

# Idaho standards, compliance points and proposed allocations



presented to Pend Oreille  
Watershed Advisory Group  
June 24, 2007

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# Discussion Points

- Compliance Points
- Assessment Status
- Beneficial Use Status
- Targets
- Example Allocations
- Tributary Update



# Compliance Points

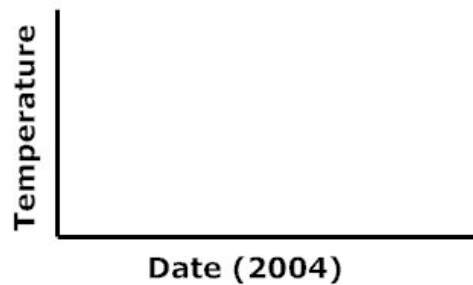
# Model Output

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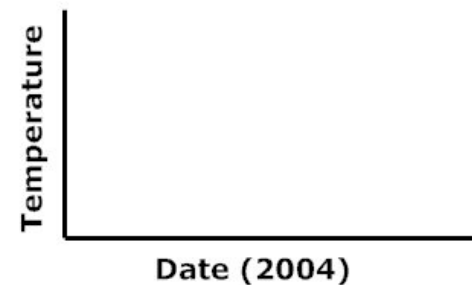
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# Narrowing Modeling Results

