

## Enclosure 2

### **Forest Service Comments on the FERC Draft Environmental Impact Statement (DEIS)**

The following comments, for the most part, reflect differences in interpretation of the Project record between the Forest Service (FS) and the FERC's DEIS, or are clarification of information we have previously submitted. For the sake of brevity and because the majority of FS concerns are addressed in the DEIS, we do not detail those areas of agreement in our response below.

Comments below are arranged and reference the corresponding text from the FERC Draft Environmental Impact Statement (DEIS) for ease in cross-referencing.

#### **IV. CONSULTATION AND COMPLIANCE**

##### **C. Mandatory Requirements**

##### **3) Section 4(e) Conditions**

Page 22, Preliminary License Condition (25):

The Forest Service is dropping this Preliminary License Condition and incorporating provisions for recreational summer Lake Britton elevations into the Recreation Management Plan Component of the Land and Habitat Management Plan License Condition.

Page NA: Change to FS Preliminary license conditions:

The Forest Service has eliminated and modified a number of license conditions from those in the October 2002 Preliminary 4(e) package. They are, with the exception of the one above, addressed under the corresponding text from the DEIS below.

#### **V. ENVIRONMENTAL ANALYSIS**

Page 31, Missing Study Results:

The FERC states, "Unless otherwise stated, the source of our information is the license application (PG&E 2001)." What's not addressed in this narrative (as discussed in our cover letter to this response) is that results from Project studies were not available to incorporate into the FERC's DEIS. This has created the following concerns for the Forest Service:

- Some of the data relied on by the FERC in the DEIS, such as the 1984 IFIM data, has since been **shown to be incorrect**. PG&E recalculated this data and provided the new results after completion of the FERC's DEIS. The Forest Service comments on this data set and other errors in Appendix A-3.

- Concurrently in this response we provide comments on individual components of PG&E's 2002 controlled flow studies. These studies are in various stages of completeness: from new draft studies being filed with FERC (to get them into the record for FERC's consideration) which have yet to incorporate interested party comments, to final draft studies in which interested parties comments have been incorporated, to studies which are not yet released for consideration.

## **C. Proposed Action and Action Alternatives**

### **1) Water Resources a. Affected Environment (Pages 34-75):**

Pages 41-42, Upstream Water Quantity:

The FERC acknowledges under "Scope of Cumulative Impact Analysis" (Page 33), in this section (in reference to DEIS pages 41-42), and additionally under "Water Use – Effects & Recommendations" (Page 80-82) that flow regimes adversely affect upstream consumptive water use. Although the Forest Service did not completely understand this relationship when first presented in the PRCT several years ago, it is now clear that the downstream Project has direct effects on upstream users in some years, primarily those users whose diversion agreements are tied directly to the release of Project waters at the Pit 3 dam. While there unquestionably are water rights issues tied to this situation over which neither the Forest Service nor the FERC has jurisdiction, there is also a water quantity issue that is directly affected by decisions made for this License. It is appropriate that the FERC has now recognized that tie in their DEIS, as discussed in this section.

It is important to understand the magnitude of the tie between upstream effects to water quantity and Project Operations from both an economic and environmental standpoint so that appropriate levels of mitigation can be developed in relicensing, as appropriate. Because the tie between the Project and upstream water availability was not clearly understood at the time of study development and data gathering several years ago, there is a void in the Project record. To assist in filling this void, representatives of Modoc County assembled environmental effects associated with this potential change in upstream water availability/quantity. We have provided their environmental submittal in our Appendix D-1 of this response. It is important to note that the additional environmental effects from loss of water to the upstream area in this report would only occur if any increases in instream flow are taken from upstream users. Stated differently, if PG&E were to take additional instream flows from power generation, this drop in water availability would not be passed on to upstream users. To address the potential economic effects to upstream water availability, PG&E contracted with Chico State University to complete an economic analysis. See the reference below under Page 80 of the DEIS for Forest Service comments on this report.

Page 36, 2<sup>nd</sup> to last sentence, Lake Britton drawdown:

FERC states “Typical Lake Britton drawdown due to peaking operations is 3 to 6 feet per day.” Since Lake Britton fluctuates on a weekly basis, we believe the FERC intended to state “per week” instead of “per day”.

Page 61, Nutrients:

In the discussion of 150 cfs flows improving water quality of Lake Britton, FERC reiterates states PG&E’s conclusion that short residence times inhibit nitrogen–fixing algae and that the high flushing rate also removes nutrients before they can be used for algal production. While the Forest Service agrees that the 150 cfs flow may have improved the water quality at Lake Britton, it has not eliminated the persistent algal bloom situation. There have been at least three algal blooms, the most recent of which was last summer (2002) since PG&E started releases in 1987. We support the FERC and the State Water Resources Control Board taking a closer look at this issue.

Page 71-75, Sediment Transport and Supply:

FERC claims that ‘The potential bedload transport capacity of the Pit River in the Pit 3 reach.... Still exceeds estimated bedload inputs by more than an order of magnitude. The Pit 3 reach continues to be sediment-supply limited.’ Further, it is stated that pre-project, gravel-sized sediments would have been likely to occur as patches in the lee of large boulders or other obstructions. Although rainbow trout can use tributaries to Project bypass reaches for spawning, the Forest Service considers observations such as the following by R2 (2003) as possibly significant: ‘It was concluded that R2 field crews would simply note if distinct spawning gravel patches were observed during habitat mapping (of the Pit River mainstem); none were noted so this is not discussed further in this document’(emphasis added).

This observation by R2, along with the discussion of spawning habitat found under DEIS Page reference 128 below provides to the Forest Service clear justification for adding gravels impounded by Project reservoirs. It may be true that there are sufficient trout (and other fish species) juveniles to fully seed existing adult habitat. Increases in Project instream releases, however, may create a condition where spawning gravel could be insufficient for the expected increase of adult biomass of trout, hardhead, and other fish species.

To provide a background overview of sediment supply and transport and storage dynamics in the Project bypassed reaches, the DEIS summarized results and conclusions contained in the original geomorphology report and its addendum (R2 Resource Consultants 2001; R2 Resource Consultants 2002). The DEIS was published March 2003 and therefore could not include a review of the gravel mobility study (R2 Resource Consultants 2003). As outlined in comments to the gravel mobility study (Smeltzer to Turner, April 25, 2003), results of the in-channel tracer gravel study, correctly interpreted, show that the previous geomorphology reports significantly overestimate both maximum particle size transported by various regulated flows, and average annual bedload sediment transport capacity of the Project bypass reaches.

For example, at pp. 71-75, the DEIS indicated that the existing base flows of 150-200 cfs are capable of mobilizing sand and small-gravel-sized material in the Pit 3, 4 and 5 bypass reaches. However, the gravel mobility study (R2 Resource Consultants 2003) showed that small-sized-gravel was not transported at 14 of the 17 sample sites during the August 2002 1,800-cfs test flow (Enclosure 3, Appendix A-1). Similarly, at pp. 71-75, the DEIS reproduced the original geomorphology report's conclusions that the potential bedload transport capacity under current regulated project operations exceeds the estimated current bedload supply by "more than an order of magnitude" in the Pit 3 reach, by "several orders of magnitude" in the Pit 4 reach, and by "almost double" in the Pit 5 reach. All of these overestimates of excess sediment transport capacity result from applying standard sediment transport equations that are inappropriate for the Pit River's relatively steep boulder bed dominated by large roughness elements. Yager et al. (2002) found that "predicting flow and sediment transport rates through steep channels is problematic.

Conventional transport equations, developed for lower-gradient reaches, typically over-predict sediment flux in these streams by *several orders of magnitude*. We hypothesize that current transport equations do not apply in steep, rough channels because 1) they do not account for stress borne by large, relatively immobile grains, 2) they do not differentiate between seasonally and rarely mobile sediment, and 3) they assume an unlimited sediment supply." [Emphasis added.]

FERC did not necessarily rely directly on this background information at pp. 71-75 in its analysis of the various proposed gravel augmentation programs (at pp. 134-136). The Forest Service calls attention to these overestimates simply to highlight that maximum mobile particle size and potential bedload sediment transport capacity estimates FERC reproduced as background material in the DEIS at pp. 72-75 cannot be relied upon directly for evaluating the probable efficacy and design of the various gravel augmentation measures that have been proposed for partially mitigating the Pit 3/4/5 Project's significant impact on bedload sediment supply to the three Pit River bypass reaches. The Forest Service provides specific comments to FERC's analysis of spawning gravel management at DEIS reference Page 134-136 below.

## **1) Water Resources b. Environmental Effects & Recommendations (Pages 75-94):**

Page 80, 1<sup>st</sup> two paragraphs, Providing Instream Flows:

FERC discusses three ways in which PG&E could provide flows to meet new proposed instream flow requirements: 1) decreased generation, 2) increase flows by exercising upstream senior water rights, and 3) combination of the first two. FERC goes on to assume the first approach (i.e. reduced generation) would be taken by PG&E. While the Forest Service strongly prefers the FERC's approach, PG&E has been very forthright in collaborative discussions stating that they must exercise their upstream water rights so that they are not lost through non-use. This is a **critical** point of distinction. IF PG&E reduces power generation during periods of greatest impact to upstream diverters, the upstream **water availability** issue could be eliminated from this relicensing. (There

would remain a separate, longstanding, **water rights** issue beyond the scope of this relicensing). The Forest Service does not have the authority to require that PG&E reduce generation.

Page 80, 3<sup>rd</sup> paragraph, Upstream Economic Effect:

In the cover letter to this response the Forest Service outlined key points and a discussion of upstream water availability, which is a large and complex issue. Although there is a longstanding water rights issue underlying this issue that cannot be resolved through relicensing, the relicensing itself is exacerbating the water availability issue. The three sides of this issue are:

- Loss of water to upstream water diverters will have consequent economic and environmental effects to these parties as well as to their communities and surrounding lands.
- Loss of water to downstream aquatic resources will continue environmental degradation induced by Project facilities for another 30-50 year license term which is counter to resource mandates (FPA, NEPA, ECPA) and Forest Comprehensive Plans.
- Loss of water from power generation has the potential to affect the availability of electricity to the power grid and to increase costs passed on to ratepayers.

Currently water in the Pit River Project is utilized in the following manner (percentages are based on average unimpaired annual flow in the Pit 5 reach of 2,400,000 ac-ft per year calculated from synthetic unimpaired data provided by PG&E for the Pit 5 reach).

- Upstream agriculture diverts 20,000-140,000 acre feet/year above the project or 0.8% to 5.8% of total flows.
- PG&E average power generation use is 2,000,000 acre feet/year or 83% of the total flows.
- Current bypass flows of 150 cfs (108,000 acre/feet per year) for resources or 4.5% of flows.

Clearly this could become a “win-lose” situation if not adequately addressed. The Forest Service proposes one or a combination of the following: 1) Separate the upstream water availability issue from relicensing via an agreement that would not require increases in instream flow to come from upstream diverters (while protecting PG&E water rights). That issue could then be settled through water rights processes. 2) Develop a clear understanding of the extent of effect to upstream diverters by proposed increases in Project instream flows (as upstream waters provide only a small portion of Project inflow). This would provide the basis for discussions of parties needs during different portions of the year or in different water year types. 3) The FERC mandate in their license that increased flows are to be provided by PG&E out of generation to provide a better balance of water usage as provided for in the Electric Consumers Protection Act (ECPA). To initiate item 2) above, the Forest Service has spent considerable effort in defining the upstream effect from proposed Forest Service instream flow requirements, as summarized below, and as explained in more detail in Appendix D-2.

It is also important to note there is NOT a 1:1 ratio between proposed flows in the downstream section (i.e. within the Project) and the upstream section. This means that a **100 cfs increase in Project instream flows (for example) does not equal a 100 cubic feet per second (cfs) effect to upstream users.** See Appendix D-2 for a more thorough explanation of the upstream effects and Appendix D-5 for a water budget graphic that shows the location of water inflow to this Project.

FERC discusses the Chico State University (Gallo & Jensen, 2003) economic report that shows that implementation of Forest Service instream flows could result in a loss of 43,000 acre/ft annually to upstream users. This, in turn, results in agricultural production losses of \$7,767,776. PG&E provided the hydrologic data used by Gallo & Jensen to determine the economic effects of increased instream flow requirements. The provided hydrologic data was based on averaged data (as per PG&E) that admittedly did not distinguish a number of critical factors, as discussed below.

The Forest Service (FS) analyzed PG&E's hydrologic basis for this economic report and presented our results at a PRCT meeting on April 2, 2003. The FS analysis in Appendix D-2 provides a summary of our more complete analysis of the hydrologic record to determine upstream environmental and economic effects, IF instream flows are not taken from generation. The FS is concerned that the PG&E hydrologic analysis was too general and the conclusions reached on the economic impact related to increased flows are overstated. The FS does not argue with the economic analysis per se, but is concerned that the underlying hydrologic assumptions used in determining the economic outputs of the model are significantly overstated. Due to the small economic base, high rate of unemployment, and population size of two of the upstream affected counties (Lassen and Modoc), even a small economic effect is significant. For that reason the Forest Service does not wish to debate the actual dollar impact associated with instream flows; we do however, feel a thorough understanding of the hydrologic basis for these effects is essential in discussions and negotiations associated with determining appropriate instream flow conditions.

The FS analysis used the synthetic average daily flow record for the Pit 3 reach (unimpaired inflow to Lake Britton from 1970 through 1999) provided by PG&E for the relicensing effort. The PG&E analysis was based on flows measured at the USGS gage below the Pit 1 Powerhouse (USGS gage # 11355010). The PG&E analysis assumed that if flows at the Pit 1 gage were at least 3000 cfs, then Lake Britton would spill and PG&E's water right was fulfilled. The FS found that this flow value is probably high and the flow level at Pit 1 corresponding to spill at Britton is closer to 2200 to 2400 cfs. Thus PG&E underestimated the number of days diversion was possible.

More important, the PG&E analysis averaged data for the record at Pit 1. This ignores the great variation in flow between years and the fact that in many years, Lake Britton does not spill and thus upstream diversion may not be possible. The FS analysis found that upstream diversion either would not occur or would occur on only a few days in over 35 percent of the years in the 30 year period reviewed if PG&E's assertion of spill is required as a prerequisite to diversion is implemented. In these years, the level of

instream flow required below Lake Britton would have no effect on upstream diversions since diversion would not be possible, but would only affect PG&E’s power generation ability at the Pit3 powerhouse.

The FS analysis also shows that the probable level of impact to upstream diversion volumes is much smaller than 43,000 acre-feet per year. In more than 50 percent of the years examined, the volume of water lost due to an increase in instream flows was less than 5,000 acre-feet and was less than 7,600 acre-feet in about 70 percent of the years. In many years, there is sufficient water to fully satisfy upstream diversion requirements estimated by PG&E to be 140,000 acre-feet per year and an increase in instream flow has no effect.

Hydrologic issues aside, it is important for FERC to consider that there are important economic affects that should be considered for the entire Project. For example, we now have some limited upstream economic data based on agricultural production, as discussed above. There is no commensurate downstream economic benefits information concerning either the existing condition, or what might be improved through changes in the flow regime. For example, currently the Forest Service issues a number of angler outfitting and guiding permits to local groups for angling in the Pit 3 and 4 reaches. Besides the employment and secondary economic benefits provided by those employees, the clients are also spending money in the local area. Data from a Forest Service annual reports indicates that in California \$81.00 per person is expended per day of fishing (1996 dollars). Use figures and economic value for outfitting/guiding on just the Pit 3 and 4 reaches equates to the following economic returns to the local community for 1999-2002:

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Permits issued	8	10	10	10
User Days	287	214	265	153
Economic value	\$23,246	\$17,334	\$21,465	\$12,393

Besides the economic benefits of guided anglers as portrayed in the above table, there are of course a large number of people who fish without a guide and other recreationists who are camping, picnicking, hiking, and sight-seeing within the Project. They are also spending money in the area during their stay which benefits the local economy, and which has not been considered in the Gallo and Jensen report.

Page 81, Operational Model:

On this page the FERC discusses their operational model in calculating water associated with new minimum flows. We would like to clarify that the Forest Service flow condition was originally and continues to be, a “flow shaping” condition with the 400 & 450 cfs proposed flows being interim measures for the Pit 3 and Pit 4 reaches respectively. These static flows would be replaced with variable “shaped” flows following finalization of 4(e) conditions based on review of pertinent data not currently available and discussions with appropriate parties, and after the Licensee modifies Project facilities (i.e. Pit 3 dam) to provide for variable flows. The term “shaped” flows refers to

instream water flow releases that vary during different times of the year and, between different water year types. More information on shaped flows and their benefits and impact is provided in Appendices A-3 and D-4.

Page 86, water quality:

FERC discusses their belief that general project operations do not have the ability to influence the certain water quality parameters and recommend that monitoring for coliform, pH, or conductivity is not warranted. However, this is countered by a statement on Page 55 citing potential anthropogenic coliform sources in the Pit 4 and 5 reaches could be from Big Bend and several campsites along the river. Given the potential increase in dispersed recreation use along the Pit 3, 4, and 5 reaches and at Lake Britton, it would be prudent to continue some monitoring to ensure beneficial uses of water are maintained.

## 2) Aquatic Resources a. affected environment (pg 94-109):

Page 94-98, Pit Reaches Fishery:

This section presents data regarding the quality of the Pit 3, 4, 5 fishery. This quality is used to justify the existing flow regime and subsequently minimize the effects of the FS proposed flow regime. Ironically, the FERC DEIS (Page 123) uses California Department of Fish and Game (CDFG) quality goals to argue against increased flows when CDFG has proposed a significant increase in flow in Pit 3, 4, 5. FERC does not clearly articulate the difference between quality and quantity. The quality of the fishery is largely a function of the remoteness of the site and relatively low use at the present. The Pit 3, 4, 5 reach consists of 22.5 miles of river. PG&E fishing effort surveys indicate that during peak use (weekends and holidays) less than 30 parties per day currently use the reach. The same surveys indicate a steady decline in fishing quality in Pit 3 as use of the reach increases (CDFG data do not show this decline). While quality is important, quantity is equally important, especially in the future as use of the reach increases. By way of analogy, a very small piece of quality steak is not nearly as satisfying of a meal as an entire steak. Clearly the quantity of the fish habitat and fishery is important. **The FERC analysis should be based both on the quantity and quality of fish habitat.** The quality of the fishery will remain constant in Pit 3 and will increase in Pit 4 (better temperatures) with the proposed FS flow regime, but quantity (amount of habitat and total number of fish) will increase in both reaches.

