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July 8, 2020

Via Certified Mail – Return Receipt Requested Aurelia Skipwith, Director U.5. Fish & Wildlife Service, 1849 C. Street, NW, Rm. 3331 Washington, DC 20240-0001	*Via Certified Mail – Return Receipt Requested* Jennifer Norris, Field Supervisor USFS-Sacramento Fish and Wildlife Office 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846
Via Certified Mail – Return Receipt Requested Chief Thom Porter, Director Cal. Dept of Fire and Forestry Protection P.O. Box 944246 Sacramento, CA 94244-2460	*Via Certified Mail – Return Receipt Requested* Xavier Becerra, Attorney General Office of the Attorney General 455 Golden Gate Avenue, Suite 11000 San Francisco, CA 94102-7004
Via Certified Mail – Return Receipt Requested Roger A. Burch, Registered Agent Gualala Redwood Timber, LLC 18625 Sutter Boulevard, Suite 900 Morgan Hill, CA 95037	*Via Certified Mail – Return Receipt Requested* Owners and Managing Agents Gualala Redwood Timber, LLC P.O. Box 1300 Morgan Hill, CA 95038
Via Certified Mail – Return Receipt Requested Wilbur Ross, Secretary United States Department of Commerce 1401 Constitution Avenue, N.W. Washington, DC 20230	*Via Certified Mail – Return Receipt Requested* David Bernhardt, Secretary United States Dept. of the Interior 1849 C Street, N.W. Washington, DC 20240
Via Certified Mail – Return Receipt Requested Chris Oliver, Assistant Administrator NOAA Fisheries 1315 East-West Highway Silver Spring, MD 20910	

Re: Notice of Intent to Sue for Violations of Section 9 of the Endangered Species Act

To Whom It May Concern[1]:

This letter is sent on behalf of the Friends of the Gualala River and the Center for Biological Diversity (collectively, the "Parties").

[1] If you are represented by counsel in this matter, the request is specifically made that this communication be directed to such counsel, and this communication shall be deemed to have been made directly to such counsel.

The Parties intend to file suit in U.S. District Court for violations of sections 4(d) and 9 of the Endangered Species Act ("ESA" or "Act"), 16 U.S.C. §§ 1533(d), 1538(a)(1)(B), due to the unlawful take of Northern California steelhead, Central California Coast coho salmon, California red-legged frog, marbled murrelet, and northern spotted owl (collectively, the "Listed Species") from proposed logging, log hauling, roadbuilding, and road maintenance of real property owned by Gualala Redwood Timber, LLC ("GRT") located in northwestern Sonoma County, California (the "Logging Project") near the town of Gualala and adjacent to the Gualala River ("Site").[2] The California Department of Forestry and Fire Protection ("CalFire") approved GRT's Dogwood Timber Harvesting Plan ("Dogwood THP") for the logging of the Site on March 30, 2018. The Logging Project would remove primarily mature redwoods (90-100 years old) from alluvial floodplains in the lower Gualala River watershed and is reasonably certain to result in the take of the Listed Species.

I. The ESA Prohibits the "Take" of the Listed Species Unless Authorized by an Incidental Take Permit

Section 9 of the ESA prohibits the "take" of endangered or threatened species. 16 U.S.C. § 1538(a)(1)(B). The term "take" is defined in the "broadest possible manner to include every conceivable way" in which a person could harm or kill fish or wildlife. S. Rep. No. 307, 93rd Cong., 1st Sess. 1, reprinted in 1973 U.S. Code Cong. & Admin. News 2989, 2995. Accordingly, the ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). The National Marine Fisheries Service ("NMFS") has further defined the term "harm" to include "significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering." 50 C.F.R. § 222.102; *see also Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 701 (1995) (upholding functionally indistinguishable U.S. Fish and Wildlife Service ("FWS") regulatory definition). While NMFS has not promulgated a regulatory definition of "harass," FWS regulations define "harass" as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." 50 C.F.R. § 17.3.

Pursuant to Section 4(d) of the Act, 16 U.S.C. § 1533(d), NMFS extended ESA Section 9

[2] Specifically, the Site includes 342 acres of non-contiguous logging area on alluvial flats primarily on the east side of South Fork of the Gualala River, along the south side of the main stem of the Gualala River, along the north side of the Wheatfield Fork and Buckeye Creek, and along the Big and Little Pepperwood creeks. The Site is near latitude 38.766330°, longitude -123.481894°, and is identified further in the Dogwood Timber Harvesting Plan, THP No. 1-15-042 SON, approved by the California Department of Forestry and Fire Protection on March 30, 2018.

protections to the Northern California steelhead Distinct Population Segment ("NC Steelhead"), which has been listed as a threatened species under the ESA since 2006. 50 C.F.R. § 223.102(e); 71 Fed. Reg. 834 (Jan. 5, 2006) (designating as "threatened" all naturally spawned populations of steelhead in California coastal river basins from Redwood Creek southward to the Russian River, which includes the Gualala River watershed).