Daily Maximum at a Given Point



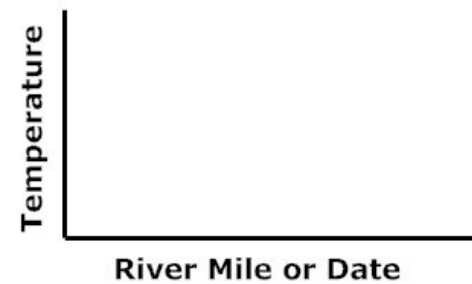
Daily Average at a Given Point



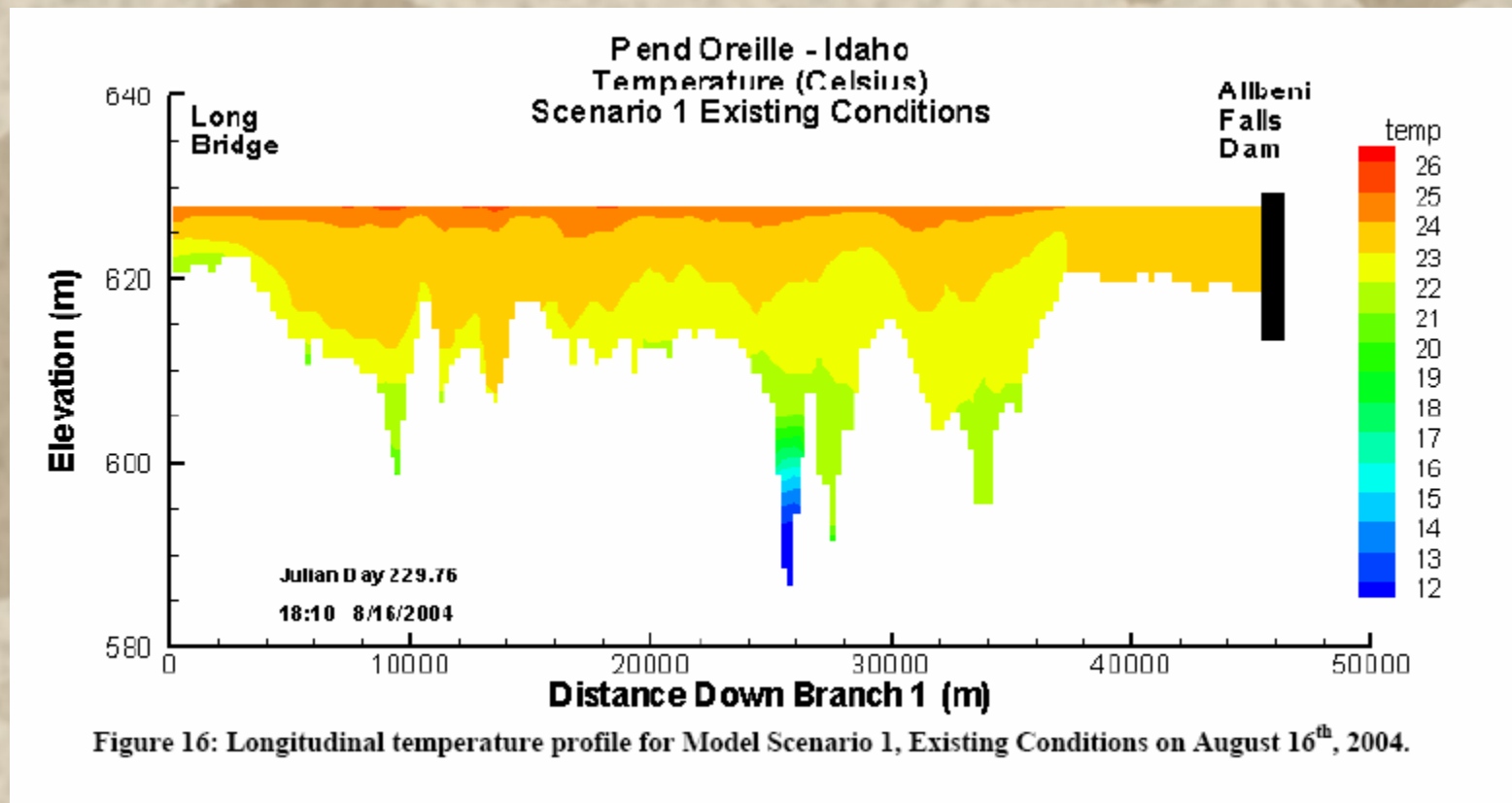
Longitudinal Profile

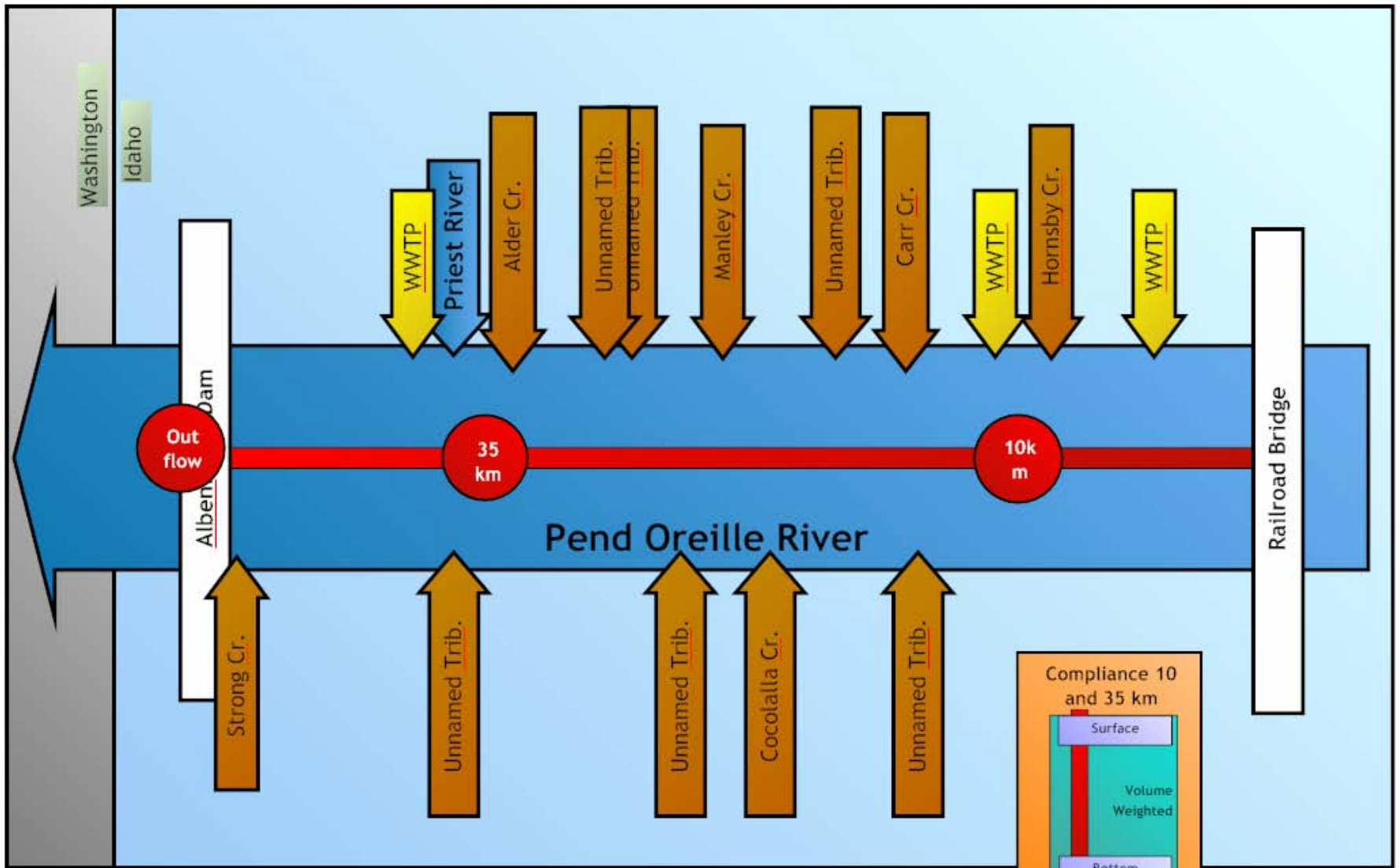


Volume weighted

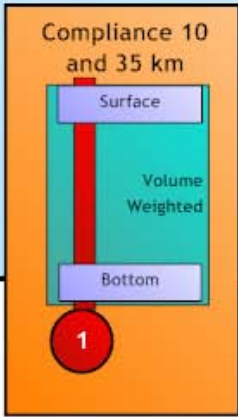


# Narrowing Modeling Results Cross Section Evaluations





Warmest day in 2004 is August 16. Hot day with maximum hypolimnion withdrawal on August 8.



