would be impacted by a proposed laydown and parking area, while half of another parcel would be impacted by a proposed borrow pit.⁶³¹

The PSA classifies impacts from the laydown/parking area and borrow pit as temporary impacts because these areas would purportedly revert to pre-existing conditions sometime after Project construction.⁶³² Although COC BIO-11 requires a plan for restoring temporarily disturbed areas, it does not establish a temporal threshold for the completion of the restoration activities.⁶³³ In addition, the PSA (pp. 5.8-13 and -14) suggests it may not be possible to fully restore the borrow pits,

⁶²⁷ Colorado River Basin Water Board, Waste Discharge Requirements for Imperial Irrigation District El Centro Generating Station. Order R7-2020-0006, Attachment F – Fact Sheet (2020) p. F-14.

⁶²⁸ Cashen Comments, p. 13; Figure DRR-280 suggests the drain water from the easternmost parcel drains to Red Hill Bay. However, Google Earth imagery suggests the drain water may enter Vail Drain 2A, which flows into the Alamo River.

⁶²⁹ *Ibid.*

⁶³⁰ PSA at p. 3-6 (Figure 3-3).

⁶³¹ *Ibid.*

⁶³² PSA at p. 5.8-13.

⁶³³ Cashen Comments at p. 13.

and that all temporary work areas may be “left in [unspecified] conditions requested by the landowner.”⁶³⁴

Substantial evidence demonstrates that even temporary reductions in agricultural return flows to Red Hill Bay may cause a long-term impact on the pupfish.⁶³⁵ As reported in the Initial Study for the Red Hill Bay Wetlands Restoration Project, the pupfish in Red Hill Bay occur in very shallow rivulets created by the drain water, and thus, any reduction in drain water could eliminate the habitat needed for persistence. **If this occurs, pupfish would be permanently extirpated from Red Hill Bay unless there is connectivity to a source population for recolonization.**⁶³⁶

The PSA fails to analyze potentially significant direct impacts on the pupfish due to the Project’s pipeline.⁶³⁷ The PSA states that the Red Hill Bay Drains are an important area for desert pupfish, and that the drains connect to canals along Garst Road in an area identified by the Applicant as tamarisk thickets.⁶³⁸ Substantial evidence demonstrates that desert pupfish may occur in the canals (tamarisk thickets) along Garst Road due to connectivity with the Red Hill Bay drains.⁶³⁹ A portion of the Project’s pipeline would be constructed through the tamarisk thickets adjacent to Garst Road, and Figure DA 5.2-1c shows the pipeline intersecting desert pupfish habitat in the southeast corner of Red Hill Bay.⁶⁴⁰ According to the PSA, the pipeline would permanently impact 1.87 acres of the tamarisk thickets adjacent to Garst Road.⁶⁴¹ The PSA describes how construction of the pipeline “over canals and drains” could impact habitat for fish, from accidental spills of hazardous materials.⁶⁴² Given the length of the pipeline through the tamarisk thickets (approximately 1,300 feet), numerous support structures would be required.⁶⁴³ The PSA fails to adequately assess how construction of these footings would directly

⁶³⁴ PSA at p. 5.8-13.

⁶³⁵ The PSA does not establish how long agricultural fields used for construction camps, borrow pits, and laydown areas would be taken out of production. These temporary features would also be used for the Morton Bay Geothermal Project and the Black Rock Geothermal Project. Even if construction of the 3 projects occurs concurrently, it appears agricultural activities would not be restored for at least 29 months. See PSA at p. 3-17.

⁶³⁶ Cashen Comments at p. 13.

⁶³⁷ *Id.*

⁶³⁸ PSA at p. 5.2-88.

⁶³⁹ Cashen Comments at p. 14.

⁶⁴⁰ *Id.* at p. 15; TN # 251682, Figure DA 5.2-1c: Desert Pupfish Habitat Map (Aug. 18, 2023).

⁶⁴¹ PSA at p. 5.2-127 to 5.2-128 (Table 5.2-5). Red Hill Bay is the only place within the Biological Study Area where the pipeline intersects tamarisk thickets. Therefore, all 1.87 acres are in Red Hill Bay.

⁶⁴² PSA at p. 5.2-89.

⁶⁴³ Cashen Comments at p. 14.

impact the desert pupfish and its habitat particularly with respect to habitat connectivity.

Further, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the effects that three proposed geothermal projects would have on agricultural returns flows, which provide habitat for pupfish in IID drains and river deltas at the Salton Sea.⁶⁴⁴ On 24 Aug 2023, IID submitted a letter to the Commission 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.”⁶⁴⁵

The cumulative impacts analysis requested by IID was not provided by the Applicant, nor is it in the PSA, in violation of CEQA. CEQA documents may not rely on hidden studies or documents that are not provided to the public.⁶⁴⁶ The Commission’s siting regulations require staff to assess whether the potential environmental impacts have been properly identified.⁶⁴⁷ Staff’s reliance on the IID cumulative impact analysis violates CEQA. There is substantial evidence in the public record that the Project could have substantial direct, indirect, and cumulative impacts on the desert pupfish.⁶⁴⁸ As a result, these impacts must be properly addressed in a revised and recirculated PSA.

⁶⁴⁴ *Id.* at 16; see ECORP Consulting, Salton Sea Desert Pupfish Habitat Connectivity Plan [External Review Draft #1] (May 2023) p. 3.

⁶⁴⁵ TN # 251870.

⁶⁴⁶ *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3rd 818, 831 (“Whatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.”).

⁶⁴⁷ PSA at p. 2-1.

⁶⁴⁸ Cashen Comments at p. 14.

2. *The PSA Fails to Adequately Analyze Impacts Associated with Drains and Canals*

The PSA provides that the Project would temporarily impact 27.44 acres of drains and canals, and permanently impact 2.52 acres of drains and canals.⁶⁴⁹ This is reflected in Table 5.2-5 of the PSA, which quantifies impacts to the land cover types in the Project area.⁶⁵⁰ 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 and to what extent the Project would impact drains and canals.⁶⁵¹ The PSA acknowledges that some of the drains and canals serve an important function in providing habitat for the desert pupfish, Yuma Ridgway’s rail, burrowing owl, and other special-status species.⁶⁵² Thus, significant temporary or permanent impacts on drains and canals may also have significant adverse effects on sensitive specific habitat which are not disclosed in the PSA.

The PSA provides that “this analysis concludes canals and drains would not be impacted because they are managed by IID.”⁶⁵³ The PSA provides that the Applicant has stated in response to data requests “that that the project would have no impact on IID canals and drains other than crossing with above ground pipes and gen-tie lines.”⁶⁵⁴ But, the PSA provides substantial evidence that the Project would, in fact, impact IID drains and canals.

In the analysis of impacts to the desert pupfish, the PSA references a “remnant drain,” and it states that one untapped well pad is proposed over the current location of the drain.⁶⁵⁵ CURE’s expert biologist Mr. Cashen concludes that Staff’s determination that the drain is a remnant of previous irrigation activities is not supported by substantial evidence.⁶⁵⁶ The drain, which is approximately 1.4 miles long, was constructed in either 2015 or 2016.⁶⁵⁷ The drain was constructed to convey agricultural return flows from the southeast corner of Red Hill Bay to the Salton Sea after water in Red Hill Bay receded. IID currently refers to the drain as the “existing central drain” and IID is contemplating using that drain for a project

⁶⁴⁹ PSA at p. 5.2-125, 5.2-88.

⁶⁵⁰ *Id.* at p. 5.2-128.

⁶⁵¹ Cashen Comments at p. 8.

⁶⁵² PSA at p. 5.2-129.

⁶⁵³ *Id.* at p. 5.2-133.

⁶⁵⁴ *Ibid.* (internal citations omitted).

⁶⁵⁵ PSA at p. 5.2-88.

⁶⁵⁶ Cashen Comments at p. 8.

⁶⁵⁷ *Ibid.*

mandated by the Imperial County Air Pollution Control District.⁶⁵⁸ The Applicant's proposal to construct a well pad on top of the drain constitutes a direct impact on the "canals and drains" land cover type. However, the PSA inconsistently states that this feature is unimpacted. The construction of the well pad also violates Condition of Certification BIO-4, which states: "[c]onstruction and operation of the project shall avoid the Salton Sea, the Alamo River, and canals and drains, including all associated riparian habitat, and any canals and drains that have been abandoned but could still convey water to the Salton Sea."⁶⁵⁹ In this case, the drain that would be impacted by the well pad is one that "could still convey water to the Salton Sea."⁶⁶⁰ Violation of mandatory mitigation or condition of approval is itself a significant impact.⁶⁶¹

The PSA states that the "Red Hill Bay Drains" are an important area for desert pupfish, and that the drains connect to canals along Garst Road in an area identified by the Applicant as tamarisk thickets.⁶⁶² The PSA provides that "CDFW stated that a survey in the end of May 2023 yielded over 400 desert pupfish, mostly juveniles, in the main connector channel of the Red Hill Bay Drains. The Red Hill Bay Drains connect to canals along Garst Road, in an area identified by the applicant as Tamarisk thickets and flows toward the Salton Sea."⁶⁶³ These canals along Garst Road were not discussed in the AFC, nor have any maps been provided that identify the location of the canals.⁶⁶⁴ Based on the Applicant's GIS data, the Project's pipeline would run through the tamarisk thickets and near the edge of Garst Road.⁶⁶⁵ Because IID canals typically run along the edges of roads, and because the pipeline would require support structures in the substrate, substantial evidence demonstrates that the pipeline could have direct impacts on the canals referenced in the PSA, and consequently, on the desert pupfish.⁶⁶⁶

⁶⁵⁸ Imperial Irrigation District, Red Hill Bay Semi-Annual Report (July-December 2023) to the Imperial County Air Pollution Control District (Jan 31, 2024) pp. 1, 3.

⁶⁵⁹ PSA at p. 5.2-152.

⁶⁶⁰ Cashen Comments at p. 8 ("When constructed in 2015 or 2016, the drain extended to the edge of the Salton Sea. However, the Salton Sea has subsequently receded another ¼ mile. Extending the drain another ¼ mile would enable the drain to convey water to the Salton Sea if it does not already do so.").

⁶⁶¹ See *Napa Citizens for Honest Government v. Napa County Bd of Supervisors* (2001) 91 Cal.App.4th 342; *Lincoln Place Tenants Association v. City of Los Angeles* (2005) 130 Cal.App.4th 1491.

⁶⁶² PSA at p. 5.2-88.

⁶⁶³ *Ibid.*

⁶⁶⁴ Cashen Comments at p. 9.

⁶⁶⁵ *Ibid.*

⁶⁶⁶ *Ibid.*

The Applicant did not map the drains and canals in Red Hill Bay.⁶⁶⁷ Therefore, if Staff used the Applicant's GIS data to analyze impacts to vegetation communities and land cover types, the impact calculations provided in Table 5.2-5 of the PSA lack substantial evidence to support the PSA's conclusions regarding Project impacts to the drains and canals in Red Hill Bay.⁶⁶⁸

3. *The PSA Fails to Adequately Analyze Impacts Associated with Snowy Plover*

The Western snowy plover (*Charadrius nivosus nivosus*) is a federally threatened species and considered a CDFW species of special concern.⁶⁶⁹ Snowy plover was observed by the applicant in a flooded agricultural field.⁶⁷⁰ The Red Hill Bay playa (classified as iodine bush scrub in the PSA) provides potential nesting habitat for snowy plovers.⁶⁷¹ Four of the Project's well pads, and a portion of the Project's pipeline, would be located on the Red Hill Bay playa. Disturbance by humans is a key factor in degrading or eliminating snowy plover nesting habitat.⁶⁷² 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.⁶⁷³

Direct mortality can occur when humans step on, or drive over, chicks or eggs.⁶⁷⁴ More commonly, indirect mortality occurs because high levels of human activity hinder normal brooding, foraging, and sheltering activities.⁶⁷⁵ 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.⁶⁷⁶

⁶⁶⁷ See TN #252553, Data Request Response Set 1 Figure DRR 25 Land Cover and Vegetation Types (Oct. 10, 2023).

⁶⁶⁸ Cashen Comments at p. 9.

⁶⁶⁹ PSA at p. 5.2-102.

⁶⁷⁰ *Ibid.*

⁶⁷¹ Cashen Comments at p. 15.

⁶⁷² *Ibid.*

⁶⁷³ *Ibid.*

⁶⁷⁴ *Ibid.*

⁶⁷⁵ *Ibid.*

⁶⁷⁶ *Ibid.*; U.S. Fish and Wildlife Service, Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (*Charadrius alexandrinus nivosus*) Volume 1: Recovery Plan (2007), available at <https://westernsnowyplover.org/pdfs/WSP%20Final%20RP%2010-1-07.pdf>; see also Brindock KM, MA Colwell, Habitat Selection by Western Snowy Plovers During the Nonbreeding Season. *Journal of Wildlife Management* 75(4):786-793 (2011), available at <https://wildlife.humboldt.edu/sites/default/files/colwell/pdf/Brindock%20&%20Colwell%202011.pdf>.

The PSA states the following regarding impacts to the snowy plover: “[d]irect 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.”⁶⁷⁷ Mr. Cashen provided substantial evidence that facilities in Red Hill Bay would degrade and destroy snowy plover habitat, resulting in significant impacts.⁶⁷⁸

The PSA incorporates BIO-12 to reduce impacts to snowy plover nests during construction of the Project. The PSA does not incorporate 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.”⁶⁷⁹ These daily inspections of the pipeline route during operation would have a significant impact on any snowy plovers nesting on the Red Hill Bay playa.⁶⁸⁰

BIO-12 requires pre-activity surveys for nesting birds prior to project construction or decommissioning activities conducted during the avian breeding season. Substantial evidence demonstrates that BIO-12 does not mitigate significant impacts to snowy plovers due to daily inspections of the pipeline.⁶⁸¹ 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.” It is unclear what buffer size would be used for snowy plover nests because the snowy plover is neither a passerine nor a raptor.⁶⁸² Therefore the PSA does not provide substantial evidence that impacts to snowy plover are adequately mitigated.

Substantial evidence in Mr. Cashen’s comments demonstrate that, 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).⁶⁸³ Incubating plovers ceased incubation and left nests when an observer approached to within a mean distance of 80 ± 33 meters.⁶⁸⁴ This led Muir and Colwell to conclude that fencing erected to minimize

⁶⁷⁷ PS at p. 5.2-102.

⁶⁷⁸ Cashen Comments at p. 17.

⁶⁷⁹ PSA at p. 3-24.

⁶⁸⁰ Cashen Comments at p. 13.

⁶⁸¹ *Id.* at 17.

⁶⁸² *Ibid.*

⁶⁸³ *Ibid.*

⁶⁸⁴ *Ibid.*; Muir JT, MA Cowell, Snowy Plovers Select Open Habitats for Courtship Scrapes and Nests. *Condor* 112(3):507-10 (2010), *available at* <https://academic.oup.com/condor/article-pdf/112/3/507/26964574/condor0507.pdf>.

human disturbance should be placed such that people cannot approach closer than 100 meters (328 feet). Based on the substantial evidence in these research studies, the avoidance buffers prescribed in BIO-12 must be at least 100 meters (328 feet) for snowy plover nests.⁶⁸⁵

4. The PSA Fails to Adequately Analyze Impacts to California Black Rail

The PSA does not adequately characterize potentially significant impacts to California Black Rail from the Project. 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.⁶⁸⁶ The California black rail is known to occur at the Hazard Tract and at other marsh habitats in the Project area.⁶⁸⁷ 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.⁶⁸⁸ 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.⁶⁸⁹ 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 the species must be “fully mitigated” through measures that are: (a) roughly proportional in extent to the impact, and (b) capable of successful implementation.⁶⁹⁰

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.⁶⁹¹ 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.⁶⁹² 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, not the black 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.⁶⁹³ For example, although BIO-13 requires pre-

⁶⁸⁵ Cashen Comments at p. 13.

⁶⁸⁶ Fish & Game Code § 3511(b).

⁶⁸⁷ Cashen Comments at p. 16; Communication between Razia Shafique-Sabir, Deputy Project Leader and Biologist at SBSSNWR, and Scott Cashen (July 10, 2024).

⁶⁸⁸ PSA, p. 5.2-63.

⁶⁸⁹ California Department of Fish and Wildlife, Fully Protected Animals, <https://wildlife.ca.gov/Conservation/Fully-Protected> (last visited July 29, 2024).

⁶⁹⁰ Fish & Game Code § 2081.

⁶⁹¹ Cashen Comments at p. 16.

⁶⁹² *Id.*

⁶⁹³ *Id.*

activity surveys and construction monitoring for Yuma Ridgway's rail, no surveys or construction monitoring is required for the California black rail.⁶⁹⁴ As a result, and because the PSA does not incorporate mitigation to "fully mitigate" impacts on the black rail, for example mitigation measures which would offset habitat degradation caused by the Project's noise, light, and human activity, impacts on the California black rail remain potentially significant.⁶⁹⁵

5. The PSA Fails to Adequately Analyze Noise Impacts to Yuma Ridgway's Rail

The PSA does not adequately characterize potentially significant impacts to Yuma Ridgway's Rail and other sensitive marsh birds from noise from the Project. Pile driving and steam blows associated with the Project would produce impulse noise that could cause a Yuma Ridgway's rail and other sensitive marsh birds to flush from their nests or other cover, thereby making the birds and eggs more susceptible to predation which is known to be a significant threat to Ridgway's rails.⁶⁹⁶ The PSA provides that "the loss of listed bird species or a disruption to their behavior and or breeding would be considered a significant impact."⁶⁹⁷ Moreover, "direct impacts to bird species could occur as a result of direct mortality by vehicle strikes; 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."⁶⁹⁸ The Project's pile driving and steam blows could cause noise levels of 104 dBA at 50 feet.⁶⁹⁹ This would result in potentially significant impacts to the Yuma Ridgway's rail due to their abandonment of their nests and disruption of their communication and breeding behaviors.⁷⁰⁰

6. The PSA Fails to Adequately Analyze Impacts to 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."⁷⁰¹ However, the PSA's subsequent analysis of Project impacts only

⁶⁹⁴ *Id.*

⁶⁹⁵ Cashen Comments at p. 16.

⁶⁹⁶ *Id.* at 15.

⁶⁹⁷ PSA at p. 5.2-100.

⁶⁹⁸ *Id.*

⁶⁹⁹ PSA at pp. 5.9-7 to 5.9-8. 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 than 104 dBA.

⁷⁰⁰ *Id.*

⁷⁰¹ PSA at p. 5.2-94.

addresses some (about half) of the species.⁷⁰² The following species were excluded from the PSA's analysis without justification:

- Redhead
- Northern harrier
- White-tailed kite
- Gull-billed tern
- Yellow-breasted chat
- Loggerhead shrike
- Black skimmer
- Yellow-headed blackbird

The PSA 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.”⁷⁰³ The Imperial Valley provides critical wintering habitat for several of the species on the PSA's list. For example, cultivated landscapes in the Imperial Valley provide wintering habitat for up to 50 percent of the *global population* of mountain plovers.⁷⁰⁴ Agricultural fields in Imperial Valley are also known to be a core wintering area for sandhill cranes,⁷⁰⁵ long-billed curlews,⁷⁰⁶ and white-faced ibis.⁷⁰⁷

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 alternation of available habitat.⁷⁰⁸ The PSA then states that the

⁷⁰² See PSA at p. 5.2-99 to 5.2-108.

⁷⁰³ *Id.* at p. 5.2-95.

⁷⁰⁴ Wunder MB, FL Knopf. 2003. The Imperial Valley of California is critical to wintering Mountain Plovers. *J. Field Ornithol.* 74:74-80. See also Shuford WD, T Gardali, 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.

⁷⁰⁵ Shuford WD, N Warnock, KC Molina, B Mulrooney, and AE Black. 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.

⁷⁰⁶ 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.

⁷⁰⁷ 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.

⁷⁰⁸ PSA at p. 5.2-106.

Project's impacts to foraging habitat "would result in a small reduction compared to the 500,000 acres total agricultural lands in Imperial County."⁷⁰⁹ For this reason, the PSA makes the determination that impacts to foraging 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.⁷¹⁰ But, the PSA's conclusions regarding the loss of foraging habitat for special status-species is not supported by substantial evidence.⁷¹¹ The PSA fails to adequately analyze the cumulatively significant impacts of past, present, and future projects in relation to the Project. The Lithium Valley Specific Plan Project and associated habitat degradation and impacts to biological resources, and fails to analyze cumulative development in the region.

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

The PSA fails to include substantive analysis of night lighting associated with the Project. The PSA provides that "[n]ight lighting could disturb resting, foraging, or mating activities of wildlife and make wildlife more visible to predators. Night lighting could also attract birds and bats to areas which could result in collisions on tall structures. Additionally, certain lighting may attract insects which in turn may attract birds and bats to forage."⁷¹² But the PSA fails to include photometric analysis to analyze impacts from night lighting on species within the Project area. Photometric analysis is necessary to analyze the intensity, distribution and spectral composition of light within the project area to understand the Project's night lighting's impacts on nocturnal wildlife.⁷¹³

The PSA provides:

To reduce impacts, the applicant is including design features while also meeting the requirements for security and safety. 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

⁷⁰⁹ PSA at p. 5.2-107.

⁷¹⁰ *Id.* at pp. 5.2-109, 5.2-135.

⁷¹¹ Cashen Comments at p. 18.

⁷¹² PSA at p. 5.2-117.

⁷¹³ Cashen Comments at p. 24.

time, thereby minimizing the amount of lighting potentially visible off site and minimizing the potential for lighting impacts to proximate wildlife.⁷¹⁴

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.⁷¹⁵ The Applicant proposed additional nighttime construction activities during discussion at the PSA workshop conducted by the Commission on July 30, 2024. At the workshop, the Applicant stated that more nighttime construction would be required than initially proposed due to the high heat during the daytime. A substantial amount of high-intensity night 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.⁷¹⁶

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.⁷¹⁷ 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.⁷¹⁸ 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 frequently.⁷¹⁹ 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.⁷²⁰

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.⁷²¹ Several additional laydown/parking areas would be located in the vicinity of Obsidian Butte, near wetland habitat where

⁷¹⁴ *Id.*

⁷¹⁵ Cashen Comments at p. 23.

⁷¹⁶ PSA at p. 3-17; *see also* AFC, Tables 2-9 and 2-10.

⁷¹⁷ Cashen Comments at p. 23.

⁷¹⁸ *Ibid.*

⁷¹⁹ *Ibid.*

⁷²⁰ *Ibid.*

⁷²¹ *Ibid.*

Yuma Ridgway's rails and California black rails have been detected.⁷²² Night lighting from the construction camps and laydown/parking areas could have a significant impact on rails in nearby habitats.⁷²³ The PSA fails to 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).⁷²⁴ 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.

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.⁷²⁵ 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 Imperial Valley.⁷²⁶ This constitutes a significant cumulative impact on special-status birds that depend on agricultural habitat in the Imperial Valley.⁷²⁷

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

⁷²² 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>

⁷²³ Cashen Comments at p. 24.

⁷²⁴ *Ibid.*

⁷²⁵ *Id.* at p. 19.

⁷²⁶ *Ibid.*

⁷²⁷ *Ibid.*

associated with habitat loss from conversion to industrial use associated with development under the Lithium Valley Specific Plan 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. 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.⁷²⁸ 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.⁷²⁹ To provide valid analysis, a revised and recirculated PSA must use a consistent geographic scale.⁷³⁰ 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.⁷³¹ 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 the following projects:

- 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)
- Hell's Kitchen Geothermal Exploration Project, Niland (Approved, not built)
- Energy Source Mineral ALTiS, Imperial County (Pending Construction)
- Morton Bay Geothermal Project, Imperial County (Pending Permit)

⁷²⁸ Cashen Comments at p. 15; PSA at p. 5.2-75, 5.2-138.

⁷²⁹ Cashen Comments at p. 15.

⁷³⁰ *Ibid.*

⁷³¹ *Ibid.*

- 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.⁷³² This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).⁷³³ Under the LVSP, most of this land would (or could) be converted to industrial uses.⁷³⁴

For many bird species, the Imperial Valley provides an important habitat for birds due to its geographic relationship with the Salton Sea. 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).⁷³⁵ Of these 460,258 acres, 48,000 to 74,000 acres⁷³⁶ would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.⁷³⁷ California Ethanol Project will have a significant adverse impact on the Imperial Valley population of burrowing owls and other bird species

⁷³² LVSP Initial Study at p. 2.

⁷³³ LVSP Baseline Report at p. 22 (Figure 2-4).

⁷³⁴ LVSP NOP at p. 3 (Figure 2).

⁷³⁵ Imperial County, 2021 Agricultural Crop & Livestock Report (2022), *available at* <https://agcom.imperialcounty.org/wp-content/uploads/2022/10/2021-CR-Draft-Final.pdf>.

⁷³⁶ The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.

⁷³⁷ 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>.

that forage mainly in low-growing agricultural fields.⁷³⁸ 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.⁷³⁹

These developments pursuant to the LVSPP, 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.

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 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

⁷³⁸ 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).

⁷³⁹ WSA.

⁷⁴⁰ PSA at p. 5.2-133.

⁷⁴¹ *Ibid.*

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 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

⁷⁴² Cashen Comments at p. 21.

⁷⁴³ *Id.*

⁷⁴⁴ *Id.*

⁷⁴⁵ PSA at p. 5.2-134.

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.

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."⁷⁴⁸ 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.⁷⁴⁹ 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."⁷⁵⁰ This statement is not reflected in the Project Description or Staff's proposed Conditions of Certification.⁷⁵¹ 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.

⁷⁴⁶ *Id.*

⁷⁴⁷ Cashen Comments at p. 21.

⁷⁴⁸ 14 Cal. Code Regs. §§ 15090, 15091.

⁷⁴⁹ *Id.* at 16.

⁷⁵⁰ PSA at p. 5.2-97.

⁷⁵¹ 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.⁷⁵² The PSA makes the determination that BIO-17 would mitigate the Project's permanent impacts on habitat.⁷⁵³ 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."⁷⁵⁴ Whereas this measure would mitigate the Project's impacts on vegetation communities, it would not sufficiently mitigate the Project's impacts on *habitat*.⁷⁵⁵ Habitat is defined as: "the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism."⁷⁵⁶ 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.⁷⁵⁷

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).⁷⁵⁸ 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

⁷⁵² PSA at p. 5.2-106.

⁷⁵³ *Id.* at p. 5.2-107.

⁷⁵⁴ *Id.*

⁷⁵⁵ Cashen Comments at p. 16.

⁷⁵⁶ See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

⁷⁵⁷ Cashen Comments at p. 16.

⁷⁵⁸ *Id.*

Municipal Code Section 91702.02(L), as feasible. (Jacobs 2023a, p. 5.13-29).⁷⁵⁹ 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.

Mitigation measures must be "fully enforceable through permit conditions, agreements, or other legally-binding instruments."⁷⁶⁰ "Compliance with a regulatory permit or other similar process may be identified as mitigation if compliance would result in implementation of measures that would be reasonably expected, based on substantial evidence in the record, to reduce the significant impact to the specified performance standards."⁷⁶¹ The requirement that night lighting occur in compliance with the Imperial County Municipal Code does not ensure impacts would be less than significant, because the measures are neither binding nor extant.

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.⁷⁶² CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.⁷⁶³ "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."⁷⁶⁴ 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..."⁷⁶⁵ 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

⁷⁵⁹ PSA at p. 5.15-32.

⁷⁶⁰ 14 Cal. Code Regs. § 15126.4(a)(2).

⁷⁶¹ *Id.* § 15126.4(a)(1)(B).

⁷⁶² Cashen Comments at p. 24.

⁷⁶³ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

⁷⁶⁴ *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.

⁷⁶⁵ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

state why specifying performance standards for mitigation measures “was impractical or infeasible at the time the EIR was certified.”⁷⁶⁶ The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.⁷⁶⁷ 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.⁷⁶⁸ Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.⁷⁶⁹

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.⁷⁷⁰ 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.⁷⁷¹

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,⁷⁷² but it does not identify how much each method (e.g., use of impact cushions) would reduce the pile driving noise level.⁷⁷³ 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.⁷⁷⁴ 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.⁷⁷⁵

⁷⁶⁶ *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.

⁷⁶⁷ *Ibid.*

⁷⁶⁸ *Endangered Habitats League, Inc. v. County of Orange*, (2005) 131 Cal.App.4th 777, 794.

⁷⁶⁹ *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.

⁷⁷⁰ Cashen Comments at p. 24.

⁷⁷¹ PSA at pp. 3-21 to 3-22.

⁷⁷² *Id.* at p. 5.9-7

⁷⁷³ Cashen Comments at p. 3.

⁷⁷⁴ *Ibid.*

⁷⁷⁵ *Ibid.*

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.⁷⁷⁶ BIO-12 states: “Pre-activity surveys shall be conducted by the approved biologist at the appropriate time of day/night, during appropriate weather conditions.”⁷⁷⁷ This statement is too vague to ensure efficacy of the mitigation.⁷⁷⁸ A revised PSA must define what would be considered the appropriate time of day and weather conditions.⁷⁷⁹

Mitigation Measure BIO-12 outlines the methods that should be used during the pre-activity survey.⁷⁸⁰ 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-12.⁷⁸¹ 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.”⁷⁸² 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.⁷⁸³

6. The PSA Fails to Adequately Mitigate Significant 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:

⁷⁷⁶ PSA at p. 5.2-167.

⁷⁷⁷ *Ibid.*

⁷⁷⁸ Cashen Comments at p. 27.

⁷⁷⁹ *Ibid.*

⁷⁸⁰ PSA at pp. 5.2-167 to 5.2-168.

⁷⁸¹ Cashen Comments at p. 27.

⁷⁸² PSA at 5.2-168.

⁷⁸³ Cashen Comments at p. 27.

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 verify [sic] that no nesting is occurring.⁷⁸⁴

The section of this requiring surveys to verify that no nesting is occurring is vague and would not adequately ensure that impacts to the Yuma Ridgway's rail would be mitigated.⁷⁸⁵ A revised PSA must establish what would be considered “adjacent” by providing a quantifiable distance.⁷⁸⁶ The Yuma Ridgway's rail is a secretive bird that constructs well concealed nests.⁷⁸⁷ As a result, it is extremely difficult to “verify” that no nesting is occurring.⁷⁸⁸ When surveying for Ridgway's rails, biologists use behavioral cues (e.g., vocalizations in areas with concentrated rail activity) to infer nest locations.⁷⁸⁹ 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*.⁷⁹⁰

7. *The PSA Fails to Adequately Mitigate Significant Impacts from Operational Noise to Ridgway's Rail*

The PSA fails to adequately analyze or mitigate significant 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.”⁷⁹¹ BIO-14 then establishes construction noise thresholds for the breeding and non-breeding seasons (60 dBA and 80 dBA, respectively).⁷⁹² 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.⁷⁹³

⁷⁸⁴ PSA at p. 5.2-170.

