March 29, 2022

Attn: FWS–R8–ES–2021–0108,
U.S. Fish and Wildlife Service
MS: PRB/3W, 5275
Leesburg Pike, Falls Church, VA 22041–3803

Re: Foothill Conservancy supplemental comments on Endangered and Threatened Wildlife and Plants; Foothill Yellow-Legged Frog; Threatened Status with Section 4(d) Rule for Two Distinct Population Segments and Endangered Status for Two Distinct Population Segments

To the US Fish and Wildlife Service:

The Foothill Conservancy strongly supports the proposed listing status for the Foothill Yellow-Legged Frog. We would like to offer the following comments in order to support the US Fish and Wildlife Service's recent proposal to list the species.

The Foothill Conservancy is a 501(c)(3) non-profit conservation organization devoted to protecting, restoring, and sustaining the natural and human environment in Amador and Calaveras Counties for the benefit of current and future generations. Our organization has a history of involvement in local and regional conservation and watershed advocacy. The Foothill Conservancy played a major role in securing state Wild and Scenic River designation for the Upper Mokelumne River, which contains populations of Foothill Yellow-Legged Frog (FYLF). We were also signatories in the PG&E project 137 relicensing settlement agreement, which established an Ecological Resources Committee (ERC) that performs project monitoring on the Mokelumne River. Our involvement with the ERC has given us the opportunity to support this listing by providing more information about the population of FYLF in the Upper Mokelumne River. We hope our comments will be useful to provide additional biological information,

population data, examples of current ineffective protections, and suggested management strategies for the FYLF.

Mokelumne River Population of FYLF:

A. Background

The Mokelumne River Project P-137, owned by PG&E, is located on the North Fork of the Mokelumne River (NFMR), California. The project is comprised of 7 storage reservoirs (Upper Blue Lake, Lower Blue Lake, Twin Lake, Meadow Lake, Upper Bear River and Lower Bear River Reservoir, and Lake Tabeaud), 9 dams, 4 powerhouses (Salt Springs, Tiger Creek, West Point and Electra) and multiple tunnels like the tiger creek conduit and the electra tunnel. The project is operated under a 2001 multi-party settlement agreement, in which Foothill Conservancy is one of the signatories. Some achievements of the settlement agreement include increases to stream flow that improve habitat for native wildlife, the removal of 3 small dams on tributary creeks of the Mokelumne which lead to the creeks being restored to their natural state, increased number of recreational river flows which increased the popularity of the formal river access points, and the creation of a stream ecology monitoring program called the Ecological Resources Committee (ERC), which assists in the implementation of the license for FERC and makes decisions about project management. By participating in ERC meetings, we are able to access stream ecology monitoring data that they have collected over the course of the settlement license. Below we share supplemental information about FYLF supporting their need for listing.

B. Biological Information

There are several biological observations of the NFMR FYLF population that we would like to share. As mentioned above, the Foothill Conservancy has access to project monitoring data for the Mokelumne River Project 137 through our participation in the ERC. The ERC is in charge of implementing the Ecological Resources Adaptive Management Program and the Stream Ecology Monitoring Program (SEMP), in addition to numerous other responsibilities. SEMP monitoring has shown that the frogs in the Mokelumne River appear to have some unique strategies for surviving the variable conditions of the dam-altered flow regime. The surveys conducted showed that the frogs in the Mokelumne River lay their eggs much deeper and further from the shore than any other known population (PG&E, 2015). This unique oviposition behavior is likely an adaptive response to avoid the river fluctuations caused by hydropower operations. The NFMR population of FYLF is also unique because they “wait until the tail end of the declining hydrograph with temperatures approaching 12 to 15°C to begin breeding” (PG&E, 2022). **The population of FYLF frogs on the Mokelumne River exhibits unique behaviors which should inform management of their habitat, especially as it relates to ramping rates and flow rates during the breeding season.** .

Like most FYLF, high flows in the NFMR in 2011 and 2017 caused a delayed onset of egg laying (PG&E, 2022). High flows can scour egg masses and prevent frogs from finding suitable breeding habitat. There were also many dry and critically dry water years over a nine year monitoring period, and data suggests that “FYLF initiate breeding earlier in dry and critically dry

years compared to wetter years" (PG&E, 2022). This evidence shows that climate has an influence on FYLF breeding behavior, which is especially important in the face of climate change. **This data further supports the significant threat to the South Sierra DPS posed by climate change**.