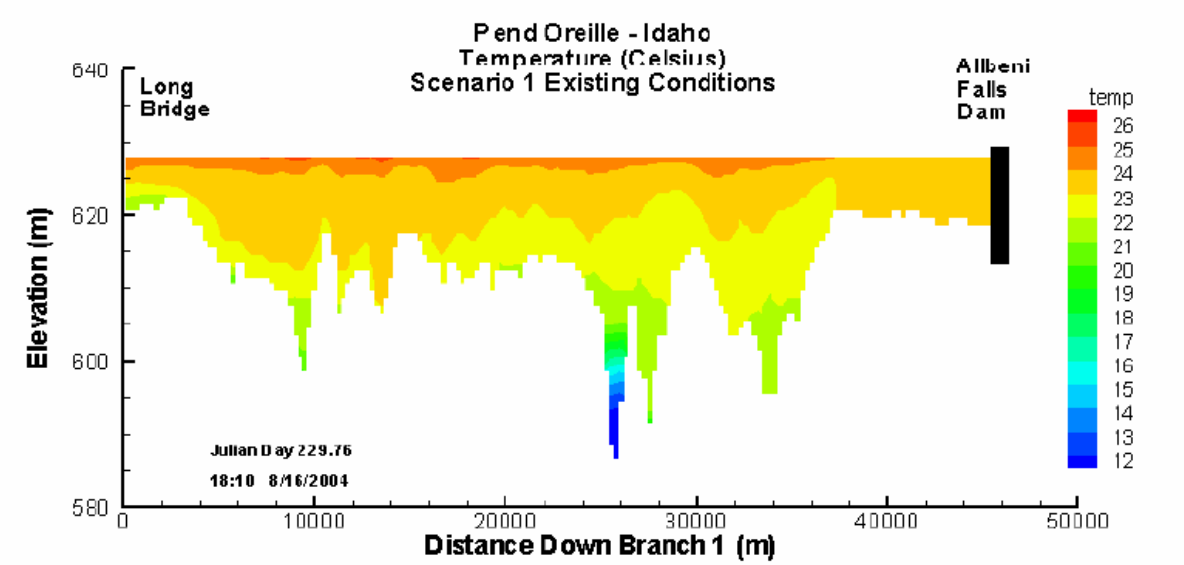
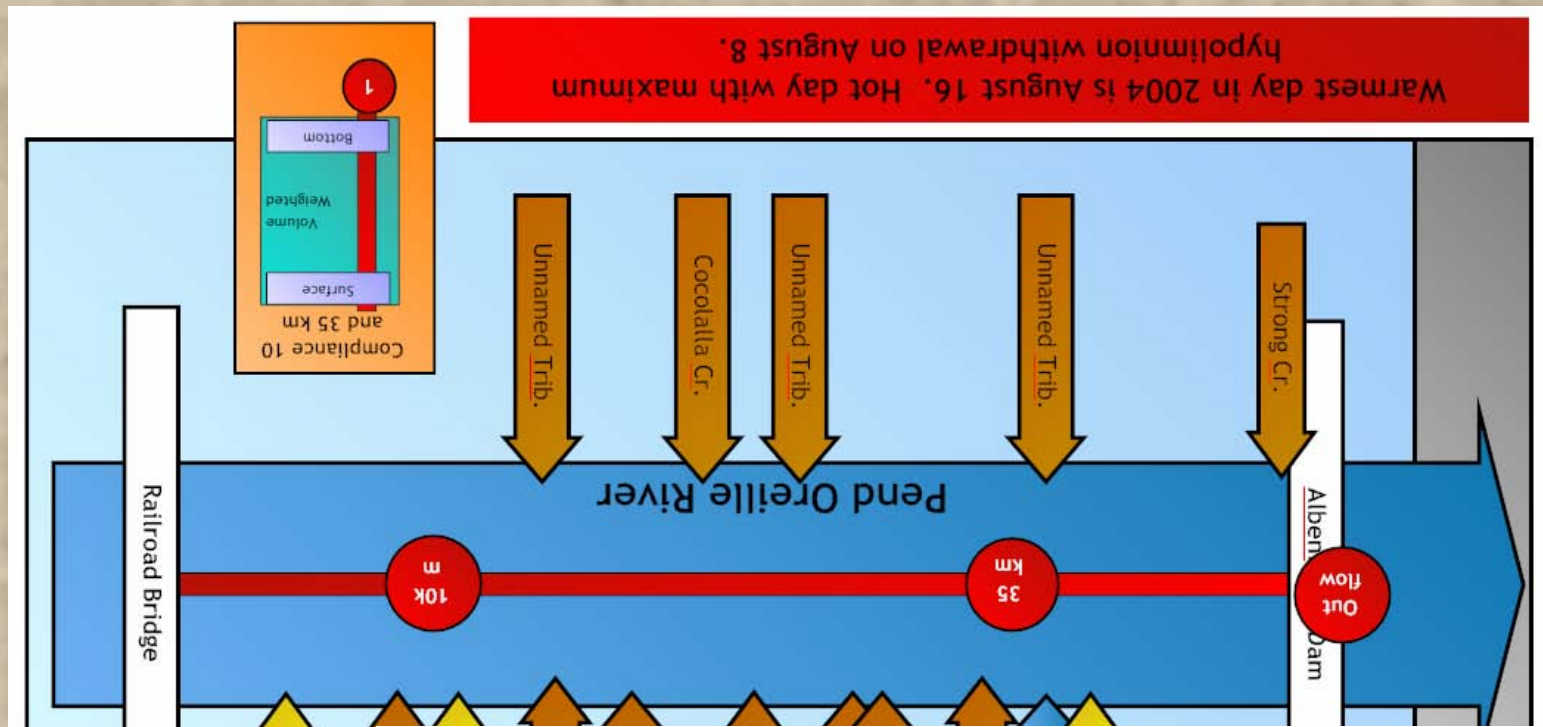


Figure 16: Longitudinal temperature profile for Model Scenario 1, Existing Conditions on August 16<sup>th</sup>, 2004.

