GLOSSARY

abiotic the planet. The non-living components of

abundance (1) The number of organisms per square metre of streambed or other given habitat; (2) The total number of organisms in the streambed or habitat. Generally, measures of ecosystem abundance and diversity are used to indicate ecosystem health.

acid mine drainage (AMD) Drainage flowing from or caused by surface mining, deep mining or coal refuse piles that is typically highly acidic with elevated levels of dissolved metals. AMD severely degrades water quality and is often toxic to aquatic life.

acid rain Rain having a pH less than 5.6. The increased acidity may be caused naturally (such as by gases ejected during a volcanic eruption) or by human disturbances (such as the burning of fossil fuels).

acute With reference to toxicity, having a sudden onset and lasting a short time (usually within 4 to 7 days for fish). Of a stimulus, severe enough to induce a response rapidly. Can be used to define either the exposure or the response to an exposure (effect). The duration of an acute aquatic toxicity test is generally 4 days or less and mortality is the response measured. An acute effect can be mild, sublethal, or lethal.

ad hoc For a particular reason.

adaptive In general, an animal species that can make adjustments in response to changes in its environment. The more adjustments a species can make in its living and feeding patterns, the wider range of habitats and disturbances that species can tolerate. In environmental management, adaptive refers to a strategy that is flexible and can incorporate new information into a revised, improved management strategy or policy.

additive In cumulative impacts assessment, refers to repeated disturbances of a similar nature that eventually overwhelm an ecosystem's capacity to absorb the disturbance.

adsorbable organic halogens (AOX) Halogens contained in organic compounds which are separated by adsorption on activated charcoal for subsequent halogen measurement expressed as g Cl_2 per litre of solution. In kraft pulp mills, chlorine is the only halogen used in measurable quantities, so that the concentration of AOX in a liquid is a good estimate of the concentration of all chlorinated organic compounds in that liquid.

advective transport The transfer of heat, cold, or other atmospheric properties by the horizontal motion of a mass of air.

aerobic (1) Environmental conditions in which oxygen is present; (2) Organisms requiring oxygen in order to survive; (3) A process that occurs only in the presence of oxygen.

alluvial aquifer The uppermost portion of an aquifer.

alluvial deposits Materials transported by a stream or river and deposited as the river floodplain.

ameliorate To improve, or make tolerable.

amphibian A cold-blooded vertebrate animal in the class Amphibia. Some characteristics include: 1) land-dwelling as adults, but return to water to breed; 2) can use skin and mouth lining for oxygen exchange underwater; 3) glandular skin lacking hair, scales, or feathers; 4) eggs hatch into an aquatic larval stage.

anaerobic (1) Environmental conditions in which oxygen is absent; (2) An organism able to survive in the absence of oxygen; (3) A process that can occur only in the absence of oxygen.

analyte The specific component measured in a chemical analysis. That which is identified and quantified in the process of analyzing the sample.

antagonism A phenomenon in which the toxicity of a mixture of chemicals is less than that which would be expected from a simple summation of the toxicities of the individual chemicals present in the mixture.

anthropogenic Referring to changes in the environment resulting from the presence or activities of humans.

aquifer A body of permeable rock, gravel, or sand that is capable of storing significant quantities of water, that is underlain by impermeable material, and through which groundwater moves.

assessment endpoints Explicit expressions of the actual environmental values that are to be protected. Assessment endpoints are statements or goals concerning an ecological characteristic (such as reproductive effects on aquatic organisms) that is to be evaluated and protected. Assessment endpoints are often tied to the response of ecological receptor species to environmental stresses, but they are also in part dependent upon those ecological characteristics perceived to be of value to humans.

assumptions The supposition that something is true. In environmental modelling, assumptions are often made regarding a particular ecosystem component or process, or chemical characteristic or behavior. The model operates under these assumptions.

baseline data The data gathered as part of the baseline environmental assessment. Data is collected in order to gain knowledge of the natural environment prior to disturbance.

basin A depressed area having no, or very limited, outlets for surface waters; examples include a lake or river basin.

benchmark concentration Specific contaminant concentrations at which some level of effects are expected (e.g. LC50, LOEC).

benthic Referring to organisms living in or on the sediments of aquatic/marine habitats.

benthic invertebrates The invertebrate organisms (such as insects, snails, and crayfish) that live on or in the sediments of aquatic/marine habitats.

benthos The sum total of organisms (including plants and animals) living in, or on, the sediments of aquatic habitats.

bioaccumulation A general term describing the process by which chemicals are taken up by aquatic organisms directly from water. Uptake pathways also include consumption of food and sediment containing the chemical.

bioavailable The portion of the total quantity or concentration of a chemical in the environment that is available for biological action, such as uptake by an aquatic organism. More specifically, environmental bioavailability is the portion of the chemical in an available form that the organism actually absorbs.

