

Protect Lake Almanor

February 2, 2021

Plumas County Board of Supervisors
Court House, Third Floor
520 Main Street
Quincy, CA 95971

This letter is a follow up to conversations with Plumas County Supervisors and officials of the County. On June 9, 2020 and July 7, 2020, The Plumas County Board wrote the State Water Resources Control Board offering "unequivocal support" for withdrawing 250 cubic feet per second of cold water, ostensibly to cool water 30 miles downstream, from the Canyon Dam Intake Tower (Alternative 3) in accordance with the SWRCB's draft Clean Water Act Certification of PG&E's license renewal. This matter has been sitting with the SWRCB for 16 years. This cold-water withdrawal is specified to take place during the period from June 16 to September 15 each year, the most critical period in the health of the water quality and fisheries of Lake Almanor and Butt Valley Reservoir.

The aforementioned letters are in direct conflict with all studies, science and recommendations, including the Plumas County General Plan, that have been developed during the past 25 years. As recently as this fall and winter, PG&E reiterated, point by point, why the SWRCB "Certification Conditions" are incorrect nearly in their entirety and damaging to Plumas County resources, economy and its citizens.

We leave you to review separately PG&E's most recent attempts to shed light on the fractured science behind the "Certification" attempt (PG&E's letters to Federal Energy Commission of October 21, 2020 and December 4, 2020).

In the following and in the Exhibits attached you will find information that apparently was not brought to your attention before accepting the recommendations to sign the two letters offering the Board of Supervisors' "unequivocally support" for the adoption of the final Certification by the SWRCB of Alternative 3. (Note that additional clarification of each of these points and more information is contained in **Exhibits A-D**):

- **No study has supported the draining of Lake Almanor cold water to cool the RC-C Reach**
 - No evidence has been submitted that release of water from Lake Almanor was the best method to enhance the fishery at the Rock Creek Cresta reach nearly 30 miles below Lake Almanor or that any cost-effective method was available, except the Fishery Enhancement Mitigation Fund.
 - Although the claimed purpose for releasing the huge quantity of water from Canyon Dam is to cool the temperature of the water in the Rock Creek-Cresta reach, by 1-2 degrees to improve the fishery in the summer, all evidence is to the contrary.
 - As early as 1996, during Licensing of Rock Creek-Cresta, project License 1962, the FERC Notice of Availability of Draft Assessment – November 1, 1996 declared that "...PG&E and CDFG have separately concluded that equal or greater protection and enhancement of NFFR fishery resources would result if PG&E provides funds for fishery enhancement projects.... Therefore, CDFG and PG&E have agreed to amend the Agreement by deleting the requirement to modify the Prattville intake structure...". Two notes regarding this statement:
 - This is the same department, CDFG with a changed name, now CDFW, that recently wrote FERC supporting the Conditions imposed by the SWRCB. A complete reversal

after signing the Rock Creek-Cresta Agreement. Note that Settlement Agreements require concurrence of all parties to meet and amend the terms. This, unfortunately, is an indicator of whether the State feels bound by their agreements and applies directly to the County Counsel assertions the SWRCB had protections in the "Conditions".

- In compliance with the Rock Creek-Cresta Agreement, PG&E established the "Coldwater Habitat and Fishery Mitigation and Enhancement Fund" with an initial commitment of \$5,000,000.
 - In other declarations since 1996, both FERC and PG&E have declared that the installation of the Thermal Curtain, or "funding other structures for cooling the waters", in addition to the \$5,000,000 funding mentioned above, are recommendations they would not support. (FERC Draft EIR of 2004, page 361). FERC has also deemed that any temperature protection of cold-water habitat would have to be "reasonably" done,.
 - Numerous studies funded by PG&E have found no reasonably cost-effective alternatives (Rock Creek-Cresta Project FERC19622005 Final Report, PG&E) In the next section, the Stetson Report will show just how unreasonable the cost for Alternative would be.
- **The Cost is unreasonable by any standards:**
 - Stetson Engineers, in 2009, prepared a study for the SWRCB titled "*Level 3 Report*". In that report Stetson described the cost of Alternative 3 upon which the SWRCB based their "Conditions" for the Certification. The costs shown for the Alternative 3, added to the costs already agreed to in the Settlement Agreement ("*Present Day*" in Stetson Table ES-3)) defy the imagination for irresponsible, wasteful spending by a government agency.
 - The Settlement Agreement in 2004 contained a table for future releases at Canyon Dam (see **Exhibit C, Table A1**) which at that time were not specific regarding the real cost of structure modifications and lost generation. Those costs were later identified in the *Stetson Report* (page E-15).
 - Cost to implement the Settlement Agreement releases: (**Exhibit B - Table ES-3 "Present Day"**); which we note are releases which in volume are substantial increases to streamflow
 - \$4,894,000 for modifications to the Canyon Dam Intake Tower
 - Annual amortized cost \$601,000
 - \$24,000 for annual operations and maintenance
 - 47,940,000 kilowatt hours if lost generation each year (enough to provide electricity for over 8,500 residences annually at California averages)
 - \$3,116,000 cost of lost KWH at 2009 calculations
 - Total Cost, in 2009 dollars of \$3,741,000 or, over the life of the license - **\$187,050,000 (escalated at 2% = \$316,411,500)**.
 - Cost to implement the Condition 6, in the SWRCB's attempted Certification, releasing 250cfs during summer months: (**Exhibit B - Table ES-3 Alt. 3 "Modify Canyon Dam...."**)
 - The modifications to the intake tower already would be in place as part of the Settlement Agreement releases
 - 39,600,000 KWH of lost generation (enough to provide electricity for over 7,000 residences)

