

Comments of Davis Hydro

on the

PG&E Draft License Surrender Application – September 2008

FERC Project 606

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Davis Hydro
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Introduction

Davis Hydro is pleased to be asked by PG&E to comment on their Draft License Surrender Application (DLSA). This document puts forward one of many alternative facility dispositions¹ not yet suggested or studied by PG&E within the NEPA context. Under NEPA, all reasonable alternatives to the proposed activity have to be considered. To ground and add reality to our comments, we will compare the DLSA with Davis Hydro's Reconstruction (DHR) alternative when appropriate. Other alternatives could be pursued; the proposed Davis Hydro alternative is one of many alternatives that could meet fisheries and community goals more effectively and at less cost to all.

Davis Hydro presents for comparison an alternative to the proposed action – notably to have PG&E meet the fish restoration and community objectives by having a new owner/operator for the facility. This DHR proposal, which addresses only the Kilarc facility, is close to the conceptual *do nothing/no action* alternative wherein PG&E would leave the facility in place. At this point in time, PG&E could: proceed on its planned DSLA alternative, do nothing leaving an opportunity for a new operator to take over, or collaborate with new operators to continue operations for fish and communities benefit.

The following two sections comment on PG&E's DLSA alternative by comparing and contrasting it to a simplified DHR alternative put forth earlier this year by Davis Hydro and the community of Whitmore. This comment does not espouse that PG&E should adopt or comment on the DHR alternative; it is used here to show how PG&E's significant environmental impacts could be remediated by studying and following such a course. Nor is the DHR alternative presented here for discussion; only the points that are directly applicable to illuminate deficiencies in PG&E's draft and underlying approach are included. A short summary of the DHR is included in Appendix A and a complete description is on the reference section of the WWW.kilarc.info website. Other less substantive notes and comments on the DSLA are in Appendix B.

¹ Specifically, we will not address the exact legal structure that can most effectively address the different alternatives. Clearly, cooperation of PG&E will be of great assistance to producing a solution that will most profit all concerned, including the fish.

Background

As background to this evaluation, one has to consider that there is a large human population which has built in the area that may easily not have done so had the Kilarc facility not existed. The analysis of alternatives must recognize that there are human and wild-life populations that are fully adapted to the present conditions. The town of Whitmore and the surrounding community have been built partly because of the amenities provided by the Kilarc facility, and both people and animals have come to depend on current conditions. This is unlike the normal “do nothing/no action” alternative where the “natural conditions” have no human population developments or a natural environment that has adapted to the facility over the past 100 plus years. To suggest that the community that has grown up around the Kilarc facility should just disappear – or unbuild itself is unrealistic. The disposition of the Kilarc facility must be evaluated from the existing condition for both humans and wildlife, and since we are talking about Green power, for listed endangered species and national and global effects.

This review of the DLSA starts with a section describing some of the unmitigated impacts of the Kilarc facility, and for contrast, in the last section shows how another alternative – such as the Davis Hydro Alternative will better serve the environment, the fish, the community and PG&E's ratepayers.

The Unmitigated Impacts of the DLSA

The unmitigated impacts are divided into the following six areas – each of which constitutes an important environmental effect that needs to be studied under various alternatives. It is recognized that the endangered fish in the area are of critical importance, and as potentially endangered species carry considerable weight in FERC/NEPA alternative decisions². Therefore, although there is some ambiguity about whether steelhead are an endangered species, we will treat them as such here and focus on these fish. However, in the future they may not be classified as endangered and other factors become important, so they are addressed both in the DLSA and here.

1. Fire

Fire risk will increase in the area due to the loss of high elevation/local water supply that allows easy, rapid ferrying of water down to a fire by helicopter. Removal of the Kilarc reservoir at its local high position over the community will have an effect on the town of Whitmore and the surrounding area that has come to depend on this gravity-

² See for example paragraphs 5 and 6 of the 7/1/08 FERC [Order rejecting requests for stay and Motion to Amend Surrender Order re FPL Energy Maine Hydro, LLC's Fort Halifax Project under P-2552](#). This Project is somewhat similar in its process to P-606, but is missing an alternative that exists and can protect and enhance endangered species.

avored water. This community cannot move or easily adapt to the loss of this fire protection, so the effect is unmitigated.

It might be argued that PG&E is not obliged to provide fire protection to the community or environment that has built up around the project³. Undoubtedly this is true, but the loss of this protection will have a long term effect nevertheless, and is an impact of the proposed DLSA demolition alternative. It remains impossible to mitigate without maintaining the forebay and the surrounding trees cleared for easy helicopter access.

The effect on the fish will be more profound. Fire is a major identified stressor on fish in the area. The fire runoff is chemically very alkaline and full of ash and fines. The loss of soil from fire fills the streams with fine ash and fines that destroy habitat for several years, and the residual load of fines persist long after the fires, negatively impacting anadromous fish downstream in the fish habitat beds of the Cow. While there is always a risk of fire, the differential probabilistic loss of fire protection to plants, wildlife, and primarily for this analysis, the fish will have a negative effect on all species of concern.

