



SENT VIA EMAIL

March 5, 2015

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
Commentletters@waterboards.ca.gov

RE: Transmittal of PacifiCorp's Comments on the Proposed Approval of the North Coast Temperature Policy and Action Plans

Enclosed with this transmittal letter are PacifiCorp Energy's ("PacifiCorp") comments on the "Proposed Approval of an Amendment to the Water Quality Control Plan for the North Coast Region to Establish a Policy for the Implementation of the Water Quality Objectives for Temperature and Action Plans to Address Temperature Impairments in the Mattole, Navarro, and Eel River Watersheds." PacifiCorp appreciates the opportunity to comment on the North Coast Temperature Policy and Action Plans.

The Policy provides that the water quality objectives for temperature shall be implemented through a combination of riparian management and other temperature controls as appropriate in various regulatory processes and permitting actions under existing North Coast Regional Water Quality Control Board ("North Coast Board") authority or through coordination with other agencies with jurisdiction. The Policy also identifies controllable factors that influence temperature, and identifies actions that the North Coast Board staff shall take to achieve temperature objectives and implement temperature Total Maximum Daily Loads ("TMDLs"). PacifiCorp owns dams and reservoirs on the Klamath River [the Klamath Hydroelectric Project ("Project")], that are subject to Federal Energy Regulatory Commission licensing authority and that were assigned load allocations in the Klamath River TMDL. PacifiCorp also owns the Iron Gate Fish Hatchery, which is operated by the California Department of Fish and Wildlife and is subject to National Pollutant Discharge Elimination System (NPDES) permit requirements. PacifiCorp submitted timely comments to the North Coast Board addressing the Policy's application to PacifiCorp's Project and the hatchery; the need for the Policy to acknowledge that temperature TMDLs must be established and implemented to achieve thermal loads that are protective of a balanced, indigenous population of shellfish, fish and wildlife, as required by the Clean Water Act, rather than numeric or narrative temperature objectives; the Policy's use of the Klamath River TMDL's temperature model as an example method to estimate natural temperatures; and the Policy's inaccurate discussion of technical information regarding the impacts and potential removal of PacifiCorp's facilities.

As described in detail in the attached comments, PacifiCorp's comments to the North Coast Board were largely ignored. PacifiCorp requested that the Staff Report's description of

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effects of the Project and large-scale dam removal be removed because the North Coast Board does not have jurisdiction over and the Policy has limited application to the Project. The Staff Report was not changed to address this concern and the North Coast Board's response to these comments was inadequate, as is described in the attached comments. In addition, PacifiCorp raised concerns about the development of thermal loads, the characterization of thermal conditions and effects in the Klamath River, and the biological implications of those conditions and effects, which the North Coast Board waived aside by stating that they are only relevant to the TMDL process. The table in the attached comments provides an explanation of why and in what manner the responses provided by the North Coast Board to each comment were inadequate or incorrect.

Please feel free to contact me at (503) 813-6170 should you have any questions regarding PacifiCorp's comments.

Sincerely,

A handwritten signature in blue ink that reads "Tim Hemstreet". The signature is written in a cursive style with a long horizontal line extending from the start of the name.

Tim Hemstreet, P.E.
Klamath Program Manager

PacifiCorp Comments on State Water Board’s Proposal to Approve North Coast Temperature Policy and Action Plans

PacifiCorp’s Comment to NCRWQCB	NCRWQCB Response	Explanation
<p><u>The Policy should clarify that it applies to PacifiCorp and its facilities only to the limited extent that the Regional Board will coordinate with the State Water Board in any 401 certification for the Project.</u></p> <p>The Policy identifies factors of elevated water temperature and strategies to address the factors through permitting and other actions to attain and maintain water quality objectives for temperature. With respect to these objectives, the NCRWQCB is not in a position to take any regulatory action to enforce implementation of temperature objectives by PacifiCorp for the Project. While the removal of four dams owned by PacifiCorp on the mainstem Klamath River may proceed pursuant to the Klamath Hydroelectric Settlement Agreement (“KHS A”); should dam removal under the KHS A not proceed, the FERC relicensing and the State Water Resources Control Board (“SWRCB”) water quality certification process for the Project will resume. PacifiCorp has prepared an implementation plan for the Klamath River TMDL which consists of interim water quality measures provided in the Klamath Hydroelectric Settlement Agreement (“KHS A”) until a decision by the Secretary of the Interior is made about whether dam</p>	<p><u>General Comment #20: Comments Specific to the Klamath TMDL</u></p> <p>PacifiCorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by PacifiCorp are relevant to this process and are addressed below.</p>	<p>The NCRWQCB did not directly respond to this portion of the comment. It only responded to the CEQA-related portion of the comment, below. The general response does not address the comment because the Policy and Staff Report inappropriately describe prior analyses related to the effects of the Project and the effects of large scale dam removal, despite the fact that Klamath River dam removal is not an action that would occur as a result of the Regional Board’s implementation of this Policy.</p>