This communication is directed at the Plumas County Board of Supervisors in an attempt to convince them to reconsider their support for the extremely damaging "Condition 6" and all of the other Conditions in the misguided attempt at issuing a Clean Water Certification.

Given the long delay in the SWRCB taking appropriate action and especially the change in personnel at the County level it is understandable that much information was lost or overlooked in considering the SWRCB proposals. Your support of the costs and damages possible to Lake Almanor by offering "unequivocal support" to the SWRCB will not fare well in the Lake Almanor community and beyond. This is the time to correct this oversight, especially if legal action follows a FERC issuance of license without the SWRCB "Conditions" and the issue becomes highly publicized.

Sincerely,

William N. Dennison

William Dennison, Former District 3 Supervisor and Chairperson Plumas County 2105 Committee

Dr. Gina Johnston by *William N. Dennison*

Dr. Gina Johnston, Retired California State University Chico/LAWG Water Quality Studies 2009-20

Aaron Seandel

Aaron Seandel, Former member of Plumas County 2105 Committee

Michael Willhoit

Michael Willhoit, Former member of Plumas County 2105 Committee

Dale Knudsen

Dale Knudsen, Former member of Plumas County 2105 Committee

Robert L. Lambert

Robert Lambert, Former member of Plumas County 2105 Committee/Retired Hydro Engineer

Dennis Williams

Dennis Williams, Former Superintendent of Schools, Plumas County

Susan Bryner

Susan Bryner, President of Lake Almanor Chamber of Commerce

Tom McGowan

Tom McGowan, Chair, Plumas County Planning Commission

Exhibit A

Feb. 2, 2021

Lake Almanor and the North Fork of the Feather River – Project 2105.

Proposal to damage Lake Almanor water quality, fisheries and local economy by California State Water Resources Control Board.

The entire process of justifying taking cold water from Lake Almanor to cool the Rock Creek-Cresta reaches of the North Fork of the Feather River was based on a specious construction of “facts”.

- Removing cold water from Lake Almanor was an issue in 1996 during the Re-licensing negotiations for Rock Creek/Cresta power systems (Project 1962). Simultaneously, fisheries experts told the parties that habitat, not water temperature, was the problem and that is what should be addressed. Below are supporting documents and studies that refute the premise of experimenting with the water quality and fish habitat of Lake Almanor to “benefit” downstream waters.

Following are some, but not all, of the comments contrary to the support of cold-water withdrawal from Lake Almanor regarding the downstream temperature.

- **FERC Notice of Availability of Draft Assessment** – dated November 1, 1996, *“Based on the results of physical model studies and their projected temperature benefits, PG&E and CDFG have separately concluded that equal or greater protection and enhancement of NFFR fisher resources would result if PG&E provides funds for fishery enhancement projects ...Therefore, CDFG and PG&E have agreed to amend the Agreement by deleting the requirement to modify the Prattville intake structure...”* .
- PG&E, under Settlement Agreement 1962 established the **“Coldwater Habitat and Fishery Mitigation and Enhancement Fund”** with an initial commitment of \$5,000,000 .
- **FERC’s Draft EIR for 2105** in 2004 (page 361) said, *“We do not adopt Interiors recommendation to develop a water temperature management plan, fund and construct a modified Prattville intake, and fund other structure(s) to satisfy appropriate water temperature criteria beyond that provided by the Coldwater Habitat and Fishery Mitigation and Enhancement Fund under the relicensing SA for the Rock Creek-Cresta Project”... .*
- **Rock Creek-Cresta Project, FERC Project No. 1962 License Condition 4D...Additional Reasonable Water Temperature Control Measures, July 2005** – PG&E commissioned a multi-million-dollar study of all 24 alternatives put forth to lower the temperature of the Rock Creek-Cresta reaches. The conclusion with regard to withdrawing water from the Canyon Dam intake was summarized as, *“The overall benefits of such modest gains in trout habitat are expected to be very limited and not measurable given natural fish population variability. Also, this alternative has a potential for*

having a corresponding effect of reducing cold water fish habitat in Lake Almanor... . All of the alternatives identified and evaluated have substantial costs in the range of tens of millions of dollars which, if implemented, would likely be borne by Licensee's electric customers".

