

Exam Reviews for Water Resources

Vietnamese fish farming

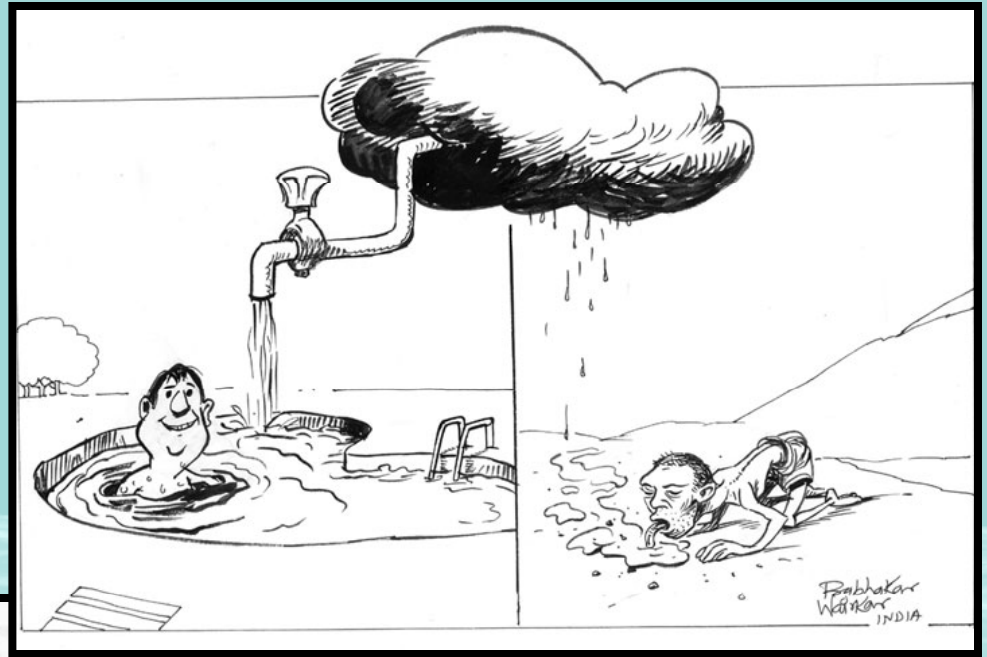
Green River , Wyoming



Water sustains all life. It is the most distinctive and abundant substance found on Earth; yet, it remains naturally scarce by location. Increasingly, human activities are creating shortages of this most abundant resource as we overuse, misuse, and pollute!

Exam Reviews for Water Resources

All water on planet Earth is
locked into the hydrologic
cycle - conservation can
mean life or death!



“Tap Water?! As if.”

Water Conservation? - "These pumpkins are crossed with a camel so I don't have to water them."

Water Resources Exam I Spring 2010

Exam Format (total points possible on the exam: 40)

Part One: 12 multiple choice questions (12 points).

Each question is worth 1 point. Expect multiple readings questions. I ask multiple choice questions which go beyond definitions - questions that make you link several concepts.

Part II: Sketch and Label (4 points). Example: hydrologic cycle, groundwater environment...anything I drew on the board

Part III: Listing and Short Answers (6 points) Examples: a) Questions I asked in class regarding a lecture point; b) questions from the overheads; c) student presentation points (few sentences on the discussion focus); d) the central theme or key point of a reading (two questions will directly come from your text “Question sfor Discussion”

Part IV: Short Answer Terminology (8 points).

8 definitions each worth 1 point. Two bonus short answer question. Example – capillary action, transpiration, potentiometric surface... Expect several terms from the readings.

General Test Related Information

1. Study: examples, lecture and text terms, policies, case studies, questions posed during class, & major readings concepts.
2. Any information printed on the PowerPoint overhead is fair game.
3. Any information written on the board may be on the exam.
4. Class discussion questions may be on the exam.
5. Information not printed in the very brief PowerPoint outline, such as the definition of a term or an expanded discussion on a specific topic, may be on the exam.
6. I do ask questions which go beyond definitions - questions that make you link several concepts. “Concept understanding” type questions are commonly asked.
7. If you have not been coming to class, I do not expect you to do well, as I intentionally design questions that are couched in class lectures and discussions – study hard and good luck.

