



# **Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast**

## **Appendix J: Glossary of Terms**

**Coastal Protection and Restoration Authority  
of Louisiana**

**April 2007**

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## Glossary

**acceptability** Adequate to satisfy a need, requirement, or standard. One of the U.S. Army Corps of Engineers requirements for a project.

**Act 8** Louisiana State legislation passed in the first extraordinary session of 2005 to provide for the development and implementation of a comprehensive coastal protection plan (see “coastal protection”) to integrate hurricane protection and coastal restoration to achieve a long-term solution; also created the CPRA (see “Coastal Protection and Restoration Authority”), and provided for other mechanisms to promote the successful implementation of hurricane protection and ecosystem restoration measures in coastal Louisiana.

**adaptive management** An interdisciplinary approach acknowledging that uncertainty exists in the anticipated outcomes of manipulating large complicated systems, that understanding the complexity of systems requires the knowledge or expertise of many disciplines, and that we must continually monitor the results of our actions in order to adapt as necessary. It is also a vehicle to allow the existing body of best practices to be used, while reaching out to all stakeholders to understand the best technically sound and socially acceptable way to proceed. An iterative approach that includes monitoring and refinements in decision making tools using information provided by scientists, engineers and others, resulting in recommendations that are incorporated into management actions; results are tracked to assess the effectiveness of the management to assess the need for further research, and changes to recommendations and management actions, and so on.

**air quality determination** The Louisiana Department of Environmental Quality ensures that projects do not adversely affect air quality through this determination as a requirement of the Clean Air Act.

**alternative plan** A set of one or more management measures within a subprovince functioning together to address one or more objectives.

**amplitude** The maximum absolute value of a periodically varying quantity.

**anaerobic** A situation in which molecular oxygen is absent from the environment.

**annual plan** The state coastal restoration and protection plan submitted annually to the legislature as provided in Act 8.

**anoxia** Absence of oxygen.

**anthropogenic** Caused by human activity.

**aquaculture** The science and business of farming marine or freshwater food fish or shellfish, such as oysters, crawfish, shrimp and trout, under controlled conditions.

**astronomical tides** Daily tides controlled by the moon, as opposed to wind-generated tides.

**authority** The Coastal Protection and Restoration Authority (CPRA). (Act 8)

**beach nourishment** The practice of hydraulically pumping clean, sandy sediment onto an eroded beach for the purpose of restoration.



**beneficial uses of dredged material** All productive and positive uses of material dredged from stream or navigation channels to maintain the desired depth for navigation purposes.

**benefits** Valuation of positive performance measures.

**benthic** Living on or in sea, lake, or stream bottoms.

**biomass** The total mass of living matter (plant and animal) within a given unit of environmental area.

**borrow pit** Term used to describe the physical site remaining after soil material has been removed for construction purposes; in uplands and wetlands, these sites may become bodies of water and in marine environments, the water depth becomes deeper in the seabed or lakebed.

**bottomland hardwood forest** Low-lying forested wetlands found along streams and rivers.

**brackish marsh** Intertidal plant community typically found in the area of the estuary where salinity ranges between 4-15 ppt.

**bulk density** An indicator of size and arrangement of various soil or sediment particles, and the ratio of the weight of the soil and water per unit volume of ground (e.g. pounds per cubic feet) .

**Chenier Plain** Western part of coastal Louisiana where there is indirect influence from Mississippi and Atchafalaya rivers.

**clay** That fraction of soil, sediment, or dredged material whose equivalent grain size diameter is 0.002 mm or less, generally referred to as fine-grained.

**Clean Water Act Section 404 (b) (1)** There are several sections of this Act that pertain to regulating discharges into wetlands. The discharge of dredged or fill material into waters of the United States is subject to permitting specified under Title IV (Permits and Licenses) of this Act and specifically under Section 404 (Discharges of Dredge or Fill Material) of the Act.

**Coastal area** The Louisiana Coastal Zone and contiguous areas subject to storm or tidal surge. (Act 8)

**coastal protection** Plans, projects, policies, and programs intended to provide hurricane protection, coastal conservation or restoration. (ACT 8)

**Coastal Protection and Restoration Authority (CPRA)** The Louisiana governing body with the authority to articulate a clear statement of priorities, and to focus development and implementation of efforts of local, state, and federal agencies to achieve comprehensive coastal protection (see “coastal protection”).

