

<p><b>Docket Number:</b> <u>58-0102-1102</u>  <b>Effective Date:</b> <u>2012 Sine die</u>  <b>Rules Title:</b> <u>Water Quality Standards</u>  <b>Agency Contact and Phone:</b> <u>Don Essig, 373-0119</u></p>	<p style="text-align: right;"><b>Public Notice</b>  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  <b>Hearings:</b>  <b>Locations and Dates:</b> N/A  <b>Written Comment Deadline:</b> 9/2/11</p>
<p><b>Descriptive Summary of Rule as Initially Proposed:</b>  DEQ proposes to revise its Water Quality Standards, IDAPA 58.01.02, to include a site-specific temperature criterion for the Snake River to protect fall spawning of Chinook salmon from Hell's Canyon Dam to the Salmon River. This site-specific criterion would be a change from the current criterion of a maximum weekly maximum of 13° C from October 23<sup>rd</sup> through April 15<sup>th</sup> to a site-specific criterion of a weekly maximum temperature (WMT) of 14.5° C from Oct 23<sup>rd</sup> through November 6<sup>th</sup> and a WMT of 13° C from November 7<sup>th</sup> through April 15<sup>th</sup>. The first date a WMT can be calculated is October 29<sup>th</sup>. The proposed rule change recognizes the declining thermal regime in the Snake River during the fall spawning season and that higher temperatures at the outset of the spawning season are both protective and supportive of the fall Chinook salmon spawning and incubation occurring in the Snake River during this time. This proposed rule change recognizes that a need to change the site-specific temperature criterion in the Snake River between the Hell's Canyon Dam and the confluence with the Salmon River exists. The current site-specific criterion of 13° C between October 23<sup>rd</sup> and April 15<sup>th</sup> is not regularly met during the first 14 days of the fall spawning season and yet salmonid spawning and incubation is at the highest levels of the last two decades. The proposed rule changes the temperature criteria to 14.5°C for the first 14 days of the spawning period and then reduced to 13°C for the balance of the fall and early spring.</p> <p>DEQ recommends that the Board adopt the rule, as presented in the final proposal, as a pending rule with the final effective date coinciding with the adjournment <i>sine die</i> of the Second Regular Session of the Sixty-first Idaho Legislature. The rule is subject to review by the Legislature before becoming final and effective.</p>	<p><b>Negotiated Rule Making:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Groups Involved:</b> Sign-in sheet attached.</p> <hr/> <p><b>Costs To the Agency:</b> None anticipated.</p> <p><b>Costs To the Regulated Community:</b> None anticipated.</p> <hr/> <p><b>Relevant Statutes:</b> Sections 39-105, 39-107, and 39-3601 et seq., Idaho Code</p> <hr/> <p><b>Idaho Code § 39-107D Statement:</b> The standards included in this proposed rule are not broader in scope, nor more stringent, than federal regulations and do not regulate an activity not regulated by the federal government.</p> <p><b>Fiscal Impact Statement:</b> The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year: Not applicable.</p>

Temporary Rule	<input type="checkbox"/> Necessary to protect public health, safety or welfare <input type="checkbox"/> Compliance with deadlines in amendments to governing law or federal programs <input type="checkbox"/> Conferring a benefit
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Docket Number: <u>58-0102-1102</u>		
Section	Section Title	Summary of Rule Changes Based on Public Comment
286	<b>Snake River, Subsection 130.01, HUC 17060101, Unit S1, S2, and S3; Site-Specific Criteria for Water Temperature.</b>	This section has not been changed. See attached Response to Comments.

**DEQ RESPONSE TO COMMENTS**  
**Water Quality Standards Rule Docket 58-0102-1102**  
**Hells Canyon-Snake River Site Specific Spawning Criteria**

Comments were received from 6 parties. Comments from Idaho Power and NOAA Fisheries were supportive of the proposal, the others raised various criticisms. Several of the criticisms received were similar in nature, thus DEQ has paraphrased and grouped them by topic for purposes of this response.

After reading and considering all the comments received, DEQ has decided to proceed with adoption of the site-specific spawning criterion as proposed in the August 3, 2011 Idaho Administrative Bulletin.

