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Comments on Staff Assessment 5-6 Geology, Paleontology and Minerals

See Attached Comment Letter

Additional submitted attachment is included below.

California Energy Commission
715 P Street
Sacramento, CA 95814

RE: Comments on Section 5.6 (Geology, Paleontology, and Minerals) of the Staff Assessment for the Corby Battery Energy Storage System (BESS) Project

I. Introduction

I submit these comments regarding Section 5.6 of the Staff Assessment for the proposed Corby Battery Energy Storage System. I am not a geologist or geotechnical engineer. My comments are grounded in 36 years of firsthand knowledge of subsurface and drainage conditions in the immediate project area, professional geotechnical and soil investigations concerning my property and the surrounding parent parcel, and information contained in the applicant's and Staff's own record.

As a resident on Kilkenny Road since 1990, I have constructed substantial improvements on my property, including a barn and tankhouse supported by professional geotechnical investigation. I have also personally observed shallow subsurface water during excavation in this immediate area over several decades. Those observations are not offered as a substitute for professional investigation. They are site-specific evidence showing why the Commission should resolve the groundwater and soil questions before making a final environmental finding.

The final Staff Assessment confirms several important site conditions. The preliminary site-specific geotechnical investigation encountered groundwater at approximately 7.5 to 15 feet below ground surface. Staff recognizes moderate-to-high expansive-soil potential and moisture-sensitive clay capable of shrink-and-swell movement. The applicant performed laboratory testing related to resistivity, corrosion, sulfate and chloride content. Staff also acknowledges that the preliminary site-specific geotechnical investigation did not explore the proposed gen-tie route.

Yet Condition of Certification GEO-1 places substantial additional investigation and final geotechnical recommendations into a later, site-specific geotechnical and geohazard report. The central issue is therefore not whether engineers may eventually be able to design around these conditions. The issue is whether the Commission has analyzed, before certification, the reasonably foreseeable environmental consequences of the measures that will be required to do so.

The text of GEO-1 confirms the scope of that deferral. It requires the future investigation to evaluate "questionable soils, expansive soils, and shallow groundwater," and the resulting report need only be submitted at least 60 days before ground-disturbing activities begin. GEO-1 therefore recognizes the very conditions raised here, but it does not itself establish the seasonal high groundwater elevation, quantify construction dewatering, disclose the volume of expansive-soil remediation, or specify the resulting secondary environmental effects. Those questions remain relevant to the environmental review even if the final engineering report is completed before construction.

II. Shallow Groundwater Is a Documented Local Condition, Not a Speculative Concern

Staff reports groundwater at approximately 7.5 to 15 feet below ground surface in the September 2023 preliminary investigation. That finding is consistent with other physical evidence from the immediate vicinity.

A 2011 KC Engineering investigation performed for improvements on my property, approximately 1,000 feet west of the Corby site on Kilkenny Road, encountered groundwater at 12.5 and 17.5 feet below ground surface and expressly warned that groundwater elevations fluctuate substantially with seasonal rainfall and agricultural irrigation. Historical soil information from the larger parent parcel from which the present project area was created documented soil mottling and standing-water conditions at still shallower depths. These are not remote regional examples; they concern the same immediate landmass and neighboring property.

There is also firsthand physical evidence. In February 2013, before construction of my barn, I excavated an approximately three-foot posthole on the west side of my property. The hole was left open overnight during the wet season. By the following morning, subsurface water had risen to within 6 inches of the top of the hole. Approximately twenty-five years ago, during construction of a PG&E gas pipeline trench across the

adjacent property and proposed project area, I personally observed substantial water continuously accumulating in the excavation as work progressed.

These observations do not establish a precise design groundwater elevation for the Corby parcel. That determination belongs to qualified professionals. They do, however, establish that shallow and variable subsurface water in this immediate area is real and that a point-in-time boring cannot simply be assumed to represent the highest condition that construction may encounter.

III. The Environmental Baseline Must Account for Agricultural Irrigation Recharge

The Corby site lies within an intensively irrigated agricultural area served by the Solano Irrigation District (SID). SID delivers Lake Berryessa surface water to surrounding agricultural customers. SID's published water-management information recognizes that deep percolation of applied irrigation water and seepage from canals and drains recharge groundwater.