biochemical oxygen demand (BOD) A measure of the rate at which molecular oxygen is consumed by microorganisms during the process of decomposition. BOD is used as an indicator of water pollution from organic wastes, and is measured in parts per million (ppm) of dissolved oxygen consumed.

bioconcentration The process of net accumulation of a chemical directly from water into aquatic organisms. The process includes uptake (through gills or skin tissue) and elimination.

biodiversity A term used to describe all aspects of biological diversity, in particular including species richness, ecosystem complexity and genetic variation. High measures of biodiversity are generally considered indicators of good health within ecosystems.

biomagnification A cumulative increase in the concentration of a persistent and toxic substance in successively higher trophic levels of a food chain. This term implies an efficient transfer of chemical from food to consumer, so that tissue concentrations increase from one trophic level to the next.

biota All the living organisms (plants, animals, fungi, and microorganisms) found within any one area.

biotic A term applied to the living components of the biosphere or an ecosystem, as distinct from abiotic physical and chemical components.

breakwater An offshore structure (such as a wall) protecting a harbor or beach from the force of waves.

calibration The systematic standardization of either the response of instruments used for measurements or the chemical separation achieved by a laboratory cleanup procedure. Once calibrated, an instrument is then capable of producing valid measurements.

carnivore Animals that eat only other animals.

carrying capacity The number (or weight) of organisms of a given species and quality (in terms of health) that can survive in a given ecosystem without causing its deterioration.

catastrophic A sudden and unusually severe disturbance (high intensity, low frequency).

catchment The area from which a surface watercourse or groundwater system derives its water; a drainage basin. A catchment collects and discharges surface streamflow through one outlet or mouth. The boundaries of a catchment are normally marked topographically by high ground.

chemical precipitation A precipitate is a solid that forms out of solution. The precipitate forms because it is insoluble in water; generally, precipitates settle out of the water column and become embedded in bottom sediments.

chlorinated organics A class of chemicals compounds, including dioxin and PCBs, that have been found to mimic some of the behavior of hormones and disrupt the body's natural method of regulation.

chronic toxicity Toxicity that is lingering or continues for a long time. The end result of chronic toxicity can be death, but more often the effects are sublethal (such as reduced reproduction or growth).

climax vegetation The vegetation community that characterizes a relatively stable ecosystem. This vegetation assemblage generally is persistent for a long period of time.

coastline integrity The natural and ecological health, including species diversity and water quality, of a coastal ecosystem.

community In an ecological sense, the living organisms of a particular ecosystem; the plants, animals, fungi, and microbes.

conceptual model A written description and visual representation of predicted relationships between ecological components and the environmental stressors to which they may be exposed. Conceptual models are typically used during an ecological risk assessment.

confluence The point at which two flowing water bodies (rivers, streams, or tributaries) meet and converge.

contaminant sink An ecosystem (a wetland, for example) that serves as a net retainer of a particular contaminant. In other words, the inputs of the chemical are greater than the outputs from the system.

conveyance systems Measures constructed to move stormwater from one point to another. For example, concrete or grass-lined ditches.

cost-benefit analysis In environmental impact assessment, a process for weighing the expected environmental and social costs of a project against the expected benefits. Cost-benefit analysis requires economic valuation of all costs and benefits entered in the equation, yet the method sometimes fails because some resource or social losses cannot be given a monetary value.

cynical Contemptuously distrustful of human nature and motives.

cytoplasm The living contents of a cell, other than its nucleus.

DDT Dichlorodphenyltrichloroethane, or 1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane; an organochlorinated pesticide. DDT can exist in p,p'-DDT and o,p'-DDT forms. DDT generally refers to the sum of all metabolic forms of DDT present (unless otherwise stated. DDT is a known toxic, persistent chemical compound.

decomposition A biological process that involves the breakdown of complex organic materials into simpler materials by organisms known as decomposers, such as bacteria and fungi.

deleterious A substance (either biological, such as sedimentation, or chemical, such as PCBs) that is potentially harmful to humans and/or the environment in a known or unexpected way.

denitrification The loss of nitrogen through its conversion to gaseous products (chiefly molecular nitrogen, N_2, and nitrous oxide, N_2O. The process is carried out by micro-organisms (bacteria) in an anerobic environment.

detrital feeders Species that feed on freshly dead or decaying plant or animal matter.

detritus Non-living particles of disintegrating biological material (inorganic and dead and decaying organic material) that can be suspended in the water column or settled on the bottom of lakes, streams, oceans, etc.

dichlorodiphenyldi-chloroethylene (DDE) A natural breakdown product of DDT.

diffuse The process of dispersion or mixing together.

dioxin A group of approximately 75 chemicals of the chlorinated dibenzodioxin family. 2,3,7,8-TCDD is considered the most toxic form. A common component of pulp mill effluent.

discount rate The rate at which future values are converted to present values. The social discount rate expresses the preference of society as a whole for present returns rather than future returns.

discounting The conversion of a future sum of money to its present value. In general, discounting results in a lowering of importance attached to gains and losses in the future, thereby making resource use in the present more attractive.

diversity indices Various measures used to calculate the species diversity of a given habitat. In general, higher diversity indices indicate healthier ecosystems.

