

## Section VIII - Appendices

### APPENDIX I – STATISTICS DEFINITIONS

Size: the number of non-missing observations in a worksheet column.

Missing: the number of missing observations in a worksheet column.

Mean: the average value for a column. If the observations are normally distributed, the mean is the center of the distribution.

Standard Deviation: a measure of data variability about the mean.

Standard Error of the Mean: a measure of how closely the sample mean approximates the true population mean.

Range: the minimum values subtracted from the maximum values.

Maximum: the largest observation.

Minimum: the smallest observation.

Median: the "middle" observation, computed by ordering all observations from smallest to largest, then selecting the largest value of the smaller half of the observations.

Percentiles: The two percentile points which define the upper and lower ends (tails) of the data.

Sum: the sum of all observations. The mean equals the sum divided by the sample size.

Sum of Squares: the sum of squared deviations from the mean.

Confidence Interval (C.I.) for the Mean: the range in which the true population mean will fall for a percentage of all possible samples drawn from the population.

Skewness: a measure of how symmetrically the observed values are distributed about the mean. A normal distribution has skewness equal to zero.

Kurtosis : a measure of how peaked or flat the distribution of observed values is, compared to a normal distribution. A normal distribution has Kurtosis equal to zero.

K-S Distance: the maximum cumulative distance between the histogram of your data and the gaussian distribution curve of your data.

Normality (K-S probability): tests the observations for normality using the Kolmogorov-Smirnov test

## **APPENDIX B – GLOSSARY**

**Algae** – small aquatic plants that occur as single cells, colonies, or filaments. Planktonic algae float freely in the open water. Filamentous algae form long threads and are often seen as mats on the surface in shallow areas of a lake.

**Cultural Eutrophication** – the process whereby human activities increase the amounts of nutrients entering surface waters, giving increased algal and other aquatic plant population growths, resulting in accelerated eutrophication of the watercourse or water body.

**Decomposition** – the break down of organic matter by bacteria and fungi.

**Epilimnion** – the uppermost warmest well-mixed layer of a lake during summer thermal stratification. This region extends from the surface to the thermocline.

**Eutrophic** – low clarity, high nutrient levels and excessive plant growth.

**Eutrophication** – a natural process whereby a watercourse or water body receives nutrients and becomes more biologically productive, possibly leading to a water body clogged with aquatic vegetation.

**Hydraulic retention time** – a theoretic measure of the amount of time it takes for the water in the lake or pond to completely replace itself through new inputs. Surface area, mean depth, watershed area, and average annual runoff is used to calculate the hydraulic retention time.

**Hypolimnion** – the lowest, coolest layer of a lake during summer thermal stratification. This region extends from the bottom of the thermocline to the bottom of the lake.

**Ion** - an atom or a group of atoms that has acquired a net electric charge by gaining or losing one or more electrons.

**Limnology** – is the study of fresh water bodies including physical, chemical and biological conditions.

**Mesotrophic** – Moderate clarity, nutrient levels, and plant growth.

**Metalimnion** – the middle layer of a thermally stratified lake where a rapid temperature and density change occurs.

**Morphometry** – Relating to a lake's physical structure (e. g., depth, shoreline).

**Nutrient** - any substance, such as fertilizer phosphorous and nitrogen compounds, which enhances the growth of plants and animals.

**Oligotrophic** - high clarity, low nutrient levels and low plant growth

**pH** - an expression of the intensity of the basic or acid condition of a liquid; may range from 0 to 14, where 0 is the most acid and 7 neutral. Natural waters usually have a pH between 6.5 and 8.5.

*(Appendix B cont.)*

**heophyton** – a degradation product of Chlorophyll *a* trichromatic method.

**Photic Zone** – the lighted region within a lake where photosynthesis takes place. This region extends down to the depth where plant growth and respiration are balanced by the amount of light available.

**Photosynthesis** - the process by which plants manufacture their own food (simple carbohydrates) from carbon dioxide (CO<sub>2</sub>) and water. The plant's chlorophyll – containing cells use light as an energy source and release oxygen as a byproduct.

**Phytoplankton** – microscopic algae and microbes that float freely in open water of lakes or oceans.

**Plankton** – microscopic plants and animals floating or swimming freely about in lakes or oceans.

**Pond Number** – That number which has been designated for a specific ponded water by the New York State Department of Environmental Conservation in Part 800 of its Codes, Rules and Regulations (NYS, 1984a) pertaining to Article 15 of the New York State Environmental Conservation Law (NYS, 1984b). The pond number has the form:

VV-NNNNQQ

where:

VV = New York State Biological Survey Volume code

NNNN = One to four digit number

QQ = Zero to two character qualifier

**Trophic Status** - total phosphorus, chlorophyll *a*, and secchi disk transparency are used to determine an approximate trophic status. It is used primarily to compare lakes within a given region, and to assess the changes in the degree of eutrophication.

**Turbidity** - presence of sediment in water which may make the water appear murky, unclear or opaque. A cloudy condition in water due to suspended solids or organic matter.

**ug/L** - a unit of measurement representing, micrograms per liter.

**Watershed** – the major drainage basin within which the lake is located. Within New York State there are seventeen major watersheds.

**Water Quality Classification** – New York State in Part 701 of Codes, Rules and Regulations pertaining to Article 15 of the Environmental Conservation Law, has designated the waters of the State as to best usage. Appendix E describes these classifications.