**Coastal Zone Consistency Determination** The U.S. Environmental Protection Agency reviews plans for activities in the coastal zone to ensure they are consistent with Federally approved State Coastal Management Programs under Section 307(c)(3)(B) of the Coastal Zone Management Act.

**coast-wide plan** Combination of coastal restoration and coastal protection measures assembled to address an objective or set of objectives across the Louisiana Coast.



**compaction of holocene deposits** Deltaic mud that settles under its own weight.

**completeness** The ability of a plan to address all of the objectives. One of the USACE four requirements for a project.

**comprehensive plan** See Coast-wide Plan.

**connectivity** Property of ecosystems that allows for exchange of resources and organisms throughout the broader ecosystem.

**consequences** Damages or losses resulting from some failure event. Each failure of a system has some consequence(s). A failure could cause economic damage, environmental damage, injury or loss of human life, or other possible events. Consequences need to be quantified in terms of failure-consequence severities using relative or absolute measures for various consequence types to facilitate risk analysis.

**conservation and restoration** The conservation, protection, enhancement, and restoration of coastal wetlands resources including but not limited to coastal vegetated wetlands and barrier shorelines or reefs through the construction and management of coastal wetlands enhancement projects, including privately funded marsh management projects or plans, and those activities requiring a coastal use permit which significantly affect such projects or which significantly diminish the benefits of such projects or plans insofar as they are intended to conserve or enhance coastal wetlands consistent with the legislative intent as expressed in R.S. 49:213.1 (ACT 8)

**consolidation** Term used to describe the effect caused by dewatering and desiccation of dredged soils, usually resulting in a reduction of volume and thickness of the material, or dewatering of soils caused by a load (typically soil fill) applied above the layer in question.

**continental shelf** The edge of the continent under gulf waters; the shallow Gulf of Mexico fringing the coast.

**control structure** A gate, lock, or weir that controls the flow of water.

**crevasse** A breach or gap in the levee or embankment of a river (natural or manmade), through which floodwaters flow.

**cumulative impacts** The combined effect of all direct and indirect impacts to a resource over time.

**datum** A point, line, or surface used as a reference, as in surveying, mapping, or geology.

**deciduous forest** A forest composed mostly of trees that lose their leaves in the winter.

**decomposition** Breakdown or decay of organic materials.

**dedicated dredging** Productive and beneficial uses of all dredged material from in-channel, in-lake, and in-bay sediment mining, off-shore borrow, and other non-navigation sources.

**degradation phase** The phase of the deltaic cycle when sediments are no longer delivered to a delta, and delta experiences erosion, dieback, or breakup of marshes.



- deltaic cycle** Sequence of events that typically occurs throughout time for the Mississippi River such that the Mississippi River's flow is captured by a distributary (a branch) channel that offers a shorter route to the Gulf of Mexico. After abandonment of an older delta lobe, which would cut off the primary supply of fresh water and sediment, an area undergoes compaction, subsidence, and erosion. The old delta lobe begins to retreat as the gulf advances, forming lakes, bays, sounds, and barrier islands. Concurrently, a new delta lobe would begin its advance gulfward.
- deltaic deposits** Mud and sand deposited at the mouth of a river.
- deltaic plain** The land formed and reworked as the Mississippi River switched channels in the eastern part of the Louisiana coastal area.
- demersal** Dwelling at or near the bottom of a body of water (e.g., a *demersal fish*).
- detritus** The remains of plant material that has been destroyed or broken up.
- dewatering** The process of dredged sediments compacting while losing water after being deposited.
- discharge** The volume of fluid flowing past a point per unit of time, commonly expressed in cubic feet per second, millions of gallons per day, or gallons per minute.
- dissolved oxygen** Oxygen dissolved in water, available for respiration by aquatic organisms. One of the most important indicators of the suitability of a water body to support life.
- direct impacts** Those effects that result from the initial construction of a measure (e.g., marsh destroyed during the dredging of a canal). Contrast with "Indirect Effects."
- diurnal** Relating to or occurring in a 24-hour period; daily.
- diversion** An alteration of the natural course or flow of water. In coastal restoration this usually consists of such actions as channeling water through a canal, pipe, or conduit to introduce water and water-borne resources into a receiving area.
- dynamic** Characterized by continuous change and activity.
- ecological** Refers to the relationship between living things and their environment.
- ecological community** An assemblage of species of a particular time and place.
- economic** Of or relating to the production, development, and management of material wealth, as of a country, household, or business enterprise.
- ecosystem** An organic community of plants and animals viewed within its physical environment (habitat); the ecosystem results from the interaction between soil, climate, vegetation and animal life. A functional system which includes the organisms of a natural community together with their environment.
- ecosystem restoration** activities that seek to return a organic community of plants and animals and their habitat to a previously existing or improved natural condition or function.