In addition, if there are cost/benefit issues (cost of increasing habitat versus relative gain) related to increasing flows, these should be articulated by FERC in the DEIS. Our sense is that the DEIS is using the biological (environmental effects) analysis to make cost/benefit evaluations, but not articulating the basis of these evaluations.

See Enclosure 3, Appendix A-3 for additional discussion.

Page 102 third paragraph and 103, Angler Catch Rates:

It is stated that California Department of Fish & Game (CDF&G) data indicates Pit 3 angler catch rates have not declined despite other sources suggesting they have. The CDF&G data presented in Table 25 on page 103 indicates to the Forest Service a perceptible angler success decline, even if not yet statistically significant.

Page 104, Water Temperatures:

FERC discusses the water temperature in the Pit 4 reach having a mean daily summer temperature of 19-20 degrees C. Since there is typically a 2 ½ - 3° C. diel fluctuation around this mean, instantaneous temperatures in this reach during June – August commonly exceed the 20° C State Water Plan narrative value as evidenced on Forest Service temperature recorders in the Pit 4 reach (See Appendix D-3). Note Sensor #484616 on the July 3-July 31, 2002 and August 1-September 4, 2002 graphs clearly show this daily fluctuation, exceedances of 20 °C, as well as declines in temperature during the August 4-12, 2002 control flow studies and spill events in mid-July and late August. These marginal water temperatures affect cold-water aquatic species, such as rainbow trout. Further information on water temperature modeling and impact of the flow regime on temperature and aquatic species are presented in Appendix A-3.

Page 106, Water Temperatures/diel fluctuation:

The FERC refers to water temps in Pit 5 reach being similar to Pit 4 reach except that diel fluctuations are greater and temperatures in the lower portions less than Pit 4 by 2-3 degrees due to increased tributary inflow in this reach. As in the Pit 4 reach, the Forest Service feels that the affected environmental section should acknowledge that with diel fluctuations, instantaneous maximum temperatures are probably exceeding the State Basin water plan narrative value and so the current flow regime is therefore again potentially adversely affecting cold water aquatic species.

Page 107-109 and 123, Special Status Aquatic Species:

Please refer to Appendix B of this response for the correct classifications of Forest Service special status species.

## **2) Aquatic Resources b. Environmental effects & recommendations (Page 110-151):**

Page 111-114, Tennant Method and its applicability to the Pit River:

The FERC restates PG&E's assertions that the Tennant Method was developed only from a limited number of rivers with "different hydrology and channel type" than the Pit River and that Tennant's "10 percent of mean annual flow from April to September (i.e., Tennant's severe degradation category) would be expected to have few, if any, self-sustaining rainbow trout populations." FERC accordingly states that the "Tennant Method has limited value for establishing minimum flows in the Pit River."

The Forest Service addressed our use of the Tennant method in our December 18, 2002 letter to the FERC, Page 14, c). To explain further, the FS believes the value the "Tennant Method" lends to the establishment of instream flows in the Pit River is **perspective**. The method evolved from "17 years (of work) on hundreds of streams" in

“21 different states” (Tennant 1976). Since publication of the Tennant Method many hundreds of site-specific studies (e.g., Hatfield and Bruce 2000; see others in IFC 2002) have supported the general channel/flow relationships embodied in the Tennant Method. The method rates habitat degradation based on the functions that the natural channel and flow regime provide. The method is a relative ranking of function. A careful reading of the conclusions related to 10% of mean annual flow in Tennant (1976) and an elementary knowledge of the Pit River will convince any objective person that the degraded conditions (relative to natural flows) discussed in Tennant (1976) apply directly to the Pit River.

The following statements come directly from Tennant (pg. 9) regarding conditions with 10% or less of mean annual flow. Comments are added in parentheses regarding applicability to the Pit River:

Ten percent of the average flow: This is a minimum instantaneous flow recommended to sustain short-term survival habitat for most aquatic life forms (*a relative or qualitative statement that can be viewed as true or not true depending on perspective*). Channel widths, depths, and velocities will all be significantly reduced and the aquatic habitat degraded (*true*). The stream substrate or wetted perimeter will be about half exposed, except in wide, shallow riffle or shoal areas where exposure could be higher (*true, except vegetation encroachment has covered many of the main channel substrates*). Side channels will be severely or totally dewatered (*true*). Gravel bars will be substantially dewatered (*true, except little gravel exists in the system*), and islands will usually no longer function as wildlife nesting, denning, nursery, and refuge habitat (*possibly true in some areas, not generally applicable, in some areas islands may have been created*). Stream bank cover for fish and fur animal denning habitat will be severely diminished (*not applicable because the many years of dewatering have allowed early seral stage vegetation encroachment*). Many wetted areas will be so shallow they no longer will serve as cover, and fish will be crowded into the deepest pools (*true, fish are confined to the narrow incised thalweg that creates boulder runs and in pools, little separation of shallow fry, juvenile, and amphibian habitat from adult fish habitat exists*). Riparian vegetation may suffer from lack of water (*true for main channel margin vegetation regeneration, not true for encroaching vegetation*). Large fish will have difficulty migrating upstream over riffle areas (*not generally applicable*). Water temperature often becomes a limiting factor, especially in the lower reaches of streams in July and August (*true*). Invertebrate life will be severely reduced (*not true in the existing wetted channel, but likely true when much of the main channel dewatering is considered*). Fishing will often be very good in the deeper pools and runs since fish will be concentrated (*true, but not applicable due to the long history of dewatering*). Many fishermen prefer this level of flow (*true*). However, fish may be vulnerable to over harvest (*true, except that the remoteness and difficult conditions mitigate this to some extent, but see PG&E declining catch rate statistics for the Pit 3 reach*). Floating is difficult even in canoe or rubber raft (*true*). Natural beauty and stream esthetics are badly degraded (*would be true except years of dewatering have resulted in vegetation encroachment*

*that has mitigated the dewatering esthetics to some extent, and the fact that there are few people left who remember what the unimpaired river used to look like).*

Clearly the Tennant Method has applicability to the Pit River. Thankfully due to the narrow incised thalweg and large substrates that exists in the Pit River 3 and 4 reaches the degraded conditions are not as bad as would be expected in a more typical channel. Nevertheless, the fact that the Pit 3 and 4 bypassed reaches currently have minimum flows that are approximately 5% of mean annual flow and that hundreds of instream flow studies have shown that this level of flow creates severely degraded conditions (relative to typical natural flows) lends perspective to the current Pit River situation.

The incorrect perception of the Tennant Method in paragraph 1, page 114 should be removed. The FERC should acknowledge the perspective that the “Tennant Method” provides and state that the more detailed studies conducted in 2002 and reanalysis of previous studies (e.g., 1985 IFIM) allow a more detailed analysis of Pit River instream flows than the more general Tennant Method.

The Instream Flow Council’s recently published book, Instream Flows for Riverine Resource Stewardship (Instream Flow Council, 2002) reviews the appropriateness of several instream flow analysis techniques including the Tennant method. They note on page 235 “The Tennant method was developed based on extensive field observations of 12 habitat and use parameters and measurements of hydraulic conditions at numerous locations across the United States. Data were collected from eastern, western and Midwestern streams. Although often regarded as a method suitable only for the western United States, the method was developed using data from a much wider geographic area and range of stream types in the United States”. They also note on page 237 that “Because of its robustness, this method is a reasonable starting point for quantifying instream flow needs to which refinements can be made if needed.”

The FERC states that one of the four bases for the FS instream flow 4(e) condition was use of the Tennant method. While FERC did appropriately attribute that basis to the FS, it was not heavily relied on during development of Preliminary instream flow condition as might be implied by it’s listing as the first of four “approaches”. In addition to the three other factors mentioned by FERC (i.e. flow observations, magnitude of annual variation, water temperature study data) the Forest Service relied significantly on a review of PG&E’s project record, including IFIM data collected during the last relicense (although it was known to have significant flaws, as discussed in Appendix A-3). Use of the Tennant method was limited to providing overall perspective to the general magnitude of flows presently occurring in the Pit River and proposed flows (i.e., a check against the instream flows developed with the other information stated above).

Page 123, Effects of Increased Flows on Species:

The FERC addresses the issue that agency proposed flow increases have both beneficial and adverse effects to species and other conditions. The Forest Service agrees with this statement. Change to any system has effects on dependent parameters. Some of the adverse effects have been anticipated and are an objective of the Forest Service (see the

discussion below concerning torrent sedge as referenced on Pages 183-184 of FERC's DEIS). The components of the Forest Service flow regime are intended to maximize habitat for some species as determined by Land and Resource Management Plans (LRMP) standards and guides, regulations, laws, etc., while adversely affecting species which are non-native, or have proliferated as a result of Project operations and which are adversely affecting species that we are directed to protect. Relicensing affords an opportunity to improve the environmental condition associated with this hydrologic Project by both improving habitat for desired species, and reducing it for undesirable species.

Page 123, Instream Flow for Pit 3, Page 124 for Pit 4, and Page 125 for Pit 5 Reaches:

On these referenced Pages, FERC concludes that keeping flows at 150 cfs in Pit 3 reach, increasing flows to 200 cfs in the Pit 4 reach, and increasing flows to 250 cfs in the Pit 5 reach would be consistent with PG&E's goals as defined on Page 110. We appreciate that PG&E has defined resource goals for the reaches, but recognize that the primary purpose for this Project is for the economic production of power. The Forest Service, as the land stewards for the NFSL affected by this Project, have well-defined resource objectives based on current law, regulations, policy, and direction. These resource objectives are discussed in our Forest Service comprehensive plans (LRMP's), which were used as a basis for determining our Preliminary and our Revised Preliminary 4(e) documents. Section 4(e) of the Federal Power Act affords the Forest Service an avenue to provide for the adequate protection of National Forest resources affected by this Project. By considering additional resource objectives provided by other parties as well as PG&E, resource objectives of multiple parties could possibly be achieved. Clearly there are many areas, especially when discussing the instream flow regime, where our interpretation of resource needs is not consistent with PG&E's. Please refer to our LRMPs, and more specifically: the Forest Service rationale document (Enclosure 2) in our October 9, 2002 Preliminary 4(e) submittal to the FERC, the information contained in the following paragraphs specific to FERC's assertion that the temperature regime in the Pit reaches would adversely affect aquatic species, and throughout this response for specific flow regime discussions regarding this significant point of disagreement.

The stated rationale of preserving cold-water spring habitat for two key aquatic molluscs by maintaining existing flows in the Pit 3 bypass reach is a misguided argument. True, these two, and most of the other Forest Service Sensitive and/or Survey and Manage aquatic molluscs, are dependent on the outflow of cold spring water that contributes to the uniqueness of the Pit River and its copious cold lava-based spring flows. This cold spring water dependency, however, is but one of several environmental and/or ecological parameters required ensuring survival of these mollusc species.

Forest Service guidance for the Sensitive listed *scalloped juga*, for example, states that the threats to this species are pollution and ponding of springs with elimination of flowing water habitat. The species often occurs with other Survey and Manage '*Fluminicola*' molluscs, including the listed Pit River pebblesnails. Threats to the scalloped juga and all of the *Fluminicola* molluscs are: "Dam construction that submerges cold springs, slows current velocities, lowers the availability of oxygen, and

allows fine sediment to accumulate. Existing dams on the Sacramento River and the Pit River have already caused extensive destruction of potentially suitable habitat. Reductions in water flow by water diversions...” (USDA/USDI 1998).

Among several threats to the nugget pebblesnail: “Dam construction on the Sacramento River and Pit River by Pacific Gas and Electric have caused extensive destruction of suitable habitat...Existing populations have been decimated and become fragmented and isolated as a result” (USDA/USDI 1998). Dr. Joseph Furnish, former NWFP Survey and Manage Mollusc Taxon Group Leader for developing survey protocols and management recommendations for aquatic molluscs and current USFS Region 5 Aquatic Ecologist, states that it is erroneous to focus on just the single environmental parameter of water temperature with regard to these molluscs to justify the continuation of the drastically reduced Project river flows into the bypassed reaches. The major risk to suitable habitat for these Sensitive mollusc species in the Project area is from reduced and altered flows, not from enhanced flow that would more closely fit the conditions to which these species are adapted. Proposed Forest Service 4(e) conditional flows would not substantially compromise suitable habitat for them (Dr. Joseph Furnish, personal communication 2003). See also Enclosure 3, Appendix B-2 for additional discussion of this concern.

In regard to water temperature effects, on Page 123 of the DEIS FERC states: “These higher release flows [in the Pit 3 reach] may, however, cause water temperatures to become less favorable for trout and for the nugget pebblesnail (an FS ROD SM species) and the scalloped juga (an FS Sensitive Species), which prefer coldwater temperatures.” On Page 124 FERC states: “However, the availability of habitat suitable for coldwater molluscs could be reduced due to higher minimum flows overwhelming the localized cooling effects of spring inflows. If localized spring-fed pockets of cooler water are washed out, it would limit the availability of coldwater refugia that could be important for trout rearing during the summer.” There is similar wording on Page 125 for the Pit 5 reach. This interpretation by the FERC that Forest Service proposed higher flows may be less favorable, or will inundate and overwhelm the spring flows, is counter to PG&E’s temperature data, which are partially displayed in Figures 9-11 (Pages 120-122) of the FERC DEIS, and are described on Page 119.

The Forest Service agrees with the FERC’s understanding of PG&E’s temperature data in the first paragraph on Page 119 as stated here:

- “...increasing minimum flow releases would tend to increase summer water temperatures in the Pit 3 reach and increase the uniformity of temperature conditions throughout the length of the Pit 4 and 5 bypassed reaches.”
- “Average summer water temperatures in the Pit 4 and 5 reaches would generally be reduced...”

The Forest Service notes from PG&E’s data, that the above referenced “increase in Pit 3 water temperatures” is only approximately 1/2° C during the worst case - warm/dry meteorological scenario and less than this minor variation in cooler/wetter meteorological conditions. Other PG&E data (PG&E Application Volume 8 of 9, Appendix B, Page B10-5) show that the average water temperature in the Pit 3 reach during July in a

warm/dry (worst case) scenario range from 15.9-16.6° C. Even if this reach experienced a 1/2° C increase, water temperature would still be on the low end of the preferred temperature for rainbow trout of 15-18° C (Moyle, 2002) and well below the 19-20° C parameter narrative statement in the State Basin Water Quality Plan. This temperature change can be viewed as beneficial or neutral for trout, but cannot correctly be viewed as a “less favorable” condition for trout.

The Forest Service interprets the FERC’s reference to “increased uniformity” as meaning a reduction in the discontinuity (or segmentation) of temperature along the length of the Pit 3, 4, and 5 reaches (i.e., no rapid increases or decreases in temperature along the longitudinal profile of these reaches). This is closer to the temperature regime that existed in these reaches in the unimpaired state (DEIS Figure 11) and moves the system to a more natural range of variability consistent with the Forest LRMPs and the Northwest Forest Plan Record of Decision (NFP ROD 1994) and Aquatic Conservation Strategy (ACS). This “increased uniformity” cannot possibly be construed as a detrimental condition for species native to these reaches.

The Forest Service also views “increased uniformity” occurring due to the fact that increased flows would flatten (reduce the range of) the approximately 3° C diel fluctuation as a result of the thermal buffering affect of increased flows (greater thermal mass). (See FS temperature sensors data Appendix D-3 from the Pit 4 reach and DEIS Figure 10). In the Pit 4 and 5 reaches where July and August average high temperatures are already approaching the 19-20° C Basin Plan narrative water parameter, the **maximum** daily temperatures (considering the approximately 3° C diel fluctuation) already exceed this 19-20° C Basin Plan parameter on a frequent basis (Appendix D-3). The reduction in this diel fluctuation at higher instream flows would result in reduced maximum temperatures bringing the range more closely in line with Basin Plan values, unimpaired conditions, and a more natural range of variability for the referenced coldwater species, which is therefore a benefit to these species.

Besides the benefits of reduced diel fluctuation in the Pit 4 and 5 reaches, there would also be reduction in the average water temperatures in these two reaches, as stated by the FERC above. Forest Service interpretation of PG&E’s data shows this water temperature reduction to be approximately 1° C during summer months. While not an overwhelmingly large reduction in temperature, since these reaches currently approach (using averaged temperature, or frequently exceed given maximum temperatures) the State Basin Plan narrative parameters, even a 1° C reduction in water temperatures moves the system in the correct direction for the referenced coldwater species, unimpaired conditions, and a natural range of variability.

Given these temperature discussions and data analysis, we do not understand the FERC’s statement above concerning higher flows “...overwhelming the localized cooling effects of tributary inflows”. It does not appear that the very moderate changes in water temperature of + 1/2° C to - 1° C are overwhelming, and in fact the water temperature would move in a beneficial direction.

In summary, the Forest Service interpretation of PG&E's water temperature data is that the proposed increases in instream flows are very beneficial to coldwater aquatic species in the Pit 3, 4 and 5 reaches. While the benefits afforded by a 1° C decrease in water temperature in warm/dry years in the Pit 4 and 5 reaches along with a drop in the daily maximum temperatures of the diel fluctuation may alone not be justification for implementing higher instream flows, these changes in the aquatic temperature regime provide a clear benefit, and not a detriment, to all referenced aquatic species in the Pit 3, 4, and 5 reaches. With the above discussion of the temperature benefits combined with other benefits for increased flows found in this response, as well as the October 9, 2002 Rationale Document we conclude that increased flows for improved habitat conditions for National Forest resources are very justifiable. See also Enclosure 3, Appendix A-3 for additional discussions of water temperature issues.

