Supplemental Technical Justification
Change in Idaho WQS, Docket 58-0102-1101

Modification of statewide thermal treatment requirements and Site-Specific Salmonid Spawning Criteria and treatment requirements for Lower Boise Watershed

Site-specific salmonid spawning criteria for the lower Boise watershed were approved by EPA as a temporary rule on October 27, 2011. There is no change in this final rule and the previous justification for the site-specific WQS changes, submitted to EPA on July 20, 2011, stands.

In October 2011 EPA deferred action on proposed statewide modification of Idaho's thermal treatment requirements. The modification was the removal of numeric limits to point source induced increases in receiving stream temperatures of 1°C for water designated for cold or seasonal cold water aquatic life and 2°C for water designated for warm water aquatic life. This supplemental justification is specific to this deferred action, and EPA's comments on the proposed rule dated September 2, 2011.

In their comment letter EPA points out that their April 2003 regional temperature criteria guidance recommends State's include in their water quality standards provisions to protect water cooler than numeric criteria in watersheds that support ESA listed salmonids.

We acknowledge EPA's recommendation. In reading EPA's guidance it is clear that protection of water colder than criteria, in addition to being focused on ESA listed species, is focused on summer maximum temperatures (see Attachment A). We agree that *"… increased summertime temperatures due to human activities are the greatest water temperature concern …"* and that *"… it is appropriate that temperature criteria focus on the summer maximum conditions to protect the coldwater salmonid uses …"* Summer (June – September) is the period of time in Idaho when water can be warmer than is beneficial to salmonids. The corollary to this is that the rest of the year, particularly through the winter months (November – March), increased water temperatures are generally not a concern. Furthermore Idaho waters possess outstanding thermal diversity (see attachment B) such that meeting numeric criteria at the downstream extent of a use at the warmest time of the year will mean that water temperatures are colder than criteria throughout most of a stream network almost all of the time.

Unfortunately Idaho's numeric limitations on point source induced increases in stream temperature were silent on timing of their application. Thus as EPA began developing NPDES permits with thermal effluent limits they looked at meeting the numeric treatment limitation throughout the year, including during winter (most recently City of Nampa and City of Boise permits). The magnitude of point source induced increases in receiving stream temperature varies in direct proportion to the difference in temperature between the effluent and the receiving stream. While effluent temperatures do not vary greatly through a year, stream temperatures do. Thus this difference, and thus thermal effect of an effluent, is greatest in the winter when receiving stream temperatures get very cold.

For example, the City of Nampa discharge if given a permit written to meet the numeric treatment requirement (no more than 1°C change in receiving water temperature) through the

winter, is faced with a level of treatment (effluent chilling) that would be several times that required to meet the cold water aquatic life numeric temperature criteria during summer months. The cost of winter time effluent chilling is cost prohibitive, yet is unlikely to provide any demonstrable benefit to the resource since winter temperatures in the receiving water are well below criteria. This example is by no means unique; Nampa is simply the first out of the chute and the tip of a proverbial iceberg of unreasonable thermal treatment, without modification of Idaho's thermal treatment requirements.

It probably makes most sense to have limited the thermal treatment requirement to the summer months (June-Sept). This option was considered by DEQ and discussed with EPA in early 2011; prior to DEQ's decision to enter into rulemaking. However, we were counseled that because EPA viewed Idaho's treatment requirements as a WQS that we would have to provide scientific justification for a limited season of application. EPA would also have to go through ESA consultation on the change. Our discussions concluded that it would be easier to remove the numeric limits on point source induced temperature changes entirely, leaving the remaining thermal treatment language to justify as protective of uses, rather than justify seasonal application.

EPA has since suggested that the numeric treatment limits are needed to meet their recommendation in the regional temperature guidance for protection of water colder than numeric criteria. While we agree water cooler than criteria is important to protection of salmonids, especially endangered ones, we believe our thermal treatment requirements, as modified, are sufficient to provide the cold water protection recommended by EPA. We note that Idaho's thermal treatment requirements pre-date EPA's regional criteria guidance by decades. There is no evidence the numeric thermal treatment limitations were grounded in use protection as are the numeric water quality criteria. Although DEQ does not necessarily agree that our thermal treatment requirements are, or were intended to be, a WQS in the sense of CWA section 303(c), we make that case that the remaining thermal treatment narrative language in section 401 of Idaho's WQS is sufficient to protect aquatic life uses when needed.

While the thermal treatment requirements as modified with this rulemaking lack numeric limitations on point source induced changes in receiving stream temperatures <u>narrative language remains</u>:

401.POINT SOURCE WASTEWATER TREATMENT REQUIREMENTS.
Unless more stringent limitations are necessary to meet the applicable requirements of Sections 200 through 300, or unless specific exemptions are made pursuant to Subsection 080.02, wastewaters discharged into surface waters of the state must have the following characteristics: (4-11-06)

> **01. Temperature**. The wastewater must not affect the receiving water outside the mixing zone so that: (7-1-93)
>
> **a.** The temperature of the receiving water or of downstream waters will interfere with designated beneficial uses. (7-1-93)
>
> **b.** Daily and seasonal temperature cycles characteristic of the water body are not maintained. (7-1-93)

> **c.** If temperature criteria for the designated aquatic life use are exceeded in the receiving waters upstream of the discharge due to natural background conditions, then wastewater must not raise the receiving water temperatures by more than three tenths (0.3) degrees C. (3-29-12)

So let's examine this language. The statement: "Unless more stringent limitations are necessary to meet the applicable requirements of Sections 200 through 300", refers back to Idaho's use-based water quality criteria. Clearly the use-based criteria trump the treatment requirement if more stringent. This is in fact the case for most of Idaho's major dischargers, that is, most point source dischargers in Idaho occur to waters where temperatures are not colder than numeric criteria during the summer (see Attachment C). This is not to suggest that point sources are a major cause of these warmer than criteria temperatures, but rather that larger lower elevation streams where most point sources are located are warmer simply due to their geography, and natural processes. The point source treatment requirements have no effect, do not alter use protection, in these prevailing warmer than criteria conditions in summer.