**effectiveness** Having an intended or expected effect. One of the USACE four requirements for a project.

**efficiency** The quality of exhibiting a high ratio of output to input. One of the USACE's four requirements for a project.

**egress** A path or opening for going out; an exit.

**conductivity** The ability of a medium to conduct electricity. Salt water has a higher conductivity level than fresh water, and this property allows salinity to be easily measured using a hand-held instrument.

**embankment** A linear mound of earth or stone existing or built to hold back water or to support a roadway.

**encroachment** Entering gradually into an area not previously occupied, such as a plant species distribution changing in response to environmental factors such as salinity.

**endangered species** Animals and plants that are threatened with extinction.

**enhance** To augment or increase/heighten the existing state of an area.

**entrenchment** Being firmly embedded.

**Environmental Impact Statement (EIS)** A document that describes the positive and negative environmental effects of a proposed action and the possible alternatives to that action. The EIS is used by the federal government and addresses social issues as well as environmental ones.

**estuary** A semi-enclosed body of water with freshwater input and a connection to the sea; water body where fresh water and salt water mix.

**estuarine** Related to an estuary.

**evaporation** The process by which any substance is converted from a liquid state into, and carried off in, vapor; as, the evaporation of water.

**exotic species** Animal and plant species not native to the area; usually undesirable (e.g., hyacinth, nutria, tallow tree, giant salvinia).

**faulting** A fracture in the continuity of a soil or rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are displaced relative to one another and parallel to the plane of fracture.

**feasibility report** A description of a proposed action, previously outlined in a general fashion in a Reconnaissance Report that will satisfy the Federal interest and address the problems and needs identified for an area. It must include an assessment of impacts to the environment (either in an Environmental Assessment, or the more robust Environmental Impact Statement), an analysis of alternative methods of completion, and the selection of a Recommended Plan through the use of a cost-effectiveness analysis.

**final array** The final grouping of the most effective coast-wide plans from which a final recommendation can be made.



**foreshore dikes** An embankment of rock built to minimize flooding or erosion that is constructed in the area of a shore that lies between the average high tide mark and the average low tide mark.

**forested wetland** In Louisiana, a wetland that is dominated by trees and shrubs, including swamps, bottomland hardwoods, wet cheniers and ridges.

**fresh marsh** Intertidal herbaceous plant community typically found in that area of the estuary with salinity ranging from 0-3 ppt.

**furbearer** An animal whose skin is covered with fur, especially fur that is commercially valuable, such as muskrat, nutria, and mink.

**geomorphic** Related to the geological surface configuration.

**geosynclinal down-warping** The downward bend or subsidence of the earth's crust, which allows for the gradual accumulation of sediment.

**goals** Statements on what to accomplish and/or what is needed to address a problem without specific detail.

**gradient** A slope; a series of progressively increasing or decreasing differences in a system or organism.

**habitat** The place where an organism lives; part of physical environment in which a plant or animal lives.

**habitat fragmentation** The breakup or fragmentation of a large area of habitat into isolated patches that are not linked through corridors.

**habitat loss** The disappearance of places where target groups of organisms live. In coastal restoration, usually refers to the conversion of marsh or swamp to open water.

**hazard** is a threat, which may result from either an external cause (e.g. hurricane, , flood, earthquake or human actions) or an internal vulnerability, with the potential to initiate a failure mode. It is a source of potential harm or a situation with a potential to cause loss.

**Hazardous, Toxic, and Radioactive Wastes (HTRW)** Projects features must be examined to ensure that their implementation will not result in excessive exposure of people/animals to pollutants possibly located in the study area.