Commenters:

- 1 National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- 2 Environmental Protection Agency Region 10 (EPA)
- 3 Barker Rosholt & Simpson LLP on behalf of Idaho Power Company (IPC)
- 4 Nez Perce Tribe
- 5 Columbia River Inter-Tribal Fish Commission
- 6 Idaho Rivers United

These numbers are used parenthetically below to identify those who made or echoed a particular critical comment.

**The reach of Snake River to which criteria would be applied is not natural** (*Commenter 4 &5*)

DEQ's Response:

DEQ agrees the Hell's Canyon Complex (HCC) of dams has created an unnatural environment in the Snake River below the dams. In fact, the current unnatural conditions below the dams are thermally more favorable to fall Chinook spawning than existed prior to the HCC, creating a new spawning area. That this new spawning area is unnatural does not diminish its importance nor does it say anything about temperatures that would protect Fall Chinook Spawning, which is the goal of criteria.

**Altering EPA's regionally recommended criterion on a site-specific basis would need to be based on unambiguous new scientific information and analysis.** (*Commenter 2*)

DEQ's Response:

Idaho Power Company has presented new scientific information and analysis that support the proposed site-specific temperature criterion. The work published in Geist et al. (2006) is a detailed and site-specific study of fall Chinook thermal spawning requirements, under a declining thermal regime. DEQ finds this work to be well done and supports the minor adjustment in spawning criteria proposed. This is new information, i.e. since EPA's 2003 regional temperature criteria recommendations were put forth.

There is always uncertainty, some ambiguity, in scientific inquiry. The federal regulations for water quality criteria require that there is a "sound scientific rationale" and, if departing from EPA 304(a) recommendations, that "scientifically defensible methods" be used. DEQ believes this requirement has been met in the work of Geist et al and supporting documentation and analysis put together by Idaho Power (ref IPC proposal of July 2010).

See also IPC's response to this comment at page 4 of their September 2, 2011 letter to DEQ.

**Should discuss why this river segment and population of Fall Chinook salmon require less stringent criteria than other Fall Chinook populations. (Commenter 2)**

DEQ's Response:

It is the very intent and purpose of site-specific criteria to depart from the norm, taking into account site-specific knowledge. The proposed site-specific criterion looks specifically at the Snake River below Hells' Canyon and the population of fall Chinook salmon therein, thus by design it does not look at other populations in other settings where the criterion would not be applied. NOAA-NMFS has stated that based on their review of the most recent studies and the data that they collect on fall Chinook population life stages that the current river conditions with temperatures higher than the proposed site specific criteria is fully supporting fall Chinook populations.

With regard to other fall Chinook populations in other rivers, it might well be asked why is it they require more stringent criteria than proposed here? Although we cannot say for sure without further study, it seems at least plausible that the findings in the Snake River Hells Canyon that fish initiate spawning before temperatures reach EPA's recommended criterion in anticipation of cooler temperatures to follow is not unique. If the findings in Hell's Canyon prove to be more typical then there is an argument for revising the general criterion recommended by EPA. This is beyond the scope of the present work and proposal.

See also IPC's response to this comment at page 5 of their September 2, 2011 letter to DEQ.

**Why October 23<sup>rd</sup> as the start date of spawning period and not the 1<sup>st</sup> or 15<sup>th</sup> of a month?  
(Commenter 2)**

DEQ's Response:

This comment appears to be specific to the Oregon water quality standards and IPC's proposal to the Oregon Environmental Quality Commission early this year. However, we can say the date of October 23<sup>rd</sup> in Idaho's current water quality standards was based on site-specific knowledge of fall Chinook spawning in the Snake River below Hell's Canyon dam and reflects the average date of spawning under current conditions, as is discussed by IPC at page 10 of their September 2, 2011 letter to DEQ.

Since EPA has raised the issue of a shift up or back to a date of Oct. 15<sup>th</sup> or Nov. 1<sup>st</sup> for the start of spawning, DEQ will respond. Given that criteria are used to identify waters as impaired and key up restoration activities such as TMDLs, we believe as a general principle that more precision is better than less precision in application of criteria. As a corollary, if less precision is used then more flexibility is needed in evaluating criteria exceedances. Absent flexibility, the seriousness of exceeding criteria and the propensity of fish to anticipate forthcoming cooler temperatures would incline us to shift the date back to Nov. 1<sup>st</sup>, rather than advance it to Oct. 15<sup>th</sup>, if forced to choose less precision. With any date flexibility is advisable to deal with inter-annual variations in timing of temperature changes and initiation of spawning.