DNA (Deoxyribonucleic acid) A complex nucleic acid molecule. It is the genetic material of all organisms.

dominance The degree to which one or a few species predominate in a community. Dominance can be expressed in terms of numbers, biomass, importance, or crown closure (for tree species).

drainage basin See Catchment.

drawdown The lowering or removal of water from a natural or artificial water body (such as a lake or reservoir).

dynamic Marked by continuous, usually productive, activity or change.

ecological footprint A measure of human impact on the natural environment. It can be calculated on the scale of household to ecosystem, region, or global.

economic fish species Commercially valuable fish species.

ecosystem A grouping of living and non-living parts that interact to form a stable system. Fundamental concepts include water and nutrient cycling, the flow of energy via food chains and food webs. An ecosystem is basically an energy-processing and nutrient regenerating system whose components have evolved over a long period of time. Ecosystem principles can be applied at all scales, from an individual pond to a lake to an ocean to the earth as a whole.

ecosystem integrity The quality of a natural, unmanaged or managed ecosystem in which the natural ecological processes are sustained. Genetic, species, and ecosystem diversity are assured for the future.

effects concentration 50 (EC50) The concentration of a contaminant that will cause a specific effect (such as a percentage decrease in number of offspring produced) in 50% of the test organisms.

effluent A complex waste material (such as liquid industrial discharge or sewage) that may be discharged into the environment.

effluent plume The spatial (both horizontal and vertical) extent of an effluent discharge within an aquatic receiving environment.

emergent Plants that have their roots in shallow water, with the remaining structures (stems and leaves) above the water.

empirical Originating in or based on observation or experience.

encroachment From an ecological perspective, encroachment can be thought of as the increasing effects of human-induced disturbance onto an ecosystem or region. In other words, as human development pushes further into natural environments, those habitats may suffer degradation and eventual collapse, depending on the severity and duration of the impacts.

endangered Species that, due to their very low abundance, are considered to be in danger of extinction.

endemic A native species, often with a limited geographical range.

endemism The situation in which a species is restricted to a particular geographic region, owing to factors such as isolation or response to soil, water, climatic or other environmental conditions.

endpoint The variable(s) (i.e., time, reaction to the organisms, etc.) that indicate(s) the termination of a test, and also means the measurement(s) or value(s) derived that characterizes the results of the test (e.g. EC50, LC50).

endpoints A characteristic of an ecological component that may be affected by exposure to a stressor.

energy The capacity to do work.

environmental fate model A model that can predict the pathways and transport rates of a chemical through various environmental media, such as soil, water, or aquatic organisms.

environmental receptors Organisms that have the potential to come in contact with a stressor (such as a chemical contaminant) and can serve as an indicator of the level of exposure and effects. Receptors of concern are selected primarily because of their ecological importance and their sensitivity to the potential contaminants of concern.

environmental stressors Stressors contact ecosystems or selected ecosystem components and have the potential to cause adverse impacts. Stressors may be either chemical (inorganic or organic substances) or physical (extremes in natural conditions or habitat loss) in nature, and may act in direct and/or indirect methods. Stressors also may be related to resource development and management practices, such as fisheries or forestry.

episodic Separate, isolated incidences that occur periodically.

EPT The combined taxa that occur within the Ephemeroptera (mayflies), Plectotera (stoneflies) and the Trichoptera (caddisflies). This measure is considered a strong pollution index since these three groups are the pollution-sensitive taxa.

equilibrium A system that is in balance, with inputs and outputs matching; a condition of stasis.

estuary A coastal body of water which has a free connection with the open sea and where fresh water, derived from land drainage, mixes with sea water. Estuaries are often subject to tidal action and frequently have very high value as nursery ecosystems for a variety of marine species.

eutrophication The natural, but more often, human-induced addition of nutrients to a body of water, resulting in high organic production rates. Eutrophication produces several undesirable side effects, including algal blooms, seasonally low oxygen levels, and reduced survival for fish and aquatic invertebrates.

evaporation The loss of molecules as a liquid changes to a gaseous phase. Simply, the resulting water loss when a liquid is converted to a vapor.

evapotranspiration The movement of water from the soil, an individual plant, or plant communities to the atmosphere by evaporation of the water from the soil and transpiration of water by plants.

exotic fish species Any introduced, non-native species of fish. Exotic species can frequently out-compete native fish species, as they are not vulnerable to the same diseases (or other population-limiting factors) as the native species.

expected environmental concentration The concentration of a given chemical or biological contaminant that is expected in a given aquatic habitat. EECs can be measured directly through sampling of the receiving or predicted from fate models that are based on given contaminant emission volumes.

exposure The contact reaction between a chemical or physical agent and a biological system (target or receptor).

