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August 4, 2022

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SUBJECT: COMMENTS FROM THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON GREENGEN'S PRE-APPLICATION DOCUMENT AND SCOPING DOCUMENT 1, AND REQUESTS FOR NEW STUDIES FOR THE MOKELUMNE PUMP-STORAGE PROJECT, FERC NO. 14796

Dear Mr. Sher:

The California Department of Fish and Wildlife (Department) has received and reviewed the Notice of Intent to File an Application for New License (NOI), Pre-Application Document (PAD), and Scoping Document 1 (SD1) for the licensing of the Mokelumne Pump-Storage Project (Project, Mokelumne PSP, FERC No. 14796). The Applicant (Licensee or GreenGen) filed the PAD and NOI to use the default Integrated Licensing Process (ILP) with the Federal Energy Regulatory Commission (FERC) on April 8, 2022. SD1 was issued by FERC on June 7, 2022. Study plan requests and comments on the PAD and SD1 must be filed with FERC by August 8, 2022. FERC held an agency and non-governmental organization scoping meeting for the Project on June 29, 2022. On July 13, 2022, GreenGen provided stakeholders with an updated Study Program Summary Table via email with additional resource studies not initially described in the PAD or SD1. On July 15, 2022, the Department received an email response to staff questions regarding the potential study of resources not described in previous documents. On July 18, 2022, GreenGen held an additional meeting with stakeholders to discuss water modeling and licensing studies. On July 28, 2022, GreenGen contacted the Department by email to inform staff that a Benthic Macroinvertebrate Study would be included in the revised biological study plans and that a second update to the Study Program Summary Table would be provided to the stakeholders. A Project site visit was proposed in July but never occurred; should a site visit be possible in the future, the Department expects to have better Project insights and may request further relevant studies or recommend a revised Project scope.

Based on the above-detailed meetings and correspondence, the Department submits comments on the contents of the PAD, SD1, and the updated Study Program Summary Table; and requests one additional resource study for the Project. The Department reserves the right to file additional study requests should the list of expected studies provided by the Licensee be revised or a future site visit alter our understanding of Project dynamics.

AUTHORITIES

The Department is the appropriate State fish and wildlife agency for resource consultation and Federal Power Act Section 10(j) (16 United States Code § 803 (j)) purposes. The fish and wildlife resources of the State of California are held in trust for the people of the State by and through the Department (Fish & G. Code § 711.7). The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish & G. Code § 1802). The mission of the Department is to manage California's diverse fish, wildlife, and plant resources, and the habitats on which they depend, for their ecological values and for their use and enjoyment by the public. It is the goal of the Department to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife, and plant species within the FERC-designated boundaries of the Project, as well as the areas adjacent to the Project in which resources are affected by ongoing Project operations, maintenance activities, and recreational use.

COMMENTS ON THE PAD AND SD1

General Comments

The Department has carefully considered the content of the PAD and SD1 and provides the following comments for Licensee and FERC consideration.

1. Defined Project Area

The Department finds that the Project area described in PAD Section 4.1.1 is not clearly defined. Section 4.1.1 does not specify if potential Project features such as Salt Springs or Upper and Lower Bear reservoirs are included in the Project area and instead references the map shown in Figure 4-3 to clarify Project area. The map in Figure 4-3 uses a red line to denote the proposed Project boundary which connects these three reservoirs but leaves uncertain whether the reservoirs are considered within the Project boundary. It is also not clear from Figure 4-3 if any portion of the lower Mokelumne River is within the Project boundary. Section 4.1.1 should be revised to explicitly state which system features are within the Project boundary, and the visual method used to reference the Project boundary in Figure 4-3 should be modified to encompass applicable features (e.g., the red boundary line should trace the perimeter of any included reservoirs, rivers, and tributaries potentially affected by Project construction, facilities, operations, and maintenance per 16 U.S.C. § 802(a)(1)).