**headland** A point of land projecting into the sea or other expanse of water, still connected with the mainland.

**herbaceous** A plant with no persistent woody stem above ground.

**Hollow Core Levee.** A new levee design concept that is formed from concrete and steel, primarily in triangular shapes, hollow in the middle, and well-anchored either alone as a levee or on top on an existing levee that must be raised.

**hydric soils** Soils that are saturated, flooded, or ponded long enough during the growing season such that anaerobic conditions develop.

**hydrodynamic** The continuous change or movement of water.



**hydrology** The pattern of water movement on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

**hydroperiod** The seasonal variability of inflow, outflow, and storage of water in a wetland.

**hypoxia** The condition of low dissolved oxygen concentrations.

**incremental and intermittent dredging** The management of a pipeline conveyance system used to make thin-lift or deposits of soils, either continuously during construction or intermittently pulse dredging at certain times of the year, to allow settling to occur and to allow effluent water to move from the site.

**indemnification** Insurance against or compensation for loss or damage.

**indirect impacts** Those effects that are not a direct result of project construction, but occur as secondary impacts due to changes in the environment brought about by the construction. Contrast with "Direct Impacts."

**infrastructure** The basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions including schools, post offices, and prisons.

**ingress** An entrance or the act of entering.

**inorganic** Not derived from living organisms; mainly composed of mineral matter; matter other than plant or animal.

**interdistributary deposits** Sand and mud deposited between the river channels or between bayous.

**intermediate mars** Intertidal herbaceous plant community typically found in that area of the estuary with salinity ranging from 2-5 ppt.

**intertidal** Alternately flooded and exposed by tides.

**invertebrates** Animals without backbones, including shrimp, crabs, oysters, and worms.

**keystone strategy** A strategy that other strategies rely upon for successful implementation.

**land-water ratio** The relative proportion (ratio) of area of wetlands and uplands to area of water.

**landscape ecology, patterns, structure** A heterogeneous land area composed of interacting ecosystems that are repeated in similar form throughout and their study; the arrangement of parts, elements, or details of the landscape that suggests a design of natural or human origin; the distribution of energy, materials, and species in relation to sizes, shapes, numbers, kinds, and configuration of landscape elements or ecosystems.

**larvae** The stage in some animal's life cycles between egg and adult (most invertebrates).

**leaky levee.** The concept of providing for the exchange of tidal waters, hydrologic freshwater gravity flow, and other water movement by appropriate design, construction, implementation, and management of storm surge protection system elements. This includes large gated openings in levees that will be closed in times



of potential storm surges, permeable layers of coarse-grained materials under levees that allow percolation of ground and sheetflow water, and other innovative ways to maintain a healthy sustainable coastal hydrology.

**leeward** Sheltered from the wind; away from the wind.

**levee** A linear mound of earth or stone built to minimize, but not eliminate, the risk of a river or a surge from a storm from flooding an area; a long, broad, low natural ridge built by a stream on its flood plain along one or both banks of its channel in time of flood.

**limiting ecological factor** Any physical, chemical, or biological factor which is the critical boundary on growth and/or survival of an organism, i.e., smooth cordgrass is limited in its growth by the boundaries of the sub-tidal and upland zones.

**loamy** Soil composed of a mixture of sand, clay, silt, and organic matter.

**Locally Preferred Plan (LPP)** Alternative plan preferred by local sponsor.

**maintain** To keep in existing state.

**measure** A programmatic ecosystem restoration or hurricane protection feature that can be assembled with other measures to produce desired outcomes.

**methodology** A set of practices, procedures, and rules.

**mineral substrate** Soil composed predominately of mineral rather than organic materials; less than 20 percent organic material.

**mitigation** The replacement or substitution of a habitat as compensation for habitat that has been degraded or destroyed, in Louisiana generally referring to wetlands, and generally referring to priorities placed on in-kind, on-site replacements.

**mudflats** Flat, unvegetated wetlands subject to periodic flooding and minor wave action.

**National Ecosystem Restoration (NER)** USACE standard for cost-effectiveness based on ecosystem, not economic, benefits.

**near-shore currents** Movement of water parallel to the shoreline usually generated by waves breaking on the shore at an angle other than perpendicular.