NMFS listed the Central California Coast coho Evolutionary Significant Unit ("CCC Coho") as an endangered species under the ESA in 2005. 70 Fed. Reg. 37160 (June 28, 2005). Central California Coast coho ESU's range spans Punta Gorda to the San Lorenzo River, which includes the Gualala River watershed and the Site. 50 C.F.R. § 226.210.

FWS listed the California red-legged frog ("CRLF") as a threatened species under the ESA in 1996. 61 Fed. Reg. 25813 (May 23, 1996). The range of the California red-legged frog includes Mendocino and Sonoma Counties, and thus the Site. *See* 75 Fed. Reg. 12815.

FWS listed the marbled murrelet, a species of seabird, as a threatened species under the ESA in 1992. 57 Fed. Reg. 45328 (Oct. 1 1992). The range of the marbled murrelet extends from Alaska to central California, and includes the Gualala River watershed and the Site. *See id.*; 76 Fed. Reg. 61599.

FWS listed the northern spotted owl as a threatened species under the ESA in 1990. 55 Fed. Reg. 26114. The northern spotted owl's range extends from British Columbia to the San Francisco Bay, and includes the Gualala River watershed and the Site. *See id*.

Consequently, ESA sections 9(a)(1)(B) and (G) prohibit any "take" of the Listed Species that is not authorized by an incidental take permit (issued under section 10 of the Act) or an incidental take statement (issued under section 7 of the Act) issued by NMFS or FWS. *See* 16 U.S.C. § 1539; 50 C.F.R. Parts 13, 17, & 222. Unauthorized activities that significantly degrade habitat in ways that impair the spawning, rearing, migrating, sheltering, feeding, or other essential behavioral patterns of the Listed Species are therefore illegal.

The ESA take prohibition applies to all "persons," including state government officials. 16 U.S.C. § 1532(13) (defining "person" to include any "officer, employee, agent, department, or instrumentality of the Federal Government, of any State," or of local governments). Accordingly, the ESA citizen suit provision authorizes suits against any person, including any governmental instrumentality or agency to the extent permitted by the Eleventh Amendment, to enforce the prohibition on take. *Id.* § 1540(g)(1); *see also Ex Parte Young*, 209 U.S. 123, 159-60 (1908) (authorizing lawsuits for prospective relief against state officials acting in violation of federal law); *Cascadia Wildlands v. Kitzhaber*, 911 F. Supp. 2d 1075, 1080-81, 1085-86 (D. Or. 2012). Additionally, agencies are liable for any actions that they authorize others to undertake. *Strahan v. Coxe*, 127 F.3d 155, 163 (1st Cir. 1997), cert. denied, 525 U.S. 830 (1998) (holding state liable for take of endangered right whales by virtue of its licensing of private commercial fishing

with equipment that caused whale entanglements and deaths); *Loggerhead Turtle v. Cty. Council of Volusia Cty.*, 148 F.3d 1231, 1251 (11th Cir. 1998), *cert. denied*, 526 U.S. 1081 (1999); *Defenders of Wildlife v. Administrator, EPA*, 882 F.2d 1294 (8th Cir. 1989); *Cascadia Wildlands*, 911 F. Supp. 2d 1075. As a result, CalFire is responsible for any ESA violations caused by activities permitted under the Dogwood THP authorizing logging activities at the Site.

As noted, to avoid liability under the ESA, you may obtain an incidental take permit ("ITP") under ESA section 10. 16 U.S.C. § 1539(a)(1)(B). To receive a permit to take any of the Listed Species pursuant to an ITP, you will, among other requirements, need to adopt measures for minimizing the take to the greatest extent practicable, as well as develop a plan that "conserv[es]" – i.e., helps facilitate the recovery of – the Listed Species. *Id.* §§ 1539(a)(1)(B), (a)(2)(A); *Sierra Club v. U.S. Fish and Wildlife Serv.*, 245 F.3d 434, 441-42 (5th Cir. 2001) ("'[c]onservation' is a much broader concept than mere survival" because the "ESA's definition of 'conservation' *speaks to the recovery of a threatened or endangered species*") (emphasis added). This plan, called a Habitat Conservation Plan ("HCP"), must delineate "the impact which will likely result from such taking" and the "steps [you] will take to minimize and mitigate such impacts …." 16 U.S.C. § 1539(a)(2)(A).

II. Listed Species Regulatory Background

A. Northern California Steelhead

NC Steelhead has been listed as a threatened species under the ESA since 2006. 50 C.F.R. § 223.102(e); 71 Fed. Reg. 834 (Jan. 5, 2006). Naturally-spawned NC Steelhead within the Gualala River watershed, including the Site, are protected under the ESA. *Id*. The Gualala River, including the Site, is also designated as Critical Habitat for NC Steelhead. 50 C.F.R. § 226.211.

Features of NC Steelhead habitat include floodplain connectivity, natural cover, cool clean water, in-stream large woody debris, and high dissolved oxygen concentration.

NOAA Fisheries has found that "habitat degradation associated with forest practices was a significant contributor to the reduction in abundance and distribution of NC steelhead." NOAA Fisheries, Coastal Multispecies Recovery Plan (2016). The Gualala River is designated as "essential" for the NC Steelhead's recovery. *Id*.