2. Groundwater Considerations

In several locations throughout the PAD there is mention of underground facilities and structures to be constructed as part of the proposed Project. For example,

Section 4.2 mentions an "underground powerhouse cavern complex, new inlet/outlet structures at both the upper reservoir and at Salt Springs Reservoir, a water conveyance system consisting of excavated, lined or un-lined tunnels, steel penstocks, and surge facilities, delivering high pressure water from the upper reservoir to the pump-turbine equipment located in an underground powerhouse. A low-pressure tailrace tunnel connects the powerhouse cavern and conveyance system to a new submerged inlet/outlet structure in Salt Springs Reservoir" (PAD pp. 33). Nowhere within the PAD or SD1 is there a discussion of groundwater resources within the Project area and the potential for Project effects. The Department is concerned that tunneling and exploratory drilling operations could significantly impact groundwater resources that are expressed as streams, seeps, and springs. These surface water expressions of shallow groundwater resources comprise groundwater dependent ecosystems that contribute to baseline flow and provide habitat and forage for aquatic and terrestrial species, including many state and federally listed species present in California (Rohde et al. 2019). The PAD should be updated to include a section that discusses existing groundwater features and resources within the Project area. This section should also include a discussion of the potential for disruption of these features and resources, either through exploratory drilling or tunneling to construct Project facilities, and measures that would be implemented to avoid, reduce, or mitigate these potential impacts.

3. Avoidance of Impacts

Section 4.2 of the PAD states, "The Project intends to avoid impacts to the Mokelumne Settlement Agreement, downstream water rights, permit and license holders, agreements between parties on the river and state and federal regulatory agencies, SWRCB orders and decisions, federal directives, court decrees, and numerous agreements between EBMUD and other Mokelumne River users both upstream and downstream of EBMUD's Mokelumne River facilities. Additionally, the Project intends to avoid impacts to Mokelumne River fishery resources and the ability to meet instream flow and temperature management requirements in the Lower Mokelumne River, or to Pacific Gas and Electric Company's (PG&E) current operation at Salt Springs powerhouse" (PAD pp. 33). There is no further discussion in this section of avoidance measures proposed to prevent these impacts, nor clarity on Project water rights. The Department suggests providing more details regarding proposed avoidance measures and water rights enabling the Project's proposed power generation in this section or referencing sections of the PAD where these details may be found.

4. Hydrologic and Water Temperature Operations Model Parameters

Project information provided to date indicates that water temperature and operations modeling will be included in Project studies pending development. Department staff understand that reservoir CE-QUAL-W2 modeling will be completed for various Project configurations to help understand how operation of the Project may affect reservoir and downstream temperature regimes. Other than this commitment to

complete temperature and operations modeling, few operations modeling details have been provided. Reservoir operations modeling is critical for developing both an accurate water balance for the affected reservoirs as well as input hydrology for temperature modeling. The development of the operations modeling for the Project should use a publicly available tool that can be provided to licensing participants and FERC. The operations modeling should include a sub-daily (minimum hourly) timestep, all potential Project configurations, and the ability to consider how energy production from the Project would be affected by any environmental constraints.

Regardless of the modeling tools that are developed, the Licensee should include Department and other licensing participants in the process of development of the operations and temperature modeling tools. After initial development and calibration, the Licensee's team should provide the modeling files and hold a meeting or series of meetings to review the modeling products. Collaborating during early model development will cultivate shared buy-in and limit the potential need to rework modeling products later in the Project licensing process.

REQUESTS FOR AND COMMENTS ON NEW PROJECT LICENSING STUDIES

The PAD and SD1 provided a preliminary list of study needs and a list of initial study proposals for the Project respectively. Following a meeting with Project stakeholders on June 9, 2022, the Licensee described further studies that were to be included in a list of additional studies not part of either the PAD or SD1. On July 13, 2022, the Licensee provided compiled study proposals in an email attachment titled DRAFT Study Program Study Table. To date, the Department understands the complete suite of studies proposed to evaluate potential Project effects to include the following:

- CR-1 Cultural Resources Study
- CR-2 Built Environment Study
- TR-1 Tribal Resources Study
- WR-1 Hydrologic and Water Temperature Operations Models
- WR-2 Water Quality Study
- BR-1 Special Status Amphibian and Aquatic Reptile Study
- BR-2 Wetlands, Riparian, and Botanical Resources Study
- BR-3 Fish Community Characterization and Entrainment Risk Assessment
- BR-4 Wildlife Study
- BR-5 Avian Community Study
- BR-6[1] Benthic Macroinvertebrate Study
- GS-1 Geotechnical Investigation

[1] At the time of this letter, the code and title for the proposed Benthic Macroinvertebrate Plan (BMI) have not been provided. This temporary code and title will be used throughout the remainder of this correspondence to refer to the BMI plan.