**National Environmental Policy Act (NEPA)** A federal act that ensures that Federal agencies consider the environmental impacts of their actions and decisions. NEPA requires all Federal agencies to consider the values of environmental preservation for all significant actions and prescribes procedural measures to ensure that those values are fully respected.

**net gain** The amount of cumulative land gain minus the land loss, when gain area is greater than loss area.

**net loss** The amount of cumulative land gain less land loss, when gain is less than loss.



**no action alternative** The alternative in the plan which describes the ecosystem of the coastal area if no restoration or protection measures were constructed.

**nursery** A place for larval or juvenile animals to live, eat, and grow.

**objectives** Statements describing desired targets of proposed actions.

**organic** Composed of or derived from living things.

**oscillations** Fluctuations back and forth, or up and down.

**oxidation of organic matter** The decomposition (rotting, breaking down) of plant material through exposure to oxygen.

**oxygen-depleted** Situation of low oxygen concentrations where living organisms are stressed.

**petrochemical** Any compound derived from petroleum or natural gas.

**pipeline conveyance** The use of a hydraulically managed pipeline to pump and place dredged material for purposes of wetland nourishment or construction.

**placement site** Any area, confined or unconfined, that is used for the beneficial or dedicated disposal of dredged material for purposes of restoration or protection features.

**point-bar deposit** The shallow depositional area on the inside bank of a river bend.

**post-larval** Stage in an animal's lifecycle after metamorphosis from the larval stage, but not yet full grown.

**potable water** Water that is fit to drink.

**ppm** parts per million

**ppt** parts per thousand

**primary consolidation/secondary compression** Two processes acting on a compressible soil that has been loaded that causes the sediment to increase in density, and decrease in volume.

**prime farmland** Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. One of the categories of concern in the EIS.

**principles** Framing statements that can be used to evaluate alternatives while considering issues that affect them. Used along with targets and assessments of ecosystem needs to provide guidance in formulation of alternative plans.

**probability** Measure of the likelihood, chance, odds, or degree of belief that a particular outcome will occur. A conditional probability is the probability of event occurrence based on the assumption that another event (or multiple events) has occurred.



- productivity** Growth rates of plants and animals; a net increase in productivity is an indicator of sustainability.
- Progradation** The phase during the deltaic cycle where land is being actively built gulfward through deposition of river sediments near the mouth.
- Programmatic Environmental Impact Statement (PEIS)** Any Environmental Impact Statement that supports a broad authorization for action, contingent on more specific detailing of impacts from specific measures.
- Planning Unit** A major division of the coastal zone of Louisiana.
- pulsing** Allowing a diversion to flow periodically at a high rate for a short time, rather than continuously.
- quantitative** Able to assign a specific number; measurement of the value is possible.
- rebuild** To some extent build back a structure/landform that had once existed.
- reconnaissance report** A document prepared as part of a major authorization that examines a problem or need and determines if sufficient methods and Federal interest exists to address the problem/need . If so, then a “Feasibility Report” is prepared, which details the solution and its impacts further.
- reduce** To diminish the rate or speed of a process.
- rehabilitate** To focus on historical or pre-existing ecosystems as models or references while emphasizing the reparation of ecosystem processes, productivity and service.
- relative sea level rise** The sum of the sinking of the land (subsidence) and eustatic sea level change; the change in average water level with respect to the surface.
- reliability** The ability of a system or a component to fulfill its design functions under designated operating and/or environmental conditions for a specified time period. This ability is commonly measured using probabilities. Reliability is, therefore, the probability that the failure event, however defined, does not occur.
- restore** Return a to a close approximation of a previous condition or function prior to disturbance; may be accomplished by modifying conditions responsible for the loss or change; re-establish the function and structure of an ecosystem to a desirable state.
- risk** The potential of losses for a system resulting from an uncertain exposure to a hazard or as a result of an uncertain event. Risk should be based on identified risk events or event scenarios. Risk is a multi-dimensional quantity that includes event-occurrence probability, event-occurrence consequences, consequence significance, and the exposed population; however, it is commonly measured as a pair of the probability of occurrence of an event, and the outcomes or consequences associated with the event’s occurrence. Another common representation of risk is in the form of a curve depicting specified losses and the probability of exceeding those losses.
- risk analysis** The technical and scientific process to breakdown risk into its underlying components. Risk analysis provides the processes for identifying hazards, event-probability assessment, and consequence assessment. The risk analysis process answers three basic questions: (1) what can go wrong? (2) what is the likelihood that it will go wrong? (3) what are the consequences if it does go wrong? Risk analysis can include provisions to make changes to a system to control risks.