- Lorena Gorbet, representing the Mountain Maidu spoke on several occasions of the need to do river and creek reclamation in the tributaries to return them to their natural state and thus lower water temperatures and make suitable habitat for salmonids on the hottest days. The Maidu, having acquired the Humbug Valley/Yellow Creek lands through the Pacific Lands and Forest Stewardship resulting from PG&E's bankruptcy settlement have embarked on such a demonstration project.
SWRCB was mute on all proposals to lower water temperatures naturally using environmentally friendly techniques.
- **Project 1962 FERC license Condition No. 4** reads,
"In order to reasonable protect cold freshwater habitat, Licensee shall maintain daily temperatures of 20 degrees Celsius or less in the Rock Creek and Cresta Reaches, to the extent that Licensee can reasonably (underlines added)_do so".
In the same document the statement was made that the Thermal Curtain was not cost-effective. Even the Canyon Dam alternative exceeds the 2004 cost-effectiveness cited in the Draft EIR cited above.

Failing to find clear historical or scientific backing for a lower temperature in the Rock Creek-Cresta reaches, the SWRCB embarked in a different direction in 2006 – reclassifying the UNFFR as a "temperature impaired body of water" using the 2006 federal Clean Water Act Section 303(d) List of Water Quality Limited Segments For California.

- Work papers for this effort used some curious reasoning. First, this term appears frequently, *"In the absence of necessary data to interpret numeric water quality objectives, recent temperature monitoring data shall be compared to the temperature requirements for aquatic life in the water segment. In many cases, fisheries, particularly salmonid, represent the beneficial uses".* Essentially, the claim was that if the salmonids were in the habitat, the historical record must show that the water was colder; completely ignoring history, the fact that the fish naturally sought colder water during heat spells in the colder tributaries and that railroad and highway alterations to the culverts, as well as blocked migration structures related to the former, were factors altering the health of the salmonids.
Finally, SWRCB summed up this line of logic with weak evidence: two photographs with one being a 1911 trout catch in baskets and the second of two Maidu women with a string of ("probably") several trout, this from 1915.
- **Association of California Water Agencies** – October 20, 2006 expressed concern about *"the inadequate justification for a proposed listing from temperature impairment on the North Feather River"*. It also challenged the agency regarding the propriety of the SWRCB using instantaneous daily maximum temperature exceedances as the basis for temperature listing.
- **California Regional Water Quality Control Board, Central Valley Region (their own agency)** - in a letter of December 1, 2005 from the Assistant Executive Officer provided three pages of

reasons why the UNFFR should not be listed as a temperature impaired water, concluding with this paragraph,

"In conclusion, we do not support 303(d) temperature listing for the NF Feather River based on information we have (including information referenced in the two-page listing summary). We request that you include this letter with your comments to SWRCB on the current proposed listings."

SWRCB then proceeded to list the NFFR as temperature impaired without historical or scientific support. From that point a 14-year delay in the Project 2105 license continued without justification.

Damage to the water quality and fisheries of Lake Almanor and Butt Reservoir has always been in the forefront of the many studies done regarding withdrawing cold water from Lake Almanor.

- **A. Jacob Odgaard, University of Iowa professor**, head of the team that conducted the Thermal Curtain modeling, said in an interview that, "continuous withdrawal of only cold water could deplete that lake's cold-water supply, resulting in damage to the lake habitat". This was at the very start of the examination of Thermal Curtains.
- **Prattville Intake Modification and Potential Impact to Lake Almanor Fishery Study – Thomas R. Payne and Associates 2004** - summarized water withdrawal through Thermal Curtains... *"Seven percent of the Lake was suitable for salmonids without the curtain and 4% was simulated to have been suitable with a curtain. That is only a 3% difference when compared to the whole lake volume, but a 38% reduction in available salmonid habitat with a curtain as opposed to without the curtain". ... "For August 7, 2000 this method yielded no simulated suitable habitat using the criteria of less than or equal to 20 degrees centigrade and DO concentrations greater than or equal to 5 mg/l under existing conditions."...
...*"The existing summertime conditions currently stress the salmonid populations".*
...*"Dead salmonids have been observed by SCUBA divers in the Big Spring area. Whether this was due to overcrowding during times of severe habitat reduction would require further investigation".**
- Later studies, Jones and Stokes, Stetson and others have all recognized the Thomas Payne report but with varying opinions on the severity of the damage to the habitat. None discounted the effect of cold-water withdrawal. All too often the solution for the "minimal damage" to Lake Almanor salmonids was to plant more fish to compensate for those killed in the process of making the downstream reach more healthy; not to prevent fish kill but to grow them larger.
- **Lake Almanor Watershed Group/Sierra Institute** – Has been conducting water quality sampling in Lake Almanor since 2009 under the direction of Dr. Gina Johnston. Dr. Johnston summarizes the current water quality situation and the prospects for safe water in Lake Almanor under Condition 6 of the SWRCB disputed order in her recent statement: "In the Draft Water Quality Certification for P, G & E, the California State Water Resources Control Board is allowing releases of 250 cfs from Canyon Dam at Lake Almanor from June 16 to September 16 to improve water temperature in the North Fork of the Feather River. The removal of cold water from the hypolimnion of Lake Almanor will have negative impacts on the habitat of cold-water fish. It may mix nutrients from the hypolimnion into the overlying metalimnion and promote