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# Assessment Status

Overall, temperature is cooler now than would be under natural conditions

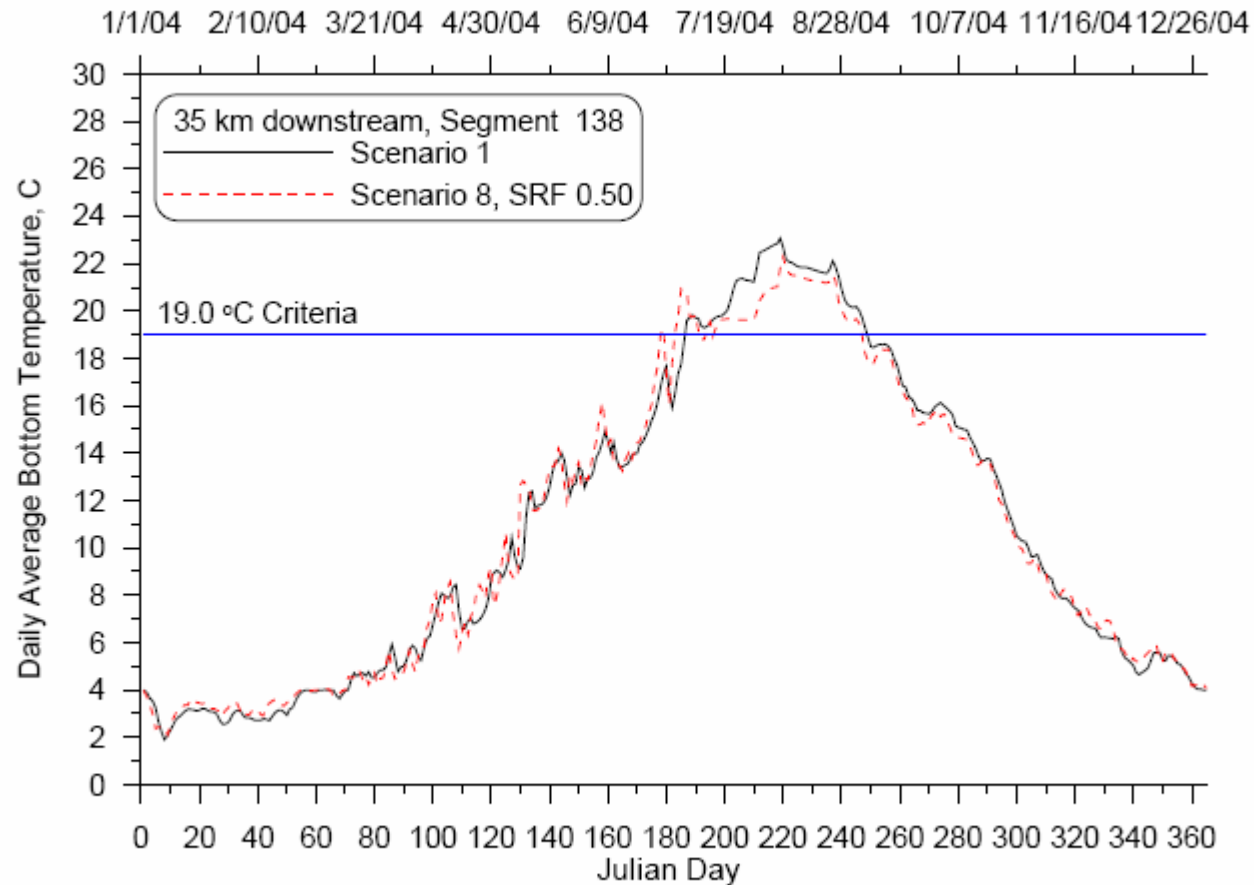
There are a few areas where temperature exceeds Idaho numeric criterion and the river is warmer than would be under natural conditions.

20-8-19

# Compliance Area No. 5

- The temperature of bottom water, 35 km downstream from the Railroad Bridge. Here, the Idaho Water Quality Standards' numeric temperature criteria of 19.0 °C (IDAPA 58.01.02.250.02.b.) is exceeded from late June (June 27) to early September (Sept 6). During this period simulations of existing conditions were compared to those of natural conditions simulations in order to evaluate compliance with Idaho Water Quality Standards, Natural Conditions statement (IDAPA 58.01.02.053.05). These comparisons (figure 7) revealed that current conditions were generally warmer by up to 1.5°C. At this area, current temperatures meet neither numeric criteria nor natural conditions requirements of Idaho's water quality standards. This being said, this compliance area has some uncertainty regarding absolute accuracy. This compliance area is within a deep isolated zone. The calibration data are for the more uniform sections of the River, and interaction with neighboring model compartments has not been physically measured (Page 3 from handout titled "Staff Report" 6/8/2007).

# Compliance Area No. 5



**Figure 7: Daily average bottom temperature time series at 35 km downstream from Lake Pend Oreille for the Natural Conditions (8) and Existing Conditions (1) Scenarios, 2004.**

# Compliance Area No. 13

- The water temperature at a cross section of the entire length of the Idaho portion of the Pend Oreille River on a hot day of the year (August 8), when maximum entrainment of Pend Oreille Lake's hypolimnion is occurring. Water temperatures are sometimes cooler under current conditions than they would be under natural conditions (figure 21) and sometimes warmer. There are large patches where an increase in temperature (between 0.0 °C and 1.1 °C) can be observed (Figure 59). The location of these patches was compared to water quality criteria 22.0 °C (IDAPA 58.01.02.250.02.b.). Most (98%) of the warmer patches occur in locations where current temperatures are less than 22.0 °C (blue portion of Figure 60) and meet Idaho Water Quality Standards. The rest of these patches (2%) occur in locations where current temperatures ranged from 22.1 °C to 22.7 °C (red portion of Figure 60). Exceedances ranged from 0.3 °C to 0.7 °C, and water temperatures would meet Idaho Water Quality Standards if they were between 0.1 °C and 0.4 °C cooler. At this area, current temperatures meet neither numeric criteria nor natural conditions requirements of Idaho's water quality standards. (Page 6 from handout titled "Staff Report" 6/8/2007).