Pages 123-125, Wadeability:

The FERC addresses wading difficulty at increased flows; "In addition, higher flows would probably have an adverse effect on wading conditions..." and that it would impede attainment of California Fish & Game Management objectives. While we agree in a general sense that at some flow the ability to wade or cross the river (especially given the large substrate in this river) is reduced, this is oversimplification as discussed below and in Enclosure 3, Appendix A-3.

During the 2002 demonstration flows fishability data were collected (Whittaker and Shelby 2003). The results of these data are that fishability, based on the wading-based fly angling approach currently popular in the Pit 3, 4, and 5 reaches, would be substantially altered if flows were higher than about 250 cfs in the Pit 3 and Pit 5 bypassed reaches, or about 350 cfs in Pit 4, bypassed reach. This supports the FS proposal that flows should be shaped during different seasons to adjust flows for biological and potentially, user based interests, but may also suggest that the FS proposed minimum flow of 300 cfs (from shaping) should be reduced if wade fly fishing is an important activity to be accommodated in the Pit 3 reach. We suggest the minimum flow should be reduced to 250 cfs. Temperature considerations in the Pit 3 reach (see discussion of temperature below) would allow this without compromising ecological goals. The FERC analysis correctly states that wading would become more difficult with the higher FS flows, but does not identify that this pertains primarily to the interim minimum flows (400 and 450 cfs). **The DEIS incorrectly states that the FS proposed flow regime (flow shaping with a 300 cfs seasonal minimum flow) would not accommodate wade fishing in the Pit 4 reach (DEIS Page 124), but correctly suggests that wade fishing would be affected in the Pit 3 reach (DEIS Page 123). It should also be noted, however, that in the Pit 3 reach flows were still in the acceptable range up to 300 cfs (Whittaker and Shelby 2003, Figure 27).**

The FERC DEIS puts an inordinate amount of weight on wadeability. Wadeability or the ability to cross a river or wade fish should only be one factor in determining an appropriate instream flow. The National Forest portions of the Pit 3 and 4 reaches are within Northwest Forest Plan "Riparian Reserve" designation where returning the ecosystem to a more natural condition takes precedence over recreational factors. In

addition, while wading in the river is a preferable way to catch fish at current flows, there is much anecdotal evidence to suggest the Pit River was a very successful angling river at unimpaired flows of 2,000 cfs and above. The Whittaker and Shelby report additionally discussed that some new areas would probably open up (for angling) while areas currently fished at lower flows may not be as fishable. The report states “Most agreed that new fishing “hot spots” would emerge in response to new flows, but that these might evolve over time”. Our observations during the demonstration flows are that this is true. Obviously a successful catch rate is not dependent on the current existing flow regime, and changes in angling methods (e.g. angling from the bank or in shallower water, from a fishing raft, or even installation of foot bridges to allow crossing of the river) can allow the anglers to adjust to new flows. The most important factor is that improved fish habitat will benefit both fish and ultimately the angler (not just one method of angling). **The FERC DEIS should explicitly state the factors that are being used to determine an appropriate or inappropriate flow regime and show explicitly how much weight is being given to each factor (e.g., how important is wadeability compared to other factors).**

Page 124, Cold Water Pool:

FERC quotes PG&E material and states that “ temperature of outflows from the Pit 3 powerhouse would probably increase if the minimum flow release were increased to levels greater than approximately **250 cfs**, which would deplete the pool of cool water in the deeper part of Lake Britton”. This statement “deplete the pool of cool water” is erroneous or at a minimum misleading. Under the July dry/warm scenario a release of **1,600 cfs** provides temperatures in the Pit 3 reach of between 17.8 and 18.1 °C (DEIS Figure 9). This is the hottest month and a flow release 6 times greater than the 250 cfs quoted above and temperatures are still within the 15-18 °C preferred temperature range of trout. A flow release of 400 cfs creates a temperature regime of 15.8-16.7 °C, which during the hottest month and warmest climatic conditions is exactly in the preferred temperature range of trout. Figure 11 shows the unimpaired (without Lake Britton) temperature during a normal water year in Pit 3. Unimpaired temperature is 17.4 – 17.8 °C, again, exactly in the range of preferred temperatures for trout. Water temperature in the Pit 3 reach historically (unimpaired conditions without Lake Britton) were optimum for trout due to the 400 cfs inflow of 16 °C ground water from Hat Creek and 170 cfs inflow of 10 °C groundwater from Burney Creek (and other cool water inflows) mixed with Pit River water (see DEIS Figure 11 for unimpaired flows). Optimum trout temperature in the Pit 3 reach is not dependent on a “pool of cool water” from Lake Britton, it is the natural state of this river system. In fact, current temperatures in the Pit 3 reach under the existing 150 cfs flow regime are on the cool side for optimum trout growth during the late spring/early summer and fall if food is abundant in the system. **FERC should remove the misleading language in the DEIS regarding temperature (initiated by PG&E report text) in the Pit 3 reach under an increased flow regime and simply state that temperatures will remain in the preferred range for trout.** See Enclosure 3, Appendix A-3 for additional discussion of water temperature effects to aquatic organisms.

Page 126, Temperature Effects to Fish Species:

DEIS Page 126 states that “the current diversity of thermal environment created by spring and tributary inputs...is important for supporting the existing diverse assemblage of non-game species of fish”. We agree completely that the cool water spring and tributary inflows to the Pit River reaches are critical for maintaining the native aquatic assemblage by maintaining the summer temperatures below approximately 19 °C, but disagree entirely with the FERC’s statement that adopting the Forest Service 4(e) Conditional flow could “...well be detrimental”. We view the myriad of ground water and tributary inflows as an essential component of the Pit River ecosystem that along with whole-river cooling also provides thermal diversity. We do not view artificially creating whole channel temperature discontinuities (segmented temperatures) due to severe dewatering of the channel as a beneficial kind of thermal diversity, however, as is implied in the DEIS text. Further segmenting a river by whole channel thermal discontinuities that is already segmented by many dams can in no way be viewed as beneficial to the movement and dispersal of aquatic populations. In the Virgin River (Utah), thermally segmenting (different sections of warm and cold water inflows) of an otherwise free running stretch of river is likely one of the main causes of the recent rapid decline (almost extirpation) of the woundfin minnow population (Craig Addley, Pers. Obser.). See also Enclosure 3, Appendix A-3 for additional discussion.

The Pit River aquatic organisms evolved in Project area water with unimpaired discharges of 3,000 cfs annually, and 2,000 cfs in summer, over a very long period of time. Adopting Forest Service 4(e) flow requirements would yield a Project discharge below 20% of historic summer baseflow levels into the Pit 3 and 4 bypass reaches.

Following the Licensee and the FERC line of reasoning to a logical conclusion (i.e., preserving cold spring water flows by minimizing or maintaining existing bypass releases) would appear to ‘completely divert Project bypass flows to fully ensure preservation of cold spring pools and outflows’. This, of course, diametrically opposes the historic record of why Forest Service Sensitive fish and molluscs in the Project area may be near Endangered Species Act candidacy for listing. It also opposes the clearly documented recommendations as to how to preserve and protect these species, as described above.

Page 126, Flow Shaping:

The FERC concurs with the Licensee’s view that extreme caution should be exercised when considering any changes to existing flow releases into project bypassed reaches. The precautionary statement appears to be overemphasized considering the rationale the Forest Service provides for the submitted 4(e) flow release condition. The Forest Service believes that the Preliminary 4(e) flow requirement, in the context of the Northwest Forest Plan (ROD) Aquatic Conservation Strategy, is well justified and is most prudent. Guidance in the ROD and elsewhere in the two Forest’s Land and Resource Management Plans prescribe a Project condition reasonably approaching natural ranges of variability. The Forest Service agrees with the suggestion of developing flow shaping, however. See Enclosure 3, Appendix A-3, Items 2, 5, and 6 for an extensive discussion of the Forest Service proposed flow regime, flow shaping, and ramping rates.

Page 127, Spring freshet flow:

The FERC believes that the existing frequency of peak flow events into bypassed reaches (exceeding 1,500 cfs in 8 of 10 years, on average) is already sufficient to meet the intent of the preliminary Forest Service 4(e) Condition that annual freshet flows be ensured by March of every year. It is probable that the ensuing flows of up to several thousand cfs after prolonged freshet droughts may be unable to fully 'reset the clock' as is implied by the FERC. It is stated by the FERC on page 134, first paragraph: "Provision of a single high-flow event early in the season, as recommended by the FS, would likely have much less of an adverse effect, and may provide beneficial effects, on aquatic resources".

As is described in Enclosure 1 under the "Flow Regime for Affected NFSL" condition, the Forest Service has modified the Freshet Flow from our October 2002 Preliminary Condition. It essentially takes the middle ground between the FS Preliminary 4(e) requiring a freshet flow every year, to FERC's recommendation that would only allow freshets after two years of drought. The modification to our 4(e) removes the dependency on determining water year type, and may not require a freshet flow in all years. The new condition would be enacted IF there has been no flow exceeding 1,500 cfs since March 1 of the preceding year. (For example, a spill on March 20, 2000 would have met the requirement of a spill in the preceding year when evaluated on March 1 of 2001. If the dry years continued and there were no spills until March 1 of 2002, one would then be required. If the one spill had occurred on February 20, 2000, then when evaluated on March 1, 2001, a freshet flow would be required.) Additionally, we have heard from PG&E (Jim Holeman, personal communication at PRCT meetings) that it is possible for PG&E to alter their normal spring maintenance procedure such that they could shut down multiple units at one dam (rather than single units on multiple dams as they are doing now) to create a spill while they are doing their normal annual maintenance. (A discussion of Licensee's maintenance procedures can be found on Page 2 of their June 21, 2002 AIR Request #1, Response #2). This would not affect power generation, as the units would be off-line anyway (just in a different sequence), and could provide the needed freshet flows, possibly exceeding the 1,500 cfs FS proposal, depending on the number of units shut down. Additionally, these Pit 3 dam freshet flows would allow upstream water users whose agreements are tied to this spill to divert water to storage in these drier years when water would not otherwise have been available to them. These flows could also provide an opportunity, albeit limited, for spring whitewater boating. We believe that with some additional collaborative discussions this condition could become a win-win for all parties. The benefit of freshet flows for both physical and biological processes are additionally discussed in Enclosure 3, Appendices A-1, A-3, B-2, and B-5.

Page 128, Trout Habitat:

The FERC states in the first paragraph: "... There is no conclusive evidence that spawning habitat is currently limiting trout populations in any of the three reaches." It appears to be selectively used here, when similar claims could be made for nearly every existing biological condition regarding the Project and the Pit River. Further comments

on the issue of spawning habitat are provided under DEIS Page reference 71-75, above and 134-136, Spawning Gravel, below.

Page 128-131, Ramping rates:

Although FERC agrees that a ramping rate Plan is needed to attenuate possible adverse resource affects induced by spill, on Page 130, FERC states, "...we find that the benefits of implementing a restrictive ramping rate, such as the 1-inch per hour rate recommended by CDFG and the FS, appears to be limited". The Forest Service has modified our Preliminary Ramping Rate Condition (incorporated into the Enclosure 1 Revised Preliminary "Flow Regime for Affected NFSL" condition) from 1 inch per hour to 2-tenths of one foot per hour. This modification changed units to the standard "tenths of feet" used for ramping values, and the value itself was adjusted to be more consistent with ramping rates on similar systems. We are willing to discuss alternate proposals for ramping rates that would provide adequate protection of forest resources, when all of the control flow data is available. See also Enclosure 3, Appendix A-3 Item 6 for a discussion of ramping rates.

Also in this section, the FERC discusses PG&E's statements regarding spill induced by planned outages. FERC cites Licensee data from a June 21, 2002 letter that states, "...planned annual outages are never scheduled in a manner that would require any spill...". The Licensee characterizes planned outages as "infrequent", and they show only four unplanned outages between August 1992 and April 2002. However, in some cases there may be benefits to inducing spill from maintenance activities during seasons (winter/spring) when organisms and their life stages have adapted to such flows. (See Freshet flow discussion above, at Page 127). At other times of the year when species have adapted to low flows which don't fluctuate (i.e. summer and early fall) maintenance spills with ramping rates of 1,945%, 238%, 538%, 350%, and even 60% has occurred with the spills referenced below can be extremely harmful to biological resources. See Appendix A-2 for effects to FYLF, "Effects of High Test Flows on Attached Algae in PG&E's Pit 3, 4, and 5 Hydroelectric Project (Spring Rivers Ecological Sciences January 31, 2003), and "Effects of High Test Flows on Malinda Gulch Mussel Bed in PG&E's Pit 3, 4, and 5 Hydroelectric Project (Spring Rivers Ecological Sciences January 31, 2003).

While past information indicates that Licensee spills were "infrequent" the Forest Service is disturbed by the trend of increasingly frequent operational spills as portrayed by the following PG&E data and from the PG&E June 21, 2002 AIR #1, Response #2.

**February 26, 1981 (license issuance) to August 18, 1992: 11 ½ years - no spills**

(The spill during the period of August 19-28, 1992 was caused by the "Fountain Fire" burning portions of the PG&E 230 kV transmission line. This is considered an emergency beyond Licensee's control).

**August 29, 1992 to April 19, 2002 – 10 years – three spills as follows:**

October 14-15, 1998 outage caused by governor causing spill in Pit 4 & 5 reaches. Flows went from approximately 150 cfs to 4,000 cfs (1,945% upramp/hour) and back with an 11-hour spill duration.

July 12-13, 1999: Pit 4 shut down for turbine maintenance with a decision to spill instead of reducing generation or storing water in Lake Britton. "This

decision was due to the lack of generation available to support the grid”. Spills increased from approximately 150 cfs to 1,400 then 2,000 cfs with 238%, and 538% upramp rates, for a duration of 49 hours.

April 19, 2002: Unit 2 in Pit 4 had a problem requiring shutdown for safety at the same time other units were already off line for maintenance. Flows went from approximately 150 to 900 and spiked at 2,250 for up ramp rates of 350% and 60% over an 11-hour duration.

**April 20, 2002 to May, 6, 2003: 1 year – 3 spills as follows:**

(This list does not include control flow spills May 6-10, 2002 and August 4-25, 2002 which were requested by the PRCT for this relicense).

July 9, 2002: 2,000 cfs spill for very short duration as shown on Figure 14 of Spring Rivers Draft FYLF report.

July 10, 2002: Very similar to above-listed spill, but separate spike of approximately 2,000 cfs spill for very short duration, again shown on Figure 14 of Spring Rivers Draft FYLF report. These two spills were reportedly induced by market demand, and do not reflect in the FERC data because they occurred after Licensee provided reports to the FERC.

August 29, 2002: a spike of 5,600 cfs caused by a shut-down of the Pit 4 intake caused by clogging of the intake from algae loosened during the August test flows (so this spill could be directly tied to the test flows and could, arguably be discounted for that reason).

Although there must have been maintenance problems in the first decade of this license, we note that it did not result in spill. We do not know if increased spill is the result of changes to the Licensee’s previously stated standard operating procedures or some other cause, or if they may become more prevalent in future years, as indicated by the above trend. The Forest Service does not fully understand, nor have jurisdiction over the power market issues. However, because of the biological effect of out-of-season spills on NFS resources, it is imperative to the Forest Service that all of these operational spills are evaluated in the FERC’s analysis, and that appropriate plans incorporate language to protect biological species affected by spills which can be controlled by the Licensee. We understand that occasional emergencies occur when the Licensee has no choice but to spill or risk damage to Project facilities or public safety.

Page 133, third paragraph, second line, Typographic error:

Replace ‘text flows’ with ‘test flows’. Also in this paragraph, the California floater is a Forest Service Sensitive species.

Page 134-136, Spawning Gravel Management:

At pages 134-136 in its DEIS, the FERC summarized the various gravel augmentation programs (including annual gravel placement and monitoring, or both) proposed by FS, Interior, CDFG, Trout Unlimited, and California Trout. The FERC then acknowledged and agreed with PG&E’s concern that “very large additions of gravel could have adverse effects, which include a loss of refuge habitat for trout and a loss of habitat for macroinvertebrates that are adapted to large and stable substrates.”

The FERC identifies at p. 135 the “scarcity of small trout collected in all three bypassed reaches during PG&E’s 2002 fish sampling effort suggests that the scarcity of spawning habitat could limit recruitment”, and concludes that “increasing the availability of gravel in the bypassed reaches could benefit aquatic resources by increasing the availability of trout spawning habitat and improving invertebrate production, and may also improve wading conditions.” FERC concludes at p. 136 that the primary benefit of gravel augmentation would be “to increase the production of trout fry in the upper portions of each bypassed reach, where little substrate suitable for trout spawning exists.” The Forest Service strongly points out that the R2 Resources 2002 survey work found few to no gravel patches. Hardhead, a Forest Service Sensitive native fish species, comprised the second-greatest biomass in both the Pit 3 and Pit 4 bypassed reaches (Table 24, DEIS). Despite hardhead spawning behavior not being abundantly clear, the distribution of up to 20,000 eggs per individual female over patches of gravel is known (Moyle 2003). It is therefore not entirely accurate to refer to only trout as a probable beneficiary of spawning gravel enhancement in Project bypassed reaches. Species differences aside, the FERC specifically concludes that “annual placement of a limited amount of gravel (approximately 2 to 5 tons) in the upper portion of the Pit 3 and Pit 4 bypassed reaches could provide enough substrate to substantially enhance trout reproduction without risking major losses of trout refuge habitat or other unintended effects on habitat conditions for sensitive fish or mollusc species.”

On Page 135, second paragraph, in contrast to the statement on page 128 regarding there being no conclusive evidence that trout spawning gravel is limiting, FERC concludes in this paragraph that capture of few juvenile trout in all three bypass reaches during 2002 fish sampling indicates that spawning gravel could be scarce enough to limit recruitment, and that increased gravels could increase invertebrate habitat which could increase the biomass of trout and non-game species that can be supported.