⁷⁸⁵ Cashen Comments at p. 28.

⁷⁸⁶ *Ibid.*

⁷⁸⁷ *Ibid.*

⁷⁸⁸ *Ibid.*

⁷⁸⁹ *Ibid.*

⁷⁹⁰ *Ibid.*

⁷⁹¹ PSA at p. 5.2-171.

⁷⁹² *Ibid.*

⁷⁹³ Cashen Comments at p. 36.

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 bulldozer operating 600 feet from rail habitat would generate a noise level of 66.4 dBA at the rail habitat.⁷⁹⁴ 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.⁷⁹⁵

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.⁷⁹⁶ 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.”⁷⁹⁷ 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.⁷⁹⁸ Third, to avoid ambiguity in when the Plan would be required, BIO-14 needs to define the specific areas that provide “suitable rail habitat.”⁷⁹⁹

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.”⁸⁰⁰

Mitigation Measure BIO-14 cannot adequately mitigate impacts to Yuma 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

⁷⁹⁴ See AFC, Table 5.7.7.

⁷⁹⁵ Cashen Comments at p. 36.

⁷⁹⁶ *Id.*

⁷⁹⁷ TN # 251683, Distribution and Occupancy of Yuma Ridgway’s Rail Report – Public Version (Aug. 18, 2023) p. 8.

⁷⁹⁸ Cashen Comments at p. 36.

⁷⁹⁹ *Ibid.*

⁸⁰⁰ PSA at p. 5.2-171.

only maintenance activities (as stated in BIO-14).⁸⁰¹ In addition, the PSA fails to identify the “marshland habitat” that would be subject to the noise study.⁸⁰² 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.⁸⁰³ 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.⁸⁰⁴ Intermittent and unpredictable “impulse” noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.⁸⁰⁵

Several metrics can be used to characterize the noise environment.⁸⁰⁶ 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.⁸⁰⁷ These infrequent impulse sounds are best characterized by the metric Lmax, which captures the highest instantaneous sound level measured during a specified period.⁸⁰⁸ 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).⁸⁰⁹

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.⁸¹⁰ Because these activities would be infrequent and of short duration,⁸¹¹ they (especially steam blows) are unlikely to surpass the 60 dBA *Leq* threshold established in BIO-14.⁸¹²

⁸⁰¹ Cashen Comments at p. 37.

⁸⁰² *Ibid.*

⁸⁰³ *Ibid.*

⁸⁰⁴ *Ibid.*

⁸⁰⁵ *Ibid.*

⁸⁰⁶ *Ibid.*

⁸⁰⁷ *Ibid.*

⁸⁰⁸ *Ibid.*

⁸⁰⁹ *Ibid.*

⁸¹⁰ PSA at pp. 5.9-7 to 5.9-8; Cashen Comments at p. 29 (“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 than 104 dBA.”).

⁸¹¹ PSA at p. 5.9-7.

⁸¹² Cashen Comments at p. 37.

This would result in potentially significant impacts to the Yuma Ridgway's rail (or other sensitive marsh birds).⁸¹³

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

i. Mitigation Measure BIO-15

Substantial evidence demonstrates that Mitigation Measure BIO-15 is not sufficient to adequately reduce 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).”⁸¹⁴ 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.⁸¹⁵ Therefore, a revised PSA should establish an effective means for detecting occupied owl burrows that occur between 656 feet and 1,000 feet of project activities.⁸¹⁶

ii. Mitigation Measure BIO-16

Even with the implementation of Mitigation Measure BIO-16, the Project's impacts to burrowing owls remain significant. 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.⁸¹⁷

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.⁸¹⁸ Most of the burrowing owl burrows in the Project

⁸¹³ *Id.*

⁸¹⁴ PSA at p. 5.2-172.

⁸¹⁵ TN # 254835, Burrowing Owl Survey Report (Feb. 2024).

⁸¹⁶ Cashen Comments at p. 39.

⁸¹⁷ PSA at p. 5.2-174.

⁸¹⁸ Cashen Comments at p. 39.

area occur along the banks of IID's drains and canals.⁸¹⁹ 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."⁸²⁰ 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.⁸²¹ 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.⁸²²

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."⁸²³ A revised PSA must identify the geographic limits for the replacement habitat.⁸²⁴ California Department of Fish and Wildlife in the Staff Report on Burrowing Owl Mitigation provides that: "[l]ocating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document."⁸²⁵

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 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.⁸²⁶ This demonstrates burrowing owls do not simply colonize (or recolonize) surrogate habitat after they are displaced from a project site. Moreover, it demonstrates that the provision of unoccupied habitat does not mitigate the functions of the habitat that is eliminated.⁸²⁷ Mitigation Measure BIO-16 is therefore not sufficient to adequately mitigate impacts to burrowing owls and must be revised in a recirculated PSA.

⁸¹⁹ *Id.*

⁸²⁰ TN # 251870.

⁸²¹ Cashen Comments at p. 39.

⁸²² *Id.*; California Department of Fish and Game, Staff Report on Burrowing Owl Mitigation (Mar. 7, 2012) p. 10 (hereinafter "CDFW Burrowing Owl Mitigation"), *available at* <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843>.

⁸²³ PSA at p. 5.2-174.

⁸²⁴ Cashen Comments at p. 38.

⁸²⁵ CDFW Burrowing Owl Mitigation at p. 10.

⁸²⁶ *Id.*

⁸²⁷ Cashen Comments at p. 30.

iii. Compensatory Mitigation for Burrowing Owl

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.⁸²⁸ 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.⁸²⁹

California Department of Fish and Wildlife Burrowing Owl Survey Protocol and Mitigation Guidelines provides that: "If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the Burrowing Owl Survey Protocol, and the site approved by CDFG [CDFW]. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

- Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.
- Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.
- Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.⁸³⁰

Habitat loss and degradation are the greatest threats to burrowing owls in California.⁸³¹ As a result, the cumulative loss of burrowing owl habitat in Imperial County constitutes a potentially significant cumulative impact that cannot be

⁸²⁸ *Id.* at p. 19.

⁸²⁹ 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>.

⁸³⁰ California Department of Fish and Game, Burrowing Owl Survey Protocol and Mitigation Guidelines (April 1993), available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline>.

⁸³¹ California Bird Species of Special Concern (2008), available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10405&inline>.

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.⁸³²

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.⁸³³

9. 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.⁸³⁴ 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.⁸³⁵ However, the PSA does not establish any geographic limits on the location of the habitat compensation land required under BIO-17.⁸³⁶ As a result, substantial evidence demonstrates that BIO-17 does not ensure significant impacts to habitat would be reduced to less than significant levels.⁸³⁷ 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.

⁸³² 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>.

⁸³³ 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>.

⁸³⁴ Cashen Comments at p. 31.

⁸³⁵ PSA at pp. 5.2-16 to 5.2-17; Cashen Comments at p. 31.

⁸³⁶ Cashen Comments at p. 31.

⁸³⁷ *Id.*

10. The PSA Improperly Defers Mitigation for Avian Collisions

BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan.⁸³⁸ 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.⁸³⁹ 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 whether remedial actions are necessary.⁸⁴⁰ 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.”⁸⁴¹ 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.⁸⁴² 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.⁸⁴³ Mr. Cashen concludes that placing line markers at only select locations would be insufficient to prevent significant impacts to birds.⁸⁴⁴ Indeed, even if line markers are installed along the entire gen-tie line, the impact on birds could remain significant.⁸⁴⁵ Third, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.⁸⁴⁶ 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.

⁸³⁸ PSA at p. 5.2-178.

⁸³⁹ *Id.*

⁸⁴⁰ Cashen Comments at p. 31.

⁸⁴¹ PSA at p. 5.2-179.

⁸⁴² *Id.*; Cashen Comments at p. 31.

⁸⁴³ *Id.*

⁸⁴⁴ Cashen Comments at p. 31.

⁸⁴⁵ *Id.*; 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>.

⁸⁴⁶ Cashen Comments at p. 31.

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.

11. 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 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."⁸⁴⁷ 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."⁸⁴⁸ 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."⁸⁴⁹

CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.⁸⁵⁰ "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."⁸⁵¹ 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..."⁸⁵² 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

⁸⁴⁷ PSA at p. 5.2-115.

⁸⁴⁸ *Ibid.*

⁸⁴⁹ *Ibid.*

⁸⁵⁰ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

⁸⁵¹ *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.

⁸⁵² 14 Cal. Code Regs. § 15126.4(a)(1)(B).

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.⁸⁵³

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 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.

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

The PSA fails to adequately mitigate impacts to wetlands for numerous reasons. 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 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.

The project owner shall acquire, in fee or in easement, a parcel or parcels of land for any permanent impacts, up to 1.87 acres, to compensate for impacts to state and federal jurisdictional waters.”

Mr. Cashen provides substantial evidence demonstrating that there are several reasons why the approach proposed in BIO-22 would not ensure Project

⁸⁵³ PSA at p. 5.2-177.

impacts to wetlands and other jurisdictional waters are reduced to less than significant levels, as explained below.⁸⁵⁴

First, the trigger for BIO-22 is “ground-disturbing activities in areas supporting jurisdictional waters.”⁸⁵⁵ However, the Applicant has already stated that there are no jurisdictional waters in the Project area, and that construction of the geothermal plant and other Project facilities (injection well pads, pipelines, and borrow site) will have no impacts to federal or state jurisdictional wetlands or waters.⁸⁵⁶ As a result, none of the conditions in BIO-22 would be triggered.⁸⁵⁷ To rectify this issue, a revised and recirculated PSA must require the Applicant to obtain a jurisdictional determination (either preliminary or approved) from the U.S. Army Corps of Engineers (“USACE”). In addition, a revised and recirculated PSA must require the Applicant to consult with the Regional Water Quality Control Board (“RWQCB”) to determine whether the Project could result in potential impacts to state wetlands or waters that do not fall under the jurisdiction of the USACE.

Second, 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.⁸⁵⁸ 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 1:1.⁸⁵⁹ 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.

⁸⁵⁴ Cashen Comments at p. 30.

⁸⁵⁵ PSA at p. 5.2-182.

⁸⁵⁶ AFC at p. 5.2-25.

⁸⁵⁷ Cashen Comments at p. 30.

⁸⁵⁸ PSA at p. 5.2-134. Although the PSA suggests BIO-22 includes restoration up to 7.55 acres of temporarily impacted wetlands, there is no such provision in BIO-22.

⁸⁵⁹ SWRCB Wetland Policy at p. 234; *see also* U.S. Army Corps of Engineers, Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE (2015) pp. 16-18, *available at*

<https://www.spd.usace.army.mil/portals/13/docs/regulatory/mitigation/mitmon.pdf>.

Third, 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 Commission is responsible for identifying the specific mitigation needed to reduce the Project's 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.⁸⁶⁰

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

⁸⁶⁰ 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.

as proposed mitigation measures of such impacts, will require review under CEQA before the Water Board can issue permits for those proposed impacts.⁸⁶¹

Fourth, 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 Water Act are not achieving the goal of “no overall net loss” of wetland acres and functions.⁸⁶² 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.”⁸⁶³ 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.⁸⁶⁴ 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.⁸⁶⁵ 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.⁸⁶⁶

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.⁸⁶⁷

⁸⁶¹ City of Dublin, Final Environmental Impact Report: At Dublin Project, Comment Letter #2 (Oct. 2018).

⁸⁶² National Research Council, *Compensating for Wetland Losses Under the Clean Water Act* (2001); *see also* Environmental Law Institute, *Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards* (Apr. 2004) p. 271, *available at* <https://www.eli.org/sites/default/files/eli-pubs/revision.pdf>; R.L. Kihlslinger, *Success of Wetland Mitigation Project* (2008), *available at* <https://jacksontetonplan.com/DocumentCenter/View/780/Kihlslinger-RL-2008-PDF?bidId=>.

⁸⁶³ State Water Resources Control Board, *An Evaluation of Compensatory Mitigation Projects Permitted Under Clean Water Act Section 401 by the California State Water Resources Control Board, 1991-2002* (2007) p. 8 (hereinafter “CWA Compensatory Mitigation Report”), *available at* https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wetlandmitstudy_rpt.pdf.

⁸⁶⁴ National Research Council, *Compensating for Wetland Losses Under the Clean Water Act* (2001).

⁸⁶⁵ CWA Compensatory Mitigation Report.

⁸⁶⁶ A. Wagner, *Temporary Impacts to Wetlands in the Arid Southwestern United States Permitted by Section 404 of the Clean Water Act* (2021), *available at* <https://escholarship.org/content/qt9vf0x41k/qt9vf0x41k.pdf?t=qttbn8>.

⁸⁶⁷ Cashen Comments at p. 31.

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 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.”⁸⁶⁸ As stated in the AFC, “[t]he primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Elmore Ranch, San Andreas, and Brawley Seismic Zone faults.”⁸⁶⁹

Moreover, “[t]he risk of liquefaction induced settlement is [also] high.”⁸⁷⁰ “Liquefaction occurs when granular soils below the water table are subjected to vibratory motions, such as those produced by earthquakes. With strong ground shaking, the pore water pressure increases as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations.”⁸⁷¹ 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.”⁸⁷²

CEQA requires the lead agency to consider the whole of the action.⁸⁷³ 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.⁸⁷⁴ 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,....”⁸⁷⁵

With regards to geologic hazards, the PSA concludes that the proposed conditions of certification “both mitigate environmental impacts [from geologic

⁸⁶⁸ PSA at p. 5.6-6.

⁸⁶⁹ AFC, appen. 5.4 at p. 13.

⁸⁷⁰ *Id.* at Executive Summary.

⁸⁷¹ *Id.* at p. 15.

⁸⁷² *Ibid.*

⁸⁷³ 14 Cal Code Regs. §§ 15003(h); 15378(a).

⁸⁷⁴ PSA at p. 3-2.

⁸⁷⁵ *Ibid.*

hazards] and ensure conformance with applicable LORS.”⁸⁷⁶ 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, ... require mitigation to be less than significant.”⁸⁷⁷ No mitigation measures for significant impacts on these Project components are identified or evaluated in the PSA.⁸⁷⁸

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 seismic hazards, as discussed in Dr. Malama’s attached expert comments. Second, Dr. Malama provides substantial evidence to demonstrate that impacts from liquefaction and surface inundation may be significant and unmitigated in the PSA. Third, the PSA fails to evaluate induced seismicity from the Project’s produced and injected fluids. Finally, 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 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 Seismic Hazards

Dr. Malama concludes that seismic hazards may be significant and unmitigated in the PSA.⁸⁷⁹ He provides the following evidence:

The mineralogy of the fault gouge is important in determining whether the fault is a hydraulic barrier and weak under shear loading. If the Brawley Fault is filled with clay-rich gouge, it would be weak under shear and more prone to failure in response to seismic activity, which can have implications for the project related to ground shaking and surface rupture risk. If the fault gouge is granitic, then its permeability may be sufficiently high to allow for fluid migration. Clay-rich fault gouges tend to have different hydromechanical behavior when compared to granitic fault gouges. Clay-rich fault gouge tends to be of low permeability, making them hydraulic barriers, restricting regional fluid flow. However, clay-rich fault gouge tends to have low frictional (or shear) strength and its low permeability tends to have the effect of increasing fluid pore pressures within the fault, which would have the effect of further weakening the shear strength of the fault. The opposite is typically the case

⁸⁷⁶ *Id.* at p. 5.6-28.

⁸⁷⁷ *Ibid.*

⁸⁷⁸ *Ibid.*

⁸⁷⁹ Malama Comments at p. 1.

for granitic fault gouges. 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.”⁸⁸⁰

Dr. Malama finds that the PSA omits critical information regarding “the actual mineralogic composition of the Brawley Fault gouge.”⁸⁸¹ He also comments that the Applicant’s responses to data requests, along with the cited references, do not provide this information.⁸⁸² If faults around the Project site are clay filled, Dr. Malama explains that “[p]ore pressure buildup in the faults is a potential risk,” and “[t]his has the effect of lowering the effective normal stress on the fault making it more prone to shear failure [internal citation omitted], which has implications for the susceptibility of the project area to ground surface rupture.”⁸⁸³ 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. Impacts from Surface Inundation and Liquefaction May be Significant and Unmitigated

The preliminary geotechnical report for the Project concludes that “[t]he risk of liquefaction induced settlement is high.”⁸⁸⁴ 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 liquefaction.”⁸⁸⁵ 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.”⁸⁸⁶ Thus, the geotechnical report did not analyze geologic

⁸⁸⁰ *Ibid.* (internal citations omitted).

⁸⁸¹ *Ibid.*

⁸⁸² *Ibid.*

⁸⁸³ *Ibid.*

⁸⁸⁴ AFC, appen. 5.4 at Executive Summary. Dr. Malama comments that the findings in the preliminary geotechnical report must be reconciled with the conclusions in the PSA with regards to surface inundation and liquefaction. Malama Comments at p. 2. The PSA determines that impacts will be less-than-significant despite the presence of “clayey soils with low infiltration rates [that] dominate the surface.” *Ibid.*

⁸⁸⁵ PSA at p. 5.6-18.

⁸⁸⁶ AFC, appen. 5.4 at p. 2.

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 surface inundation 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 are unstable, or that would become unstable as a result of Project execution, is likely to result in potentially significant impacts from ground shaking, surface rupture, and liquefaction.⁸⁸⁷ Based on the calculated peak ground acceleration figure set forth in the PSA, Dr. Malama concludes that there are moderate to high risks from ground shaking at the Project area.⁸⁸⁸ Coupled with "the shallow groundwater, known soil type, [and] historical ground surface rupture," Dr. Malama finds that "the proposed project infrastructure, particularly the proposed six production wells, associated well pads, and pipelines to the north of the project site, will be constructed and operated on geologic units and soils that could become unstable as a result of the project operations."⁸⁸⁹

Dr. Malama explains that potential leakages from the Project's pipelines "have the potential to cause surface inundation and result in soil liquefaction."⁸⁹⁰ Dr. Malama's analysis relies on two estimates to support his conclusion.⁸⁹¹ First, the AFC estimates 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," and accordingly, Dr. Malama states that even a small volume of fluid release could have "an appreciable impact...."⁸⁹² Second, the PSA estimates that a conveyance system to surface impoundment facilities can transport process fluids at a maximum rate of 797 gallons per minute.⁸⁹³ Based on this information, Dr. Malama concludes that "leak of even a few minutes has the potential to result in significant impacts from surface inundation and liquefaction."⁸⁹⁴ Dr. Malama comments "...that liquefaction, in particular, can lead to 1) non-uniform and differential settlement of structures often resulting in cracking, 2) loss of bearing support 3) flotation of buried structures such as sewer lines, tanks, and pipes, 4) strong lateral forces against retaining structures such as seawalls, 5) Lateral spreading...."⁸⁹⁵

⁸⁸⁷ Malama Comments at pp. 1-2.

⁸⁸⁸ *Id.* at p. 1.

⁸⁸⁹ *Ibid.*

⁸⁹⁰ *Ibid.*

⁸⁹¹ *Ibid.*

⁸⁹² AFC at p. 2-64; Malama Comments at 1.

⁸⁹³ PSA, appen. D at p. 35.

⁸⁹⁴ Malama Comments at p. 2.

⁸⁹⁵ *Ibid.*

For the foregoing reasons, the geologic hazards from surface inundation and liquefaction must be analyzed in a revised PSA and adequate mitigation must be adopted, as necessary.

C. The PSA Fails to Evaluate 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.⁸⁹⁶ Dr. Malama cites to several studies on induced seismicity from fluid injection.⁸⁹⁷ 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].”⁸⁹⁸ 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).⁸⁹⁹ “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.”⁹⁰⁰ 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.”⁹⁰¹ 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.”⁹⁰²

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.”⁹⁰³

⁸⁹⁶ Malama Comments at pp. 6-7.

⁸⁹⁷ *Ibid.*

⁸⁹⁸ *Id.* at p. 6.

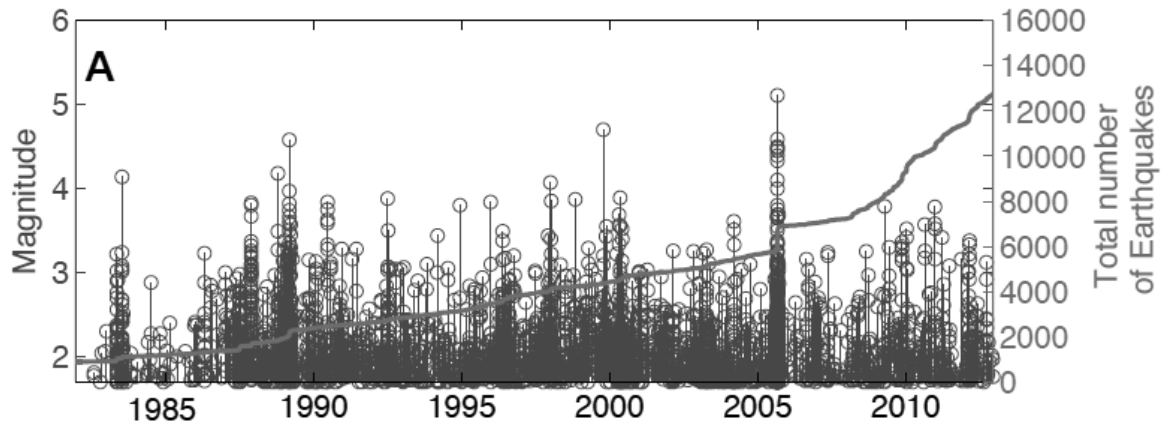
⁸⁹⁹ *Ibid.*

⁹⁰⁰ *Ibid.*

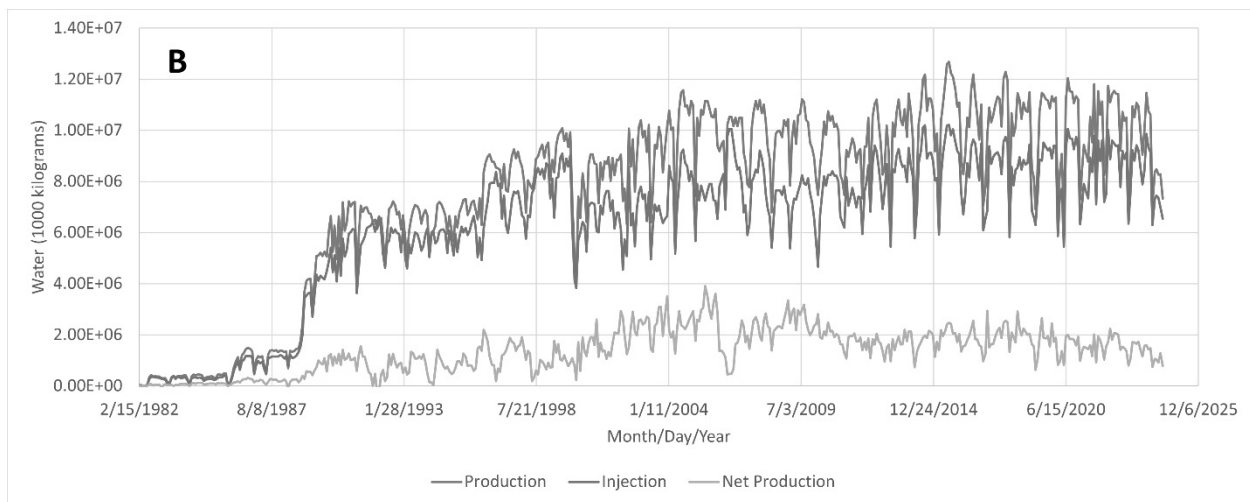
⁹⁰¹ *Ibid.*

⁹⁰² *Ibid.*

⁹⁰³ *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.⁹⁰⁴ 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 [].”⁹⁰⁵



For the Elmore North Project, the AFC stated that each production well would have an average production capacity of approximately 1,626,000 pounds per hour and a production demand of around 10,294,000 pounds per hour.⁹⁰⁶ Furthermore, each injection well would have a capacity of 2.7 million pounds per

⁹⁰⁴ *Ibid.*

⁹⁰⁵ *Ibid.*

⁹⁰⁶ AFC at p. 2-16.

hour.⁹⁰⁷ Based on these estimations, Dr. Malama calculates that the Project would generate an approximate volume of 4.4 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.⁹⁰⁸ 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 twelve (12) injection wells and removed from the reservoir by the nine (9) production wells.⁹⁰⁹ 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.

D. 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 California Geologic Energy Management Division ("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,...."⁹¹⁰ 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.⁹¹¹ 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.

⁹⁰⁷ *Id.* at p. 2-6.

⁹⁰⁸ Malama Comments at p. 6.

⁹⁰⁹ *Id.* at p. 7.

⁹¹⁰ PSA at p. 5.16-1 (emphasis added).

⁹¹¹ *Id.* at p. 5.6-17.

The PSA fails to provide any evidence that these measures would reduce the impacts from seismic ground shaking on these components. Consequently, the significant impacts on these Project features remain inadequately assessed and unmitigated in the PSA.

LAND USE, AGRICULTURE, 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.⁹¹² 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.⁹¹³ These options include procuring Agricultural Conservation Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County.⁹¹⁴

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.⁹¹⁵ "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified."⁹¹⁶ 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.⁹¹⁷

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.⁹¹⁸ The MMRP in the County's PEIR also does not allow for the deferred

⁹¹² PSA at p. 5.8-14.

⁹¹³ *Ibid.*

⁹¹⁴ *Ibid.*

⁹¹⁵ 14 Cal Code Regs. § 15126.4(a)(1)(B).

⁹¹⁶ *Ibid.*

⁹¹⁷ *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 709.

⁹¹⁸ *Id.* at pp. 727-28.

selection of one of the available options.⁹¹⁹ The PSA also does not explain why a 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.⁹²⁰ 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.⁹²¹

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”⁹²² 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.”⁹²³

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.⁹²⁴ The PSA fails to provide substantial evidence to support the determination that the No

⁹¹⁹ Imperial County, Final Programmatic Environmental Impact Report: Imperial County Renewable Energy and Transmission Element Update (undated) p. 5-4 to 5-5 (emphasis added), *available at* <https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmrip.pdf>.

⁹²⁰ PSA at p. 8-23.

⁹²¹ 14 Cal. Code Regs. § 15126.6(d).

⁹²² *Id.* at p. 8-24.

⁹²³ PSA at 8-21.

⁹²⁴ *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).

Project Alternative is the environmentally superior alternative. Therefore, the alternatives analysis is inadequate.

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.

Thank you for your consideration of these comments.

Dated: September 4, 2024

Respectfully submitted,

Original Signed by:

/s/ Andrew J. Graf
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Energy

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 Elmore North Geothermal Project

Dear Mr. Graf,

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Komal Shukla has reviewed materials related to the above-referenced project. This document constitutes Dr. Komal Shukla's comment letter reviewing the Preliminary Staff Assessment (PSA) and the applicant's (Elmore North Geothermal LLC) response to California Unions for Reliable Energy (CURE) comments on the preliminary determination of compliance for the Elmore North Geothermal Project. Dr. Shukla'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 PSA, the Applicant proposes to site and construct the Elmore North Geothermal Project (ENGP or Project) within the Salton Sea Known Geothermal Resource Area (KGRA) located near Calipatria, Imperial County, California. The ENGP will be located on a 50-acre parcel of land in Imperial County, east of the Salton Sea. The ENGP will comprise a geothermal resource production facility, a geothermal-powered power generation facility, and associated ancillary facilities. The resource production facility will include geothermal production and injection wells, pipelines, fluid and steam handling facilities, a solid handling system, Class II surface impoundment, a service water pond, a retention basin, process injection pumps, and steam polishing equipment. The power generation facility will include a triple pressure condensing turbine/generator set, surface condensers, a non-condensable gas (NCG) removal system, a heat rejection system, a generator step-up transformer (230-kilovolt substation), and power distribution centers. The ENGP's geothermal resource production facility and geothermal-powered power generation facility will share a control building, service water pond, and other secondary support facilities. The project would consist of a 157-megawatt (MW) (140 MW net) electricity generating facility powered by steam sourced from super-heated geothermal brine.

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. Inadequate GHG Emissions Analysis in PSA Fails to Address Long-Term Impacts

The PSA claims that the proposed project will not produce a net increase in greenhouse gas (GHG) emissions because it will replace fossil fuel resources with clean energy. The PSA argues 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 demand¹” along with the rationale 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 project²”

The assessment of the Project’s GHG emissions impact, as detailed in the PSA, presents a claim that the Project will result in no net increase in GHG emissions. This assertion is based on the premise of avoided emissions from replacing fossil fuel resources with cleaner alternatives. However, this analysis does not adequately incorporate key factors related to 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. This oversight raises significant concerns about the accuracy and reliability of the Project’s environmental impact assessment.

Overview of the PSA’s Assumptions

The PSA uses a displacement factor of 822.5 lbs CO₂e/MWh to calculate the avoided emissions from the Project, assuming it replaces a fossil fuel source with this emission intensity. The Project’s annual avoided emissions are calculated based on this factor, resulting in an estimated 457,447 MTCO₂e per year over the Project’s lifespan. The PSA’s analysis is flawed due to its reliance on a static displacement factor and its failure to incorporate the implications of California’s clean energy transition. By neglecting the progressive reduction in grid emissions mandated by SB 100, the PSA overstates the Project’s environmental benefits and underestimates its potential to contribute to a net increase in GHG emissions. Additionally, the displacement factor of 822.5 lbs CO₂e/MWh, based on natural gas generation, is not representative of current or future conditions. The IID average displacement factor of 585 lbs CO₂e/MWh and the statewide average of 422 lbs CO₂e/MWh provide should be used to calculate avoided emissions (Figure 1)³. Using these displacement factors demonstrates that the Project would result in a net increase in emissions over its lifespan.