That local hydrologic setting complicates any simple assumption that groundwater necessarily reaches its annual maximum during the winter rainy season and steadily declines during the irrigation season. In October 2025, a septic contractor working on my property advised me that, in his experience in this area, groundwater can be particularly high during the agricultural irrigation season because of the quantity of SID water applied to surrounding orchards.

I do not offer that contractor's observation as proof that the annual maximum groundwater elevation at the Corby site necessarily occurs in summer. The Commission need not accept that proposition based on my account. The Commission should determine the answer.

The relevant question is: What is the seasonal high groundwater elevation at the Corby Project site, and does that determination account for recharge from SID agricultural irrigation, canal seepage, drainage systems, and other local sources during the irrigation season? Staff's reported 7.5-to-15-foot observations establish that groundwater is already shallow. They do not, by themselves, establish the seasonal maximum.

This matters because the appropriate groundwater condition affects excavation, foundation design, drainage, dewatering, liquefaction, and the potential for subsurface structures to redirect shallow groundwater. Before Staff relies on a particular groundwater elevation, it should demonstrate that the elevation represents an appropriate environmental and design condition rather than merely a measurement taken on the dates the borings were drilled.

IV. Construction Dewatering Remains an Unanalyzed Secondary Impact

The Staff Assessment discusses groundwater use and subsidence, but consumptive water demand and construction dewatering are not the same physical process. A project may consume relatively little groundwater over a year and still require substantial temporary pumping when a trench, vault, foundation excavation, or over-excavated soil area extends below a shallow or perched water table.

The project involves grading, foundations, underground electrical facilities, utility trenching, and potentially significant soil remediation. The record does not establish the maximum excavation depths for all of these activities in relation to the actual seasonal high groundwater condition. Without that comparison, Staff cannot demonstrate whether dewatering will be minor, intermittent, or substantial.

If groundwater is encountered, several environmental questions follow. Pumped water must go somewhere. Sediment must be controlled. Discharge may enter agricultural ditches or other local drainage features. Pumping may alter localized groundwater gradients, and sufficiently intensive temporary pumping can contribute to settlement or subsidence. These effects are not answered by stating that the project's overall groundwater consumption is small.

Before final action, the Commission should identify:

- The maximum anticipated excavation depths for foundations, underground utilities, vaults, trenches, and soil-remediation work, and how those depths compare with the seasonal high groundwater condition.
- The anticipated range of construction dewatering volumes if groundwater is encountered.
- Where dewatering effluent would be discharged and what treatment or sediment-control measures would apply before discharge.

- Whether discharge could affect agricultural drainage, downstream erosion, water quality, biological resources, neighboring wells, or groundwater gradients.
- Whether temporary dewatering could cause localized settlement or subsidence affecting adjacent roads, agricultural infrastructure, or neighboring property.

These are foreseeable consequences of constructing in documented shallow-groundwater conditions. They should be analyzed before approval rather than first addressed when final engineering determines that pumping is necessary.

V. Seasonal Groundwater Also Matters to Staff's Liquefaction Conclusion

Staff characterizes liquefaction potential as low to moderate, based in part on the predominance of fine-grained subsurface soils and alluvium. At the same time, Staff expressly acknowledges shallow groundwater.

I do not contend that the project site necessarily presents a significant liquefaction hazard. The narrower issue is that the groundwater assumption used in the liquefaction analysis should reflect the appropriate seasonal high-water condition. If groundwater elevations can rise materially above the levels observed during the preliminary borings because of rainfall, irrigation recharge, or perched conditions, that information should be incorporated into the analysis rather than deferred to the final geotechnical report.

The Commission should therefore identify the groundwater elevation used for the liquefaction evaluation and explain why that elevation adequately represents the site's seasonal high groundwater condition.

VI. Expansive-Soil Remediation Is Recognized, but Its Environmental Footprint Is Not Quantified

Staff acknowledges that surficial clay soils at the BESS, substation, and stormwater-retention areas have moderate-to-high expansion potential and that shrinking and swelling can crack or unevenly displace foundations. Staff further reports that the preliminary geotechnical investigation proposed subgrade improvement and fill placement, including removal and replacement of shallow shrink-swell clays.

This is important because the mitigation itself has an environmental footprint. If final geotechnical design requires substantial over-excavation of expansive clay and replacement with engineered fill, material must be excavated, loaded, hauled, disposed of or reused, and replacement material must be imported and compacted. Section 5.6 does not quantify those volumes.