The Forest Service agrees with the FERC’s conclusion that the primary benefit of gravel augmentation in the Pit 3 and Pit 4 reaches would be increased spawning (trout and hardhead) and macroinvertebrate habitat, and that angler wading improvements would likely be less significant and secondary. The Forest Service also agrees that the most severe reduction in potential trout spawning substrate occurs in upper portions of the bypassed reaches, and that placement of gravel at sites immediately below the Pit 3 and Pit 4 dams is appropriate and consistent with the gravel management and monitoring concept outlined in the Forest Service proposal. The Forest Service also agrees with the FERC that under the envisioned spawning gravel management program gravel should be placed annually in amounts not large enough to cover the entire active channel bed to depths that would prohibit trout from accessing available high flow refugia or prohibit macroinvertebrates and molluscs from attaching to large exposed substrate elements in the water column. However, the Forest Service disagrees with the FERC that annual placement of approximately 2 to 5 tons of gravel would provide enough substrate to substantially enhance trout reproduction or macroinvertebrate production. Similar to the shared concern that adding too much gravel may be detrimental to the current aquatic habitat, the Forest Service is also concerned that adding *too little* gravel will produce no measurable increase in in-channel gravel storage beyond the immediate placement

location. Likewise, there may be no measurable increase in trout spawning success or macroinvertebrate productivity, and thus call into question the efficacy and economic justification of the program during the future license term. The Forest Service therefore advocates adoption of a spawning gravel augmentation and management program similar to the FERC’s proposed program, but including annual placement of a larger amount of gravel than the FERC has proposed.

As a basis for this recommendation, the Forest Service conducted an analysis that demonstrates placement of a larger amount of gravel than the FERC has proposed would produce additional habitat benefits and also exhibit a lower cost-benefit ratio than FERC’s proposal. First, regarding potential additional benefits, the available information and literature indicate that placement of larger amounts of gravel would produce greater in-channel gravel storage, and thus greater availability of potentially suitable trout spawning habitat. R2 Resource Consultants (2002:xi) determined that “delivery of gravel to the Pit 3 Reach has been reduced by the Project from 15,100 tons per year to 1,700 tons per year;” and “delivery of gravel to the Pit 4 Reach has been reduced by the Project from 16,000 tons per year to 1,300 tons per year.” (Table 1)

**Table 1**  
**Pit 3/4/5 Project Impact on Gravel Supply to Pit River Bypassed Reaches**  
**Source: R2 Resource Consultants (2002)**

<b>Bypassed Reach</b>	<b>Pit 3</b>	<b>Pit 4</b>	<b>Pit 3-Pit 4 Average</b>	<b>Pit 5</b>
Without-Project Supply (tons/year)	15,100	16,000	15,550	31,200
With-Project Supply (tons/year)	1,700	1,300	1,500	16,300
Project Impact (tons/year)	13,400	14,700	14,050	14,900

The Project reduced gravel supply immediately below the Pit 3 and Pit 4 dams by nearly 100 percent, or by approximately 15,100 tons per year and 16,000 tons per year, respectively. Adding 2 to 5 tons to the Pit 3 and Pit 4 reaches would replace only 0.01 percent to 0.03 percent of without-Project supply. Moreover, 2 to 5 tons is only 1.3 to 3.3 cubic yards of material, an amount sufficient to produce from 12 to 24 potential trout spawning nests, but only if distributed optimally on the bed. R2 Resource Consultants (2003) characterization of sediment transport and storage dynamics in the Pit 3 and Pit 4 bypassed reaches is consistent with a body of recent academic work on boulder bed rivers which has characterized alluvial sediment storage as discrete “alluvial patches” that incompletely cover the bedrock and immobile boulder active channel bed surface at fixed, hydraulically-determined locations and increase or decrease in size in response to changes in sediment supply. Sklar and Dietrich (2002) found that “the threshold of alluvial patch formation occurs at a critical bedload sediment concentration where sufficiently frequent grain interactions produce large transient wakes that trap other grains. Initially, patch size grows rapidly but then stabilizes such that only a small fraction of the total bed area is alluviated. The alluviated area *increases linearly* with

increasing sediment supply, narrowing the width of the exposed bedrock region where active sediment transport and bedrock erosion is concentrated.” [Emphasis added.] It follows from PG&E’s studies and the literature that placing a larger amount of gravel in the bypassed reaches would directly increase the potential benefit to spawning and invertebrate habitat.

Second, regarding incremental cost, significantly more gravel than 2 to 5 tons can be placed for the FERC-estimated cost of the FERC-proposed gravel augmentation plan. The FERC at p. 370 concluded that “annual placement of a limited amount of spawning gravel (about 2 to 5 tons) could be done relatively easily from the Pit 3 dam and the Pit 4 dam at a relatively small cost. Likewise, the cost of moving woody debris from the Pit 3 intake trashracks to outside of the log boom and allowing the debris to be carried over the dam during a high flow event would be small. The fish and invertebrate monitoring that we discussed in the previous discussion would serve as a basis to measure the success of these enhancement measures. We estimate that the combined annualized costs for both of these measures would be about \$34,460 and the expected benefit, given the high value of this trout fishery, is worth the cost.” This cost appears to be the sum of the \$11,320 FERC-estimated annualized cost for the Interior-proposed and FERC-adopted woody debris management plan (at p. 344), and the \$23,140 FERC-estimated annualized cost for the Trout Unlimited/California Trout-proposed and FERC-adopted gravel augmentation plan (at p. 343). The \$23,140 FERC-estimated annualized cost for gravel augmentation includes capital and one-time costs of \$15,000 and annual operations and management costs (gravel delivery and placement) of \$30,000 per year from year 5 through 30 (at p. 343).

The Forest Service solicited cost quotes from local construction companies including Hat Creek Construction in Burney for delivering washed, rounded 8 - 64 mm river gravel. The average quoted delivered costs to the Pit 3, Pit 4, and Pit 5 dams (in 2002\$) per (standard) 24 ton truckload were \$539.44, \$616.50, and \$411.00 respectively, reflecting differences between hauling distance and travel time specific to the existing roadway network (Table 2).

**Table 2**  
**Local Contractor Quoted Cost for Cleaned, Rounded, River Gravel**  
**Delivered to the Pit 3, Pit 4, and Pit 5 Dam Locations (in 2002\$)**  
**Source: Matt Smeltzer, Stetson Engineers, personal communication**

<b>Location/Bypassed Reach</b>	<b>Pit 3 Dam</b>	<b>Pit 4 Dam</b>	<b>Pit 5 Dam</b>
Delivered cost per std 24-ton truckload	\$539.44	\$616.50	\$411.00

Using these quoted unit costs, the Forest Service determined that approximately twenty-six (26) 24-ton truckloads (624 tons) could be delivered annually to the Pit 3 dam and 26 24-ton (624 tons) truckloads could be delivered annually to the Pit 4 dam for a total annual cost of \$30,054 (Table 3). For comparison, the Forest Service determined that delivering 2 to 5 tons of gravels to both the Pit 3 and Pit 4 dams would cost

approximately \$1,156 per year, not \$30,000 as estimated by FERC. Because gravel is delivered in standard units of 24-ton truckloads, the approximate cost of delivering 12 tons of gravel to both the Pit 3 and Pit 4 dams is effectively the same as delivering 2 to 5 tons to each of the dams.

**Table 3**  
**Comparison of USFS-Estimated and FERC-Estimated**  
**Delivered Gravel Costs for Various Gravel Augmentation Programs**

Augmentation Proposal	Pit 3		Pit 4		USFS Est. Cost	FERC Est. Cost
	tons/year	number of loads	tons/year	number of loads	annual cost	annual cost
2 to 5 tons (FERC 2003)	5	1	5	1	\$1,156	\$30,000
1 std (min) 24-ton truckload	12	1	12	1	\$1,156	na
52 standard (minimum) 24-ton truckloads	624	26	624	26	\$30,054	na
100 standard (minimum) 24-ton truckloads	1200	50	1200	50	\$57,797	na

To put the various annual gravel placement amounts in quantitative perspective, the amounts are reported in Table 4 both as a percentage of the average current gravel supply to the Pit 3 and Pit 4 reaches (1,500 tons/year; Table 1) and as a percentage of the average without-Project supply (15,550 tons/year; Table 1). Table 4 shows that for approximately the same (non-annualized) annual operations and management cost as the FERC estimated for its adopted gravel augmentation program, approximately 624 tons of gravel can be placed below both the Pit 3 and Pit 4 dams, about 4.0 percent of the average without-Project supply. Such a program would increase the average current gravel supply by 42 percent. According to current standard geomorphic practice in boulder bed streams (e.g., Sklar and Dietrich 2002), a direct increase in current gravel supply of 42 percent is likely to cause a comparable (20-50 percent) increase in in-channel gravel storage.

Because of the scarcity of current in-channel gravel storage and potential spawning gravels, the Forest Service believes that in-channel storage increases of 50-100 percent are not unreasonable. For example, 1,200 tons of gravel placed annually below the Pit 3 and 4 dams still approaches only 8 percent of historical supply and 80 percent of current supply (Table 4). This \$57,797 cost estimate is about twice the FERC-estimated cost of placing 2 to 5 tons below each of the dams and appears to be well justified considering the documented project decreases in gravel storage. An alternate scenario, which is acceptable, though less satisfactory would be to augment gravel up to the cost proposed in the FERC's DEIS of \$30,000 (i.e., 624 tons/year below the Pit 3 and 4 dams).

Although providing proportionally less trout spawning habitat it would provide 4% of historical supply and 42 percent of current supply (Table 4). Both scenarios are shown in Table 3 and 4.

**Table 4**  
**Cost-Benefit Comparison of Various Potential Gravel Augmentation Programs**

<b>Augmentation Proposal</b>	<b>Average Benefit to Pit 3 and Pit 4 Bypassed Reaches</b>			<b>FS Est. Cost</b>	<b>FERC Est. Cost</b>
	tons/year	% of Current Supply	% of W/O-Project Supply	annual cost	annual cost
2 to 5 tons (FERC 2003)	5	0.3 %	0.03 %	\$1,156	\$30,000
1 std (min) 24-ton truckload	12	0.8 %	0.08 %	\$1,156	na
52 standard (min) 24-ton truckloads	624	42 %	4.0 %	\$30,054	na
100 standard (min) 24-ton truckloads	1200	80 %	7.7 %	\$57,797	na

The Forest Service does not believe that 1,200 tons of gravel is a large enough amount to create negative habitat effects discussed in the DEIS at p. 136, such as covering the channel bed to depths that may prohibit trout from accessing available high flow refugia or prohibit macroinvertebrates and molluscs from attaching to large exposed substrate elements in the water column. Twelve hundred tons of gravel is equivalent to approximately 800 cubic yards or about 21,600 cubic feet. If this amount were evenly distributed on the 100-ft wide active channel bed over a distance of 2,000 ft below the dam, it would cover the bed to a depth of 1.3 inches (33 mm), approximately the depth of about **one median-sized gravel particle**. The 624-ton proposal for the FERC-adopted annual cost would cover the bed area to a depth of 0.7 inches, and FERC’s 2 to 5 ton proposal would theoretically cover the bed area to a depth of 0.0022 to 0.0054 inches (0.056-0.14 mm or 56-140 microns). The characteristic scale of the potentially affected trout refuge and mollusc habitat of concern is comparable to the average low-flow depth and typical boulder diameter, or about 3 feet. None of these gravel augmentation proposals would be expected to produce gravel deposit depths of this scale. Furthermore, any minimal incremental impacts to trout refuge and mollusc habitat caused by any of these gravel augmentation programs would be more than offset by anticipated increases in aquatic habitat provided by increased minimum stream flows.

Page 145 & 150, Fish Entrainment:

The FERC does not agree with the portion of the Forest Service preliminary 4(e) entrainment Condition, No. 30 in Preliminary 4(e), that includes the following sentence: “The licensee shall also conduct quantitative fish entrainment monitoring following procedures developed by the Licensee and agreed to by the Forest Service and other

consulting agencies at the Pit 3 and Pit 4 tailraces”. Additionally, the 4(e) Condition states: “The fish entrainment sampling report shall address effects and trends on entrained fish species that could lead toward federal listing”. The FERC generally cites expense and uncertainty of results as the primary reasons for disagreement (FERC, DEIS 2003).

The Licensee response to the Forest Service’s recommendation to conduct further analysis of entrainment, stated in the comments to the draft license application (PG&E 2001), was to agree to discuss the issue further at ‘Pit River Collaborative Team’ meetings. A Licensee caveat was the claim that rough sculpin pass through Project powerhouse facilities unharmed.

The FERC, in their “Preliminary Assessment of Fish Entrainment at Hydropower Projects, Volume 1” (June 1995), introduces the report by stating “Entrainment is important to the Federal Energy Regulatory Commission (FERC) because we must evaluate the effects of turbine entrainment on fish populations. We must decide, with assistance from resource agencies, whether to require licensees to take protective measures to reduce entrainment”. The FERC concludes that most of the protective measures employed in west coast projects generally occur where anadromous fish are involved, but cite expense of the entrainment study as a generally prohibitive factor along with difficulty of standardizing the results.

Projected total annualized cost of the entrainment study, as proposed by the Forest Service and analyzed in the Draft Environmental Impact Statement, is one percent of the total licensee/FERC supported annual additional cost that the relicensing proposal requires. The revised Preliminary license condition could vary between 0% increase and this 1%, depending upon fish population surveys.

The maximum projected annualized cost of 1% is not prohibitive in the judgment of the Forest Service. The Forest Service rationale for conducting the entrainment monitoring is to qualitatively note the capture rate and status of the rough sculpin and hardhead fish species, both of which are Forest Service Sensitive listed fish. The rough sculpin is also a Federal Species of Concern, and is listed as Threatened by the state of California. The hardhead is a species of concern to the state of California. By no means is it in the best interest of the licensee to possibly contribute toward the eventual listing of either of these two fish species on the Federal Endangered Act list, if such a determination is ever to be considered during the term of this license.

Recent entrainment sampling in the Pit 3 tailrace was conducted quarterly over the past nine months (PG&E, unpublished raw data, from Dave Longenecker, May, 2003). One individual hardhead was captured (March 2003, captured alive) along with one rough sculpin, also captured alive (June 2002).

The Forest Service hereby modifies the previous entrainment Preliminary License Condition (now incorporated into the “Fish and Benthic Macroinvertebrates Monitoring Reaches and Reservoirs” component of the Lands and Habitat Management Plan) to read: “This report will include a trends analysis (as part of the existing fish populations study –

not a new study) for FS special status fish for those species which have been shown in other Project studies, to be susceptible to entrainment. If a trend towards listing is indicated for these special status species, the Licensee shall conduct quantitative fish entrainment at that time. The studies will follow procedures developed by the Licensee and agreed to by the Forest Service and other consulting agencies and will occur at the Pit 3 and Pit 4 tailraces.” We believe this modified condition will meet our resource objectives of preventing listing of these species should downward trends indicate a need to take additional measures for their protection, while minimizing costs to PG&E, by not requiring this work unless downward trends indicate this need.

**3. Terrestrial resources: a. affected environment**

Page 151, Vegetation:

In this discussion of the vegetation we don't see a clearly defined analysis area. In comparing cover types from Table 2 of the GANDA report, and Table 28 of the FERC DEIS, the figures don't match. For example, white alder riparian – GANDA says 6.6% of the vegetation is this type; the DEIS says <1% of this type. It is unclear why these data sets are not consistent. Our interpretation of the discrepancy is that the GANDA report only includes the riparian corridor, consisting of riparian and upland vegetation within 350 feet of the centerline of the Pit River, from Pit 3 Dam to Pit 5 Powerhouse (i.e. below Lake Britton), which was mapped at a scale of 1:2,000 (Garcia and Associates, 2001). Our guess is that the DEIS figures also include the upland vegetation that was mapped along a two-mile corridor centered on the Pit River, from Highway 299 Bridge to Pit 5 Powerhouse (i.e. including Lake Britton), at a scale of 1:12,000 (Garcia and Associates, 2001). Please confirm our assumption, or tell us how the DEIS percentages were calculated. For your convenience, the table below shows both the GANDA figures, transformed from acres to percentages of the total riparian corridor, and the DEIS figures. This table is from our “Biological Evaluation – Plant Species”, Page 5 (Enclosure 3, Appendix B-3).

The following table shows dominant cover types, first by percent of the project area (based on information in the DEIS on page 152 and Table 28), and next by percent of the riparian corridor below Lake Britton (Garcia and Associates, 2001). Several cover types that exist above Pit 3 dam do not appear below the dam.

**Table 2. Dominant cover types in the project area (this includes Pit 3, 4 and 5 reaches)**

COVER TYPE	PERCENT OF PROJECT AREA	PERCENT OF RIPARIAN CORRIDOR
Non-vegetation	37%	2%
Reservoirs	34%	<1%
Transmission corridors	2%	<1%
Other	1%	<1%
Upland vegetation	62%	76%
Douglas-fir or Sierran mixed conifer	34%	65%
Jeffrey pine	8%	NA

Oregon white oak	5%	6%
Ruderal (disturbed, weeds)	4%	<1%
Eastside ponderosa pine	3%	NA
Canyon live oak	2%	4%
Jeffrey pine-Oregon white oak	2%	NA
Black oak	1%	<1%
Other	3%	<1%
Riparian	1%	22%
Torrent sedge or wet herb	<1%	2%
Brickellbrush	<1%	3%
Willow shrub	<1%	8%
White alder	<1%	6%
Black cottonwood	<1%	<1%
Oregon ash	<1%	1%
Black oak	<1%	2%

Page 160, Management Indicator Species:

Forest Plan MIS and species assemblages need to be addressed. These are addressed in the Terrestrial Wildlife Report, provided in Appendix B-4. This report could be included as an Appendix to the FEIS, rather than incorporated into the main body of the document. Add a statement in the Special-status wildlife section on page 160 that says, “Lassen Forest Plan MIS and Shasta-Trinity Forest Plan Wildlife Assemblages are addressed in Appendix B-4”.