PSA’s calculation is based on several problematic assumptions:

¹ 5.3.2.2 on Pg.393. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843)

² Pg.394. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843)

³ See [2022 PCL Imperial Irrigation District ADA \(ca.gov\)](https://www.energy.ca.gov/filebrowser/download/6033), <https://www.energy.ca.gov/filebrowser/download/6033>.

- ❖ **Constant Displacement Factor:** The PSA assumes a fixed displacement factor of 822.5 lbs CO₂e/MWh throughout the Project's 40-year lifespan. This approach fails to account for the significant changes in California's energy mix over time, specifically the progressive shift towards cleaner energy sources. The displacement factor used in the PSA is based on a high historical emission intensity for fossil fuels, which becomes progressively less relevant as the grid becomes cleaner. The Project's reliance on this outdated factor leads to an overestimation of its environmental benefits.
- ❖ **Neglect of California's Clean Energy Transition:** The PSA does not adequately address the impacts of California's SB 100 policy, which mandates a shift to 100% renewable and zero-carbon energy by 2045. This policy will lead to a substantial reduction in the state's average emission factors over time, rendering the assumed displacement factor of 822.5 lbs CO₂e/MWh increasingly outdated and less relevant.
- ❖ **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.

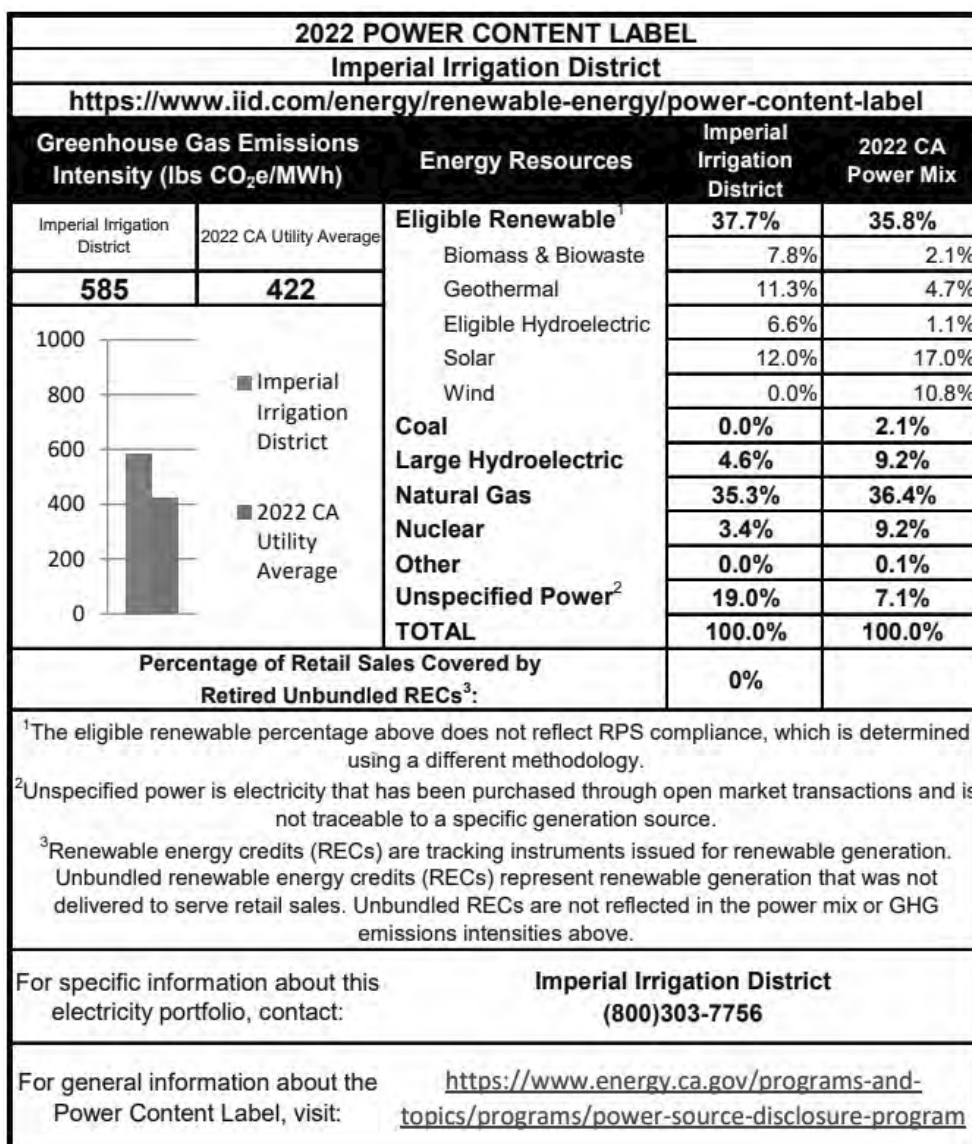


Figure 1 : IID and Statewide (California) displacement factors for GHG Intensity

Impact of Clean Energy Transition on Emissions

California's clean energy transition significantly alters the context in which the Project's emissions and avoided emissions should be evaluated. 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 66,227 MTCO₂e/year, as stated in the PSA, represents the direct emissions the project is estimated to produce each year of operation. To calculate the total project emissions over its 40-year lifespan, we multiply the annual emissions by the number of years:

Annual Emissions: 66,227 MTCO₂e/year
Project Lifetime: 40 years

Total Project Emissions = Annual Emissions * Project Lifetime
Total Project Emissions = 66,227 MTCO₂e/year * 40 years = 2,649,080 MTCO₂e

It is important to note that the 2,649,080 MTCO₂e reflects the total emissions produced by the project without considering any potential reductions from displaced emissions due to the use of renewable energy. Therefore, to assess the project's environmental impact, we must compare the total project emissions with the avoided emissions calculated 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 CO₂ 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/MWh)

Parameters

Initial Displacement Factor: 585 lbs/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

Revised Displacement Factor Calculation

2025-2034 (Linear Reduction from 0% to 90%):
Annual Reduction Rate = 90%/10 years = 9% per year

Displacement Factor in MTCO₂e/MWh = 0.263 MTCO₂e/MWh

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 (MTCO ₂ e)	Net Emissions (MTCO ₂ e)
2025	324,996.0	-258,769.0
2026	295,562.4	-229,335.4
2027	267,355.2	-201,128.2
2028	237,921.6	-171,694.6
2029	208,488.0	-142,261.0
2030	179,054.4	-112,827.4
2031	149,620.8	-83,393.8
2032	120,187.2	-53,960.2
2033	90,753.6	-24,526.6
2034	61,320.0	4,907.0
2035	33,112.8	33,114.2
2036	29,433.6	36,793.4
2037	25,754.4	40,472.6
2038	23,301.6	42,925.4
2039	19,622.4	46,604.6
2040	15,939.2	50,287.8
2041	13,490.4	52,736.6
2042	9,807.2	56,419.8
2043	6,132.0	60,095.0
2044	3,675.2	62,551.8
2046–2065	0	66,227.0

Table 1: Net Emissions Difference for the Project Using IID Displacement Factor

Net Emissions

IID Average Displacement Factor:

- **Total Avoided Emissions:** 1,943,666 MTCO₂e
- **Total Project Emissions:** 2,649,080 MTCO₂e
- **Net Increase in Emissions:** 705,414 MTCO₂e

Case - 2 Statewide (Displacement Factor of 422 lbs/MWh)

Parameters

Initial Displacement Factor: 422 lbs/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

Revised Displacement Factor Calculation

2025–2034 (Linear Reduction from 0% to 90%):

Annual Reduction Rate = 90%/10 years = 9% per year

Displacement Factor in 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: $422 * (1 - 0.97) / 2204.62 = 0.006 \text{ MTCO}_2\text{e/MWh}$
2043: $422 * (1 - 0.98) / 2204.62 = 0.005 \text{ MTCO}_2\text{e/MWh}$
2044: $422 * (1 - 0.99) / 2204.62 = 0.003 \text{ MTCO}_2\text{e/MWh}$
2045: $422 * (1 - 1.00) / 2204.62 = 0 \text{ MTCO}_2\text{e/MWh}$

2046–2065 (100% Reduction):

Displacement Factor = 0 MTCO₂e/MWh

Annual Avoided Emissions:

2025: $0.191 * 1,226,400 = 234,246.4 \text{ MTCO}_2\text{e}$
2026: $0.173 * 1,226,400 = 212,443.2 \text{ MTCO}_2\text{e}$
2027: $0.156 * 1,226,400 = 191,308.8 \text{ MTCO}_2\text{e}$
2028: $0.139 * 1,226,400 = 169,174.4 \text{ MTCO}_2\text{e}$
2029: $0.122 * 1,226,400 = 148,039.2 \text{ MTCO}_2\text{e}$
2030: $0.104 * 1,226,400 = 127,545.6 \text{ MTCO}_2\text{e}$
2031: $0.087 * 1,226,400 = 106,411.2 \text{ MTCO}_2\text{e}$
2032: $0.070 * 1,226,400 = 85,276.8 \text{ MTCO}_2\text{e}$
2033: $0.052 * 1,226,400 = 63,782.4 \text{ MTCO}_2\text{e}$
2034: $0.035 * 1,226,400 = 42,649.6 \text{ MTCO}_2\text{e}$
2035: $0.019 * 1,226,400 = 23,301.6 \text{ MTCO}_2\text{e}$
2036: $0.017 * 1,226,400 = 20,848.8 \text{ MTCO}_2\text{e}$
2037: $0.015 * 1,226,400 = 18,396.0 \text{ MTCO}_2\text{e}$
2038: $0.013 * 1,226,400 = 15,943.2 \text{ MTCO}_2\text{e}$
2039: $0.012 * 1,226,400 = 14,016.8 \text{ MTCO}_2\text{e}$
2040: $0.010 * 1,226,400 = 11,564.0 \text{ MTCO}_2\text{e}$
2041: $0.008 * 1,226,400 = 9,111.2 \text{ MTCO}_2\text{e}$
2042: $0.006 * 1,226,400 = 6,658.4 \text{ MTCO}_2\text{e}$
2043: $0.005 * 1,226,400 = 5,219.2 \text{ MTCO}_2\text{e}$
2044: $0.003 * 1,226,400 = 2,766.4 \text{ MTCO}_2\text{e}$
2045: $0 * 1,226,400 = 0 \text{ MTCO}_2\text{e}$
2046–2065: 0 MTCO₂e

Net Emissions

Statewide Average Displacement Factor:

- **Total Avoided Emissions:** 1,518,703.2 MTCO₂e
- **Total Project Emissions:** 2,649,080 MTCO₂e
- **Net Increase in Emissions:** 1,208,714.8 MTCO₂e

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Year	Avoided Emissions (MTCO2e)	Net Emissions Difference (MTCO2e)
2025	234,246.4	-168,019.4
2026	212,443.2	-146,216.2
2027	191,308.8	-125,081.8
2028	169,174.4	-102,947.4
2029	148,039.2	-81,812.2
2030	127,545.6	-60,318.6
2031	106,411.2	-40,183.8
2032	85,276.8	-19,049.2
2033	63,782.4	4,555.4
2034	42,649.6	23,577.6
2035	23,301.6	42,925.4
2036	20,848.8	45,378.2
2037	18,396.0	47,830.0
2038	15,943.2	50,283.8
2039	14,016.8	52,210.2
2040	11,564.0	54,663.0
2041	9,111.2	57,115.8
2042	6,658.4	59,568.6
2043	5,219.2	61,007.8
2044	2,766.4	63,460.6
2045	0	66,227.0
2046	0	66,227.0
2047	0	66,227.0
2048	0	66,227.0
2049	0	66,227.0
2050	0	66,227.0
2051	0	66,227.0
2052	0	66,227.0
2053	0	66,227.0
2054	0	66,227.0
2055	0	66,227.0
2056	0	66,227.0
2057	0	66,227.0
2058	0	66,227.0
2059	0	66,227.0
2060	0	66,227.0
2061	0	66,227.0
2062	0	66,227.0
2063	0	66,227.0
2064	0	66,227.0
2065	0	66,227.0

Table 2: Net Emissions Difference for the Project Using Statewide Displacement Factor

Both scenarios lead to a net *increase* in GHG emissions over the Project's lifetime (Table 1 and Table 2). Despite accounting for avoided emissions from displaced electricity generation, the Project's emissions—when assessed with the regional and statewide displacement factors—surpass the avoided emissions, undermining the intended environmental benefits. The Project's total carbon footprint remains positive. The plot (Figure 2) illustrates that the Project will contribute to rising net emissions over time, particularly after 2045. To ensure a precise evaluation and alignment with California's climate objectives, it is essential to use updated and dynamic displacement factors that accurately represent the real-time energy mix. The Project's claim of no net increase in GHG emissions is unsupported when considering the long-term transition to cleaner energy, emphasizing the need for a revised and comprehensive analysis that includes these critical elements. 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 Advisory⁴ issued by the Governor's Office of Planning and Research and the guidance from the California Air Pollution Control Officers Association⁵.

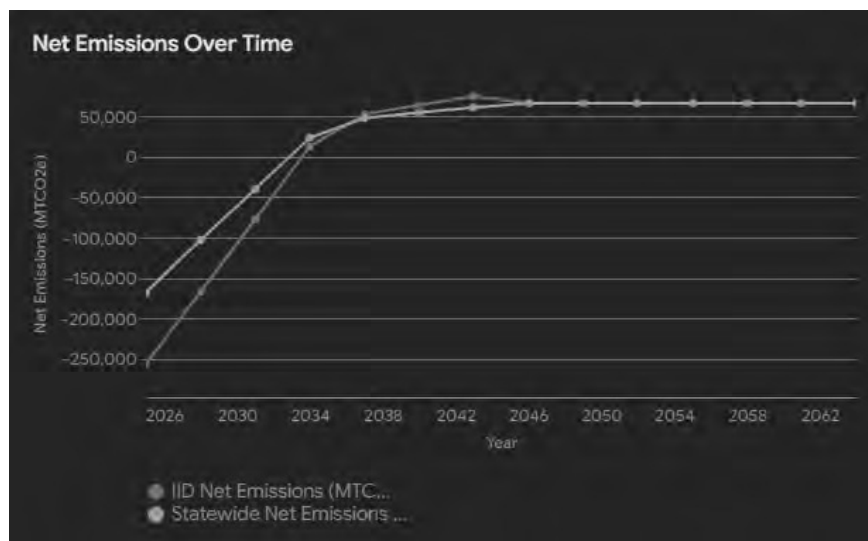


Figure 2: Net emissions increase over project's lifetime (2025-2065)

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.”⁶ The PSA also notes that “[C]onstruction GHG emissions for the offsite switching station, offsite piping, laydown yards,

⁴ <https://opr.ca.gov/docs/june08-cega.pdf>.

⁵ https://www.caleemod.com/documents/handbook/full_handbook.pdf.

⁶ Refer to Para.3 on Pg.133. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843)

and temporary worker housing were not included in the applicant's emissions calculations.”⁷ 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 contribute significant GHG emissions. Excluding these emissions may overlook substantial sources of criteria pollutants, GHGs, and toxic air contaminants.
- **Offsite Piping and Laydown Yards:** Like switching stations, these components involve construction equipment and materials transportation, which can contribute additional emissions of criteria pollutants, GHGs, and toxic air contaminants.
- **Temporary Worker Housing:** While this may seem minor, 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 insignificant without providing quantifiable evidence. The assumption that shorter construction times and reduced equipment usage equate to negligible emissions lacks empirical support and could significantly 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 necessitate comprehensive accounting and monitoring of emissions. Excluding significant sources undermines compliance with these standards and may misrepresent 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. Including these emissions may demonstrate a higher probability of exceeding applicable significance thresholds. The emissions can and should be quantified to accurately assess the project's environmental impact.

❖ **Emissions Mitigation:** Implementing strategies to minimize emissions from geothermal activities.

⁷ Refer to Para.4 on Pg. 392-93. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843)

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 assertions⁸ regarding the appropriateness of the meteorological data used for the air quality model, several critical points need to be addressed.

The Applicant's⁹ 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."*

"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 southeast¹⁰."

- ❖ **Distance, Proximity, and Urban vs. Non-Urban Sites:** The Imperial County Airport, located 28 miles away from the project site, introduces significant uncertainty in the representativeness of the meteorological data due to the considerable distance (explained in earlier comment letter as well¹¹). Local meteorological conditions, particularly in regions with unique climatic and geographical features like the Salton Sea, can vary over such distances. Consequently, using data from a station so far from the project site inherently reduces 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 closer and more relevant source of meteorological data (previously explained in CURE PDOC comments¹²). Proximity to the project site is a critical factor in ensuring that the data reflects the actual conditions experienced at the site. Using data from a closer station significantly enhances the reliability and accuracy of the model.

Additionally, the Imperial County Airport is an urban site and does not accurately represent the conditions at the plant site. Between the plant site and the Imperial County

⁸ Pg. 3-4 Elmore North Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-02 (TN #: 256155).

⁹ Pg. 3 Elmore North Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-02 (TN #: 256155).

¹⁰ Pg. 3 Elmore North Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-02 (TN #: 256155).

¹¹ Exhibit A, Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from James J. Clark, Clark & Associates re: Comment Letter Elmore North Geothermal Preliminary Determination of Compliance (Feb. 29, 2024) (hereinafter "Clark Comments").

¹² The CURE PDOC comments for the project (Transaction Number [TN] #254833) are available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254833&DocumentContentId=90487>.

Airport, there are 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 increased roughness factor in urban areas results in different dispersion characteristics, further underscoring the inappropriateness of using Imperial County Airport data for the project site.

- ❖ **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 effect¹³. This suppresses the actual planetary boundary layer, which 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, being next to the shoreline, captures this effect and provides more accurate data for the dispersion model.
- ❖ **Data Completeness and Spatial Representativeness:** While it is true that 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 allow for the use of the most representative data available. Supplementing the two years of data from Sonny Bono with additional data or employing statistical methods to address any gaps would provide a more accurate representation of the local conditions than using data from a distant station. The Applicant's preference for ASOS station data due to fewer missing data points does not inherently guarantee more representative data for the project site. Moreover, the meteorological data which the Applicant and the PSA rely upon is not consistent with EPA guidance because data from the Imperial County Airport during the years 2019 and 2020 was omitted as the California Air Resources Board determined the data to be incomplete. The critical factor is the spatial representativeness of the data, not just the completeness. A non-ASOS station closer to the project site can provide more accurate and relevant data despite having some missing data points.
- ❖ **Comparative Analysis of Wind Roses:** The Applicant's comparison of wind roses from the Imperial County Airport and the Sonny Bono station is flawed. The Imperial County Airport data shows predominantly westerly and southwesterly winds (Figure 2), whereas the Sonny Bono station data shows predominantly southeasterly winds (Figure 3). This significant difference in wind direction further demonstrates that the Imperial County Airport data is not representative of the project site. Wind roses provide a general overview of wind patterns but do not capture the full spectrum of local atmospheric dynamics. Relying solely on wind rose comparisons ignores other important factors such as temperature, humidity, and atmospheric stability, which can significantly impact dispersion modeling.

¹³ 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/pdf?md5=f209d4042bb2ed551aafd4758b75785e&pid=1-s2.0-S1352231022005714-main.pdf>.

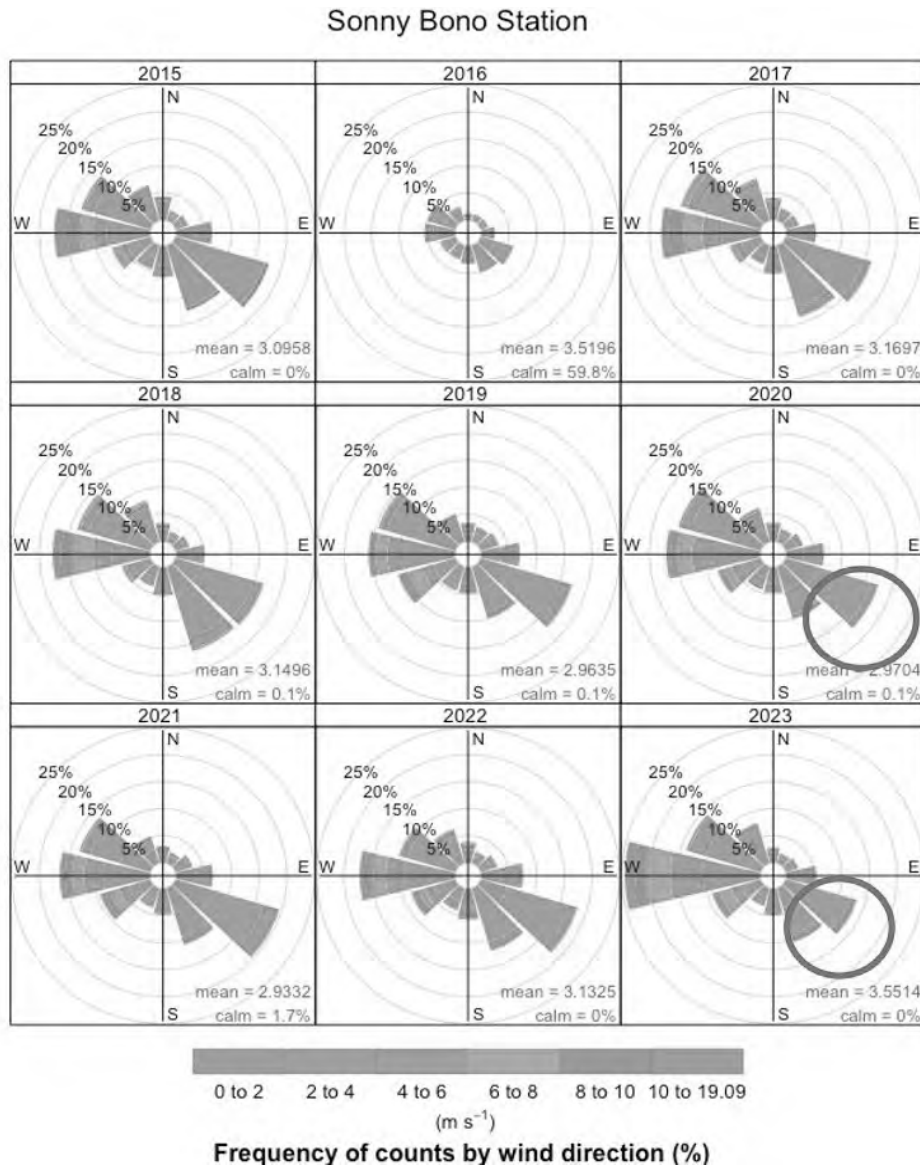


Figure 2: Wind Rose Plot Illustrating Wind Conditions at Sonny Bono Monitoring Station

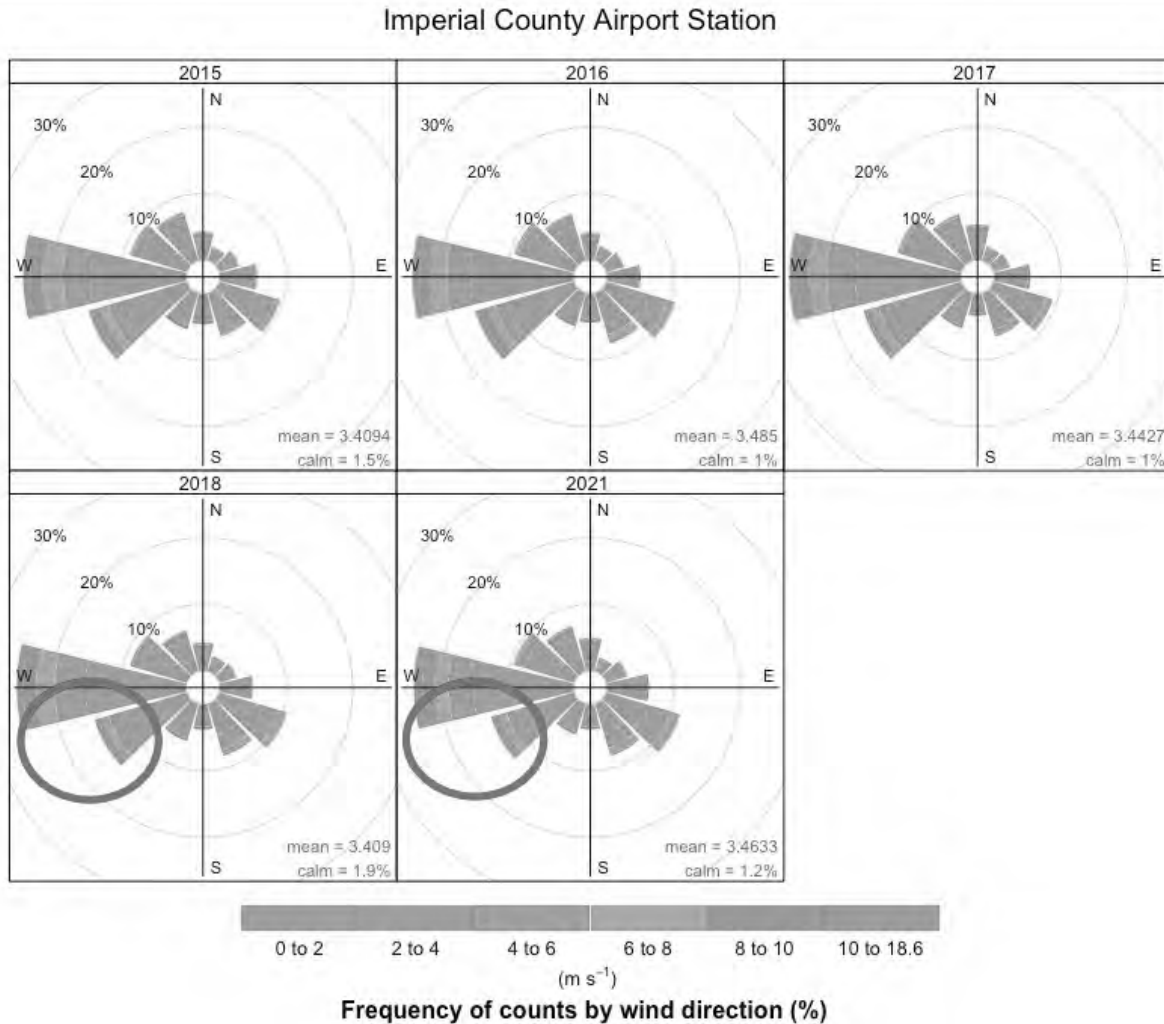


Figure 3: Wind Rose Plot Illustrating Wind Conditions at Imperial County Airport Station

Based on these points, the reliance on data from the Imperial County Airport, despite the lack of significant geographic features between the sites, does not provide the most accurate and representative meteorological input for the dispersion model. 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 considered to ensure the integrity and accuracy of the air quality model.

IV. Inadequate Analysis of Construction Impacts for the Proposed Switching Station

A new proposed 230kV switching station, the first point of interconnection, is to be constructed as part of the IID system upgrades, approximately 0.7 miles from ENGP near and northwest of the intersection of Garst Road and West Sinclair Road (Figure 4). The applicant will engineer,

construct, own, operate, and maintain the gentile line between the proposed ENGP generator step-up transformer and the switching station.

The PSA's exclusion of emissions from the switching station's construction is problematic. They justify this by citing the station's smaller footprint¹⁴, lower ground disturbance, shorter duration, and fewer equipment, while also claiming similar receptor distances and the implementation of mitigation measures AQ-SC1 through AQ-SC5.



Figure 4: 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 undermines the validity of their emissions assessment. The 29-month timeline for the entire plant is misleading, and excluding the switching station's emissions from calculations is a major oversight. The justification that these emissions are negligible due to a smaller footprint and fewer equipment lacks empirical support and underestimates potential impacts.
- ❖ **Unsubstantiated Comparisons:** Comparing the switching station's emissions to those of the main project without rigorous analysis is misleading. Significant differences in construction scale and activity have not been adequately considered.

¹⁴ Pg. 137, Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

- ❖ **Misrepresentation of Mitigation Measures and Overlooked Emission Types:** Relying on AQ-SC1 through AQ-SC5 without detailed emissions data is inadequate. The effectiveness of these measures cannot be validated 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.¹⁵

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	481	160	550	No
NOx	120	39.9	100	Yes
SOx	1.16	0.39	None	N/A
PM10 ^b	23.6	7.88	150	No
PM2.5 ^b	17.3	5.77	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 2023a. CEC staff analysis

Table 3: Criteria Pollutant Emissions from Project Construction

Proposed Mitigation Measures for Construction NOx Emissions:

Use Enhanced NOx Control Technologies:

- **Optimize Engine Warm-Up Time:**

¹⁵Refer to Table 5.1-6 on Pg.138. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

- 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 address the updated regulatory requirements.¹⁶ The final rule for the revised standard, effective from May 6, 2024, mandates that all new permits consider the new PM2.5 NAAQS (Table 4 and Table 5 mentions the standard as 12 µg/m³ while impacting concentration is more than 9.0 µg/m³). The PSA's assertion that the project's permit application, completed before this effective date, is exempt from these new requirements is problematic. It overlooks the fact 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/m ³)						
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	1.3	48.6	49.9	20	249%
PM2.5 ^a	24-hour	1.0	24.5	25.5	35	73%
	Annual	0.2	9.4	9.6	12	80%
CO	1-hour	133.8	5,726	5,860	23,000	25%
	8-hour	107.3	4,123	4,230	10,000	42%
NO₂ ^b	State 1-hour	55.9	105.0	160.9	339	47%
	Federal 1-hour	52.9	70.6	123.5	188	66%
	Annual	10.1	14.9	25.0	57	44%
SO₂ ^c	State 1-hour	0.3	22.5	22.8	655	3%
	Federal 1-hour	0.3	16.6	16.9	196	9%
	24-hour	0.2	7.1	7.2	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

¹⁶Refer to Table 5.1-2 on Pg.124. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM₁₀	24-hour	7.1	474.7	481.8	50	964%
	Annual	0.6	48.6	49.2	20	246%
PM_{2.5}^a	24-hour	4.3	24.5	28.8	35	82%
	Annual	0.4	9.4	9.8	12	82%
CO	1-hour	1,421.1	5,726	7,147	23,000	31%
	8-hour	114.5	4,123	4,237	10,000	42%
NO₂^b	State 1-hour	152.8	105.0	257.8	339	76%
	Federal 1-hour	1.3	70.6	72.0	188	38%
	Annual	0.1	14.9	15.0	57	26%
SO₂^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 PM_{2.5} NAAQS, staff conservatively combined the maximum modeled 24-hour PM_{2.5} impacts to the three-year average of 98th percentile PM_{2.5} background.

