San Jose State University  
College of Social Science  
Environmental Studies Department  
ENVS 129 - 01  

*Water Policy in the Western US*  

**FALL 2019**

**Instructor:** Patrick T. Ferraro  
[sjsu.edu/envs/ferraro](http://sjsu.edu/envs/ferraro)

**Office Hours:** Monday, Wednesday 1:30–2:30 PM, Room WSQ 115A

**Cell Phone:** 408-293-1852

**Preferred E-mail:** PTFerraro5@gmail.com

**Class Hours:** Monday, Wednesday 12:00 – 1:15 PM

**Classroom:** Boccardo Business Center 320

**Prerequisites:** ENVS 001 or Instructor Consent.

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**Catalog Course Description:**

Water resource development; federal reclamation policy; water law and water rights; interbasin transfers; Colorado River, Central Valley Project and State Water Project; groundwater overdrafting; agricultural water and water pricing

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**Course Format:**

Students are expected to have completed reading assignments prior to class. Lecture will be supplemented with audio-visual media. A portion of each class will be spent as interactive discussion between instructor and students. Experts may be invited to some of the classes to augment the instructor’s expertise. Field trips will be scheduled as time permits.

Students are required to use a computer or device connected to the Internet and use the Microsoft Office Suite, including current versions of Word, Excel and Microsoft.

Assignments will be posted on [Canvas Learning Management System course login website](http://sjsu.instructure.com) and be submitted by the due date and times listed.
Assignments will also be emailed by due date and time to instructor at preferred email: ptferraro5@gmail.com Students are responsible for regularly checking with the messaging system through MySJSU on Spartan App Portal http://one.sjsu.edu

Course Text:

With the multitude of topics and levels used to approach these subjects, one suitable textbook covering the entire course outline cannot be specified. Readings from pertinent Internet web sites will be assigned for each class topic. Students will be encouraged to search and review related links to supplement the information provided on the assigned sites and use the information to help generate discussions in the classroom.

The following printed materials are recommended and available for purchase through Amazon.com and for use in the MLK library in the reserve section:

- *The Big Thirst: The Secret Life and Turbulent Future of Water*,
  By Charles Fishman Price: $15.77
  http://astore.amazon.com/hydrologic-20/detail/1439102074
  Read reviews at http://hydro-logic.blogspot.com/2011/06/book-review-big-thirst-by-charles.html and

2.) *Deadbeat Dams: Why We Should Abolish the U.S. Bureau of Reclamation and Tear Down Glen Canyon Dam* Paperback – March 1, 2015
  by Daniel P. Beard (Author)
What you will learn:

* How water rights are determined in California and other states.

- The processes available for conflict resolution when engineering decisions are in opposition to environmental regulation
- The roles and responsibilities of key state and federal environmental, land use and natural resource management agencies in water resources protection and flood management
- Financing options, common subsidies, and methods used for externalizing costs for water projects and setting water rates.
- Public participation requirements and strategies for successful water project campaigns
- To participate in the ongoing process of water policy development.

Grading

- 25% Classroom participation: discussion of internet articles on topics of the week.
  - Please contact editor at rhellmann@brwncald.com to subscribe free of charge.
- 25% Quizzes - 6 quizzes will be given about two weeks apart. Each quiz will be 5%, but your lowest quiz score will be tossed.

- 25% Paper - Each student will write **up to** 5000-word paper **summarizing student’s participation in current local water issue.** Suggested topics will be offered, but students may select a topic of their own interest. **Topics are due on Sep. 4, 2019; Final Report Due Dec 2, 2019.** Report must follow requirements. (See rubric posted on Canvas for all due dates)
- 25% Final Exam. Take-home, essay style exam will be given two weeks prior to final class meeting and **due on day of final scheduled meeting, Dec. 16, 2019 12:00 PM.**
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<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
<th>Percentage</th>
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<tr>
<td>A plus</td>
<td>960 to 1000</td>
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<td>A</td>
<td>930 to 959</td>
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<td>D minus</td>
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**Writing for EnvS 129 and use of other sources**

SJSU policy prohibits representing the work of another as your own. You must give appropriate credit through quotation and citation whenever you use the work of another. For footnotes, they can be at the end of the page, or the end of the paper. Any significant source, even if not quoted, should be listed in the paper. It is not appropriate to turn in a paper that is a collection of quotes; instead the vast majority of the paper should be your own writing.