exposure pathways The various routes through the environment by which a stressor can come in contact with a receptor. For example, through the water column, aquatic sediments, pore water, or through consumption of an affected organism by an organism not yet in contact with the stressor.

exposure The contact of an environmental stressor with an environmental receptor.

externalities A cost or benefit arising from an economic transaction that falls on a third party and is not taken into account by those involved in the initial transaction. For example, a village's loss of fisheries when a new dam is constructed.

extirpated The elimination of a species or subspecies from a particular area, but not from its entire range.

extrapolation To use the best available existing data to make a quantitative prediction regarding a specific research question or site. Extrapolation is conducted in the absence of data from the site in question.

extrapolation factors In ecological risk assessment, use of extrapolation factors is an approach for dealing with uncertainty when assessing chemical risks. Extrapolation factors usually involve the adjustment of a point estimate by a factor to estimate an acceptable concentration for a substance in the environment.

faeces Human waste matter discharged from the alimentary canal.

far-field In aquatic environmental monitoring, far-field refers to sampling stations located a distance downstream of the effluent discharge point to allow for more thorough mixing of the effluent and river water.

fauna The animal community found in a particular habitat or region.

finite Limited.

floodplain The flat land bordering a river or stream onto which the floodwaters will spread. It is made up of unconsolidated material typically deposited from previous flood events. The size of a floodplain varies according to the volume of water, and is thus defined by a specified flood size. For example, the 10-year floodplain would be defined by the largest flood that would occur, on average, every 10 years.

flora The plant community found in a particular habitat or region.

flux The flow of energy in one or more forms, from a source to a sink. It can be continuous or a series of defined changes.

food chain The transfer of energy from the primary producers (plants) through a series of organisms that eat and are eaten, assuming that each organism feeds on only one other type of organism (e.g., earthworm, blackbird sparrow hawk progression). At each stage, energy is lost as heat, which limits the number of steps, or trophic levels, in the chain to four or five. The basic recognized food chains are the grazing and the detrital (decomposers). These interact in a more complex food web.

food web A conceptual diagram that represents the feeding relationships of organisms within an ecosystem. It consists of a series of interconnected food chains.

forecasting Predictions based on existing information.

furans A group of many chlorinated dibenzofurans. The most common furan in pulp mill effluents is 2,3,7,8-TCDF. A furan contains one less oxygen molecule than does a dioxin. Furans are known to be toxic and persistent in the environment.

gene pool The total of all the genes of all breeding individuals available within a population at any one time.

generalists A species with a broad food or habitat (or both) preference.

geology A science that deals with the history of the earth and its life, especially as recorded in rocks.

greenhouse gases Certain trace gases in the atmosphere maintain the Earth's temperature at the average level that we have today. These gases are commonly referred to as 'greenhouse gases', and the most important ones that may be influenced directly by human activity are carbon dioxide, methane, nitrous oxide, and CFCs - chlorinated fluorocarbons such as Freon. The amount of greenhouse gas is a balance between how fast the gas is put into the atmosphere (source) and how rapidly it is lost. We are interested in how human activities are altering the naturally occurring levels of carbon dioxide and methane.

groundwater The water that occurs below the earth's surface, contained in the pore spaces of bedrock and superficial mineral deposits located just above the bedrock.

habitat fragmentation The alteration or breaking up of habitat into discrete or barley connected 'islands' as a result of modification or conversion of the landscape by disturbance.

habitat sustainability index An index used to determine the highest quality habitat areas within a region. Presence of native and exotic species, habitat surface area, and degree of impact are all factors in determining the long-term viability of the habitats within a region.

hatchery-raised Fish that are raised in captivity, in large commercial or smaller private fish hatcheries. Hatchery-raised fish can create problems for wild fish stocks, as they often can escape and breed with the wild fish. The health and genetic strength of the wild fish populations can be at risk by breeding with the hatchery fish. It is thought that hatchery fish do not have the same resistance to disease or survival instincts as the wild fish stocks.

hazard quotient A formula used to calculate a risk estimate of a given contaminant. The hazard quotient (HQ) is determined by dividing the expected environmental concentration (EEC) by a benchmark concentration (BC). A hazard quotient <1 indicates negligible risk, while a hazard quotient 1 indicates the presence of risk.

hydrodynamics A branch of science dealing with the motion of fluids and the forces acting on solid bodies immersed in fluids and in motion relative to them.

hydrogeology The study of the movement of groundwater through natural materials.

hydrologic cycle Refers to the cycling of water from the ocean to the land and back again, including all the pathways and processes connected with the storage and movement of water in all three states (solid, liquid, gaseous).

hydrology The science of water on, in and over the land areas of the earth, including water's distribution, circulation and behavior, chemical and physical properties, together with the reaction of the environment on water itself.

hydrophilic A chemical of high water solubility and correspondingly low solubility in lipid tissue or sediments.