C. Population data

The population data that has been gathered by SEMP about the North Fork Mokelumne River (NFMR) population of FYLF provides additional support for the listing of the South Sierra DPS as endangered. "Between 2001 and 2020, evidence of 91 egg masses has been recorded in the Salt Springs Reach, with 62 (68%) of those observations during the SEMP 2 period and 23 (25%) during the SEMP 3 period." (PG&E, 2022) The SEMP 1 period was between 2005-2009, SEMP 2 between 2012-2016, and SEMP 3 between 2017-2021. The ERC took a brief period between 2009 and 2012 monitoring to revise their monitoring strategy, which changed their full FYLF surveys from occurring only once every 5 years to 3 years out of each 5 year SEMP study block. This means there was less monitoring done between 2001-2012 (SEMP 1), making it difficult to make comparisons to the other two monitoring periods. The evidence above shows a decline in FYLF populations on the NFMR between 2012 and 2020, during which project 137 has been in operation. No egg masses were observed in 2017 as a result of an extremely wet winter which caused flows that prevented surveys from being conducted (PG&E, 2022). Only 15 egg masses were observed in 2018 and a mere 8 egg masses recorded in 2020 (PG&E, 2022). Four of those egg masses from 2020 were actually tadpole groups, which they began counting as egg masses in 2012 (PG&E, 2022). Overall, there were lower young of year (YOY) and egg mass counts in SEMP 3 (2017-2021) compared to SEMP 2 (2012-2016). They are seeing reduced YOY and egg mass numbers both within study sites and in other parts of the reach. Data also shows that the breeding window appears to have been compressed over the years they have been studying FYLF. **The extremely low egg mass and young of year counts and reduced breeding window demonstrate how vital this listing is to protecting the small population of FYLF that currently exists in the NFMR, especially with all the threats the population is facing.**

D. Primary threats

The most evident threat the NFMR population of FYLF is facing are the altered flow regimes as a result of PG&E Project 137 hydropower operations. In order to provide power to users at optimal times, hydropower operators alter the flows of the river by storing water in reservoirs and releasing it downstream with high flow water releases. This is called hydropeaking. Alterations to flow regimes can also occur for recreational activities like whitewater rafting and kayaking. These pulse flows can detrimentally affect early life stages of the FYLF because they are more frequent and intense than natural flows, and occur at times when the flows would naturally be receding. As mentioned in the proposed rule, "the abiotic conditions that directly influence success at early life stages are those associated with stream velocity, water depth, water temperature, and streambed substrate". Hydropower operations can directly impact all of these conditions as discussed in the proposed rule. **Considering this information, the US Fish and Wildlife Service (USFWS) should be able to put in place stricter guidelines and**

regulations for required conservation measures to protect the FYLF through the hydropower licensing process.

Another potential threat to the FYLF in the NFMR is the impact from grazing. Cattle grazing has the potential to negatively impact FYLF habitat by causing excessive erosion, creating water impoundments that provide habitat for invasive American Bullfrog, sedimentation into streams, shifts in plant communities, and wetland desiccation due to loss of vegetation. **The continued decline of FYLF under current rangeland management practices demonstrates a need to update the management guidelines to better mitigate the impacts to the FYLF. These negative impacts should be incorporated into updated rangeland management guidelines and requirements that reduce the impacts on FYLF**. This is a large concern in the Mokelumne River Watershed because it is located within rural counties where there is a high presence of rangelands and agricultural properties.

Finally, the effects of climate change will likely threaten the FYLF population in the Mokelumne River by increasing water temperatures, decreasing precipitation, increasing the likelihood of large wildfires and much more. Evidence has shown that critically dry and dry water year types (WYT) can influence FYLF breeding behavior, and those WYT are expected to increase with climate change (PG&E, 2022). **The increase in sedimentation after wildfires is also a significant threat as more wildfires impact waterways throughout their habitat**.

Benefits of the Proposed Listing:

We would like to express support for the listing of the FYLF because we believe this would produce many benefits that will help protect the species from the threats they face. This listing would allow the USFWS to enforce stricter regulations and guidelines for conserving the species. It may also lead to better management of livestock grazing and more funding for further FYLF research and monitoring. Most importantly, it may help us address concerns about our local population of FYLF in the Mokelumne River and put in place stricter conservation measures for them.