The Writing Center in Clark Hall 126 offers tutoring services to San Jose State students in all courses. Writing Specialists assist in all areas of the writing process, including grammar, organization, paragraph development, coherence, syntax, and documentation styles. For more information, visit the Writing Center website at [http://www.sjsu.edu/writingcenter](http://www.sjsu.edu/writingcenter) or 924-2308.

**Disabilities Policy**

It is the policy of San Jose State University to provide appropriate accommodations to students who have documented disabilities meeting the eligibility requirements of the Americans With Disabilities Act of 1990. This website provides information on how students need to document disabilities: [http://www.drc.sjsu.edu/student_services/document_disability.htm](http://www.drc.sjsu.edu/student_services/document_disability.htm)

The following University Policies also apply to this course:

1) Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.
2) Course calendar, which includes assignment due dates, quiz dates, date of final exam, is subject to change with fair notice.

3) Policy S12-7 (Consent for Recording of Class and Public Sharing of Instructor Material)

“Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”

- Permission can be obtained in writing or orally, for the whole semester or on a class by class basis.
- In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.

4) S12-7 “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”
<table>
<thead>
<tr>
<th>Class Schedule</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1. Aug 21</td>
<td>Introduction/ Overview of Course</td>
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<td>2. Aug 26</td>
<td>Participation in the Development of Water Policy</td>
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<tr>
<td>3. Aug 28</td>
<td>Water Rights, Ecosystem Rights, Public Trust &amp; Endangered Species Act</td>
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<tr>
<td>4. Sep 4</td>
<td>Watershed Protection</td>
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<td><strong>Policy Participation Topic Due</strong></td>
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<tr>
<td>5. Sep 9</td>
<td>Groundwater Management</td>
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<td>6. Sep 11</td>
<td>Surface Water Impoundments</td>
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<td>7. Sep 16</td>
<td>Water Quality &amp; Treatment - How Clean is Clean?</td>
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<td>8. Sep 18</td>
<td>Urban Water Distribution, Public vs. Private Systems</td>
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<td>Sep 23</td>
<td>Coastal &amp; Marine Protection</td>
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<td>Sep 25</td>
<td>Urban Stormwater Management</td>
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<td>Sep 30</td>
<td>Water for Agriculture, Ag Runoff</td>
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<td>Oct 2</td>
<td>Water Pricing, Externalizing Costs</td>
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<td>Oct 7</td>
<td>Water Use Efficiency, Paying More For Less Water</td>
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<td>Oct 9</td>
<td>Sewage Treatment &amp; Water Factories</td>
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<td>Oct 14</td>
<td>Water Recycling and Reuse</td>
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<td>Oct 16</td>
<td>Desalination and Privatization</td>
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<tr>
<td>Oct 21</td>
<td>Water Project Financing, Public Outreach &amp; Participation</td>
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<td>18. Oct 23</td>
<td>The Sacramento-San Joaquin Delta</td>
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<td>19. Oct 28</td>
<td>Colorado and Columbia River Projects</td>
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<td>20. Oct 30</td>
<td>Quiz #4 Due</td>
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<td>Owens Valley Water Project</td>
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<td>21. Nov 4</td>
<td>Hetch Hetchy Water Project</td>
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<td>22. Nov 6</td>
<td>Central Valley Project and San Felipe Division</td>
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<tr>
<td>23. Nov 11</td>
<td>Central Valley Project Improvement Act</td>
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<tr>
<td></td>
<td>Draft Policy Participation Report Due</td>
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<tr>
<td>24. Nov 13</td>
<td>SoCal &amp; South Bay Water Recycling Projects</td>
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<tr>
<td>25. Nov 18</td>
<td>Quiz #5 Due</td>
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<td></td>
<td>Water &amp; Power</td>
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Send Take-Home Final Exam