algal growth. It will result in the transport of metals and nutrients from the hypolimnion into the downstream waters of the North Fork Feather River. I have been conducting limnological studies of Lake Almanor since 2009. Our studies have shown that key water quality conditions at Lake Almanor have worsened compared to earlier studies. Thermal stratification is established earlier and persists longer. By August there is no oxygen in the hypolimnion and these anoxic conditions last until turnover in late September or early October. In drought years, anoxia will occur even earlier. There is no suitable habitat (in terms of temperature and oxygen) for cold-water fish species in the entire reservoir for most of the summer and early fall. The eastern basin is the only part of the reservoir with cold water and fish tend to congregate there as summer progresses. The removal of cold water from the reservoir from June – September will decrease an already scarce resource and may result in fish kills. Typically, nutrients accumulate in the hypolimnion during the summer, as they are released by decomposition and chemical reactions. Removal of water from the hypolimnion at the rate of 250 cfs will cause mixing of the hypolimnetic water with the overlying metalimnion. This will warm the hypolimnion (further decreasing fish habitat) and will transport nutrients higher in the water column. These conditions may encourage increased algal growth, particular blue-green species. Anoxic conditions allow for chemical reactions at the sediment-water interface to release metals and nutrients into the hypolimnion during the period of thermal stratification. The withdrawal of water from the hypolimnion will result in the transport of a “cocktail” of metals (we have detected elevated levels of aluminum, arsenic, copper, iron, manganese, mercury and zinc), as well as nitrogen and phosphorous compounds, to the Seneca Reach in the North Fork Feather River.

The action of SWRCB is resulting in the deterioration of water quality in Lake Almanor by decreasing cold-water fish habitat, disrupting thermal stratification and nutrient distribution and transporting metals and nutrients into the downstream water. No current data have been presented to show that water withdrawal from Lake Almanor will improve fish habitat in the Rock Creek or Cresta Reaches of the Feather River”. (Dr. Gina Johnston, Retired Professor at California State University, Chico).

This letter does not address the metrics of the environmental impact of replacing the foregone power generation with fossil fuel, the CO2 addition to the atmosphere or any costs attendant to that problem. However, in a State with problems currently meeting electric supply and capacity needs, the Conditions of this “Certification” are wildly irresponsible dictates.

In addition to the environmental impact of replacing hydro peaking power with fossil fuel is that the SWRCB’s proposed Certification is diametrically opposed to both AB 32 and the Plumas County General Plan’s “Climate Action Plan”.

The final result of the campaign to remove cold water from Lake Almanor was the disputed “401 Certification” issued by the SWRCB on July 15, 2020. The FERC granted PG&E a Waiver of certification on July 16, 2020. SWRCB appealed the Waiver, action which was denied because FERC took no action on the Appeal within 30 days.

FERC should eliminate the entire order to withdraw water from Canyon Dam and/or install Prattville Thermal Curtains on the basis of the

- Continued failure to show a historical or scientific foundation for cooling the Rock Creek- Cresta reaches;

- Lack of specific studies to determine the impact of the damage to the environment, lake and economy;
- Probable damage to Lake Almanor water quality, fishery and the local economy.
- Unreasonable cost - \$725,000,000, or more, over the life of the License is irresponsible;
- Contradiction to California Climate Action Plan (AB 32) and Plumas County General Plan 2035 (Climate Action Plan), adopted in 2013. Both aim to reduce fossil fuels and increase “green” energy specifically wind, solar and hydro.

We support Pacific Gas and Electric’s position that cold water not be removed from Lake Almanor via the Canyon Dam Intake beyond that measure agreed to in the Settlement Agreement of 2004.

We urge the FERC to issue the license promptly, 18 years have been more than enough time for the SWRCB to act responsibly.

LEVEL 3 REPORT

**ANALYSIS OF TEMPERATURE CONTROL ALTERNATIVES ADVANCED FROM LEVEL 2 DESIGNED TO
MEET WATER QUALITY REQUIREMENTS AND PROTECT COLD FRESHWATER HABITAT ALONG
THE NORTH FORK FEATHER RIVER**

Prepared For

State Water Resources Control Board

September 2009

Prepared By

Stetson Engineers, Inc.