We think it important to note that the proposed site-specific criterion represents cooler conditions than currently exist in some years. Thus if the proposed criterion is met, the river made cooler, a shift in the start of spawning to earlier in the year would be expected. If we do not adopt the site-specific criterion and somehow meet the 13°C MWT by Oct 23<sup>rd</sup>, we would expect the start of spawning to advance even more from our present date.

Setting aside the realization and merits of such shifts in times of spawning, we need to somehow recognize in the water quality standards – either in setting dates of application or the formulation of criteria – that fish anticipate seasonal changes and start spawning before temperatures are optimal. That is what we are doing with this ramped site-specific criterion.

**Acclimation temperatures used in the Geist et al. study of 12°C is unlike pre-spawning temperatures of 16.5 to 18°C in the Snake River, bringing applicability of the study into question. (Commenter 2)**

DEQ's Response:

While this is a legitimate criticism, concern for the comparability of acclimation temperatures to field conditions appears to be relatively recent and applies as well to almost all of the studies used to support EPA's regional temperature criteria guidance. As is pointed out by IPC (see IPC's response to this comment at page 11 of their September 2, 2011 letter to DEQ), in laboratory testing of thermal tolerance few studies have reported acclimation temperatures and when they did acclimation is typically not like field conditions. Indeed laboratory studies on the whole are very controlled experiments in rather unnatural conditions. If this is sufficient reason to question the applicability of Geist et al. then it is reason to question almost all of the studies supporting EPA's regional guidance as well.

We do not however subscribe to the notion temperature studies with unknown or mismatched acclimation temperatures are without merit; this is simply an area in which future studies of thermal tolerance can be improved. An advantage the Geist et al. study has is its investigation of the effects of a declining thermal regime rather than the constant exposures typical of previous study. In this respect the Geist study is superior, more like real conditions in the Snake than prior studies supporting EPA's recommended 13°C MWMT criterion.

The point is that the Geist et al (2006) work, while not perfect in mimicking real world exposures, is by virtue of its study of declining temperatures closer to the real world than previous studies – it is the best, most recent, relevant study of thermal tolerance for fall Chinook spawning that we have. Furthermore, as IPC points out, the Geist study is not the only work that bears on the question of temperatures that support fall Chinook spawning. Two earlier studies, in which acclimation temperatures are unknown but likely involve a range of pre-spawning thermal histories, concur in a threshold temperature of 16-16.5°C for adverse effects on embryo survival. Although this is the best scientific information before us, the proposed criterion backs off from this threshold to address uncertainty, provide a margin of safety.

**Site specific assessment of protective criteria for Fall Chinook in the Snake River should address the adult migration (late summer) through fry emergence (April) period. (Commenter 2, 4 and 5)**

DEQ's Response:

EPA Region 10's criteria guidance provides a suite of criteria for addressing all life stages of salmonids, covering all portions of the seasonal cycle in temperature; unlike most criteria which take on a single value year round. That guidance includes temperature criteria to protect both adult migration and salmonid spawning. In the Snake River reach in question the calendar year is covered by EPA's recommended 20°C MWMT for adult migration during the warmer months of the year, and, presently, EPA's recommended 13°C MWMT to protect spawning and incubation during the cooler months, with Oct 23<sup>rd</sup> and April 15<sup>th</sup> being the dividing dates. This application of criteria has been approved by EPA.

The criterion proposed here is specific to spawning and does not regulate temperatures outside its period of application. It appears to us the appropriateness of EPA's recommended adult migration criterion is being questioned with this comment and a suggestion being made that late summer temperatures need to be cooler in order to justify slightly warmer criteria at the onset of spawning. We find nothing in EPA's regional guidance or federal rules regarding site-specific criteria that would tie adjustment of one member of a suite of criteria to adjustment of others. If the real issue in the Snake River below Hell's Canyon Dam is pre-spawning conditions, as is suggested by this comment, then we would suggest a separate site-specific criterion needs to be developed for that time period.