- GS-2 Tunnel Spoils Alternatives
- RA-1 Recreation Resources and Land Use Study
- RA-2 Aesthetics and Visual Resources Study
- SO-1 Socioeconomic Study
- SO-2 Traffic Impacts Analysis
- SO-3 Environmental Justice Study

The Department has the following comments regarding rationale for the proposed study plans relevant to Department jurisdiction over the conservation, protection, and management of fish and wildlife and their associated habitat:

WR-1 Hydrologic and Water Temperature Operations Models – See Comment #4 above. Fundamentally, Project operations have the potential to affect temperature and therefore alter aquatic habitat both in Project-affected reservoirs and downstream of the proposed Project scope.

WR-2 Water Quality Study – The Department supports inclusion of study WR-2. A water quality study is necessary to understand the potential effects of proposed Project construction, operation, facilities, and maintenance on water quality parameters such as temperature, turbidity, mercury mobilization and methylation, pH, and dissolved oxygen. These water quality parameters have a direct effect on the growth, survival, and general health of aquatic and semi-aquatic species within the Project area.

BR-1 Special Status Amphibian and Aquatic Reptile Study – Special status amphibian and reptile species such as foothill yellow-legged frog (*Rana boylii*), Sierra Nevada yellow-legged frog (*Rana sierrae*), and western pond turtle (*Emys marmorata*) have the potential to occur within the Project area. A full accounting of all special status species within the Project affected area is necessary to evaluate potential life history and habitat impacts due to construction, operation, facilities, and maintenance.

BR-2 Wetlands, Riparian, and Botanical Resources Study – It is important to document existing riparian, wetland, and other vegetative communities within the Project area in order to assess potential effects to these resources. Riparian and wetland areas are critical to functioning watersheds and can impact a variety of terrestrial, aquatic, and semi-aquatic fish and wildlife species that rely on these areas for habitat throughout the Project area.

BR-3 Fish Community Characterization and Entrainment Risk Assessment – This study is needed to document existing fisheries communities and assemblages including such metrics as species composition, relative abundance (e.g Catch per Unit Effort studies), size, life history and periodicity, as well as current available habitat. It is important to understand the relationship to reservoir expansion options (e.g., lost/gained/shifted habitat), connectivity to tributaries for

adfluvial species, and other potential effects due to Project construction, operations, maintenance, and facilities. The documentation of the spatial distribution of fish communities and assemblages at depth by species and life stage prior to and following construction and operations will inform fisheries response to the Project and the potential for mortality, injury, and movement of fish between reservoirs due to entrainment. At a minimum, entrainment study components should examine introduced predation effects to aquatic and semi-aquatic species in the different reservoirs and design options in relation to minimizing entrainment.

BR-4 and BR-5 Wildlife Study and Avian Community Study – Related to study BR-2, the Department supports inclusion of BR-4 and BR-5. It is important to document the existing wildlife species and their associated habitat vegetative habitat within the Project area to determine potential Project effects due to construction, operation, facilities, and maintenance.

BR-6 Benthic Macroinvertebrate Study (BMI) – As BMI are an important food source for fisheries communities within the Project area, changes in BMI composition, abundance, growth, size, and general health directly affect those same factors in stocked and naturally reproducing fish within affected reservoirs and streams. It is therefore important to document existing BMI communities prior to Project construction and operations to determine effects to fisheries communities and assemblages.

GS-1 Geotechnical Investigation – A study is needed to document the baseline groundwater condition (including contributions to streams, seeps, and springs) and existing groundwater dependent ecosystems (GDEs) prior to exploratory and final tunneling/boring. The study should examine potential changes to groundwater and GDEs due to Project construction and operation.

RA-1 Recreation Resources and Land Use Study – A study is needed to examine the effects of Project construction, operations, maintenance, and facilities on boat and shore fishing opportunities. The study should also examine the potential for dangerous hydraulic conditions and changes to access that may affect recreational use.

In addition to above studies, the Department requests Licensee undertake the following licensing study to fill resource knowledge gaps and inform License conditions that will adequately protect fish and wildlife resources. The study request addresses all seven (7) of FERC's Study Request Criteria required for the Integrated Licensing Process (CFR 18, § 5.9(b)), and relevant to this Project's ILP.

STUDY REQUEST: AQUATIC INVASIVE SPECIES MONITORING PLAN

Criteria 1 – Describe the goals and objectives of the study

Aquatic invasive species (AIS) threaten the diversity and abundance of native species and natural communities and the ecological stability and water quality of infested waters. The introduction of only a few organisms, or in the case of aquatic plants and algae, a tiny fragment of an organism, can result in the infestation of an entire water body or watershed (CDFG 2008). Impacts from aquatic invasive species can be extreme and affect ecosystems, recreation, and economics. Aquatic invasive species infestations are generally permanent; prevention is the best strategy to combat them. Both prevention monitoring and education are critical pieces in preventing the spread of invasive species. Project operation could result in the transport of undetected AIS between previously hydrologically disconnected reservoirs and downstream waters. The goal of this study is to evaluate and quantify AIS that may exist within the Project area and the steps that can be taken to mitigate the risk of introduction to previously unaffected waters.