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<p>removal pursuant to that agreement should proceed. The Klamath River TMDL staff report recognized that “[i]n the absence of the FERC/401 process, the TMDL load allocations (and existing water quality objectives) as they apply to the Project cannot be directly implemented and enforced.” (Klamath River TMDL staff report, p. 9-19.) Should relicensing resume, the Policy states that the NCRWQCB will take action to “[c]ontinue to coordinate with the Division of Water Rights by participating in... submittal of data in support of 401 certifications related to... facilities regulated by [FERC]”. (Policy staff report, p. 48.) Where the staff report for the Policy identifies dam removal as a strategy, it should clarify that it refers to dam removal for projects under the jurisdiction of or within existing authority of the NCRWQCB and not dams regulated by FERC under the Federal Power Act, such as PacifiCorp’s Project.</p>		
<p><u>The Policy should clarify that it applies to PacifiCorp and its facilities only to the limited extent that the Regional Board will coordinate with the State Water Board in any 401 certification for the Project, Cont.</u> Similarly, the analysis required by the California Environmental Quality Act (“CEQA”) included in the staff report for the Policy inappropriately discusses removal of dams owned by PacifiCorp as a potential means of compliance with the Policy. Although the Klamath River TMDL provided a programmatic</p>	<p><u>CEQA Comment #1 (PacifiCorp)</u> Dam removal is a compliance measure under the Policy only for projects under the jurisdiction of or within existing authority of the NCRWQCB and not dams regulated by FERC under the Federal Power Act. <i>Response:</i> The Policy is meant to be comprehensive, and thus describes a full range of temperature implementation actions, both within the Regional Water Board’s permitting jurisdiction, and actions outside of the Regional Water Board’s permitting</p>	<p>The Response does not address the comment because while it asserts that other agencies must adhere to the Basin Plan, that would be true without the Policy and the Policy is not needed to direct other agencies in their responsibilities. The Policy supposedly compiles a toolbox for North Coast Board staff to address temperature concerns. As noted in PacifiCorps’ comments and as stated in the Klamath TMDL staff report, dam removal is a decision before other agencies in consideration of other factors in addition to</p>

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<p>discussion of dam removal “as possible strategies by which final compliance with the TMDL load allocations may be accomplished,” it was acknowledged that “[w]hether the dams are ultimately removed is a decision before several federal and state agencies in consideration of other factors in addition to water quality, including water allocations, species protection and power needs.” (Klamath River TMDL staff report, p. 9-19.)</p>	<p>jurisdiction. It is correct that FERC projects, water rights, and local land use planning actions are not under the direct jurisdiction of the Regional Water Boards. However, other state and federal agencies must comply with the applicable Basin Plan objectives and take such plans and polices into consideration when taking discretionary actions. For example, an applicant seeking a Federal license or permit where the proposed activity may result in a discharge to surface water is required to obtain a Clean Water Act Section 401 water quality certification. The purpose of the 401 certification is to ensure that waste discharged to these waters from a proposed activity meets water quality standards and other appropriate requirements of the applicable Basin Plan. State 401 Certification conditions become mandatory conditions of any federal license or permit for the project. When the State Division of Water Rights issues a 401 Certification for a FERC project or a water diversion project, they must certify that the project complies with the applicable water quality objectives and associated implementation plans within a region’s Basin Plan. In turn the proposed Policy would rely on the jurisdiction of other agencies and their responsibility to adhere to the Basin Plan. Therefore, the examples of dam removal, which range from projects directly under the Regional Water Board jurisdiction to those under the Division of Water Rights, are</p>	<p>water quality.</p>

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PacifiCorp’s Comment to NCRWQCB	NCRWQCB Response	Explanation
	<p>reasonable and foreseeable compliance measures as a result of the proposed Policy which a CEQA impact analysis must consider. It should be noted that this analysis does not infer that particular effects associated with those measures will occur; only that it is a reasonable means of compliance that could occur.</p>	
<p><u>The Policy should clarify that it applies to PacifiCorp and its facilities only to the limited extent that the Regional Board will coordinate with the State Water Board in any 401 certification for the Project, Cont.</u> The staff report’s CEQA analysis lists dam removal as a compliance measure for “measures to address tailwater and surface impoundments” (p. 108) and “to restore and maintain stream flows that support beneficial uses” (p. 117-118). As described above, the staff report should clarify that dam removal is a compliance measure under the Policy only for projects under the jurisdiction of or within existing authority of the NCRWQCB and not dams regulated by FERC under the Federal Power Act. Due to the fact that the NCRWQCB staff will not take any action related to PacifiCorp besides continued coordination with the SWRCB in any water quality certification process for the Project, “large scale dam removal” and the removal of dams owned by PacifiCorp are inappropriate examples of the environmental effects of the Policy. Examples of statements in the CEQA</p>	<p><u>CEQA Comment #2 (PacifiCorp)</u> The use of large-scale dams and PacifiCorp-owned dams are inappropriate examples of compliance measures related to the proposed Policy. The staff report should clarify how temperature effects at other impoundments will be addressed. <i>Response:</i> All types of stream impoundments can be used as additional examples of in-stream structures potentially affected by the proposed Policy. For example, as stated in the Staff Report, there are several large dams in the North Coast Region; additionally, there are smaller impoundments – often termed “flashboard” dams – that are used to raise the water levels in streams to provide for diversion (either direct or pumping) primarily for agricultural use. Additionally, the Staff Report points to programs of implementation and compliance measures including the construction of off-stream ponds, embankment ponds, bypass flow structures and dam removal. The specific example of the PacifiCorp dams was used to further illustrate the concept that</p>	<p>The response does not address the comment because removal of dams owned by PacifiCorp is not a result of the Policy. Again, dam removal is a decision before other agencies in consideration of other factors in addition to water quality. The staff report should remove the examples as requested in PacifiCorp’s comment.</p>