In contrast, sections 401.01.a & b take effect when and where water is colder than criteria. So when and where water is colder than criteria the language at 401.01.a gives DEQ the ability to impose thermal restrictions on the discharge, if it can be shown the unrestricted temperature will interfere with designated beneficial uses at the point of discharge or downstream. Such interference may be the case anywhere, but perhaps more easily demonstrated in watersheds that support ESA listed salmonids. Furthermore, the language at 401.01.b gives DEQ even greater latitude to examine the effect of a discharge on receiving stream temperatures, paying heed to daily and seasonal cycles. EPA's guidance states that these diurnal and seasonal temperature variations are an important aspect of a thermal regime and suggests they be protected by a narrative provision, which we have.

Section 401.01.c applies where water is naturally warmer than use-based numeric water quality criteria. In this case human-caused increase in stream temperature is limited to 0.3°C. This is much lower than the removed numeric thermal treatment requirement. And as explained in a letter to EPA dated (February 5, 2004), this limitation applies cumulatively, not to each point source.

In addition to the thermal treatment requirement Idaho has antidegradation to protect high water quality, water of better quality than criteria. EPA's guidance says there are several ways in which a State or Tribe may "protect waterbodies with ESA-listed salmonids that currently have summer maximum temperatures colder than the State's or Tribe's numeric criteria". Antidegradation is mentioned as one way. Idaho's antidegradation rules set as de minimis degradation a loss of 10% of remaining assimilative capacity as of July 1, 2011. If degradation is over 10% the degradation must be justified as necessary and important. For example, if a receiving stream were 2°C cooler than numeric criteria, an increase in temperature of just 0.2°C would be significant. This provides a means to scrutinize changes even less than the 25% *"difference between the current temperature and the criterion"* suggested by EPA for non-summer periods, and smaller than the 1 and 2°C thermal treatment limitations. Antidegradation applies to all Idaho high quality waters in Idaho, not just those with ESA-listed salmonids.

In their September 2, 2011 comment letter EPA supports Idaho adoption of a formula-based limitation on change in water temperatures, such as approved for Washington. There is certainly

merit in a sliding scale limitation that is more limiting as receiving water temperature approach criteria. This is something Idaho can consider for the future, particularly should the current rule change be found in practice to be inadequate. However, mere preference for a formula-based limitation should not stand in the way of approval of the current changes to Idaho's thermal treatment requirement.

For the reasons above we do not believe the removal of the year round limitation on increases in temperature in Idaho's thermal treatment requirements will prevent protection of colder water when and where it matters to fish or reduce the vast thermal diversity in Idaho's waters. Furthermore, antidegradation and the remaining provisions of the thermal treatment requirements leave us the ability to regulate as necessary thermal effluents, should they be shown to "interfere with designated beneficial uses" or alter "daily and seasonal cycles characteristic of the water body".

REFERENCES:

DEQ. 2004. Letter from Toni Hardesty, Administrator, Water Quality Programs, to Randall F. Smith, Director Office of Water, EPA Region 10, clarifying implementation of Idaho's natural background rule. Dated February, 5, 2004.

DEQ. 2011. Docket 58-0102-1101T Rule Submittal Package. Dated July 20, 2011.

EPA. 2003. EPA Region 10 Guidance For Pacific Northwest State and Tribal Temperature Water Quality Standards. April 2003. EPA 910-B-03-002. Region 10, Office of Water, Seattle, WA. 57 pp.

EPA. 2011a. Comment letter from Lisa Macchio, Water Quality Standards Unit, Region 10 Office of Water and Watersheds, to Paula Wilson, Rules Coordinator, Environmental Quality Section, Idaho Attorney General's Office. Dated September 2, 2011.

EPA. 2011b. Action letter from Michael A. Bussell, Director, Region 10 Office of Water and Watersheds, to Barry N. Burnell, Administrator DEQ Water Quality Programs. Dated October 27, 2011.

IRZ Consulting. 2002. Paired Color Infrared and Thermal Infrared Imaging And Analysis for Selected Idaho Streams. Final report to Idaho Department of Environmental Quality, August 28, 2002. IRZ Consulting, Hermiston, OR. 27 pp.

Isaak, D. 2012. Climate-Aquatics Blog # Blog # 28, part 2, Spatial Statistical Models for Stream Networks: Applications and Inference http://www.fs.fed.us/rm/boise/AWAE/projects/stream_temp/blogs/28Part2_SpatialStatisticalModelsForStreams_applications%20.pdf

Lewis T. E. and others. 2000. Regional Assessment of Stream Temperatures Across Northern California and Their Relationship to various Landscape-level and Site-Specific Attributes. Forest Sciences Project. Humboldt State University Foundation, Arcata, CA. 420 pp.