hydrophobic A chemical of low water solubility and correspondingly high solubility in lipid tissue. Hydrophobic chemicals, such as PCBs and dioxins, readily partition out of the water column and into sediments and lipid tissue of aquatic organisms.

hypothesis An abstract idea designed to explain a phenomenon based on limited observations of that phenomenon. Hypotheses can be tested through experimentation.

hyraulic gradient The slope of the water surface. Also, the unit hydraulic pressure head difference between two points.

impermeable A surface or membrane that cannot be penetrated by a liquid or gas.

impervious A surface incapable of being penetrated by liquids, gases, or physical activity such as plant roots.

infiltration The movement of surface water into soil or rock through cracks and pores.

infiltration capacity The maximum rate at which soils and rock can absorb rainfall. It tends to decrease as the soil moisture content of the surface layer increases. It also depends on such factors as sediment grain size and vegetation cover.

influent A stream above the water table that loses water by seepage into groundwater.

initial dilution zone (IDZ) An area of initial effluent mixing that extends 100 m down river, not more than 50% of the width of the river.

interbreeding The mating or crossing of individuals more closely related than average pairs in the population. It can lead to undesirable characteristics, such as reduced fitness of the individual or population

interception The retention of precipitation on plants, from which it is subsequently evaporated without ever reaching the ground.

interest The price paid for borrowed or invested money.

inter-generational equity The idea of fairness or justice between different generations when considering the harvest or development of natural resources.

intermittent Periodic interruptions in a normal pattern or process. In hydrology, intermittent refers to streams or watercourses that flow part of the year and are dry part of the year.

iterative An ecological model is said to be iterative if it can be adapted and improved as new information is collected. Also, the concept of adaptive environmental management is iterative in that this management strategy can be changed and improved as ecological knowledge increases.

karstic Describes landforms and processes associated with dissolution of soluble rocks, such as limestone and marl. Characterized by underground drainage, caves, or sinkholes.

land tenure Refers to ownership of a parcel of land, or the rights to use the land (such as for farming).

lateral mixing The horizontal mixing of waters within a water body.

lethal concentration 50 (LC50) The concentration of a contaminant that will kill 50% of the test organisms.

lentic zone The slower-moving portions of a river or stream, such as the backwater areas outside of the main current.

lethal Causing death.

lipid Fat or oil molecule.

limnology The scientific study of bodies of freshwater, such as lakes.

lithology The characteristics of a rock. It is commonly used to refer to rock type.

litter production The accumulation of the top layer of the forest floor. Litter is composed of relatively un-decomposed organic material in the form of above-ground inputs (leaves, twigs, and branches shed from the tree canopy). Litter is the primary source of organic inputs into a forest soil.

lotic zone Refers to the swifter moving (flowing) portion of a river or stream.

lowest observed effect concentration (LOEC) The lowest concentration of a material used in a toxicity test that has a statistically significant adverse effect on the exposed population of test organisms as compared with the controls.

magnitude The size and spatial extent of a disturbance or discharge.

mass-balance A principle that assumes the entire mass of a contaminant in a discharge or accidental spill must equal the amount of contaminant that eventually ends up in different parts of the environment.

matrix methods A numerical decision-making tool that generally consists of a rectangular array of mathematical elements (as the coefficients of simultaneous linear equations) that can be combined to form sums and products. They can be used to quantitatively analyze the various configurations of multiple project alternatives.

measurement endpoints Measurement endpoints are the critical link between the existing on-site conditions and the management goals established by the assessment endpoints. Measurement endpoints enable quantitative evaluation of the assessment endpoints. Measurement endpoints can be directly investigated in field or laboratory studies and can include measures of effect (mortality, reproductive abnormalities) or measures of exposure (concentration of contaminants in tissue).

metabolism All chemical processes occurring within an organism; includes both synthesis and breakdown of organic materials, including the digestion of food.

migratory To pass, usually predictably (based on aquatic species), from one region or climate to another for purposes of feeding, breeding, etc.

morphometry Branch of limnology dealing with the physical measurements of a lake or basin.

natural capital Renewable and non-renewable stocks of natural resources, such as timber, water and fossil fuels.

near-field area An area of high exposure to the source of potential impact but beyond the region of discharge-generated dilution.

no observed effect concentration (NOEC) The highest concentration of a material in a toxicity test that has no statistically significant adverse effect on the exposed population of test organisms as compared with the controls.

non-market goods Those goods that cannot be readily exchanged for money, such as natural resources. They are considered ‘free’ goods, costing only as much as it takes to extract and process them. They fall out of a standard economic market. Prices cannot be set for them, and economic valuation becomes difficult.

nucleus The portion of a cell that contains the genetic material and information regarding cell physiology and heredity.

nutrient budget A quantitative description of the inputs, outputs, and internal cycling of nutrients (such as phosphorous, carbon, nitrogen) within an ecosystem.

nutrient cycling The biogeochemical pathway of essential biotic nutrients, such as carbon, nitrogen and oxygen, throughout the biosphere. The pathway involves nutrient uptake, conversion, utilization and excretion by organism A, and subsequent transport to, and uptake by, organism B.