That omission crosses directly into the Transportation, Air Quality, Greenhouse Gas, and Noise analyses. The rural access route to the Corby site already presents substantial constraints. Until the volume of soil export and imported engineered fill required by GEO-1 is known, Staff cannot demonstrate that the truck assumptions used in those other resource analyses encompass the traffic generated by geotechnical compliance.

If chemical stabilization such as lime or cement treatment is selected instead, a different set of effects arises, including material delivery, dust generation, worker and off-site exposure, and possible changes to runoff or shallow groundwater chemistry. The Commission should not postpone the choice between materially different remediation approaches without evaluating the reasonably foreseeable environmental consequences of those approaches.

VII. Long-Term Expansive-Soil Movement Requires an Enforceable Performance Framework

Expansive clay is not solely a construction-phase condition. Shrink-and-swell behavior is driven by changing moisture conditions and can continue throughout the operational life of the facility. That is particularly relevant at a site where Staff acknowledges expansive soils and where local soil moisture is influenced by rainfall, shallow groundwater, and surrounding irrigation.

The Staff Assessment relies on initial design and a future final geotechnical report, but it does not appear to impose a quantitative operational monitoring program for continuing ground movement. The Commission should therefore address:

- Does GEO-1 or another Condition of Certification require periodic or continuous quantitative monitoring of soil movement, such as settlement monuments, deep-seated settlement markers, tiltmeters, soil-moisture/heave sensors, or an equivalent method?
- If not, what quantitative geotechnical analysis establishes that seasonal soil movement can occur without operational monitoring while protecting concrete foundations, equipment supports, underground conduits, grounding infrastructure, and other safety-critical components?
- What settlement, differential-movement, tilt, or heave threshold would trigger investigation or corrective action, and where is that threshold made enforceable?

I do not suggest that any particular monitoring instrument is necessarily required. That is an engineering determination. The point is that Staff should identify the performance standard supporting its less-than-significant conclusion and explain how continuing soil movement will be detected and corrected if initial design assumptions prove inaccurate.

VIII. Staff Identifies Corrosion Testing but Does Not Disclose the Results or Required Protection

Staff states that the applicant's laboratory program evaluated resistivity, corrosion, sulfate and chloride content, among other soil properties. Yet Section 5.6 does not disclose the numerical results of those tests or explain how those values translate into enforceable design requirements for buried electrical infrastructure, grounding systems, reinforcing steel, concrete, conduits, or other below-grade components.

The Commission should disclose the measured soil resistivity values, soil pH if tested, sulfate concentrations, chloride concentrations, the resulting corrosion classification, and the engineering criteria applied to the facility. Without those values, the public cannot independently evaluate whether the proposed protection is adequate for the site's actual soil chemistry.

The Commission should also identify whether the test results require sulfate-resistant concrete, including Type V cement or an equivalent performance specification; enhanced reinforcing-steel protection; specialized coatings; cathodic protection; chemically resistant or low-permeability sub-slab barriers; or other corrosion-control measures.

If membranes, coatings, liners, or comparable protective systems are required, the Staff Assessment should identify the inspection and acceptance standard used before those systems are concealed. Appropriate nondestructive methods may include electronic leak detection, holiday testing, smoke testing where technically applicable, or another industry-accepted method. I do not propose a particular test. I ask the Commission to identify what enforceable protocol will verify continuity and detect punctures, seam failures, or installation defects before the protective system becomes inaccessible.

Corrosion is particularly important at a BESS because buried electrical and grounding infrastructure is expected to remain reliable for decades. The appropriate question is not whether maintenance is possible, but what site-specific design, inspection, and long-term performance requirements support Staff's conclusion that the identified soil conditions will not compromise safety-critical infrastructure.

IX. Subsurface Structures and Fill May Alter Shallow Groundwater Movement

A related issue remains largely unaddressed. The project will introduce concrete foundations, compacted engineered fill, underground utilities, and other low-permeability structures into an area with documented shallow and variable groundwater.

The Commission should determine whether these improvements could obstruct or redirect shallow subsurface flow and force water laterally or upward toward surrounding agricultural land, drainage facilities, roads, or neighboring residential property. The issue is particularly relevant if GEO-1 results in extensive replacement of native soil with differently permeable engineered material.