2. Recreation

Fishing recreation will decrease, as there is no other similar public facility for many miles. This facility – with its views, fishing, and ambiance is difficult to compare to any other, but suffice it to say, everyone who uses it – and people who come many miles to do so, prefer its ambiance to any other closer site. To suggest that people can check PG&E's website and go elsewhere is simply not equivalent. Many of the people who live in and near the Kilarc facility are there for the recreation, and to offer a remote substitute is neither equivalent nor environmentally responsible as the increase in travel to alternative sites will increase pollution from traffic, destroying proximate recreation and our environment.

The magnitude of this unmitigated local impact can be calculated in several ways, first by the relative value of housing in the area relative to more remote but similar housing, i.e. this is because people move/retire/build houses near their recreation site. Separately, one can estimate the value from the fishing density and the effects and costs of distance people have traveled to this site. The economist would also add to this the real, and option value for aesthetic enjoyment of the site by non-participants, and other residents of our environment affected by the loss. The sum of these effects gives in monetary terms the value of this site is lost to the human population – the effects on the wildlife through the destruction of existing habitat – especially wetlands will be profound. Since this site is unique, and highly valued unless an equivalent one is provided by PG&E, the recreation impact remains profound, but essentially unaddressed and unmitigated in the DLSA.

³ This is different from P-2552 in that the town of Winslow did not grow up dependent on the water for fire protection.

Is PG&E legally obligated to provide fishing forever in the Kilarc Reservoir? This is unlikely, however, in the comparison of alternatives, demolition of this wonderful facility would weigh heavily against its demolition relative to any alternative such as the (DHR) that would leave it operating as it does now.

3. Handicapped Fishing

More acute than the recreational impact on the Northern California population as a whole, is the value to the handicapped population. This is the most spectacular handicapped trout fishing known in northern California. Handicapped fishing will be impacted, as there are no other similar facilities for handicapped/wheelchair fishers. True, the number of handicapped participants is smaller than the general fishing population, but the calculation of the impact of the demolition of this fantastic resource is heightened for a smaller human population by acuteness of need, appreciation, and scarcity (or in this case lack) of comparable sites.

Under the DLSA it is not possible to mitigate this loss without constructing a nearly identical facility with similar sweeping views of three mountain ranges. Again, PG&E may not be legally required to maintain this facility for the handicapped, but in evaluating alternatives, PG&E might consider economical alternatives, such as the DHR plan, that would maintain the facility. If the demolition alternative is pursued, a minimal surrender condition would be to provide a equivalent recreation facility

4. Wetlands

There are wetlands in numerous areas of the facility that will be impacted by the DSLAs plan. These include wetlands:

- surrounding the forebay,
- That have been created down the hill, north of the forebay by the outflow from the steady leakage and occasional use of the forebay overflow,
- along the canal – primarily from leakage but also in the pools and riffle areas in the unlined sections,
- those that have been created and are maintained by the small and large flows from the drainage gates⁴, and
- along the unlined and leaky North and South Canyon ditches that have generated wetlands sporadically along their lengths.

These wetlands provide a myriad of constructive uses and under California law may be protected. The habitat created, fire protection, and hydropower are constructive uses of these wetlands and diminutions of these services may be in violation of California

⁴ The fish return facility is going to take advantage of one wetland and its associated cover from the last release gate near the trash rack. Leakage from this gate has created a year around habitat and wet area that provides a pre-prepared channel and green corridor for the Davis Hydro fish release channel.

law⁵. The loss of these wetlands is significant under state law and mitigated as a surrender condition. Further, and more important in evaluating alternatives under Federal law, any alternative action that does not support these wetlands creates a significant unmitigated impact under state law. Any alternative must maintain or mitigate for them and the services the wetlands provide.

5. Historical /Cultural

The whole Kilarc canal water delivery system is identified in the DLSA as an important system that has historical importance that reaches back to gold mining days. While the original wooden flumes are lost, their modern steel replacements⁶ provide exactly the same function in the same places along the canal. Other than the metal flumes, much of the rest of the concrete construction may be over 50 years old. Removing the structure will remove a significant artifact of early engineering in California. Finally, the first part of the canal was likely in place during gold mining days with the original channels used for hydraulically mining the Old Cow. There are similar existing channels on the North side of the Old Cow that were not modified during the copper mining craze into the first section of the Kilarc Canal. The Cultural section of the DLSA (page E.2-87-97) does not discuss the development of the canal and its relationship to previous hydraulic gold mining canals in the bypass region of the Old Cow. If it cannot be preserved, its relationship to the underlying mineralization should be documented and given the research and treatment it deserves. Just removing the structures with only an exposition and documentation of its heritage (as the DSLA has done) leaves the draft incomplete, without an analysis of the alternative of leaving them in-place.

In summary, the DSLA has made the historical record fairly clear, but the application is for future actions, and these proposed actions have not been compared to the viable alternative of leaving the structures in place and operating.

⁵ But not federal law. Since the PG&E controls the water, removal of that water will destroy the wetlands. With the wetland gone, there is no wetland destruction – under Federal Law. This is quite different from state law and is common sense. In California, under the Porter-Cologne Water Quality Control Act the local regional water quality control plan may have a provision that requires the maintenance (or mitigation) of a wetland once created for numerous reasons including water quality.

⁶ Replacement pieces and maintenance do not eliminate the historic value of a structure that still functions, or this would deprive many buildings – from the Parthenon in Athens to any earthquake retrofitted building in California - of their historic importance.