B. Central California Coast Coho Salmon

CCC Coho has been listed as an endangered species under the ESA since 2005. 70 Fed. Reg. 37160 (June 28, 2005). CCC Coho's range spans Punta Gorda to the San Lorenzo River, which includes the Gualala River watershed and the Site. 50 C.F.R. § 226.210.

Freshwater habitat requirements for CCC Coho include access to floodplains, side channels and low velocity habitat during high flow events; deep complex pools formed by large woody debris; adequate quantities of water; cool water temperatures, unimpeded

passage to spawning grounds and back to the ocean; and adequate quantities of clean spawning gravel. NOAA Fisheries, Central California Coast Coho Salmon Recovery Plan (2012). Logging and road construction are major causes of CCC Coho habitat degradation. *Id.*

C. California Red-Legged Frog

FWS listed the California Red-Legged Frog (*Rana draytonii*; "CRLF") as a threatened species in California. 61 Fed. Reg. 25813. CRLF "requires a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats . . . [including] pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons." FWS CRLF Recovery Plan (2002). CRLFs mate and lay eggs in waterways or nearby riparian areas, including ephemeral drainages or wetlands; and mature frogs forage and disperse in both riparian and upland habitats.

D. Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) is protected as a threatened species under the ESA. 57 Fed. Reg. 45328 (September 28, 1992). Marbled murrelets are long-lived seabirds which spend most of their life in marine environments but use old-growth and mature forests near the coast, like those on the Site, for nesting. Mating, foraging, molting, and preening occur in near-shore marine waters. Throughout their range, they are opportunistic feeders and consume prey of diverse sizes and species, feeding primarily on fish and invertebrates in near-shore marine waters rivers and inland lakes.

In California, "marbled murrelets use older forest stands near the coastline for nesting." 57 Fed. Reg. at 45329. Murrelets do not build nests, but instead rely on thick, flat tree branches with natural depressions and a blanket of moss on which to lay their eggs. 75 Fed. Reg. at 3425. The most important characteristic of their nesting habitat is "the presence of platforms (large branches or deformities) . . . [m]arbled murrelet habitat use during the breeding season is positively associated with the presence and abundance of mature and old-growth forests, large core areas of old-growth, low amounts of edge habitat, reduced habitat fragmentation, proximity to the marine environment, and forests that are increasing in stand age and height." 76 Fed. Reg. 61599 (Oct. 5, 2011).

FWS has concluded that the amount of suitable habitat for the marbled murrelet continues to decline throughout its range, primarily due to the direct, indirect, and cumulative impacts of commercial timber harvesting and logging operations. FWS Marbled Murrelet Recovery Plan (1997).

E. Northern Spotted Owl

The northern spotted owl (*Strix occidentalis caurina*) inhabits structurally complex forests from southwestern British Columbia through Washington and Oregon to northern California. 77 Fed. Reg. 71876, 71877–78 (Dec. 4, 2012); AR 35983. Dark brown with white spots, dark brown eyes, and a barred tail, northern spotted owls are territorial, and usually monogamous. 77 Fed. Reg. at 71883, AR 35984. They rely on

older forested habitats that contain the structures and characteristics required for nesting, roosting, foraging, and dispersal 77 Fed. Reg. at 71884.

The northern spotted owl is federally listed under the ESA as a threatened species throughout its range. 55 Fed. Reg. 26114. FWS listed the northern spotted owl as a threatened species in 1990 primarily due to the "loss and adverse modification of suitable habitat as the result of timber harvesting." *Id.* Since the ESA listing, population analyses have documented the continued range-wide declines that are attributed to the continued loss of habitat from logging and from the invasion of a non-native competitor, the barred owl. (Anthony et al 2006, Forsman et al. 2011).

Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001); habitat overlap (Dunbar et al. 1991; Herter and Hicks 2000; Pearson and Livezey 2003); and agonistic encounters (Leskiw and Gutierrez 1998; Pearson and Livezey 2003). Maintaining forest continuity and northern spotted owl nesting and roosting quality tends to reduce territorial displacement by invasive barred owls, a significant contributing factor of northern spotted owl decline in northwestern California in the last three decades.

III. The Logging Project Is Reasonably Certain to Cause Take of the Listed Species

The Site contains a mature redwood forest ecosystem along the lower stem and tributaries of the Gualala River. Due to its location in a floodplain along the Gualala River and its tributaries, the Site contains extensive alluvial floodplains containing mature redwood and other riparian ecosystems. Most of the ground in this area is wet or moist during most or all of the year.

The Logging Project will involve the use of heavy equipment in floodplain areas; water drafting; cutting and felling trees; skidding harvested trees; hauling harvested trees; slash removal and stockpiling; and road construction, reconstruction, and maintenance. These logging activities will cause significant disturbances to the biotic and abiotic elements of the Site and nearby areas. Such disturbances include the removal of mature 90 to 100 year-old redwood trees and the resulting altered forest structures; compaction and erosion of alluvial soils; damage to sensitive understory vegetation; impairment of waterways in the Gualala River watershed, including, without limitation, by increasing water temperature and sedimentation; and the short- and long-term disruption of species migration and prey availability. These impacts would both directly take Listed Species through logging activities and indirectly take Listed Species through substantial modification of Listed Species' habitat.