Page 161, Table 31 Species:

This table lists special-status species that were addressed but needs the following corrections:

- Add great gray owl as Forest Service Sensitive (FSS) and Forest Service Survey and Manage (FSM). It is not likely to occur, little suitable meadow foraging habitat and outside of the range of red tree voles (primary prey).
- Add American marten as FSS. It is unlikely to occur, may be too low in elevation, none found in camera/bait station or track-plate surveys.
- There are 4 species of bats that are listed as protection buffer species. These are discussed later in this document, but include fringed myotis, silver-haired bat, long-eared myotis and long-legged myotis.
- Willow flycatcher is FSS and yellow-breasted chat is not FSS.

Additionally, there is no discussion or analysis of Sandhill crane that is mentioned in Table 31, and listed as possibly present. An explanation of why it was dropped from further analysis should be provided

Page 170-172 & 193, Peregrine Falcons:

There does not appear to be a habitat or species description for this species. This document needs to address population trends, nesting habitat, and known nesting sites.

The effects section on page 193 talks about the potential for disturbance to peregrines, but does not describe the effects (e.g. nest abandonment; premature fledging; increased chance of trampling, overheating or cooling, increased chance of predation due to parents leaving the nest site) or the potential for these effects.

Page 173 - 174, 194, Bats:

No citations were listed for portions of this bat discussion (distribution, habitat use etc).

Townsend's bats: Add a statement from Pierson et al 2001; "while this species will use human structures that resemble caves, none of the powerhouses, dams or associated structures offered suitable day roosting habitat for this species."

Pallid bats: Add a statement from Pierson et al, 2001 that acoustic surveys did record this species in mixed oak conifer and at the base of cliffs.

Page 194 - In the effects analysis for bats, a statement is needed about possible effects to bats such as: "Installation of a gate on Pit 4 tunnel opening will maintain suitability of that structure for Townsend's and other species. There would be very little modification of oak conifer forests and no modification of rock outcrops/cliffs that provide habitat for pallid bats."

Page 175 describes how the red bat is strongly associated with riparian forests. Table 32 on page 194 indicates a decrease of riparian forest (white alder, cottonwood, Oregon ash and black oak) in the Pit 3 and 4 reaches. There should be a discussion of this effect, although short term, while the riparian forest reestablishes at a new high water mark.

Page 175, Survey & Manage (S&M) Species:

The terrestrial molluscs and protection buffer species can be either fully incorporated into the Final EIS, or reference could be made to the applicable Report in Appendix B.

Following are some comments on the DEIS' coverage of S&M species. More information on these species is found in Appendix B.

Page 176, Terrestrial S&M Molluscs:

A couple of the terrestrial S&M molluscs no longer need to be considered. These are the papillose tail-dropper slug (*Prophysaon dubium*), and Church's sideband snail (*Monadenia churchi*). *Prophysaon dubium* was dropped under the FS EIS for Amendment to the Survey and Manage, Protection Buffer and other Mitigation Measures Standards and Guidelines, 2000). Paragraphs at the top of page 176 need to be changed to reflect these changes.

### **3. Terrestrial resources: b. effects/recommendations**

Note: There is a lack of references cited throughout the wildlife sections.

Page 182, 3<sup>rd</sup> paragraph, Resource Goal Additions:

In this paragraph the FERC lists a few of the agencies' goals for aquatic resources in prescribing higher flows. It is important to note that higher base flows are just one component on an overall modified flow regime that also includes: seasonal shaping,

ramping, and freshet flows. In addition to the objectives FERC stated on our behalf, please add the following:

- Maintain or improve habitat for Forest Service special status aquatic species including: Foothill yellow-legged frogs, hardhead, etc.
- Improve the hyporheic zone, to the extent feasible
- Maintain or improve habitat for species of interest or where directed by LRMPs (i.e. coldwater fishery)
- Increase the diversity of aquatic habitats by increasing inundation of side channels, backwaters, etc.
- Maintain or restore the species composition and structural diversity of plant communities in riparian areas
- Increase diversity of flows that more closely mimic the seasonal variations found in the natural hydrograph, etc.
- Other “Aquatic Conservation Strategy Objectives” (from the Record of Decision for Amendment to Forest Service and Bureau of Land Management Planning Document Within the Range of the Northern Spotted Owl, April 1994) not specifically covered above (ROD).

Pg 183-184, last paragraph, Riparian habitat:

We appreciate that the FERC recognizes that FS flow proposals that more closely mimic the natural hydrograph would promote more active riverine processes in terms of surface water and groundwater interactions, instream habitat complexity, and primary productivity. On these pages (and elsewhere in their DEIS), FERC also asserts that increasing minimum instream flows to levels recommended by agencies would remove more torrent sedge than PG&E proposed flows, as well as small amounts of alder/willow. It is further stated that the loss of riparian habitat would be approximately 50 acres at 600 cfs and 100 acres at 1,200 cfs flows and that the loss of this habitat would be short term (5-10 years) until it becomes reestablished at the new high water mark. We generally agree with these FERC statements, although it is difficult to determine the extent of short term acreage reduction in riparian vegetation since our proposed flows are likely lower than the examples above, and would be seasonally shaped, further complicating this calculation.

Torrent sedge and willow scrub vegetation has proliferated excessively under the altered (lowered and stabilized) flows induced by this hydroelectric project, which in turn has altered the physical and biological stream channel. Two examples of this alteration are: 1) (PG&E Application, 2001, E3.1-139) “From a geomorphic perspective, the primary effect of this reduction in baseflows has been to reduce the reach-scale hydraulic complexity of the channel during low-flow periods by disconnecting side channels that formerly transmitted flow all year. Also, the prolonged exposure of bars, in combination with the reduced frequency of small floods that would have scoured bar surfaces, has allowed willow scrub vegetation to encroach onto bar surfaces that were formerly inundated frequently. The increased roughness caused by development of vegetation along the low-flow channel margin has resulted in small-scale changes in sediment deposition that also have implications for connectivity of off-channel habitats. The reduced baseflows have increased the duration that bar surfaces in the active channel are

exposed, and appears to be of sufficient depth to inhibit the establishment of perennial riparian vegetation on most bar surfaces except along the low flow channel margins where water is available near the surface. By increasing flows there would be a net reduction in the torrent sedge that has reduced connectivity of small backwater habitats but further colonization of these bar surfaces by perennial riparian vegetation is anticipated due to higher water table elevations. 2) Dr. Kupferberg identifies adverse effects to Foothill yellow-legged frog habitat associated with the torrent sedge establishment on boulders because frogs attach eggs to bare rocks near shore (Appendix A-2).

The FERC acknowledges on Page 187 of the DEIS that riparian encroachment into the channel decreased habitat complexity and reduced the area of suitable breeding habitat for foothill yellow-legged frogs by as much as 94% (Lind et al., 1996), but that the Pit River may not be comparable to these Trinity River results. (See additional discussion under Page 187 below). Three components of the Forest Service proposed flow regime would affect the torrent sedge: 1) spring freshet flows would cause annual disturbance to the sedges, 2) seasonal fluctuations from the shaped hydrograph would discourage spring seed-set of sedge if stage height decreases faster than rooting growth, 3) higher base flows which inundate existing torrent sedge root crowns would eliminate those plants, and 4) seasonal fluctuations from the shaped hydrograph may depress levels of seedling survival.

The above example of torrent sedge effects is just one example of how restoring missing components of the natural hydrograph (magnitude, timing, and duration), could result in distribution, diversity, and complexity of watershed features that provide for plants and animal species which are uniquely adapted to these riparian systems. White alders are another example of a species that is adapted to annual flooding; those lost to erosion are replaced by alder seedlings (2000, P. 15). White alders are the most abundant woody riverbank and lake-edge species in the project area. The FERC points out that the Forest Service objective of promoting the establishment of cottonwoods on gravel bars, floodplains, and terraces would be unlikely to achieve this objective (DEIS Page 184). We agree with the FERC's interpretation of PG&E data in Table 32 (Page 184) that increased instream flows are unlikely to increase cottonwood recruitment. The Forest Service interprets the data that stage height changes at the proposed moderate flows, would not be adequate to inundate these topographic features. However, a freshet flow component, with its proportionally greater stage height, could possibly assist in this recruitment although at a fairly minimal level. While increased cottonwood recruitment would be desirable, it is a stretch to characterize this as a primary reason for increasing minimum instream flows. So while we recognize that the existing riparian habitat has benefits to riparian associated species, long-term improvement of the riparian condition for the life of the license (30-50 years) adequately compensates for any small short term decrease (5-10 years) in this community induced by changes in the flows. Additionally, the FERC's recommendation to monitor riparian habitat parameters on Page 185 will assist in a better understanding of vegetation response to changes in flow components.

Another botanical benefit of increased flows is for noxious weeds which are likely to **decrease** with increased base flows, since both the California brickellbush and willow riparian vegetation series are predicted to lose acreage with increased base flows. (DEIS p. 184). These series are reported by GANDA to include significant percentages of exotic weedy species, including Himalayan blackberry (GANDA 2000, pp 9-10). The FERC has outlined negative impacts in this section of the DEIS without acknowledging the positive impacts of increased base flows, which were intentional by the Forest Service.

Page 185, Freshet Flows:

The FERC acknowledges that freshet flows of 1,500 cfs would likely help mobilize fine sediment and reduce accumulations of substrate that could be colonized by sedge and other herbs, and may provide seasonal hydrologic connections to side channels/bars. But because they already occur almost annually (8 of 10 years) there is no reason to require them in every year they don't normally occur. FERC recommends one 1,500 cfs flow in March when preceded by TWO years in which no flows have exceeded 1,500 cfs. Please see DEIS reference Page 127 above for a modification of the previous Forest Service license condition.

Page 186, 3<sup>rd</sup> full paragraph: Riparian Vegetation and FYLF:

The FERC states that increases in minimum instream flows may affect riparian habitat that currently supports foothill yellow-legged frog (FYLF) in the Pit 4 reach. The Forest Service believes that the existing baseflow conditions have allowed heavy encroachment of historical cobble / boulder bars by riparian trees and sedges. New higher baseflow conditions will inundate portions of these bars, creating a number of new habitat patches with appropriate depth and velocity environments for breeding of FYLF. However, due to limitations regarding the amount of power generation reduction that is acceptable, the new flows will be insufficient with respect to high intensity, long duration events that might naturally remove existing vegetation and prevent repeated encroachment. Because FYLF require open canopy conditions for breeding and tadpole rearing, managed removals may be required. Similar habitat enhancement projects for FYLF on the Trinity River have been successful (Lind et al 1997). See the "Vegetation Management Plan" component of the "Land and Habitat Management Plan" 4(e) Revised Preliminary license condition in Enclosure 1, and Plan Details of these 4(e)'s in Appendix C for further discussion of this requirement.

Page 186-191, Amphibians:

The Forest Service spent considerable effort on better understanding foothill yellow-legged frog found on this Project, including hiring a contractor (Dr. Kupferberg) that assisted in the methodology and implementation of frog-related studies. Dr. Kupferberg reviewed data and studies released by PG&E contractors, i.e. R2 Resource Consultants "Draft Pit River Habitat Mapping: Results of the August 2002 Demonstration Flow Study", March 17, 2003, and Spring Rivers Ecological Sciences "Draft Foothill Yellow-Legged Frog (*Rana boylei*) Studies in 2002 for PG&E's Pit 3, 4, and 5 Hydroelectric Project", March 14, 2003. Rather than reiterating portions of that document in reference to statements made in the DEIS, we refer the reader to Dr. Kupferberg's report in

Enclosure 3, Appendix A-2 for significant issues and concern with interpretations of these studies and their consequent influence over flow decisions.

Page 187, Effects of flows on Frogs - vegetation:

The FERC discusses the applicability of a study conducted on the Trinity River in northern California in which comparisons of pre- and post-project air photos indicated that reduced flows, allowed riparian vegetation to encroach into the channel, thereby decreasing habitat complexity and reducing the area of suitable breeding habitat for foothill yellow-legged frogs by as much as 94% (Lind et al., 1996). After bars were reshaped and vegetation removed, these sites were used for FYLF breeding. The FERC continues on to say that observations of the amount of foothill yellow-legged frog egg-laying habitat during test flows in the summer of 2002 suggest that conditions in the Pit River may not be comparable. This assertion that the Trinity River example is not relevant because the manipulation of discharge at the Pit did not increase the area of vegetation free patches is based on faulty reasoning. Habitat at the Trinity was created by removing woody vegetation mechanically, whereas in the Pit River flow study there was no removal of vegetation. Rather, the flow study identified what the habitat area would be if the willows and alders were to be removed either by die off with inundation, *or* by mechanical means. In the terminology of the flow study, the relevant habitat area figure would be the area of vegetation categories 1 and 2 areas summed together. The data from the Pit River are analogous to the Trinity River data such that usable habitat area would change +30% at 400 cfs and +71% at 600 cfs for the breeding sites currently occupied by FYLF, and -65% at 400 cfs and +60% for sites currently not occupied by FYLF (see Table 1, Appendix A-2).

After acknowledging that the Trinity River study “indicated that reduced flows...allowed riparian vegetation to encroach into the channel, decreased habitat complexity and reduced the area of suitable breeding habitat for foothill yellow-legged frogs by as much as 94%” the FERC concludes that “conditions in the Pit River may not be comparable” based on measurements of habitat patch size in the Pit 4 reach during test flows. However, the FERC does not present any evidence that habitat patch size is directly related to FYL frog breeding success. If the number of discrete patches is a better indicator, then Table 33 shows that 400 cfs is most beneficial to FYL frog, followed by 600 cfs; and then 150 cfs. Dr. Kupferberg’s comments (unpublished) indicate that 1) habitat space is not a limiting factor for FYLF on the Pit; 2) “the greatest risk to clutches is dislodgement during flow fluctuations/spills...Higher base flows provide a buffer; 3) ...given the channel morphology of the Deep Creek delta, the discharge which maximizes FYLF breeding habitat is around 600 cfs”. Dr. Kupferberg recommends an adaptive management plan for removal of willow, alder, and torrent sedge from cobble/boulder bars to maintain canopy-free breeding habitat for FYLF. It is unclear how the increased base flows somehow **increase riparian canopy** to decrease available breeding habitat for FYLF. This contradicts what the FERC claims on pp 183-184.

Page 193, Northern Goshawk:

On Page 193, it is recommended that PG&E conduct goshawk surveys if a project could affect nesting habitat, but does not go on to say the purpose of surveys. If a nest site were

found, what would be recommended (e.g. a spatial nest buffer or a seasonal timing restriction)? This detail could be included in the “Biological monitoring and Adaptive Management Plan” component of the LHMP. The Shasta-Trinity National Forest has a Forest-wide standard/guideline for management around active goshawk nests that states, “require limited operating periods adjacent to active goshawk nesting sites until the young have fledged” (pg 4-30). That wording is recommended for inclusion in the above referenced Plan. Additionally, add wording from the Lassen Monitoring and Evaluation Report (2000) that recommends maintaining 200 acres of high quality habitat around active nests.

Page 193, Willow flycatcher:

This section discusses changes in flow regimes that could affect habitat quantity and quality. Increasing minimum flows to levels recommended by agencies could remove small amounts of alder and willow. However, as discussed above, they would likely re-establish along the new ordinary high water mark in a relatively short period of time (5-10 years) (pg 183). However, the one mapped nest site located slightly upstream of Lake Britton is located upstream of Project releases, so would not be affected at all by changes in instream flows. We have chosen to accept a small loss (from no affect to potentially less than 50 acres for the short term of 5-10 years) in order to improve habitat for native fish and other aquatic species. It is not possible to provide benefits to all species at all times. The point count surveys for riparian associated bird species as FERC recommends on page 193 will provide an indication if trends decline so that adaptive measures could be implemented, if necessary. We recommend tying those point counts into riparian shrub vegetation monitoring (mentioned on page 185).

Page 194-195, Flow Effects on S&M Terrestrial Molluscs:

In reference to the DEIS Pages 123-125, the Forest Service addresses the FERC’s conclusion of adverse affects to S&M aquatic molluscs due to temperature changes in the river induced by higher temperatures. Forest Service statements regarding this neutral to slightly improved temperature regime for S&M species are equally applicable here, but will not be repeated for the sake of brevity.

The FERC raises the issue of adverse effects to terrestrial S&M molluscs from a reduction of riparian vegetation. On Page 194 FERC states: “SM terrestrial molluscs most often observed near springs, seeps, and along perennial tributary channels. These species were less often observed along the margins of the Pit River, and few were noted around the margins of Lake Britton.” We agree with this statement. Therefore, the terrestrial S&M molluscs, which are most often **not** associated with the Pit River margin, should not be affected by flows which are along those margins. The temporary reduction of riparian vegetation associated with increased flows is discussed on DEIS reference page 183-184 above. Long-term benefits to riparian vegetation induced by increased flow are considered to outweigh any short-term detriments.

The issue of adverse effects to terrestrial S&M molluscs from inundation along the river margin and the lower reaches of tributaries is also raised in this section. Flow increases proposed by the Forest Service would result in approximately a 4 – 8 inch change in stage

height from the current base flows to an increased flow of 500 cfs, although this range varies according to exact river location. For example, Deep Creek actual measurements indicate a change in stage discharge from 24 cm at 150 cfs to approximately 66 cm at 1,000 cfs, which equates to approximately 16 inches over that range (based on River Habitat Mapping Report, R2 Resource Consultants, March 17, 2003). These relatively minor changes in river elevation are well within the capability of these species to move to slightly higher ground, as is necessitated during seasonal flow fluctuations of a much greater magnitude, induced by storm events and spring snow melt.

In the April 9, 2001 report by R2 Resource Consultants, "Geomorphology of the Pit River" it identifies that springs within the Pit 3 reach have been associated with known fault zones. This indicates that these spring sources tend to be large complexes. Springs in other portions of the river were associated with terraces and were attributed to alluvial deposition over contact faults, interception of subsurface flows from valley sideslopes and ephemeral drainages; or a combination of these factors. PG&E Application Volume 2 of 9, Pages E3.1-90 and E3.1-111 also discusses spring and seep locations being typically associated with terraces adjacent to the channel. "Terrace-associated springs emanated from the downstream end of the terrace, in the vicinity of the contact between the end of the terrace and the adjacent hill slope. The hydrologic source of these springs is not known for certain. Most of these terraces are too high to be inundated even by flood flows that occur in the study reach. Normal flows do not bring water into contact with the terrace alluvium, so it is unlikely that these springs are fed by river water recharge at the upstream end of the terrace."