Readings

Questions on the exam will come directly from your readings. Approximately 15-20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms “Key Words to Remember”, and questions from “Questions for Discussion”. I will not nitpick and ask date, statistical, overly specific...type questions.

Water Resources Exam I Spring 2010

Completed readings

Text Chapters: 14, 6, 2, and 4

Handouts: Multiple handouts, i.e. CSOs, surface and groundwater terms to know, hydrologic cycle...

Electronic Reserve (ER):

1. Managing Across Boundaries: The Case of the Colorado River Delta

Articles on the Water Resources Homepage:

1. "An overview: World population and water"- Simon

2. Water Conflict Chronology - Gleick (glance at)

Terms and Questions to Know from Your Text

Chapter 14 – Act and ACF Compacts, IRS Water Depletion Allowance, tragedy of the commons; Chapter 14 Questions for Discussion: 1, 2, 3, 4, 5, 7, 10.

Chapter 6 – check dam, drip irrigation, dryland farming, field ditch, furrow irrigation, gravity irrigation, headgate, salinity, sprinkler irrigation, waste water, wildflood irrigation; Chapter 6 Questions for Discussion: 1, 3, 4, 5, 6, 9.

Chapter 2 – adiabatic process, cumuloform clouds, dew point, Doppler radar, gyres, ITCZ, isobars, isotherms, lysimeters, Palmer Index, potential evapotranspiration, stratiform clouds, Surface Water Supply Index, virga, warm front, water equivalent; Chapter 2 Questions for Discussion: 2, 3, 4, 5, 6, 7, 9, 10

Chapter 4 – alluvium, conglomerate, Darcy's Law, drawdown, fracture, fissure, fractured aquifer, glacial till, hydraulic conductivity, hydraulic gradient, hydraulic head, karst, saturated thickness, specific yield, transmissivity; Chapter 4 Questions for Discussion: 1, 2, 3, 5, 6, 7, 10, 12

General Study Guide

1. Greatest water related concerns ...quality and quantity
2. Examples of too much water and too little - Salton sea
3. How much fresh water is available and where is most of the world's fresh water?
4. Aral Sea case study. Why is the sea drying?
5. Hydraulic civilization: provide examples.
6. Yellow River: case study water quantity – sedimentation/turbid
7. Effluent & Influent flow
8. Colorado River and water use; policies, allocation, diversion projects, exotic species, extinctions, Mexico, delta, salinity...
9. Colorado terms: exotic river, watershed, interbasin transfers...
10. Colorado River overallocation and potential solutions
11. Water Quality: The Stink at Flushing Bay
12. What are CSOs – consider concerns and policies
13. Downstream consequences following CSO – septic, recovery
14. Solutions to CSO discharge at Flushing Bay
15. What four concerns do you see foresee with stormwater runoff?
16. Stormwater runoff policies and solutions
17. Why is water as the ultimate resource and what "unique" concern surround it?
18. Several questions will come from the video documentary
19. Hydrologic cycle (know all parts, all terms, the numbers)
20. Ground water pollution: What type of unique water resources issues does Bangladesh face? – Arsenic poisoning origins, extent, health impacts and solutions
21. Groundwater: The physical system/terms and be able to sketch features – know all the terms
22. Subsurface Water Characteristics & Human Interactions
23. Regulating CARA's and the Wellhead Protection Program
24. Wetlands important to groundwater -protection policies?

Water Resources Exam II Spring 2010

Exam Format (total points possible on the exam: 40)

Part One: 12 multiple choice questions (10 points).

Each question is worth 1 point. Expect multiple readings questions. I ask multiple choice questions which go beyond definitions - questions that make you link several concepts.

Part II: Sketch and Label (6 points). Example: Subsurface water characteristics & human interactions (CARA's), floodplains...anything I drew on the board

Part III: Listing and Short Answers (6 points) Examples: a) Questions I asked in class regarding a lecture point; b) questions from the slides; c) summary of a water law case file; d) the central theme or key point of a reading (two questions will directly come from your text "Questions for Discussion")

Part IV: Short Answer Terminology (8 points).

8 definitions each worth 1 point. Two bonus short answer question. Example – potentiometric surface, water laws commerce clause, The Daniel Ball, US v. Appalachian Electric Power Company... Expect several terms from the readings.