Past timber operations by GRT in the floodplain of the lower Gualala River have caused substantial, long-term, persistent, or effectively irreversible direct and indirect impacts to the ecosystem, including to the sensitive riparian redwood understory vegetation present at the Site. The recovery time required by shade-adapted understory vegetation following logging disturbances is reasonably certain to take many decades and lag behind regeneration of mature redwood forest overstory structure.

The Gualala River ecosystem and the Listed Species that use the Site have suffered from over a century of extractive resource use. The Site contains some of the last remaining mature floodplain redwood forest in the area. This rare ecosystem provides essential habitat for the Listed Species. The Logging Project, if not carried out in compliance with the ESA, will result in take of the Listed Species. As such, the Logging Project cannot go forward until you ensure that it will comply with the ESA.

The Logging Project is reasonably certain to result in take of Listed Species because it will significantly modify their habitat and impair essential behavior patterns. The Logging Project is also reasonably certain to cause direct take to CRLF.

A. NC Steelhead and CCC Coho Habitat Modification

NC Steelhead and CCC Coho are anadromous fish, meaning they spawn and incubate in freshwater but spend some of their lives rearing in the marine environment. (Groot and Margolis 1991). In general, salmon return "home" to their natal environment to spawn and lay eggs within meters to kilometers from where they were spawned and hatched. After spawning, eggs typically incubate over winter. All salmonids rely on species-specific availability of appropriately sized streambed substrate for spawning and rearing conditions. This often occurs near groundwater exchange with surface water due to lower temperatures and increased oxygen. (Groot and Margolis 1991, Quinn 2018).

In the spring, fry hatch from eggs at which point steelhead and coho may migrate within the watershed. Fry mature into parr, which rely heavily on freshwater and riparian terrestrial insects for food. (Quinn 2018). In California, parr typically remain in freshwater for less than one to up to three years. (Hayes et al. 2008). The timing of steelhead and coho downstream migration to the marine environment depends on environmental conditions. After maturing at sea, adult salmonids return upriver to reproduce, usually within close proximity to their natal stream reach.

Both NC Steelhead and CCC Coho are documented as rearing extensively in lagoonal estuaries in California—such as the downriver portions of the Site along the Gualala River—where they may benefit from higher growth rates and ultimately increased survival compared to individuals rearing in upstream habitats. (Bond et al. 2008, Hayes et al. 2008, Wallace et al. 2015, Osterback et al. 2017). Rearing juvenile NC Steelhead are commonly found in the Gualala River estuary; and CCC Coho have been documented in the Gualala watershed (ECORP 2005).

The dominant land use in the Gualala watershed is logging and road building associated with logging, which are central drivers of salmon population declines. (CEPA 2010). Due to these and other contributing factors, the Gualala River is currently in violation of federal and California water quality standards for sediment and temperature. (CEPA 2010). Specifically, NOAA Fisheries has identified future logging as a threat to NC Steelhead recovery on the Gualala River due to "reduced canopy cover resulting in increased stream water temperatures, increased sediment load into adjacent waterways

impairing gravel quality in downstream reaches, and significant loss of [large woody debris] recruitment, which is an essential component of habitat complexity, form and function." NOAA Fisheries, Coastal Multispecies Recovery Plan (2016).

The Logging Project's impacts to NC Steelhead and CCC Coho habitat would include physical, chemical, and biological impairments to multiple stages of salmonid development. Increased sedimentation, loss of important floodplain characteristics, impairments to the Gualala estuary, and cumulative effects of the Logging Project are reasonably certain to cause take to NC Steelhead and CCC Coho. These impacts are described further below.

a. Increased sedimentation in spawning and incubation gravels will cause take to salmonids

Logging and associated road use increase land surface runoff and surface erosion processes, thereby increasing instream sediment inputs and stream channel entrenchment, and decreasing floodplain connectivity. Sediment deposition can impair instream spawning and incubation conditions by filling interstitial spaces between gravels used for egg deposition and incubation, thus decreasing availability of oxygen to incubating embryos and altering thermal regimes influenced by groundwater. (Bisson and Bilby 1982, Hartman et al. 1996, Malcom et al. 2003, Stanford et al. 2005, Sear et al. 2008). Embryo survival decreases with increased sedimentation in spawning redds (gravel depressions where salmonids spawn). (Greig et al. 2005). Suspended sediment generated from soil disturbance and erosion caused by logging on floodplains and other near-stream locations can increase turbidity and decrease growth and survival of fishes. (Newcombe and MacDonald 1991, Newcombe and Jensen 1996). Mechanisms of impact caused by elevated suspended sediment include: alteration of behavior and reduced physiological health of juvenile steelhead and coho salmon, (Berg and Northcoate 1985, Michel et al. 2013); decreased productivity of stream and estuary food webs, which can deplete the aquatic food sources that support fish growth, (Newcombe and MacDonald 1991, Henley et al. 2000); and interference with foraging by salmonids, increasing feeding costs and reducing growth, (Barrett et al. 1992, Shaw and Richardson 2001, Wilber and Clarke 2001).