nutrient sink Wetlands that function as net storage and retention areas for nutrients or chemicals.

opportunistic A species typical of unstable or heavily disturbed environments. Such organisms are often smaller than more stable equilibrium species and have shorter life cycles. They can initially colonize a recently disturbed site, though they often lose out when in the long-term. For example, weedy species may intially colonize a cleared site, but if the site is left alone, trees will eventually come in and out-compete the weeds.

opportunity cost The value of the best alternative foregone in order to protect a given resource. In other words, the benefit that could result from extraction or development of a resource, but that is foregone in order to preserve the resource.

organochlorine An organic compound which includes chemically bound chlorine. Many organochlorines are formed in the kraft bleaching process whenever chlorine or chlorine based compounds are used (common in the pulp and paper industry). Thousands of chlorinated organic compounds exist, but only a small proportion of those in kraft mill effluent have been identified. Total organic chlorine is one of many ways of measuring organochlorines, but this is expressed as the weight of organically bound chlorine, not the weight of organochlorine molecules.

overexploitation Harvesting or use of a natural resource beyond its ability to regenerate or sustain itself.

oxymoron A combination of contradictory or incongruous words, such as *cruel kindness*.

parameter Any variable, attribute, or physical property in a set of variables or properties that, taken together, characterize an ecosystem's behaviour or function. Parameters are generally measurable, such as dissolved oxygen in water.

partition coefficient The ratio of the equilibrium concentration of a chemical in equal volumes of two mutually immiscible liquids (non-polar and polar), in contact with one another.

peak flows The highest amount of stream or river flow occurring in a year or from a single storm event.

pedology The scientific study of the general characteristics, origins, and taxonomy of soils.

percolation The flow of water (or other fluids) through soil, rock, or a filter under the influence of gravity, and in conditions of partial or complete saturation.

perennial plants Plants that continue growth from year to year.

permeability A measure of the ease with which a gas or liquid can penetrate or pass through a porous substance. In soils, permeability is determined by the size, arrangement, and composition of soil particles, and by the degree of compaction.

persistent Refers to any chemical compound that does not break down, or breaks down very slowly once released into the environment. DDT is perhaps the best known of the persistent contaminants.

perturbation Disturbance.

pH A value, on a scale of zero to 14, that gives a measure of the acidity or alkalinity of a medium or substance. The lower the pH value, the more acidic the medium or substance; the higher the pH value, the more alkaline. A neutral medium has a pH of 7; acidic media have pH values less than 7, and alkaline media have pH values greater than 7.

photosynthesis The process by which plants transform carbon dioxide and water into carbohydrates and other compounds, using energy from the sun.

phreatic zone The subsurface zone in which all interstices are filled with water at a pressure greater than the pressure of the atmosphere.

pioneer species A species capable of colonizing disturbed areas, often in large numbers and over considerable areas, and of persisting until displaced by other species as succession proceeds.

piscivorous Organisms that feed on fish.

plant transpiration The loss of water vapor from a plant to the atmosphere.

plume The main pathway for dispersal of effluent within the receiving waters, prior to its complete mixing (also refers to smoke, gases, etc.).

plume delineation Measures the zone of effluent mixing and characterizes the spatial extent of the effluent plume within the aquatic receiving environment.

point estimate A single value that is used to estimate a population parameter.

pollution-tolerant taxa With reference to use of the benthic invertebrates as a monitoring variable, pollution tolerant taxa are those species that are considered able to survive and thrive in the presence of pollutants. An abundance of pollution tolerant taxa (such as leeches), coupled with reduced numbers of pollution-sensitive taxa, generally is considered evidence of degraded water quality.

polychlorinated biphenyl (PCB) Polychlorinated Biphenyls - A class of about 70 different persistent, man-made, organic chemicals (consisting of carbon, hydrogen and chlorine) which tend to bioaccumulate through the food chain, cause reproductive failure and cancer. A family of chemically inert compounds, having the properties of low flammability, volatility, water insolubility, and high electrical insulation quality. Past applications include use as hydraulic fluids, heat exchange, dielectric fluids, and plasticizers for plastics. They were banned in 1980 in most countries, except for continued use in existing electrical equipment. As well as entering water bodies through leaks and spills, PCB can be released by incineration and travel through the atmosphere. They are examples of organic toxicants.

pore water The water between the particles of sediment. Also called interstitial water.

porosity The permeability of a substance to fluids, and thus a reflection of the volume of air space occupying voids between soil particles or within rocks. The degree of porosity affects the ability of gases or liquids to move through the rock and soil.

post hoc After this, therefore, because of this; term used as an example of the fallacy of arguing for mere temporal sequence to cause and effect relationship.

precipitation Any or all forms of water, whether liquid (rain) or solid (snow or hail) that fall from the atmosphere and reach the ground or vegetation canopy.