Table 5: Maximum Ambient Air Quality Impacts During Operation

VII. Inadequate Quantification and Modeling of Emissions: Oversights in Background Concentrations, Overlap Scenarios, and Cumulative Impact Assessment

- ❖ **Background Concentrations:** The PSA's reliance on background concentrations without explicitly quantifying emissions from nearby facilities, such as JJ Elmore, represents a significant oversight.¹⁷ The PSA's assertion that existing facilities' emissions 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. Proper cumulative impact assessment should include detailed quantification and modeling of emissions from both existing and proposed facilities. The most recent edition of EPA's "Guidelines on Air Quality Models, 40 CFR 51 Appendix W" ("Guidelines")¹⁸ recommend that individual sources located in the vicinity of the source(s) under consideration for emissions limits that are not adequately represented by ambient monitoring data be accounted for by explicitly modeling their emissions¹⁹. 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

¹⁷Refer to Para.2 on Pg.154. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

¹⁸ 40 C.F.R Pt. 51, App. W; see also 82 Fed. Reg. 5182-235 (Jan. 17, 2017).

¹⁹ 40 C.F.R Pt. 51, App. W § 8.3.1.

ambient monitoring. 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 data²⁰. At the bare minimum, the air quality model should have included emission from the JJ Elmore geothermal power plant. JJ Elmore shares common boundaries with Project. The omission of this 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 proposed Project. 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. JJ Elmore also emits the same criteria pollutants of concern as Elmore North. Without this, the analysis remains fundamentally incomplete and fails to provide a comprehensive evaluation of potential air quality impacts.

- ❖ **Modeling Overlap:** The PSA's argument that overlapping PM2.5 impacts from both facilities are unlikely to significantly affect modeled results is speculative and insufficient. The claim that such overlaps are rare does not exempt the analysis from rigorous modeling. Detailed simulations of potential overlap scenarios are necessary to ensure that combined emissions do not lead to exceedances of PM2.5 standards. The PSA's approach, which neglects the necessity of detailed modeling, risks underestimating the true environmental impact by failing to account for potential worst-case scenarios where emissions from both facilities might interact and exacerbate air quality issues.
- ❖ **Lack of Quantitative Analysis:** The PSA's reliance on a qualitative demonstration to argue that the project's highest PM2.5 impacts would not overlap with those from nearby sources, including JJ Elmore, is inadequate. The assertion that overlapping impacts are unlikely because they would occur in the same general direction under similar meteorological conditions does not substitute for rigorous quantitative analysis.²¹ The complexity of air dispersion and meteorological interactions requires detailed modeling to accurately assess potential cumulative impacts. Relying on qualitative arguments rather than empirical data and simulations leaves significant uncertainty in the impact assessment.
- ❖ **Insufficient Justification for Omission:** The PSA's conclusion that explicit modeling of existing sources is unnecessary due to the qualitative demonstration is problematic.²² Cumulative impacts analysis should not be based on assumptions or generalizations about the direction and behavior of PM2.5 plumes. The emission sources in question are in proximity, and their cumulative effects on air quality must be rigorously modeled to provide a comprehensive assessment. The exclusion of explicit modeling for nearby

²⁰ Id. §§ 8.3.1.i., 8.3.1.3.

²¹ Refer to Para.2 on Pg.154. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

²² Refer to Para.2 on Pg.154. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

sources, including JJ Elmore, is a critical gap in the analysis that undermines the validity of the impact assessment.

- ❖ **Overlooked Interaction Scenarios:** The PSA's argument does not adequately consider 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 absence of explicit modeling fails to address potential worst-case scenarios where combined impacts could lead to exceedances of air quality standards.

VIII. Deficiencies in Chronic Hazard Index Assessment

The PSA's chronic hazards assessment is critically flawed in its handling of arsenic exceedances, cumulative impacts, and wildlife risks. The reliance on qualitative arguments and the omission of detailed modeling undermines the robustness of the impact assessment. According to Table 5.10-4, the results of the applicant's HRA show that some Chronic HIs exceed the thresholds of one (i.e. PMI and MEIW). Staff checked the HRA modeling files provided by the applicant and found the predominant TACs for chronic HI is arsenic²³.

- ❖ **Chronic HI Exceedances:** The PSA acknowledges that the applicant's Health Risk Assessment (HRA) shows exceedances of the Chronic Hazard Index (HI) threshold of one, particularly due to arsenic.²⁴ This exceeds thresholds for PMI and MEIW receptor groups. However, the PSA's dismissal of these exceedances as insignificant, based on the assumption that maximum impact locations are not likely to be occupied by residents, workers, or the public, is methodologically flawed. The assessment neglects several critical aspects:
- ❖ **Potential Overlap Scenarios:** The PSA's assumption that chronic hazard impacts from different sources are unlikely to significantly overlap lacks robust justification. This assumption disregards the necessity for comprehensive simulations to evaluate worst-case scenarios where emissions from multiple sources might combine and exceed air quality standards. Without detailed modeling of these potential overlap scenarios, the assessment risks overlooking significant cumulative effects. A thorough evaluation of how combined emissions from different sources interact is crucial for ensuring regulatory compliance and accurately determining the impact on air quality. The absence of such detailed analysis could result in an incomplete understanding of potential combined effects on air quality standards.

²³Refer to Para.2 on Pg.674. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

²⁴Refer to Para.1 on Pg.676. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

IX. Insufficient Quantification of Cumulative Cancer Risks

The PSA acknowledges that the cancer risk at the point of maximum impact (PMI) exceeds the significance threshold of 10 in one million, with a reported cancer risk of 18.7 in one million. However, the PSA fails to explicitly quantify the cumulative cancer risks by incorporating emissions from existing geothermal facilities, such as JJ Elmore. This oversight is significant and problematic. The PSA's cancer risk assessment is fundamentally flawed due to its inadequate consideration of cumulative risks from existing geothermal facilities, such as JJ Elmore. The assumption that background concentrations sufficiently account for these risks fails to acknowledge the potential for combined emissions to exceed regulatory thresholds. A comprehensive assessment, including detailed cumulative risk modeling, is essential to accurately evaluate the total cancer risk and ensure public health protection. The current assessment does not fully address the combined impact of the project and existing emissions, potentially underestimating the true cancer risk to the public.

- ❖ **Threshold Exceedance:** The reported cancer risk at the PMI is already above the significance threshold, indicating a substantial potential risk. The PSA's omission of cumulative impacts from existing sources like JJ Elmore is a critical gap. Given that the cancer risk at the PMI is 18.7 in one million (Table 6) —well above the threshold—adding emissions from nearby facilities would further exacerbate the risk. For instance, the cancer risk for workers (MEIW) and residential risk (MEIR) are reported at 0.82 and 0.46 in one million, respectively, both below the threshold. However, the cumulative effect of these risks, including those from nearby facilities, could easily push the combined cancer risk above the significance level, thereby increasing the overall health risk.
- ❖ **Background Concentrations and Cumulative Impact:** The PSA claims that the emissions from existing facilities are part of the background concentrations and thus do not need separate quantification. This approach is flawed as it fails to account for the additive effect of multiple sources. The presence of naturally occurring heavy metals and emissions from existing facilities already contribute to background concentrations. Including additional emissions from the proposed project could push cumulative risks beyond acceptable levels. For example, if JJ Elmore's emissions are considered, the cumulative cancer risk could exceed the significance threshold, especially when considering the high cancer risk values reported at the PMI.
- ❖ **Failure to Model Combined Effects:** The PSA's failure to conduct detailed modeling of the cumulative impact of the proposed project in conjunction with existing sources undermines the credibility of the risk assessment. The assumption that the cumulative impact of existing sources is negligible or acceptable based on background levels is not supported by quantitative evidence. Detailed simulations are needed to evaluate how combined emissions from the project and nearby facilities interact and affect overall cancer risk.

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI) (unitless)
PMI ¹	18.7 ⁵	1.29 ⁵
MEIR ²	0.46	0.03
MEIW ³	0.82	1.29 ⁵
Maximally Exposed Sensitive Receptor ⁴	0.46	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 4.61 miles east of the project boundary.

3 Maximally exposed individual worker (MEIW). It is 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 2023hh, Table 5.9-9 and Table 5.9-10, Jacobs 2023oo, Table 6 and HRA modeling files provided by the applicant, ICAPCD 2024a, Table 11

Table 6: 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 and exclusion of cumulative risk modeling fail 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 leaves a critical gap in understanding the full extent of health risks associated with 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"*²⁵

The PSA's dismissal of radon impacts is problematic and warrants closer scrutiny. The PSA argues that radon is not identified as a Toxic Air Contaminant (TAC) in California and, therefore, does not require inclusion in the Health Risk Assessment (HRA). This assumption, while reflecting current regulatory guidelines, overlooks several key issues:

²⁵Refer to Table 5.10-3 on Pg.671. Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

- **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.²⁶

- ❖ **Trucks:** 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)²⁷.
- ❖ **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"²⁸ and Caltrans assessment²⁹)
- ❖ **Lack of Evidence for Trip Distribution Assumptions:** Assumptions about worker origins and the distribution of trips (e.g., 15% from Niland, 45% from Calipatria, etc.) lack supporting data. The absence of detailed data on workers' residential locations and their commuting patterns leads to potential inaccuracies in trip distribution modeling.
- ❖ **Impact on Emissions:** The PSA does not account for increased emissions resulting from potential underestimation of trip generation rates. Increased vehicle trips, particularly during peak hours, can significantly elevate local emissions of pollutants such as NOx, PM2.5, and CO.

²⁶ Pg. 738, Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

²⁷ Trip Generation” manual - <https://www.ite.org/technical-resources/topics/trip-and-parking-generation/resources/>.

²⁸ 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).

²⁹ Caltrans report accessible at - <https://files.ceganet.opr.ca.gov/250143-2/attachment/2gQUJybgLxesxZMTEFLsZqi2Bf0rKIMtwqrfCQqwb8PLFgCioOM-X5yualcixzzE4NrtlmIDbKA52R80>.

- ❖ **Construction Period and Worker Trips (as shown PSA³⁰):**
 - Estimated 29-month construction period.
 - Up to 636 workers per day, resulting in 1,272 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: 1,311 (1,272 worker trips + 39 truck trips in PCE).
 - Peak Hour Trips: 528 Trips (264 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 sites³¹. Average peak hour trips³² 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= $0.5 \times 1,272 = 636$ 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 published³³. 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
 - Daily Truck Trips in PCE= $26 \times 2 = 52$ trips
- ❖ **Revised Daily Trips:** Using revised assumptions.
 - Total Daily Trips= $1,272 + 52 = 1,324$ 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 trips³⁴. Total Peak Hour Trips= 636 worker trips + 26 truck trips in PCE= 662 trips

³⁰ Pg. 738, Elmore North Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-02 (TN #: 256843).

³¹ <https://www.nrc.gov/docs/ML1104/ML110460575.pdf>.

³² Pge.11, Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.

³³ FHWA report at <https://www.fhwa.dot.gov/reports/tswstudy/Vol3-Chapter9.pdf>.

³⁴ Pge.11, Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.

❖ **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/mile³⁵

❖ **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=1,311×20=26,220 miles
- Revised Daily VMT: Revised VMT=1,324×20=26,480 miles

❖ **NOx Emissions**

❖ **Original NOx Emissions:**

- **Original Daily VMT:** 26,220 miles
- **Average NOx Emission Factor for Trucks:** 0.2 grams per mile (g/mile)
- **Total NOx Emissions:** Total NOx (Original)=26,220 miles×0.2 g/mile=5,244 grams

❖ **Revised NOx Emissions:**

- **Revised Daily VMT:** 26,480 miles
- **Average NOx Emission Factor for Trucks:** 0.2 grams per mile (g/mile)
- **Total NOx Emissions:** Total NOx (Revised)=26,480 miles×0.2 g/mile=5,296 grams

❖ **Original Peak Hour NOx Emissions:**

- **Original Peak Hour Trips:** 528
- **Average Trip Length:** 20 miles
- **Total VMT During Peak Hours (Original):**
Original Peak Hour VMT=528×20=10,560 miles
- **Total NOx Emissions During Peak Hours (Original):**
Total NOx (Original Peak Hours) =10,560 miles×0.2 g/mile=2,112 grams

❖ **Revised Peak Hour NOx Emissions:**

- **Revised Peak Hour Trips:** 646
- **Average Trip Length:** 20 miles
- **Total VMT During Peak Hours (Revised):**
Revised Peak Hour VMT=646×20=12,920 miles
- **Total NOx Emissions During Peak Hours (Revised):**
Total NOx (Revised Peak Hours) =12,920 miles×0.2 g/mile=2,584 grams

Summary of Revised Analysis

❖ **Daily Emissions:**

- **Original Total NOx Emissions:** 5.244 kg

³⁵ CARB data at https://www2.arb.ca.gov/sites/default/files/2020-07/ldvtp88_ac.pdf.

- **Revised Total NOx Emissions:** 5.296 kg
- ❖ **Peak Hour Emissions:**
 - **Original Peak Hour NOx Emissions:** 2.112 kg
 - **Revised Peak Hour NOx Emissions:** 2.584 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 5.244 kg to 5.296 kg daily and from 2.112 kg to 2.584 kg (144% increase) 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 states that 95% of the filter cake is non-hazardous and 5% is hazardous due to heavy metal concentrations. The criteria for this characterization are not detailed, raising questions about the consistency and accuracy of the testing procedures.
- ❖ The statement that "the filter cake could be characterized at times as hazardous" indicates variability in the waste composition, which requires stringent monitoring and management protocols.
- ❖ **Compliance with Regulations:** The PSA mentions that hazardous waste will be stored on-site for less than 90 days and transported by licensed haulers. However, it does not provide specific details on the storage protocols, spill prevention measures, or the qualifications of the waste haulers. The requirement for the facility operator to obtain a USEPA hazardous waste generator identification number is mentioned, but the steps to ensure compliance and the oversight mechanisms are not adequately outlined.
- ❖ **Disposal Capacity and Alternatives:** The PSA relies on the expansion of the DVCM facility to accommodate future waste. It assumes the Cell 4 expansion will be completed before the current capacity is exhausted but does not address contingency plans if the expansion is delayed or if waste generation rates exceed projections. The alternative disposal option at Copper Mountain Landfill in Yuma, Arizona, is mentioned but not detailed. The potential impacts of transporting hazardous waste over long distances, including increased emissions and accident risks, are not discussed.
- ❖ **Cumulative Impact:** The cumulative impact analysis for the three proposed geothermal projects (ENGP, MBGP, and BRGP) on local landfill capacity is considered less significant. However, this assumes perfect compliance with recycling protocols and does not account for potential variations in waste generation rates or unforeseen operational issues. The

PSA lacks a thorough assessment of the air quality and greenhouse gas (GHG) emission impacts associated with the transportation of 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 AZ, which is approximately 129 miles from the project site (Figure 5). This distance significantly increases the vehicle miles traveled (VMT), leading to higher emissions of pollutants and GHGs.



Figure 5: Distance Between Project Site and Hazardous Waste Facility in Arizona

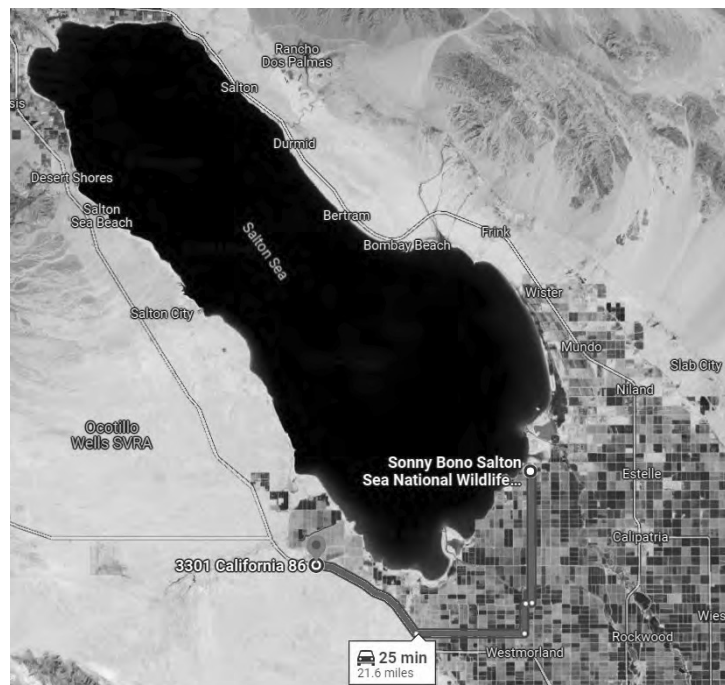


Figure 6: Distance Between ENGP Plant and the Desert Valley Company Monofil Disposal Site

To provide a realistic assessment, consider the emissions from heavy-duty trucks over this distance. Assuming a truck emits 1.161 grams of CO₂ per mile³⁶, the total emissions for a single trip (129 miles) would be 149.769 grams of CO₂. Given multiple trips, the cumulative emissions will 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 at capacity. While an expansion is planned, relying on this facility without considering delays or increased waste generation rates is unrealistic.
- **Alternative Disposal Sites:** If DVCM cannot accommodate the waste, alternative sites further away must be considered, increasing the vehicle miles traveled (VMT) and corresponding emissions.
- **Emission Analysis:** For the 22-mile trip to DVCM (Figure 6), emissions would be lower, but still significant when considering the volume of waste transported regularly. A similar calculation for a 22-mile trip would result in 25.542 grams of CO₂ per trip.

Emission Analysis for Filter Cake Transportation

To illustrate the impact, let's use the provided distances and a hypothetical scenario.

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.
- **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

³⁶ <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.>

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



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.



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, anthropogenic/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 Indo-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, I., 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, Singapore.

Select Technical Conferences:

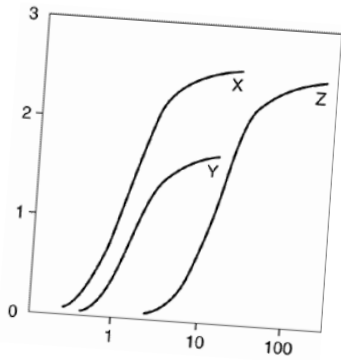
- Shukla, K., Ojha, N., & Khare, M., (2019) Air Quality Simulations over Delhi Using WRF-Chem in Conference of Indian Aerosol Science and Technology Association 2018 "Aerosol Impacts: Human Health to Climate Change" 2018 <http://cas.iitd.ac.in/iasta2018/pdf/>
- Shukla, K., Xiaoming, C., Ojha, N., & Khare, M., (2018), Air Quality Simulations over Delhi Using WRF-Chem: Effects of Local Pollution and Regional-Scale Transport , A42A-01 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec. <http://abstractsearch.agu.org/meetings/2018/FM/A42A-01.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 B11H-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, India

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
Elmore North Geothermal Project.**

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 02, the Applicant proposes to site and construct the Elmore North Geothermal Project (ENGP or Project) within the Salton Sea Known Geothermal Resource Area (KGRA) located near Calipatria, Imperial County, California. The ENGP includes geothermal production wells, pipelines, fluid and steam handling facilities, a solids handling system, Class II surface impoundment, service water pond, a retention basin, process fluid injection pumps, power distribution

center, borrow pits, and injection wells. The proposed project would have a gross output of 157 megawatt (MW), with a net output of 140 MW. The Project will be located on approximately 63 acres of a 160-acre parcel within the unincorporated area of Imperial County, California and is bounded 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.



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 (PM₁₀). 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, near the town of Calipatria in Imperial County. Land uses in the surrounding area include existing geothermal power facilities, agriculture, and the Sonny Bono Salton Sea National Wildlife Refuge. In addition to the Imperial Valley Air District being 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 PM₁₀ 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 disproportionately affect the residents.

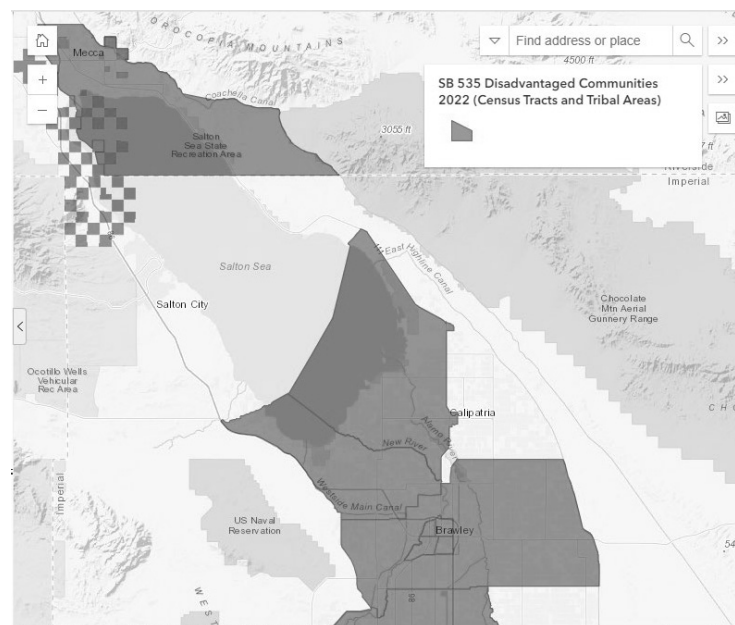


Figure 2: SB 535 Designated Communities

Specific Comments:

1. The Air Modeling Used As The Basis Of The Air Quality Analysis And Health Risk Assessment Contains Critical Flaws.

The Proponent's consultant, Jacobs Engineering, asserts that the air dispersion model and meteorological data used in the air dispersion analysis was 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. EPA¹, 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 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 report², 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

¹ U.S. EPA. 2021. Support Center For Regulatory Atmospheric Modeling (SCRAM). <https://www.epa.gov/scram/air-quality-dispersion-modeling>

² Evan, A.T. 2019. Downslope Winds And Dust Storms In The Salton Basin. *Monthly Weather Review* Vol 147: 2387-2402

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.

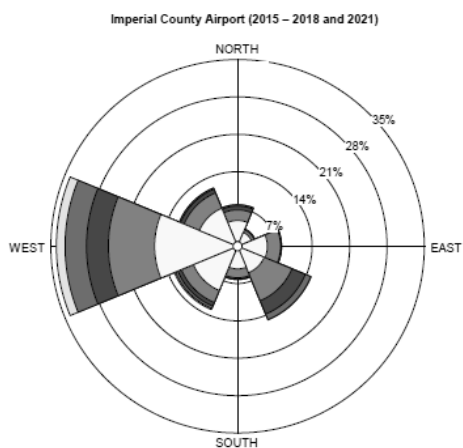


Figure 4: Wind Rose For Imperial County Airport

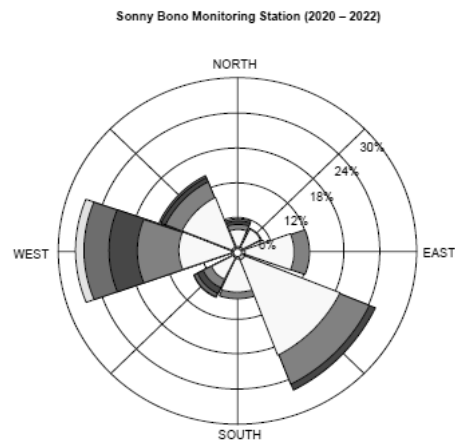


Figure 5: Wind Rose For Sonny Bono

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 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’s Monitoring Methods For Dust And Cooling Tower Drift Are Flawed.

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.

3. 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 facility⁶ has been previously identified by the Imperial County Air Pollution Control District (ICAPCD) as a 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.

4. 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.

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

⁷ Staff Assessment page 5.10-6.

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 *Coccidioides immitis* (*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 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 PM₁₀ fugitive dust emissions with increased incidence of coccidioidomycosis.¹¹

⁸ Staff Assessment page 5.10-21.

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/Colson2017FugitiveDustCoccidioides.pdf>

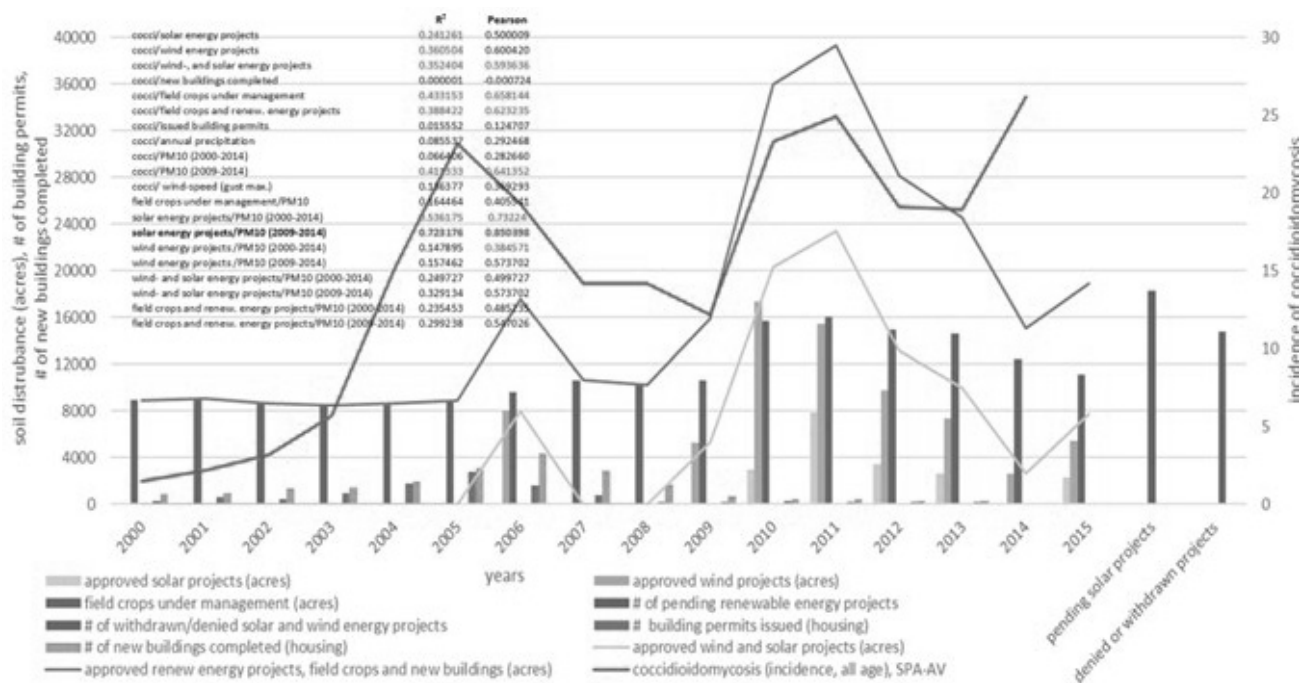


Figure 2: Valley Fever Incidence And Soil Disturbance

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 PM₁₀, 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

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/Colson2017FugitiveDustCoccidioides.pdf>

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 *Coccidioides immitis*, (*cocci*) and are not effective at controlling Valley Fever¹⁶ because they largely focus on visible dust or larger dust particles—the PM₁₀ 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 *Coccidioides 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 *Coccidioides immitis* impacted soils. Sampling for and removal of impacted soils is the best solution to *Coccidioides immitis* spores. Since *Coccidioides 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 *Coccidioides immitis* spores are onsite and implement mitigation measures to actively suppress the spread of Valley Fever, including:

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>.

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.”).

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 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.

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>.

5. 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. Permits¹⁸ 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 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.

6. 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

¹⁸ ATC 1890.pdf, ATC 1891.pdf, ATC 1927.pdf, ATC 2000.pdf, and ATC 3734.pdf

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 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 the Project.

7. 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.

¹⁹ Staff Assessment. Pg 3-14.

²⁰ Staff Assessment. Pg 5.12-6

This omission raises serious concerns about the preparedness and capability of emergency responders to manage potentially hazardous waste incidents effectively and safely.

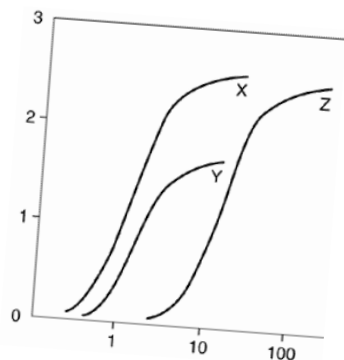
To ensure safety of the workers and surrounding community, the Staff Assessment must be updated to include a detailed description of training and certification levels of CFD and ICFD personnel regarding hazardous waste management and emergency response, an assessment of CFD's and ICFD's equipment, resources, 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,

A handwritten signature in dark ink, appearing to read "J. J. Coe". The signature is fluid and cursive, with the first letter of each name being capitalized and prominent.



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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 Imminent 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 Equivalency 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.

Clark, J.J.J. 2003. “Manufacturing, Use, Regulation, and Occurrence of a Known Endocrine Disrupting Chemical (EDC), 2,4-Dichlorophenoxyacetic Acid (2,4-D) in California Drinking Water Supplies.” National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Minneapolis, MN. March 20, 2003.

Rosenfeld, P. and **J.J.J. Clark.** 2003. “Understanding Historical Use, Chemical Properties, Toxicity, and Regulatory Guidance” National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Phoenix, AZ. February 21, 2003.

Clark, J.J.J., Brown A. 1999. Perchlorate Contamination: Fate in the Environment and Treatment Options. In Situ and On-Site Bioremediation, Fifth International Symposium. San Diego, CA, April, 1999.

Clark, J.J.J. 1998. Health Effects of Perchlorate and the New Reference Dose (RfD). Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.

Browne, T., **Clark, J.J.J.** 1998. Treatment Options For Perchlorate In Drinking Water. Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.

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.

Clark J.J.J., Brown, A., Ulrey, A. 1997. Impacts of Perchlorate On Drinking Water In The Western United States. U.S. EPA Symposium on Biological and Chemical Reduction of Chlorate and Perchlorate, Cincinnati, OH, December 5, 1997.

Clark, J.J.J.; Corbett, G.E.; Kerger, B.D.; Finley, B.L.; Paustenbach, D.J. 1996. Dermal Uptake of Hexavalent Chromium In Human Volunteers: Measures of Systemic Uptake From Immersion in Water At 22 PPM. Toxicologist. 30(1):14.

