

## Appendix 2: Proposed Alternative Sublethal Criteria

## Problem:

Maximum spawning temperatures for fish, which drive the sublethal criteria for most months in all waterbodies, are calculated such they are protective of 50% of species, 50% of the time. Each monthly max temp is first calculated as the geometric mean of the range of temps for a species, and then the geometric mean of all species' individual geomeans for a given month. When this is used as the criterion it essentially

## Proposed Solution:

Instead of using geomean of the geomeans as max spawning temperature, we propose using the value that is one standard deviation below the mean, or the value that is protective of 84% of species, 84% of the time.

Data is from a spreadsheet obtained from DNR's Mike Wenzholz entitled: spawning analysis complete compilation 042004\_082007 review.xls. We used the same data, just a different calculation of maximum spawning temperature (labelled Method 1).

We recalculated the max spawning temp for only warmwater species to illustrate the difference in max spawning temperatures. The Table below highlights the differences between the two approaches:

**WARMWATER WATERBODIES**

Month	Large Rivers					Small Rivers				
	Ambient Temp*	Max Spawning Temp†	Sublethal WQC*	Proposed Max Spawning Temp	Proposed Sublethal WQC	Ambient Temp*	Max Spawning Temp	Sublethal WQC*	Proposed Max Spawning Temp	Proposed Sublethal WQC
Apr	46	65.36	55	<b>55</b>	<b>55</b>	48	65.36	55	<b>55</b>	<b>55</b>
May	60	70.35	65	<b>59</b>	<b>60</b>	58	70.35	65	<b>59</b>	<b>59</b>
June	71	71.93	75	<b>61</b>	<b>71</b>	66	71.93	76	<b>61</b>	<b>66</b>
July	75	74.47	80	<b>64</b>	<b>75</b>	69	74.47	81	<b>64</b>	<b>69</b>
August	74	78.42	79	<b>68</b>	<b>68</b>	67	78.42	81	<b>68</b>	<b>68</b>

\*Obtained from Table 2, NR 102.25(2)

† From DNR file: "spawning analysis complete compilation 042004\_082007 review.xls"