

RESPONSE TO COMMENTS CITY OF BOISE, GEOTHERMAL PROJECT

A draft National Pollutant Discharge Elimination System (NPDES) permit for the City of Boise, Geothermal Project was issued for Public Notice on June 11, 1999. The Public Notice initiated a 30-day public comment period expiring on July 12, 1999. The Environmental Protection Agency (EPA) received written comments from the City of Boise dated July 12, 1999. The original Fact Sheet provided during the Public Notice period will not be modified to reflect any changes made to the permit resulting from public comments. The following is a summary of the substantive comments related to the draft permit and the EPA's responses:

1. **Comment:** The permit and fact sheet rely on twenty year old ambient temperature data to conclude exceedences of the state temperature criteria for the protection of cold water biota and salmonid spawning. More recent data exists at the Veteran's Parkway Bridge, one and one-half river miles downstream of the Boise Geothermal discharge.

Response: The ambient temperature data originally used by the EPA was from the United States Geological Survey (USGS) station 13205500-Boise River at Boise and dates from February 1973 to October 1982. The EPA also considered USGS station 13206000-Boise River at Glenwood which dates from October 1970 to October 1992. Both of these stations show exceedences of the state water quality criteria for temperature. In response to the comment, the EPA evaluated the Veteran's Parkway Bridge ambient data that was gathered quarterly in accordance with the City of Boise, Lander Street permit and found that it also violated the state's temperature criteria. The temperature criterion for salmonid spawning from October 1 through July 15 was exceeded nine times and the criteria for cold water biota was exceeded three times using the Veteran's Bridge data.

2. **Comment:** The fact sheet incorrectly concludes that no dilution or mixing zone is available. The state standards found at IDAPA 16.01.02.401 and IDAPA 16.01.02.060 address dilution.

Response: The ambient data available at two USGS stations as well as the Veteran's Parkway Bridge station violate the state's temperature criterion for salmonid spawning and cold water biota (See response #1). A mixing zone is not consistent with IDAPA 16.01.02.401 because the water quality criteria are not met in-stream. The mixing zone policy found at IDAPA 16.01.02.060 requires that discharges not cause unreasonable interference with existing beneficial uses. Further discussion with the Idaho Division of Environmental Quality (IDEQ) clarified that a compliance schedule order allowed an increased thermal loading (see response #8).

3. **Comment:** No analysis was performed to conclude that the reasonable potential to exceed water quality standards for temperature exists. The historical performance data for the facility and the recent improvements that decrease the current and anticipated future discharges by 80% were not included in the reasonable potential analysis.

Response: A “reasonable potential” analysis is only necessary when the maximum reported effluent value is less than the most stringent applicable criterion for that pollutant. The reasonable potential evaluations (consistent with EPA’s 1991 Technical Support Document for Water Quality-based Toxics Control) take into account the variability of the monitoring data (i.e. coefficient of variation) and the number of monitoring samples available. When dilution is available in the receiving water, the upstream concentration and river flow are also utilized. Because the maximum reported daily value for temperature (46EC in the winter and 43EC in the summer) is greater than the state criterion for salmonid spawning and cold water biota, an analysis is not necessary. The City’s historical performance with the 1982 state issued compliance schedule order and the City’s recent improvements do not play a factor in determining the reasonable potential to violate state water quality standards.

4. **Comment:** The EPA did not consider Section 401 of Idaho’s water quality standards, specifically IDAPA 16.01.02.401.03.a, which allows a one degree Celsius (EC) increase. This provision was approved by the State of Idaho Health and Welfare Board for the City of Boise Geothermal Project in a compliance schedule order dated March 17, 1982.

Response: When considered individually, section 401 of the State’s standard applies to point sources “unless more stringent limitations are necessary to meet the applicable requirements of Sections 200 through 300...” More stringent temperature limitations do apply under IDAPA 16.01.02.250.02c) and d) for the protection of cold water biota and salmonid spawning (cold water biota and salmonid spawning are designated use classifications for the Boise River). However, as discussed in response # 8, IDAPA 16.01.02.400.a allows the conditions of section 401 to be placed in the compliance schedule order.

5. **Comment:** The fact sheet incorrectly concludes that temperature limits will not be met based on the existing state water quality standard and provides a five-year compliance schedule.

Response: As discussed in response # 8, further analysis of the state water quality standards revealed that the compliance schedule order contains the applicable state water quality standards for the City of Boise Geothermal’s discharge. Seasonal limits were developed consistent with the order. According to available monitoring data, the facility is discharging at a lesser temperature than the limits. Therefore, the 5 year compliance schedule has been removed.

6. **Comment:** Currently, the facility is monitoring weekly for temperature and has demonstrated compliance with IDEQ's compliance schedule order. The EPA's draft permit requirement of continuous temperature monitoring should be reevaluated based on compliance with the state order and the reduced volume of geothermal water discharged to the river.

Response: Continuous monitoring for temperature is relatively inexpensive and is necessary to assure that temperature spikes do not occur throughout the day that violates the instantaneous maximum limits. The continuous monitoring will reveal the time of day that is representative of the maximum effluent temperature. Upon permit reissuance, the EPA may lessen the monitoring frequency consistent with the peak temperature time.

7. **Comment:** The river mile is incorrectly stated as 49.7 in the permit. The actual discharge is 1.5 miles upstream of the Lander Street wastewater treatment facility.

Response: The river mile has been corrected to river mile 51.2 in the permit.

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8. **Statement:** The temperature requirement can be made less stringent without violating the requirements of state law, including water quality standards, by applying the permissible temperature levels and maximum heat discharge level as noted in the November 8, 1982, amended Stipulation for Compliance Schedule order between the State Board of Health and Welfare, and the City of Boise, and as adopted in section 400.02.a and .b and 401.03.a..iv of the Water Quality Standards.

Response: After further evaluating Section 400.02.a of the Idaho water quality standards, The EPA agrees that compliance with the temperature conditions in the 1982 compliance schedule order constitutes compliance with Idaho water quality standards. Therefore, the seasonal temperature limits have been revised in the permit based on the following mass-balance equation found in the compliance schedule order. The following seasonal temperature limits replace the previous temperature limits found in the draft permit.

$(\text{Boise River Flow} + \text{Boise Geothermal Flow}) \times (\text{Permissible Temperature}) =$
 $(\text{River Flow}) \times (\text{Natural Temperature}) + (\text{Boise Geothermal Discharge}) \times (\text{Allowable Discharge Temperature})$

$Q_{\text{Boise-Geothermal}} = \text{Boise Geothermal Discharge (Design Flow)}$
 $= 1.0 \text{ mgd (1.55 cfs)}$

$Q_{\text{BoiseRiver}} = \text{Boise River Flow}$
 $= \text{lowest seven-day average flow expected in a 10 year period (7Q10)}$
 $= 95 \text{ cfs}$

$T_{\text{River}} = \text{Natural Temperature of Boise River (based on 95\%-ile of summer and winter data)}$

$$\begin{aligned}
&= 19.94 \text{ EC summer (July 16 - Sept 30)} \\
&= 11.6 \text{ EC winter (Oct 1 - July 15)} \\
T_{\text{Temperature}} &= \text{Permissible Temperature (of Boise River)} \\
&= \text{Temperature of Boise River plus 1EC} \\
&= 20.94 \text{ EC summer} \\
&= 12.6 \text{ EC winter} \\
T_{\text{BoiseGeothermal}} &= \text{Boise Geothermal Discharge Temperature}
\end{aligned}$$

Solving the equation for Boise Geothermal Discharge Temperature yields limits of 82.2 EC in the summer and 66.4EC in the winter.