Table ES-3 Estimated Costs of Level 3 Alternatives

Alternative	Measures	Capital Cost (\$)	Annualized Cost (\$/year)				
			Amortized Capital (50 years)	Annual O&M	Foregone Power Generation Loss		Total (\$/year)
					KWh × 10 ⁶ /year	\$/year	
Baseline	None	-	-	-	-	-	0
1) "Present Day"	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to Those Given in the Partial Settlement	4,894,000	601,000	24,000	47.94 ¹	3,116,000	3,741,000
3.) 2.) Alternative 3	Install Prattville Intake Thermal Curtain and Remove Submerged Levees	21,338,000	2,622,000	213,000	0.00	0	2,835,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 250 cfs (in July and August)	4,894,000	601,000	24,000	31.6 26.39 ²	1,715,000 1,715,000	2,340,000
	Total	34,952,000	4,295,000	324,000	74.33	4,831,000	9,450,000
Alternative 3x	Install Prattville Intake Thermal Curtain and Remove Submerged Levees	21,338,000	2,622,000	213,000	0.00	0	2,835,000
	Operate Caribou #1 PH Preferentially	0	0	0	11.32 ³	736,000	736,000
	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	79.17 ²	5,146,000	6,515,000
	Total	32,040,000	3,937,000	267,000	138.43	8,998,000	13,202,000
Alternative 4a	Install Prattville Intake Thermal Curtain	14,847,000	1,824,000	148,000	0.00	0	1,972,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
	Total	23,567,000	2,896,000	235,000	47.94	3,116,000	6,247,000
Alternative 4b	Install Prattville Intake Thermal Curtain	14,847,000	1,824,000	148,000	0.00	0	1,972,000
	Operate Caribou #1 PH Preferentially	0	0	0	13.91 ³	904,000	904,000
	Total	14,847,000	1,824,000	148,000	61.85	4,020,000	5,992,000
Alternative 4c	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	79.17 ²	5,146,000	6,515,000
	Operate Caribou #1 PH Preferentially	0	0	0	11.32 ³	736,000	736,000
	Total	10,702,000	1,315,000	54,000	138.43	8,998,000	10,367,000
Alternative 4d	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	79.17 ²	5,146,000	6,515,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
	Total	19,422,000	2,387,000	141,000	127.11	8,262,000	10,790,000

- 1) Foregone power generation loss is due to increased Canyon Dam releases to those given in the Partial Settlement and commensurate flow reductions through the Butt Valley, Caribou #1, and Caribou #2 PHs.
- 2) Additional foregone power generation loss is due to the increased Canyon Dam release in July and August under the alternative and commensurate flow reductions through the Butt Valley, Caribou #1, and Caribou #2 PHs.
- 3) Additional foregone power generation loss is due to the lower turbine efficiency of Caribou #1 PH relative to Caribou #2 PH (by about 15%).

1 **APPENDIX A. Protection, Mitigation, and Enhancement Measures**
 2 **Recommended to be Included in New Project License, Section 4(e)**
 3 **Conditions, and Other Mandatory License Conditions**

4
 5 **Section 1. Streamflow Management**

6
 7 **1. Minimum Streamflows.** For the preservation and improvement of aquatic resources
 8 in the Project area, Licensee shall maintain specified Minimum Streamflows and release
 9 Pulse Flows below Project dams as measured at gages NF-2 and NF-70 in accordance
 10 with the Tables A-1 and A-2 below. The Minimum Streamflows identified are minimum
 11 release requirements as per Paragraph 5. The Parties recognize that the SWRCB's 401
 12 Certification may adjust Table A-2 Streamflows in June through September to achieve
 13 water temperatures protective of cold, freshwater habitat, as determined to be under
 14 reasonable control of Project operation. Minimum Streamflows shall commence within
 15 60 days of the issuance of the New Project License, unless facility modifications are
 16 required.

17
 18 Table A-1. Releases from Canyon Dam

19

Water	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year Type												
CD	75	75	90	90	90	80	75	60	60	60	60	70
Dry	90	100	110	110	110	110	80	70	60	60	60	75
Normal	90	100	125	125	125	125	90	80	60	60	60	75
Wet	90	100	125	150	150	150	95	80	60	60	60	75

20
 21
 22 Table A-2. Releases from Belden Dam

23

Water	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year type												
CD	105	130	170	180	185	90	80	75	75	75	85	90
Dry	135	140	175	195	195	160	130	110	100	100	110	115
Normal	140	140	175	225	225	225	175	140	140	120	120	120
Wet	140	140	180	235	235	225	175	140	140	120	120	120

24
 25
 26 Where facility modification is required to implement the efficient release of Minimum
 27 Streamflows, the Licensee shall submit applications for permits within one year after
 28 issuance of the New Project License and complete such modifications as soon as

Multiple zoning districts may be consistent with a single General Plan land use classification, as long as the densities and unit types allowed within each zoning district are also permitted in the relevant General Plan category.

