True / False questions are 0.15 point each.

T / F Aerenchyma in wetlands-adapted plants often help create an oxygenated zone around the roots.
T / F A constructed wetlands can be established by decreasing the elevation of an area’s hydrologic outlet.
T / F Created wetlands should have hydroperiods similar to natural wetlands.
T / F Ideally, a builder should construct a stormwater wetland in about 2 weeks.
T / F Mosquitoes are often a problem near constructed wetlands.
T / F The Swampbuster provision of the 1985 Farm Bill requires farmers to drain wetlands in order to grow crops.
T / F Many people object to wetlands regulation on Fifth Amendment grounds.
T / F Section 404 of the Endangered Species Act addresses protection of wetlands habitat.
T / F Plants which accumulate heavy metals in their peripheral tissues are desirable for use in a wastewater treatment constructed wetlands.
T / F A good donor site for wetland mulch is a created wetland.
T / F Mottling in soils is caused by fluctuations in redox potential over time.
T / F Adjusting the level of the outlet of a constructed wetlands can improve the effectiveness of the wetland for stormwater treatment.
T / F Mitigation banking makes use of a $300 million revolving fund established as part of the Clinton/Gore wetlands initiative.
T / F The marsh section of a constructed wetlands should be a uniform depth.
T / F The Corps of Engineers is in charge of wetlands protection because the majority of wetlands in the USA are owned by the government.
T / F Constructed wetlands have hydroperiods similar to natural wetlands.
T / F Wetlands are protected and managed by the National Wetlands Protection Act of 1992.
T / F From 1988-1996 less than 1% of applications for 404 (dredge and fill) permits were rejected in NYS.
T / F Agriculture on drained Histosols in the EAA is a sustainable system.
T / F Asexual reproduction is common among wetlands plants because seed germination under saturated/anaerobic conditions is problematic.
T / F Roadside ditches and constructed wetlands are good sources of wetland mulch.
T / F Wetlands regulation is considered by many to be a restriction of property rights.
T / F Availability of a chemical or nutrient in a wetland system is affected by both its chemical and physical form.
T / F A drained wetlands tends to experience subsidence because oxygen becomes available as a favorable electron acceptor and decomposition rates increase.
T / F The organization Ducks Unlimited supports wetlands conservation.
T / F Mineralization is the production of nitrate-nitrogen during the decomposition of organic matter.
T / F Rapidly rising sea levels are a potential threat to the Everglades.
T / F Sugar is the dominant crop in the Everglades Agricultural Area.
T / F Much of the legislation that is currently being used to regulate, manage, and protect wetlands was originally intended for other purposes.
T / F At least one person is in jail because he not only repeatedly violated Section 404 procedures, but also flooded his neighbors’ homes.

Multiple choice questions are 0.3 point each.

A constructed wetlands that is built for stormwater management
   (a) is covered under Section 404 of the Clean Water Act
   (b) requires monitoring and maintenance to keep it working well
   (c) should have both deep-water and marsh areas
   (d) a and b
   (e) a and c
   (f) b and c
   (g) all of the above
   (h) none of the above

The size of a stormwater constructed wetland depends on:
   (a) the amount of impervious surface in the drainage area
   (b) the design type chosen
   (c) the size of the area draining into the wetlands
   (d) a and b
   (e) a and c
   (f) b and c
   (g) all of the above
   (h) none of the above
The forebay of a constructed wetlands:
(a) traps sediment which needs to be removed periodically
(b) is rarely more than 18 inches deep
(c) should incorporate child-proofing features
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

What is the approximate rate of destruction of organic matter in the Everglades Agricultural Area since the land was drained?
(a) 0.1 feet per year
(b) 0.1 feet per century
(c) 0