Objectives in support of this goal include:

1. Evaluate, identify, and quantify AIS that may occur within the proposed Project area;
2. Evaluate the potential for transport of AIS between reservoirs and downstream waters; and
3. Evaluate measures that can be implemented during Project design, operation, and maintenance to mitigate the effects of any present AIS and/or avoid the introduction of new AIS into Project-affected reservoirs and downstream waters.

Criteria 2 – Explain the relevant resource management goals

In the State of California, fish and wildlife resources are held in trust for the people of the State by and through the Department (Fish & G. Code, § 711.7). The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. The mission of the Department is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. Fish and wildlife resources and associated habitats are affected by ongoing operations at Project facilities. It is the goal of this Department to preserve, protect, and as needed, restore habitat necessary to support native fish, wildlife, and plant species within the Project boundary and affected adjacent areas.

California has been severely impacted by invasive aquatic plants and animals which have altered native ecosystems and taken a toll on recreation and sensitive native species (i.e., species that are listed as endangered or threatened or otherwise considered rare or declining) (CDFG 2008). A study is needed to determine if AIS exist

within the proposed Project area and if so, determine methods to minimize the harmful ecological impacts posed by their movement due to Project operations.

Criteria 3 – Explain any relevant public interest considerations

The Department is the State fish and wildlife resource agency, and therefore holds in trust California fish and wildlife resources for the people of the State. AIS pose a threat not only to fish and wildlife resources in currently infected waters but have the potential to affect uninfected waters throughout the State. Unlike other sources of pollution, established AIS populations can reproduce and spread, affecting habitat and recreation alike. As a result, resources must be devoted to both the identification and prevention of new introductions and the control of existing ones. These introductions can occur through a variety of vectors between watersheds further complicating preventative measures (CDFG 2008).

Criteria 4 – Describe existing information concerning the subject of the study proposal and the need for additional information

Currently there is a programmatic PG&E Quagga-Zebra Mussel (QZM)-AIS Prevention Plan-Vulnerability Assessment (Plan; PG&E 2020, draft update in peer review and final due in 2023) in place which includes the North Fork Mokelumne watershed and other waters affected by the Mokelumne Hydroelectric Project (FERC No. 137-P). Implementation of the Plan fulfills the monitoring requirements stipulated in 14 California Code of Regulations §672.1 (b) for operators of a reservoir (as defined in Fish & G. Code § 2302). In recent years, PG&E has prioritized prevention monitoring of high and moderate risk waters for both the introduction and establishment categories within watersheds based on calcium values and recreational use. In 2022, PG&E has implemented monitoring efforts for waters located within the North Fork Mokelumne watershed. Additionally, CDFW's Aquatic Invasive Species Regional Coordinator with the North Central Region (NCR) Aquatic Invasive Species Program has conducted prevention monitoring efforts outlined for undetermined or data gap waters (Upper Bear River Reservoir and Lower Bear River Reservoir) within the Plan. These efforts include the collection of water quality data, calcium samples and conducting visual surface surveys for QZM and other AIS. CDFW staff have performed a visual inspection of shoreline and substrates for aquatic invasive vegetation. To fully inform the draft Environmental Impact Statement for the proposed Project and to complement available information, the Licensee should develop and implement an AIS Study that determines a baseline understanding of AIS currently introduced within the proposed Project area. At a minimum, the AIS Study should include surveys for aquatic invasive species including vegetation, calcium measurements, water quality sampling, and the inspection of surface and artificially deployed substrates prior to Project construction and operation. A baseline understanding of AIS introductions is necessary to determine potential Project induced and exacerbated impacts as well as the development of adequate avoidance and mitigation measures, if necessary.

Criteria 5 – Explain the nexus between Project operations and effects on the resources to be studied, and how the study results would inform license development

Operation of the Project has the potential to transport AIS between, and downstream of, reservoirs which can impact native species and the habitats on which they depend. Effects include reduced diversity and abundance of native plants and animals due to competition, predation, and loss of habitat; stresses on rare, threatened, and endangered species; and losses in fisheries production (CDFG 2008). Study results from the surveys described above in Criteria 4 would inform relicensing participants of the existence of AIS within the proposed Project area. A determination of positive results would be the first step in the development of effective measures to prevent the spread of AIS from detected areas within the Project to uninfected downstream areas or adjacent waterbodies and watersheds.