6. Anadromous Trout

A focus of this discussion is the fish. The rainbow trout (*Oncorhynchus mykiss*) in the area may become steelhead⁷ if conditions are right. Further, it is contended by the fish conservation agencies that by increasing the water in the bypass through removing the hydro under the DSLA, more steelhead will be produced. Therefore, *ceteris paribus*, more steelhead would be produced by Kilarc removal, so that alternative should be accepted irrespective of any other factors. The following is a discussion of that premise and reasoning.

6.a. Bypass Fish Habitat

The removal of the Kilarc facility is driven by PG&E's belief that they would be required to put more water in the bypass for the fish. This may be a self-fulfilling prophecy, if a scientific basis for such a "4e" condition is not required. The difficulty here is that there is no evidence of the number of fish that will be produced if water were returned to the bypass, either in absolute terms, or relative to an alternative proposal similar to that put forward by Davis Hydro.

CDFG staff cites experience at Battle and other creeks where more water in the bypasses has produced a large increase in fish, notably rainbow, and potential steelhead behavior in those areas. That experience and finding is uncontested. However, in this case, the habitat of the bypass channel is very poor for young rainbow habitat – worse than the habitat available in the other rivers publicly cited especially for critical spawning and juvenile life stages. To quote the DLSA (page E.2-18),

Old Cow Creek {in the by-pass area} is predominantly a {Rosgen} B2-channel type downstream from the Kilarc Main Canal Diversion Dam. Dominant bed material is overwhelmingly boulder, interspersed with smaller bedrock sections.

And

The Old Cow Creek Project affected bypass reach is entirely classified as cascade/step-pool. According to Montgomery and Buffington (1997), cascade channels have a random bedform and are very steep, entrenched, high energy streams. The step-pool is characteristic of steep-gradient mountain channels that have short steep plunges punctuated by flats, indicative of a stair-stepped bedform.

⁷ Rainbow trout and steelhead are the same species. The use of the endangered species act (ESA) here is to preserve not a species – not even a subspecies - but rather a behavior of some members of the species. Since one cannot tell which fish will migrate downstream to the sea and return – thus becoming a steelhead- the ESA is being used to protect all habitat that contains rainbow trout where the physical conditions might allow anadromy. While it is very unlikely that significant numbers will return upstream into this bypass region, relative to resident and downward adult migrants, the emphasis at this site is to emit as many juvenile steelhead as possible so that the straying behavior of the steelhead as it returns can be utilized to increase steelhead behavior and populations across the Diaspora of the fish's range.

These pools could provide lateral habitat if there were sand or gravel sides. Unfortunately they are mostly incised rock lined and boulder edged. This poor spawning and juvenile habitat along with upstream migration barriers gives an opening for asking which alternative will produce the most steelhead- facility removal, or Davis Hydro's fish spawning habitat initiative.

The serious question, and it is the question on which the DHR proposal is based, is "will the increase in population in the bypass be more effective at steelhead restoration than the actively managed steelhead spawning grounds proposed for the three Kilarc canal habitat sections?" If study shows that the answer is yes, then PG&E's DLSA is the preferred alternative for steelhead. However, if the spawning channel of Davis Hydro is successful, i.e. it creates more fish than the DLSA alternative, then it is the preferred approach based on anadromous trout produced.

If PG&E's DSLA plan goes forward there will be more flow in the bypass from the water currently used by the hydro. This may increase habitat by some amount. There, the productivity of any additional habitat created with increased flows may be small or even negative due to the incised valley geomorphology of the bypassed region of the Old Cow. Specifically, according to the soil transport analysis, increasing the flow in the bypass reach will do nothing to increase sediment accumulation along possible habitat areas⁸. Current evidence is a starting point for such a study: the poverty of habitat in the bypass reach can be confirmed by site observations, and the report on the habitat described in Appendix E of the DSLA and the discussion of this region in the Biological Habitat Assessment (BHA). It can also be observed remotely in the pictures on the Davis Hydro Web site⁹ and in the pictures presented in the BHA¹⁰. If it is revealed that the DLSA proposed plan of demolition decreases habitat in the Kilarc bypass channel, it might not be permitted to flood this critical¹¹ habitat with water so long diverted for hydropower.

In summary, the critical question in the evaluation of alternatives is whether the natural stream channel – in this case, not in the case of the gentle South Cow or Battle

⁸ The steeper alluvial project-affected bypass reaches of Old Cow and South Cow creeks classified as cascade/step-pool are supply-limited. This means that the transport capacity (ability to move sediment) is much greater than the sediment supply (DLSA p. E.2-24). Thus increasing the transport capability further with more flow may only exacerbate the denudation of the small amount of lateral bank generated habitat material that exists.

⁹ There are two groups of pictures. The first, available in the picture section of the www.kilarc.info website, show the reach sections that are accessible without serious rock climbing. The second group of pictures is the high resolution, low altitude aerials which are available from Davis Hydro on request (they are far too massive to post). A typical one is shown [here](#). These are currently being used by Davis Hydro for cover assessment, and formulating a possible attack plan on the Mongolian Blackberries over much of the wetlands area.

¹⁰ Or, as was so eloquently put during a recent public meeting on the DSLA, "There's no steelhead up there {in the bypass} because they cannot get up there, and if they could, all they would find would be rock bottom. They need gravel and there isn't any."

¹¹ Critical habitat for Central Valley Steelhead was designated September 2, 2005 and includes portions of Cow Creek and its tributaries (70 FR 52488) (DLSA p. E.2-41).