Supporting Attachments

Attachment A – Quotes from EPA's April 2003 Regional Temperature Guidance

Attachment B – Examples of the Thermal Diversity in Idaho Streams

Attachment C – Point Source Discharges in Relation to Water Colder than Criteria

Attachment A
Quotes from EPA's April 2003 Regional Temperature Guidance

Following are quotes for EPA Regional Temperature Guidance (April, 2003) regarding cold water, refugia, the need to protect water colder than criteria, and a focus on summer maximum temperature as the primary concern.

Page 5:

> "Although evidence suggests that historical water temperatures exceeded optimal conditions for salmonids at times during the summer months on some rivers, the temperature diversity in these unaltered rivers provided enough cold water during the summer to allow salmonid populations as a whole to thrive." *[Emphasis added]*

Page 6:

> "Human activities can increase water temperatures by increasing the heat load into the river, by reducing the river's capacity to absorb heat, and by eliminating or reducing the amount of groundwater flow which moderates temperatures and provides cold water refugia." *[Emphasis added]*

Page 7:

> "… groundwater exchange between the river and the riverbed (i.e., hyporheic flow) that cools the river and provides cold water refugia during the summer." *[Emphasis added]*

Page 18:

> *"Focus on Summer Maximum Conditions*
>
> In general, increased summertime temperatures due to human activities are the greatest water temperature concern for salmonids in the Pacific Northwest, although temperatures in the late spring and early fall are also a concern in some areas. EPA therefore believes it is appropriate that temperature criteria focus on the summer maximum conditions to protect the coldwater salmonid uses that occur then. Generally, improving river conditions to reduce summer maximum temperatures will also reduce temperatures throughout the summer and in the late spring and early fall (i.e., shift the seasonal temperature profile downward). Thus, the data indicate that, because of the natural annual temperature regime, providing protective temperatures during the summer maximum period will in many areas provide protective temperatures for more temperature sensitive uses that occur other times of the year."

Page 27, speaking of bull trout:

> "… they take advantage of cold water refugia during the period of summer maximum temperatures*" [Emphasis added]*

Page 28, speaking of water used for migration:

> "Some isolated salmon and trout juvenile rearing may occur in these waters during the period of summer maximum temperatures, but when it does, such rearing is usually found only in the confluence of colder tributaries or other areas of colder waters. Further, in these waters, juvenile rearing was likely to have been mainly in cold water refugia areas during the period of maximum temperatures prior to human alteration of the landscape." *[Emphasis added]*

Page 29, narrative protection of natural thermal regime*:*

> "Critical aspects of the natural thermal regime that should be protected and restored include: the spatial extent of cold water refugia (generally defined as waters that are 2°C colder than the surrounding water), the diurnal temperature variation, the seasonal temperature variation (i.e., number of days at or near the maximum temperature), and shifts in the annual temperature pattern."

Page 29, reference to antidegradation:

> "EPA notes that the protection of existing cold water refugia should already be provided by the State's or Tribe's antidegradation provisions or by the cold water protection provisions discussed in Section V.2 below."

Page 30, an indication that spring/fall spawning criteria may not be needed at all:

> "As discussed in Section V.1.B above, EPA recommends additional uses and criteria that would generally apply during times other than the period of summer maximum temperatures. These additional uses and criteria are intended to provide an added degree of protection for those situations where control of the summer maximum temperature is inadequate to protect these sensitive uses." *[Emphasis added]*

Quotes from section V.2. Provisions to Protect Water Temperatures That Are Currently Colder Than The Numeric Criteria:

> "Because the temperatures of many waters in the Pacific Northwest are currently higher than the summer maximum criteria recommended in this guidance, the high quality, thermally optimal waters that do exist are likely vital for the survival of ESA-listed salmonids." *[Emphasis added]*

> "… in situations where downstream temperatures currently exceed numeric criteria, upstream temperature increases to waters currently colder than the criteria may further contribute to the non-attainment downstream …" *[Conversely meeting criteria downstream will require colder water upstream]*

"… natural summertime temperatures in Pacific Northwest waters were spatially diverse, with areas of cold-optimal, warm-optimal, and warmer than optimal water."

"EPA … recommends that States and Tribes adopt strong regulatory provisions to protect waterbodies with ESA-listed salmonids that currently have summer maximum temperatures colder than the State's or Tribe's numeric criteria. EPA believes there are several ways a State or Tribe may do this. One approach could be to adopt a narrative temperature criterion (or alternatively include language in its antidegradation rules) that explicitly prohibits more than a de minimis increase to summer maximum temperatures in waters with ESA-listed salmonids that are currently colder than the summer maximum numeric criteria." *[Emphasis added]*

"For non-summer periods it may be appropriate to set a maximum allowable increase (e.g., 25% of the difference between the current temperature and the criterion) for waters with ESA-listed salmonids where temperatures are currently lower than the criteria." *[Emphasis added]*

"… the recommended criteria in this guidance are based in part on the assumption that meeting the criteria at the lowest downstream point at which the use is designated will likely result in cooler waters upstream.*"[Emphasis added, this is more than just likely, all evidence is that cooler water upstream is the prevailing pattern, driven by proximity to groundwater inflow and time of travel from cool water sources]*

Page 4:

"EPA approval or disapproval would not depend on whether a criterion adopted by a State or Tribe is consistent with a particular guidance document, such as this guidance or the national 304(a) criteria recommendations, but rather on whether the State or Tribe demonstrates that the criterion protects the most sensitive designated use, as required by section 303(c) of the CWA and EPA's WQS regulations."