During the May and August 2002 test flows, the Forest Service visited known springs along the Pit 3 and 4 reaches to observe what changes were induced by the increased flows. The Forest Service originally thought that higher instream flows might "reconnect" springs that had become isolated from the river by the drop in stage height induced by the Project, and so used the May and August test flows as an opportunity to observe first hand changes at river-side springs. Our observations did not support our hypothesis of "reconnecting" springs, nor of the inundation of springs posed by the FERC. We merely observed that the junction between springs, which were already connected to the river, shifted according to the stage height induced by the increasing flows.

By increasing water surface elevation there is a net reduction in the amount of change in the stage height associated with seasonal fluctuations and therefore would be a benefit to various aquatic and terrestrial organisms. Reducing the change to the wetted perimeter by maintaining slightly higher flows provides a more stable environment and can improve habitat conditions by reducing severe fluctuations.

We recommend that a section for discussion of "Protection of known sites of survey and manage aquatic and terrestrial molluscs", similar to the section on Page 178 for plants, be incorporated into this section. PG&E documented the occurrence of survey and manage terrestrial and aquatic molluscs within the project area. Many of these aquatic and terrestrial molluscs may be associated with riparian areas/seeps/springs related to leakage

from Project facilities (e.g. Weir Creek in the Pit 3 reach is known to be partially tunnel leakage). Maintenance activities by PG&E to eliminate leaks or other operations could therefore affect S&M species.

Page 191-195 Special Status Birds & Mammals:

For Sensitive Species, determinations need be made about the effects of the proposal and are to be included in the Final EIS. These determinations include no impact (NI); may impact individuals or habitat but will not likely to contribute to a trend towards listing (MIIH); will impact individuals or habitat with a consequence that the action may contribute to a trend towards listing (WIFV) and beneficial impact (BI). These determinations have been developed by the Forest Service and are included in Appendix B for inclusion in the FEIS.

#### **4. Threatened & Endangered Species, a. affected environment (pg 196)**

Page 198, Bald Eagles:

The document states there are now 11 active nest territories in the Pit 3, 4 and 5 project area; on page 205 it says nesting pairs are at 10 (plus one near Pit 6 reservoir). This conflict needs to be resolved.

Whether it is 10 or 11 pairs, use has been increasing, and the area is very productive for bald eagles. While the 1985 study showed that flows at 150 cfs provided satisfactory foraging habitat, the DEIS says that this study also showed that increasing flows from 150 to 300 cfs in Pit 4 reach could reduce the amount of foraging habitat by more than 50%. While not stated, we believe that this data set only considered loss of existing habitat, and not creation of new habitat afforded by these increased flows. The 2002 study results were not available at the time the DEIS was written, and need to be incorporated to include a discussion of created habitat. This includes changes in pool habitats, fish availability and stranding and the bald eagle study. While the bald eagle study was done in August of 2002, after young had fledged, it did not show major shifts in foraging at different flow regimes, for those pairs that use the river reaches.

Page 207 1<sup>st</sup> paragraph, boating speed restrictions and bald eagles:

In response to concerns with bald eagle protection, we agree with the FERC's support for maintaining "Existing measures (e.g., boating speed restrictions in upper Lake Britton) would likely need to be continued; additional measures may also be needed to respond to changes in bald eagle nest locations". Please see comments on Page reference 244-245 below for continued discussion of this concern.

#### **4. Threatened & Endangered Species, b. Environmental effects & Recommendations (pg 201)**

Page 204, 1<sup>st</sup> full paragraph, Bald Eagle foraging vs. Flows:

The FERC uses PG&E's 1985 BFES report to show that increased flows reduce bald eagle foraging habitat, leading to later support PG&E's lower, more conservative instream flow recommendation. Although this conclusion is somewhat in conflict with FERC's statement on Page 209 of the DEIS: "Modest increases in flows would be likely

to maintain the prey base, as well as foraging opportunities and contribute the cumulative benefits to the bald eagle”. It is also germane to mention that this old study did not include new foraging habitat created when river margins and bars became inundated since protruding riparian vegetation interfered with foraging (see also Page reference 198 above). However, this is a short-term effect until the inundated riparian vegetation dies out, leaving behind increased foraging area. This issue was revisited with the 2002 controlled flow study, bald eagle foraging component. We understand that the FERC has not yet had the opportunity to review and incorporate this newer study material into the analysis. Forest Service interpretation of the draft 2002 control flow study indicate that current Forest Service flow proposal (i.e. 400 and 450 cfs in the Pit 3 and 4 reaches respectively) are not adverse to bald eagle foraging. We have not had the opportunity to tie the various habitat studies together and develop new flow conditions, but assuring adequate bald eagle foraging (and possible increases in habitat) would be one factor in determining final 4(e) flow license conditions.

Page 209 Cumulative Effects section, Flows, Transmission Lines:

States: “Modest increases in flows would be likely to maintain the prey base, as well as foraging opportunities, and contribute the cumulative benefits to the bald eagle”. This is encouraging to note with proposed increases in flows.

This analysis should address the miles of Project transmission and powerlines, as they have the potential for cumulative effects to bald eagles. Additionally, this section does not address the recreational use overlap in the spring and early summer period when eagles are on nests, with most fledging by July 15. Some of the recreational use data (Table 35) and predicted increases in recreational use as a result of improvements should be incorporated. These would also be addressed in the revision of the Interagency Bald Eagle Management Plan (IBEMP), so may be more appropriate to do at that level.

## **5. Recreational Resources - a. affected environment (pg 209)**

Page 215, Clark Creek Lodge:

This page lists Clark Creek Lodge as having facilities and being open from mid-February through December. This facility is not currently open and was not open in 2002. It has been advertised for sale in print and on the Internet. Given its tenuous situation, this opportunity should be deleted from the text and any other listings as being available for the public to recreate.

Page 217, Big Bend Hot Springs:

Similar comment to the previous – As has previously been noted by the Forest Service in response to the PG&E Final Application, Big Bend Hot Springs has no permit from the County of Shasta to operate as a public campground. Because of this, the facility is not inspected for standards of safety and cleanliness for public occupancy. This facility should not be listed as a public recreation opportunity.

Page 219 – Table 35, Dusty Campground:

As was previously noted by the Forest Service in response to the PG&E Final Application, there are day-use parking sites at Dusty and this is a high use day-use area due to the attraction of the beach and nearby boating use.

Page 219 –221, Current occupancy of the 3 public campgrounds on Lake Britton:

We agree with both PG&E's recreational use data, and the FERC's discussion of that data in relation to campground occupancy and the growing sense of "crowding" as perceived by the public during PG&E surveys. For example, at McArthur Burney Falls State Park "typical occupancy" of the day-use parking lot at the beach is shown as 45% weekdays, and 70% holiday and non-holiday weekends. The campground is listed as approaching or exceeding capacity during July & August each year, reaching total capacity on average of 56 times a year. Recreators consider Burney Falls campground as crowded on weekdays and weekends. For Northshore Campground, capacity was reached two times in 1999 and 2000, and is considered as "crowded" by recreators during the summer and non-summer seasons during the weekend and holiday periods. For Dusty Campground, occupancy is 50% on an average monthly basis, and 70% on weekends, with a feeling of being "crowded" during weekend and holiday periods.

## **5. Recreational Resources - b. environmental effects & recommendations**

Page 227, Recreation Management Plan:

The FERC recommends PG&E develop a Recreation Management Plan in consultation with a number of parties. We agree with the FERC's recommendation and suggest that the plan should follow the general process and framework for "Limits of Acceptable Change" as used by the Forest Service, but modified for non-wilderness areas. This framework will integrate much of the work already done by the Pit River Collaborative Team (PRCT) and the Recreation sub-group of the PRCT such as existing and desired conditions and ways to move toward the desired conditions by implementing specific tasks.

Page 238, first paragraph, Fish Barrier Access:

We agree with the FERC recommendation that recreational access to the Upper Lake Britton and Fish Barrier areas should be continued. It provides for recreationists, including those with limited mobility, access to various water opportunities (creek, lake, and river) within the project, and is an extremely scenic destination for the local public. The upper Lake Britton appeals to those desiring more solitude and less high-speed types of experiences. The Fish Barrier provides close-up opportunities for wildlife viewing, stream fishing, and relaxing in a non-boating setting. The recreation subgroup of the PRCT had a number of ideas for rerouting roads and closing off sensitive resources yet accommodating the recreational need in this area. In a letter from PG&E to Robert C. Hight of the California Department of Fish and Game (CDF&G), dated August 15, 2002 PG&E states: "I want to assure you that it is the Company's policy is to allow continued public access to the WTA [wild trout area]. This access has included vehicle access on existing designated roads and foot access on stream banks and lands."

It is therefore with some irony that we inform you and clarify for the record that PG&E has already closed public vehicle access to the fish barrier. The Forest Service disagreed with this closure at PG&E-sponsored meetings attended by the Pit River Tribe and some resource agencies (although invited, CDF&G was unable to attend the meeting).

We do not disagree with PG&E's efforts of restoring the damage in this area caused by off-road vehicle enthusiasts illegally using equipment to widen their race track (see DEIS reference Pages 290, and 294-295 below), and applaud theirs' and the Tribe's recent efforts of restoring this area. We also agree that there are a number of excessive roads in this area that should be closed to the public to prevent resource damage. Our comments are specific to one road to go from the existing gated closure to the fish barrier. Our disagreement on the elimination of vehicle access to the fish barrier is based on the following:

- It was one of the only areas on the upstream end of Lake Britton that provides access to Project waters to mobility-impaired and elderly publics. Much of the access to Project waters has already been eliminated due to resource concerns in past relicensings. While fly fishing enthusiasts may be capable of hiking from a new parking area located outside of the Project boundary to the fish barrier, a sizable segment of the public can not.
- It is an extremely scenic area including views of the junction of Hat Creek and the Pit River.
- The road is blocked by a gate (to allow continued maintenance of the fish barrier) adjacent to a sensitive area with flat topography that will make enforcement very difficult. Vehicles wanting to go around the gate in their attempt to reach the fish barrier destination will damage the very resources the closure is intended to protect.
- Elimination of legitimate access to the fish barrier was not the objective of the proposed area work and road closures. It was to eliminate the illegal and resource damaging effects of the OHV users.
- The Forest Service would like to see this area continue to be addressed in relicensing. Numerous conversations in the cultural sub-group meetings have led us to believe that PG&E is attempting to eliminate road access to the Project area in order to eliminate discussions of this area in relicensing; they have repeatedly questioned the project nexus. The road (now gated) to the fish barrier, and recreation induced by Project waters (both the Pit River, and lower Hat Creek) are within the FERC Project boundary, and are therefore clearly related to relicensing.
- If this area is removed from relicensing, sensitive resources in this area will be eliminated from the FERC oversight. With these resources overlapping both PG&E and National Forest system lands, it is critical to assure that protection is afforded to the entire area, not just sensitive portions on the National Forest.

It would assist all parties to have this issue clarified and addressed in the Final EIS, if not sooner at the proposed "clarification meeting".

Page 238, second paragraph, Hat Creek Park:

The Forest Service feels that many of the needs for visitors in the Upper Britton portion of the project could be met at the existing Hat Creek Park. The County of Shasta has submitted a request to PG&E to continue operation of the Hat Creek Park and is applying for grants in order to rehabilitate the site. The Forest Service requests that PG&E involve members of the Pit River Collaborative and other interested parties in any plan development for the Hat Creek Park so that needs within the project area may possibly be accommodated at this site (such as sanitation facilities and ADA accessible picnicking and stream fishing opportunities).

Page 238, third paragraph, Ferry Crossing:

The Forest Service supports the FERC in recommending improvements to the Ferry Crossing for improved recreation opportunities and to protect sensitive resources.

Page 238, last paragraph, Clark Creek Trail:

The Forest Service agrees that a new trail at Clark Creek is not necessary and supports the FERC recommended action of measures to maintain and upgrade existing trails in the project boundary surrounding Lake Britton. This action will assist visitors in appropriate recreation access and help alleviate impacts to resources including soils.

Page 239, first paragraph, Interpretive Drive:

The Forest Service agrees to eliminate the 4(e) condition for an interpretive driving loop on the north side of the Upper Lake Britton area. We support the development of a comprehensive interpretive plan which would incorporate information needs for this area and the Recreation Management Plan that would look at needs for sanitation measures in this area. We also support the road management plan and the need for cindering certain roads and pullouts, such as the road along the top of the river bank in the Upper Britton area along the north shore in order to reduce resource damage caused by vehicles driving around muddy areas, and consequent damage to adjacent sensitive resource sites.

Page 239, second paragraph, Lake Britton Capacity:

The Forest Service agrees with the FERC that many of the Lake Britton facilities are at or near capacity (see the Page 219-221 above). We also support the upgrade and expansion of existing facilities over creation of new facilities in the near term. Demand for day-use activities, especially beach areas, is high and will continue to increase over the term of the license. The Forest Service is working with PG&E and interested parties to evaluate existing sites for improvement and modification to accommodate some level of increased demand. We recognize that due to the high value of resources in this area (cultural and bald eagles) we may not necessarily fulfill all future demand for recreational opportunities at this lake.

Page 244 (last paragraph)-245 (1<sup>st</sup> and 3<sup>rd</sup> paragraphs), boat speed zones:

On Page 207, the FERC supported continuation of existing speed limits on Lake Britton for protection of bald eagles and their habitat. Again, here on Page 245 in the 3<sup>rd</sup> paragraph, the FERC recommends as part of the recreation management plan a number of items including “implementing speed limits”. Finally in the last sentence of this

paragraph, the FERC recommends that PG&E include measures to assess the potential effects of boating use on bald eagles in the recreation monitoring plan. So it with some confusion that we note on Page 244 (last sentence) that the FERC states; “We do not, however, recommend that PG&E create any speed management zones, because it is the county’s responsibility, not the Licensee’s, to provide boating safety and enforcement measures. We respectfully disagree. The Forest Service believes it is the responsibility of the FERC, the US Fish and Wildlife Service, the Licensee, and the Forest Service to protect threatened species habitat. In this case, it is human activity from project-induced recreation that can degrade the habitat.

The Forest Service concern stems from the fact that bald eagles forage on the surface of the water on Lake Britton from just before dawn to around 9 a.m. This time period is critical and there is currently only minor overlap of recreational activity (boating at high speeds) and bald eagle foraging. With the projected increases in human population it is anticipated that high speed boating will also increase. High speed boating could also increase due to bass tournaments if the bass fishery is increased by not allowing fluctuations in the lake level in the spring. In order to minimize future conflicts and degradation of bald eagle habitat the Forest Service requests the FERC to incorporate into the license a “trigger” for action; when early morning, high speed boating increases by 20%, then a use restriction would be developed. What is anticipated is that PG&E would be required to work with the county to restrict boating speed limits to below 5-10 mph prior to 9 a.m., and this restriction to be addressed in the new IBEMP. This would be upstream of the Highway 89 bridge where the lake is narrower and foraging habitat is more restricted. This is thought to be where the eagles can most easily be displaced by surface water activity.

There is an existing speed limit on the upper ¼ of the lake (the next bay above Dusty Campground) that restricts boating to below 5 mph, 24 hours a day, year-round, which the FERC acknowledges in the DEIS. This was developed in response to the Bald Eagle Management Plan in the last license. It has worked well and the Forest Service requests that the FERC direct PG&E to develop a similar future condition should use indicate a need. Monitoring to see if this 20% trigger is reached would need to be conducted by PG&E. The Forest Service has addressed this need in Appendix C (Plan details) for TES species.

Page 245 – second paragraph, Boat Launch Modifications:

The FERC does not specifically accept the Forest Service request to have PG&E make modifications to the existing boat launch ramp to facilitate loading of disabled people into boats. The recreation subgroup of the PRCT made site visits to the State Park day use area and to Jamo in order to assess the possibility of constructing an ADA boat-loading platform. A number of these designs are now published and are being constructed at reservoirs in the west (Beckley, Bob. 2000). The Forest Service constructed such a platform at Packer’s Bay at Shasta Lake, California. The basic premise is a platform that allows the user to drive the trailered boat up next to the platform and to load a disabled person into the boat prior to its launch. The ramps usually have multiple levels to accommodate different sizes of boats. Due to the need for

more flat paved area in order to construct such a platform, it was decided that the designs were not suitable for either site. However, PG&E personnel and members of the subgroup concluded that some modifications to the existing launch ramp structure at Jamo could be made to create a partial solution. These modifications would consist of some additional concrete structure and handrails. The Forest Service requests that the FERC incorporate the idea of pursuing such modifications into the FERC recommendations for Jamo.

The Forest Service would like to clarify its 10(a) recommendation concerning extending the season of the host at Jamo through the end of September. The recreational use after Labor Day does certainly decline, however, typical sunny weather continues to draw moderate levels of users to the launch ramp for boat launching, shore fishing, and general shoreline use. The Forest Service desires to have PG&E continue regular cleaning of the restroom facility and general area policing for problems with trash and overnight occupancy *during weekends* through the end of September at Jamo Point. This would greatly improve the recreational experience of the users during that time. Whether this host did this or regular employees would be at the discretion of PG&E. PG&E could continue to collect fees at the site during the same time period to offset some of the costs to provide the service.

The Forest Service would like to elaborate on the 4(e) condition concerning the modifications to the ADA accessible fishing platform currently in place at Jamo Point. Minor modifications could be made to the side rails of the platform to make it more conducive to fishing by children and disabled people. We feel that these modifications to the existing structure would not be extensive or costly. We wish to work with PG&E in the context of the Recreation Plan to pursue these modifications. Secondly, the pier is frequently left standing above a very shallow or dry lakebed at times of lake drawdown, which makes it generally unusable as a fishing platform during these times. The Forest Service proposal was to redesign the fishing pier so that the pier would fluctuate with the lake levels and improve the fishing experience at that site. The Forest Service would like the FERC to include this proposal in the Recreation Planning process.