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Creek- will potentially be as fertile a habitat as is possible under the Davis Hydro alternative. Thus a minimal criticism of this draft is that it fails to show that the demolition alternative is preferable even from the narrow metric of steelhead production. A minimal analysis for surrender should be the defense of this hypothesis.

6.b Downstream Steelhead and Salmon Habitat

The demolition of the Kilarc Canal will raise the water temperature below the powerhouse and in the extensive salmon and steelhead habitat downstream of the powerhouse. This is documented in numerous temperature measurements made by Mr. and Mrs. Wetmore. It is also supported by the detailed observations reported in Exhibit E of the DSLA (pp. E.2-39) and it is easily observed on any summer day with a thermometer. The magnitude of the downstream temperature effect is undoubtedly small, but – in contrast, may be very significant in habitat area determination¹². The large excellent salmon and steelhead habitat downstream of the powerhouse will be affected incrementally by the high temperatures in the summer, and while the temperature change in the Cow will be very small, its marginal effect when applied over the large and fertile habitat shallows may be large. The magnitude of this habitat loss might be compared in size and fertility to the paucity of spawning and juvenile areas in the bypass channel.

In summary, the loss of this fish habitat and thus fish from temperature effects cannot be ignored. While the temperature effect is small, the fertility of the affected spawning and juvenile habitat is very large and very temperature sensitive. This habitat loss with project demolition is a significant unmitigated impact and should be studied as a minimal analysis if fish habitat is of concern.

6.c Acid Rain

The effects of acid rain¹³ on salmonids are well documented and must be mitigated if the demolishing alternative increases hydrocarbon emissions. Demolishing this source of green power will engender substitution of fossil energy causing acid rain, incrementally destroying large areas of steelhead and other salmon habitat. This is unmitigated and cannot be mitigated by PG&E because they are already unable to acquire green resource at any price to meet their mandated goals.

While acid rains importance to the fish seems to be a vague, and weak impact, nothing is further from the truth when the tiny effect is integrated across the affected area. We are now facing a massive global warming, with destruction of many fish resources because of supposedly inconsequential “local” decisions of hydrocarbon usage. The National Oceanographic and Atmospheric Administration is charged with considering

¹² See [L. Thompson et al's Research Paper Impact on Fish](#) on the effects of temperature effects on trout and salmon habitat in the lower sections of Cow Creek. This is available on the WWW.Kilarc.info documents page as document KC0090.

¹³ It may constitute a significant take by PG&E in its net effect on rainbow. The effect of these rains are national in scope and applicable across the whole of the Western steelhead habitat. If we are interested in the effect on the steelhead as a pollution, then a national evaluation is warranted.

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these large effects and to adequately represent them when evaluating local decisions. We would expect them here to fight to preserve what green power we have, for in this case and many like it, the destruction of green power sources is assuredly killing our planet.

6.d Transient Habitat Impacts

The transient effects of demolition will not be from the small effect of the dam removal, but also from the removal of the huge forebay and three miles of canal and associated structures. The latter will put fines into the Old Cow for many years as the loosened material runs off. This is a significant unmitigated impact in that these fines will wash slowly downstream over many years mixing into gravel beds and destroying their fertility. While the gravel may appear to remain healthy from the surface, with a significant load of fines settling within the gravel matrix, there is a lowering of interstitial waterflows and oxygen necessary for good spawning. This effect will not be in the small area of the Old Cow, but continue downstream for many miles polluting the far larger and more fertile salmon and steelhead habitat of the lower Cow Creek¹⁴. This is a significant unmitigated impact, subtle in that it will take years to have an integral effect, but possibly profound in its potential effect. The DLSA addresses the issue of runoff, but fails to address the short and long term effects on the target fish. This analysis of incremental long term silting and effects on downstream salmon and steel head habitat should enter the balance calculus of what is best for the listed species.

6.e The German Ditch

In the original [Decommissioning Agreement](#) was a good-faith promise by PG&E to return the water that they owned in the German ditch to the stream for instream (fish) uses¹⁵. However, PG&E had already generously allowed others to use and become dependent on this water, much like the town of Whitmore was built dependent on the implicit generosity of PG&E for providing fire control, recreation, and minor industry to the town with the creation of the Kilarc reservoir.

When the German Ditch users objected to the loss of the water, PG&E capitulated and promised the water back to the current users of the water. CDFG has objected that this denuded the original agreement of a major fish enhancement element because the German ditch is on the South Cow Creek and is full of steelhead and late fall and winter run salmon. The current actions and negotiations of PG&E are unknown. It may have chosen to continue to abrogate this commitment to the fish by simply abandoning the water right thereby *de jure* returning the water to the stream, but *de facto* allowing the current users to continue use and diversion.

The losers in all this are both the ditch users and the fish, as the water will continue to be diverted until the time that CDFG will require expensive screening and its

¹⁴ This is also different from the P-2552 cited decision *ibid*. In this case the removal of the facility will have significant negative effects over very large spawning and juvenile habitat areas of the Cow Creek, negatively impacting the key species we are trying to help.