Section 404 of the Clean Water Act applies to:
(a) constructed wetlands
(b) created wetlands
(c) natural wetlands
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Section 404 permit applications might be withdrawn because:
(a) The Corps reviewing official suggests that the plan needs modification
(b) most permit applications are rejected and people get discouraged
(c) project funding may fall through
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Why is the ability of a plant to use water efficiently often an advantage in a wetlands environment?
(a) The less water used, the less exposure to toxins formed under anaerobic conditions
(b) less energy is required to move water
(c) many wetlands have dry seasons when there actually is limited water
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Denitrification
(a) is the conversion of ammonium ions to nitrogen gas
(b) leads to loss of usable soil nitrogen
(c) requires oxygen
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above
Subsidence in wetland soils
(a) is often a consequence of land drainage for agriculture
(b) is, in some cases, balanced by deposition of organic matter
(c) does not occur in the Everglades Agricultural Area
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Residence time in a constructed wetland
(a) can be changed by adjusting the level of the wetland outlet
(b) applies to nutrients as well as water
(c) equals volume divided by flow rate
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

High marsh wedges:
(a) are deep water areas
(b) increase the sinuosity of the flow path in a constructed wetlands
(c) are what people in Pennsylvania call submarine sandwiches
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

A stormwater wetland:
(a) should have a dry weather source of water
(b) should provide the shortest possible path for storm water
(c) is rarely used in residential developments
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

The original (pre-1850) Everglades has been transformed into
(a) the Everglades Agricultural Area
(b) Everglades National Park
(c) Water Conservation Areas
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Since 1950, Florida Bay has experienced:
(a) increased nutrient inflow rates
(b) decreased water inflow rate
(c) neither of the above
(d) both of the above

How has the hydroperiod in the Everglades changed as a result of the various “internal improvement” projects?
(a) less water is transported to Florida Bay
(b) intervals during which the water level is at the ground surface or above are shorter
(c) peak water levels are much higher
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above
Which of the following are well adapted to flooded/anaerobic conditions:
(a) pumpkin root cells
(b) rice root cells
(c) neither of the above

Nationwide Permit 26:
(a) has been unpopular and controversial
(b) is the most widely used Individual-type 404 permit
(c) has recently been modified
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

The micropool of a shallow marsh system stormwater constructed wetland should:
(a) have erosion protection at the outlet
(b) not be larger than 0.02 acres
(c) hold at least 60% of the total storage volume of the wetland
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

The forebay of a shallow marsh system stormwater constructed wetland should:
(a) be at least 10 feet deep
(b) have a surface area at least 0.001 times the watershed area
(c) have a runoff coefficient of at least 0.25
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

The term “River of Grass”:
(a) was coined by conservationist Margery Stoneman Douglas
(b) refers to the vast sugarcane fields in the EAA.
(c) ignited the Everglades preservation movement
(d) a and b
(e) a and c
(f) b and c
(g) all of the above
(h) none of the above

Which of the following would require the largest plot of land?
(a) A shallow marsh system treating runoff from a 20 acre housing development
(b) A pond/wetland system treating runoff from a 15 acre nature area
(c) An extended detention wetland treating runoff from a 30 acre nature area

Values of the following questions are in parentheses.

(1) Discuss the concept of residence time in a stormwater constructed wetlands with particular reference to wetlands at Corbett Park (across the Canal from campus).
(2) What is mitigation banking and why is it an attractive option for many? Do you feel that it is a valid concept? Defend your position on the issue.

(1) What was the approximate rate of accumulation of organic matter in the Everglades between the end of the last glaciation and the year 1800?

(1) Describe/discuss your most notable impression from the video we watched on Thursday, 4/20.

(0.3) What are three maintenance operations that might be required for a stormwater constructed wetland?
(1) What is the difference between a constructed wetland and a created wetland?

(0.8) List and describe several wetland values that were examined in the video we watched on Thursday, April 20.

(3) In the context of the Section 404 permitting program, what is the difference between a general permit and an individual permit?

(1) Describe several ways in which a stormwater constructed wetlands removes pollutants.

(0.5) What are several ways to establish a plant community in a constructed or created wetland?