Page 246, paragraph 2, Burney Falls State Park:

The Forest Service wholeheartedly supports the California Department of Parks and Recreation in its request for funding for development within the McArthur Burney Falls State Park. Specifically, the CDPR would use the funds to construct a group camp as part of their approved development plan. As is shown by PG&E Recreation use studies (and as discussed on DEIS Pages 219-221 above), the State Park campground and day use area is at or near capacity many times during the summer season. Conditions are rated as “crowded” by all types of users. Additionally, overnight spaces for the public within the project are currently limited. Dusty campground has very few sites (7 spaces) and it will reach capacity within this license period. As the FERC pointed out in the DEIS (Page 239) “Currently, recreational use of the lower Lake Britton area is at or near capacity at certain locations and periods. However our recommendations in general focus on the upgrade and expansion of existing facilities to accommodate existing and near-term future recreational use.”

We encourage the FERC to consider the CDPR request. Should the group camp at the State Park be funded, it would create overnight spaces that would serve the project area while not impacting sensitive resources, which are limiting expansion at Dusty and North Shore Campgrounds. CDPR has indicated that construction of the group camp will free up 15 single-family sites (100 “people at one time”) within their campground. This figure represents over 25% of the Forest Service request for new developed campground spaces within the upper project area.

Further, the Forest Service requests that the FERC consider an additional amount of funding be provided to the State Park annually to replenish the beach sand at the State Park day use area. This is needed as the water fluctuations deplete the resource. This would provide a quality day use experience to the users. The State Park day use area is within the project boundary and is PG&E-owned land managed by the State Park.

Recent information (M. Gross, CDPR, April 2003, personal communication) indicates that almost all of the funds set aside during the last relicensing have now been spent in support of facility enhancement – specifically a fishing pier. Additional funds would further the State Park development plan and take pressure off the licensee to provide facilities at the Lake, or to impact new areas with potential effects to cultural resources and bald eagles. This proposal is truly a “win-win” for all parties and should be reconsidered by the FERC.

Page 247, last paragraph, County Boating Ordinance:

We agree with the FERC that the reservoirs are under a Shasta County ordinance concerning boating but the Forest Service submits that these ordinances were originally put into place upon the recommendations of PG&E once the reservoirs were constructed. The advice and recommendation of PG&E to the County in regards to these ordinances would be required in order for the County to consider any modifications. The amount of effort expended by the licensee to initiate the change should reflect the strong desire by agencies to open this opportunity to the public. The Forest Service desires to work with PG&E and other interested parties to find solutions to issues of safety and user behaviors while using the reservoirs.

The Forest Service supports the recommendation of the FERC to have the licensee develop a day use area at the Pit 3 tailrace as well as a day-use area at either Pit 5 or Tunnel reservoir. We will work with interested parties in the context of the Recreation Management Plan to design locations for this access as well as for possible designs to make accessible fishing structures that will not conflict with project operations. The Forest Service wishes to make clear that there may need to be a boating “season” on the reservoirs due to known bald eagle nest sites and we would work collaboratively to address these concerns in implementation of recreation and the IBEM plans.

Page 252, paragraph 1, Ruling Creek Dispersed Site:

The Forest Service appreciates the FERC support in providing improvements for the Ruling Creek dispersed area. The 4(e) condition for the Ruling Creek dispersed area

included a specific item to have PG&E realign the access road into the area away from the river's edge. This action was specified due to active erosion occurring because of the roadway. We believe that the FERC intends this particular item to be part of the spoil pile management plan but we wanted to be certain it was included as a part of the needs for this area.

Page 252, paragraph 2, New Campground Pit 5:

The Forest Service is disappointed that the 10(a) recommendation for a developed site in the lower project reaches near Big Bend was not considered. We feel there is a demand and a need for such a facility that would serve the visitors to the river reaches. The licensee reports that projections of recreation-day use in the Pit River Canyon will increase 44% over the life of the license. Currently, those desiring to camp in a more developed site must utilize the campgrounds in the Lake Britton/Burney area. There are no opportunities for such amenities as formalized camping areas with showers in the lower river reaches. The only lodge building available (Evergreen Lodge) is a single house that is not advertised and is rented a year in advance. As previously stated, Big Bend Hot Springs is not a County-permitted facility. It can be found on the Internet in websites that cater to "clothing optional" aficionados. This specific "opportunity" may not appeal to a wide variety of recreationists. The private Camp Pit is immensely popular with current employees and retirees of PG&E. Unfortunately, members of the public do not have the same opportunity in the lower reaches. In fact there are as many private camps for PG&E employees and retirees (3) as there are for the public on this Project which appears to the Forest Service to be a disproportionate share available to the public.

Development of such a campground was discussed on site by members of the Pit River Collaborative and separately by the Recreation subgroup. Suitable sites were located within the project boundary but outside of the "pristine" portions of the river reaches near existing roads and with potential for power due to nearby lines. This proposal was discussed with some members of the Big Bend community who also put forward some ideas for locations near main roads but away from possible conflicts with Camp Pit users. Unfortunately, no on-site survey of recreationists can capture those who do not come to that location because of lack of available facilities (among other things). For this we can only rely on trends, which show that developed site camping continues to rise in demand for the future. In summary, the Forest Service would like the FERC to reconsider its recommendation on no new developed facilities in appropriate locations of the lower river reaches.

General recreation note:

A number of improvements within the canyon are recommended by the FERC. In its 4(e) condition for the Pit 4 Reach, the Forest Service specified trash collection and potable water availability in the Pit 4 reach. While the issue of trash collection may be addressed at Ruling Creek, there may be a need to place trash receptacles so that they can be utilized at the whitewater boating put in and take out areas (or users can be directed to the nearest collection point). The Forest Service wishes to reiterate the need for a potable water source in the river reaches. It was thought that this need could be accommodated at

one or both of the Pit 3 and 4 powerhouses where we understand that potable water for PG&E employees is already available.

Page 253, paragraph 4, Lake Britton elevations:

The FERC recognizes that the Forest Service intended to formalize the Lake Britton water elevations as PG&E currently operates. The FERC says that higher lake levels normally do not occur during the high use recreation season and users indicated they were not impacted by the current water levels. The Forest Service is concerned that, if the lake is brought up to higher levels during the high use recreation season (Memorial weekend through Labor Day weekend) that the amount of day use areas would be greatly reduced which would displace many recreationists. Our wording was to formalize what has in the past been a standard operating procedure. It is not the intent to prohibit lake operations due to emergencies and flood events.

## **6. Land Use and Aesthetic Resources - a. affected environment (pg 263)**

Page 266, Transmission lines:

The FERC acknowledges that the Pit 3 230-kV transmission line is still within the project boundary, until environmental work is complete. The Forest Service is therefore including parameters to be addressed under this line in the vegetation management plan document. If this line becomes separated, this work will also drop from this plan.

Page 274, vehicles per day (VPD):

On this page, the FERC discusses vehicles per day (vpd) trigger that was discussed in past relicensings. Although the Forest Service new approach to consider triggers for road improvements may make this discussion obsolete, we want to clarify for the record difference of interpretation of the vpd trigger. While the Forest Service understanding (and our interpretation of the FERC's understanding) is that when 200 vpd is reached, PG&E would undertake traffic safety improvements. In discussions with PG&E they stated that it was not a one time threshold, but a seasonal (Memorial Day to Labor Day) **average** of vehicles per day. While we could find no reference in past discussions to that interpretation, that was their position. There is a very significant difference in interpretation between 200 vpd as a one-time threshold (which was nearly reached on several occasions) to a seasonal average of 200 vpd. To obtain a seasonal average of 200 vpd, would require weekend and holiday use to be in the thousands, as weekday traffic is notably lighter. The new concept for addressing future road modifications discussed in reference to FERC's DEIS Page #286 below, makes this whole debate moot.

Page 274-5, Table 40, Recreation:

Please add the following information to this table:

- North Shore Campground road is under a special use permit from the Forest Service to PG&E.
- Dusty Campground road and a portion (east end) of Dusty Campground itself are on PG&E lands. This campground was reconstructed by PG&E as a part of the last relicensing effort, and is currently managed by PG&E under an agreement

- with the Forest Service. Therefore add PG&E to the FS under the “land ownership” column, and change the notes to eliminate “Not a PG&E facility”.
- Add “Ruling Creek Dispersed Site” road on NFSL, an existing graveled road originally built by PG&E for construction activities that continues to provide access to Project facilities (the penstock tunnel adit), as well as for recreation. This road needs to be shifted away from the Pit River, as it is currently eroding into Project waters, and should be discussed as a component of the Ruling Creek dispersed camping area within the Recreation Management component of the LHMP.
  - Add the Pit 4 spoil pile road just below the Pit 4 Dam, on NFSL. This small native surfaced road actually crosses mid-slope through Spoil Pile 4D ending at the rivers edge, and is preventing stabilization of that Project spoil pile. Its use or abandonment needs to be discussed in the Spoil Pile Management Plan component of the LHMP.
  - Add the Pit 4 valve house road, on NFSL and PG&E lands. This existing graveled road, forks off the Pit 4 reach of the River Road, and currently has a cable gate closure that doesn’t meet FS safety standards. Additionally, this road accesses Project facilities (valve house, surge tank, penstocks, etc.) and the proposed spoil pile disposal site to be discussed further in both the Spoil Pile Management and Road and Facilities Management Plan components of the LHMP.

Page 273 – 276, Traffic Use:

This affected environment section for traffic use does not address Forest Service road safety and environmental issues that have been discussed in many Forest Service responses to PG&E and FERC filings. To summarize our concerns briefly, we have serious road safety and environmental issues. The road is eroding down hill, the pavement is cracked and potholed, signs required in PG&E’s sign plan are missing, roads do not meet current FS (or other highway agency) guidelines, turnouts are insufficient, visibility is obstructed, water drainage is not adequate, bin walls are no longer holding back the road, rotting logs are being used as bin walls, sediment from road maintenance activities is entering Project waters, and numerous other problems exist. Our most recent documents that address these issues are shown below for reference. While we appreciate that the FERC recommends a road plan, the items needed to be addressed in that Plan go beyond standard maintenance activities. The DEIS does not adequately reflect the existing condition that warrants the degree of repairs that are necessary to bring this 1930’s road up to current standards. These road concerns needs to be discussed in the FERC’s final EIS.

- October 9, 2002 “Preliminary 4(e) Terms and Conditions” Document to FERC. Enclosure 2, Rationale - Pages 58-63.
- December 18, 2002 “Forest Service Response to Comments of PG&E” Pages 12-13, #d.

**6. Land Use and Aesthetic Resources - b. environmental effects & Recommendations (pg 282)**

Page 286 first sentence of first paragraph, Project Roads:

In this first sentence where FERC addresses the type of traffic use, the sentence should be changed to include: "...for mixed traffic including passenger cars, sport utility vehicles, pickup truck, fire vehicles, dump trucks, lowboys, and logging equipment". In the 3<sup>rd</sup> sentence in this section change the sentence from what's existing to: "The plan would address minimum standards for paving width, design criteria for culverts to meet management objectives, turnout spacing, and designated parking areas". This sentence more accurately reflects FS road needs.

As discussed briefly in reference to DEIS Page 274 above, determining a trigger that would induce upgrades to Project roads (and most specifically the Pit 3 and 4 reaches of the River Road) based on vehicle use has not been clear. Previous PG&E and Forest Service discussions that debated the actual number of vehicles that would make the road no longer "safe" is an incorrect tact to determine improvements. A single number such as volume of traffic does not by itself indicate a safety problem or that a certain capacity with respect to safety has been met or exceeded.

There are existing road standards that apply to Forest Service roads that are based on road management objectives. For example, road management objectives of moving people as quickly as possible from one point to another without any need for recreational stops or scenic viewing (i.e. a freeway) would result in a different road than one intended for slow moving vehicles with stops for recreational activities, and wildlife viewing (single lane with turn-outs and parking areas outside the traveled way). The safety portion comes into play in assuring that the standards that meet that road management objective are maintained. Once the road is brought to the standard that meets the road management objective there is no need to trigger additional reconstruction unless the road management objectives change (e.g. induced by changes in traffic or recreational use patterns). There would of course be a need for operation and maintenance of the roads to keep them in compliance with the Road Management Objectives and Plan. For roads on NFSL, the Forest Service would approve "road management objectives" based on recommendations developed by Forest Service resources staff and qualified PG&E and Forest Service engineers. The Forest Service will be meeting with the Licensee on May 14-15, 2003 to review concerns in the field and to discuss this approach for road management.

Page 290, 1<sup>st</sup> paragraph, roadway standards:

The FERC states, "An increase in users as well as the passage of time would likely warrant additional road rehabilitation to help ensure that the capacity of the roads is not exceeded and to maintain the roadways to current standards." The Forest Service, as addressed above and in previous responses, has stated the roadways do not currently meet Forest Service standards. So to "...maintain the roadways to current standards" is not acceptable; we are requiring upgrading of roads on or affecting NFSL to meet Forest Service road standards based on our road management objectives. See the reference to DEIS Page 357 below.

Pages 290-293, FERC Analysis of road needs:

The FERC may wish to amend portions of the DEIS wording in this section given the change in approach as discussed above; from using purely road usage numbers, to instead using established road standards in conjunction with road management objectives to determine road development levels.

Page 290, 2<sup>nd</sup> paragraph, ORV Plan:

The Forest Service agrees with this paragraph concerning ORV use causing damage in the vicinity of the western portion of the lower Hat Creek area and the FERC recommendation to develop an ORV management plan as a component of the road and facilities management plan. We have been working with PG&E and the Tribe on this area due to on-going damage of sensitive resource values on: 1) Project 2) PG&E, and 3) National Forest System lands. From these discussions and fieldwork, we have learned that some of the access to PG&E and Project lands is over old dirt tracks on NFSL. Use of these access ways by off-road vehicles (ORV's) is causing some of the damage discussed in this requirement, and therefore PG&E alone can not resolve this issue, and would be prevented from accomplishing this FERC-mandated license condition.

This connected and cumulative action needs to be addressed in the FERC FEIS in order to allow resolution and fulfillment of the Licensee's responsibilities under this license condition. The proposed actions on NFSL are of limited scope and tied specifically to the ORV license condition requirement of this relicense. This proposed action should not be confused with a larger Forest Service planning effort to consider off-road vehicle use throughout the forest that will be undertaken on a forest-wide scale within the next 2-5 years. Waiting for this large-scale process before taking the limited actions listed below to decommission these dirt access ways would prohibit resolution of the issues tied to the Project relicense.

We are not requesting funding from other parties, funding for these actions would come from the Forest Service. But it is necessary to publicly disclose the full extent of actions required by this relicensing before they can be implemented.

To expedite resolution and to provide the FERC with the information necessary for public disclosure of the full effects of this license condition, the Forest Service proposes that the FERC include the following information in the Final EIS. The Forest Service proposed actions could include any or all of the following:

- Decommission less than two miles of existing dirt track(s) accessing PG&E and Project lands and waters only. These dirt (non-surfaced) tracks, dead-end onto PG&E and Project lands and waters. (Legal locations: Township 36 north, Range 3 east, portions of Sections 12, and 13, MDM, in the vicinity of the Sand Pits.)
- Block road junctions, install water bars and other water directing structures to redirect water off dirt tracks and to avoid erosion into Project waters.
- Obscure dirt tracks through ripping, or other measures that will minimize long-term erosion potential.
- Remove culverts, if any.
- Implement an ORV closure to allow an avenue for citing offenders.
- Sign the area of closure or other restrictions.

- Forest Service Patrols of NFSL to discourage use and to cite violators.
- Notify public through news releases or other media of changes.

The reasons for undertaking these actions is to alleviate the following concerns:

- Existing dirt tracks on NFSL provide access to the public which dead ends at PG&E boundaries inducing trespass on adjacent properties including Project lands.
- Erosion and sedimentation from this ORV use is proceeding downhill and affecting Project waters.
- Resource damage and disturbance to sensitive resources, as well as bank swallows (a listed TES species) found in area sand pits, and other wildlife.
- The reasons to take these actions at this time is to coordinate actions on NFSL with those of adjacent landowners (i.e. PG&E) who are being mandated through Project relicensing to take actions to resolve damage issues that are not totally within their control.

The effects of these actions would be:

- To eliminate less than two miles of dirt track being used by off-road vehicles who are trespassing on private lands and causing resource damage. Since the Lassen National Forest is open to ORV use, except in areas where it is specifically prohibited by a forest closure order, literally thousands of miles of roads are still open to ORV users on the Lassen National Forest. The effect of the loss of less than 2 miles of track is negligible.
- Resource protection afforded by the decommissioning of these routes is more than compensated for by protection of sensitive resources on National Forest and adjacent private lands.

The Forest Service wishes to do our part to assure that steps are undertaken to jointly resolve this issue. Including this disclosure in the FEIS will assure that all parties can implement coordinated actions to resolve this longstanding problem.

Page 294-295, Law Enforcement:

The Forest Service October 9, 2002 Preliminary 4(e) submittal included Condition #42, “Law Enforcement and Patrol Plan”. On pages 294-295 of the DEIS, the FERC states that it is more appropriate to deal with these issues separately in the Recreation and Cultural Resource sections. Accordingly, the Forest Service has eliminated this stand-alone condition and incorporated wording into both our revised preliminary “Cultural Resources Management Plan” and “Recreation Plan” 4(e) conditions (now as part of the larger LHMP condition).

We would like to clarify our intent regarding “law enforcement”. The Forest Service has a number of resource objectives as they apply to Project-induced recreation and use of the Project area:

- Boating speed limits on upper Lake Britton and other zoning are enforced.
- Fire prevention patrols are providing information to the public and eliminating human-caused fire threat.