While a seasonal temperature criterion only applies during its defined time period and does not control temperatures at other times, it is worth noting that there is nothing in this seasonal application of criteria that would suggest that real world temperatures should or can follow a rectangular, stair-step pattern – i.e. a steady 20°C from late spring through early fall, suddenly plunging to a steady 13°C until the next spring. Rather criteria set an upper limit on the normal seasonal variations in temperature through the course of a year, with most of the time being cooler than criteria and a transition from one time period to the next necessary in order to meet those criteria.

See also IPC's response to this comment at page 12 of their September 2, 2011 letter to DEQ.

**The observed increase in returning adult Chinook is confounded by hatchery versus wild components (Commenter 2, 5 & 6)**

DEQ's Response:

DEQ agrees that the issue of hatchery supplementation, along with failure of some hatcheries to mark their stock, confounds determination of salmon recovery. It is much less clear to us that hatchery stock differ from wild stock in their thermal preferences; while this is possible it appears unfounded at this time.

What can be said is that fall Chinook salmon, whether hatchery or wild origin, would not return and spawn if conditions in the Snake River in Hell's Canyon were not suitable. As noted by IPC (see IPC's response to this comment at page 14 of their September 2, 2011 letter to DEQ) observations indicate the population is increasing and has in fact exceeded recovery goals in most recent years. While this does not mean there is no room for improvement in thermal conditions it does indicate present conditions are favorable. As noted in the comment received from NOAA-NMFS, the agency charged with salmon recovery:

"There is no direct evidence that the current water temperature regime, which does not meet the current IDEQ water temperature criteria, has negatively affected Snake River fall Chinook salmon. Since 2000 the population has grown substantially under the existing thermal regime."

In the context of the proposed site-specific temperature criterion it is thus important to understand several things about the existing thermal regime of the Snake River in Hell's Canyon:

- 1) By virtue of population trends it is demonstrably favorable to fall Chinook spawning;
- 2) The current temperatures are not the basis of the proposed criterion, rather the criteria are based on laboratory study in conjunction with other information and an understanding of the seasonal cycles of temperature;
- 3) The proposed site-specific criterion would require cooler fall temperature than now exist.

**Not meeting the standard is not an indication the standard needs to be changed (Commenter 5)**

DEQ's Response:

DEQ agrees. We also agree that there clearly has been a shift in the thermal regime toward warmer fall and winter temperatures, as is common below large storage reservoirs. By most accounts this has created a more favorable thermal regime than existed historically in this reach, prior to upstream impoundment.

Not meeting the current standard is not the basis for the proposed site-specific criterion for fall Chinook spawning in Hell's Canyon. Rather the basis for the proposed site-specific criterion is the scientific information presented by IPC in their documentation provided to DEQ and made available to the public during rulemaking. Although more like current conditions, the proposed criterion will require the Snake River be made cooler.

**The proposed ramp in criteria from 14.5°C to 13°C is a rate of decline that is unnatural (Commenter 5)**

DEQ's Response:

While a drop from 14.5°C to 13°C MWMT over two weeks may not be natural (the natural rate of decline is unknown and would be difficult to precisely determine) the proposed site-specific criterion does represent a rate of decline far more reasonable than one might imagine is suggested by current criteria, i.e. 20°C to 13°C in a day. As previously noted criteria are not set to define what the pattern of temperature variation should be, but rather to set upper limits, an envelope on normal seasonal cycles, above which temperature should not range (see response above at top of previous page).

It is important to understand that the rate of decline inherent in the proposed criteria:

- 1) Has been studied in controlled laboratory studies;
- 2) Is close to what presently exists, which, as noted above, is favorable to fall Chinook spawning.

**Rulemaking was open to all interested parties (Commenter 5)**

DEQ's Response:

Open rulemaking is sound public policy, but it is also required by laws governing administrative procedure.