Attachment B
Thermal Diversity in Stream Temperature in Idaho

EPA's Regional temperature guidance (April, 2003) makes a big point of the importance of temperature diversity across the stream network in allowing now endangered salmonids to thrive in streams that they acknowledge are at times warmer than are optimal for these important and special fish. *"Although evidence suggests that historical water temperatures exceeded optimal conditions for salmonids at times during the summer months on some rivers, the temperature diversity in these unaltered rivers provided enough cold water during the summer to allow salmonid populations as a whole to thrive."* (EPA, 2003 page 5).

In choosing recommended criteria EPA opted for temperatures at what they considered to be *"near the warmer end of the optimal range for uses"*. They did so recognizing that *"numeric criteria that apply to uses that occur during the summer maximum period are intended to apply to the warmest times of the summer, the warmest years (except for extreme conditions), and the lowest downstream extent of use"* and expects that applying these criteria so *"is likely to result in temperatures near the middle of the optimal range for most of the spring through fall period in the segments where most of the rearing use occurs."* Reasons they provided are *"First, if the criterion is met at the summer maximum, then temperatures will be lower than the criterion during most of the year. Second, because the criterion would apply at the furthest point downstream where the use is designated, temperatures will generally be colder across the full range of the designated use."*

DEQ concurs with the above statements of EPA and offers the attached graphics (Figures 1-4) as example evidence of the vast thermal diversity in Idaho's streams and the truth in EPA's rationale. Such examples abound.

Figure 1. Inverse relation of stream temperature with elevation.

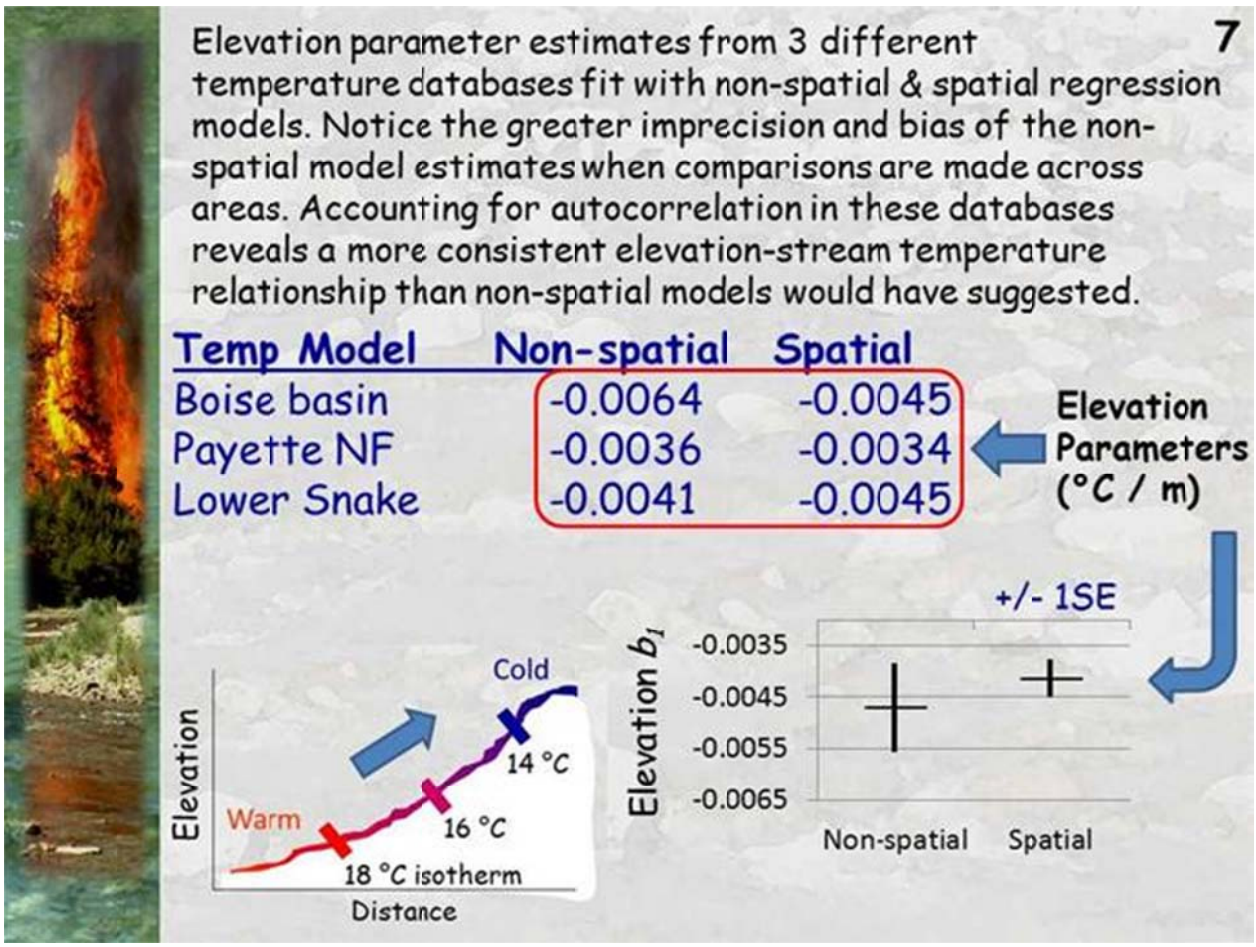


Figure 1 is from the Climate-Aquatics Blog of Dan Issak of the Rocky Mountain Forest and Range Experiment Station (Blog # 28, part 2, http://www.fs.fed.us/rm/boise/AWAE/projects/stream_temp/stream_temperature_climate_aquatics_blog.html .