Inadequacy of Existing Regulatory Mechanisms:

A. Local Regulatory Issues

It is apparent that the current regulatory mechanisms put in place to protect the FYLF are inadequate because the species is still in decline. We will discuss current regulatory mechanisms of PG&E Project 137, and eventually point out ways to improve this management to protect the FYLF population from further decline. As part of the settlement agreement, the ERC set up strict requirements for water temperature and flow rates. First of all, they set up a minimum streamflow schedule for each particular stream reach within the affected project area. The schedules specify minimum streamflows by month and water year type, but these schedules can be temporarily modified if required by equipment malfunction or operating emergencies (PG&E, 2000a). There are 5 WYT: Wet, Above Normal (AN), Below Normal (BN), Dry, and Critically Dry (CD). They determine WYT based on the predicted amount of unimpaired inflow to Pardee Reservoir and forecasting information provided by the licensee and California

Department of Water Resources (DWR) each month from February through May. The May forecast is then used to determine the final WYT until the next February. The settlement agreement states that Salt Spring Reservoir is expected to spill in wet, AN, and BN years, and not expected to spill in dry and critically dry years. The minimum streamflow they identified in Bear River below Lower Bear River Reservoir Dam was down to 4 cfs during CD WYT. The minimum streamflow they identified in the North Fork Mokelumne River below Salt Springs Reservoir Dam during CD WYT was 15 cfs. The same goes for the North Fork Mokelumne River below the Electra Diversion Dam.

The settlement agreement also sets up pulse flow requirements that differ based on WYT and particular reach. During dry years, they are required to release a 5 day continuous 500 cfs pulse flow in the North Fork Mokelumne River. The pulse flow events during dry years shall also be timed to occur as reservoir inflow and snowmelt runoff peaks and begins to decline. It is unknown whether these pulse flows are having an adverse impact on the NFMR FYLF, but more research is needed to see what these impacts are.

PG&E is also required to preserve water quality by maintaining daily water temperatures of 20℃ or less as measured in the North Fork Mokelumne River immediately below Salt Springs Reservoir Dam. These temperature and flow requirements are set up so they can achieve a set of resource objectives agreed upon during the settlement agreement. This includes objectives about fish production; macroinvertebrate production; temperature; dissolved oxygen; water quality; riparian habitat; threatened, endangered, and sensitive species; recreation access, and public safety. For each objective, they provide rationale as to why the objective was set where it was.

PG&E's rationale for recommended limitations on summer operations is because NGOs are concerned with how short term power generation water releases may adversely affect ecological resources. NGO's like Foothill Conservancy were concerned that short term power generation water releases that occur after the spring runoff period would result in large intermittent increases to streamflow, which would otherwise be low and declining. The rationale states that "there is no definitive information to make a determination that adverse ecological effects are occurring during this practice" (PG&E, 2000b). **There needs to be more evidence that shows how hydropower operations can adversely affect the FYLF and its habitat, so project operators can no longer claim that there are no adverse impacts from their project. This listing would help take some of the load off NGOs who are trying to protect the FYLF during FERC hydropower licensing by providing them the evidence they need to prove the adverse effects of hydropower operations.**

The Project 137 monitoring was designed to see whether the ecological objectives set up as part of the settlement agreement are being met under the license required minimum stream flows and pulse flows. SEMP monitoring was divided into 5 years periods, so trends could be identified and adjustments to management strategies could be made to better meet their identified ecological thresholds. "The adaptive management program of the SA allows for adjustments to minimum streamflows and pulse flows in specific stream reaches after each

5-year monitoring period in the form of block water additions." (PG&E, 2022). These block water additions are their way of adapting to new information and changing ecological conditions. "At the November 2011 meeting of the ERC and FS Team, a decision was reached against adding available block water (Block 1; available during SEMP 2: 2012 - 2016) in the Salt Springs Reach to protect and enhance the FYLF population and prevent any potential detrimental effects on their breeding success that increased flows might have." (PG&E, 2022) In fear of negatively impacting FYLF breeding success, the ERC has decided not to add available block water back into the natural flow of the Mokelumne River. **We encourage taking advantage of opportunities presented by hydropower projects to gather more information about the impacts of ramping rates and flows of FYLF and its habitat. We recommend that this adaptive management program continues and other hydropower licensees be required to incorporate adaptive management strategies such as those used in project 137 to make adjustments to better protect the FYLF.**

Suggested Management Strategies:

A. FERC Hydropower

Since current management and monitoring strategies are not enough to prevent the FYLF population in the Mokelumne River from decline, we believe further protections and restrictions should be put in place during FERC relicensing. This means requiring FERC licensees to put in place minimum and maximum flow requirements, to implement funding for FYLF monitoring, and to apply appropriate mitigation measures such as managing recreational flows. These requirements are already being fulfilled by PG&E for the Mokelumne River Project, however, there is an upcoming relicensing that could change the license requirements laid out during the last settlement agreement. If all FERC licensees are subject to these requirements, then we would not have to worry about losing protections for FYLF during periods of relicensing. Monitoring requirements would also lead to a better collection of available science about the FYLF, which can help inform good management practices related to the FYLF. **Better survey methods should be developed for determining breeding.** Biologists with P-137 have struggled to conduct timely breeding surveys due to high flows preventing snorkeling surveys during the breeding period - the most recent data shows significant declines in egg mass and tadpole detections, as well as a compressed breeding window, but it is unclear if that is due to survey inadequacies or an actual decline in breeding attempts and success. Requiring reach wide surveys for young of year individuals is one step towards addressing this issue.