The Dogwood THP makes clear that sedimentation is reasonably certain to occur. THP § IV, p. 146 (listing among "[t]he major biological impacts" of the Logging Project: "erosion of the soil with the resulting loss of forest productivity and the sedimentation of the watercourses affecting downstream fisheries and instream habitat for aquatic species."). Vegetation removal and soil disturbance from logging activities are reasonably certain to increase sedimentation within the floodplain and reduce the floodplain's capacity to trap and stabilize sediments during flood events, resulting in increased sedimentation of the Gualala River. Given the direct causal connection between sedimentation and harm to salmonids, such sedimentation is reasonably certain to cause take to NC Steelhead and CCC Coho, including by killing, harming, and harassing members of these species.

b. Loss of floodplain characteristics essential to salmonid rearing will cause take of salmonids

Natural floodplain processes and floodplain complexity are essential to maintenance of salmon habitat. (Bellmore et al. 2013, Whited et al. 2011). The natural flood-pulse disturbance regime of floodplain habitats maintains complexes of backwater and spring channels that exhibit water velocities, temperatures, and prey sources better suited than mainstem habitats for growth of rearing juvenile salmonids. (Stanford et al. 2005, Bellmore et al. 2013). Multiple studies describe increased growth and abundance of juvenile salmonids on off-channel floodplain habitat, due to thermal refugia and increased productivity and prey. (Sommer et al. 2001, Ebersole et al. 2003, Jeffres et al. 2008, Bellmore et al. 2013). Both aquatic and terrestrial inputs of prey are important aspects of salmon growth in floodplain habitats. (Eberle and Stanford 2010, Bellmore et al. 2013). Because excessive sedimentation ultimately decreases floodplain and riparian connectivity, as well as the quality and productivity of those floodplain habitats (as described above in Sec. III.A.1.a), juvenile salmon growth may decrease, ultimately leading to decreased salmon survival at sea (Quinn 2018). Moreover, removal of riparian vegetation is reasonably certain to increase stream temperature and decrease fish cover in floodplain habitats.

The Dogwood THP notes these reasonably certain impacts. THP § IV, p. 146 (listing among "[t]he major biological impacts" of the Logging Project: "change of habitat for certain groups of species through the conversion of existing eighty to one hundred year old timber stands to younger age classes."). Given that the Gualala River is already in violation of temperature standards, further increasing temperatures from logging is reasonably certain to decrease suitable rearing area and salmon growth, while loss of cover is reasonably certain to increase predation on rearing salmonids. These impacts are reasonably certain to cause take to NC Steelhead and CCC Coho, including by killing, harming, and harassing members of these species.

c. Impairments to estuarine habitat will cause take to salmonids

Increased sediment, chemical nutrients, temperatures, and decreased oxygen in the Gualala River estuary are reasonably certain outcomes of logging in the lower watershed. These effects are, furthermore, reasonably certain to be exacerbated by recent timber harvests in steep and highly erodible areas directly above the lower watershed areas in Site (including without limitation the Apple, Kestrel, and German South THPs), which contribute to greater sediment yields to the Gualala River estuary.

Estuaries are considered exceptionally valuable to salmon growth and smoltification, providing services including buffering of sediment transport, purifying water, storing carbon and other nutrients, and buffering against sea level rise and storm surges. (Heady et al. 2014, Wallace et al. 2015, Osterback et al. 2018). The Gualala River estuary is known steelhead rearing habitat and all salmon smolts and spawners, including coho, must traverse the estuary at least twice to complete their life cycles. (ECORP 2005).

Consequently, changes in estuarine habitat have significant implications for salmon productivity. Increased sediment, nutrients, and temperatures resulting from logging in the Gualala River and its estuary are reasonably certain to impair feeding and growth for reasons described above in section III.A.1.b regarding floodplain characteristics. (Meehan 1991, NRC 1996). Moreover, increasing nutrient loads, including nitrogen, phosphorus, and dissolved and particulate carbon mobilized by logging disturbance of floodplain vegetation and soils will further lead to increased microbial oxygen demand, especially at night. This will result in decreased dissolved oxygen levels in the estuary, which already approach hypoxic conditions at some times of the year. (ECORP 2005). High temperatures and low dissolved oxygen could become harmful or lethal to rearing and spawning salmon and their prey. (Meehan 1991, Dahlgren 1998, Sergeant et al. 2017). In a lagoonal northern California estuary, increasing water temperatures above bioenergetic optima is documented as causing decreased growth rates of juvenile steelhead, which can compromise ocean survival and successful reproduction. (Seghesio 2011, Quinn 2018).