General Test Related Information

1. Study: examples, lecture and text terms, policies, case studies, questions posed during class, & major readings concepts.
2. Any information printed on the PowerPoint overhead is fair game.
3. Any information written on the board may be on the exam. The exam is not cumulative.
4. Class discussion questions may be on the exam.
5. Information not printed in the very brief PowerPoint outline, such as the definition of a term or an expanded discussion on a specific topic, may be on the exam.
6. I do ask questions which go beyond definitions - questions that make you link several concepts. "Concept understanding" type questions are commonly asked.
7. If you have not been coming to class, I do not expect you to do well, as I intentionally design questions that are couched in class lectures and discussions – study hard and good luck.

Readings

Questions on the exam will come directly from your readings. Approximately 15-20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms "Key Words to Remember", and questions from "Questions for Discussion". I will not nitpick and ask date, statistical, overly specific...type questions.

Water Resources Exam II Spring 2010

Completed readings

Text Chapters: 3, 8, 9, and (may omit 5 for now)

Handouts: Multiple handouts, i.e. ...Subsurface water characteristics, & human interactions, Stream order, floodplain features, Legal definition of "Traditional Navigable Waters – water that qualify as waters of the US

Electronic Reserve (ER): None

Internet: Familiarize yourself with the New Island website

Terms and Questions to Know from Your Text

Chapter 3 – watershed, overland flow, inter flow, hyporheic zone, ephemeral stream, intermittent stream, cirque lake, pluvial lake, kettle lake, littoral, limnetic, profundal zone, epilimnion, hypolimnion, thermocline, seiche, gage height, nilometers, Chapter 3 "Questions for Discussion": 2, 4, 6, 8, 9, 10, 12, 15

Chapter 8 – Massachusetts Mill Act, prior appropriation, California doctrine, exchange, point of diversion, salvaged water, Niagara River Water Diversion Treaty, Delaware River Compact, rule of capture, rule of absolute ownership, Chapter 8 "Questions for Discussion": 1, 2, 3, 4, 5, 6, 8.

Chapter 9 – Clean water act amendments, CERCLA, desert land act, EIS, federal water pollution and control act, flood control acts, gallatin report, Louisiana swampland act, NEPA, national irrigation congress, NPDES, NRCS, reclamation act, refuse act, RCRA, rivers and harbors act; superfund, swamplands acts, taylor grazing act, water pollution control act, water quality act; Chapter 9 Questions for Discussion: 1, 6,

General Study Guide

1. Subsurface Water Characteristics & Human Interactions
2. Regulating CARA's and the Wellhead Protection Program
3. Wetlands important to groundwater -protection policies?
4. Physical characteristics of Fluvial Processes - Niagara Falls
5. Knick point, headward erosion, base level, endorheic drainage, gradient...
6. Valley deepening and valley widening (how and why it happens)
7. Stream order (be able to determine)
8. Stream transport process of eroded material
9. Laminar flow & turbulent flow and the three forms of stream that are created (know characteristics of each)
10. Be able to diagram and identify floodplain features
11. Be able to diagram and identify floodplain features related to policy.
12. Method for determining flood recurrence intervals
13. Klamath River case study and why it is important
14. The role of the U.S. Bureau of Reclamation
15. Key laws associated with the Klamath controversy
16. Development of water laws in the US and the riparian doctrine
17. Know important/precedent setting water law cases - i.e. Maryland Mill Act, Cappaert v. U.S., Code of Napoleon
18. Know how common law applies to water resources
19. Know the case law that creates the legal jurisdiction for waters that qualify as water of the US.

Water Resources Exam III

Exam Format (total points possible on the exam: 40)

Part I: Multiple choice questions (15 points).

Each question is worth 1 point. Expect multiple readings questions. I ask multiple choice questions which go beyond definitions - questions that make you link several concepts.

Part Two: Listing and Fill-In-The Blank (4 points)

Examples: reading and class terms, macroinvertebrate identification

Part Three: Short Essay - (6 points)

Example short essay topics: student research presentation; water laws and policies; handouts i.e. Stratton V. Mt Hermon Boys' School precedent; differences between riparian rights and prior appropriation); estuarine, tidal, or lower perennial river sections on the LCR and wetland changes; "Questions for Discussion" from your textbook, case studies...

Part Four: Fieldtrip Questions – (7 points)

Any question or discussion addressed on the two fieldtrips could show up on the exam.