While this shows an idealized, statistically derived relation, it illustrates the well-known and documented relation between stream temperature and elevation, or perhaps more accurately with distance from source. This relation reflects colder water at higher elevation and warmer water at lower elevation further from groundwater and snowmelt sources.

Figure 2. Paired morning and evening longitudinal profiles of water temperature in the Middle Fork Salmon River.

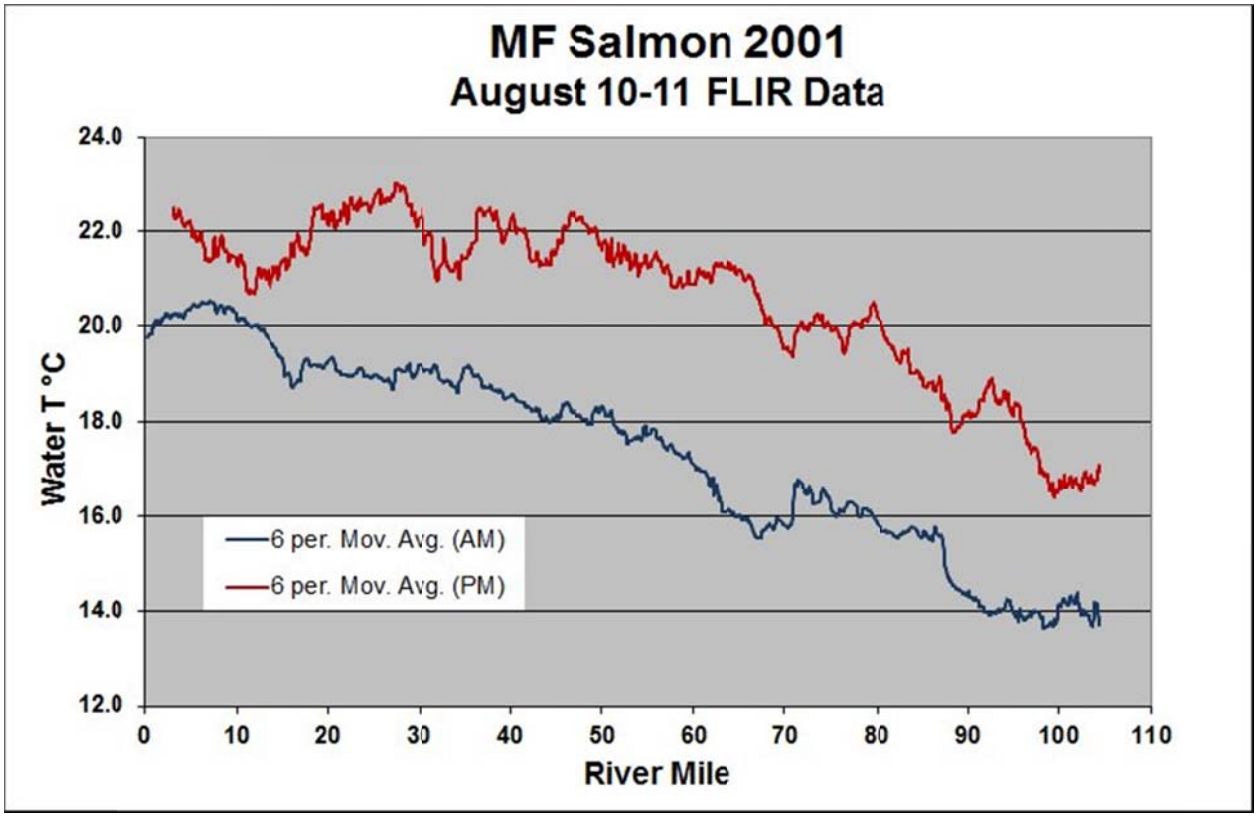


Figure 2 shows data from airborne forward looking infrared (FLIR) imaging obtained by IRZ consulting under contract to DEQ in summer of 2001. These data document in great detail for the Middle Fork Salmon River the general upstream to downstream warming trend described statistically by D. Isaak. However here we see the unsteady trend, complexity of variation, found in spatially dense, 'real world' data. The irregularity of the profile, the ups and downs, are likely explained either by cooler tributary inflows, or localized cooling by groundwater inflow, or warming by hot springs. It can be seen that for this nationally designated Wild River, where there are no point sources and few non-point sources as well, that the temperature in the afternoon exceeded Idaho's daily maximum criterion of 22°C in portions of the lower river.

Figure 3. Paired morning and evening longitudinal profiles of water temperature in the main Salmon River.