Thermal refugia within estuaries play an important role when temperatures increase (Matsubu and Simenstad 2017), but estuarine complexity—including groundwater inputs that provide essential refugia—is reasonably certain to be reduced by increased sediment inputs. Additionally, if sedimentation resulting from logging causes increased frequency of estuary closure by sand bar formation, bird predation on estuary rearing salmonids forced to delay seaward migration for prolonged periods is also reasonably certain to increase. (Frechette et al. 2013, Osterback et al. 2018). Excessive temperature increases additionally block migration and cause pre-spawn mortality of adult salmon migrating upstream to spawn. (Richter and Kolmes 2005). These impacts to the Gualala River estuary are reasonably certain to cause take to NC Steelhead and CCC Coho, including by killing, harming, and harassing members of these species.

d. <u>Cumulative effects of the Logging Project will cause take to salmonids</u>

Riparian vegetation removal—resulting in increased light and stream temperatures—and logging activities—resulting in increased sediment and nutrient inputs—are reasonably certain to cause cascading effects through aquatic foodwebs that will negatively impact NC Steelhead and CCC Coho growth, survival, and reproduction. Algal and aquatic plant productivity are reasonably certain to increase substantially after logging, and macroinvertebrate communities upon which freshwater rearing CCC Coho and NC Steelhead salmon depend are frequently homogenized. (Fortino et al. 2004). Thus, the combined impacts of logging in the Gualala River watershed are reasonably certain to decrease viability of incubating eggs, decrease growth and survival of rearing salmonids, degrade spawning habitat, and cause pre-spawning mortality. Considering the present extremely precarious state of both NC Steelhead and CCC Coho in the riverine and estuarine habitat of the Gualala River ecosystem, the Logging Project's habitat modifications are reasonably certain to cause take and, additionally, cumulatively contribute to continuing population-level declines, significantly impairing their recovery in the Gualala River basin.

B. California Red-Legged Frog Habitat Modification and Direct Take

CRLF are known to live in the floodplain and upland habitat near the Site. There are four known records of CRLF occurring within 8 km (5 miles) of the Dogwood THP units. Three of these four records occur within one mile of proposed Unit 1, which is within the maximum known dispersal distance (2 miles) for CRLF making movements through a combination of riparian and upland habitats. FWS CRLF Recovery Plan (May 2002); (Bulger et al. 2003). Two of these records are within 0.5 mile from proposed harvest units, including CRLF that were observed in the mainstem Gualala River at the Highway 1 bridge on July 30, 2014. The Gualala River is located approximately 38 miles south of the contact zone between CRLF and Northern Red-legged Frog (*Rana aurora*; "NRLF"). (Shaffer et al. 2004; Halstead et al. 2018).

CRLF terrestrial habitats include mammal burrows, leaf litter, and under shrubs, (Bobzien and DiDonato 2007; D'Amore 2007; Tatarian 2008), and thus they are susceptible to the harms of vegetation removal and physical disturbance to the landscape, compaction of soils, and loss of underground burrow networks. CRLF commonly reside in ground squirrel burrows (D'Amore 2007), and thus take may go undetected when the ground is disturbed. Diet analyses indicate the importance to CRLF of terrestrially derived prey. (Bishop et al. 2014). Stable carbon isotopes in frog tissue confirmed that dominant prey items include a mix of terrestrial carnivores (e.g., spiders, beetles, wasps) and detritivores (e.g., worms, ants). Small frogs are largely insectivorous, and although large adult frogs can consume aquatic vertebrates in the wet season, they consume terrestrial vertebrates in the dry season. (Hayes and Tennant 1985; Stebbins 2003; Bishop et al. 2014). The Logging Project, thus, is reasonably certain to interfere not only with the physical habitat integrity of CRLF and cause take directly, but also affect food resources for CRLF and indirectly cause take in that way. Such taking includes killing, harming, and harassing members of the species.

FWS has delineated a maximum protective buffer limit of 1 mile, with variable minimum distances around aquatic habitats to be determined by local known dispersal patterns which can be up to 2 miles. 75 Fed. Reg. 12816 (2010); (Bulger et al. 2003). Persistent occupancy of sites by CRLF is especially sensitive to fragmentation by roads. (D'Amore et al. 2010). The scientific literature reflects a consensus that buffer zones to protect CRLF should provide connectivity among aquatic habitats (i.e., the margins of the river and the various off-channel water bodies and ponds encompassed within the Site). Without a buffer, the construction of haul roads and skid trails within the Site are reasonably certain to disturb dispersal patterns and disrupt migration to and away from breeding sites, causing take of CLRF. The concomitant sedimentation of aquatic breeding habitats from road construction is also reasonably certain to disrupt migration to breeding sites, causing take of CLRF.

Research indicates a variety of CRLF migration patterns. Some CRLF move along well-established corridors that provide specific sensory cues to guide movement. (Stebbins 2003). Many other long-distance migrating CRLF travel to and from breeding sites during the rainy season and moved overland in relatively straight lines toward target sites. (Bulger et al. 2003). CLRF leave breeding habitat at various times throughout the rainy

season. In one radio-telemetry study in Marin County, 66 percent of female frogs and 25 percent of male frogs moved to non-breeding areas even when the breeding site retained water. (Fellers and Kleeman 2007). CLRF also leave breeding sites in the dry season to aestivate in upland refugia. For example, in Alameda Creek in September a radio-tagged male frog spent three weeks in a burrow 433 feet away from the water before returning to the stream channel. (Bobzien and DiDonato 2007).