# Compliance Area No. 13

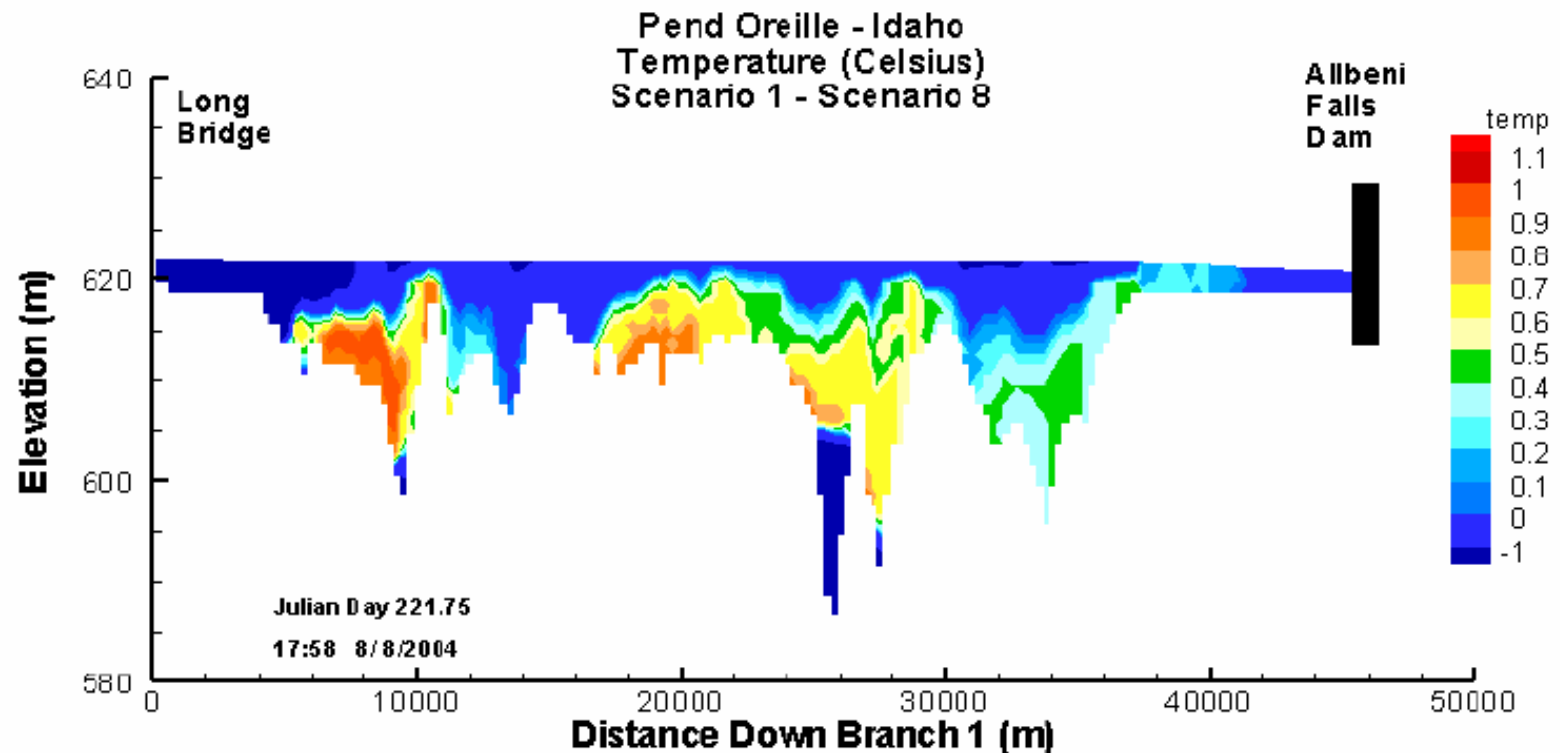


Figure 59: Longitudinal temperature profile difference, Existing Conditions (1) - Natural Conditions (8) Scenarios on August 8<sup>th</sup>, 2004 with a refined temperature difference scale.