¹⁵ See item 7.a. of the [Decommissioning Agreement](#) (on physical page 17)

maintenance. This loss of fish is significant because the South Cow is currently well populated with steelhead and salmon with extensive local and upstream habitat for both species. The German Ditch constitutes a diversion of significant quantities of water and is unscreened. Most of the downstream migrating steelhead and salmon are lost into this ditch and thus the fields¹⁶. If PG&E continues on this course, the effects on the lack of water for fish recovery will be profound. The negative effects of the loss of water from the stream will continue to be large and this needs to be included in the mitigation analysis.

6.f Genetics

The DLSA makes the point that historically, the Cow Creek watershed was and is stocked with rainbow extensively. CDFG planted a variety of species since at least the 1930s, including Chinook salmon, steelhead, rainbow trout (of various strains), brown trout (of various strains), and Eastern brook trout. In the 1990s, rainbow trout and steelhead were planted in the streams and rainbow trout have been planted in Kilarc Forebay (DLSA Page E.2-41). Since upstream passage of anadromous fish is difficult (many say impossible¹⁷), this stocked indigenous population will persist into the indefinite future as it is well adapted to the existing environment. This barrier is only one of many and by no means the largest barrier in the bypass region¹⁸. This would preclude any significant infusion of the anadromous genotype into the area now saturated¹⁹ with adapted non migrating fish. Thus simply on the basis of the current conditions any thought that steelhead behavior will be generated as the result of the hydro-removal is not supported by the genetic content and physics of the region.

Unmitigated Impacts Summary

In summary, the PG&E Draft License Surrender Application (DLSA) correctly lists many impacts and underlying challenges of the proposed action especially vis-à-vis

¹⁶ This is a large opportunity in that the South Cow is full of salmon and steelhead habitat and both species are prevalent in the area.

¹⁷ Whitmore Falls had long been considered an impassible barrier to anadromous salmonids. CDFG and NOAA Fisheries re-evaluated the barrier at Whitmore Falls in 2003 and now believe that this barrier may be passable under unspecified high flow conditions (likely during wet years ...). The reclassification of the barrier at Whitmore Falls led CDFG and NOAA Fisheries to revise their management objectives for the Project Area to include anadromous salmonids (DLSA p. E.2-42). However, this barrier is only one of many and by no means the largest barrier in the bypass region. This would preclude any significant infusion of the anadromous genotype into the area now saturated with non migrating fish.

¹⁸ CDFG identified a waterfall located 2.7 miles upstream of the Kilarc Powerhouse as a barrier to upstream migration. This barrier likely precludes the use of the upper portion of the Project Area by anadromous salmonids. It was determined that this 12-foot-high falls was likely to be impassable at any flow. Additionally, a boulder cascade located 3.0 miles upstream of Kilarc Powerhouse (between these 12-foot falls and the Kilarc Main Canal Diversion Dam) was assessed as a barrier at most flows. Eleven other barriers were also identified within the Old Cow Creek bypass reach. (DLSA p. E.2-42).

¹⁹ Rainbow trout are the most abundant species in the Kilarc Development area. This species made up over 90 percent of the total number of fish at all sites sampled (PG&E Draft Biological Assessment 2007, as quoted in the DLSA p. 2-43).

the fish. Across the board, the Draft Application fails to adequately address the effects of their actions. Further, since it is obvious that there are significant impacts, PG&E's ignoring the study of alternatives lengthens the time they operate the site under the old rules²⁰ while waiting for the FERC to require them to study the alternatives rather than simply doing the studies as they originally suggested. This very delay has a profound negative effect on the species by nature of the resultant inaction.

Davis Hydro's Impact Mitigation Alternative

This comment on PG&E's DSLA continues by discussing what could be done on short notice to move to a new operator for the site; an operator who intends to base its operations on fish restoration, recreation, site maintenance, and community involvement. Speed is of the essence if we want to help the fish. The Davis Hydro alternative could be started immediately with PG&E's cooperation and if it were to be seen to be helping the fish, we could have a Win (fish)-Win (fishing)-Win (community)- Win (PG&E cost) solution at little cost to all concerned in very short order. Therefore, to facilitate that discussion, we extend our comment on PG&E's DSLA plan in the following section with an alternative that could be put in place immediately.

The Davis Hydro Reconstruction proposal addresses all of the above unmitigated impacts and makes provision to immediately start bringing environmental benefits far beyond what is current practice. Thus, the DHR alternative can be thought of as mitigations for all the negative impacts of PG&E's DSLA and thus appropriate in a comment on their DSLA. The previous section was organized as a list of some²¹ of the impacts that PG&E demolition plan will cause. These will be discussed in the same order as above.

1. Fire

Under Davis Hydro's DHR alternative, the forebay will be retained as it is now. The fire protection will continue to be provided by water availability in the forebay. This is especially important in that the whole of the community of Whitmore has come to count on that easily accessed large supply of water to protect them.

Separately important, is the protection from fire the forebay provides the target fish in at least two forks of Cow Creek. Fire destroys forests in a way that it is followed by severe runoff. Soil structure is destroyed, and the runoff becomes very alkaline. This runoff does great harm to fish habitat downstream by filling any gravel spawning and juvenile spawning beds with fines and toxic mud. The negative effects on the macro-invertebrates, their food sources (insects in particular) and fish persist long after the fire,

²⁰ The known record of similar annual license delays PG&E has been able to obtain to date is over 25 years.