**Delayed Spawning leads to delayed emergence and thus greater down river mortality for out-migrating smolts (Commenter 4)**

DEQ's Response:

This statement may be true. However, fall Chinook spawning has been documented to occur at temperatures above what is being proposed. Under either the current criteria or the proposed criteria, the Snake River in some years would need to be made cooler in late October than it is now. Thus the timing

of spawning (if it shifts at all) under the proposed criterion may be advanced slightly from what is seen now. The effect of any shift in fall spawning on spring emergence of fry and out migration of smolts depends as well on water temperature through the winter and into spring.

It is apparent that the present unnatural conditions brought about by upstream impoundment have resulted in warmer temperatures through the winter as well. This has improved conditions for spawning and incubation over that which existed in this reach pre-impoundment, and likely accelerated hatch and out migration from pre-impoundment conditions.

**Technology exists to cool the river (Commenter 4 & 6)**

DEQ's Response:

We don't doubt that technology exists, that modification to existing dams are possible, that would cool the Snake River in the late summer and into early fall, even unnaturally so as we see in the Clearwater River. The consideration of the availability and affordability of such technology is not allowed in the setting of water quality criteria under the Clean Water Act, thus it is irrelevant to the current proposal.

**The Endangered Species Act (ESA) requires precaution and resolving uncertainty so as to not increase risk to listed species (Commenter 6)**

DEQ's Response:

We believe this is correct, although the ESA does not grant federal agencies any authorities they do already possess. We note with regard to the present proposal:

- 1) The criterion is well supported by scientific study and is proposed at value lower (more conservative) than suggested by this science;
- 2) Intensive ongoing monitoring of existing conditions indicates fall Chinook spawning is protected under the existing thermal regime;
- 3) Will require cooler temperatures than currently exist, thus represents improvement (lower risk) over existing conditions;
- 4) Overall there is very high certainty fall Chinook spawning will continue to be protected; and
- 5) The proposal is supported by NOAA-NMFS, the agency responsible for managing fall Chinook under the ESA.

**Antidegradation and climate change**

DEQ's Response:

DEQ concurs with the comments of IPC expressed in their September 2, 2011 letter to DEQ.

## MEETING SIGN-IN SHEET

**Meeting Title: NEGOTIATED RULEMAKING**

**Water Quality Standards, Docket No. 58-0102-1102**

**Meeting Date and Location: 6/21/11 – Boise, Idaho**

**Phone participation: 373-0101/bridge 1**

Name	Affiliation	E-Mail Address
Phone participation:		
✓ Chris Tretter	Idaho Department of Lands	
✓ Ara Andrea	Idaho Department of Lands	
<del>Brett Swift</del> <i>No</i>	<del>American Rivers</del>	
✓ Nathan Gardiner	Idaho Power	
✓ Julie Carter <del>AG</del>	CRITFC	
<del>Greg Haller</del> <i>No</i>	<del>Nez Percé</del>	
✓ Carl Merkle	Confederated Umatilla Tribes	
✓ David Geist	Idaho Power consultant	
✓ Chuck Coutant	Idaho Power consultant	
✓ Keith Kirkendall <del>AG</del>	NOAA	
✓ John Palmer	EPA – Seattle	
✓ Ritchie Graves	NOAA	
<i>Paula Wilson</i>	<i>AG/DEQ</i>	

Name	Affiliation	E-Mail Address
Barry Burnell	Idaho DEQ	Barry.burnell@Deg.idaho.gov
Albert Barker	BRS	apb@idahowaters.com
Sarah Higley	BKS	swt4@idahowaters.com
Cindy Robertson	IDFG	cindy.robertson@idfg.idaho.gov
Michael Morse	USFWS	michael_morse@FWS.gov
Doug Conde	DEQ-IDAG	
Don Essig	DEQ	Don.Essig@DEQ.Idaho.gov

Name	Affiliation	E-Mail Address
Ralph Myers	Idaho Power	rmyers@idahopower.com
Kevin Lewis	Idaho River United	kevin@idahorivers.org
Brian Hoelscher	IPC	bhoelscher@idahopower.com
Phil Groves	IPC	pgroves@idahopower.com
Jim Tucker	IPC	jtucker@idahopower.com
Chris Randolph	IPC	crandolph@idahopower.com
Jim Chandler	IPC	jchandler@idahopower.com