# Compliance Area No. 13

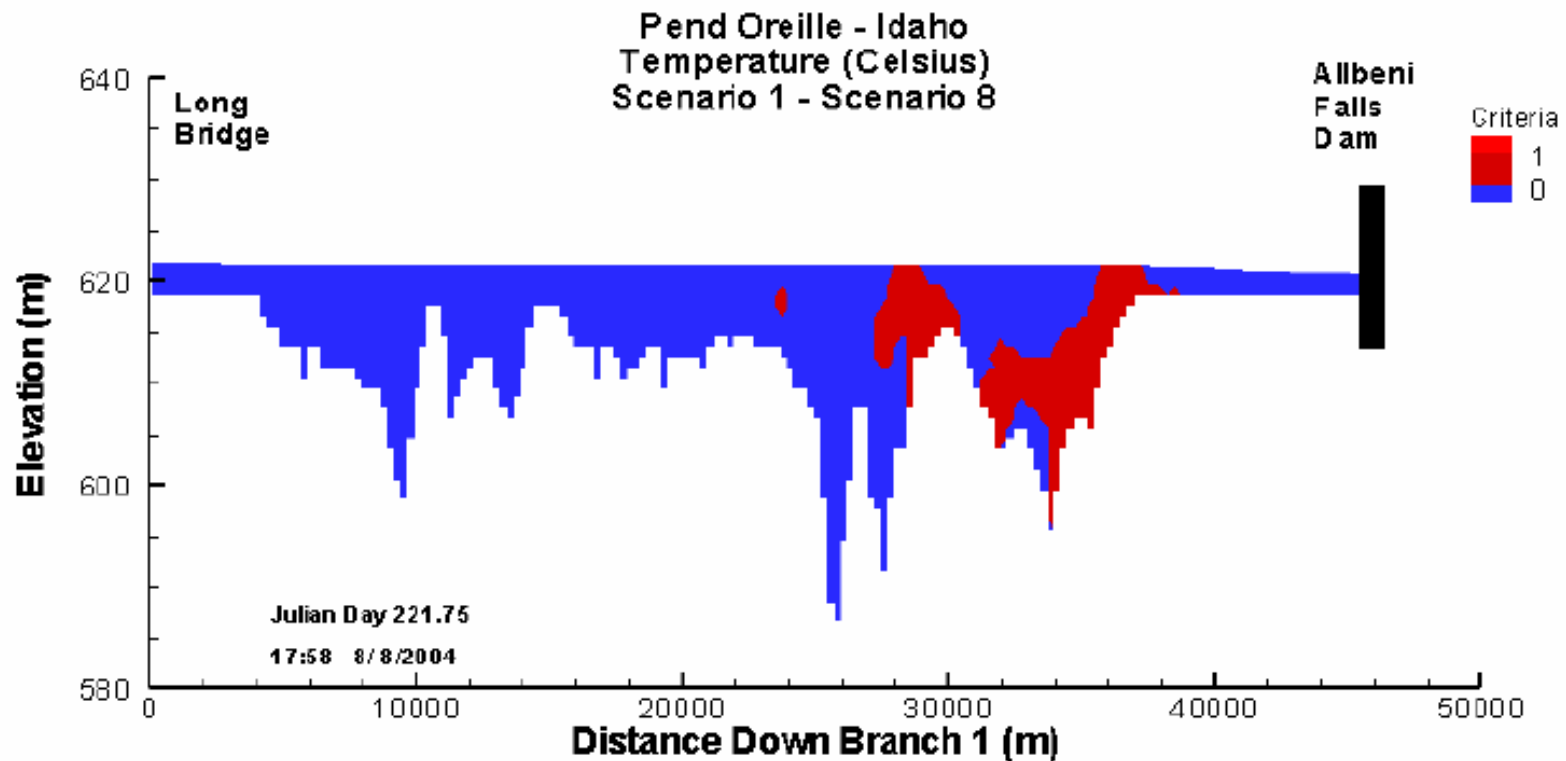


Figure 60: Longitudinal temperature profile difference, Existing Conditions (1) - Natural Conditions (8) Scenarios on August 8<sup>th</sup>, 2004 red indicates temperature difference was above 0.3 °C and river temperature was above 22 °C

## Summary Comparisons of Modeling Results to Idaho Water Quality Standards

No	Compliance Area	Evaluation	Figure	Numeric Criterion	DEQ Finding
1)	10 km surface	Average	Figure 2	19 °C	Meets Standards
2)	10 km bottom	Average	Figure 4	19 °C	Meets Standards
3)	10 km volume weighted	Average	Figure 5	19 °C	Meets Standards
4)	35 km surface	Average	Figure 6	19 °C	Meets Standards
5)	35 km bottom	Average	Figure 7	19 °C	Does Not Meet Standards
6)	35 km volume weighted	Average	Figure 8	19 °C	Meets Standards
7)	Albeni Falls Outflow	Continuous	Figure 9	22 °C	Meets Standards
8)	10 km surface	Maximum	Figures 10 and 11	22 °C	Meets Standards
9)	35 km surface	Maximum	Figures 12 and 13	22 °C	Meets Standards
10)	Longitudinal surface	Continuous	Figure 14	22 °C	Meets Standards
11)	Longitudinal volume weighted	Continuous	Figure 15	22 °C	Meets Standards
12)	Cross Section Aug 16	Continuous	Figures 16 and 18	22 °C	Meets Standards
13)	Cross Section Aug 8	Continuous	Figures 19 and 21	22 °C	Does Not Meet Standards

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# Washington WQ Standards

Water leaving a State/Tribal  
Boundary should meet downstream  
State's/Tribal water quality  
standards.



# Beneficial Use Status

# Cold Water Aquatic Life Beneficial Use

- Negatively affected by excess temperatures
- Salmonid Fish Species likely to have reduced population strength
  - Adfluvial Bull Trout
  - Adfluvial Cutthroat Trout
  - Resident Brown Trout