- Dodge, D.G.; **Clark, J.J.J.**; Kerger, B.D.; Richter, R.O.; Finley, B.L.; Paustenbach, D.J. 1996. Assessment of Airborne Hexavalent Chromium In The Home Following Use of Contaminated Tapwater. *Toxicologist*. 30(1):117-118.
- Paulo, M.T.; Gong, H., Jr.; **Clark, J.J.J.** (1992). Effects of Pretreatment with Ipratropium Bromide in COPD Patients Exposed to Ozone. *American Review of Respiratory Disease*. 145(4):A96.
- Harber, P.H.; Gong, H., Jr.; Lachenbruch, A.; **Clark, J.**; Hsu, P. (1992). Respiratory Pattern Effect of Acute Sulfur Dioxide Exposure in Asthmatics. *American Review of Respiratory Disease*. 145(4):A88.
- McManus, M.S.; Gong, H., Jr.; Clements, P.; **Clark, J.J.J.** (1991). Respiratory Response of Patients With Interstitial Lung Disease To Inhaled Ozone. *American Review of Respiratory Disease*. 143(4):A91.
- Gong, H., Jr.; Simmons, M.S.; McManus, M.S.; Tashkin, D.P.; Clark, V.A.; Detels, R.; **Clark, J.J.** (1990). Relationship Between Responses to Chronic Oxidant and Acute Ozone Exposures in Residents of Los Angeles County. *American Review of Respiratory Disease*. 141(4):A70.
- Tierney, D.F. and **J.J.J. Clark**. (1990). Lung Polyamine Content Can Be Increased By Spermidine Infusions Into Hyperoxic Rats. *American Review of Respiratory Disease*. 139(4):A41.

ATTACHMENT C

July 22, 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 Elmore North
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 Elmore North Geothermal Project (“Project”). BHE Renewables (“Applicant”) proposes to construct and operate a 157-megawatt electricity generating facility on 51 acres of land south of the Salton Sea. In addition to the electricity generating facility, the Project involves the construction and operation of 21 wells and 13 well pads; 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

Water Supply Requirements

The information in the PSA with respect to both the Project's water supply requirements (5,560 afy) and the water delivery point (N Lateral, Gate N 36)¹ is inconsistent with what is reported in the Applicant's Water Supply Assessment, which states the Project would require 6,480 afy of water via the Vail 3 Lateral (TN 256894; p. 1-2).

Red Hill Bay

The PSA states: “[p]lant operators would drive the pipeline routes daily to perform visual inspections.”² There are no existing roads in Red Hill Bay where a portion of the Project's pipeline would be located,³ and road construction in Red Hill Bay is not discussed in the PSA's description of the Project. Therefore, it appears the plant operators would drive off-road through the playa to visually inspect the pipeline. Driving off-road through the playa would impact the existing iodine bush scrub (a sensitive natural community), and it could impact ground-nesting birds such as the snowy plover (a special-status species). It also would generate dust and crush furrows that were installed in Red Hill Bay to control dust.^{4,5} The Imperial Irrigation District (“IID”) is required to maintain these furrows as part of the stipulated order for abatement issued by the Imperial County Air Pollution Control District on May 2, 2022.⁶ The PSA fails to disclose and analyze the environmental impacts associated with plant operators driving in Red Hill Bay during daily inspections of the pipeline.

Borrow Pits

The Project includes 4 borrow pit sites that total approximately 460 acres.⁷ These borrow pits, which would be used for approximately 29 months,⁸ would also be used by the Black Rock Geothermal Project (“BRGP”) and the Morton Bay Geothermal Project (“MBGP”). The Applicant estimates that 5 feet of excavation would occur at the borrow pit sites.⁹ 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

¹ PSA, p. 3-12.

² PSA, p. 3-24.

³ PSA, Figure 3-3.

⁴ PSA, p. 5.2-15.

⁵ The furrows run north-south while the majority of the proposed pipeline in Red Hill Bay runs east-west.

⁶ Imperial County Air Pollution Control District. 2022 May 2. Stipulated Order for Abatement. p. 8. *See also*. IID. 2022 May 6. Air Pollution Control District Hearing Board Approves Abatement Order on Red Hill Bay, Imperial County APCD & IID to Enter into Joint Settlement Agreement [joint press release]. [accessed 2024 Jul 7]. <https://www.iid.com/Home/Components/News/News/1002/793>.

⁷ PSA, p. 3-19.

⁸ PSA, p. 3-17.

⁹ Figures 2-7a through -7d in Elmore North Geothermal Project Data Request Response Set 1 Part 13 (TN #252490-13).

borrow sites for use as topsoil in restoring the borrow sites to preconstruction conditions as much as possible (Jacobs 2023a, p. 5.11-20).”¹⁰

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, the AFC suggests topsoil would be “lost” from the borrow pit sites.¹¹ The Elmore North power plant will be located on approximately 51 acres.¹² The power plant for the Morton Bay Geothermal Project will be located on approximately 63 acres,¹³ while the power plant for the Black Rock Geothermal Project will be located on approximately 55 acres.¹⁴ 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 approximately 291 acres of topsoil. The PSA states the borrow pits would be restored “as much as possible;”¹⁵ however, 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.¹⁶ 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,¹⁷ the noise level (Lmax) generated by each pile drive would be substantially more than 104 dBA.

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,¹⁸ 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, California black rail, and other special-status bird species.

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

¹⁰ PSA, pp. 5.8-13 and -14.

¹¹ AFC, p. 5.11-19 (TN 249737): “Impacts 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 ... *The loss of topsoil* can increase the sediment load in surface receiving waters downstream of the construction sites.” [emphasis added].

¹² PSA, p. 1-2.

¹³ Morton Bay Geothermal Project AFC, p. 1-1 (TN 249723).

¹⁴ Black Rock Geothermal Project AFC, p. 1-1 (TN 249752).

¹⁵ PSA, pp. 5.8-13 and -14.

¹⁶ PSA, p. 5.9-7.

¹⁷ *Id.*

¹⁸ *Id.*

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 (Jacobs 2023a TN249723). 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.”¹⁹

The PSA states that the construction schedule for facility startup is based on a two-shift, 24 hours per day schedule. This suggests that a “two-shift, 10 hours per day” schedule (for construction activity) equates to 10 hours of construction activity per day. However, the PSA subsequently suggests that construction activity would typically occur for 13 hours per day (i.e., between 7 am and 8 pm). It then further contradicts itself in stating “[w]ell drilling operations are conducted 24 hours per day, seven days per week.”²⁰ None of this information is consistent with the AFC, which states construction activity, including operation of construction equipment, would occur 20 hours per day, 7 days per week.²¹

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).”²² This statement is inconsistent with: (a) the PSA’s statement regarding the possibility of a seven-day work week; (b) the PSA’s statement regarding drilling operations 24 hours per day; and (c) the AFC’s statement regarding operation of construction equipment up to 20 hours per day, 7 days per week.

The Project’s construction schedule has implications on the potential for the Project to cause significant impacts on wildlife due to night lighting. It also has implications on 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). The CEC must issue a revised and recirculated PSA that provides consistent information on the Project’s construction schedule, and that addresses whether the Applicant would be capable of complying with NOISE-6, NOISE-7, and BIO-4 given the construction schedule and any potential modifications to that schedule (e.g., overtime work or a 7-day work week).

¹⁹ PSA, pp. 3-17 and 3-18.

²⁰ PSA, p. 3-19.

²¹ AFC, p. 5.1-26.

²² PSA, pp. 5.9-6 and 6-17.

ENVIRONMENTAL SETTING

Sensitive Natural Communities

The *Allenrolfea occidentalis* Shrubland Alliance (iodine bush scrub) is considered a sensitive natural community.²³ The PSA 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.²⁴ Based on the PSA’s 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”).²⁵ 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.²⁶ 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.”²⁷

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.²⁸ 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 270 asked the Applicant to identify the areas that were surveyed according to the protocols.²⁹ The Applicant’s response did not provide the requested information; the response states: “[b]otanists used professional judgement when necessary to conduct pedestrian surveys in potentially suitable special-status plant habitat, including natural vegetation types ... Natural vegetation types within the BSA include North American Arid West Emergent Marsh, North American Warm Desert Playa, and Invasive Southwest Riparian Woodland and Shrubland.”³⁰ As a result, the Applicant

²³ PSA, p. 5.2-9.

²⁴ 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.

²⁵ TN 252553.

²⁶ PSA, pp. 5.2-5 and -22.

²⁷ 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.

²⁸ AFC, p. 5.2-12.

²⁹ TN 254078.

³⁰ TN 254602.

has not provided evidence that the botanists conducted protocol-level surveys in all areas with natural *or naturalized* vegetation that may be directly or indirectly affected by the Project, as recommended in the CDFW protocol.

In November 2023, the Applicant revised the boundaries of some Project components. The revised Project boundaries are shown in Figure 1-4R of the Elmore North Geothermal Project Revised General Arrangement Refinement Package (TN 253187). 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 251683) 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.³¹ This deficiency has implications on the PSA's ability to provide an accurate description of the Project's environmental setting and impacts.

Aquatic Resources

No aquatic resources were mapped by the Applicant in the proposed disturbance areas; however, the Applicant's wetland delineation did not encompass Red Hill Bay where 4 well pads and a portion of the pipeline would be located.³² The PSA states that CEC Staff observed aquatic resources outside the project area, including an area on the east side of Garst Road that was inundated with water and contained patches of cattails.³³ Neither the PSA nor the Applicant have addressed aquatic resources on the *west side* of Garst Road (in Red Hill Bay).

In 2020, the U.S. Army Corps of Engineers ("USACE") issued an approved jurisdictional determination for the Salton Sea Air Quality Mitigation Program Phase 1b/Priority 1 Review Area in Red Hill Bay.³⁴ Several potentially jurisdictional aquatic resources were delineated. The Project's pipeline overlaps feature "PSSW-2." Although the USACE determined this feature did not qualify as waters of the U.S., it likely qualifies as waters of the state because it supports wetland hydrology, hydrophytic vegetation, and hydric soils.³⁵ In addition, portions of the Project's easternmost well pads and associated pipelines appear to overlap with a feature called "Ditch-3." Although this feature was artificially created, it may qualify as waters of the state because it is over one acre in size and does not appear to have been created for a purpose listed in section II.3.d of the State's wetland definition.³⁶

³¹ AFC, Figure 5.3-4 (TN 249737).

³² PSA, pp. 5.2-14 and -15.

³³ *Id.*

³⁴ 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.

³⁵ *Id.*

³⁶ 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.

Habitat Mapping

The AFC 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.³⁷ 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.

According to the PSA: “[h]abitat, land cover, and vegetation community mapping was conducted within a one-mile radius of the generating facility and within 1,000 feet of the well pads, pipelines, auxiliary features, and linear features, where access was permitted (TN249737).”³⁸ Neither the PSA nor the AFC (TN 249737) provides a map depicting the habitats, land covers, and vegetation communities within the Project’s buffer. This precludes the ability to assess indirect impacts to special-status species that may occur in habitats within one mile of the Project. For example, the Project includes several construction laydown and parking areas along Severe Road southeast of Obsidian Butte.³⁹ The Vail 5 Lateral and Vail 5 Drain are located adjacent to Severe Road. Google Earth imagery (dated 2023 Feb 14) suggests that there is riparian vegetation along these features, and in a wetland area north of the intersection of Severe Road and McKendry Road. Several special-status species (e.g., California black rail, Yuma Ridgway’s rail, least bittern, mountain plover, loggerhead shrike) have been detected in this area.⁴⁰ The PSA’s failure to describe and map habitats adjacent to the laydown and parking areas along Severe Road precludes understanding of the special-status species that could occur in those habitats, which in turn precludes the ability to assess the adequacy of the PSA’s impact analyses and proposed mitigation.

In addition to the construction laydown and parking areas along Severe Road, the Project includes several Project components immediately south and west of the Hazard Tract (Unit) of the Imperial Wildlife Area.⁴¹ The PSA provides conflicting information on habitat within the Hazard Tract. The PSA first states: “[o]n the east side of Garst Road, the Hazard Unit is inundated with patches of cattails (*Typha* sp.) scattered throughout the water.”⁴² However, the PSA subsequently states: “[t]he area on the east side of Garst Road was not within the proposed development area and was therefore not assessed for potential [Yuma Ridgway’s rail] habitat. This area east of Garst Road consists of the 272-acre Hazard Unit managed by the NWR for waterfowl hunting. In spring and summer 2022, this area had no water, but consisted of large patches of dead cattails (TN251683).”⁴³ This information is both inconsistent (regarding habitat conditions) and misleading. The Hazard Tract is not comprised solely of areas with open water and cattails that are managed for waterfowl hunting; it is comprised of managed shallow seasonal wetlands, cattail marshes that are managed for the Yuma Ridgway’s rail, enhanced

³⁷ AFC, p. 5.2-5 (TN 249737).

³⁸ PSA, p. 5.2-77.

³⁹ PSA, Figure 3-3.

⁴⁰ 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>

⁴¹ PSA, Figure 3-3.

⁴² PSA, pp. 5.2-11 and -12.

⁴³ PSA, p. 5.2-79.

riparian habitat, and permanent open water wetlands.⁴⁴ Hunting is prohibited in several of these areas.⁴⁵

Similar to the aforementioned issue regarding habitats near Severe Road, the PSA's failure to describe and map habitats in the Hazard Tract precludes understanding of the special-status species that could occur in those habitats. Moreover, it precludes the public from understanding which portions of the Hazard Tract are considered "suitable habitat" for the Yuma Ridgway's rail. This is a critical deficiency because it affects implementation of BIO-13 and BIO-14, both of which have actions that are triggered by Project activities within 500 feet of "suitable habitat" for the Yuma Ridgway's rail.

PROJECT IMPACTS

The PSA Fails to Adequately Analyze Impacts on IID Drains and Canals

Direct Impacts

CEC Staff ("Staff") used the Applicant's GIS data to analyze impacts to vegetation communities and land cover types.⁴⁶ Based on that analysis, Staff determined the Project could temporarily impact 27.44 acres of drains and canals, and permanently impact 2.52 acres of drains and canals.⁴⁷ 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, burrowing owl, and other special-status species.

The PSA provides evidence that the Project would in fact impact IID drains and canals. In the analysis of impacts to the desert pupfish, the PSA references a "remnant drain," and it states that one untapped well pad is proposed over the current location of the drain.⁴⁸ I disagree with Staff's determination that the drain is a remnant (e.g., from previous irrigation activities). The drain, which is approximately 1.4 miles long, was constructed in either 2015 and 2016. The drain appears to have been constructed to convey agricultural return flows from the southeast corner of Red Hill Bay to the Salton Sea after water in Red Hill Bay receded. IID currently refers to the drain as the "existing central drain" and IID is contemplating using that drain for a project mandated by the Imperial County Air Pollution Control District.⁴⁹ Irrespective of

⁴⁴ 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. Figure 3-3.

⁴⁵ U.S. Fish and Wildlife Service. 2020 Sep. Sonny Bono Salton Sea National Wildlife Refuge, Hazard and Union Hunting Areas. https://www.fws.gov/sites/default/files/documents/FINALhuntingmapANDregs2020_508.pdf

⁴⁶ PSA, p. 5.2-125.

⁴⁷ *Id.*

⁴⁸ PSA, p. 5.2-88.

⁴⁹ Imperial Irrigation District. 2024 Jan 31. Red Hill Bay Semi-Annual Report (July-December 2023) to the Imperial County Air Pollution Control District. pp. 1 and 3.

whether it is a remnant (abandoned) drain or not, the Applicant’s proposal to construct a well pad on top of the drain constitutes an impact to the “canals and drains” land cover type. It also violates COC BIO-4, which states: “[c]onstruction and operation of the project shall avoid the Salton Sea, the Alamo River, and canals and drains, including all associated riparian habitat, and any canals and drains that have been abandoned but could still convey water to the Salton Sea.” In this case, the drain that would be impacted by the well pad is one that “could still convey water to the Salton Sea.”⁵⁰

The PSA states that the “Red Hill Bay Drains” are an important area for desert pupfish, and that the drains connect to canals along Garst Road in an area identified by the Applicant as tamarisk thickets.⁵¹ These canals along Garst Road were not discussed in the AFC, nor have any maps been provided that identify their location(s). Based on the Applicant’s GIS data, the Project’s pipeline would run through the tamarisk thickets and near the edge of Garst Road. Because IID canals typically run along the edges of roads, and because the pipeline would require support structures in the substrate, it appears likely that the pipeline could have direct impacts on the canals referenced in the PSA.

The Applicant did not map the drains and canals in Red Hill Bay.⁵² Therefore, if Staff used the Applicant’s GIS data to analyze impacts to vegetation communities and land cover types (as stated in the PSA), it appears the impact calculations provided in Table 5.2-5 of the PSA fail to account for Project impacts to the drains and canals in Red Hill Bay.

The PSA Fails to Address the Project’s Impacts on IID’s Regulatory Obligations

IID has several regulatory commitments pertaining to the desert pupfish. In 2002, the USFWS issued a Biological Opinion (“BO”) that requires IID to maintain connectivity among pupfish drains that are connected both directly and indirectly to the Salton Sea, and to maintain pupfish habitat conditions in pupfish drains below the lowest-most elevation control structure.⁵³ In 2003, the CDFW issued an Incidental Take Permit (“ITP”) to IID, which directs IID to ensure an appropriate level of connectivity among drains (direct or indirect to the Salton Sea) below their lowest elevational checks.⁵⁴ Both the BO and ITP recommend drain extensions and drain interconnections as potential pupfish habitat improvement actions. IID’s Water Transfer Agreement and related Quantification Settlement Agreement requires IID to maintain the amount of in-drain pupfish habitat (i.e., no net loss of in-drain pupfish habitat).⁵⁵

⁵⁰ When constructed in 2015 or 2016, the drain extended to the edge of the Salton Sea. However, the Salton Sea has subsequently receded another ¼ mile. Extending the drain another ¼ mile would enable the drain to convey water to the Salton Sea if it does not already do so.

⁵¹ PSA, p. 5.2-88.

⁵² See Figure DRR 25 (TN 252553).

⁵³ See ECORP Consulting. 2023 May. Salton Sea Desert Pupfish Habitat Connectivity Plan [External Review Draft #1].

⁵⁴ *Id.*

⁵⁵ *Id.*

In May 2023, IID released a draft of its Desert Pupfish Habitat Connectivity Plan (“Pupfish Plan”), which is designed to help IID satisfy the regulatory requirements of the BO, ITP, and Water Transfer Agreement Environmental Impacts Statement/Report.⁵⁶ The Pupfish Plan states:

“The Salton Sea shoreline is anticipated to continue to recede, and Sea salinity is modeled to continue to increase over time. As such, maintaining pupfish drain connectivity through time may not provide the benefits to pupfish that were expected in existing permits. Depending on the size and persistence of drain deltas and their surface water connection to the Sea, pupfish may still benefit from drain connectivity and potential shoreline freshwater mixing zones between drains within the Salton Sea. Still, drain extensions and the portions of new drain habitat above the confluence with the Salton Sea could certainly provide additional, relatively high-value, in-drain pupfish habitat.”⁵⁷

The Pupfish Plan identifies the “Red Hill Bay East Ditch” and “Red Hill Bay Drain 1” as two drains that could be extended to provide habitat connectivity for pupfish.⁵⁸ In addition, the “Red Hill Bay Drains” discussed in the PSA provide the relatively high-value, “new drain habitat” highlighted in the Pupfish Plan. This new habitat has been created by drains entering the exposed lakebed or playa, which have subsequently “developed into braided channels and ponded wetland habitats supporting wetland vegetation and robust populations of desert pupfish.”⁵⁹

In addition to the regulatory commitments pertaining to the desert pupfish, IID is required to install, operate, and maintain Best Available Control Measures (“BACM”) in Red Hill Bay as part of the stipulated order for abatement issued by the Imperial County Air Pollution Control District on 2 May 2022.⁶⁰ The stipulated order mandates that IID install, operate, and maintain temporary surface roughening to support vegetation establishment at the Red Hill Bay Site. In addition, the stipulated order mandates that by 2 May 2025, IID complete all necessary water supply upgrades, install all irrigation infrastructure, and complete all vegetation seeding/transplanting to support implementation of vegetation BACM at the Red Hill Bay Site, or identify as soon as possible the locations of and initiate the process to install gravel BACM or apply chemical stabilization BACM at the Red Hill Bay Site where vegetation is not practical.⁶¹ In addition, the stipulated order mandates that by 2 May 2027, IID achieve the stipulated order’s performance criteria for vegetation, gravel, or chemical stabilization BACM.⁶² IID has completed the surface roughening obligation (i.e., the furrows referenced in the PSA) and it has commenced environmental review under CEQA for implementation of the remaining BACM.⁶³

⁵⁶ *Id.*

⁵⁷ *Id.* pp. 3 and 4.

⁵⁸ *Id.*, Table 4.

⁵⁹ ECORP Consulting. 2023 May. Salton Sea Desert Pupfish Habitat Connectivity Plan [External Review Draft #1]. p. 3.

⁶⁰ Imperial County Air Pollution Control District. 2022 May 2. Stipulated Order for Abatement.

⁶¹ *Id.*

⁶² *Id.*

⁶³ Imperial Irrigation District. 2024 Jan 31. Red Hill Bay Semi-Annual Report (July-December 2023) to the Imperial County Air Pollution Control District.

The PSA fails to discuss how the Project would affect IID's legal obligations pertaining to the desert pupfish, and to IID's ability to satisfy the terms of the stipulated order for abatement issued by the Imperial County Air Pollution Control District.

Desert Pupfish

Desert pupfish are known to occur in IID drains and they presumed present in the Project area.⁶⁴ Several of the Project's facilities (including the geothermal plant) would be located in an agricultural field south of Red Hill Bay. Irrigation runoff from fields directly south of Red Hill Bay is pumped over a berm into Red Hill Bay.⁶⁵ The pumped water creates a wetted area, which has contained desert pupfish.⁶⁶ A survey in the end of May 2023 yielded over 400 desert pupfish, mostly juveniles, in the main connector channel of the Red Hill Bay Drains.⁶⁷

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.⁶⁸ 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 (TN254014; TN254602). 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.”⁶⁹

There are four 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.

⁶⁴ Data Adequacy Supplement Set 2 (TN 250678), p. 7.

⁶⁵ Imperial Irrigation District. 2017 Nov. Draft Initial Study for the Red Hill Bay Wetlands Restoration Project. <https://ecos.fws.gov/ServCat/DownloadFile/161293>

⁶⁶ *Id.*

⁶⁷ PSA, p. 5.2-88.

⁶⁸ 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/qa-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>

⁶⁹ PSA, p. 5.2-89.

Second, Staff's rationale that "conversion of one parcel" would have a minimal effect on pupfish habitat in Red Hill Bay is unsupported and is inconsistent with information provided by the Applicant. The Applicant's response to CURE Data Request 280 (TN 254602) states the following: "Figure DRR-280 identifies all project components along with existing agricultural return flows. Flows from the plant site drain towards Red Hill Bay. Flow directions from all other project components are as shown." Figure DRR-280 (TN 254602) shows the following:

1. The Red Hill Bay Drains are supplied by agricultural return flows from 4 parcels between Cox Road (to the north), Sinclair Road (to the south), Gentry Road (to the west) and an unnamed road west of the Alamo River (to the east).
2. Return flows from agricultural parcels immediately south of Sinclair Road enter Vail Drains 2 through 4A. These drains feed into the Pumice Drain, which subsequently drains into an area between Obsidian Butte and Rock Hill (i.e., outside of Red Hill Bay).⁷⁰
3. Return flows from agricultural parcels further south drain west towards the Salton Sea.
4. Return flows from agricultural parcels east of the Alamo River drain west into either the Alamo River or Morton Bay.

Therefore, contrary to what is suggested in the PSA, there are only 4 agricultural parcels that supply return flows to the Red Hill Bay drains.⁷¹ This is consistent with what was reported in the Initial Study for the Red Hill Bay Wetlands Restoration Project. The Initial Study states: "[f]ields *directly south* of Red Hill Bay are pumped over the berm and terminate at Red Hill Bay ... Direct effects of construction may include diverting agricultural discharge water from the pumped fields along the southern edge of Red Hill Bay to the Salton Sea."⁷²

Based on Google Earth imagery (dated 14 Feb 2023), there are approximately 470 acres of irrigated agriculture on the 4 parcels that supply water to the Red Hill Bay Drains. The Project would involve cessation of agricultural operations on approximately 317 of these acres, which would reduce agricultural returns flows into the Red Hill Bay Drains by approximately 67 percent. This would have a very significant impact on habitat for the desert pupfish in Red Hill Bay.

The formerly proposed Red Hill Bay Wetlands Restoration Project involved creating shallow water habitat for a range of migratory birds, including nesting seabirds, while also reducing dust emissions from this exposed area of the Salton Sea. The Initial Study for the project provided the following analysis of impacts to the desert pupfish:

"A survey for desert pupfish at the wetlands on the southeast corner of Red Hill Bay was conducted on June 24, 2014 by Sharon Keeney (CDFW, Bermuda

⁷⁰ Colorado River Basin Water Board. 2020. Waste Discharge Requirements for Imperial Irrigation District El Centro Generating Station. Order R7-2020-0006. Attachment F – Fact Sheet. p. F-14.

⁷¹ Figure DRR-280 suggests the drain water from the easternmost parcel drains to Red Hill Bay. However, Google Earth imagery suggests the drain water may enter Vail Drain 2A, which flows into the Alamo River.

⁷² Imperial Irrigation District. 2017 Nov. Draft Initial Study for the Red Hill Bay Wetlands Restoration Project. p. 17. [emphasis added].

Dunes). Mosquito fish (*Gambusia affinis*) and sailfin mollies (*Poecilia latipinna*) were captured. The wetland had four small rivulets of water draining the wetland. Desert pupfish were observed in some of rivulets, but the water was too shallow to trap. When westerly winds push Salton Sea water into the bay, these rivulets may connect to the Salton Sea. On June 25, 2013 Sonny Bono NWR staff observed desert pupfish to be present off of the pumped water to the west of the wetlands. **Since this area does not have an impounded area the channel is probably dependent on the amount of spill water pumped onto the playa.**⁷³

The Project would impact 2.5 of the 4 parcels that provide drain water for pupfish in Red Hill Bay. One of the parcels would be permanently impacted by construction of the geothermal plant and switching station.⁷⁴ An additional parcel would be impacted by a proposed laydown and parking area, while half of another parcel would be impacted by a proposed borrow pit.⁷⁵

The PSA classifies impacts from the laydown/parking area and borrow pit as temporary impacts because these areas would allegedly revert to pre-existing conditions sometime after Project construction.⁷⁶ However, temporary reductions in agricultural return flows to Red Hill Bay would not necessarily be a temporary impact to the pupfish.⁷⁷ As reported in the Initial Study for the Red Hill Bay Wetlands Restoration Project, the pupfish in Red Hill Bay occur in very shallow rivulets created by the drain water, and thus, any reduction in drain water could eliminate the habitat needed for persistence. If this occurs, pupfish would be permanently extirpated from Red Hill Bay unless there is connectivity to a source population for recolonization.

Third, the PSA fails to analyze potentially significant direct impacts on the pupfish due to the Project's pipeline. The PSA states that the Red Hill Bay Drains are an important area for desert pupfish, and that the drains connect to canals along Garst Road in an area identified by the Applicant as tamarisk thickets.⁷⁸ Therefore, desert pupfish may occur in the canals (tamarisk thickets) along Garst Road due to connectivity with the Red Hill Bay Drains. A portion of the Project's pipeline would be constructed through the tamarisk thickets adjacent to Garst Road, and Figure DA 5.2-1c (TN 251682) shows the pipeline intersecting desert pupfish habitat in the southeast corner of Red Hill Bay. According to the PSA, the pipeline would permanently impact 1.87 acres of the tamarisk thickets adjacent to Garst Road,⁷⁹ and the PSA describes how construction of the pipeline "over canals and drains" could impact habitat for fish (e.g., from

⁷³ *Id.*

⁷⁴ PSA, Figure 3-3.

⁷⁵ *Id.*

⁷⁶ Although COC BIO-11 requires a plan for restoring temporarily disturbed areas, it does not establish a temporal threshold for the completion of the restoration activities. In addition, the PSA (pp. 5.8-13 and -14) 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."

⁷⁷ The PSA does not establish how long agricultural fields used for construction camps, borrow pits, and laydown areas would be taken out of production. These temporary features would also be used for the Morton Bay Geothermal Project and the Black Rock Geothermal Project. Even if construction of the 3 projects occurs concurrently, it appears agricultural activities would not be restored for at least 29 months (see PSA, p. 3-17).

⁷⁸ PSA, p. 5.2-88.

⁷⁹ PSA, Table 5.2-5. Red Hill Bay is the only place within the Biological Study Area where the pipeline intersects tamarisk thickets. Therefore, all 1.87 acres are in Red Hill Bay.

accidental spills of hazardous materials).⁸⁰ Given the length of the pipeline through the tamarisk thickets (approximately 1,300 feet), numerous support structures would be required. The PSA fails to assess how construction of these support structures would directly impact the desert pupfish, its habitat, and habitat connectivity.

Fourth, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the effects that the three proposed geothermal projects would have on agricultural return flows, which provide habitat for pupfish in IID drains and river deltas at the Salton Sea.⁸¹ 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 stated in the PSA (p. 2-1), the CEC’s siting regulations require staff to assess whether the potential environmental impacts have been properly identified. In this case, there is substantial evidence that the Project could have substantial direct, indirect, and cumulative impacts on the desert pupfish. As a result, these impacts must be properly addressed in a revised and recirculated PSA.

Snowy Plover

The PSA determined there is a high potential for western snowy plovers to forage and nest in the Project area.⁸² Snowy plovers nest on sandy, gravelly, or friable soil with minimal to no vegetation.⁸³ The Red Hill Bay playa (classified as iodine bush scrub in the PSA) provides potential nesting habitat for snowy plovers. Four of the Project’s well pads, and a portion of the Project’s pipeline, would be located on the Red Hill Bay playa.

Disturbance by humans is a key factor in degrading or eliminating snowy plover nesting

⁸⁰ PSA, p. 5.2-89.

⁸¹ See ECORP Consulting. 2023 May. Salton Sea Desert Pupfish Habitat Connectivity Plan [External Review Draft #1]. p. 3.

⁸² PSA, p. 5.2-36.