If Staff concludes that subsurface-flow displacement will not occur, the final record should identify the hydrogeologic or geotechnical basis for that conclusion.

X. The Gen-Tie Corridor Has Not Received the Same Site-Specific Geotechnical Investigation

Staff expressly states that the preliminary site-specific geotechnical investigation did not explore the proposed gen-tie line route. Nevertheless, Section 5.6 extrapolates conditions from the BESS site and relies upon future investigation and engineering for the gen-tie components.

The gen-tie is not an incidental feature. It includes substantial linear construction, major support structures, and underground segments and trenching. Conditions along that corridor may affect excavation, foundation type, groundwater encounters, soil handling, and construction methods.

A less-than-significant finding for this component should rest on site-specific information sufficient to identify the likely construction methods and their reasonably foreseeable environmental consequences. The Commission should not certify the environmental conclusion first and conduct the investigation necessary to support it later.

XI. Paleontology and Other Geologic Issues

I do not challenge every conclusion in Section 5.6. I have not identified evidence establishing that fault rupture or landsliding presents an unaddressed significant impact at this site. Staff has also developed detailed paleontological Conditions of Certification PAL-1 through PAL-8 addressing qualified personnel, monitoring, worker training, stop-work procedures, recovery, reporting, and curation.

Where Staff has developed a supported analysis and enforceable conditions, I do not dispute it. My concerns are directed to the documented groundwater and soil conditions for which important investigation, design, mitigation, or performance questions remain unresolved.

XII. Requested Commission Action

Before taking final action, I respectfully request that the Commission revise Section 5.6 and the related analyses in Section 5.16 (Water Resources), Section 5.1 (Air Quality), Transportation, Noise, and other affected resource sections as necessary to address the secondary impacts of the geotechnical measures ultimately required.

Staff's own conformance analysis also identifies Solano County General Plan policies calling for sound management of land and water resources, minimization of erosion, protection of water quality, and prevention or correction of land-use hazards. Those policies reinforce the need to resolve the site's shallow-groundwater, soil-movement, dewatering, and erosion questions on the present record rather than treating later geotechnical design as a substitute for environmental analysis.

At minimum, the Commission should:

- Establish an evidence-based seasonal high groundwater condition that accounts for local irrigation recharge, or explain why the existing measurements are sufficient.
- Analyze construction dewatering, including anticipated pumping, discharge, treatment, erosion, water-quality, and subsidence effects.
- Identify the groundwater condition used in the liquefaction analysis and demonstrate that it represents an appropriate seasonal design condition.
- Quantify the likely soil export/import and associated truck traffic if expansive soils must be removed and replaced, or analyze the impacts of alternative stabilization methods.
- Disclose the soil resistivity, pH if tested, sulfate and chloride results and identify the resulting corrosion-protection design standards.
- Identify enforceable performance and inspection standards for long-term expansive-soil movement and any required protective membranes, coatings, or below-grade corrosion systems.
- Evaluate whether foundations, engineered fill, and underground structures could redirect shallow subsurface groundwater.
- Complete sufficient site-specific geotechnical investigation of the gen-tie corridor to support the environmental findings for that component.

The Commission should not confuse engineering feasibility with environmental review. A future engineer may be able to design around groundwater, expansive soils, corrosion, or unsuitable materials. But the Commission must still determine before certification what environmental consequences are reasonably foreseeable from doing so and whether enforceable measures are in place to address them.

XIII. Conclusion

The Staff Assessment itself confirms the central concern. Shallow groundwater exists. Expansive soils exist. Soil chemistry warranted resistivity, corrosion, sulfate and chloride testing. The gen-tie corridor has not received the same site-specific geotechnical investigation as the BESS parcel. And GEO-1 places important investigation and final design decisions into a future geotechnical report.

These are not minor drafting omissions. They affect the factual basis for Staff's less-than-significant findings and reach into Water Resources, Transportation, Air Quality, Noise, and the long-term reliability of safety-critical BESS infrastructure. The Commission should not approve the Project on the assumption that future engineering will answer questions that the environmental review is required to confront now.

On the present record, the Commission should decline to adopt the Section 5.6 findings and should not certify the Corby Project at this location.

In addition to my comments, I formally incorporate by reference and fully support the technical comment letter submitted by Keep Vacaville Safe.

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