APPENDIX B.   DATA MANAGEMENT

B.1   LABORATORY REPLICATES

Chemical concentrations obtained from the analysis of laboratory duplicates or replicates (two or more analyses on the same sample) will be averaged for a closer representation of the "true" concentration compared to the results of a single analysis. Averaging rules are dependent on whether the individual results are detects or non-detects. If all concentrations are detects for a given parameter, the values will simply be averaged arithmetically. If all concentrations are undetected for a given parameter, the minimum detection limit will be reported. If the concentrations are a mixture of detects and non-detects, any two or more detected concentrations will be averaged arithmetically and detection limits ignored. If there is a single detected concentration and one or more non-detects, the detected concentration will be reported. The latter two rules are applied regardless of whether the detection limits are higher or lower than the detected concentration.

B.2   SIGNIFICANT FIGURES AND ROUNDING

The laboratory reports results with various numbers of significant figures depending on the instrument, parameter, and the concentration relative to the reporting limit. The reported (or assessed) precision of each observation is explicitly stored in the project database by recording the number of significant figures assigned by the laboratory. Tracking of significant figures becomes important when calculating averages and performing other data summaries.

When a calculation involves addition, such as totaling PCBs, the calculation can only be as precise as the least precise number that went into the calculation. Example (assuming two significant figures):

> 210 +19=229, but this would be reported as 230 because the trailing zero in the number 210 is not significant.

When a calculation involves multiplication or division, such as when lipid normalizing, all significant figures are carried through the calculation and then the total result is rounded at the end of the calculation to reflect the value used in the calculation with the fewest significant figures. Example:

> 59.9 x 1.2 = 71.88, to be reported as 72 because there are two significant figures in the number 1.2.

When rounding, if the number following the last significant figure is less than 5, the digit is left unchanged. If the number following the last significant figure is equal to or greater than 5, the digit is increased by 1.

B.3   DILUTIONS

All analyte concentrations within the calibration range of the instrument in the lowest analytical dilution were selected as the final result. Any analyte concentrations that

exceeded the calibration range and were qualified as estimated by the laboratory as an exceedance ("E" qualified) were rejected by the data validator. The values for these analytes were selected from the analysis of the sample dilution in which the analyte concentration was within the calibration range of the instrument. In cases where the result from the lowest analytical dilution is qualified by the laboratory or the validator the validator will use their best professional judgment to determine whether or not the qualification warrants the selection of the result from another analytical dilution as the final result.

B.4   CALCULATING TOTALS

Concentrations for analyte sums will be calculated as follows:

- ◆ Total PCBs are calculated, in accordance with the methods of the Washington State Sediment Management Standards (SMS), using only detected values for seven Aroclor mixtures.[1] For individual samples in which none of the seven Aroclor mixtures are detected, total PCBs are given a value equal to the highest reporting limit of the seven Aroclors and assigned a "U" qualifier indicating the lack of detected concentrations.

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[1] Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260