²¹ There are others that are not addressed but which are similar including the effect on wildlife, migrating birds, endangered species, property values to humans. While it is simple to say that the "natural conditions are best" the inhabitants and their dwellings are highly adapted to the existing conditions, so that for them "natural conditions" are the existing conditions.

negatively impacting fish in the area for years after a fire with runoff pollution. This take of fish and their habitat in the Cow by fire runoff should be considered in the analysis of alternatives to benefit the fish.

In summary, Davis Hydro's DHR plan offers the best fire protection for the human, wildlife and fish populations in the area and by retaining the forebay, provides a baseline for alternative comparison and a minimal basis for surrender conditions.

2. Recreation

2.a Fishing Continuity

Public fishing recreation will be maintained as it is now. This facility – with its views, fishing, and ambiance will be maintained in the forebay area.

2.b Extension and Education

To better connect to the fishing community, Davis Hydro will build an information kiosk near the trash rack and a series of public information boards that describe the steelhead spawning efforts being undertaken in the canal. The public education and outreach are a part of the DHR alternative to enlist the public in maintaining the facility and understanding the importance of fish and water protection measures. We intend to work toward an education facility where children can come for a school tour that will include Green hydropower, recreation, and a real steelhead lifecycle education showing the spawning²² and downstream migration in different seasons.

In summary, the DHR alternative will continue the recreation opportunities of the area and extend them with a steelhead information component. The continuation of existing conditions and the extension into fish and fish habitat education should eliminate any mitigation issues. These would comprise minimal surrender or continued operating conditions to meet fishing goals in addition to the fish stock/habitat enhancements that are described below.

3. Handicapped Fishing

Under Davis Hydro's DHR proposal, handicapped fishing will be maintained as it is now with several additional informal maintenance measures instituted. Wheelchairs can currently access the whole of the forebay in an informal manner that is reportedly unmatched by more formal railed, tarred, handicapped facilities with few fish.

²² Unfortunately the rainbow spawn in the winter when it may not be possible to organize school trips due to weather and school schedules. However, the seaward migration is the focus of DHR's efforts and this will occur in the spring. The spawning of brown trout can be easily witnessed in the Kilarc canal this month (November) which should engage the kids. Unfortunately, Davis Hydro's Reconstruction alternative considers the brown trout to be predators and their propagation will not be encouraged.

In talking to the handicapped users of the facility, in some areas the sides and ground material are a little soft and in others rocks protrude and make access awkward. The DHR plan includes an effort to remove most of the offending rocks and the paths will be hardened in places with tamped decomposed granite to make wheelchair passage easier.

In summary, the DHR alternative will slightly expand the current extraordinary, popular handicapped fishing facilities, so loved and used rather than destroying them.

4. Wetlands

Since the DHA alternative leaves the forebay untouched, the wetlands will not be changed significantly. Rather, at some sections along the canal, riparian fish habitat pools will be built into the southern hillside of the canal and wetlands expanded into small side passages where ground conditions permit. The northern side of the canal has to remain free of trees to prevent leakage via old tree roots. Fish habitat expansion on this side is limited by potential leakages and frost effects. The canal-side habitats and drainage littoral areas are to be created on the south sides of the Kilarc, so there will be a slight expansion of wetlands. These have yet to be designed and must be implemented in concert with the reconstruction of the spawning beds and recognizing the permeability of some of the soils.

Finally, the fish return facility joins an existing a long stream (unnamed) that currently has an extensive wetland and riparian habitat. The riparian habitat from small, seasonal and occasional flows leaves an extensive soil habitat where not choked by Mongolian blackberries. The fish return passage will increase this to a wetland, making a more robust, long riparian habitat²³ running down the dry NW side of the piedmont. If permitted, the Mongolian blackberries will be diminished using safe chemicals and deciduous woody littoral cover will be encouraged. New steady flow will be provided to create an easy downstream passage for seaward migrating fish.

In summary, by retaining the Kilarc, and greatly expanding wetlands, the DHR alternative contributes to the needed inventory of riparian habitat needed in this area. In the calculus of alternative evaluation the contribution of these wetlands to the environment and specifically the food supply for fish has to be considered.

5. Historical and Cultural

The Eastern end of the Kilarc canal was an extension of older canal structures and hydraulic mining waterways in the Old Cow. This early canal had wooden flumes, many pieces of which can be seen in pieces down the hillside from the existing canal. Other remains exist of canals, pits, shafts, and waste piles in the bypass region, as reminders of the mining activity. The history of the canal and the very early use of the siphon to bring

²³ Part of this small creek might be made and managed as a small side-channel natural spawning ground and year around habitat. It is entirely on private land and fairly inaccessible. This is in the feasibility and discussion stages at this point.

water over from Canyon Creek are documented in the DLSA and are important artifacts and should be preserved by continuing its use.

Currently the North Canyon ditch is in poor condition and falling into ruins from lack of maintenance. The wooden flumes are rotting into holes and the ditch is washed out²⁴. Abandoning this facility may be a rational economic decision, but in that case, its historical nature and engineering should be clearly documented for posterity.

The DHR proposal would make use of the North and South Canyon Creek waters for two reasons: First, it will provide additional water for green power, and second, the water will be warmer in the winter and will help moderate temperatures and icing in the Kilarc Canal. In the summer, the water from the North and South Canyon is colder than that coming down the Old Cow cooling the water in the canal (DLSA p. E.2-40). This temperature moderation is beneficial for the fish, especially in the summer.