In addition to the Logging Project's substantial modification of CLRF habitat, timber harvesting activities is reasonably certain to result in direct take by killing or injuring individual CLRFs. The Logging Project would utilize various forms of heavy equipment to remove trees and develop a network of haul roads and skid trails in the Site. Water drafting would also occur at multiple water holes and gravel holes within or near the Site. The Dogwood THP explicitly acknowledges the following biological impacts: "disturbance of animal species in the summer time through logging and trucking activity [and] . . . directly killing certain slow moving or non-mobile plant and animal species through falling, skidding, logging, trucking and road building activities." THP § 4, p. 146.

These activities are reasonably certain to result in the direct take of CRLF, which are relatively slow moving and, during certain times of the year, stationary. CRLF forage in both riparian areas and upland areas during the April to November period of active timber operations. CRLF are particularly susceptible to direct physical harm in upland areas during the dry season—the primary period for timber harvesting operations—when CRLF commonly reside in mammal burrows. CRLF at the Site are reasonably certain to go undetected under the Dogwood THP's lax survey requirements, and thus are reasonably certain to be crushed by heavy equipment use.

Given the variety of CRLF movement behaviors, without a 1-mile buffer radius around all aquatic habitats encompassed within the boundaries of the Dogwood THP—which is not part of the Logging Project—CRLF are reasonably certain to be taken, including through killing, harming, and harassing.

C. Marbled Murrelet and Northern Spotted Owl Habitat Modification

The Logging Project would substantially modify the mature, late-seral redwood forests inhabited by the marbled murrelet and northern spotted owl by removing many of the century-old trees that comprise that forest type. Disturbances to the Site from timber operations, including tree felling and removal, slash piling and removal, and road construction and maintenance, would result in further persistent impacts to marbled murrelet and northern spotted owl habitat. Both bird species rely on continuous, mature redwood stands for breeding, feeding, sheltering, and other key behavioral patterns.

a. Loss of nesting sites is reasonably certain to result in take of marbled murrelets

In 1992, marbled murrelets in Oregon, Washington, and California were listed as a threatened species because of "the loss and modification of nesting habitat (in older

forests) primarily due to commercial timber harvesting." 57 Fed. Reg. at 45,328. "The principal factor affecting marbled murrelets in the three-state area, and the main cause of population decline has been the loss of older forests and associated nest sites." *Id.* at 45,330.

When marbled murrelets nest, they have high "site fidelity," meaning they return again and again to the same forest stand and even the same nest tree. Nesting occurs between mid-April and September, and nests can be as far as 50 miles from the ocean. 57 Fed. Reg. at 45,328-29. Female murrelets lay a single egg, and the male and female take shifts incubating the egg while the other bird flies back and forth to the ocean to feed. *Id.* at 45,329. The adults feed the chick at least once per day, carrying food back from the ocean. *Id.*

The Site's large stands of mature trees, with low amounts of edge habitat, reduced habitat fragmentation, and proximity to the marine environment are particularly suitable for marbled murrelet nesting during their breeding season. In addition, mature redwoods provide natural platforms on which marbled murrelets are able to lay their eggs.

Marbled murrelets have been observed in the Gualala River watershed. Yet, the entirety of the Site has not been surveyed for marbled murrelets in recent years, and the THP relies on a number of incomplete previous surveys associated with previous THPs for other logging projects. It is, thus, reasonably certain that the Logging Project would result in take of marbled murrelets through the destruction and loss of nesting sites.

b. Loss of nesting sites is reasonably certain to result in take of northern spotted owls

The northern spotted owl similarly relies on older forest habitats containing mature trees for nesting and roosting. Mature trees have the arboreal structures and characteristics necessary for the owls' nesting and roosting. FWS Northern Spotted Owl Recovery Plan (2011). Northern spotted owls have been observed nesting in the Gualala River watershed. Thus, the Logging Project is reasonably certain to remove northern spotted owl nesting and roosting sites, thus constituting a take of this species through harm and harassment.

Maintaining northern spotted owl nesting and roosting quality also reduces territorial displacement by invasive barred owls. FWS Northern Spotted Owl Recovery Plan (2011). The Logging Project is reasonably certain to reduce northern spotted owl nesting and roosting quality, thus exacerbating displacement by invasive barred owls and constituting a take of these animals, including through harm and harassment.

c. Forest fragmentation and reduction of stand density is reasonably certain to result in take of marbled murrelets

Marbled murrelets are significantly impacted by forest fragmentation. 57 Fed. Reg. at 45,329 ("[s]tand size is also an important factor for marbled murrelets"). Marbled

murrelets depend on large blocks of "interior habitat"—habitat away from forest edges—for protection from predators, changes in microclimate, and windthrow of nest trees. 76 Fed. Reg. 61,604 (Oct. 5, 2011); 75 Fed. Reg. at 3425 (nesting habitat is "positively associated with the presence and abundance of mature and old-growth forests, large core areas of old-growth, low amounts of edge habitat, reduced habitat fragmentation, proximity to the marine environment, and forests that are increasing in stand age and height").