B. Spatial Patterns

The Zoning Map should reflect the general pattern of land use depicted on the General Plan Diagram. However, the two need not be identical. The boundaries of land use classifications represented on the Land Use Map are generalized; boundaries on the Zoning Map are usually more precise and parcel-specific.

C. Timing

California State law allows a “reasonable amount of time” for reconciling any inconsistencies between the Zoning Ordinance and the General Plan (See Government Code Section 65860).

Climate Change and the General Plan

Climate change may be one of the greatest challenges facing the Sierra Nevada region in the coming decades. The potential changes will pose challenges to the environment, economies and communities. These challenges have become an increasing concern in California, the nation, and the world. Climate change is presently thought to be both naturally occurring and induced by increases in the amounts of carbon dioxide (CO₂) and other GHGs in the earth’s atmosphere, attributable to the burning of fossil fuels. Evidence has been steadily growing that human activities have helped speed and magnify changes in the global climate. The burning of fossil fuels, mostly coal and oil, is the primary manmade cause of GHGs, a fact that has led to calls for increased energy efficiency and use of renewable sources of energy. Since 2005, there have been a number of legislative changes that cover GHG impacts from land use planning decisions.

- Governor Schwarzenegger issued Executive Order **S-3-05** in June 2005, setting GHG emission targets for the State to meet, starting with a reduction to 2000 GHG emission levels by 2010, 10% below 1990 levels by 2020 and concluding with a reduction to 80% below 1990 numbers by 2050. This order directed the California Environmental Protection Agency (CAL EPA), Business, Transportation and Housing Agency, California Air Resources Board (CARB), the California Energy Commission, and the Public Utilities Commission (PUC) to work together to develop a Climate Action Plan and report back on progress on meeting the Statewide targets.
- In 2006, Governor Schwarzenegger signed **AB 32**, which established the first set of limits on GHG emissions for the state of California and put into place the regulatory framework needed to reach those targets. AB 32 set the 10% below 1990 GHG emissions level as a target to be achieved by 2020. In order to meet this goal, the California Air Resources Board has developed GHG emissions reporting procedures.
- In 2008, Governor Schwarzenegger signed **SB 375**, which sets out planning concepts intended to reduce vehicle travel by promoting more compact development; ideas which are incorporated in this General Plan. A goal of SB 375 is to help curb GHG emissions. Taken together, both S-3-05 and AB 32 set the emission targets that Plumas County will eventually be required to attain. While explicit thresholds and requirements have yet to be developed, various state agencies have begun to examine proposed land use plans and specific projects for their potential GHG impacts. Three important steps in helping to reduce potential climate change impacts are the creation of an inventory of existing GHGs and a plan to reduce these emissions.

Step 1: GHG Inventory

A GHG inventory will provide the County with the tools to better understand the level of GHGs that are currently being emitted, where these emissions come from, and how they are projected to increase over time. To calculate the level of GHGs a community emits within a given year, data on source production is collected and converted into an equivalent of CO₂. This provides a baseline against which the County can track its progress on lowering GHG emissions. Additionally, by taking into account population and job growth rates, an agency can predict what its GHG emissions will be in the future.

Step 2: GHG Reduction Plan

A GHG Reduction Plan (GHGRP) or Climate Action Plan (CAP) identifies ways in which a city, county, or community can reduce GHG emissions and addresses adaptation to the inevitable effects of climate change. A typical target for a Climate Action Plan is a 15% reduction below 2005 levels by 2020. A Climate Action Plan outlines transportation, land use, energy use, and waste production measures to achieve its target and proposes a timeline for implementation. Climate Action Plans are becoming increasingly popular as a way to spread awareness of climate change, to reduce an area's impact on the environment, and to save money on energy bills. Additionally, when referenced in general plans and environmental documents, Climate Action Plans signify a public agency's efforts to combat climate change.

Step 3: Develop a Strategy for Carbon Sequestration.

Beyond reducing emissions of GHGs, Plumas County's extensive forests will play a role in combating climate change by sequestering carbon—the CO₂ created by the burning of fossil fuels is turned into the structure of the trees themselves and removed from the atmosphere. A report by the United States Department of Agriculture says of forests:

“Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth.”

Directing new growth into established towns and communities where opportunities for increasing bike, pedestrian and transit systems where they are more appropriate and realistic, will help lower transportation related GHG emissions. Improving building energy efficiency standards and promoting the use of renewable sources including wind, solar, hydropower, and geothermal will lower emissions as well as consumption of fossil fuels in the County as a whole.