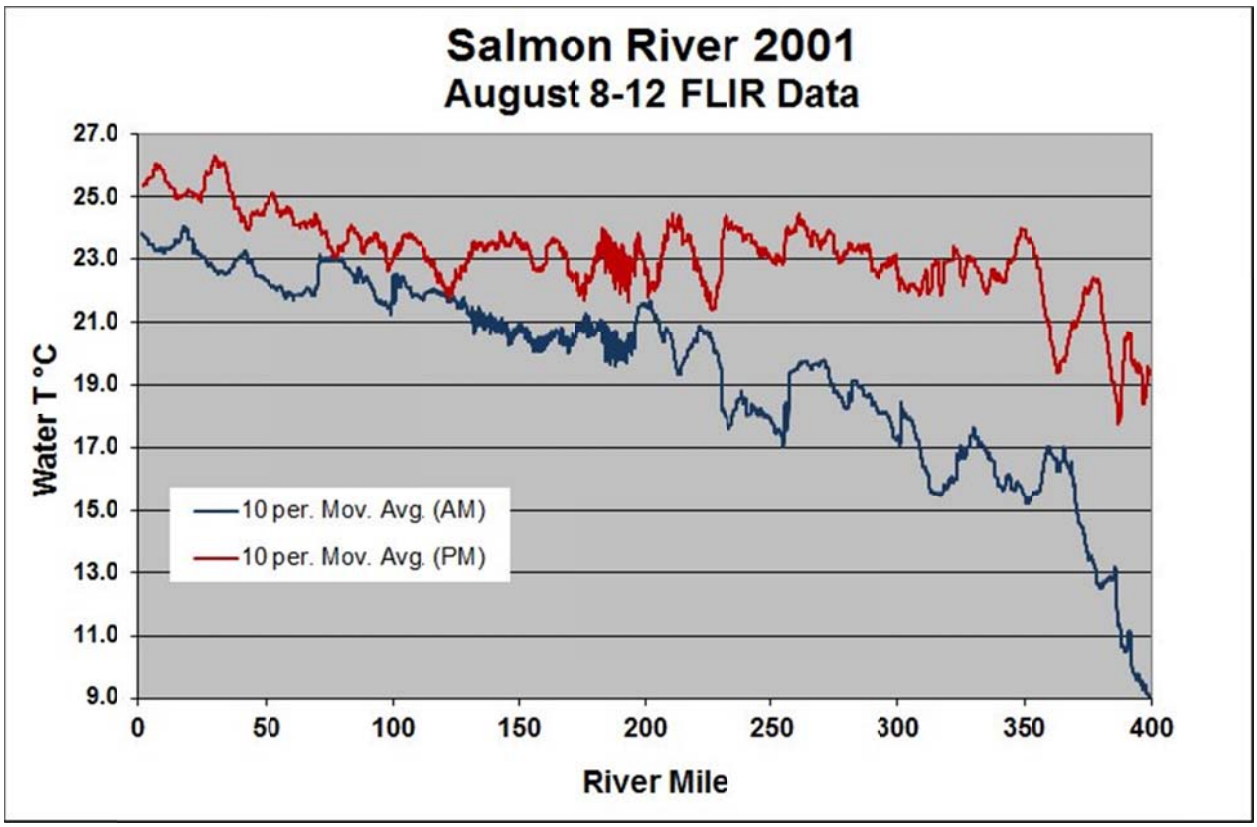
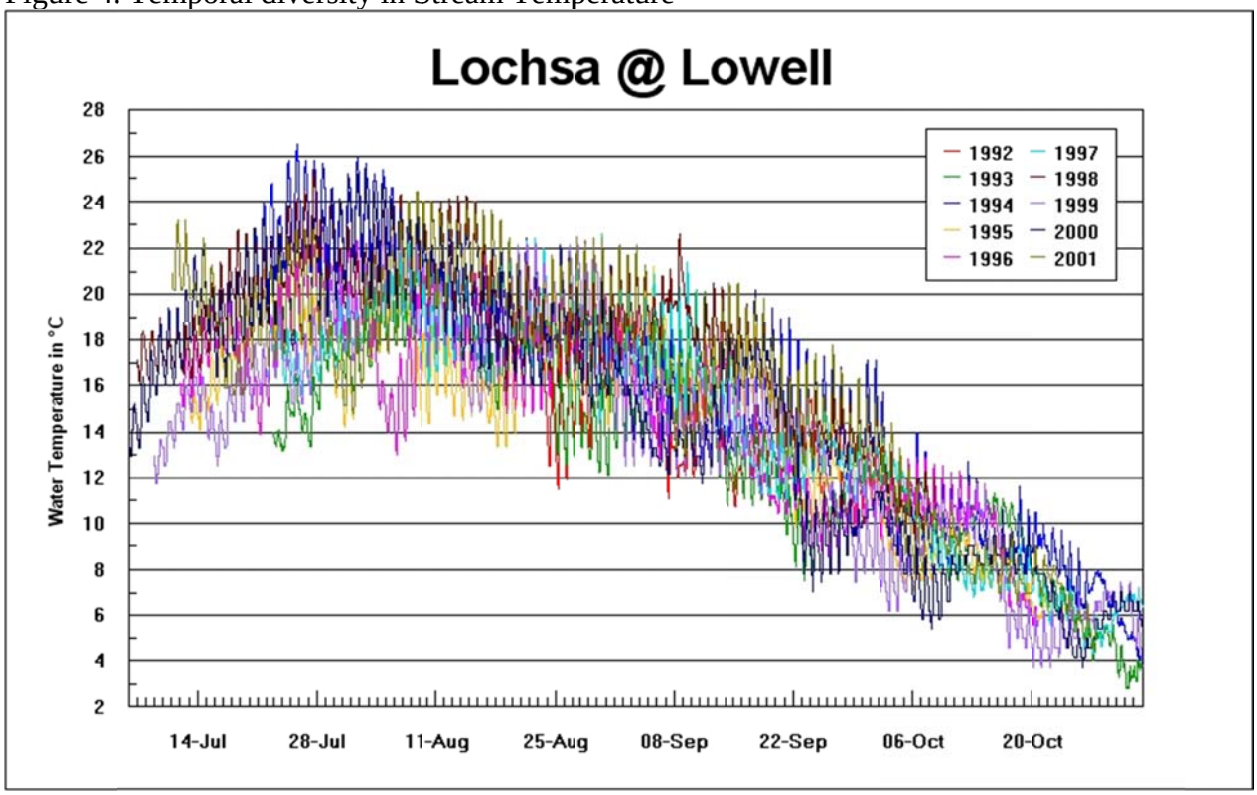