PacifiCorp’s Comment to NCRWQCB	NCRWQCB Response	Explanation
<p>analysis regarding the removal of dams owned by PacifiCorp that should be removed include the following:</p> <ul style="list-style-type: none"> • “Excluding the issue of Klamath dam removal, the policy is anticipated to have a beneficial effect on the environment, greenhouse gas (GHG) emissions and climate change.” (p. 127) • “Large scale dam removal (demolition) and other large-scale restoration activities are reasonably foreseeable compliance measure that could result in the short term violation of local air quality standards, and therefore pose a potentially significant impact. Compliance measures such as erosion control, reservoir reseeding and riparian planting are not likely to result in a violation of air quality standards; however, the fine particulate matter and vehicle emissions from dam removal activities could exceed established thresholds and as a result would be considered a potentially significant impact and unavoidable.” (p. 128) • “For example, according to one of the dam decommissioning studies for the Klamath River hydroelectric facilities, approximately 480 acres of riparian area surrounding the three reservoirs could be lost through dam removal. If wetland construction, watershed-wide riparian protection and replanting, and re- 	<p>the proposed Policy is intended to affect decisions and actions taken by other agencies, such as the Division of Water Rights or Bureau of Reclamation. Additionally, the use of the PacifiCorp dams as examples was essential in discussing the potentially significant impacts to the environment as result of a project-level action. As presented-in the Klamath Facilities Removal Environmental Impact Statement/Environmental Impact Report, December 2012, prepared by the U.S. Department of the Interior and California Department of Fish and Wildlife, several significant and unavoidable impacts to the environment are anticipated if dam removal proceeds. By disclosing impacts for a large project such as the Klamath Dam Removal Project, the analyses capture a range of impacts broad enough to cover small projects as well.</p>	

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<p>vegetation of the exposed reservoir surfaces are applied as mitigation measures, the impact from the loss of riparian habitat from these sites will likely be less than significant (Klamath EIS/EIR, 2012).” (p. 131)</p> <ul style="list-style-type: none"> • “In the case of dam removal, emissions from replacement power sources will likely cause a significant and unavoidable impact from GHG emissions until PacifiCorp can add new sources or renewable power to compensate for the loss of the hydroelectric facilities.” (p.139) • “In the event that the Klamath River reservoirs are decommissioned, flatwater recreation users will have to use the other flatwater facilities in the region. In addition, impact to white-water recreation will be adversely affected in specific reaches of the Klamath River due to changes in flow stages at certain times of year and have been determined to be significant and unavoidable. Once a decommissioning plan is developed, mitigation measures identified, in the plan must ensure that the other regional facilities have the infrastructure in place to support the increased user base. Mitigation measures identified include such things as installation/relocation of campgrounds, restrooms, boat ramps, garbage service, etc. Although, significant impacts to recreation have been identified 		

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<p>the long term benefit associated with the removal of the Klamath hydroelectric facilities is positive towards recreational values. For example several of the reservoirs and reaches of the Klamath River are impaired for recreation due to poor water quality associated with toxic algal blooms. It has been determined that dam removal would alleviate these impairments. Additionally, it has been determined that dam removal would have long-term beneficial effects on free-flowing condition, water quality, scenic, wildlife, fishery, and recreation river values associated with the upstream and downstream reaches designated as Wild and Scenic.” (p. 154)</p>		
<p><u>The Policy improperly focuses on implementation of the intrastate water quality objectives and should acknowledge that there can be allowable temperature increases if those increases are demonstrated to be protective of a balanced, indigenous population of shellfish, fish, and wildlife.</u> The staff report correctly states that the federal Clean Water Act “section 303(d)(1)(D) specifically requires that states estimate ‘the total maximum daily thermal load required to assure protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife.’” (Staff Report, p. 16) However, the staff report does not further discuss or acknowledge this requirement.</p>	<p><u>General Comment #20: Comments Specific to the Klamath TMDL</u> Pacificorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by Pacificorp are relevant to this process and are addressed below.</p>	<p>The response does not address the comment because this issue was not addressed in the Klamath TMDL process and it is not only relevant to established TMDLs. The Policy is interpreting the Basin Plan objectives and describing various methods of implementing those objectives. Implementing those objectives can include establishing the total maximum daily thermal load required to assure protection and propagation of a BIP. The Policy should acknowledge that temperature impaired water bodies can be addressed by such thermal load estimates instead of only by requiring that permitted conditions result in attainment of natural conditions or generic narrative and numeric</p>

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<p>The maximum thermal load required to ensure a BIP is the only permissible basis for a thermal TMDL. See 33 U.S.C. § 1313(d)(1)(D). Cf. 40 C.F.R. § 130.7(c)(1) (“For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS [water quality standards]”) (emphasis added). The thermal TMDL may not be based on narrative or numeric temperature objectives or criteria, such as those in the Basin Plan or as described in the staff report. Instead, the staff report focuses on the implementation of the intrastate water quality objective for temperature that states: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature. At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperatures. The staff report for the Policy states: “Because temperature impaired waterbodies cannot accommodate any increase in temperatures, the intrastate water quality objective for</p>		<p>water quality standards.</p>