# Sub-Adult Salmonid Thermal Barrier or Unhealthy Habitat

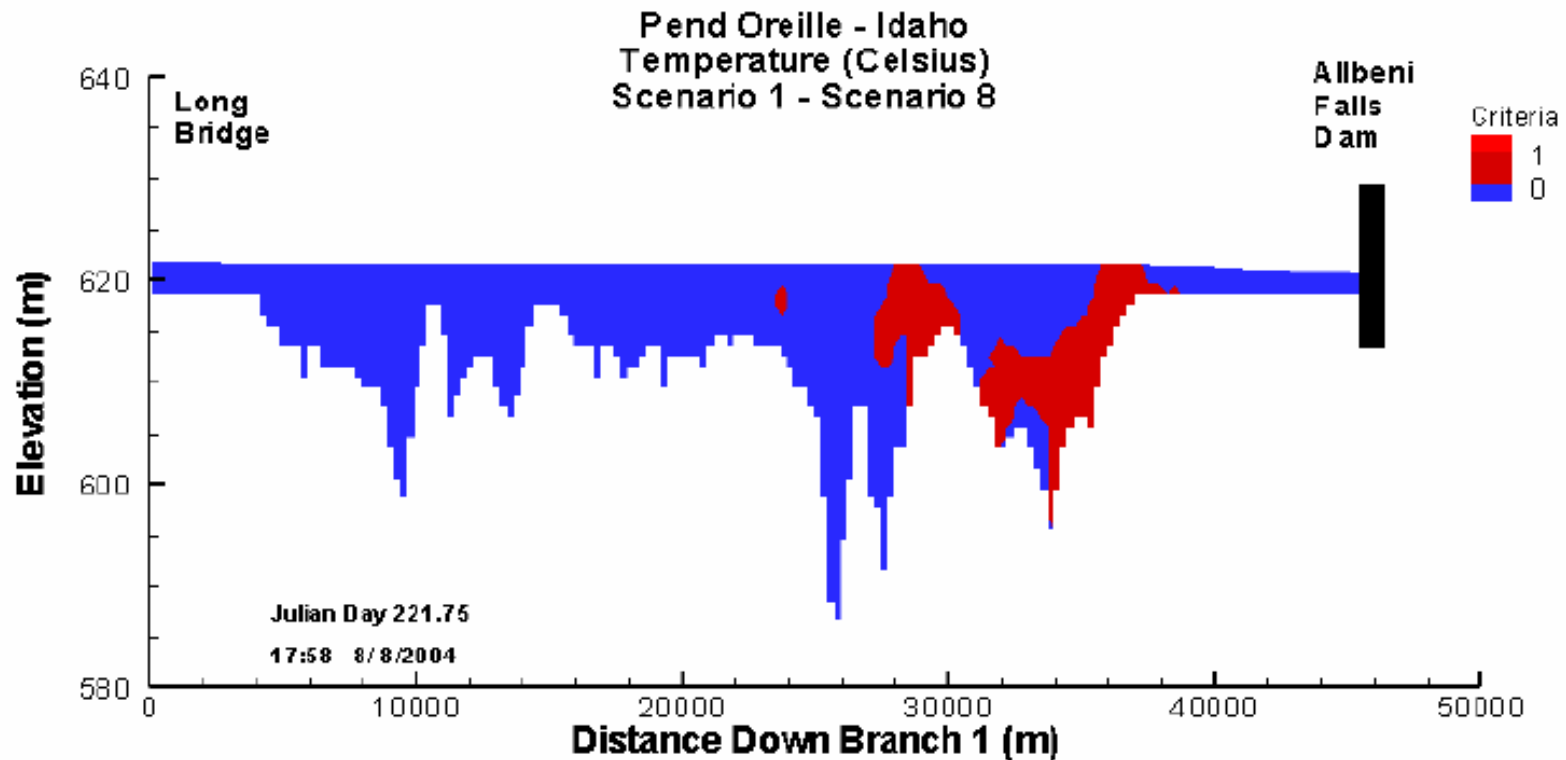


Figure 60: Longitudinal temperature profile difference, Existing Conditions (1) - Natural Conditions (8) Scenarios on August 8<sup>th</sup>, 2004 red indicates temperature difference was above 0.3 °C and river temperature was above 22 °C



# Targets and Sources

## Table of suggested Idaho Water Quality Targets

Target	Implementation Priority	Temp. increase above Idaho Water Quality Standards	Period of increased temperature	Location of Affected Area	Compliance Area	Suspected Source
Idaho cross section	1	0.1 °C – 0.4 °C	Aug 8	Figure 60	13	Albeni Falls Dam
Idaho bottom 35 km.	2	0.1 °C – 1.5 °C	June 27 – Sept. 6	35 km downstream from Railroad Bridge	5	Albeni Falls Dam
Washington State Line	3	1.68 °C	5/8/2004	Idaho/Washington State Line	n.a.	Albeni Falls Dam

# Sources

- No observed negative effect
  - Permitted Dischargers
    - Sandpoint, Dover, Priest River WWTP
  - Tributaries
    - Including Priest
  - Bank Shade
- Observed negative effect
  - Albeni Falls Dam Operation

Albeni Falls Dam Operation is also the primary source for overall cooler water temperatures at many times of the year.



# Example Allocations



# Permitted Sources August

NPDES Permitted Sources	Point Source Target	Discharge Volume (permitted design flow)	Heat Load Allocation for August
City of Sandpoint WWTP	20.0 °C	3.0 MGD	<b>227.1 Million kcal/day</b>
City of Dover WWTP	20.0 °C	0.5 MGD	<b>37.8 Million kcal/day</b>
City of Priest River WWTP	20.0 °C	0.25 MGD	<b>18.9 Million kcal/day</b>
Reserve for future growth	20.0 °C	0.27 MGD	<b>20.4 Million kcal/day</b>
<b>Total</b>	<b>na</b>	<b>4.02 MGD</b>	<b>299.8 Million kcal/day</b>

# Permitted Sources Example Targets

**Target temperatures for each NPDES permitted source by month (°C)**

Point Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
City of Sandpoint WWTP	9.0	8.0	9.0	10.0	14.0	16.0	19.0	20.0	18.0	16.0	13.0	10.0
City of Dover WWTP	10.0	10.0	10.0	12.0	14.0	17.0	20.0	20.0	18.0	16.0	14.0	12.0
City of Priest River WWTP	9.0	10.0	11.0	12.0	15.0	17.0	20.0	20.0	19.0	16.0	14.0	12.0
Reserve for future growth	9.0	8.0	9.0	10.0	14.0	16.0	19.0	20.0	18.0	16.0	13.0	10.0

# Different Daily Allocations for Each Month

NPDES Permitted Sources	Point Source Target	Discharge Volume (permitted design flow)	Heat Load Allocation for August
City of Sandpoint WWTP	20.0 °C	3.0 MGD	227.1 Million kcal/day
City of Dover WWTP	20.0 °C	0.5 MGD	37.8 Million kcal/day
City of Priest River WWTP	20.0 °C	0.25 MGD	18.9 Million kcal/day
Reserve for future growth	20.0 °C	0.27 MGD	20.4 Million kcal/day
<b>Total</b>	<b>na</b>		