Planning for climate change provides strategies that can also address other issues that affect community livability and sustainability. With rising energy and fuel costs, plans that direct more compact patterns of development, which encourages and facilitates the placement of employment in close proximity to housing, can significantly reduce miles traveled to work, reducing personal transportation costs and public infrastructure costs. A plan that supports and facilitates locally grown and processed meats and produce can provide less expensive and healthier food options that don't carry the typical associated transportation costs.

NOT RECOMMENDABLE WITH FOSSIL

CONDITION 6. Water Temperature Management Program

6(A) Canyon Dam Supplemental Flows

Within 60 days of license issuance, the Licensee shall operate Canyon Dam releases to prevent the mean daily water temperature¹³ of the North Fork Feather River from exceeding 20°C, as measured at Gage NF-57 (USGS Gage No. 11403200), from June 16 through September 15. The Licensee shall release supplemental flows up to a total release of 250 cfs from the low-level Canyon Dam outlet to reduce water temperature. The total release includes the supplemental flows for river temperature reduction required in this condition and the MIFs outlined in Table 2. To the extent feasible, the Licensee shall initiate Canyon Dam releases from the low-level Canyon Dam outlet prior to, and in all cases no later than within 24 hours of an exceedance of 20°C mean daily water temperature at Gage NF-57 (between June 16 – September 15). Releases from the Canyon Dam outlet shall be implemented in compliance with Ramping Rates (Condition 2). Temporary modifications of the supplemental flows are subject to the same requirements listed in Condition 1(E) and 1(F).

6(B) Supplemental Flow Reductions

If reliable information¹⁴ such as the monitoring results from Condition 7 (Water Quality or Condition 8 (Lake Almanor Fishery) indicates that continued release of supplemental flows may adversely affect the Lake Almanor fishery, the Deputy Director may decrease or suspend the supplemental flows, or require the Licensee to initiate consultation with the Forest Service, CDFW, USFWS, Plumas County, and State Water Board staff to determine if a decrease or suspension of the supplemental flows is necessary to reasonably protect the cold freshwater beneficial uses of Lake Almanor and the North Fork Feather River, and determine what, if any, adjustments are necessary.

The Deputy Director will **promptly** review any recommendation to evaluate, decrease, or suspend supplemental flows that is submitted by a resource or local agency and supported by adequate documentation.

Within six months of initiating consultation or any other time frame specified by the Deputy Director, the Licensee shall submit to the Deputy Director: documentation of consultation; a recommendation regarding the need for a modification of the existing supplemental flows; the consulting agencies' comments and recommendations; and a description of how the recommendation incorporates or addresses the comments and recommendations.

The Licensee shall file with FERC the Deputy Director-approved decreases in or suspension of the supplemental flows or other actions. The Licensee shall implement

¹³ Mean daily water temperature is the average of the incremental readings of instantaneous water temperature from midnight (12:00 AM) of one day to midnight (12:00 AM) of the next day.

¹⁴ Such reliable information may include, but is not limited to, evidence of a fish kill or evidence of a significant reduction in suitable habitat likely to adversely affect fishery resources.

the decreases in or suspension of supplemental flows or other actions upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

6(C) Fishery Performance Goals

Within two years of license issuance, the Licensee shall develop a Fisheries Goals Report in consultation with Forest Service, CDFW, USFWS, and State Water Board staff and submit it to the Deputy Director for review and approval.

The Fisheries Goals Report shall identify fishery performance metrics (e.g., total abundance, density, age composition, spatial distribution, seasonal survival, etc.) for the North Fork Feather River that are specific, measurable, attainable with improved habitat conditions, and time-bound, which can be used to assess whether the supplemental flows are effectively controlling temperature and providing reasonable protection to cold freshwater species.

The Licensee shall include with the Fisheries Goals Report: documentation of consultation; comments and recommendations made in connection with the Fisheries Goals Report; and a description of how the Fisheries Goals Report incorporates or addresses the comments and recommendations. The Deputy Director may require modifications as part of any approval.

The Licensee shall file with FERC the Deputy Director-approved Fisheries Goals Report and any approved amendments thereto.

6(D) Feather River Temperature Contingency Plan

If at any time the Deputy Director determines and notifies the Licensee that the supplemental flows are insufficient to achieve the goals in the Fisheries Goals Report, the Licensee shall develop a Feather River Temperature Contingency Plan (Contingency Plan) in consultation with the Forest Service, CDFW, USFWS, Plumas County, and State Water Board staff. The Licensee shall submit the Contingency Plan to the Executive Director for review and approval in accordance with the timeline established in the Deputy Director's notification.