B. Federal Land Management Agencies

Federal Land Management agencies also have the opportunity to improve FYLF protections and regulations. **If the FLYF gains final listing designation, the United States Forest Service (USFS) and USFWS should work collaboratively to update the Forest Plans to include more conservation measures for the FYLF and suitable habitat.** This would involve updating the standards and guidelines (S&Gs) and Best Management Practices (BMPs) for each national forest that contains FYLF populations to incorporate guidelines and regulations to conserve suitable habitat and frog populations. This would require rangeland managers and other

agencies to adopt the best available measures for conserving the FYLF and its suitable habitat. They would also have to adopt adaptive management standards that are updated as new science is released. In the 2004 Sierra National Forest Plan Amendment (SNFPA), they claim that their guidelines and grazing management strategies will protect meadow hydrology and sensitive species that live in meadows such as the FYLF. There are only 2 standards and guidelines directly related to the FYLF in the recent SNFPA. The first being that within 500 feet of a known FYLF occupied site, design pesticide applications to avoid adverse effects to individuals and their habitats. The other guideline states "as appropriate, assess and document aquatic conditions following the regional stream condition inventory protocol prior to implementing ground disturbing activities within suitable habitat" for the FYLF (USDA Forest Service, 2004). Finally, it was recommended to locate new facilities for gathering livestock outside of meadows and riparian conservation areas in order to avoid adverse effects on aquatic resources. **There must be more protections put in place for the FYLF in the Sierra Nevada Forest Plan so all National Forests within the Sierra Nevada can collaboratively help conserve the species.**

The USFS can also improve crossings that have been deemed inadequate for aquatic organism passage. There are thousands of road crossings and culverts within the National Forest system that do not allow adequate passage for aquatic organisms, and improving these passages would help the FYLF access more areas of suitable habitat. Improvements should be prioritized to areas where FYLF are known to exist in order to most quickly conserve their habitat.

Another action the USFS can take to conserve FYLF habitat is to update S&Gs and BMPs to better protect tributaries and streams from erosion after wildfire events. Post-fire erosion can impair water quality and ruin ideal FYLF habitat along stream banks. Priority should be given to restore these landscapes as soon as possible after the fire in order to prevent the negative habitat impacts the fire will have on FYLF and other vulnerable aquatic species.

C. Private Lands

If listed, the BMP's for timber harvest on private lands should be updated to include stricter protections of riparian habitat from impacts caused by erosion and sedimentation. Existing riparian buffers are inadequate, and wider buffers should be considered to better protect the FYLF. The use of herbicides in occupied FYLF habitat should be prohibited, and wider buffers provided for herbicide applications.

Summary:

We hope the information we provided in our comments will help support the listing of the South Sierra DPS of FYLF as endangered. If the listing is successful, there must be efforts to update water management strategies and mitigate threats to the FYLF such as grazing and hydropower operations. This will involve updating forest plans, grazing management strategies, and FERC hydropower licensing requirements. This will be a demanding process, but it is necessary in order to prevent the further decline of this species.

In addition to providing recommended management strategies, our comments were intended to show that the FYLF in the North Fork Mokelumne River are very special and deserve to be listed as endangered along with the other frogs in the South Sierra DPS. The evidence for this is the extremely low egg mass counts and the unique behavior patterns that the fogs in the NFMR display as an adaptation to hydropower operations.

Thank you for reviewing our comments and recommendations.

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References Cited

Pacific Gas and Electric Company (PG&E). 2000a. Mokelumne Relicensing Settlement Agreement

Pacific Gas and Electric Company (PG&E). 2000b. Rationale Report for the Mokelumne Relicensing Settlement Agreement.

Pacific Gas and Electric Company (PG&E). 2015. Results of 2014 Amphibian Surveys for the Mokelumne River Project. Report prepared for Pacific Gas and Electric Company, San Ramon, California with technical assistance from Garcia and Associates (GANDA).

Pacific Gas and Electric Company (PG&E). 2022. 15 Year SEMP Amphibian Monitoring Report. Report prepared for Pacific Gas and Electric Company, San Ramon, California with technical assistance from Kleinfelder.

United States Department of Agriculture (USDA) Forest Service. 2004. Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement Record of Decision.