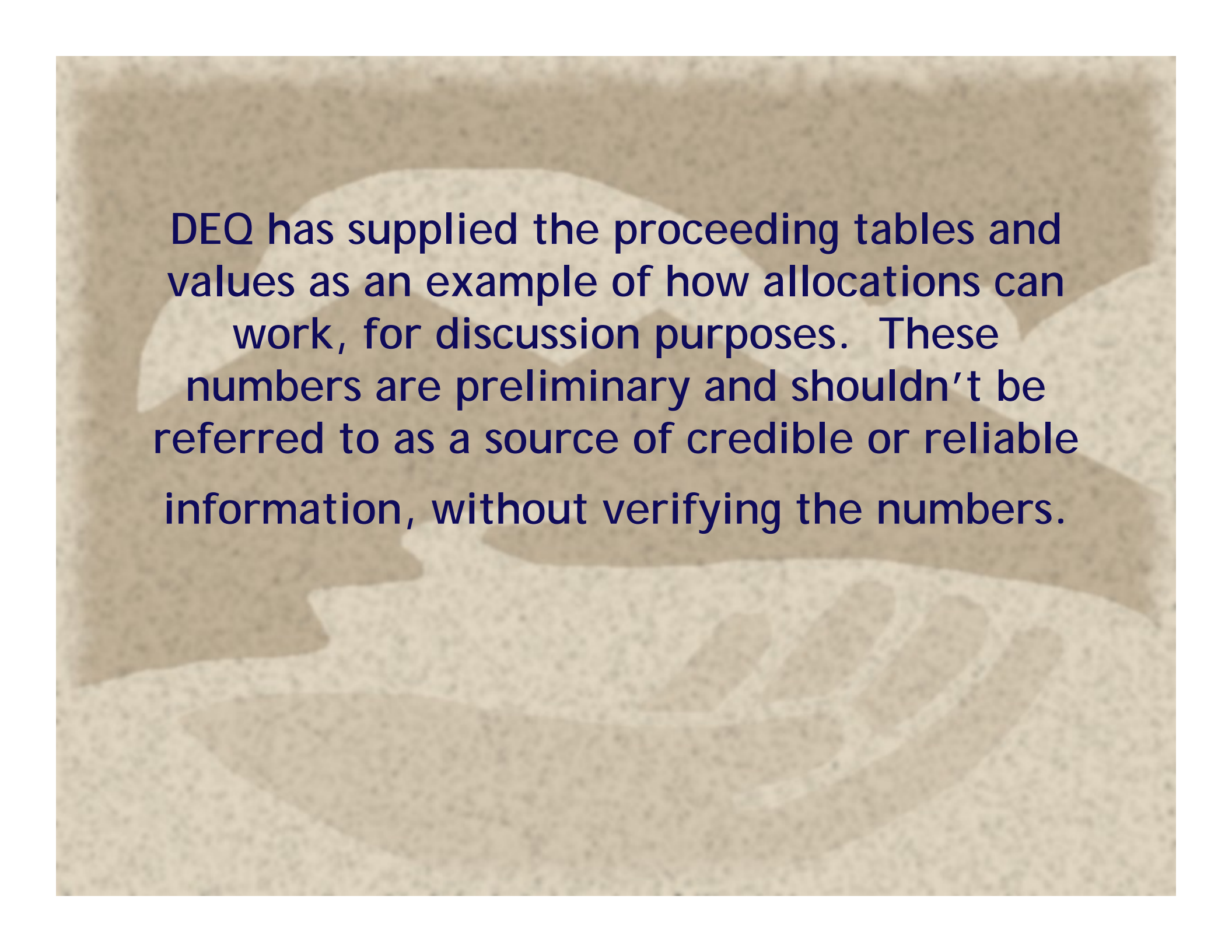
May Example Allocation for NPDES Permitted Sources

Point Source	Point Source Target	Discharge Volume (permitted design flow)	Heat Load Allocation for May
City of Sandpoint WWTP	14.0 °C	3.0 MGD	159.0 Million kcal/day
City of Dover WWTP	14.0 °C	0.5 MGD	26.5 Million kcal/day
City of Priest River WWTP	15.0 °C	0.25 MGD	14.2 Million kcal/day
Reserve for future growth	14.0 °C	0.27 MGD	14.3 Million kcal/day
<b>Total</b>	<b>na</b>	<b>4.02 MGD</b>	<b>214.0 Million kcal/day</b>

# Albeni Falls Example

## Example Allocations for Albeni Falls Loads

Source	Target	Discharge Volume	Heat Load range
Current Condition: Albeni Falls Dam, Idaho cross section Water Quality Target, Aug 8	23.0 °C	13,000 cfs	<b>7.316 trillion kcal/day</b>
Target Condition: Albeni Falls Dam, Idaho cross section Water Quality Target, Aug 8 (0.1 to 0.4 °C cooler)	22.9 to 22.6 °C	13,000 cfs	<b>7.284 trillion to 7.188 trillion kcal/day</b>
<b>Reduction Amount</b>	<b>0.1 to 0.4 °C</b>	<b>na</b>	<b>30 to 128 billion kcal/day (0.5%)</b>

The background of the slide features a faint, sepia-toned image of two hands cupping a globe. The hands are positioned on the left and right sides, with fingers slightly curled around the globe. The globe is centered in the upper half of the image. The overall tone is warm and textured, resembling aged paper or parchment.

DEQ has supplied the proceeding tables and values as an example of how allocations can work, for discussion purposes. These numbers are preliminary and shouldn't be referred to as a source of credible or reliable information, without verifying the numbers.

# Tributary Update (Jenna)

- Revision to operating procedures.
- All draft TMDLs on our website.