⁸³ PSA, p. 5.2-102.

habitat.⁸⁴ 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.⁸⁵

Direct mortality can occur when humans step on, or drive over, chicks or eggs.⁸⁶ 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.⁸⁷ 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.⁸⁸ Human activity may also cause brood movement, resulting in the separation of one or more chicks from the rest of the brood.⁸⁹ In addition, movement into adjacent territories can result in attacks on the young by other adult plovers, resulting in chick death and abandonment.⁹⁰ 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.⁹¹

The PSA states the following regarding impacts to the snowy plover: “[d]irect 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.”⁹² There is no question that Project facilities in Red Hill Bay would degrade and destroy snowy plover habitat.

The PSA incorporates BIO-12 to reduce impacts to snowy plover nests during construction of the Project. The PSA does not incorporate 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.”⁹³ These daily inspections of the pipeline route would have a significant impact on any snowy plovers nesting on the Red Hill Bay playa.

⁸⁴ 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.

⁸⁵ 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.

⁸⁶ *Id.*

⁸⁷ Colwell MA, Hurley SJ, Hall JN, Dinsmore SJ. 2007. Age-Related Survival and Behavior of Snowy Plover Chicks. *Condor* 109(3):638-647.

⁸⁸ *Id.*

⁸⁹ 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.

⁹⁰ *Id.*

⁹¹ 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.

⁹² PSA, p. 5.2-102.

⁹³ PSA, p. 3-24.

COC BIO-12 does not mitigate potentially significant impacts to snowy plovers due to daily inspections of the pipeline. BIO-12 only requires pre-activity surveys for nesting birds prior to *project construction or decommissioning activities* conducted during the avian breeding season. 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 snowy plover nests (i.e., because the snowy plover is neither a passerine nor a raptor).⁹⁴

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.⁹⁵ 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.⁹⁶ 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.⁹⁷ 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.⁹⁸ 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.⁹⁹ 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 the species must be “fully mitigated” through measures that are: (a) roughly proportional in extent to the impact, and (b) capable of successful implementation.¹⁰⁰

⁹⁴ The snowy plover is in the order Charadriiformes.

⁹⁵ 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.

⁹⁶ Muir JT, Cowell MA. 2010. Snowy Plovers Select Open Habitats for Courtship Scrapes and Nests. Condor 112(3):507-510.

⁹⁷ Personal communication on 10 Jul 2024 with Razia Shafique-Sabir, Deputy Project Leader and Biologist at SBSSNR.

⁹⁸ PSA, p. 5.2-63.

⁹⁹ California Department of Fish and Wildlife. 2024. Fully Protected Animals. [accessed 2024 Jul 23]. <https://wildlife.ca.gov/Conservation/Fully-Protected>

¹⁰⁰ Cal. Fish & Game Code § 2081.

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."¹⁰¹ However, the PSA's subsequent analysis of Project impacts only addresses some (about half) of the species.¹⁰² The following species were excluded from the PSA's analysis without justification:

- Redhead
- Northern harrier
- White-tailed kite
- Gull-billed tern
- Yellow-breasted chat
- 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."¹⁰³ The Imperial Valley provides critical wintering habitat for several of the species on the PSA's list. For example, cultivated landscapes in the Imperial Valley provide wintering habitat for up to 50 percent of the

¹⁰¹ PSA, p. 5.2-94.

¹⁰² See PSA, p. 5.2-99 through 5.2-108.

¹⁰³ PSA, p. 5.2-95.

global population of mountain plovers.¹⁰⁴ Agricultural fields in Imperial Valley are also known to be a core wintering area for sandhill cranes,¹⁰⁵ long-billed curlews,¹⁰⁶ and white-faced ibis.¹⁰⁷

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.¹⁰⁸ 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."¹⁰⁹ 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.¹¹⁰

Cumulative Impacts

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.¹¹¹ 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 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, the FSA must identify the amount of agricultural land within a 6-mile radius of the proposed Project. Conversely, if the geographic scope is Imperial County, the FSA 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 is that it excludes impacts from the Lithium Valley Specific Plan Project ("LVSP"). The LVSP encompasses approximately

¹⁰⁴ 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.

¹⁰⁵ 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.

¹⁰⁶ 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.

¹⁰⁷ 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.

¹⁰⁸ PSA, p. 5.2-106.

¹⁰⁹ PSA, p. 5.2-107.

¹¹⁰ PSA, pp. 5.2-109 and -135.

¹¹¹ PSA, p. 5.2-75.

51,786 acres of land adjacent to the southeastern shore of the Salton Sea.¹¹² This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).¹¹³ Under the LVSP, most of this land would (or could) be converted to industrial uses.¹¹⁴

For many bird species, the Imperial Valley provides important habitat for birds due to its geographic relationship with the Salton Sea. 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).¹¹⁵ Of these 460,258 acres, 48,000 to 74,000 acres¹¹⁶ would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.¹¹⁷ 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.¹¹⁸ 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 the information provided above, reasonably foreseeable future projects would 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.”¹¹⁹

¹¹² Dudek. 2023 Dec. Initial Study for the Imperial County Lithium Valley Specific Plan.

¹¹³ Rick Engineering Company. 2024 Feb. Lithium Valley Final Baseline Report. Figure 2-4.

¹¹⁴ 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.

¹¹⁵ 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>

¹¹⁶ The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.

¹¹⁷ 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>.

¹¹⁸ 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.

¹¹⁹ PSA, p. 5.2-139.

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 the cumulative projects identified in the PSA:¹²⁰

1. The FEIR for the Energy Source Mineral ATLAS 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.¹²¹
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.¹²²
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.¹²³
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.¹²⁴

Thus, none of these projects provided compensatory mitigation for impacts to burrowing owl habitat. Indeed, it is my experience 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. 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.¹²⁵ Habitat loss and degradation are the greatest threats to burrowing owls in California.¹²⁶ 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

¹²⁰ PSA, Table 1-2.

¹²¹ County of Imperial. 2021 Sep. Final Environmental Impact Report for the Energy Source Mineral ATLAS Project. <https://www.icpds.com/planning/environmental-impact-reports/final-eirs>

¹²² 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>

¹²³ 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>

¹²⁴ 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>

¹²⁵ County of Imperial. 2011 Nov. Draft Environmental Impact Report for the Mount Signal and Calexico Solar Farm Projects. pp. 4.4-38 and -47.

¹²⁶ 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.

owl), there is substantial evidence that the burrowing owl population in Imperial County has experienced significant declines due to inadequate mitigation.¹²⁷

Second, 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.¹²⁸

Two co-investigators and I reviewed CEQA documents associated with approximately 75 projects that had burrowing owl mitigation requirements.¹²⁹ 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.
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") Plan prior to conducting preconstruction surveys, as required in the CEC's

¹²⁷ 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>

¹²⁸ 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>

¹²⁹ 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.

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. 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."¹³⁰ This statement is not reflected in the 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."¹³¹ 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.¹³² The PSA then makes the determination that BIO-17 would mitigate the Project's permanent impacts

¹³⁰ PSA, p. 5.2-97.

¹³¹ PSA, pp. 5.8-13 and -14.

¹³² PSA, p. 5.2-106.

on habitat.¹³³ 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.”¹³⁴ 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).

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.”¹³⁵ 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.¹³⁶

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.¹³⁷ 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

¹³³ PSA, p. 5.2-107.

¹³⁴ See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. *Wildlife Society Bulletin* 25(1):173-182.

¹³⁵ PSA, p. 3-18.

¹³⁶ PSA, p. 3-17. See also, AFC, Tables 2-9 and 2-10. (TN 249737)

¹³⁷ 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.

and move more frequently.¹³⁸ 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.¹³⁹

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.¹⁴⁰ 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.”¹⁴¹

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).¹⁴² 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

¹³⁸ 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.

¹³⁹ 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.

¹⁴⁰ 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>

¹⁴¹ PSA, p. 5.2-117.

¹⁴² Longcore T, Rich C. 2004. Ecological Light Pollution. Frontiers in Ecology and the Environment 2:191-198.

variables and does not provide photometric analysis demonstrating impacts to wildlife would be less than significant.

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.¹⁴³

Noise Impacts

The PSA establishes that noise during construction and operation of the Project could have a significant impact on wildlife, including special-status species.¹⁴⁴ The PSA then states:

“To reduce any noise-related impacts to birds, 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) as described in Section 5.9 Noise and Vibration. Though these measures are proposed for human receptors, the adoption of these measures would also reduce impacts to birds during operations. Specifically, these noise COC/MM would ensure operation of the project would not cause ambient noise levels from generating facility operations to exceed 43 dBA, would require an occupations noise study to identify any noise hazardous areas within the generating facility, restrict noisy construction activities to specific timeframes, limit noise from steam blowers through mufflers or silencers, and require pile driving to be conducted in a manner that reduces noise and vibration.”¹⁴⁵

The PSA’s account of the proposed noise mitigation measures is misleading. NOISE-4 requires that “operation of the project will not cause ambient noise levels due to power plant operation to exceed 43 dBA Leq at SBR,” which the PSA states is approximately one mile southwest of the project site.¹⁴⁶ Thus, NOISE-4 applies to power plant operational noise levels one mile from the Project site, not to the overall ambient noise levels from generating facility operations.

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

¹⁴³ PSA, pp. 3-21 and 3-22.

¹⁴⁴ PSA, pp. 5.2-118 and -119.

¹⁴⁵ PSA, p. 5.2-119.

¹⁴⁶ PSA, p. 5.9-1.

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**, especially during the courtship, pair-bonding, egg-laying, and incubation periods (1 March – 30 June).”¹⁴⁷

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.”¹⁴⁸ Because the nearest sensitive (human) receptor is located approximately one mile from the Project site,¹⁴⁹ 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 Elmore North Project site in 2025.¹⁵⁰

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.

¹⁴⁷ PSA, p. 5.2-100. [emphasis added].

¹⁴⁸ PSA, p. 5.9-17.

¹⁴⁹ PSA, p. 5.9-6.

¹⁵⁰ 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.

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.”¹⁵¹ 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.”¹⁵² 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. 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.

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 decibels during the breeding season or 80 decibels 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.”¹⁵³

The PSA fails to provide evidence that the performance standards specified in BIO-14 would be feasible to achieve. The Applicant has 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.”¹⁵⁴ Response to CURE Data Request 239 states “[s]ilenced high pressure steam blows are likely on the order of 90 dBA at 100 feet.”¹⁵⁵ 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.¹⁵⁶ 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.

The Hazard Tract of the Imperial Wildlife Area is occupied by the Yuma’s Ridgway’s rail and California black rail.¹⁵⁷ The southwest corner of the Hazard Tract is located approximately 1,700 feet from the Project’s rock muffler (TN 253187). The entire Hazard Tract is located

¹⁵¹ PSA, p. 5.9-8.

¹⁵² AFC, p. 5.7-9 (TN 249737).

¹⁵³ PSA, p. 5.2-119.

¹⁵⁴ AFC, pp. 5.7-9 and -10. (TN 249737)

¹⁵⁵ TN 254014.

¹⁵⁶ 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>

¹⁵⁷ Personal communication on 10 Jul 2024 with Razia Shafique-Sabir, Deputy Project Leader and Biologist at SBSSNWR.

within 14,193 feet of the rock muffler, and the southern portion of the Hazard Tract is located within 3,163 feet of the rock muffler (60 dBA attenuation distances for first and second steam blow values, respectively). These data indicate that even with a rock muffler, the Project's steam blows would exceed the 60-dBA threshold throughout some or all of the habitats in the Hazard Tract. The data further indicate the steam blows could exceed the 60-dBA threshold at the marsh occupied by Yuma Ridgway's rails west of the Project site.¹⁵⁸ 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.¹⁵⁹

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.¹⁶⁰ 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 area¹⁶¹ and a 30 percent reduced alerting distance.¹⁶² 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.¹⁶³

In addition to the rail habitat in the Hazard Tract, there is rail habitat at cattail marshes within the Union Tract of the Sonny Bono Salton Sea National Wildlife Refuge ("SBSSNWR").¹⁶⁴ One of these cattail marshes is located approximately 2,900 feet east of the proposed geothermal plant site and approximately 2,200 feet from a proposed production well. The PSA does not provide ambient noise levels at rail habitat in the Hazard Tract or Union Tract. However, at the

¹⁵⁸ 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. Figure 3-3.

¹⁵⁹ 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.

¹⁶⁰ 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.

¹⁶¹ 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)

¹⁶² 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)

¹⁶³ *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.

¹⁶⁴ 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. Figure 3-3. *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>

SBSSNWR Headquarters,¹⁶⁵ the daytime ambient noise level was 43 dBA Leq.¹⁶⁶ Primary noise sources at this location were aircraft overflights, road traffic, people talking, and birds.¹⁶⁷ Presumably the ambient noise levels at rail habitat in the Hazard and Union Tracts is less than 43 dBA Leq (e.g., due to less road traffic and people talking). The PSA states that drilling activities would produce a noise level of 83 dBA Leq at 50 feet.¹⁶⁸ This equates to a noise level of 50 dBA Leq at rail habitat in the Union Tract, thus exceeding the ambient noise level by at least 7 dBA. 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.

Jurisdictional Wetlands

The PSA provides the following analysis regarding temporary impacts to state or federally protected wetlands:

“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 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.”¹⁶⁹

The PSA fails to justify why 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.” 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.). These deficiencies preclude the ability to assess whether the “temporary” wetland impacts quantified in the PSA would indeed be temporary.

The PSA then states the following regarding the Project’s impacts to state or federally protected wetlands:

¹⁶⁵ See AFC Figure 5.7-1 for a map of the sound monitoring locations. (TN 249737)

¹⁶⁶ PSA, p. 5.9-6.

¹⁶⁷ AFC, Table 5.7-3. (TN 249737)

¹⁶⁸ PSA, p. 5.9-7.

¹⁶⁹ PSA, p. 5.2-133.

“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.”¹⁷⁰

This information is confusing because the PSA first (p. 5.2-133) makes the determination that the Project would impact wetlands (or other jurisdictional waters), but then suggests that there is only a possibility that the Project would impact wetlands. The CEC must issue a revised and recirculated PSA that clearly articulates 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, the 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.

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.

The project owner shall acquire, in fee or in easement, a parcel or parcels of land for any permanent impacts, up to 1.87 acres, to compensate for impacts to state and federal 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, the trigger for BIO-22 is “ground-disturbing activities in areas supporting jurisdictional waters.” However, the Applicant has already stated that there are no jurisdictional waters in the Project area, and that construction of the geothermal plant and other Project facilities (injection well pads, pipelines, and borrow site) will have no impacts to federal or state jurisdictional wetlands or waters.¹⁷¹ As a result, none of the conditions in BIO-22 would be triggered. To

¹⁷⁰ PSA, p. 5.2-134.

¹⁷¹ AFC, p. 5.2-25 (TN 249737).

rectify this issue, the revised and recirculated PSA must require the Applicant to obtain a jurisdictional determination (either preliminary or approved) from the U.S. Army Corps of Engineers (“USACE”). In addition, the revised and recirculated PSA must require the Applicant to consult with the Regional Water Quality Control Board (“RWQCB”) to determine whether the Project could result in potential impacts to state wetlands or waters that do not fall under the jurisdiction of the USACE.

Second, 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.¹⁷² 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 1:1.¹⁷³ 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.

Third, 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.”¹⁷⁴

¹⁷² PSA, p. 5.2-134. Although the PSA suggests BIO-22 includes restoration up to 7.55 acres of temporarily impacted wetlands, there is no such provision in BIO-22.

¹⁷³ 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.

¹⁷⁴ Kern County. 2011 Oct. Final Environmental Impact Report: RE Distributed Solar Projects, Chapter 7-4 (part 1), Comment Letter #8.

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.”¹⁷⁵

Fourth, 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 Water Act are not achieving the goal of “no overall net loss” of wetland acres and functions.¹⁷⁶ 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.”¹⁷⁷ 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.¹⁷⁸ 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.¹⁷⁹ With respect to temporary impacts, Wagner (2021) found that 40% of the projects authorized by the Los

¹⁷⁵ City of Dublin. 2018 Oct. Final EIR for the At Dublin Project, Comment Letter #2.

¹⁷⁶ 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* Kihlslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16.

¹⁷⁷ 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.

¹⁷⁸ 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.

¹⁷⁹ 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.

Angeles District of the USACE in 2011 had temporary impacts in which vegetative cover did not recover to pre-impact levels.¹⁸⁰

For these reasons, the revised and recirculated PSA must provide a detailed wetland mitigation plan that can be vetted by the public before the CEC makes a decision on the Project.

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).”¹⁸¹ 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.¹⁸² The CCP is designed to guide the management of the Refuges over the next 15 years (i.e., through 2029).¹⁸³ A revised and recirculated 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. Even with successful implementation of the COCs/MMs proposed in the PSA, the Project would result in direct (e.g., habitat loss) and indirect (e.g., noise) impacts on the Sonny Bono Salton Sea NWR.¹⁸⁴ 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.¹⁸⁵ 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.”¹⁸⁶ Consequently, a revised and

¹⁸⁰ 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.

¹⁸¹ PSA, Table 5.2-7.

¹⁸² 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.

¹⁸³ *Id.*, p. 1-1.

¹⁸⁴ *See*, AFC, Figure 5.2-2.

¹⁸⁵ *Id.*, 4-40, -41, 4-84.

¹⁸⁶ 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.

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 of water for habitat management at the Sonny Bono Salton Sea NWR and Imperial Wildlife Area.

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.¹⁸⁷ 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

¹⁸⁷ Cal Code Regs. tit. 14 § 15126.4.

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.” Incredibly, BIO-22 leaves it up to the Applicant to decide whether the Project would impact jurisdictional aquatic resources, and thus, whether the compensatory mitigation described in BIO-22 should be implemented.

- 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, 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, but 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. Staff’s Data Adequacy Recommendation dated 8 May 2023 (TN 250067) stated that Staff required additional information to make the AFC conform with siting regulations. This additional information included, but was not limited to: (a) a detailed revegetation and weed monitoring plan for temporarily disturbed areas; (b) a Closure, Revegetation, and Rehabilitation plan, as well as financial securities for such an effort; and (c) specific details that subsequently allow for evaluation of the compensatory habitat proposal for burrowing owl. Although Staff recognized the need for this information over a year ago, it was not provided in the PSA. The fact that Staff needed additional information to assess the adequacy of the proposed mitigation, but now apparently can make determinations without that information, is evidence that some of the findings in the PSA are biased.

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 needs to 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 in Red Hill Bay, it appears 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. This issue should be addressed in a revised and recirculated PSA.

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 verify *[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.

The Yuma Ridgway’s rail is a secretive bird that constructs well concealed nests. As a result, it is extremely difficult to “verify” that no nesting is occurring. When surveying for Ridgway’s rails, biologists use behavioral cues (e.g., vocalizations in areas with concentrated rail activity) to infer nest locations. The revised and recirculated 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*.

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 two problems with this portion of BIO-14. 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.¹⁸⁸ Under this

¹⁸⁸ See AFC, Table 5.7.7.

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. 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. 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.” (TN 251681, p. 8) 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. Third, to avoid ambiguity in when the Plan would be required, BIO-14 needs to define the specific areas that provide “suitable rail habitat.”

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.¹⁸⁹ 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.¹⁹⁰ Intermittent and unpredictable “impulse” noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.¹⁹¹

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 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

¹⁸⁹ 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.

¹⁹⁰ *Id.* See also Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. *Ornithological Monographs* 74:6-22.

¹⁹¹ *Id.* See also Wright MD, Goodman P, Cameron TC. 2010. Exploring behavioural responses of shorebirds to impulsive noise. *Wildfowl* 60:150-167.

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.¹⁹² Because these activities would be infrequent and of short duration,¹⁹³ 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.

BIO-14 defines the non-breeding season as "February 15 – September 16 – February 14." This error needs to be fixed in the revised and recirculated PSA.

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 254835). Therefore, the FSA must establish a means for detecting occupied owl burrows that occur between 656 feet and 1,000 feet of project activities.

¹⁹² PSA, pp. 5.9-7 and -8. 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 than 104 dBA.

¹⁹³ PSA, p. 5.9-7.

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 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.¹⁹⁴

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.¹⁹⁵ During 2006–2007, Wilkerson and Siegel (2010) surveyed the entire breeding range of the species in California, except the Channel Islands.¹⁹⁶ 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.

¹⁹⁴ California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 10.

¹⁹⁵ Rosenberg DK, Haley KL. 2004. The Ecology of Burrowing Owls in the Agroecosystem of the Imperial Valley, California. *Studies in Avian Biology* 27:120-135.

¹⁹⁶ Wilkerson RL, RB Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. *Bird Populations* 10:1-36.

BIO-17 (Habitat Conservation or Restoration Plan)

As discussed previously, 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.¹⁹⁷ 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 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 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. 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.¹⁹⁸ 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.¹⁹⁹ Third, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.

This concludes my comments on the PSA.

Sincerely,



Scott Cashen, M.S.
Senior Biologist

¹⁹⁷ PSA, pp. 5.2-16 and -17.

¹⁹⁸ *Id.*

¹⁹⁹ 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.

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: Elmore North Geothermal Project (ENGP) Water Resources Evaluation

Dear Ms. Rengifo,

The Elmore North Geothermal Project (“ENGP”) proposed by Elmore North 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 ENGP is proposed on a 51-acre portion of an approximately 140-acre parcel south of the Salton Sea and would have a maximum continuous rating of approximately 157 megawatts (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 ENGP include a steam turbine generator system, geothermal fluid processing system, a single 14-cell cooling tower, 21 wells (including production and injection wells) and 13 well pads, and a 0.5-mile-long aboveground interconnection to an Imperial Irrigation District switching station 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 ENGP Staff Assessment (TN256843) and revised Water Supply Assessment (WSA) (TN 256894).

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 ENGP, 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 also 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 5.16-13).

A. The Analysis Omits Consideration of Future Hydrology of the Colorado River Based on Climate Projections

Neither the ENGP PSA or the ENGP WSA discuss Colorado River projected future hydrology based on projections from global climate models (GCMs) (Ajami, H., 2021; Gangopadhyay, S., and McGuire, M., 202 ; 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 253968). 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 254505). Yet, 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, 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 253968). 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.

A. 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 5.16-18). 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 ENGP PSA analysis only included the estimated water supply for the two other geothermal projects, i.e., Morton Bay and Black Rock. (PSA 5.16-14). "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 5.16-14-15).

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 its July 23 letter, IID requested that the 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. The projects include Hell's Kitchen, EnergySource Minerals (Atlis) and Hudson Ranch Geothermal." (TN 257957). Moreover, the AFC's cumulative impacts analysis evaluated eight projects, which are not all included in the PSA's analysis.

(AFC 5.15-17—18). 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 PSA's Cumulative Impacts' list of projects 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 3.54X 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 nonagricultural 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."

I. 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 nonagricultural 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. (University of California Riverside Salton Sea Task Force, 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).

V. 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 34.8% 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 ENGP 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).

To address these impacts, the WSA states that “If commercially viable, ENGP would seek additional water through IID’s Clearinghouse, consistent with any contractual requirements or limitations.” (WSA p. 1-2).” This alternative water source is 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 water efficiency, the Applicant explained that "ENGP has been designed for optimal water efficiency...." (TN 254505) 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. 1-10) For this reason, the PSA must discuss whether the operational water use efficiency of the proposed Elmore North 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)	seven-cell	fourteen-cell	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 ENGP Staff Assessment (TN256843) and revised Water Supply Assessment (WSA) (TN 256894). 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 ENGP 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

References

Ajami, H., 2021. "Chapter 2: Watershed Hydrology - Hydrology and Water Resources in the Salton Sea Watershed" in Crisis at the Salton Sea: Vital Role of Science. In University of California Riverside Salton Sea Task Force (Ed.).
https://www.saltontaskforce.ucr.edu/files/ugd/0d73bf_965128e5688948918ff4af26a5f85fac.pdf

Ascent Environmental, 2021. Imperial County Regional Climate Plan. Prepared for Southern California Association of Governments and Imperial County Transportation Commission.
https://www.imperialctc.org/assets/documents/transportation-plans-and-studies/ICTC-Regional-Climate-Action-Plan_FINAL.pdf

Brown, R.M., and N.B. Corpuson, 2023. HILARY: Geography Saves Imperial Valley from Storm Damage. August 23, 2023, Calexico Chronicle.
<https://calexiconchronicle.com/2023/08/23/hilary-geography-saves-imperial-valley-from-storm-damage/>

Bureau of Reclamation (Reclamation), 2012. Colorado River Basin Water Supply and Demand Study.
https://www.usbr.gov/watersmart/bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf

Reclamation, 2018. Colorado River Basin Ten Tribes Partnership Tribal Water Study, Study Report.
<https://tentribespartnership.org/wp-content/uploads/2019/12/WaterStudy.pdf>

Reclamation, 2021a. Water Supply Reliability in the West - SECURE Water Act Report.
<https://www.usbr.gov/climate/secure/docs/2021secure/2021SECUREREport.pdf>

Reclamation, 2021b. Colorado River Basin. SECURE Water Act Section 9503c, Report to Congress.
<https://www.usbr.gov/climate/secure/docs/2021secure/basinreports/ColoradoBasin.pdf>

California Department of Water Resources (DWR), 2024. The State Water Project Delivery Capability Report 2023, July 2024.
https://data.cnra.ca.gov/dataset/finaldcr2023/resource/92356681-957a-48ee-97c4-529d25b9dbb2?utm_medium=email&utm_source=govdelivery

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>

Gangopadhyay, S., and McGuire, M., 2021. West-Wide Climate and Hydrology Assessment. Technical Memorandum ENV-2021-001, Bureau of Reclamation. 423 pp.
<https://www.usbr.gov/climate/secure/docs/2021secure/westwidesecurereport1-2.pdf>

Hanak, E., Mount, J., Gray, B., Schwabe, K., Colby, B., Kenney, D., Bradley, T., Escriva-Bou, A., Jezdimirovic, J., & Fleck, J. (2018). "Colorado River" Public Policy Institute of California (PPIC) Water Policy Center, November.
<https://www.ppic.org/wp-content/uploads/californias-water-the-colorado-river-november-2018.pdf>

Hoerling, M. P., J. K. Eischeid, H. F. Diaz, B. Rajagopalan, and E. Kuhn, 2024: Critical Effects of Precipitation on Future Colorado River Flow. J. Climate.
<https://journals.ametsoc.org/view/journals/clim/37/16/JCLI-D-23-0617.1.xml>

Imperial Irrigation District, Water Resources Section (IID WRS), 2021. Imperial Irrigation District 2021 Water Conservation Plan.
<https://www.iid.com/home/showpublisheddocument/19518/637690432334530000>

Lukas, J., and E. Payton, eds. 2020. Colorado River Basin Climate and Hydrology: State of the Science. Western Water Assessment, University of Colorado Boulder.
<https://doi.org/10.25810/3hcv-w477>.

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>

Rick Engineering Company, 2024. Lithium Valley Specific Plan, Final Baseline Report. Prepared for Imperial County.
https://www.icpds.com/assets/planning/LithiumValley_Final-Baseline-Report_2.15.24_wAppendices-1.pdf

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 ASSOCIATIONS

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

California Groundwater Management, Second Edition, Groundwater Resources Association of California, co-author and project manager, 2005.

"Water Contamination by Low Level Organic Waste Compounds in the Hydrologic System," in Water Encyclopedia, Wiley, 2004.

Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration, Water Research Foundation, co-author, 2009.

Aquifer Storage and Recovery in the US, ASR 9, American Ground Water Trust, Orlando Florida, September 2009 – a compilation of key ASR issues on DVD, contributing editor and speaker, 2010.

Sustainability From The Ground Up – Groundwater Management In California – A Framework, Association of California Water Agencies, principal author, 2011.

ISMAR9 Call to Action: Sustainable Groundwater Management Policy Directives, Principal Author, 2016.

Groundwater Journal Special Publication on Managed Aquifer Recharge - Co-Editor -in publication

"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.

"Got Groundwater? State of Low Impact Development & the Sustainable Groundwater Management Act: Recharging Streams and Groundwater," Localizing California Waters, Yosemite, California, November 2016.

"Sustainable Groundwater Management – A New Law in California," International Association of Hydrogeologists Congress – Montpellier, France – September 2016.

ATTACHMENT E

July 29, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Attn: Ms. Tara Rengifo

Subject: Review of Elmore North Geothermal Project Preliminary Staff Assessment (PSA)

Dear Ms. Rengifo,

This is a review of sections of Chapter 5: Environmental Impact Assessment of the Elmore North Geothermal Project Preliminary Staff Assessment (PSA). The focus of these comments is section 5.6: Geology, Paleontology, and Minerals, and section 5.16: Water Resources in the PSA.

I. Brawley Fault as Barrier

The mineralogy of the fault gouge is important in determining whether the fault is a hydraulic barrier and weak under shear loading (Summer and Byerlee, 1977). If the Brawley Fault is filled with clay-rich gouge, it would be weak under shear and more prone to failure in response to seismic activity, which can have implications for the project related to ground shaking and surface rupture risk (Wang et al., 1980; Summers and Byerlee, 1977; Byerlee 1978, Morrow et al., 1981). If the fault gouge is granitic, then its permeability may be sufficiently high to allow for fluid migration (Ikari, 2009). Clay-rich fault gouges tend to have different hydromechanical behavior when compared to granitic fault gouges. Clay-rich fault gouge tends to be of low permeability, making them hydraulic barriers, restricting regional fluid flow (Ikari, 2009). However, clay-rich fault gouge tends to have low frictional (or shear) strength and its low permeability tends to have the effect of increasing fluid pore pressures within the fault, which would have the effect of further weakening the shear strength of the fault (Ikari et al. (2009) and others referenced therein). The opposite is typically the case for granitic fault gouges. 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.”

The PSA does not disclose or evaluate the actual mineralogic composition of the Brawley Fault gouge. The PSA must be revised to set forth the mineralogy of the Brawley fault gouge, if known, in the subsection titled “Faulting and Seismicity.” The document “Elmore North Geothermal Project Data Request Response Set 2” (TN 252808) and the supporting references Hulen et al. (2002, 2003) do not address fault gouge mineralogy because they focus on characterizing the geothermal resource. Pore pressure buildup in the faults is a potential risk if the faults in the vicinity of the project area are clay filled. (Ikari, 2009) This has the effect of lowering the effective normal stress on the fault making it more prone to shear failure (Ikari, 2009), which has implications for the susceptibility of the project area to ground surface rupture. The seismic hazard at the project site may thus be more pronounced than implied in the PSA.