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<p>temperature requires that permitted conditions result in natural conditions in these waterbodies.” (staff report, pp. 28-29.) Simply taking the most conservative approach possible by setting the thermal TMDL or water quality objective for temperature equal to zero is insufficient because it makes no effort to determine the maximum thermal load that is required to ensure a BIP. The Policy should acknowledge that there can be allowable temperature increases if those increases are demonstrated to be protective of a BIP. This is consistent with PacifiCorp’s comments to the Klamath River TMDL and petition for writ of mandate, which objected to the Klamath River temperature TMDL because it failed to determine the maximum thermal load that would be protective of a BIP, improperly set temperature targets rather than thermal loads, and contained no evidence that existing incremental temperature increases as a result of the thermal lag caused by PacifiCorp’s reservoirs are not protective of a BIP.</p>		
<p><u>The Policy improperly points to the Klamath River TMDL and its flawed temperature model as an example of a method to estimate natural temperatures.</u> The staff report describes the Klamath River TMDL temperature model as an example of a deterministic model that can be used to estimate natural temperatures. (p. 22.) However, as PacifiCorp demonstrated in its comments on the Klamath River TMDL</p>	<p><u>General Comment #20: Comments Specific to the Klamath TMDL</u> PacifiCorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment</p>	<p>The responses do not address this comment because PacifiCorp’s concerns regarding the Klamath River TMDL temperature model are not only relevant to the TMDL process since the Board is using the model in the development of this Policy. The points raised by PacifiCorp regarding specific aspects of the modeling have <i>not</i> been previously addressed in the TMDL process, and the model remains flawed and is a bad example of how natural</p>

PacifiCorp’s Comment to NCRWQCB	NCRWQCB Response	Explanation
<p>(PacifiCorp 2009, 2010) and as stated in PacifiCorp’s petition for writ of mandate, the TMDL’s temperature model is flawed and the model is an unsupportable approach to estimating natural temperatures and should not be used as an example. In particular, the Klamath River TMDL temperature model contained an error regarding its calculation of solar radiation that reduced solar radiation in river reaches but not in reservoir reaches – resulting in model outputs that underestimated natural river temperatures and thereby overstated the temperature effects of the Project when compared to a natural, “without dams” condition. In addition, model uncertainty was not quantified for the Klamath River TMDL model and only a single model year was used for calibration though data for at least 5 years was available. This failure was recognized by one of the peer reviewers of the Policy, but dismissed by the NCRWQCB’s response to the peer review comment. The commenter stated: “In a brief review of several original reports (e.g., Navarro, Scott and Klamath River TMDL studies), I have not seen many examples of rigorous model validation or uncertainty analysis presented. ...the degree to which the temperature models were quantitatively validated, and how uncertainty in model parameters may qualify model predictions are not apparent.” (pp. A-18-A-19.) The NCRWQCB responded by claiming</p>	<p>of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by Pacificorp are relevant to this process and are addressed below.</p> <p><u>General Comment #21: Use of the Klamath River TMDL Temperature Model is not an Appropriate Example of a Method to Estimate Natural Temperatures</u></p> <p>Pacificorp commented that the Staff Report’s reference to the Klamath TMDL modeling exercise as an example of estimating natural temperatures is inappropriate because the model is flawed, uncertainty was not quantified, that a site-specific approach should be taken to implementing temperature load allocations in permits, and that the Staff Report should acknowledge that models evolve and the most up-to-date information should be considered for establishment of regulatory requirements.</p> <p><i>Response:</i> The points raised by Pacificorp regarding specific aspects of the modeling have been previously addressed in the TMDL process. The models used in the development of the Klamath TMDL are cited to describe how temperature impacts associated with changes in hydrodynamics are evaluated, and natural temperatures are estimated in complex situations. The Regional Water Board agrees that temperature considerations</p>	<p>temperatures should be estimated.</p>

PacifiCorp’s Comment to NCRWQCB	NCRWQCB Response	Explanation
<p>“the Klamath River TMDL report includes an appendix that discusses the model testing process in great detail”, yet dismissed the notion that the model led to any action affecting PacifiCorp or others with implementation responsibilities under the TMDL, stating: “It is important to understand the utility of the modeling exercises, which is the identification of temperature factors that are affected by human activities and most important for the control of temperature. The results of the modeling exercises are not integrated into permits and have only been integrated in water quality goals in a few select cases. The results of the shade and temperature models developed for the temperature TMDLs are not intended to be used in place of a site-specific approach to implementing temperature protection. The shade and temperature models have been used to identify the most important factors to consider in source reduction efforts, estimate loading at a watershed scale, and elucidate important physical processes and interactions, such as the temperature effects of the interaction of groundwater and surface water.”(pp. A-18 – A-19)</p> <p>The Klamath River TMDL relied on the temperature model to establish the temperature targets assigned to PacifiCorp’s reservoirs, despite the errors and inadequate quantification of uncertainty in the model. (TMDL staff report, pp. 5-18 – 5-21.) As</p>	<p>should be incorporated into project-specific regulatory requirements on a site-specific basis, with consideration of all available information. Regional Water Board staff agree that models evolve as information improves.</p>	

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<p>NCRWQCB staff acknowledged in response to the peer review comment above, the Klamath River TMDL model results should not be used in site-specific regulatory actions. Further, load allocations established in a TMDL using models are not independently enforceable and should not replace a site-specific approach to implementing temperature objectives in a permit. The staff report for the Policy should explicitly recognize that models evolve and that the most up to date information should be used to establish regulatory requirements, as the SWRCB did in its resolution approving the Klamath River TMDL. The SWRCB stated: The North Coast Water Board’s TMDL assigns load allocations associated with the Klamath Hydroelectric Project based on modeling and models peer reviewed during development of the board’s TMDL. Load allocations are neither water quality standards nor effluent limitations. Models are constantly improving. The State Water Board anticipates that interested parties will continue to update models and model inputs. The State Water Board will consider any modeling and available data prior to issuing a water quality certification, if any, for the Klamath Hydroelectric Project to ensure that conditions of certification include provisions to comply with water quality standards. The North Coast Water Board’s TMDL implementation actions (Table 4-18) recognize</p>		