predatory Any free-living animal that hunts, kills, and eats other animals.

predominant 1) Having superior strength, influence, or authority; 2) being most frequent or common.

primary productivity The rate at which energy produced within the ecosystem is stored within the ecosystem or group of communities.

probability The relative frequency with which an event might occur over time.

productivity The rate at which biomass is produced by green plants in the form of organic substances, many of which are used as food materials.

qualitative Descriptive; non-numerical.

quantitative Numerical; based on counts, measurements,

Ramsar The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Thus, though nowadays the name of the Convention is usually written "Convention on Wetlands (Ramsar, Iran, 1971)", it has come to be known popularly as the "Ramsar Convention". There are presently 128 Contracting Parties to the Convention, with 1090 wetland sites, totaling 82.4 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.

raptor Any predatory bird, such as a hawk or owl, that has feet with sharp talons or claws adapted for seizing prey, and a hooked beak for tearing flesh.

reburial A common endpoint of sediment toxicity testing. The number of test organisms that burrow into clean sediments after exposure to the potentially contaminated are one indicator of the level of contamination of the test sediments. The greater the number of test organisms that rebury, the lower the level of contaminant concentration in the test sediments.

recruitment The addition or reproduction of new individuals to a population.

reductionist A theory that all complex systems can be completely understood in terms of their components. In other words, seeks to reduce complex data or phenomena to simple terms.

reference area An area which is not exposed to a potential source of pollution but exhibits similar natural characteristics to the exposed monitoring sites.

regeneration The renewal of a forest or stand of trees by natural or artificial means.

remediation Physical or policy measures that are intended to reduce the severity of environmental impacts on a given resource or ecosystem.

renewable Any biological resource capable of indefinite renewal (on a human time scale), assuming that the prevailing environmental, social, and political forces allow this.

replacement cost A general term that can be used to help place a monetary value on a particular natural resource. For example, wetlands perform flood storage and reduction that would have to be replaced if those wetlands were filled and developed. Society would have to pay for stormwater treatment facilities to replace lost wetland functions. The financial value of the wetlands could be the cost of those flood management facilities.

residence time The amount of time something has been in one place. In pesticide application, the time the chemical remains in the ecosystem. In nutrient cycling, the time period an element remains in one pool or compartment.

resident The organisms typically found in an area.

resource exploitation The use or harvesting of a natural resource, potentially beyond the resource's ability to regenerate or maintain ecosystem health.

retention capacity The amount of water held by a dam.

retention time A measure of the average time that water remains in a wetland.

riparian The zone along the banks of rivers and streams.

risk estimate A quantitative expression of the expected probability of undesirable effects resulting from exposure to known or potential environmental concentrations of a material.

saltwater intrusion (salinisation) The intrusion of saltwater into freshwater ecosystems as a result of human or natural disturbance or human development. Drastic changes in species composition can result.

scenarios An imagined sequence of events designed to test various management options or a model's effectiveness.

sediment grain size A measure of the size of soil particles, including larger cobbles and gravels and finer clays and silts. Grain size is a useful parameter to examine when determining the availability of a particular contaminant to aquatic life. In general, finer soil particles with high organic matter content will retain more of a contaminant. Fine particles have a higher surface area -to -volume ratio than larger particles. In addition, many chemical contaminants have a tendency to partition (adhere) to sediments high in organic matter.

sediment/water interface The meeting of the water column and aquatic sediments.

sentinel species A species known to be sensitive to a particular contaminant or physical change that can serve as an indicator of the severity of impact.

sequestered The removal and storage of a substance from one medium into another. Generally, that substance is rendered biologically unavailable. Wetlands can sequester nutrients and potential contaminants by removing them from the water column and storing them in sediments and plant biomass.

siltation (sedimentation) The deposit and build-up of eroded soil materials in the water of creeks, lakes, rivers or other water bodies. Siltation of aquatic environments can have adverse environmental impacts, such as burial of fish spawning beds or increased turbidity that can interfere with the respiration of aquatic organisms.

simulate The use of a computer or mathematical model to predict effects from a management option given different sets of assumptions about a population or resource.

slope gradient The angle at which a planar surface is inclined relative to the horizontal. For example, nearly level slopes have a slope gradient of 0 -3%, while steep slopes have a slope gradient of 30-65%.

sludge A combination of solids and liquids resulting from sewage-treatment processes without thickening or physical or chemical pretreatment.

sorption The process in which one substance takes up or holds another. Sorption can take place either through adsorption (the accumulation of one substance onto the surface of another) or absorption (a process in which one substance permeates another).

specialists A species with narrow food and/or habitat preferences.

species composition The distribution of the number of species and the number of individuals of each species within a community.

species richness The number of species within a given area, regardless of distribution.

status quo The existing conditions.

steady state or dynamic equilibrium The state at which competing rates of uptake and elimination of a chemical within an organism, tissue or system are equal. An apparent steady state is reached when the concentration of a chemical in tissue remains essentially constant during a continuous exposure.