The goal of the Contingency Plan is to identify action(s) for achieving the fisheries goals and improving habitat conditions altered by the diversion, storage, and use of water associated with Project operations. The Licensee shall evaluate a range of actions as part of the consultation including additional supplemental flows and installation of thermal curtains at the Prattville and Caribou intakes. The Licensee shall include with the Contingency Plan: documentation of consultation; comments and recommendations made in connection with the Contingency Plan; and a description of how the Contingency Plan incorporates or addresses the comments and recommendations.

Before taking action on the Contingency Plan, the Executive Director will provide public notice and an opportunity for comment. The Executive Director may approve the Contingency Plan, with or without conditions, or require the Licensee to evaluate or implement any other temperature control measures that the Executive Director determines are feasible, reasonable, and necessary to meet the fisheries goals. The Licensee shall file with FERC the Executive Director-approved Contingency Plan or any

other temperature control measures required by the Executive Director. The Licensee shall implement the Contingency Plan or other temperature control measures required by the Executive Director upon receipt of Executive Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 7. Water Quality

No later than one year following license issuance, the Licensee shall submit a Water Quality Monitoring Plan (Water Quality Plan) to the Deputy Director for review and approval. The Water Quality Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Plumas County, Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board), and State Water Board staff. Section 5 of Appendix A to the Settlement Agreement may serve as the basis for the Water Quality Plan.

At a minimum, the Water Quality Plan shall include:

1. (i) List of water quality parameters to be monitored that includes, but is not limited to: water temperature, dissolved oxygen, turbidity, and bacteria. The list shall also include current water quality objectives for the parameters as provided in the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (SR/SJR Basin Plan) (Central Valley Regional Water Board 2018) or amendments thereto;
2. (ii) Proposed monitoring plan, including monitoring locations with a map, sampling protocols, analytical methods, QA/QC procedures, and the schedule and frequency of monitoring;
3. (iii) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The Licensee shall propose any updates to the plan based on the monitoring results or new information related to water quality conditions in the watershed that may be impacted by Project operations. Reports shall include identification of any potential water quality concerns, as well as proposed actions to address any Project-related impacts. Reports shall be submitted to Forest Service, CDFW, Plumas County, USFWS, Central Valley Regional Water Board, and State Water Board staff; and
4. (iv) Documentation of consultation with Forest Service, CDFW, USFWS, Plumas County, Central Valley Regional Water Board, and State Water Board staff, comments and recommendations made in connection with the plan, and a description of how the plan incorporates or addresses the comments and recommendations.

The Deputy Director may require modifications to the plan as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Water Quality Plan, and any approved amendments thereto. The Deputy Director also may direct the Licensee to implement reasonable control measures to address water quality impacts associated with the Project, including but not limited to oxygenation in Lake Almanor if warranted based on water quality monitoring. The Licensee shall implement the Water Quality Plan and any other required measures upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 8. Lake Almanor Fishery

No later than one year following license issuance, the Licensee shall submit a Lake Almanor Fishery Monitoring Plan (Almanor Fish Monitoring Plan) to the Deputy Director for review and approval. The Almanor Fish Monitoring Plan shall be developed in consultation with the Forest Service, Plumas County, CDFW, USFWS, and State Water Board staff. The primary goal of the Almanor Fish Monitoring Plan shall be to monitor the health of Lake Almanor's fisheries. At a minimum, the Almanor Fish Monitoring Plan shall include:

1. (i) Types of monitoring that will be implemented in Lake Almanor, including but not limited to angler surveys, fish condition, and fish community composition. The plan shall describe who will conduct the monitoring and how it will be performed, including methods, QA/QC, frequency, and timing;
2. (ii) An annual evaluation of the monitoring data to determine, in consultation with CDFW, Forest Service, Plumas County, USFWS, and State Water Board staff, whether any changes to Lake Almanor's fish stocking program are necessary to ensure the Project's operations do not adversely affect Lake Almanor's fishery. The annual evaluation shall include a recommendation, if necessary, to fund additional stocking under Condition 12 (Fish Stocking);
3. (iii) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The Licensee shall propose any updates to the plan based on the monitoring results or new information related to fishery conditions in Lake Almanor that may be impacted by Project operations. Reports shall include identification of any potential fishery concerns, as well as proposed actions to address any Project-related impacts. Reports shall be submitted to Forest Service, Plumas County, CDFW, USFWS, and State Water Board staff; and
4. (iv) Documentation of consultation with the Forest Service, Plumas County, CDFW, USFWS, and State Water Board staff, comments and recommendations made in connection with the plan, and a description of how the plan incorporates or addresses the comments and recommendations.

The Deputy Director may require modifications as part of any approval. The Deputy Director also may direct the Licensee to implement measures to address impacts to Lake Almanor's fisheries associated with the Project. The Licensee shall file with FERC the Deputy Director-approved Almanor Fish Monitoring Plan, and any approved amendments thereto. The Licensee shall implement the Almanor Fish Monitoring Plan

and any other required measures upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requireme