Part Five: Short Answer (key words, terminology, policy...) (8 points).

10 definitions each worth 1 point. Two bonus short answer question. Examples - usufructory, Safe Drinking Water Act ... Expect several definitions to come from the "Key Words to Remember" section of your textbook.

General Test Related Information

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4. Class discussion questions may be on the exam.
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Water Resources Exam III

Major Areas of Study

Completed readings

Text:

Text Chapters: 5, 11, 7, and 12

Handouts:

1. Water Resources Assignment on Riparian Rights- Stratton V. Mt Hermon Boys' School
2. Differences between riparian rights and prior appropriation
3. In-class exercise on Macroinvertebrate Identification (be able to identify a picture of a macroinvertebrate)
4. New Island and Silver Creek fieldtrips
5. Water quality fact and summary sheet attached to New Island fieldtrip assignment

Articles on the Water Resources Homepage:

You do not have to read any of the articles I wrote on wetland classification and restoration – sorry we just did not get to it this semester.

Many questions will come directly from your readings. The questions could be on a subject discussed or not discussed. This is to guarantee that you are reading the text

1. Know the varying interpretations of the Riparian Doctrine: Continuous Flow, Reasonable Use, and Correlative Rights principles
2. Regulated Riparianism, permit system and vested interest
3. French Long Lot Mississippi River – Advantages & disadvantages
4. Stratton V. Mt Hermon Boys' School summary
5. Categorizing reasonable or unreasonable uses based on combinations of land ownership & location of water use.
6. Prior Appropriation Doctrine: why & where did it replace the Riparian Doctrine; fundamental rules of the doctrine; important early legislation that help define the doctrine i.e. Irwin v. Phillips & Coffin v Left Hand Ditch Co.
7. Major differences between riparian & prior appropriation
8. Important characteristics of water quality for turbidity, conductivity, dissolved oxygen, pH, temperature...
9. Study the water quality handout that I gave you that covers descriptions of each important water quality parameter
10. Macroinvertebrates as water quality indicators in the Adirondacks - case study
11. Be able to identify pictures of Macroinvertebrates (order)
12. What are the advantages of using Macroinvertebrates?
13. What macros indicate good Vs bad water quality?
14. What is the Biotic Index and what is the Percent Model Affinity Index? Apply them to streams in the study site.
15. Water use – agriculture, industry, and municipal supplies
16. Case study: Floods & Municipal Water Supply, Neuse NC
17. Consumptive & non-consumptive water use
18. Municipal/domestic use and water supply
19. Drinking Water Contaminants major groups – organic and inorganic chemicals, microorganisms, disinfectants...
20. Drinking water quality and the Safe Drinking Water Act
21. New York City's water supply – watersheds, watershed planning, effectiveness, pollution concerns.
22. What conservation practices are participating farmers practicing to protect the water supply?
23. Persistent quality concerns in NYC drinking water – microorganisms cryptosporidium & Giardia
24. Know information from the two fieldtrips

Water Resources Exam III

Terms and Questions to Know from Your Text

Chapter 5 – Water quality classification in New York, basic parameters of water, inorganic chemicals, metals, minerals, selenium, MCL, organic chemicals. SOCs and examples, VOCs and examples, NVOCs and examples, integrated pest management, nitrogen, phosphorus, components of the nitrogen cycle, BOD, London’s Broad Street pump as a landmark in epidemiology, indicator organisms, E. coli, giardia, cryptosporidium, monitored natural attenuation, superfund, Total Maximum Daily Loads Program

“Questions for Discussion”: 5, 6, 8, 9, and 10

Chapter 11 – SDWA Amendments of 1996, flocculation, final drinking water treatment methods, primary, secondary and tertiary waste treatments, “Questions for Discussion”: 1, 4, and 5.

Chapter 7 – The primary purpose of dams in the US, dam operations, dead storage, active storage, flood pool, surcharge capacity, freeboard, live capacity, firm yield, total capacity, Teton Dam, impacts of dams, Questions for Discussion: 1, and 7

Chapter 12 – Wild and Scenic Rivers Act, wild, scenic and recreational rivers, NEPA, Council on Environmental Quality, Endangered Species Act proceeding or step to enact i.e. safe harbor and scoping process, Snail Darters and the Little Tennessee River, Salmon and the Columbia River Questions for Discussion: 1, 5, and 6