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<p>the flexibility the State Water Board retains with respect to timing, interim measures, and methods for final compliance when issuing a water quality certification, if any, for the Klamath Hydroelectric Project. (Resolution 2010-0043, ¶ 6.)</p>		
<p><u>The Staff Report Does Not Accurately Characterize Thermal Conditions and Effects in the Klamath River.</u> The staff report (pages 19 and 37) incorrectly implies that the effects of the Project’s reservoirs on water temperatures in the Klamath River may extend downstream to the Pacific Ocean under certain conditions and cite Bartholow et al. (2005) to support this statement. We note that the staff report appears to incorrectly cite Bartholow et al. (2005). The staff report lists Bartholow (2005) in the References Cited for the journal article titled “Recent water temperature trends in the lower Klamath River, California” (North American Journal of Fisheries Management 25 (1):152-162). This journal article does not make conclusions regarding the extent of effects from Iron Gate dam to the Pacific Ocean. An earlier article by Bartholow et al. (2004) titled “Predicting the Thermal Effects of Dam Removal on the Klamath River” (Environmental Management 34 (6): 856-874), which the Staff report may have meant to cite, indicates that “Dam removal might affect the river’s thermal regime during certain conditions for over 200 km of the mainstem”</p>	<p><u>General Comment #22: Typos and Incorrect Citations in the Staff Report</u> PacifiCorp identified an incorrect citation and typos in the Staff Report. Staff has incorporated changes in the Staff Report to address these minor corrections.</p>	<p>Besides a correction of the citation to Bartholow et al. (2005), the response does not address the comment because the Staff Report does not cite the substantial information reported elsewhere on this topic or modify its conclusions with respect to the temperature effects of the Project to accurately reflect the citation.</p>

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<p>(200 km equals about 124 mi). In general, Bartholow et al. (2004) found the influence of upstream reservoirs was attenuated at Seiad Valley (RM 61).</p> <p>In addition to Bartholow et al. (2004), the staff report also needs to cite the substantial information reported elsewhere on this topic. PacifiCorp model results (e.g., see PacifiCorp’s March 2004 Exhibit E Environmental Report, PacifiCorp’s March 2004 Water Resources Final Technical Report, the 2007 FERC EIS on the Klamath Hydroelectric Project Proposed Relicensing, PacifiCorp’s 2008 401 Application to the State Water Resources Control Board) show that the effects of the Project’s reservoirs on water temperatures diminish appreciably below the confluence with the Shasta River (RM 176), are mostly small or absent at the confluence with the Scott River (RM 143.9), and are generally absent when the river reaches Seiad Valley (RM 120).</p> <p>Perry et al. (2011) also simulated water temperatures in the Klamath River under assumed conditions with and without dams and reservoirs. Perry et al. (2011) conclude that annual-mean water temperatures vary little, if at all, between these scenarios downstream of the Scott River (RM 143.9).</p> <p>Perry et al. (2011) conclude that mean water temperature in spring would increase by about 2°C after dam removal near Iron Gate Dam, and by about 1°C at the Scott River. For summer, Perry et al. (2011) conclude mean</p>		

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<p>temperature differences of less than 1°C would occur near Iron Gate dam and diminish rapidly downstream. Perry et al. (2011) conclude that the largest differences with reservoirs and dams would occur in the fall when simulated mean temperatures decreased by 4°C at Iron Gate Dam, and by about 2°C near the Scott River.</p>		
<p><u>The Staff Report Does Not Accurately Characterize the Biological Implications of Thermal Conditions and Effects in the Klamath River.</u></p> <p>The staff report (page 37) states that the TMDL found the effects of the Klamath reservoirs on the “shift in the seasonal temperature pattern” to be “significant” in terms of “biological implications”. With regard to the reservoir-related shift to cooler temperatures in spring and early summer, the staff report (page 37) states “Cooler temperatures are known to reduce juvenile salmonid growth rates; however this effect may be mitigated by the benefit gained by reduced incidence of stressfully high temperatures during outmigration”. However, PacifiCorp is aware of no evidence that juvenile salmonid growth rates are reduced in the Klamath River. On the reservoir-related shift to cooler temperatures in spring and early summer, Bartholow et al. (2004) state that “spring and early summer temperatures could be warmer without dams, potentially harming chinook rearing and outmigration in</p>	<p><u>General Comment #20: Comments Specific to the Klamath TMDL</u></p> <p>PacifiCorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by PacifiCorp are relevant to this process and are addressed below.</p>	<p>The NCRWQCB provided no direct response to this comment. If the general response regarding comments specific to the Klamath TMDL was meant to address PacifiCorp’s comment, it does not because this issue was not resolved by the Klamath TMDL process and it is not only relevant to that process. The Policy and Staff Report inaccurately discuss the effects of the Project and the biological implications of those effects and should be revised as noted in PacifiCorp’s comment.</p>