Figure 4 was generated in the same way, from FLIR data, as Figure 2. The Salmon River however has some point and nonpoint sources of thermal pollution. Although the same longitudinal warming pattern is still very much evident, we can imagine that if human caused sources were controlled, the entire profile would shift downward. The point here is that temperatures are spatially diverse, likely even more so than depicted. Only the mainstem rivers were flown, not the undoubtedly cooler tributaries, which we would expect to be thermally similar to the uppermost reaches shown here (river 350 and above). Also, FLIR, being a surface temperature measurement, does not reveal localized small cool water refugia that may exist but do not cool the surface of the stream. Furthermore theses data here are an average of 10 adjacent but closely spaced surface measurements, thus smoothing some variability.

Such landscape, or should we say riverscape, patterns are also described in great detail in the "Regional Assessment of Stream Temperatures Across Northern California in Relationship to Various Landscape-Level Variables" (Lewis and others, 2000)

Figure 4. Temporal diversity in Stream Temperature



This figure depicts the temporal diversity of stream temperatures. Shown are ten years of data collected by the US Forest Service during the summer across years of different flows and weather. In this figure you can see 4 temporal scales of variation:

1) Daily cycles, a pattern of morning lows followed by late afternoon highs, driven by the daily solar cycle; and

3) Seasonal cycles, the overall seasonal pattern of peak warmth in summer with markedly cooler temperatures on either side, driven by the sun but modified by flow and other factors; and

2) Day-to-day variations, that is, the daily range is not the same every day, nor a steady seasonal progression, but rather varied by daily weather; and

4) Year-to-year variation; the magnitude and timing of peak temperatures (different colors) differ from year to year.

This illustrates that temporal variation in stream temperatures, at least in the temperate climate of Idaho, is vast, even extreme, from near freezing to warmer than prevailing cold water criteria. This variation expresses itself on four different time scales such that a stream experiences, and a fish in that stream is exposed to, maximum temperatures only briefly. This great variation makes it difficult to specify a limit on maximum temperature, never to be exceeded, in a stream which is thermally supportive of fish use.

As with the longitudinal profiles, we can imagine that controlling point sources will reduce temperature across all time frames. However, because the effect of warm effluent sources is more pronounced in winter, more winter than summer cooling would be expected form point source thermal load reductions. On the other hand, reducing non-point source heat loading, that is improving shade, would work the opposite, as solar heating of streams is more pronounced in summer. It must be noted that shade on large (wide) rivers becomes inconsequential to their heat budget. This is especially so where the climate is too dry, or soils too thin or rocky, to support growth of trees, a situation that exists along the lower mainstem Salmon River for example. A natural lack of riparian trees, thus shade, is also a phenomenon common in high elevation meadows, where saturated soils impede establishment and growth of trees.

Attachment C
Point Source Discharge in Relation to Water Colder than Criteria

Facility Name	NPDESID	Major or Minor	Permit Stream	Assessment Unit	Pollutants	T warmer than criteria
ABERDEEN, CITY OF - ABERDEEN WWTP	ID0020176	Major	Aberdeen Drain to American Falls Reservoir	ID17040206SK025_02a	Combined biota/Habitat	?
BLACKFOOT, CITY OF - BLACKFOOT WWTP	ID0020044	Major	Snake River	ID17040206SK022_04	Temperature (USGS 2011 data)	y
BOISE, CITY OF	ID0020443	Major	Boise River	ID17050114SW011a_06	Low flow, Habitat, Sediment, Temperature	y
BOISE, CITY OF - WEST BOISE WWTP	ID0023981	Major	Boise River	ID17050114SW005_06	Temperature, Sediment, Low flow, Habitat, Fecal coliform	y
BURLEY, CITY OF - BURLEY WWTP	ID0020095	Major	Snake River	ID17040209SK001_02	Total phosphorus, Temperature (USGS 2005 Minidoka data)	y
BURLEY, CITY OF - BURLEY-HEYBURN INDUSTRIAL PARK	ID0000663	Major	Snake River (Milner Pond)	ID17040209SK001_07	Nutrients, Sediment, designated warm water	y
CALDWELL, CITY OF - CALDWELL WWTP	ID0021504	Major	Boise River	ID17050114SW005_06	Sediment, Temperature, Low flow, Habitat, Fecal coliform	y
CLEARWATER PAPER CORPORATION	ID0001163	Major	Snake River	ID17060103SL001_08	Temperature	y
COEUR D'ALENE, CITY OF - COEUR D'ALENE WWTP	ID0022853	Major	Spokane River	ID17010305PN004_04	Cadmium, Lead, Zinc, Total phosphorus, Temperature (USGS 2002 data)	y
GOODING, CITY OF - GOODING WWTP	ID0020028	Major	Little Wood River	ID17040221SK001_05b	Temperature (USGS 2004 Malad R. data)	y
HAILEY, CITY OF	ID0020303	Major	Big Wood River	ID17040219SK007_05	Other flow regime	?
HAYDEN AREA REGIONAL SEWER BOARD	ID0026590	Major	Spokane River	ID17010305PN004_04	Total phosphorus, Zinc, Lead, Cadmium, Temperature (USGS 2002 data)	y