- ORV use around bald eagle nests and other wildlife harassment by the public is stopped.
- Off-road and other vehicle closures, and rules of other restricted areas are enforced.
- Rules and regulations of various parties as related to the project are enforced.
- Looting and vandalism of cultural sites is minimized and when it does occur, follow-up investigations and citations of offenders occur.
- Cultural sites are monitored for natural or human caused damage, erosion, etc.
- Litter is reduced through public contacts and picking up of materials.
- The public complies with stay limits, and there is no seasonal occupation of recreational sites by vagrants.
- There is compliance with fees at recreational sites.
- Road speed limits are enforced.
- PG&E and Project related facilities are patrolled and protected from trespass and vandalism.
- Etc.

As these resource objectives all relate directly to Licensee's facilities or use induced by their Project, there is a financial responsibility incumbent upon them. Most of these objectives can be reached through use of non-law enforcement personnel. However, in addition, we believe that an enforcement component is necessary to ensure compliance with laws, regulations, rules, and ordinances. Since the Licensee has acknowledged in cultural and recreation sub-groups the unavailability of Law Enforcement personnel due to higher priorities and extended response times, the FERC's suggestion of utilizing existing law enforcement personnel (Page 295) will not achieve the stated resource objectives. For example, for over a decade off-road motorcycle usage has been occurring on a cultural resource site in the Lake Britton Archaeological District. PG&E has requested Sheriff's assistance in contacting these parties while the damage is occurring, but due to higher priority calls the Sheriff's office is normally unable to respond. The abusers of this area are aware of the lack of enforcement, which lead recently to their widening of the "track" with equipment that was clearly a trespass action. Fortunately, a Forest Service law enforcement investigation (a portion of the site damage occurred on NFSL) led to the arrest and conviction of this trespasser. PG&E and the Forest Service are now taking actions to avoid a re-occurrence of this damage (see additional comments in reference to DEIS Page 290, above) that is at least partially the result of the lack of Licensee-provided law enforcement.

A plan is needed (and recommended by the Forest Service under both recreation and cultural resources) to provide adequate personnel to address the resource objectives induced by this project. The Forest Service is aware of other programs by which PG&E may be able to acquire law enforcement services, as is occurring on other FERC-licensed Projects. PG&E could enter into a contractual agreement with the local Sheriff's office similar to the Lassen National Forest cooperative law enforcement program. This program complements agency personnel with deputies that have specific patrol assignments on the National Forest.

PG&E has been working collaboratively with the cultural sub-committee on addressing this issue. We appreciate that PG&E has looked into providing enforcement staff, but disagree with their estimated cost of \$250,000 annually for this work. While we agree that one time start up costs would be higher than on-going years, our consultation with LE staff have indicated that this cost is not realistic, and could be undertaken at an estimated \$50,000 annual cost, after first year start-up, or as an annual fund to cover other agencies assistance for Project law enforcement. This annual cost, especially when considering its benefits to recreation, cultural resources, fire, wildlife, and even facility protection, does not seem excessive.

In summary, the need for having law enforcement near and available to the Project has been identified in multiple areas (recreation, cultural resources, fire prevention, wildlife, etc.), has been identified as a need by various entities (Tribe and several resource agencies), and has a direct project nexus as affected sites and users are within the Project boundary. There are reasonable opportunities for PG&E to provide an employee or use other programs to provide the enforcement necessary to stop the on-going cultural resource disturbance, as well as to protect other resources and Project facilities. We will continue to work with the Licensee and other appropriate parties to find reasonable solutions to these concerns.

Page 302-3, Visual quality:

We agree with the FERC's discussion of PG&E facilities not meeting current Forest Service visual quality objectives (VQO), especially those of "retention" and "partial retention", and that these Project features existed prior to the Forest Service visual quality management policies. The scale used in developing the VQO for the forest-wide planning efforts in the respective LRMPs was large. Therefore, small-scale features, such as these PG&E facilities, were not intended to be identified during the larger scale LRMP planning efforts. However, this project level planning effort for relicensing provides the opportunity to modify the Forest Service LRMP VQO's. Therefore, the VQO designations for National Forest System lands within sight distance of these PG&E facilities should be changed from "retention" and "partial retention" to the more appropriate objective of "Modification", where human activities may visually dominate the original characteristic landscape. By incorporating these changes into this NEPA analysis and forthcoming FEIS these changes will be incorporated, as a non-significant plan amendment into the respective LRMPs. Additionally, FERC has recommended the Licensee develop a "Visual Management Plan", including visual screening and painting during regular upgrading of facilities, and the Forest Service has proposed visual enhancements such as scenic overlooks and facility interpretation. Through modifying the VQO designation, implementing the Visual Management Plan, and the other enhancements, the Project will become compliant with VQO in Forest Service comprehensive plans.

We also have noted during numerous field trips that there are a number of items in the Pit 3 and 4 reaches that broke loose from Licensee facilities that need to be removed. These include orange buoy lines, signs, and other debris. We would expect that those items be removed at the earliest opportunity (outside of relicensing), and that future Licensee

debris be addressed in the visual quality plan with a procedure for clean up in a more timely manner.

## **7. Cultural Resources - a. affected environment (Pg 305)**

Page. 307, last paragraph, CRMP:

Although throughout this section the CRMP is referenced as the “new CRMP”, we see on Page 323 where you agree with the Tribe that this “new CRMP” should be considered as a draft needing further revision by the Tribe and other agencies. We agree with that statement, and would appreciate the final EIS reflecting this “draft” status, as it will still be under revision at that time. At the end of same paragraph on Page 307, when discussing sites eligible and not eligible, the FERC’s information does not reflect agreed upon subcommittee changes to this data after field inspections and discussions that occurred last fall. More field inspections will occur this year, and more changes will undoubtedly be necessary. In addition, SHPO has not been consulted concerning the eligibility of many of these sites. These eligibility determinations are part of the ongoing work the subcommittee is undertaking as we are revising the Draft CRMP, so this data should not be included at this point in time until the CRMP is finalized (this does not apply to the historic period sites addressed in the following paragraph (Pg. 308) upon which both the Forest Service and SHPO have concurred.

Page. 308, paragraph before Traditional Cultural Properties, Eligibility:

The Forest Service prefers all sites that are eligible based on features or attributes alone (no excavation needed) to have formal determinations of eligibility completed and sent to SHPO for concurrence, regardless of whether or not PG&E will treat them “as if” they are eligible. This adds an extra layer of protection for these significant sites.

## **7. Cultural Resources – b. environmental effects & recommendations (Pg. 309):**

Page 309, Applicant-Proposed Measures:

This whole section (with the exception of the last two paragraphs on Pg. 320, which are fine) is still a work in progress as the cultural subcommittee of the PRCT continues site inspections and discussions. Table 44 has several inaccuracies that do not reflect the subcommittees work over the last year of site inspections and meetings, including errors concerning determinations of eligibility and of proposed mitigation measures that have significantly changed since the Draft CRMP was sent to the FERC.

Page 323 & 325, PA:

On these pages the FERC discusses their intention of executing a new Programmatic Agreement to cover the new license period. The Forest Service agrees with this statement, but wants to add that the Forest Service needs to be stipulated as a signatory to that document since it includes actions that affect National Forest System lands.

Page 325, First paragraph, National Register:

This text discusses the nomination of the National Register District prior to the issuance of the license, making it unnecessary to address it in the new license for this Project.

However, necessary review of this complex and detailed nomination document by the Tribe and pertinent agencies, collaborative discussions, and possible field review to verify the often-inaccurate site information provided by PG&E is necessary. Additionally, in the last sentence of the following paragraph, the FERC goes on to state that data from the new ethnographic study should be incorporated into the new National Register District nomination to be prepared by PG&E. This new study has not yet been started by PG&E. It is unreasonable to expect all of this work can be completed prior to license issuance in November of 2003. Instead of rushing this important work, the Forest Service recommends that the FERC provide 1 year after license issuance to file this nomination.

## **VI. DEVELOPMENTAL ANALYSIS**

Pages 328-335, Comparison of Power Generation Loss caused by flows:

This discussion compares the FERC's estimate of hydropower generation reduction caused by the Forest Service's Preliminary 4(e) Condition minimum flow requirements in the Pit 3 and Pit 4 project bypassed reaches with independent estimates made by Forest Service contractor Stetson Engineers. Stetson developed a Lake Britton reservoir operations model to assist the Forest Service in the preparation its October 2002 Preliminary 4(e) conditions.

The FERC estimated that providing the interim minimum instream flow requirements outlined in the Forest Service's Preliminary 4(e) Conditions (namely 400 cfs and 450 cfs in the Pit 3 and Pit 4 Project bypassed reaches, respectively) and in the Forest Service's 10(a) recommendations (500 cfs in the Pit 5 reach) would reduce the Pit 3/4/5 Project's 1,948,700,000 kWh total annual average generation by 208,100,000 kWh, or 10.7 percent.

In comparison, Stetson's Lake Britton reservoir operations model analysis estimates that the interim measures outlined in the Forest Service's Preliminary 4(e) flow conditions would reduce total annual average Pit 3/4/5 Project generation by 78,000,000 kWh, or 4.0 percent of total Project generation (Appendix D-4).

Stetson's analysis therefore indicates that FERC overestimated hydropower generation reduction attributable to the Forest Service's Preliminary 4(e) flow conditions by 130,100,000 kWh -- a 63 percent overestimate.

Although FERC did not completely document its modeling analysis methods and assumptions in the DEIS, the Forest Service's review of the DEIS suggests that FERC's 130,100,000 kWh overestimate has at least three components described below and summarized in Table 1:

- FERC included power generation reduction attributable to implementing the No-Action alternative (baseline) in its estimate of total Pit 3/4/5 Project hydropower generation reduction attributable to the Forest Service's Preliminary 4(e) flow

conditions. Stetson’s independent model analysis shows that implementing the No-Action Alternative (current minimum flow requirements) would in and of itself reduce the Pit 3/4/5 Project’s total historical annual average hydropower generation by about 7,900,000 kWh, or 0.4 percent of total Pit 3/4/5 Project generation. This amount of generation reduction should have been excluded from the estimated reduction due to the FS Preliminary 4(e) flow conditions.

- The FERC included hydropower generation reduction attributable to the Forest Service’s 10(a) recommended minimum flows in the Pit 5 Project bypassed reach in its estimate of total Pit 3/4/5 Project hydropower generation reduction attributable to the Forest Service’s Preliminary 4(e) flow conditions. Stetson’s independent model analysis shows that implementing the Forest Service’s 10(a) recommended minimum flow in the Pit 5 reach would in and of itself reduce the Pit 3/4/5 Project’s total historical annual average hydropower generation by about 113,790,000 kWh, or 5.8 percent of total Pit 3/4/5 Project generation. This generation reduction should have been excluded from the estimated reduction due to the FS Preliminary 4(e) flow conditions.
- The FERC’s operational model analysis differed from Stetson’s reservoir operations model analysis in several aspects including period of record analyzed, and therefore attributed an additional 8,410,000 kWh reduction in total Pit 3/4/5 Project hydropower generation to the Forest Service’s Preliminary 4(e) flow conditions, or 0.4 percent of total Pit 3/4/5 Project generation.

**Table 1**  
**Components of FERC’s 208,100,000 kWh Estimate of Annual Pit 3/4/5 Project Generation Loss Attributable to the Forest Service’s Preliminary Flow Conditions**  
**(Source: Stetson Engineers, Appendix D-4)**

Component	Annual Average Hydropower Generation Reduction (kWh)	Percentage of FERC’s estimate
No-Action Alternative	7,900,000	4
Forest Service 10(a) recommendations for Pit 5 reach	113,790,000	55
Model differences including different period of record analyzed	8,410,000	4
Forest Service Preliminary 4(e) conditions for Pit 3 and Pit 4 reaches	78,000,000	37
<b>Total</b>	<b>208,100,000</b>	<b>100</b>

Because the FERC partially relies on hydropower generation reduction estimates to evaluate the various alternative flow proposals, the Forest Service believes that the FERC’s hydropower generation reduction analysis procedure should be revised to provide a correct estimate of generation reduction attributable to Forest Service proposed flows. Specifically, the FERC’s analysis should be revised to:

- Quantify power generation differences between the historical regulated case and the “No-Action” baseline case, and clarify that these differences are attributable to implementation of the “No-Action” Alternative and are excluded from FERC’s estimates of hydropower generation reduction attributable to various other flow proposals and recommendations;
- Separate power generation reduction attributable to Forest Service’s Preliminary 4(e) flow conditions in the Pit 3 and Pit 4 Project bypassed reaches and its (non-mandatory) 10(a) flow recommendations in the Pit 5 reach; and,
- Document the FERC’s operational model analysis methods and assumptions in order to allow an independent evaluation of the procedure and reasonable comparison with our independent reservoir operations model analysis, including an explanation of model logic and assumptions and model sensitivity of results to selected period of record and method used in preparing synthesized unimpaired Lake Britton inflow input data.

See Appendix D-4 for the supporting analysis of the above referenced independent power loss estimates and a Lake Britton reservoir operations modeling summary. If the FERC would like to receive a complete digital database of model input and output data, and/or an executable copy of the full model to facilitate its review and analysis of the Forest Service’s Preliminary flow conditions, please contact the Forest Service for further information.

Additionally, there appears to be differences in the methods for estimating power loss by various parties. Although the Forest Service was not able to analyze the basis for PG&E’s estimates of power generation loss attributable to the Forest Service 4e and 5a minimum flows, it is worth noting here for the record that PG&E’s estimate is very different from results of FERC’s and Stetson’s model analyses. At p. 18 in PG&E’s February 25, 2003 Exhibit H, PG&E estimates that providing the Forest Service’s interim Preliminary 4e condition minimum flows in the Pit 3 and Pit 4 reaches would cost PG&E 103,000,000 kWh/yr or \$5,206,000/yr. PG&E estimates at p. 21 that providing the Forest Service’s 10(a) recommended flows in the Pit 5 reach would cost PG&E 67,900,000 kWh/yr or \$3,422,000/yr. The combined total of these estimates is 170,900,000 kWh/yr and \$8,628,000/yr, less than FERC’s 208,100,000 kWh/yr estimate. Moreover, the percentage of PG&E’s total estimate attributable to the 4(e) conditions alone is about 60 percent, with 40 percent attributable to the 10(a) recommendations for flows in the Pit 5 reach which were not adopted by the FERC. In both FERC’s and Stetson’s model analysis results, the ratio of the total Pit 3/4/5 power generation reduction attributable to the 4(e) conditions alone was closer to about 40 percent (42 percent in FERC’s analysis and 37 percent in Stetson’s analysis). It appears from this that PG&E’s method of estimating hydropower generation loss is very different from methods used by FERC and the Forest Service.

Page 345, #40-Vegetation Management Plan, #45-Fire Management Plan:

Plans that call for changes on the ground need to reflect the costs of such treatments.

While it cannot be estimated at this point in time the annual costs projected in this table need to be footnoted that they could increase considerably depending on the planning effort.

Page 346, #46 Bat-friendly gate costs:

Due to the nature of anchoring the proposed gate and the size of the opening, it is our experience that this gate will cost closer to \$15,000.

Page 349, #60 Road access to car-top boat launch costs:

The \$23,000 annual road maintenance costs are excessive for this three mile cindered road segment. If the words “annually grade and provide surface replacement every 5 years” were added to the text, the costs would be closer, but possibly even then excessive.

Page 353, #81, 82, 84, 85 – Trail improvement costs:

The costs reflected in the DEIS appear insufficient for expected development. The trails themselves were user created and are not built to acceptable grade causing erosion into Project waters, and some go through sensitive resource areas and need relocation. Reconstruction and relocation of trails, and construction of parking areas and restrooms (at some trailheads) all need to be considered in development of “Capital and one-time costs”.

Page 357, Road Costs:

On this Page of the DEIS FERC lists costs associated with environmental measure #100. “Complete a roads and facilities management plan” with a one-time cost of \$20,000 (no specific reference to rehabilitation costs). PG&E on the other hand in their February 25, 2003 “Updated Cost of Project Power” letter to the FERC, on Page 20 shows that they estimate “Project Road rehabilitation” costs at \$16,040,000 one time and \$120,000 annual costs. There is a huge disparity in these numbers, although it appears that the two parties are considering different objectives. While the FERC costs are associated only with a road management plan, PG&E has estimated costs to complete road rehabilitation.

For clarification, our objective (as addressed under “roadway standards” on Page reference 290 above) is to have PG&E reconstruct the existing roads where they do not currently meet FS road standards. While this will be a one-time sizable effort on the part of the Licensee it is critical to note that much of this is deferred maintenance on the part of PG&E, and is not related to relicensing. The Forest Service has had numerous conversations about the road condition with PG&E for over two decades. For example, repairs on the Rock Creek bridge were needed to meet load capacity for construction vehicles accessing the Pit 4 dam modification project last year. PG&E stated that they would reconstruct the bridge to standards developed during relicensing, and so were granted a temporary bridge overload permit to allow the dam modification to proceed in a timely manner. Bridge repairs then are clearly not related to relicensing, but with needed upkeep of an existing road under the terms of a Forest Service special use permit to PG&E, as well as within the terms of PG&E’s license from the FERC. The same applies

to costs such as repaving portions that have aged and are beyond their useful life, to bin walls that have eroded, to erosion induced loss of road shoulders, surfacing, etc. It would not be appropriate to use the Licensee's limited relicensing budget for on-going road O&M activities. This would reduce funding for legitimate relicensing mitigations. Had the roads been maintained over the years to accommodate use, this significant overhaul of the roads would not be needed. A road management plan with clearly defined standards and incorporation into this license should avoid this situation in the future. That said, there might be some road improvements that are tied to new standards that could appropriately be included in the relicensing budget (i.e. expanding pavement of the Pit 3 reach road to Gravel bar as a resource protection measure).

We are hopeful that the FERC has not listed "project road rehabilitation costs" associated with Licensee's deferred maintenance of these roads in their DEIS as they recognize that these are deferred maintenance costs associated with the Licensee's existing road authorizations, and not with relicensing. As FERC mentions on Page 290, "...PG&E commits to the principle of providing safe passage along access roads and proposes a road management and maintenance plan including addressing minimum roadway standards".

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