Fragmentation from logging reduces the interior habitat, increases the amount of forest edge, and isolates remaining habitat patches. FWS, Marbled Murrelet Five-Year Status Review (2009), p. 30. Impacts from habitat fragmentation include "effects on population viability and size, local or regional extinctions, displacement, fewer nesting attempts, failure to breed, reduced fecundity, reduced nest abundance, lower nest success, increased predation and parasitism rates, crowding in remaining patches, and reductions in adult survival." *Id.* at 29. Predation and nest failure are major threats to marbled murrelets. *See* 75 Fed. Reg. at 3432 ("Nest failure rates of 68 to 100 percent due to predation in real nests, and 81 to 95 percent in artificial nests have been reported"). Murrelet predation "increases with the fragmentation of older-aged forests" and nest success "is lower in small forest fragments." 57 Fed. Reg. at 45,334 (internal citations omitted). Due to these risks, it is imperative that marbled murrelet habitat is maintained "in relatively large contiguous blocks." USFWS, Marbled Murrelet Recovery Plan (1997), p.50. The reduction of stand density from the removal of mature trees is reasonably certain to have similar detrimental effects on marbled murrelets by decreasing overall stand age, causing loss of suitable nesting sites, changing microclimates, and increasing predation.

The Logging Project would increase forest fragmentation and reduce stand density at the Site, and so is reasonably certain to result in the impacts described above, including increased predation, causing the take of this threatened bird species through killing, harm, and harassment.

d. Reduction of forest density and logging activity disturbances are reasonably certain to result in take of northern spotted owls

Continuous stands of mature forest also provide quality nesting, roosting, and foraging habitat for northern spotted owl (Sovern et al., 2015; Dugger et al., 2016). Northern spotted owl rely foraging habitat created by dense stands of mature trees, which harbor the complex understory vegetation conducive to northern spotted owl prey species, including rodents. The Logging Project would reduce the canopy density of the mature forest and result in the removal of understory vegetation. These effects are reasonably certain to reduce prey availability to northern spotted owl and cause take through harm and harassment.

Additionally, by providing healthy habitat for northern spotted owls, maintaining continuous stands of mature forest moderates their displacement by the invasive barred owl. (Sovern et al., 2015; Dugger et al., 2016). Conversely, the fragmentation of older

forests exacerbates the threat posed by barred owl invasion into forests once occupied by northern spotted owl (Dugger et al. 2011). Researchers have found a direct correlation between the likelihood of barred owl invasion of spotted owl territories and the lack of older forest. *Id.* The Logging Project, by increasing forest fragmentation, is reasonably certain to increase barred owl invasion and result in the take of northern spotted owl through killing, harm, and harassment.

e. Direct take of marbled murrelet and northern spotted owls

Marbled murrelet nesting between mid-April and September directly coincides with planned active timber operations. Thus, it is reasonably certain that the Logging Project will "harm" (actually injure or kill) murrelet fledglings not yet old enough to fly by felling trees they are residing in, thus resulting in the direct take of individual marbled murrelets.

Northern spotted owl nesting also coincides with planned active timber operations. Females typically lay eggs in late March or April, and juveniles leave the nest in late May or June, though juveniles are dependent on their parents until September when they are able to fly and hunt on their own. FWS Northern Spotted Owl Recovery Plan (2011). Thus, it is also reasonably certain that felling trees home to owl fledglings not yet old enough to fly will actually injure or kill them, resulting in direct take.

f. Harassment of Threatened Bird Species

The Logging Project is also reasonably certain to "harass" both marbled murrelets and northern spotted owls. FWS defines "harass" as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." 50 C.F.R. § 17.3. The Logging Project will cause significant noise and physical disturbances, resulting in poorer nesting, roosting, and foraging habitat for the northern spotted owl, thereby constituting a take through harm and harassment. Similar results are negative repercussions are also reasonably certain to occur for marbled murrelets. These effects are reasonably certain to disrupt normal behavior patterns of these species. *See, e.g., Marbled Murrelet v. Pacific Lumber Co.*, 880 F. Supp. 1343, 1367 (N.D. Cal. 1995) (timber harvesting during breeding season could "harass" marbled murrelets by "annoying them to such an extent that it will significantly disrupt their normal behavior patterns").

IV. Conclusion

GRT's anticipated activities are reasonably certain to result in unlawful take of the Listed Species. By authorizing the Logging Project, CalFire is also liable for the unlawful take. This notice therefor provides the grounds upon which the Parties may file suit. Following the close of the 60-day notice period, the Parties intend, to file a citizen suit against you under Section 11 of the Endangered Species Act for these and any and all similar violations, through which we will seek declaratory and injunctive relief, as well as fees

and costs.

The Parties remain willing to discuss settlement terms and effective remedies for the violations in this letter during the 60-day notice period. If you wish to pursue such discussions in the absence of litigation, please contact me.

Sincerely,

STUART G. GROSS

cc: Tim S. Kline

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