II. Surface Inundation and Liquefaction Risk

The construction and operation of the project on geologic units and soil that are unstable, or that would become unstable as a result of project execution, is likely to result in potentially significant impacts from ground shaking, surface rupture, and liquefaction. According to the PSA (page 5.6-8), the calculated peak ground acceleration (PGA) at the Project site is 0.61 g, where PGA has a typical range of 0 to 1.0 g. This suggests the risk of ground shaking would be moderate to high. The project area is in a seismically active tectonic zone with ongoing rifting, faulting, and earthquake activity in the Brawley Seismic Zone (BSZ) characterized by numerous cross-cutting high angle normal faults. Given the shallow groundwater, known soil type, historical ground surface rupture, and known peak ground acceleration of 0.61 g, the proposed project infrastructure, particularly the proposed six production wells, associated well pads, and pipelines to the north of the project site, will be constructed and operated on geologic units and soils that could become unstable as a result of the project operations. In particular, potential leakages from fluid conveyance systems to and from the production and injection wells and well pads, have the potential to cause surface inundation and result in soil liquefaction. According to the document “Application for Certification: Elmore North Geothermal Project (April 2023)” (23-AFC-02, TN# 249737), “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.” (AFC 2-64) This volume of fluid release would have an appreciable impact for these relatively small volumes. In the PSA, Appendix D, page 35, one conveyance system to surface impoundment facilities can transport process fluids at a maximum rate of 797 gallons per

minute (which equals 1.15 million gallons per day). Thus, a leak of even a few minutes has the potential to result in significant impacts from surface inundation and liquefaction. It is well known that liquefaction, in particular, can lead to 1) non-uniform and differential settlement of structures often resulting in cracking, 2) loss of bearing support 3) flotation of buried structures such as sewer lines, tanks, and pipes, 4) strong lateral forces against retaining structures such as seawalls, 5) Lateral spreading (according to the Pacific Northwest Seismic Network).

It should be noted that *Appendix 5-4 Geologic Resources*, which is the Preliminary Geotechnical Report (TN 249740) for the Elmore North Geothermal Project rates the risk associated with liquefaction as *high* even if it were to occur in isolated sand pockets below the surface. The Preliminary Geotechnical Report also highlights the predominance of surface clayey soils at the site of the proposed plant facility characterized by low infiltration rates, which increases the potential for surface inundation not only around the wells and well pads, but also at the plant site. There is a need to reconcile the findings of the Preliminary Geotechnical Report with those of the PSA on liquefaction risk as well as surface inundation potential given that clayey soils with low infiltration rates dominate the surface. The Geotechnical Report evaluated the liquefaction risk as significant but the PSA as *Less than significant* (5.6-7) with mitigation.

III. Water Resources & Flood Risk

Groundwater within the Elmore North Geothermal Project area is said to be saline, of poor quality with high total dissolved solids. The PSA page 5.16-2 states that shallow groundwater in the [project] area is hydraulically connected to the Salton Sea and is very saline. A groundwater storage capital project in the area would need permeable soils and subsurface sediment. The PSA (page 5.16-2) clearly states that sediment in the area is fine-grained and of low permeability (transmissivity) such that it would not be feasible to recharge the aquifers. The PSA page 5.16-2 states that “groundwater levels recharge very slowly” which would exacerbate surface inundation and increase flood risk because of increased potential for surface water ponding due to limited infiltration.

Six production wells and the associated well pads are outside the plant site to the north of the project site (see Figure 3-3 of PSA reproduced in part below as Figure 1) and would be located in areas dominated by poorly drained soils with high flood risk. The flood risk is high because of (1) shallow groundwater, which means the surface water has nowhere to go if it infiltrates, and (2) clayey soils with low infiltration rates, meaning surface water cannot infiltrate fast enough before ponding (and flooding) happens at the surface. The construction of new, additional impervious surfaces (e.g., Project well pads) in areas of high flood risk would increase the impacts from flooding. Additionally, these Project features will also be located outside the berm intended to protect the plant area so there is no mitigation proposed for significant impacts from flooding in these areas. Engineering controls are necessary to mitigate flood risk, yet the PSA fails to adequately analyze and mitigate these impacts.

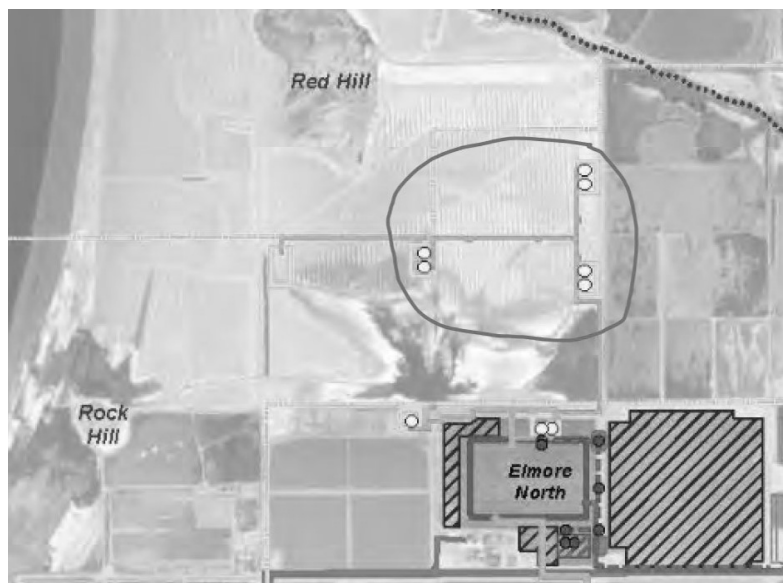


Figure 1. Site map showing location of plant and production wells circled in blue (reproduced from ENGP PSA Figure 3.3)



Figure 2. Map from SoilWeb showing the site map soils impacted by the BRGP as dominated by Imperial-Glenbar silty clay loams.

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.

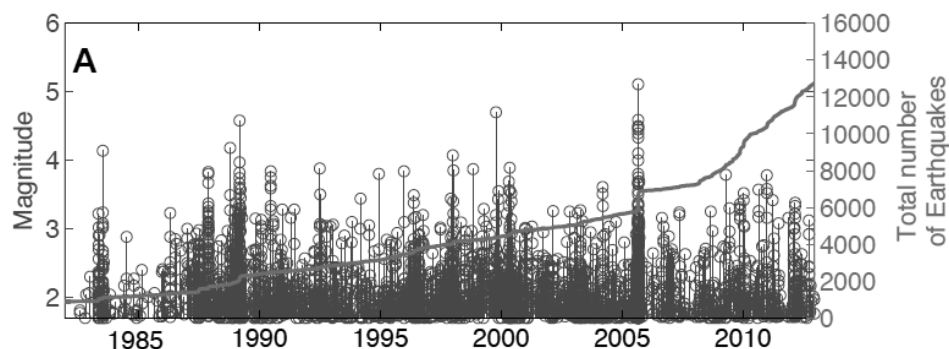


Figure 3. Salton Trough seismicity data showing the number (green curve) of earthquakes greater than magnitude 1.5 (blue circles) over the period 1982 to 2013. The data shows increasing seismicity over the study period above pre-1986 background rates of less than 2000 earthquakes to over 12,000 at the 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 3). 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.

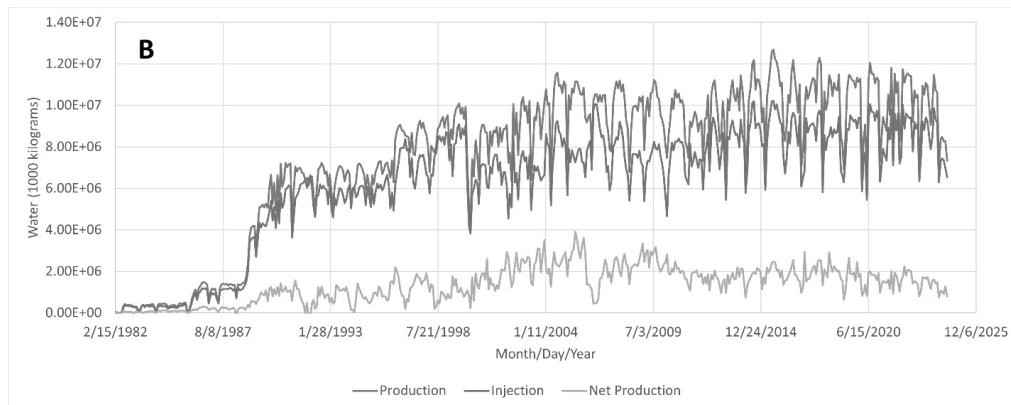


Figure 4. Water (Geothermal fluid) production, injection, and net production shown in 1000 kilograms from 1982 to the present (2024). The net production is the difference between production and injection mass of water (data from the California Department of Conservation).

The proposed ENGP comprises 12 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 (ENGP AFC, TN# 249737), each production well will have a maximum capacity of 1,626,000 pounds per hour of geothermal fluid but will operate at a rate of 1,100,000 pounds per hour per well to maintain a total capacity of 10,294,000 pounds per hour (TN# 249737 on page 2-16). The injection wells each have injection capacities of 2.7 million pounds per hour (TN# 249737 on page 2-6). Using these production rates from the ENGP, the projected increase in produced water (geothermal fluid) in the Salton Sea Geothermal Resource Area per year per well would be about 4.4 billion kg (assuming 24-hour operations for 365 days). Similar amounts of fluids will be injected per ENGP 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 ENGP PSA must be revised to include an evaluation of the impact the addition of 12 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,

Bwalya Malama, Ph.D.
Professor, Groundwater and Soil Biophysics
Department of Natural Resources Management and Environmental Sciences
California Polytechnic State University, San Luis Obispo, CA.



Recoverable Signature

X Bwalya Malama

Bwalya Malama

Signed by: Bwalya Malama

References

- Balks, M.R., Bond, W.J. and Smith, C.J., 1998. Effects of sodium accumulation on soil physical properties under an effluent-irrigated plantation. *Soil Research*, 36(5), pp.821-830.
- Brodsky, E.E. and Lajoie, L.J., 2013. Anthropogenic seismicity rates and operational parameters at the Salton Sea Geothermal Field. *Science*, 341(6145), pp.543-546.
- Byerlee, J.D., 1978. Friction of Rocks, Pure and Applied Geophysics. 116, 615.
- California Department of Conservation, Data Query Geothermal Well Records, Production and Injection Data, available at www.energy.ca.gov/geothermal.
- Chen, X. and Shearer, P.M., 2011. Comprehensive analysis of earthquake source spectra and swarms in the Salton Trough, California. *Journal of Geophysical Research: Solid Earth*, 116(B9).
- Hulen, J., Norton, D., Kaspereit, D., Murray, L., van de Putte, T., Wright, M., 2003. Geology and a working conceptual model of the obsidian butte (unit 6) sector of the salton sea geothermal field, California. TRANSACTIONS-GEOTHERMAL RESOURCES COUNCIL, 227–240.
- Hulen, J.B., Kaspereit, D., Norton, D.L., Osborn, W., Pulka, F.S., Bloomquist, R., 2002. Refined conceptual modeling and a new resource estimate for the salton sea geothermal field, imperial valley, California. Transactions-geothermal resources council, 29–36.
- Ikari, M.J., Saffer, D.M., Marone, C., 2009. Frictional and hydrologic properties of clay-rich fault gouge. *Journal of Geophysical Research: Solid Earth* 114.
- Levy, G.J. and Torrento, J.R., 1995. Clay dispersion and macroaggregate stability as affected by exchangeable potassium and sodium. *Soil science*, 160(5), pp.352-358.
- Locat, J. and Demers, D., 1988. Viscosity, yield stress, remolded strength, and liquidity index relationships for sensitive clays. *Canadian geotechnical journal*, 25(4), pp.799-806.
- Majer, E.L., Baria, R., Stark, M., Oates, S., Bommer, J., Smith, B. and Asanuma, H., 2007. Induced seismicity associated with enhanced geothermal systems. *Geothermics*, 36(3), pp.185-222.
- BRGP PSA, 2024. Morton Bay Geothermal Project Preliminary Staff Assessment, Docket No. 23-AFC-01, TN# 257697.
- Morrow, C., Shi, L.Q. and Byerlee, J., 1981. Permeability and strength of San Andreas fault gouge under high pressure. *Geophysical Research Letters*, 8(4), pp.325-328.
- Morrow, C.A., Shi, L.Q., Byerlee, J., 1984. Permeability of fault gouge under confining pressure and shear stress. *Journal of Geophysical Research: Solid Earth* 89, 3193–3200.
- Summers, R., and Byerlee, J., 1977. A note on the effect of fault gouge composition on the stability of frictional sliding. In *International Journal of Rock Mechanics and Mining Sciences & Geomechanics Abstracts* (Vol. 14, No. 3, pp. 155-160). Pergamon.
- Wang, C. Y., Mao, N. H., & Wu, F. T., 1980. Mechanical properties of clays at high pressure. *Journal of Geophysical Research: Solid Earth*, 85(B3), 1462-1468.
- Ward III, P.A. and Carter, B.J., 2004. Dispersion of saline and non-saline natric mollisols and alfisols. *Soil science*, 169(8), pp.554-566.

BWALYA MALAMA

California Polytechnic State University
Natural Resources & Environmental Management Dept.
San Luis Obispo, CA

Phone (W): (805) 756-2971
Email: bmalama@calpoly.edu

EDUCATION

Ph.D. in **Hydrology**, with minor in **Mathematics**, University of Arizona, 2006
MS in Mining, Geological and Geophysical Engineering, University of Arizona, 2001
BS (Honors, Cum Laude) in Mining Engineering, University of Arizona, 1999

APPOINTMENTS

08/2023-Present: **Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

09/2017-08/2023: **Associate Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

09/2014-2017: **Assistant Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

08/2010-08/2014: **Senior Member of Technical Staff**

Sandia National Laboratories, Carlsbad, NM

08/2009-07/2010: **Assistant Professor**

Department of Geological Engineering, Montana Tech of the University of Montana

08/2008-08/2009: **Assistant Research Professor**

CGISS & Department of Geosciences, Boise State University

06/2006-07/2008: **Postdoctoral Research Scientist**

CGISS & Department of Geosciences, Boise State University

08/2003-08/2006: **Research Associate** (PhD Candidate)

Department of Hydrology and Water Resources, University of Arizona

08/1999-07/2003: **Research Assistant** (MS Candidate)

Department of Mining and Geological Engineering, University of Arizona

TEACHING EXPERIENCE

California Polytechnic State University, NRES Department

Environmental Soil Physics (SS 424)

Environmental Groundwater Hydrology (ERSC 442)

Environmental Contaminant Transport (ERSC 443)

Advanced Environmental Science (ESCI 550)

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

Applied Hydrogeology
Advanced Hydrogeology.

Pima Community College, Tucson, Arizona

College Algebra; Trigonometry; Statistics.

Mining and Geological Engineering, University of Arizona (Graduate instructor)

Underground Mine Ventilation.

PUBLICATIONS

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>
2. Lazcano et al. (2022) *Assessing the short-term effects of no-till on crop yield, greenhouse gas emissions, soil C and N pools in a cover-cropped, biodynamic Mediterranean vineyard*, Australian Journal of Grape and Wine Research (Accepted)
3. Heath, J.E., Kuhlman, K.L., Broome, S.T., Wilson, J.E., **Malama, B.** (2021) *Heterogeneous Multiphase Flow Properties of Volcanic Rocks and Implications for Noble Gas Transport from Underground Nuclear Explosions*, Vadose Zone Journal 20(3), e20123
4. **Malama, B.**, Devin Pritchard-Peterson, John Jasbinsek, Christopher Surfleet (2021) *Assessing Stream-Aquifer Connectivity in a Coastal California Watershed*, Water 13(4) 416
[doi:10.3390/w13040416](https://doi.org/10.3390/w13040416)
5. Kuhlman, K.L., **Malama, B.**, (2020) *Uncoupling electrokinetic flow solutions*. Mathematical Geosciences, 1-26. <https://doi.org/10.1007/s11004-020-09889-8>.
6. **Malama, B.**, Montgomery, M., Aurelius, S. (2019) *Theory and practice of slug tests for aquifer characterization*, Encyclopedia of Water: Science, Technology, & Society.
7. **Malama, B.**, Kuhlman, K.L., Brauchler, R., Bayer, P. (2016) *Modeling cross-hole slug tests in an unconfined aquifer*, Journal of Hydrology, Volume 540, September 2016, Pages 784–796.
8. Kuhlman, K.L., **Malama, B.**, Heath, J.E. (2015) *Multiporosity flow in fractured low-permeability rocks*, Water Resources Research, 10.1002/2014WR016502.
9. **Malama, B.**, Kuhlman, K.L. (2015) *Unsaturated hydraulic conductivity models based on truncated lognormal pore-size distributions*, Groundwater, 53: 498–502.
10. **Malama, B.** (2014) *Theory of transient streaming potentials in coupled unconfined aquifer-unsaturated zone flow to a well*, Water Resources Research, 50, 2921-2945.

11. **Malama, B.**, Kuhlman, K.L., James, S. (2013) *Core-scale solute transport model selection using Monte Carlo analysis*, Water Resources Research, 49, 1-15.
12. **Malama, B.**, Revil, A. (2014) *Modeling transient streaming potentials in falling-head permeameter tests*, Groundwater, 52(4), 535-549, doi: 10.1111/gwat.12081.
13. Johnson, B., **Malama, B.**, Barrash, W., Flores, A.N. (2013) *Recognizing and modeling variable drawdown due to evapotranspiration in a semiarid riparian zone considering local differences in vegetation and distance from a river source*, Water Resources Research, 49, 1030-1039.
14. **Malama, B.** (2013) *Measurement of streaming potentials generated during laboratory simulations of unconfined aquifer pumping tests*, pp. 127-157, Chapter 7 in Advances in Hydrogeology, Mishra, P.K. & Kuhlman, K.L. (Ed.), Springer New York.
15. **Malama, B.**, Kuhlman, K. L., Barrash, W., Cardiff, M., Thoma, M. (2011) *Modeling slug tests in unconfined aquifers taking into account water table kinematics, wellbore skin and inertial effects*, Journal of Hydrology, 408(1-2), 113-126.
16. **Malama, B.** (2011) *Alternative linearization of water table kinematic condition for unconfined aquifer pumping test modeling and implications for specific yield estimates*, Journal of Hydrology, 399(3-4), 141-147.
17. Michael C., Barrash, W., Thoma, M., **Malama, B.** (2011) *Information content of slug tests for estimating hydraulic properties in realistic, high-conductivity aquifer scenarios*, Journal of Hydrology, 403(1-2), 66-82.
18. **Malama, B.** & Johnson, B. (2010) *Analytical modeling of saturated zone head response to evapotranspiration and river stage fluctuations*, Journal of Hydrology, 382(1-4), 1-9.
19. **Malama, B.**, Kuhlman, K.L., Revil, A. (2009) *Theory of transient streaming potentials associated with axial-symmetric flow in unconfined aquifers*, Geophysical Journal International, 179, 990-1003.
20. **Malama, B.**, Revil, A., Kuhlman, K.L. (2009) *A semi-analytical solution for transient streaming potentials associated with confined aquifer pumping tests*, Geophysical Journal International, 176, 1007-1016.
21. **Malama, B.** & Barrash, W. (2009) *Flow in the neighborhood of a confined aquifer observation well*, Journal of Hydrology, 364 (1-2), 107-114.
22. Riva, M., Guadagnini, A., Neuman, S.P., Janetti, E.B., **Malama, B.** (2009) *Inverse analysis of stochastic moment equations for transient flow in randomly heterogeneous media*, Advances in Water Resources 32(10) 1495-1507.
23. Jardani, A., Revil, A., Barrash, W., Crespy, A., Rizzo, E., Straface, S., Cardiff, M., **Malama, B.**, Miller, C., Johnson, T. (2009) *Reconstruction of the Water Table from Self-Potential Data: A Bayesian Approach*, Ground Water, 47(2), 213-227.
24. Cardiff, M., Barrash, W., Kitanidis, P.K., **Malama, B.**, Revil, A., Straface, S., Rizzo, E. (2009) *Potential-Based Inversion of Unconfined Steady-State Hydraulic Tomography*, Ground Water, 47(2), 259-270.
25. **Malama, B.**, Kuhlman, K.L., Barrash, W. (2008) *Semi-analytical solution for flow in a leaky unconfined aquifer toward a partially penetrating pumping well*, Journal of Hydrology, 356(1-2), 234-244.

26. **Malama, B.**, Kuhlman, K.L., Barrash, W. (2007) *Semi-analytical solution for flow in leaky unconfined aquifer-aquitard systems*, Journal of Hydrology, 346(1-2), 59-68.
27. Jardani, A., Revil, A., Bolève, A., Crespy, A., Dupont, J-P., Barrash, W., **Malama, B.** (2007) *Tomography of the Darcy velocity from self-potential measurements*, Geophysical Research Letters, 34, L24403.
28. Kulatilake, P.H.S.W., Park, J., **Malama, B.** (2006) *A new rock mass failure criterion for biaxial loading conditions*, Geotechnical and Geological Engineering, 24(4), 871-888.
29. **Malama, B.**, & Kulatilake, P.H.S.W., (2003) *Models for normal fracture deformation under compressive loading*, International Journal of Rock Mechanics and Mining Sciences, 40(6), 893-901.
30. Kulatilake, P.H.S.W., **Malama, B.**, Wang, J. (2001) *Physical and particle flow modeling of jointed rock block behavior under uniaxial loading*, International Journal of Rock Mechanics and Mining Sciences, 38(5), 641-657.

SELECTED ABSTRACTS & CONFERENCE PRESENTATIONS

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
4. **Malama, B.**, Ye-Chen Lin (2021) *Resolving the Stream Depletion Model Paradox: Theory of Depletion with Stream Drawdown near a Pumping Well*, Earth & Space Science Open Archive, <https://doi.org/10.1002/essoar.10508030.2>
5. **Malama, B.**, Iason E. Pitsillides (2020) *Deep Sensing of Transient Electrokinetic Response of Aquifer-Aquitard System to Pumping*, AGU Fall Meeting, December, San Francisco, CA.
6. **Malama, B.**, Solum James (2019) *Two Years of Sap Flow for Evapotranspiration Characterization in Riparian Vegetation*, AGU Fall Meeting, December, San Francisco, CA.
7. **Malama, B.**, Jack T. Ridder, Nico Hillman, Shelby Littleton (2019) *Transient Electrokinetic Signals Measured above a Fractured Rock Aquifer*, AGU Fall Meeting, December, San Francisco, CA.
8. Kuhlman, K.L., **Malama, B.** (2019) *Eigenvalue Uncoupling of Electrokinetic Flows*, AGUFGM, 2019, H21H-1815.
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

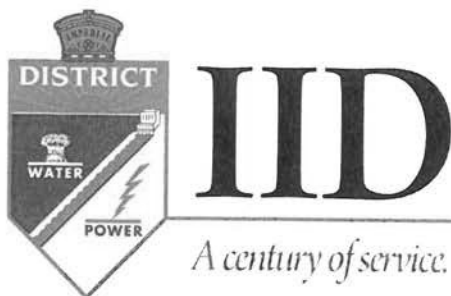
COMPUTATIONAL SKILLS

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



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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 MERCHANTABILITY, 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. Hansen

Date: 11/1/2022

TRANSMISSION CUSTOMER:

BHE Renewables, LLC

By: [Signature]
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



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



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

[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.

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



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 <aromero@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



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 <aromero@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



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



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](https://www.jacobs.com) | 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



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](mailto:jerry.salamy@jacobs.com) | 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



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
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E-mail: dvargas@iid.com

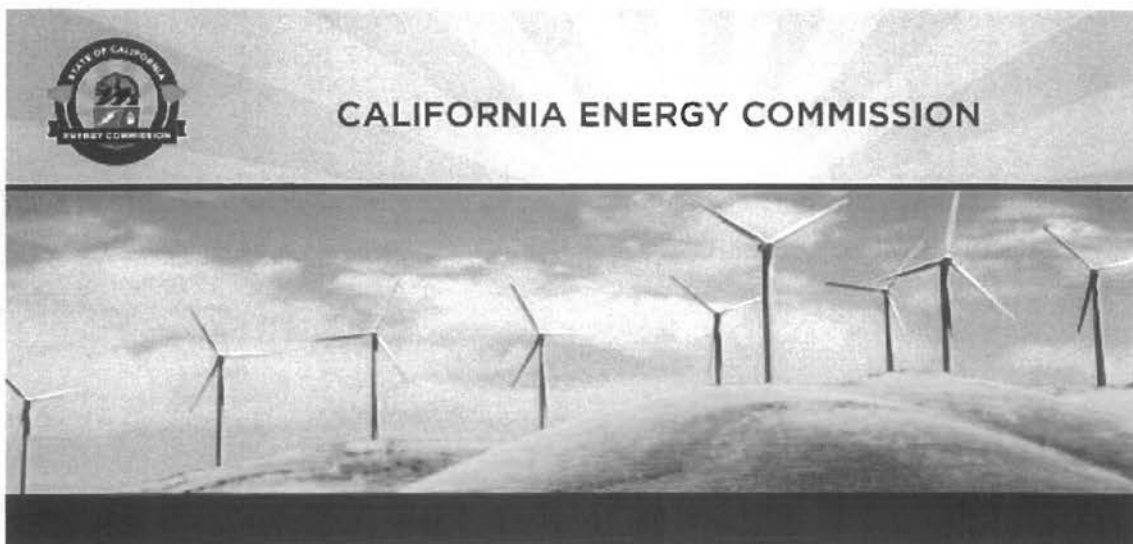
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Vargas, Donald A

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

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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.

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ENERGY COMMISSION



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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



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](mailto:Jerry.Salamy@jacobs.com) | 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
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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



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,

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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>

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<Manjot.Bhangoo@calenergy.com>

Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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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

BHE Commitment to Excellence
Safety First, Last and Always



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Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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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



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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

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BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
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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,

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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

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



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
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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>
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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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Sent: Monday, July 31, 2023 4:17 PM
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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
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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



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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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 supply¹.

- 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/Environmental-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/qa-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/departments-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
Tel: (760) 482-3609
Cel: (760) 427-8099
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 <aromero@IID.com>
Subject: Transmission Line Permitting

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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



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: 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

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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

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT
150 SOUTH NINTH STREET
EL CENTRO, CALIFORNIA 92243
PHONE: (619) 339-4606
FAX: (619) 353-9420



APPLICATION FOR APCD AUTHORITY TO CONSTRUCT/PERMIT TO OPERATE

✓/X	NATURE OF APPLICATION
<input type="checkbox"/>	New Equipment to be installed or constructed
<input type="checkbox"/>	Pre-fabricated (off the shelf) Equipment not Requiring Construction
<input checked="" type="checkbox"/>	Amendment to Completed Application or Existing Application to Construct PERMIT NO. 1890
<input type="checkbox"/>	Modification of existing permitted equipment
<input type="checkbox"/>	Change of Permit Ownership
<input type="checkbox"/>	Banking
<input type="checkbox"/>	Other (explain):

APPLICANT INFORMATION

Firm Name	ELMORE L.P.				
Legal Owner	ELMORE L.P.				
Equipment Address (For portable Equipment Use Home Base)	786 WEST SINCLAIR ROAD CALIPATRIA, CALIFORNIA 92233				
A/C Contact Title	BRUCE CARLSEN, ENVIR.MNGR	Phone:	(619) 348-4000		
Mailing Address (if different from Equipment Location)	950 WEST LINDSEY ROAD CALIPATRIA, CA 92233				
Permit Recipient/Title	BRUCE CARLSEN, ENVIR.MNGR	Phone:	(619) 348-4000		
Site Contract/Title	JOHN KOWALCZYK, SUPERINTEND	Phone:	(619) 348-4000		
Nature of Ownership	<input type="checkbox"/> Govt	<input type="checkbox"/> Utility	<input type="checkbox"/> Corp.	<input type="checkbox"/> Dealership	<input type="checkbox"/> Individual <input checked="" type="checkbox"/> Partnership
Nature of Business	ELECTRICAL GENERATION FROM GEOTHERMAL ENERGY				

DESCRIPTION OF OPERATION

Normal Equipment Operating Hours	A Day: 24 HOURS	Days/Week: 7	Weeks/Year: 52
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General Description of Process Equipment & Air Pollution Control Equipment (add attachments if necessary)

BRINE PROCESSING AND POWER GENERATION AT THE ELMORE POWER PLANT

Signature of Authorized Person: <i>Bruce Carlsen</i>	Date: 5/20/96
Print Name/Title BRUCE CARLSEN, ENVIRONMENTAL MANAGER	Company: CALIFORNIA ENERGY OPERATING COMPANY

DO NOT WRITE BELOW THIS LINE (APCD USE ONLY)

Receipt # 279890	Date: 5/21/96	Amount Received: \$ 90
Add'l Fee Receipt #	Date:	Amount Received: \$
<input type="checkbox"/> Attachments(list)		

MP

**To the
Imperial County
Air Pollution Control District**

**AUTHORITY TO CONSTRUCT PERMIT
DATA SUBMITTAL
CalEnergy
Operating Company**

Prepared for

**CalEnergy Operating Company
950 West Lindsey Road
Calipatria, California 92233**

Prepared By

**RTP Environmental Associates, Inc.
7514 Girard Avenue, #1-432
San Diego, California 92037
(619) 456-8020**

1.0 EXECUTIVE SUMMARY

CalEnergy Operating Company (CEOC) operates the following four geothermal facilities: Vulcan, Hoch, Elmore and Leathers. This submittal was prepared in response to a letter from the Imperial County Air Pollution Control District (APCD) requiring additional information regarding requested permit revisions. The reason for these permit revisions was due to the assessment that actual air pollutant emissions were significantly below the permitted limits. These permitted limits were also noted to be below the Title V Major Source definitions threshold levels. Since the only basis for being qualified as a major source in the Title V Program is as a result of the permitted limits (or potential to emit), CEOC is seeking to have the permits revised so they are more accurate in their assessment of the power plants' potential emissions. This submittal is directed toward that consideration.

The responses to the APCD letter follows the same order as the letter except for the certification information. This certification applies to all of the information presented in this submittal and follows this section.

2.0 CERTIFICATION BY A RESPONSIBLE OFFICIAL

Certification:

I hereby certify that based on information and belief formed after reasonable inquiry, that, the answers, statements, and information contained in the foregoing material are, to the best of my knowledge, true, accurate, and complete.