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<p>the mainstem”.</p> <p>The staff report (page 37) states “Warmer temperatures in the summer period may reduce the nocturnal feeding opportunities of juvenile salmonids that persist at thermal refugia, thereby reducing their ability to withstand stressfully high daytime temperatures (National Research Council of the National Academies 2004)”. However, this statement is misleading in that reservoir related temperature effects during summer actually result in cooler daytime temperatures and only slightly warmer nighttime temperature near Iron Gate dam that then diminishes rapidly downstream. Also, the National Research Council of the National Academies (2004) does not state explicitly that the thermal changes caused by the dams are adverse to salmon, rather that the mainstem Klamath River resides in an environment that is not going to provide thermal conditions for salmon rearing in the warm parts of the year. Furthermore, the National Research Council of the National Academies (2004) did not state that the dams create thermal conditions that are adverse to salmon rearing.</p> <p>With regard to the reservoir-related shift to warmer temperatures in the fall, the staff report (page 37) states “Warmer temperatures in the fall may delay adult migration or lead to stressfully high temperatures when adults are present or eggs</p>		

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<p>are incubating in gravels”. However, available temperature data and water quality modeling studies indicate that temperature conditions for fish migration in most of the lower Klamath River are unaffected by the dams (e.g., see PacifiCorp’s March 2004 Exhibit E Environmental Report, PacifiCorp’s March 2004 Water Resources Final Technical Report, the 2007 FERC EIS on the Klamath Hydroelectric Project Proposed Relicensing, PacifiCorp’s 2008 401 Application to the State Water Resources Control Board). Modeling indicates that temperature effects are generally absent in the lower 120 miles of the river. Also, water temperatures in the fall are undergoing relatively rapid seasonal cooling, so that even the upper portion of the river affected by the dams has water temperature conditions that are suitable for fish migration, particularly after September when most migration occurs. Strange (2010) concluded that adult Chinook salmon in the Klamath River Basin initiated upriver migration in association with periods of declining river temperature. Adult Chinook initiated migration when mean daily river temperatures ranged from 21.8°C to 24.0°C, and changing river discharge had a negligible influence on migration behavior (Strange 2010). As discussed in PacifiCorp’s February 2010 comments on the Klamath River TMDL, existing river temperature conditions below Iron Gate dam support a balanced indigenous</p>		

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<p>population of fish and apparently do not hinder the migration of fish to the hatchery fish ladder at the base of Iron Gate dam, the fish hatchery facility downstream of the dam, or to other Klamath basin tributaries such as Bogus Creek, which would be most affected by any adverse temperature conditions resulting from Iron Gate dam. The staff report implies that Klamath River water temperatures are not suitable for (or supportive of) cold water species, including salmonids. However, this is contrary to the testimony of USFWS and NMFS agency experts, and the Findings of Fact on USFWS/NMFS Issue 2(A) in McKenna (2007), which concluded that anadromous fish stocks possess the biological and behavior traits needed to successfully spawn, rear and migrate in the Project reaches upstream of Iron Gate dam (assuming passage facilities at the dams). McKenna (2007) concluded that the record clearly establishes that existing water temperatures will not preclude anadromous salmonid migration. McKenna (2007) cited agency testimony that the temperature conditions are faced by anadromous fish to an equal degree both above and below Iron Gate dam. McKenna (2007) cited agency testimony that coho salmon in other parts of the Klamath system occupy water with temperatures in excess of 26°C (the data relied upon by the draft TMDL cites 25°C as “lethal” for coho adults), and</p>		

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<p>juvenile coho salmon observations in the main stem Klamath River where temperatures exceed 20°C (the data relied upon by the draft TMDL considers chronic effects to be observed in core juvenile rearing habitat at temperatures above 16°C). McKenna (2007) also concluded that the evidence also demonstrates that juvenile fish most likely would not outmigrate during periods of sub-optimal water temperatures. See Findings of Fact on USFWS/NMFS Issue 2(A) and at pages 14-19, 36, 68-69 in McKenna (2007) and 401 Certification Application (PacifiCorp 2008) at pages 5-60 to 5-104.</p> <p>Cold water species, including salmonids, occupy the mainstem Klamath River during every month of the year. However, available water temperature data show that conditions in the middle and lower Klamath River in the vicinity of Happy Camp downstream to the Trinity River – a reach that is influenced little, if any, by upstream reservoirs – chronically exceed water temperature suitability guideline criteria for the colder waters of the Pacific Northwest (EPA 2003). For example, daily maximum and minimum water temperatures in the vicinity of Happy Camp can be up to 30°C and 25°C, respectively, for over a week at a time in late July and early August. The maximum weekly mean temperature (MWMT) exceeds the guideline temperature by over 10°C for juvenile rearing, and exceeds the guideline temperature for</p>		

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<p>lethal effects by several degrees C in portions of the river below Seiad Valley. During summer periods, the flows are much lower, leaving the river in a large bedrock or alluvial channel that has appreciable exposure. Topographic shading has a modest effect when solar altitude is at an annual maximum (Deas et al. 2006). In summary, the river is naturally warm, and the EPA (2003) guideline criteria for the colder waters of the Pacific Northwest are inconsistent with local conditions and inappropriate for use in assessing temperature conditions supportive of a BIP in the Klamath River below Iron Gate dam.</p> <p>As discussed in PacifiCorp’s February 2010 comments on the Klamath River TMDL, the Klamath River TMDL’s temperature allocations and targets continue to be based on “ideal” or near-ideal temperatures for salmonids in the generally colder waters of the Pacific Northwest that are not attainable in the Klamath Basin, and not the “thermal load which cannot be exceeded in order to assure protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife [BIP]” in the Klamath River per 40 C.F.R. § 130.7(c)(2). As discussed in depth in PacifiCorp’s TMDL comments, the temperature effects of the Project are consistent with the protection and propagation of a BIP in the Klamath River. As described above, this conclusion is based on</p>		