In summary, recommended surrender condition is to retain the Historical artifacts of the water delivery system by using and maintaining them. This approach which has water temperature implications and therefore fish habitat considerations differs from the draft approach of the DLSA which is to document the remains then write them off as unimportant and demolish them.

6. Anadromous Fish

6a. Bypass Fish Habitat

PG&E's surrender results from a belief that they would be required to put more water in the bypass for the steelhead fish. This may have been true, if it were left uncontested by science and a careful examination of alternatives that might produce more fish such as the one proposed here by Davis Hydro. In very simple terms, the following elements are suggested for evaluation when looking at the habitat in the bypassed region²⁵:

- that the bypass region is not natural habitat in that there has been low water there for over a hundred years, and second,
- until recently most of the bypass region has been difficult to access so people have overlooked the fact that the bottom of most of the bypassed Old Cow streambed is stone or large boulders with very little spawning grounds and limited juvenile area. This PG&E plan will lead to only a small potential increase in fish in the area.

²⁴ Despite a recent FERC inspection report to the contrary.

²⁵ See Davis Hydro's [photos](#) taken Summer 2008.

6.b Downstream Habitat

In the DHR alternative the cold water continues to flow from the powerhouse. The impact of the loss of fish habitat downstream will be averted. Also under the DHR plan additional cover is planned for the Kilarc Canal reducing the temperature in the summer.

6.c Acid Rain

The acid rains that result from fossil generation are well documented and must be mitigated since salmonids are sensitive to their effect. Demolishing this source of green power will engender substitution of fossil energy to make up for the loss of green power. This fossil generation will cause acid rain that will have a very small effect but incrementally destroying habitat over very large areas of steelhead and other salmon habitat.

PG&E stipulates that they can obtain green power elsewhere. That statement is in direct contrast with their struggling to acquire the state-required amount of renewable energy for their Renewable Portfolio Standard portfolio. The reality is that all possible efforts are going to be made to acquire indigenous sources of renewable power, and having to acquire more to make up for the loss of Kilarc will exacerbate this shortage. Since every electric utility is now trying to acquire green energy, the loss of the Kilarc will only be displaced by their retention of or building fossil generation producing both acid rain and greenhouse gasses²⁶.

In the DHR alternative, no mitigation is needed in that it is already producing green power and this will continue uninterrupted if FERC permits. Since this site is already mostly constructed, it has a much smaller construction impact than a new Green energy plant - of any type. It is a very preferred source of green power – so long as fisheries objectives can be met or exceeded – which is the intent in the DHR alternative.

6.d Transient Habitat Impacts

The transient effects of demolition will not be only from the small effect of the dam removal but from the removal of the huge forebay and three miles of canal and associated structures. This will put fines into the Old Cow for many years as the loosened material runs off. This is a significant unmitigated impact.

The DHR plan will have some of the same impacts from the trucks on the road and the footprints of the loaders, but the amounts will be far smaller as we are only bringing in gravel and some cover materials. In the DHR plan there will also be some

²⁶ This is true even if PG&E is able to just meet their goals. For in so doing they will have bought up and prohibited other utilities from meeting their goals. Until the supply of green energy meets or exceeds needs, the loss of the green energy from Kilarc will only delay the removal of fossil generation.

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trucking in, and moving around of gravels for the spawning beds, and this effect has to be addressed. Most of the gravels will be screened from the sand gravel mixture at the east end of the forebay where the large amount of the natural riverbed material now resides. Since this material is local, the soils impact should be small.

6.e The German Ditch Enhancements

PG&E's DSLA plan for the German Ditch has to be judged against possible alternatives. The simplest of alternative metrics has to be an analysis of the total impact on the fish. In the area of the German Ditch, DHR has proposed a solution²⁷ that will allow:

- continued water diversions – with some conservation efforts,
- monitored and maintained fish screening in the first 100 meters of the German Ditch diversion, and
- actively managed informal upstream and downstream fish passage.

This approach will be discussed with all parties.

In summary, if PG&E is allowed to abandon their water rights in place as proposed, the fish - a lot of anadromous fish - in the South Cow will continue to suffer. Under the DHR alternative, with the cooperation of the German Ditch Association, we may be able to supply the water needs of all users while screening, passage building and conservation provide significant improvements to fish passage.

6.f Genetics

Both the DSLA and Davis Hydro are concerned about genetics. Currently the whole area is saturated with fish that have not been selected from populations with anadromy. For 70 years, the area has been seeded from Buckhorn down with fish selected only on their size. This means that there may or may not be any fish in the populations that are annually seeding the area that have any predilection toward anadromy. Using this population as a basis for targeted sub-population restoration is most likely to be inefficient or counterproductive at best.

Removing the Kilarc facility may not increase anadromy in that the area is saturated with adapted non-migrating fish. Since it is difficult, if not impossible, for significant numbers of fish to migrate upstream, and the forebay is seeded regularly with fish not selected for anadromy, the potential for anadromy would only increase at a maximum rate with the general rise in population – if any. More realistically, because the resident healthy reproducing population is adapted to residency, the area may produce little anadromy as it absorbs whatever genetic infusion is hypothesized.

²⁷ A copy of a white paper discussing these ideas is available in the WWW.Kilarc.info documents [here](#). At this point it has not been discussed with the German Ditch users, this can be done if the aggregate saving of fish from all sources associated with this action is of interest.