HECLA MINING COMPANY - LUCKY FRIDAY MINE AND MILL	ID0000175	Major	South Fork Coeur d'Alene River	ID17010302PN011_03	Cause Unknown (metals suspected)	n
HECLA MINING COMPANY - GROUSE CREEK UNIT	ID0026468	Major	Jordan Creek	ID17060201SL042_03		n
IDAHO FALLS, CITY OF - IDAHO FALLS WWTP	ID0021261	Major	Snake River	ID17040201SK001_04		n
JEROME, CITY OF - JEROME WWTP	ID0020168	Major	J8 Canal, to Snake River	canal		?
KETCHUM, CITY OF	ID0020281	Major	Big Wood River	ID17040219SK007_05	Other flow regime	?
LEWISTON, CITY OF - LEWISTON WWTP	ID0022055	Major	Clearwater River	ID17060306CL001_07	Dissolved gas saturation	n
MCCAIN FOODS USA INC	ID0000612	Major	Snake River	ID17040209SK001_07	Nutrients, Sediment	?
MERIDIAN, CITY OF - MERIDIAN WWTP	ID0020192	Major	Fivemile Creek	ID17050114SW010_03	Habitat, Fish bioassessment, Combined biota, Cause unknown	?
MERIDIAN BEARTRACK COMPANY - BEARTRACK MINE	ID0027022	Major	Napias Creek	ID17060203SL025_02		n
MOSCOW, CITY OF	ID0021491	Major	Paradise Creek	ID17060108CL005_02	Temperature, Sediment, Nutrients, Ammonia, Habitat, Other flow regime, E. coli	y
NAMPA, CITY OF - NAMPA WWTP	ID0022063	Major	Indian Creek	ID17050114SW002_04	Temperature, Fecal coliform	y
PAYETTE, CITY OF	ID0020672	Major	Payette River	ID17050122SW001_06	Temperature, E. coli	y
POCATELLO, CITY OF	ID0021784	Major	Portneuf River	ID17040208SK001_05	Sediment, Temperature, Oil & grease, Nutrients, Dissolved oxygen, Habitat, Fecal coliform	y
POST FALLS, CITY OF	ID0025852	Major	Spokane River	ID17010305PN003_04	Cadmium Lead, Zinc, Total phosphorus, Temperature (USGS 2002 Spokane R. data)	y
PRESTON, CITY OF - PRESTON WWTP	ID0020214	Major	Worm Creek	ID16010202BR005_02b	Total phosphorus, Sediment	?
REXBURG, CITY OF - REXBURG WWTP	ID0023817	Major	South Fork Teton River	ID17040204SK001_05		n

SANDPOINT, CITY OF - SANDPOINT WWTP	ID0020842	Major	Pend Oreille River	ID17010214PN002_08	Total phosphorus, Temperature, Dissolved gas saturation	y
GALENA AND COEUR MINES AND MILLS	ID0000027	Major	Lake Creek	ID17010302PN009b_02	Cause Unknown	n
SODA SPRINGS, CITY OF - SODA SPRINGS WWTP	ID0020818	Major	Bear River	ID16010201BR001_0L	Total phosphorus, Sediment, Temperature (USGS 2000 data)	y
SOUTH FORK COEUR D'ALENE RIVER SEWER DISTRICT	ID0021300	Major	South Fork Coeur d'Alene River	ID17010302PN001_04	Cadmium, Lead, Zinc, Sediment	n
THOMPSON CREEK MINING COMPANY - THOMPSON CREEK MINE	ID0025402	Major	Thompson Creek	ID17060201SL028_03		n
TWIN FALLS, CITY OF - TWIN FALLS WWTP	ID0021270	Major	Snake River	ID17040212SK019_07	Total phosphorus, Sediment, Other flow regime	?
WEISER, CITY OF	ID0020290	Major	Snake River	ID17050201SW004_08	Dissolved oxygen, Total phosphorus, Sediment, Temperature	y
XL FOUR STAR BEEF INC	ID0000787	Major	Indian Creek	ID17050114SW003_04	Cause unknown, Sediment, Temperature	y

Counts	Major	36	Warmer than T criteria	96
	Minor	126	Colder than T criteria	50
	Unknown	12	Maybe warmer than criteria	28

Summary

174 discharges	Majors to stream	19	known
36 majors	warmer than criteria	8	maybe