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<p>the testimony of experts from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service and the findings of fact in the Energy Policy Act of 2005 (EPAct) trial-type proceeding on Project FERC relicensing requirements conducted in 2007. See Findings of Fact on USFWS/NMFS Issue 2(A) and at pages 14-19, 36, 68-69 in McKenna (2007). See also 401 Certification Application (2008) at pages 5-60 to 5-104.</p>		
<p>Page 3, Section 2.1: The sensitivity testing discussion suggests that shade is a driving factor in North Coast streams. (See page 6: “In summary, increased solar radiation loads are likely to be the primary controllable driver of elevated water temperatures in most waterways in the North Coast Region, but aren’t always.”) While shade is identified as a factor that can be managed for water temperature improvement, basin physiography, soils (including local soil conditions), vegetation types and quality, hydrology, grazing, recruitment, persistence or continuity of shade along a stream, climate change, and other key factors create a highly complex mosaic of conditions to fulfill. Examining typical riparian restoration planting project success and failure rates attest to the challenge of getting trees to grow in specific locations. Certain streams systems respond well to riparian shade prescriptions that support temperature improvements/ management, and these are generally small</p>	<p><u>General Comment #24: System-Specific Analyses of Shade Restoration Potential</u> Pacificorp recommended that “each system should be examined for potential for shade restoration, including a quantification of such benefits.” <i>Response:</i> This Policy directs the Regional Water Board to consider the benefits of any specific action to address elevated water temperatures, including shade restoration, on a site-specific, case-by-case basis. However, conducting such an analysis for every stream in the region without a specific project context is unnecessary and wouldn’t allow for the same level of site-specific interpretation as occurs during a project-specific evaluation.</p>	<p>The response does not address the comment because it misinterpreted the comment as suggesting that a site-specific analysis be conducted in the staff report for this Policy, when actually the comment suggested that the Policy <i>identify</i> that each system should be examined, such as in a specific project context. The Policy does not clearly direct the Regional Water Board to <i>quantify</i> benefits, as the comment suggested, and should be revised to identify that each system should be examined for potential for shade restoration, including a quantification of such benefits.</p>

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<p>streams. Other streams present considerable challenges, due to various factors, including those listed above. Recommend identifying that each system should be examined for potential for shade restoration, including a quantification of such benefits.</p>		
<p><u>Page 6:</u> “High-order streams are often too wide relative to the height of vegetation to provide levels of shade that have a substantial temperature effect. The Klamath and Eel River Temperature TMDLs recognize this phenomenon and do not assign riparian shade load allocations for the mainstems.” This seems contradictory to statements on page 6: “The temperature TMDL analyses have consistently found that the shade provided by riparian vegetation has a dramatic beneficial effect on stream temperatures, and that achieving the intrastate water quality objective for temperature requires riparian shade consistent with natural conditions. This concept is the basis of TMDL load allocations prescribed in every north coast temperature TMDL.” This sentence should be changed to “This concept is the basis of TMDL load allocations prescribed in most north coast temperature TMDLs.”</p>	<p><u>General Comment #26: The Importance of Shade in the Context of Wide Stream Channels</u> A comment submitted by Russian Riverkeeper stated that shade can be important in wide streams where the stream runs along the streambank. An image of the Russian River where this is the case was provided as an example. Pacificorp commented on the same discussion in the staff report (pg. 6) and stated that it contradicts the statement on the same page that says “This concept is the basis of TMDL load allocations prescribed in every north coast temperature TMDL.” Pacificorp suggested modifying the statement to state “most TMDLs” instead of “all TMDLs”. Response: The Policy directs the Regional Water Board to take a site-specific approach to addressing temperature concerns that allows for consideration of the issue raised by Russian Riverkeeper. The Staff Report also discusses the benefits of riparian vegetation beyond shade that are additional considerations when evaluating any near-stream project. The statement that importance of shade is the basis of TMDL load allocations prescribed in every north coast temperature TMDL is a true</p>	<p>PacifiCorp maintains that, at the very least, the Staff Report’s statement that the shading “concept is the basis of TMDL load allocations prescribed in every north coast temperature TMDL” is confusing. This is evidenced by the seemingly contradictory response by the NCRWQCB that “the Klamath TMDL contains load allocations for riparian shade, though they do not apply to the mainstem”. Therefore, because a shade-based temperature TMDL is not applied to the mainstem Klamath River, shade-based TMDL load allocations are evidently <u>not</u> prescribed for every north coast temperature TMDL. Furthermore, it is reasonable to conclude that shade-based TMDLS will not necessarily be applied in <u>all</u> future TMDLs, particularly in regards to wider stream and river channels. Wide channels are naturally less shaded because they have a canopy gap overhead, particularly in channels oriented north-south. For example, Li et al. (2012) showed that a mature riparian forest can nearly fully shade a 5-m wide stream, even at mid-day, but provide only minimal mid-day shade to a 30-m wide stream. Li, G., C.R. Jackson, and K.A. Kraseski. 2012.</p>