**sand** That fraction of soil, sediment, or dredged material whose grain size diameter is between 2.00 to 0.05 mm, generally referred to as coarse-grained.

**salt marsh** Intertidal herbaceous plant community typically found in that area of the estuary with salinity ranging from 12-32 ppt.

**salinity** The concentration of dissolved salts in a body of water, commonly expressed as parts per thousand.

**scoping** Soliciting and receiving public input to determine issues, resources, impacts, and alternatives to be addressed in the draft EIS.

**sea-level** Long-term average position of the sea surface.

**Sediment budget** An accounting of the volume of sediments needed to nourish/restore an area, accounting for the transport into and out of the area due to natural processes.

**sediment plume** Caused by sediment rich rainwater runoff entering the ocean. The runoff creates a visible pattern of brown water that is rich in nutrients and suspended sediments that forms a kind of cloud in the water spreading out from the coastline. Commonly forms at river and stream mouths, near sloughs, and along coasts where a large amount of rain runoff flows directly into the ocean.

**seedbank** Residual seeds, tubers, or propagules in or on the soil or wetland surface.

**sheet flow** Flow of water, sediment, and nutrients across a flooded wetland surface, as opposed to through channels or through near-surface marsh/swamp deposits or subsurface soils.

**shoaling** The shallowing of an open-water area through deposition of sediments.

**silt** That fraction of soil, sediment, or dredged material whose equivalent grain size diameter is between 0.05 to 0.002 mm, generally referred to as fine-grained.

**social** Relating to human society and its modes of organization.

**socioeconomic** Involving both social and economic factors.

**spoil banks** Dredged material removed from canals and piled in a linear mound along the edge of canals.

**stabilize** To fix the level or fluctuation of; to make stable relative to the changes occurring under natural conditions, but not fixed such that no change is implied over time.

**State Historic Preservation Office (SHPO)** The part of the Louisiana Department of Culture, Recreation, and Tourism that deals with Indian sites and other archaeological remains.

**storm overwash** The process by which material is transposed landward during a storm event by waves and storm surge.

**storm surge** An abnormal and sudden rise of the sea along a shore as a result of the winds of a storm.



**strategy** Ecosystem restoration concept from the Coast 2050 Plan.

**stream gaging data** Records of water levels in streams and rivers.

**submergence** Going under water.

**subsidence** The gradual downward settling or sinking of the Earth's surface with little or no horizontal motion.

**sustain** To support and provide with nourishment to keep in existence; maintain.

**swamp** In Louisiana, a periodically inundated forested wetland with fluctuating water levels generally dominated by baldcypress and gums.

**Tarbert flow** Stream gage data recorded at Tarbert's Landing on the Mississippi River.

**target** A desired ecosystem state that meets an objective or set of objectives.

**terrestrial habitat** The land area or environment where an organism lives; as distinct from water or air habitats.

**toxicity** The measure of how poisonous something is.

**transpiration** The process by which water passes through living plants into the atmosphere.

**turbidity** The level of suspended sediments in water; opposite of clarity or clearness.

**unique farmland** Land other than Prime Farmland (see "Prime Farmland") that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits, and vegetables.

**upland** A general term for non-wetland elevated land above low areas along streams or between hills.

**water budget** An accounting of the inflow to, outflow from, and storage in a hydrologic unit.

**Water Resources Development Act (WRDA)** A bill passed by Congress that provides authorization and/or appropriation for projects related to the conservation and development of water and related resources.

**weir** A dam or low-level dike placed across, or at the base of, a canal or river to raise, divert, regulate or measure the flow of water or movement of a salt water plume upstream.

**wetland** Periodically inundated communities characterized by vegetation which survives in wet soils, ranging from coastal intertidal marshes to freshwater swamps and bottomland hardwoods.

**wetland complex** The aggregation of wetlands and associated ecological features (corridors, landbridges, buffers, ridges, cheniers, etc.) within the landscape.

**wind fetch** A term used to describe the open area and distance across a body of water in which wind can exert energy on waves to cause them to be higher and more forceful upon impact with shorelines.