In contrast to this “natural conditions” approach, Davis Hydro will address the fish genetic dilution issue aggressively. With active management, Davis Hydro intends to undertake an active genetic selection process seeding breeding fish in the area that have a history of producing anadromy. How that will be accomplished is not clear at this time, but DH plans to work with agency researchers and engineers alike to produce as pure a strain as possible for cultivation at Kilarc. What is clear is that without an active management program, the natural conditions will produce little anadromy due to the unique conditions of the Creek.

Summary Comments

While the FERC may consider a License Surrender Application derived from this DLSA, it must do so in the context of all reasonable alternatives. Thus, to respond to the request for comments to PG&E's DLSA, and its evaluation for completeness, we have had to include a reasonable alternative. The intent is not to describe the DHR alternative here (it is available in the Documents section of the WWW.Kilarc.info website) but to show that preferred alternatives exist, and, with analysis and consideration, may be seen as preferable to demolition for all participants in this process.

It is simply insufficient to say that “natural conditions are best” as a basis for non-evaluation of alternatives, when they may easily not be. That statement is perhaps generally true if man were not involved in the environment, but there is no scientific evidence that it is true here. Further, a thorough review of the “natural conditions” may reveal that (again in this unique case) the natural conditions in the Kilarc bypass channel are not the best alternative for the restoration of the target fish.

Finally, this DLSA process and the delays on the obviously needed studies might be considered a delaying tactic so that PG&E can continue to operate under the existing rules. It is clear that there are significant unmitigated impacts, so a NEPA analysis will be required. Pretending otherwise as the DLSA suggests serves only to delay the studies extending operation of the facility. PG&E will not start the studies until ordered to do so by the FERC at some point in the future. Then study completion will be extended as far as possible pushing into the indefinite future²⁸.

Nevertheless, within the context of responding to the inadequate DLSA submitted, little can be said in that almost no studies of the impacts have been performed. For comparison, Davis Hydro's alternative I is discussed and shown to be superior on every environmental count not including saving PG&E millions of dollars in demolition

²⁸ See Exhibit C, page 3 for a proposed specific baseline of the lengthy schedule.

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cost. Finally, Davis Hydro is ready²⁹ to start work on the reconstruction of the Kilarc facility to support anadromous fish and produce green power.

²⁹ There is the issue raised by Exhibit D: Cost (if taken over by a government agency). A book value of \$5 million dollars in this Exhibit is mentioned along with a list of adders (a hundred year old asset bought originally from a bankrupt company with a 15 year depreciation life must have some interesting accounting to now be worth so much).

That approach is a sunk cost perspective, and irrelevant given the changing expected costs. Going forward, PG&E is faced with a reported 14.5 million dollars cost to demolish, not counting a similar list of environmental remediation, system effects, and adders since PG&E's infrastructure (like the town of Whitmore, and the surrounding environment) has adapted to the plant in place and operating. The expected break-even cost to PG&E to have someone take over the facility should be between 14.5 million and 25 million dollars. However, as PG&E suggests, this is all speculative at this point since no constructive arrangements have been suggested.

Appendix A

A Summary of the Davis Hydro Reconstruction Alternative

The refined Davis Hydro Alternative I was released for discussion in June of 2008. All interested agencies, PG&E and others were forwarded a copy for comment. The complete Alternative I is available in the reference material of the Davis Hydro website at http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm as reference document KC036j.

The Davis Hydro DHR proposal has as its core the continuation of the Kilarc facility as it is now with a major exception. There would be an actively managed fish spawning facility created in three sections of the Kilarc canal. The key innovation would be a fish bypass facility that will screen off the forebay diverting small fish into a conduit that would lead then back down to the Old Cow well above the powerhouse.

The Reconstruction would mean the addition of numerous features to the canal including gravel, cover, and groins along with old woody debris to reflect natural conditions. Operating flow changes, gravel maintenance, and screening changes would go into effect to allow upstream migration from the forebay area and capture most of the downstream migrants directing them downstream to the Old Cow rather than into the turbine.

The Davis hydro proposal assumes only that PG&E will eventually be able to "lock the doors and walk away" from the Kilarc (only) site retaining the obligation to remove the site as they do now. However, no demolition of any Kilarc facilities will take place. The only changes will be a new fish bypass facility and physical modifications to parts of the canal to make them into first class spawning grounds.

The South Cow (not included)

Davis Hydro's Reconstruction proposal does not address the South Cow facility and makes no detailed comment on its disposition. Someone might be in a good position to turn large areas of the South Cow into a fish restoration project. We believe with active management that a huge increase in production of both salmon and steelhead are possible along with a reasonable amount of hydropower, but that is not the subject of this response.

Appendix B

Other Comments and Notes on the DLSA

Initial Statement Page 4

*“FERC issues a Notice of Ready for Environmental Analysis (REA)
under the National Environmental Policy Act (NEPA)”*

Comment: FERC may not if unmitigated impacts are revealed, an EIS will be required.

Initial Statement Page 5

Note: The Final License is unlikely to be filed in 2008.

Both these comment impact Exhibit C, **Schedule**

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Map G-5 and all derived figures have some significant errors in Spillway #3 path placement.

Document Content(s)

DHcomment_DLSA.DOC.....1-22