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	statement. The Klamath TMDL contains load allocations for riparian shade, though they do not apply to the mainstem.	Modeled riparian stream shading: Agreement with field measurements and sensitivity to riparian conditions. Journal of Hydrology 428–429 (2012) 142–151.
<p>Page 6: “However, in these cases the shade provided by riparian vegetation may still be important for the maintenance of thermal refugia.” Please clarify how vegetation is important to refugia maintenance.</p>	<p><u>General Comment #23: Benefits of Shade Related to Thermal Refugia</u> PacifiCorp questioned how shade can benefit thermal refugia. Response: One example of how shade can benefit thermal refugia is where a refuge is provided by a shallow back-watered channel fed by hyporheic flow. Where the refuge is shallow, slow moving, and near the streambank, solar radiation can have a significant impact on temperatures that can be greatly reduced by the presence of shade.</p>	<p>PacifiCorp maintains that the Staff Report overstates the importance of riparian shading for maintaining thermal refugia. Even in the response by the NCRWQCB, a thermal refugia fed by hyporheic flow is likely much more dependent on the hyporheic flow for the refugia’s maintenance. PacifiCorp recommends that a more detailed explanation (with quantification) and references be provided in response to our original comment.</p>
<p>Page 37, 5.2.4: The staff report calls out Klamath River reservoirs to illustrate temperature effects, but there are a multitude of reservoirs in the North Coast region that have local effects on temperature and would be better examples to draw from since they may be subject to actions of the Regional Board. The staff report should clarify how temperature effects at other impoundments will be addressed.</p>	<p><u>General Comment #31: Addressing Effects of Other Reservoirs</u> PacifiCorp stated that the Staff Report should use other reservoirs besides those on the Klamath River as examples of temperature effects because they would be subject to actions of the Regional Water Board. Response: The regulatory process for addressing Klamath reservoirs is essentially the same as any other reservoir: coordination with the Division of Water Rights. The Division of Water Rights is the primary administrator of the regulatory process for reservoirs regardless of whether the reservoir is a FERC facility, or simply a water supply reservoir. (See e.g. State Water Board Order No. WQ 89-</p>	<p>The response does not address the comment because the water quality certification for the Klamath Hydroelectric Project will be issued by the Division of Water Rights, not through coordination with the Division of Water Rights in the Regional Board’s issuance of a WDR. The staff report should clarify how temperature effects at other impoundments will be addressed <i>by the Regional Board</i>, as PacifiCorp suggested.</p>

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	<p>18 [Central Valley Regional Water Board issued WDRs to the Bureau of Reclamation for its high temperature releases from Shasta dam; however, the State Water Board opted to address water quality issues using its water rights authority to better coordinate water supply issues].)</p>	
<p><u>Page 58, Margin of Safety:</u> PacifiCorp recommends moving away from the “conservative assumptions” approach, which does not quantify uncertainty explicitly, and move towards a more quantitative approach. For example, Section 2 of the document presents sensitivity analyses for the Navarro River, and explicit ranges of temperature response are provided. This is a much more defined and useful (for decision makers, managers, stakeholders) method to define uncertainty and determine an appropriate margin of safety.</p>	<p><u>General Comment #20: Comments Specific to the Klamath TMDL</u> PacifiCorp submitted a number of comments on issues previously addressed in the Klamath TMDL process, or issues that are only relevant to established TMDLs. Those comments are not relevant to this process because they address issues specifically related to the Klamath TMDL, 401 processes, or general TMDL approaches such as the establishment of margins of safety. This Policy does not dictate the manner that TMDLs are developed, nor does it modify the Klamath TMDL. Other comments submitted by PacifiCorp are relevant to this process and are addressed below.</p>	<p>The response does not address the comment because this is not an issue that was previously addressed in the TMDL process nor is it only relevant to TMDLs. The Policy should utilize more of a quantitative approach, as recommended by PacifiCorp.</p>
<p><u>Page 154, last paragraph:</u> The document states “that dam removal would have long-term beneficial effects on free-flowing condition, water quality, scenic, wildlife, fishery, and recreation river values associated with the upstream and downstream reaches designated as Wild and Scenic.” As suggested in the comments above, this paragraph should be deleted from the staff report Klamath River dam removal is not an action that is within the</p>	<p><u>CEQA Comment #3 (PacifiCorp)</u> There is no discussion in the Staff Report on interim conditions subsequent to dam removal, which could have a remarkable impact on fisheries, water quality, scenic conditions and other recreational values. <i>Response:</i> Interim impacts (immediately after dam removal) are discussed extensively throughout Chapter 9, and are a prime example of the potential impacts to water</p>	<p>The response does not address the first portion of the comment for the same reasons that the comments made above regarding Klamath dam removal were not addressed. The response does not address the second portion of this comment because although short term impacts were listed in Chapter 9, the comment addresses the summary discussion in the environmental checklist of whether there would be significant impacts to</p>

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<p>jurisdiction of the Regional Board and therefore not subject to this policy. However, there is no discussion of interim conditions, which could have remarkable impacts on fisheries, including listed species, water quality, scenic conditions and other recreational values until ultimate “long term” conditions are achieved.</p>	<p>quality, recreation, fisheries and scenic resources. Additionally, impacts to the environment from dam removal include elevated exhaust levels; fugitive dust; vehicle and GHG emissions; turbidity; suspended sediment loads; reductions of dissolved oxygen; potential negative alteration of critical habitat for multiple fish species; potential alterations to water supply causing increased demand on groundwater resources; potential disturbance or alterations of historical, archaeological, cultural and paleontological resources from heavy equipment or reservoir drawdown; potential negative alterations to lake skiing and whitewater boating; impacts by exceeding local noise ordinances, exposing people to groundborne vibrations and increasing the ambient noise levels for outdoor receptors. Again, the disclosure of impacts from the Klamath Dam Removal Project was used as an example for other projects that may occur (and would obviously need a project-level CEQA analysis).</p>	<p>recreation, and this discussion does not include the short term impacts.</p>