

Institute of Natural Resource Management
National Taipei University
Class Handout of the Fall Semester, 2013

Lectures 9: Water Quality Management

- INTRODUCTION
 - Water Bodies and Water Uses => Water Quality Standards 水體水質分類標準
 - Self Clarification, Self Purification, Assimilation Capacity, Carrying Capacity
 - Water Quality and River Pollution Index => Effluent Standards 放流水標準
- WATER POLLUTANTS AND THEIR SOURCES
 - Point Sources vs. Non-point Sources
 - Oxygen-Demanding Material: Organic Pollutants
 - Nutrients => N&P => CTSI (卡爾森指數, Carlson trophic state index)
 - Pathogenic Organisms: Virus, Bacteria, Protozoa...
 - Suspended Solid => SS =>Particulate Matter (PM) and TSP
 - Salts (Dissolved Solid) => TDS and Salinity
 - Toxic Metals and Toxic Organic Compounds
 - Heavy Metals and Heat => Arsenic, Hot water effluent from nuclear power plants
- WATER QUALITY MANAGEMENT IN RIVERS
 - Effect of Oxygen-Demanding Wastes on Rivers
 - Biochemical Oxygen Demand (BOD)
 - ⇒ Chemical Oxygen Demand (COD)
 - ⇒ Decay (Aerobic Decomposition): First Order Reaction
 - Dissolved Oxygen and Water Quality: Temperature and Indicator Species
 - Laboratory Measurement of BOD => 5-Day BOD
 - DO Sag Curve (De-oxygenation and Re-aeration)
- WATER QUALITY MANAGEMENT IN OTHER WATER BODIES
 - Water Quality Management in Lakes
 - Water Quality Management in Estuaries
 - Water Quality Management in Oceans
- HOMEWORK #5 (No Hand-ins Needed): Please define both the “drinking water source quality protection area (飲用水水源水質保護區)” and “tap water quality protection area (自來水水質保護區)” as well as compare the differences between them. Which laws regulate the two protection areas respectively? Please comment on the definitions, differences, and regulations.