Criteria 6 – Explain how any proposed study methodology is consistent with generally accepted practice

Fish and Game Code §2302 requires that any person, agency, district, or authority that owns or manages a reservoir that is open for public recreation and not infested with dreissenid mussels (e.g., quagga and zebra mussels) must 1) assess the vulnerability of the reservoir to introduction of dreissenid mussels, and 2) develop and implement a program to prevent the introduction of dreissenid mussels. Prevention programs are required to include public education, monitoring for the presence of both adult and veliger dreissenid mussels, and management of recreational activities. It is a violation of Fish and Game Code and the California Code of Regulations Title 14 §672.1 for water owners/managers to operate a reservoir, as qualified by Fish and Game Code §2302, without developing and implementing a prevention program that meets the requirements defined in 14 California Code of Regulations §672.1 (b). As the Licensee would in effect, through operations and maintenance of the proposed Project, co-manage water resources within the affected reservoirs with PG&E, the Licensee would have a shared responsibility for the requirements outlined in 14 California Code of Regulations §672.1 (b). Accordingly, the requested AIS study is consistent with expectations set in code to assess the presence of AIS and this study would include standard AIS surveys of vegetation, calcium measurements, water quality sampling, and the inspection of surface and artificially deployed substrates in Project water bodies.

Criteria 7 – Describe considerations of level of effort and cost

Preliminary calcium lab results for water bodies within the North Fork Mokelumne watershed are trending in the low-risk category for both introduction and establishment of QZM and other AIS (i.e., Asian clam and New Zealand mud snail), therefore effort and associated costs for implementation of the proposed AIS Plan would not be as labor intensive as efforts for a moderate and/or high-risk watershed. Following discussion by CDFW staff with Matthew Fransz, Senior Aquatic Biologist for the AIS Team at PG&E, estimates were obtained for the expected cost of implementation of the proposed AIS Plan (M. Fransz personal communication 8/4/2022). The estimated costs

for implementation include survey costs at each water body of $1,000 per person/day, with crews of 2-3 personnel for safety and efficiency. Surveys would be conducted monthly with one day required per month for the six-month period of May-November. Total estimated annual costs for surveys would therefore be approximately $12,000-18,000 per water body (number of water bodies to be determined) depending on the number of survey personnel involved. Additionally, an annual report is required to summarize the survey results for a given field season. The estimated cost for producing an annual report is approximately $10,000 which would include data entry, data analysis, mapping, and writing. Although these costs may be obligatory under requirements in Fish and Game Code and California Code of Regulations, it is up to the Licensee and PG&E to determine financial responsibilities for the potential joint management of water bodies within the proposed Project area.

CONCLUSION

The Department appreciates your consideration of the above PAD and SD1 comments and study request. We look forward to working collaboratively with you and the other relicensing participants to develop study plans and measures designed to protect, mitigate, and enhance Project-affected resources.

If you have questions regarding our comments or study requests or would like to discuss the contents of this letter, please contact Michael Maher, Senior Environmental Scientist, Specialist at Michael.Maher@wildlife.ca.gov or (916) 597-5505.

Sincerely,

DocuSigned by:
Jennifer Garcia
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Jennifer Garcia on behalf of Kevin Thomas
Acting Regional Manager
North Central Region (Region 2)

REFERENCES

14 California Code of Regulations §672.1 (b). Dreissenid Mussel Control and Prevention.

16 United States Code § 802(a)(1). Information to accompany application for license, landowner notification.

16 United States Code §803(j). Conditions of license generally.

18 Code of Federal Regulations §5.9(b). Comments and information or study requests.

CDFG (2008). California Aquatic Invasive Species Management Plan. California Department of Fish and Game (CDFG), Sacramento, California.

Fish and Game Code §711.7.

Fish and Game Code §1802.

Fish and Game Code § 2302.

M. Fransz, Pacific Gas & Electric, personal communication 8/4/2022.

PG&E (2020). Pacific Gas & Electric QZM-AIS Prevention Plan-Vulnerability Assessment Draft Update in Review (PG&E), Oakland, CA.

Rohde M.M., Seapy B., Rogers R., Castañeda X., editors (2019). Critical Species LookBook: A compendium of California's threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California.