stratification A term given to the process/period whereby a lake develops two distinct water layers (strata) of different densities and temperature separated by a transition zone.

stratification The arrangement of sediments, sedimentary rock, or soils in layers (strata).

sublethal Below the concentration that directly causes death. Exposure to sublethal concentrations of a material may produce less obvious effects, such as changes in behavior or physical/ reproductive function.

submergent Plants that are rooted in and grow in the sediments at the bottom of a freshwater or saltwater body.

succession A series of dynamic changes in ecosystem structure, function, and species composition over time. As a result, one group of organisms succeeds another through stages leading to a potential natural community or climax stage.

sustainable yield The quantity of a given resource that can be produced continuously under a given management method (such as the rate of harvest set equal to the rate of production). A long-range sustained-yield figure (e.g., timber logging) can be chosen that satisfies predetermined management and societal goals.

synergism A phenomenon in which the toxicity of a mixture of chemicals is greater than that which would be expected from a simple summation of the toxicities of the individual chemicals present in the mixture.

synthesize The combining of constituent elements into a unified whole. Specifically, the process of building chemical compounds from more elementary substances by means of one or more chemical reactions.

taxa richness The number of individual taxa collected at a sampling station. This value can be presented as a mean richness or a pooled richness.

temporal Of or relating to time.

terrestrial Of or concerning the land. An organism whose primary habitat for growth, reproduction, and survival is on or in the land.

tiering In strategic environmental assessment, tiering refers to an overlapping of layers in the assessment. In other words, tiering implies that different stages in the evaluation of a policy nest within each other.

tolerance The ability of an organism to withstand adverse or other environmental conditions for an indefinitely long exposure without dying.

tolerant species Species with a fairly high ability to endure the injurious effects of an adverse environmental condition.

total organic carbon (TOC) A measure of the total amount of organic matter present in a liquid or sediment sample. It is the sum of dissolved organic carbon and particulate organic carbon or suspended organic carbon.

toxicity The inherent potential of a biological or chemical substance to cause adverse effects in a living organism when the organism is exposed to the substance.

toxicity test The means by which the toxicity of a chemical or other test material is determined. A toxicity test is used to measure the degree of response produced by exposure to a specific level of stimulus (or concentration of chemical).

Toxicity tests can be used to gauge the effect of a material on a group of selected organisms of a single species under defined conditions. An aquatic toxicity test usually measures either a) the proportions of organisms affected or b) the degree of effect shown after exposure to a specific test material (e.g., a sample of sediment or effluent).

tracers Substances used in a plume delineation study to determine the spatial extent of an effluent discharge. Tracers ideally can be readily measured in the field at low concentrations and can be released at a constant loading rate. Fluorescent dye is a commonly used tracer.

transformation rate The rate at which chemical transformations occur in wetlands. Seasonal variations in water level and nutrient uptake can influence the transformation rate.

transformer A wetland that transforms a chemical (from dissolved to particulate form, for example) but does not change the amount of the chemical going into or out of the wetland.

translocation The active movement of a dissolved substance from one part of a plant to another.

tributary Usually a smaller stream or river flowing into a larger one.

trophic level The level within the food chain at which an organism sustains itself. Also, the feeding level that energy passes through during its movement through an ecosystem.

uncertainty Represents the data gaps or lack of information in a modelling effort. Uncertainty can arise from lack of knowledge about how the ecosystem functions, failure to identify temporal and spatial parameters, or overlooking secondary effects.

understory The smaller trees and shrubs growing under the canopies of larger trees.

uptake A process by which materials are taken into the body of an aquatic organism.

validation The testing of a model against reality. Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled. Can refer to a process whereby environmental data are determined by an independent entity to be complete and final (i.e., subject to no further change), and to have their value for the intended use described by both qualitative and quantitative statements.

value 1) A fair return or equivalent in goods, services, or money for something exchanged; 2) the monetary worth of something, i.e., its market price; 3) the relative worth, utility, or importance of a good or environmental resource or service.

water budget The balance of water inflows and outflows in a wetland ecosystem.

water column A conceptual column of water from lake surface to bottom sediments.

water table The upper limit or level in the ground of groundwater. The water table forms the boundary between the zone of saturation (no oxygen) and the zone of aeration (oxygen).

water-octanol coefficient (K_{ow}) The tendency for a chemical to partition into the lipid tissue of an organism. For example, a chemical with a high K_{ow} is more likely to accumulate in fish tissue than a chemical with a low K_{ow}.

watershed See Catchment.

wetland hydroperiod The seasonal pattern of the water level of a wetland; the rise and fall of a wetland's surface and subsurface water.

zone of effluent mixing The spatial extent of an effluent discharge, or plume. The location and dilution gradients of the effluent discharge can be identified in the zone of effluent mixing through a plume delineation study. The zone of effluent mixing can change based on alterations to the discharge and characteristics of the receiving environment.