Signature

Bruce Carlsen

Name (Typed)

Manager, Environmental Health & Safety

Title

1/30/97

Date

5.0 ELMORE POWER PLANT

The Salton Sea KGRA geothermal brine, existing at a temperature of over 500°F and a pressure of approximately 1250 PSIA, is driven up the well bore and through the brine delivery pipelines by reservoir pressure and enthalpy. As the brine rises in the well bore, the pressure of the brine is reduced and some of the brine flashes into steam, to attain thermodynamic equilibrium.

The two-phase (brine/steam) geothermal fluid from the individual production wells is manifolded into production pipelines which connect into a single larger brine supply pipe feeding the facility.

The two-phase mixture enters a High Pressure Separator where the steam and non-condensable gases are separated from the brine. The separated steam and non-condensable gases then flow to the High Pressure Separator Scrubber where any entrained brine is removed or scrubbed from the stream. The scrubbed steam and non-condensable gases then flow to the Heat Recovery System, a series of counter flow heat exchangers, in which hotwell condensate from the Surface Condenser is converted to high purity steam, largely free of non-condensable gases. The scrubbed separator steam is condensed in the Heat Recovery System and flows to the Cooling Tower under its own pressure. The steam generated in the Heat Recovery System is used along with additional steam from the High Pressure Crystallizer to drive the Turbine-Generator.

Brine from the High Pressure Separator flows to the High Pressure Crystallizer where the pressure is reduced and additional steam is released. The High Pressure Crystallizer's height allows the steam and brine to separate, with the steam passing through an internal series of scrubbing apparatus as it flows out the upper portion of the vessel. This crystallizer steam joins with the high purity steam from the Heat Recovery System and enters the High Pressure Steam Scrubber.

Within the High Pressure Steam Scrubber, the combined steam is washed with a condensate spray to remove impurities and liquid droplets before entering the Turbine.

Back in the High Pressure Crystallizer, a small amount of "silica seed" (concentrated silica slurry from the Clarifier underflow), is dispersed into the brine flow just as the pressure

drop takes place. This silica seed provides nuclei for the precipitation of the super saturated silica on the seed particles, rather than the piping and vessel walls as scale deposits.

From the High Pressure Crystallizer, the brine flows to the Low Pressure Crystallizer where the pressure is dropped, releasing additional steam. As with the High Pressure Crystallizer, disengagement space and internal scrubbing has been incorporated to allow for separation of the steam and brine.

The Low Pressure Steam Scrubber receives the steam from the Low Pressure Crystallizer where it is washed and sent to the low pressure entry points of the Turbine.

The brine leaving the Low Pressure Crystallizer flows to the Atmospheric Flash Tank where its pressure is reduced to atmospheric causing a small amount of steam to be produced. The steam generated from this pressure reduction in the Atmospheric Flash Tank is piped to the Barometric Condenser, a direct contact condenser, where it is condensed and flows to the Cooling Tower or is combined back into the brine.

The Primary Clarifier receives brine from the Atmospheric Flash Tank. Brine enters the center of the Clarifier where it is mixed with brine from the bottom of the tank that contains upwards of 5 (five) percent suspended solids. This mixing desupersaturates the brine in regard to silica. The brine then enters the main body of the Clarifier where the velocities are reduced allowing the larger solids to settle to the bottom of the tank and clear brine and small particles to flow out the upper portion of the Clarifier. The majority of the settled solids are circulated within the Clarifier itself, some is sent to the High Pressure Crystallizer as seed recycle, and the rest is sent to solids disposal.

Polymer is mixed with the brine from the Primary Clarifier as it enters the Secondary Clarifier. The polymer aggregates the small particles that did not settle in the Primary Clarifier into larger particles that can more easily settle. These particles are removed from the bottom of the Secondary Clarifier and sent to solids disposal.

The Steam Turbine is a dual-pressure, dual-flow type having two high pressure steam inlets and two low pressure inlets. The high pressure inlets are provided with steam from the High Pressure Crystallizer and the Separator Boiler. The low pressure inlets are provided with steam from the Low Pressure Crystallizer.

Each of the four separate steam inlets is equipped with a main stop valve (a swing check type emergency stop valve) and a governing valve.

The Turbine operates at 3600 revolutions per minute and is directly connected to a totally enclosed water to air cooled (TEWAC) generator.

The exhaust steam from the Turbine is condensed utilizing a Surface Condenser sized to maintain adequate vacuum under severe ambient conditions. A portion of the condensate from the Condenser hotwell is forwarded to the Heat Recovery System where it is reheated and boiled to produce high pressure steam. The remainder of the condensate flow is split between condensate for process consumption and cooling water make up for evaporative losses.

Air Removal System

The Vacuum System is used to remove non-condensable gases from the Surface Condenser. One source of non-condensable gases is the underground resource. These non-condensable gases are separated with the steam coming from the production wells. The other source of non-condensable gases is the leakage of air into the Condenser which is under vacuum. If not removed, this air will hinder the turbine exhaust steam from condensing in the Condenser causing the turbine exhaust pressure to rise, thus eventually creating mechanical and thermal integrity problems.

The Vacuum System is a two-stage, hybrid system composed of steam ejectors and vacuum pumps for compression. Ejector motive steam is condensed in shell and tube condensers.

Cooling System

The circulating water is cooled by a counter-flow mechanical draft Cooling Tower equipped with seven cells and fans. The Cooling Tower is equipped with ultra high efficiency demisters which hold the drift losses to less than 0.008% of the recirculation rate. The circulating water is pumped through the Condenser and Cooling tower by four main circulating water pumps, one of which is an installed spare.

Process Control

The steam generation rates, turbine generator speed, pressure and liquid levels and other variables of the process of this facility are controlled by a state-of-the-art computerized digital

control (DCS) system. The system consists of control and data acquisition processors, communication system, and operator interface consoles.

The brine flow is controlled by remotely adjusted control valves at each production well. Remotely actuated isolation valves are installed so the entire process or any part of it can be safely shut down. The control room may shutdown all production brine flow by closing activated plant isolation valves on each production header.

Inside the steam generation and power production portion of the facility, the control system utilizes automatic level control valves, pressure control valves, and emergency shut-off valves to control the process.

5.1 IDENTIFICATION AND DESCRIPTION OF EXISTING EMISSION UNITS

The Elmore Power Plant has basically five (5) existing emission unit types. They are described below:

Cooling Tower

The cooling tower emits pollutants from two different processes. The first process is from the cooling tower operation itself. They include drift and off-gassing aspects. The drift results in a particulate matter emission while the off-gassing results in aqueous ammonia emission. The second process includes the venting of all of the collected non-condensable gases. These gases include: hydrogen sulfide, methane, ammonia, benzene, radon and other trace components.

Internal Combustion Engines

These engines, operating on #2 diesel fuel, emit combustion products such as particulate matter, carbon monoxide, nitrogen oxides, sulfur oxides, and organics.

Geothermal Wells

The Elmore Power Plant is permitted to maintain a maximum of thirty-three wells. The emissions from constructing these wells are not included in this report because the wells are constructed by outside well drilling contractors who operate their equipment under their own permits.

These wells do not emit any air pollutants except during startups or the well or during the testing of a well. Emissions would be identical in type to the non-condensable gases emitted at the cooling tower.

Atmospheric Flash Tank

Prior to the entrance of brine to the clarifiers, the brine is allowed to flash to atmospheric pressure. This release produces a steam plume at the facility. This steam contains only trace amounts of dissolved solids which would become particulate matter. No gases are anticipated from this process, since they would have already been flashed off at earlier steps in the brine system.

Emergency Vents

At times, during turbine trips or similar upset conditions, the process vessels will vent the vessel's non-condensable gases.

5.2 CALCULATIONS

5.2.1 Current Permit Limitations

Current Potential to Emit

	<u>lb/hr</u>	<u>ton/mo*</u>	<u>ton/yr</u>
Hydrogen Sulfide	30	11.2	131.4

*based on 744 hours per month

The 1500 and 1000 KW engines are limited to 2940 hours. Based upon either APCD applicable rules or upon AP-42 emissions factors, the following emissions are calculated:

	<u>ton/mo*</u>	<u>ton/yr</u>
Particulate Matter	2.3	9.1
NO _x	30.2	119.5
Carbon Monoxide	6.6	26.2
SO _x	0.5	1.8
TOG	0.9	3.5

*based on 744 hours per month, refer to Attachment C

The emissions for benzene and ammonia and total hazardous air pollutants were not limited by APCD rules or by the permit. Also, there are no limitations on additional engines.

5.2.2 Proposed Permit Limitations (Proposed Potential to Emit)

5.2.2.1 Hydrogen Sulfide

Total hydrogen sulfide emissions from the cooling tower, geothermal wells, emergency vents and any other source of hydrogen sulfide at the plant site will be limited to less than 100 tons per year.

	lb/hr	tons/mo*	tons/yr
Hydrogen Sulfide	22.8	8.5	99.9

*based on 744 hours per month

5.2.2.2 Benzene

Total benzene emissions from the entire plant area will be less than 10 tons per year.

5.2.2.3 Ammonia

Total ammonia emissions from the facility will be less than 5 pounds per megawatt-hour (gross).

5.2.2.4 Particulate Matter

Total Particulate Matter emissions from the entire facility will be less than 100 tons per year.

5.2.2.5 Nitrogen Oxides

Total nitrogen oxide emissions from the entire facility will be less than 100 tons per year.

5.2.2.6 Carbon Monoxide

Total carbon monoxide emissions from the entire facility will be less than 100 tons per year.

5.2.2.7 Sulfur Oxides

Total sulfur oxide emissions from the entire facility will be less than 100 tons per year.

5.2.2.8 TOG

Total TOG emissions from the entire facility will be less than 100 tons per year.

5.2.2.9 Total HAPs

Total HAPs emissions from the entire facility will be less than 25 tons per year.

5.3 PROPOSED FEDERALLY ENFORCEABLE CONDITIONS

CEOC proposes the following permit conditions to limit the total facility emissions of the identified regulated pollutants to below the major source threshold values and result in permanent, quantifiable, and otherwise enforceable emissions limits (as a practical matter).

Condition 1: The H_2S from the noncondensables removed from the turbine and heat recovery systems emissions shall not exceed 22.8 pounds per hour.

Condition 2: The total facility wide H_2S emissions shall be less than 100 tons per calendar year

Condition 3: The total facility wide emissions for the following pollutants shall be less than in any calendar year:

- Particulate Matter	100 tons per year
- Carbon Monoxide	100 tons per year
- Oxides of Nitrogen	100 tons per year
- Oxides of Sulfur	100 tons per year
- Total Organics	100 tons per year

Condition 4: The total facility wide emissions of ammonia shall be less than 5 pounds per megawatt-hour (gross) or equivalent limit.

Condition 5: The total facility wide emissions of benzene shall be less than 10 tons in any calendar year.

- Condition 6: The emissions of any regulated pollutant, other than those delineated herein, as defined pursuant to 40 CFR 70.2, shall be less than the major source threshold values delineated in Imperial County APCD Rule 900 (B)(20).
- Condition 7: The emissions of any single hazardous air pollutant, other than those delineated here, as defined in Section 112(b) of the Clean Air Act and Rule 900 (B)(2), shall be less than 10 tons per calendar year, and the total of all hazardous air pollutants as defined in Section 112(b) and Rule 900 (B)(20) shall be less than 25 tons per calendar year.
- Condition 8: The operator shall cooperate, support, and participate in the Salton Sea Field H₂S ambient air monitoring program.
- Condition 9: Emergency generators (ICEs) shall be fired solely on #2 diesel fuel with a sulfur content of less than or equal to 0.05 % weight. Each engine shall be limited to 500 hours of operation per calendar year.
- Condition 10: Additional stationary engines may be used for various plant and well field activities (including fire pump engines). Each engine used shall be fired solely on #2 diesel fuel with a sulfur content less than or equal to 0.05 % weight. Each engine shall be limited to 500 hours of operation per calendar year.
- Condition 11: The APCD shall be notified, as soon as possible, of any emergency breakdown emissions. Emergency breakdown emissions are defined as any unforeseeable failure or malfunction of any air pollution control equipment, or related operating equipment, which causes a violation of an emission limitation or restriction prescribed by the Imperial County APCD Rules and Regulations or state law. Venting due to plant startup, load rejection, or well testing are not considered breakdown conditions. Information provided to the APCD shall include the type of emission and the estimated quantity.
- Condition 12: The facility shall notify the APCD of any material physical change, change in the method of operation, or addition to the facility that results in a net emission increase.
- Condition 13: Emissions in excess of those defined pursuant to 40 CFR 70.2 and Rule 900 (B)(20) of the Imperial County APCD shall require the facility to apply for a Title V permit.

5.4 PROPOSED FEDERALLY ENFORCEABLE CONDITIONS RELATING TO MONITORING, RECORDKEEPING, AND REPORTING SUFFICIENT TO DETERMINE COMPLIANCE

Monitoring, Recordkeeping, and Reporting Requirements

Within 60 days of the end of the calendar year, the facility shall submit to the Air Pollution Control Officer (APCO) an annual report for the previous calendar year which includes the following items:

- a. The operator shall conduct the following analyses every six months for the first two years and annually thereafter. All analysis results shall be available at the facility for inspection. Test methods for the monitoring analysis and monitoring protocol shall receive prior approval from the APCO:
 1. Analysis of turbine condenser hotwell condensate and cooling tower blowdown for; ammonia, boron, calcium, copper, iron, lead, magnesium, potassium, sodium, strontium, zinc, arsenic, sulfides, sulfates, and chlorides.
 2. Analysis of the non-condensable gases vented for; hydrogen sulfide, ammonia, carbon dioxide, and benzene.
 3. Analysis of produced fluid, to be used for power generation, calculated prior to first flash or emission for; ammonia, calcium, copper, iron, magnesium, potassium, sodium, strontium, silica, lithium, arsenic, zinc, sulfide, chloride, and percent non-condensable gases.
 4. Analysis of injection fluid used for power generation after the last processing stage and prior to injection for; ammonia, calcium, copper, iron, magnesium, potassium, sodium, strontium, silica, lithium, arsenic, zinc, and chloride.
- b. The types and quantities of all cooling water additives.
- c. Net electrical megawatt-hours sold for the previous calendar year.
- d. For each standby emergency generator and additional stationary engines used: the total hours of operation for each engine, and the estimated total fuel used by each engine.
- e. Based on the analyses required by (a)(1) through (a)(4) and the emissions derived from the analyses, an emissions inventory from the facility showing compliance with permit conditions 1 through 13.

- f. An updated listing of all emergency and standby stationary equipment (combustion sources).
- g. The status of all active wells associated with the facility used for production or injection during the previous calendar year. For each well include the total days of rig activity (workover, cleanout, or drilling); and the total hours of venting to the atmosphere from the test units.

ATTACHMENT C
ELMORE POWER PLANT

INTERNAL COMBUSTION ENGINES EMISSION SUPPORT DOCUMENTATION

The following APCD Rules apply to the internal combustion engines (ICEs):

Rule 400 - 200 lb/hr SO₂
Rule 400 - 140 lb/hr NO_x
Rule 400 - 10 lb/hr Combustion Contaminants

Rule 401 - 20% opacity/Ringelman #1
Rule 403 - 0.2 gr/DSCF @ STP
Rule 405 - SO₂ 0.2 % vol (2000 ppm)
Rule 406 - 0.2 gr/DSCF @ 12% CO₂ @ STP

The following current or proposed permit conditions will act as limitations on emissions from these sources:

- Maximum operation hours for emergency generator engines at 2940 hours per calendar year.
- Sole use of #2 diesel fuel with a sulfur content equal to or less than 0.05% weight.

The following standardized assumptions were used for the engine calculations:

- Engine HP = (Maximum kilowatt)(1.341)
- #2 diesel fuel at 19,300 BTU/lb, 137,303 BTU/gal, @ 7.1 lbs/gal
- Fuel use rate @ 7000 BTU/HP-hr
- EPA Method 19 F factor for fuel oil (#2) @ 9190 DSCF/MMBTU
- Ft³/lb-mol @ STP = 379.5

SO₂ Emissions

$$\left(10^6 \right) \left(\frac{.0005 \text{ lbs}}{\text{lb fuel}} \right) \left(\frac{7.1 \text{ lb}}{\text{gal}} \right) \left(\frac{\text{gal}}{137030 \text{ BTU}} \right) \left(\frac{2 \text{ lb SO}_2}{\text{lb S}} \right) = \frac{0.052 \text{ lb SO}_2}{\text{MMBTU}}$$

Engine #1 at 1500 KW, 2012 HP

$$\text{Fuel Rate} = \left(2012 \text{ HP} \right) \left(\frac{7000 \text{ BTU}}{\text{HP-HR}} \right) = \frac{14.084 \text{ MMBTU}}{\text{HR}}$$

$$\text{Exhaust Flow} = \left(\frac{14.084 \text{ MMBTU}}{\text{HR}} \right) \left(\frac{9190 \text{ DSCF}}{\text{MMBTU}} \right) = \frac{129,432 \text{ DSCF}}{\text{HR}}$$

SO emissions based on fuel S limit = (14.084)(0.052) = 0.732 lb/hr, or
1.08 tons/yr

SO₂ emissions based on Rule 405 limit @ 2000 ppm (0.2 % vol)
= 43.66 lbs/hr, or 64.2 tons/yr

SO₂ emissions based on Rule 400 limit @ 200 lbs/hr
= 200 lbs/hr, or
294 tons/yr

The controlling limit is fuel sulfur limitation, therefore, the maximum SO₂ emissions allowed is:

Engine #1	0.732 lbs/hr, 1.08 tons/yr
Engine #2	0.488 lbs/hr, 0.72 tons/yr

Particulate Matter Emissions

Engine #1	- 129,432 DSCF/hr	
	@ 0.2 gr/DSCF	= 25,886 gr/hr
	@ 7000 gr/lb	= 3.7 lbs/hr

The gr/DSCF limits of Rules 403 and 4065 are more stringent than the 10 lbs/hr limit in Rule 400, therefore, the 0.2 gr/DSCF limits the controlling value.

Engine #1	3.7 lbs/hr, 5.4 tons/yr
Engine #2	2.46 lbs/hr, 3.6 tons/yr

NO_x Emissions

AP-42 factors for diesel fueled engines larger than 600 hp will be used in this section. (AP-42, Section 3.4, Table 3.4-1).

NO_x @ 0.02423 lbs/hp-hr

Engine #1 @ 2012 hp
= 48.75 lbs/hr NO_x, 71.7 tons/yr

Engine #1 @ 1341 hp
= 32.5 lbs/hr NO_x, 47.8 tons/yr

Using the current AP-42 emissions factor (EF) for NO_x shows potential uncontrolled emissions well below the Rule 400 value of 140 lbs/hr. Therefore, AP-42 factors for NO_x will be used to calculate potential and actual emissions.

CO Emissions

AP-42 EF for CO = 0.0053 lb/hp-hr

Engine #1
10.66 lbs/hr, 15.7 tons/yr

Engine #2
7.11 lbs/hr, 10.5 tons/yr

TOG Emissions

AP-42 EF for TOG = 0.0007 lb/hp-hr

Engine #1
1.41 lbs/hr, 2.1 tons/yr

Engine #2
0.94 lbs/hr, 1.4 tons/yr

Maximum Potential Emissions 2 Engine Total

	lb/hr	ton/yr
NO _x	81.25	119.5
CO	17.77	26.2
Particulate Matter	6.16	9.1
SO ₂	1.22	1.8
TOG	2.35	3.5



**CONDITIONS FOR AUTHORITY TO CONSTRUCT
AND PERMIT TO OPERATE #1890F**

**CALENERGY OPERATING CORPORATION
7030 GENTRY ROAD
CALIPATRIA, CA 92233**

LOCATION: 786 W. SINCLAIR RD. CALIPATRIA, CA

A. General Conditions

1. The facility shall be constructed to operate in substantial compliance with the project description, and operating parameters of the Application (FR#448096) dated April 9, 2003, and with earlier permit applications beginning with the Application (FR#279890) dated May 21, 1996, Application (FR#163361) dated August 8, 1991, Application amendment (FR#31846) dated July 20, 1988, and Application (FR#28565) dated January 30, 1987, except as may be modified by more stringent requirements of law of these conditions. These applications are incorporated by reference into this permit.
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, 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 statutes of other governmental agencies.
6. No air contaminant shall be released into the atmosphere which causes a public nuisance.

B. Facility-Wide Emission Limits

1. The emissions of any regulated pollutant, as defined pursuant to 40 CFR 70.2, shall be less than the major source threshold values of Rule 900 B.20, of the Imperial County APCD Rules and Regulations.
2. The emissions of any single hazardous air pollutant, as defined pursuant to Section 112(b) of the 1990 Clean Air Act and Rule 900 B.20, shall be less than 10 tons per year. Total combined emissions of all hazardous air pollutants, as defined pursuant to Section 112(b) of the 1990 Clean Air Act and Rule 900 B.20, shall be less than 25 tons per year.
3. The total facility wide H₂S emissions shall be less than 22.8 lbs/hr (less than 100 tons per year).
4. Total facility wide emissions of benzene shall be less than 10 tons per year.
5. Permittee shall engage control equipment (oxidizer box) upon plant startup and utilize controls as long as practicable during periods of malfunction. Use of the controls will establish an affirmative defense to any excess emissions during startup, shutdown and malfunction if the control equipment is maintained and operated in a manner consistent with good practice for minimizing emissions.
6. The Permittee shall be subject to Rule 216 requirements if Benzene emissions (HAP) are in excess of 10 tons per year, or total combined emissions of all hazardous air pollutants (HAPs) are in excess of 25 ton per year.

C. Visible Emissions and Standards

1. Stationary emission source(s) at the Elmore Power Plant Facility shall not exceed 20% opacity for more than 3 minutes in any 1 hour excluding water vapor.

D. Monitoring Program

1. The Permittee shall monitor the hydrogen sulfide and benzene content in the non-condensable gas line on a monthly basis.
2. The Permittee shall monitor the oxidizer box on a monthly basis as follows:
 - a. The control efficiency of the bio-oxidizers, by measuring the H₂S concentration in the sour condensate at the inlet and at the outlet (rain) of the oxidizer box. The H₂S mass flow to the oxidizer box will be estimated and the abatement efficiency of the oxidizer box will be calculated by using the difference between the H₂S inlet and outlet concentration.
3. The Permittee shall conduct a source test of the facility in the Third Quarter of 2010 and every four years thereafter or sooner if requested by the APCO. The source test shall be conducted in the cooling tower shrouds at the Elmore

Facility. The source testing shall use EPA methods or ICAPCD approved equivalent (using for H₂S EPA method 102 modified for Imperial County with NH₃ filter). Testing protocol shall be submitted to the District for approval 30 days prior to source testing being conducted.

4. The Permittee shall inspect on a yearly basis during the turnaround or a plant shutdown the Cooling Tower Drift Eliminators to ensure that that every Cooling Tower-Cell has the complete set of panels of Drift Eliminators, and replace those that are damaged.
5. The owner of a Source operation, when requested by the Air Pollution Control Officer, shall provide records, collect samples or gather other required information that which will enable the Air Pollution Control Officer to determine compliance status (Rule 109). The APCD may at any time elect to have itself or a third party source test contractor or agency take samples and analyze for concentration and emission rates of any pollutant.
6. All the source testing, sampling, analysis, and reporting cost shall be borne by the Permittee.
7. Upon proper notification, the ICAPCD or its designee shall have the right to enter to inspect and take samples from the emission sources at the Elmore Power Plant Facility.

E. Notification

1. Breakdowns:

The Elmore Power Plant Facility 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 as soon as reasonably possible but no later than two (2) hours after its detection during normal APCD business hours or within the first (2) hours of the next APCD business day. The completion of corrective measures or the shut down of emitting equipment is required within 24 hours of occurrence of a breakdown condition, unless a Variance has been obtained. Venting due to plant startup, load rejection, or well testing is not considered breakdown condition.

2. Modifications:

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.

F. Analyses

1. The Permittee shall conduct, on a monthly basis, an analysis of the hydrogen sulfide and benzene content in the non-condensable gas line. Laboratory analysis shall use EPA approved methods or ICAPCD approved equivalents.
2. The Permittee shall conduct monthly analysis of the hydrogen sulfide content in the sour condensate at the inlet and outlet of the oxidizer box in accordance with Section D.2. Laboratory analysis shall use EPA approved methods or ICAPCD approved equivalents.
3. In accordance with Section D.3, the Permittee shall conduct a source test of the facility in the year 2010 and every four years thereafter or sooner if requested by the APCO to ensure compliance. The source testing shall be witnessed by APCD Staff, with all analytical results shall be available at the facility for inspection. The laboratory analysis shall use EPA approved methods or ICAPCD approved equivalents for the following:
 - a. Source test protocol of year 2014 shall be submitted for ICAPCD approval 30 days prior to source testing being conducted including testing described in Sections D.3, above.
 - b. Of turbine condensers, hot well condensate and cooling tower blowdown for ammonia, arsenic, beryllium, cadmium, chromium, copper, hydrogen sulfide, lead, manganese, mercury, nickel, radon, selenium, and zinc.
 - c. Of the non-condensable gases vented for: hydrogen sulfide, ammonia, arsenic, mercury, radon, benzene, toluene, and xylene.

G. Reports

1. Permittee shall submit to the ICAPCD a monthly report within 30 days of the preceding month that includes the following:
 - a. The hydrogen sulfide and benzene emissions (before control) based on analysis conducted pursuant to the requirements of Sections D.1 and F.1.
 - b. The oxidizer box abatement efficiency of hydrogen sulfide, the hydrogen sulfide concentration in the sour condensate at the inlet and outlet (rain) of the oxidizer box in ppmw and H₂S mass flow in lb/hr based on the analysis conducted pursuant to the requirements of Sections D.2 and F.2.
2. Permittee shall submit to the ICAPCD a report containing the cooling tower source testing pursuant to Section D.3 and F.3. The report shall be submitted 60 days after the source testing completion and every four years thereafter or as required by the APCD to ensure compliance.



3. Permittee shall submit to the ICAPCD an annual report by the end of February of each operating year. This report shall include the following items:
 - a. Total tons of H₂S and Benzene emissions for the reporting year.
 - b. Types and quantities of cooling water additives.
 - c. Net electrical megawatt-hours sold for the report year.
 - d. For each standby emergency generator, and additional stationary engines used, the total hours of operation for each engine, and the calculated total fuel used by each engine.
 - e. The status of all active wells associated with the facility used for production or injection during the reporting year. For each well include the total days of rig activity (work over, clean out, or drilling) and the total hours of venting to the atmosphere (from test units).
4. Within 10 days after a breakdown occurrence has been corrected, the Permittee shall submit a written report to the APCO which includes:
 - a. A statement that the occurrence has been corrected.
 - b. The reason(s) or cause(s) of the occurrence.
 - c. A description of the corrective measures undertaken.
 - d. The type of emission and estimated quantity of the emissions caused by the occurrence.
5. Emissions in excess of those pursuant under 40 CFR Part 70.2 defined under Rule 900.B.20 of the Imperial County APCD Rules and Regulations shall require the facility to obtain a Title V permit.

H. Emergency Units

1. The listed emergency combustion units shall each be restricted to operate a total of 20 (twenty) hours per year for maintenance and testing purposes.
2. Operation of the listed emergency power generators for other than testing and maintenance purposes, shall be limited to provide backup power, in each instance, be documented to the satisfaction of the ICAPCD.
3. A log showing hours of operation and routine repairs of each emergency combustion unit shall be maintained on the premises and be available for inspection by the ICAPCD.



4. All internal combustion engines shall not discharge into the atmosphere any visible air contaminant other than uncombined water vapor, for a period or periods aggregating more than three minutes in any one hour, which is 20% opacity or greater.
5. The Permittee shall maintain and utilize an operating hour meter for the engines.

Equipment/Source List

Geothermal Power Plant

1. (1) Elmore Geothermal Power Plant, with a capacity of 45 MW (net).

Emergency Combustion Units

1. (1) One Standby Power Generator Set Model DG344, 1000 KW, driven by a Cummins Model KTA50-G1 diesel engine, with a rating of 1350 hp at 1800 rpm.
2. (1) One Standby Power Generator Set Model DG346, 1000 KW, drive by a Caterpillar Model 35169A diesel engine, with a rating of 2000 hp at 1800 rpm.
3. (1) One Fire Pump, driven by a Caterpillar Model 3208 diesel engine with a rating of 170 hp.

Abatement Equipment

1. (1) One oxidizer box, with a cross-sectional area of 324 sq. ft., 48 ft long by 6 ft wide, trickle bloc packing by Balke-Durr. Packing volume is 3000 cu. ft with a fill height of 10 ft. The irrigation rate of the oxidizer box is 2.75 gpm/sq ft.





**AIR POLLUTION CONTROL DISTRICT
2012 APCD PERMIT**

Facility name and mailing address:

CALENERGY OPERATING COMPANY
7030 GENTRY ROAD
CALIPATRIA, CA 92233

Permit Number: **1890 PTO**

PAID

Active

Fee for the Year **\$13,657.50**

Permit Type **GEOTHERMAL**

TB

Location Address **786 W. SINCLAIR ROAD
CALIPATRIA, CA 92233**

Resp. Agent **CRAIG PARKER**

Phone **760-348-4000**

Issued: **4/2/2012**

Expires: **12/31/2012**

CERTIFICATION BY AUTHORIZED AGENT

The permit presented here is correct. The authorizations, certifications, and information from the application and permit being renewed, remain valid and will be kept with this ANNUAL PERMIT RENEWAL.

DATE _____

SIGNATURE _____

CERTIFICATION BY APC DIVISION MANAGER

The PERMIT RENEWAL become valid when signed by authorized agent.

[Handwritten Signature]

This permit, or an approved facsimile, shall be mounted so as to be clearly visible in an accessible place within 25 feet of the article, machine, equipment, or other contrivance, or maintained readily available at all times on the operating premises. (Rule 201D)

**Return this copy with payment fees to Imperial County Air Pollution Control District
150 South 9th Street, El Centro, CA 92243-2801**

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/ctoeg87dmaywenwcc9ki9/ANz0PECAqWtK6MFX1i1q7Hk?rlkey=djudg7x6xbvrsirxe429c1kfv&st=tysmdzxd&dl=0>.

We request that these documents be included in the official record of proceedings and can provide hard copies upon request.