28. Dec 2  Flood Protection, FEMA and Watershed Stewardship
Final Policy Participation Report Due (late submissions accepted until Dec 9)

29. Dec 4 & 9  Quiz #6 Due  Student Presentations

30. Dec 16  Final Exam Due by 12:00 PM

Quizzes will be posted on Canvas and emailed to students and returned, when completed, by email to ptferraro5@gmail.com and posted on Canvas.
Supplemental Reading Assignments
ES 129 Water Policy in the West
Patrick T. Ferraro, Instructor

Class Schedule
supplemental reading assignments

1. Aug 21 Introduction/ Overview of Class

Thinking Globally: Water Distribution
http://ga.water.usgs.gov/edu/waterdistribution.html
http://ga.water.usgs.gov/edu/watercyclesummary.html

How Much Water Is There On Earth? Magellan Would Be Shocked

GOOD: Water: Water by the Numbers | GOOD

Partial Text of The Great Thirst: Chapters on Aboriginal California & Spanish Settlement

http://books.google.com/books?id=7CDVZL_AOBUC&dq=1.)+The+Great+Thirst:+Californians+and+Water,+1770-1990+Hundley&printsec=frontcover&source=bl&ots=Qm0taQovnz&sig=d1VoMAq84Yc5ShGL2BHE-IpdsYs&hl=en&ei=e0iMSua5GIfSsgOJo6y7CQ&sa=X&oi=book_result&ct=

Good Water History Research Site

http://wrca.library.ucr.edu/

UC Water Colloquium Video Library:

http://library.ucr.edu/wrca/about/ccow.html

List of CA Water Agencies:

http://library.ucr.edu/wrca/grants/districts.html

2. Aug 26 Participation in Developing Water Policy

Download


Making Presentations Before the State Water Resources Control Board

http://www.swrcb.ca.gov/board_info/meetings/board_presentations.shtml

Successes and Failures in California Water Regulation

Gary Wolff, Vice Chair, California State Water Resources Control Board

California Colloquium on Water - Gary Wolff

Environmental Justice Coalition for Water’s Work Groups

Water Rights-

Public Trust: philosophical and legal implications for California’s future; given by Joseph L. Sax, Professor, Boalt School of Law, UC Berkeley. [California Colloquium](http://www.braypapers.com/PTD.html)


- Text of TITLE 34 - CENTRAL VALLEY PROJECT IMPROVEMENT ACT

Text of Endangered Species Act
[http://wildlifelaw.unm.edu/fedbook/esa.html](http://wildlifelaw.unm.edu/fedbook/esa.html)
Endangered Species Act, United States, Encyclopedia of Earth
http://www.eoearth.org/article/Endangered_Species_Act,_United_States

Bad for Species, Bad for People:
What’s Wrong with the Endangered Species Act and How to Fix It
http://www.ncpa.org/pub/st303

Video: RonRobie @ UC Berkeley Water Colloquium: (1:09:52)

4. Sep 4 Watershed Protection

What is a Watershed?
http://www.kcet.org/socal/departures/ lariver/confluence/river-notes/what-is-a-watershed- anyway.html

Watersheds
http://water.epa.gov/type/watersheds/index.cfm

Watershed Protection and Flood Prevention Act of 1954

Federal Law Perspective:
Obstacles to Watershed Protection:
[http://findarticles.com/p/articles/mi_hb3153/is_n4_25/ai_n28666039/?tag=content;col1](http://findarticles.com/p/articles/mi_hb3153/is_n4_25/ai_n28666039/?tag=content;col1)

5. **Sep 9**  
**Groundwater Management**

What is Ground Water?

Selected Groundwater Issues
* Artificial Recharge
  * Freshwater-Saltwater Interactions along the Atlantic Coast
* Groundwater and Surface-water Interactions
  * Karst
* Land Subsidence
* Unsaturated Zone
* Groundwater Networks
* Regional Groundwater Studies

http://water.usgs.gov/ogw/issues.html


Groundwater Depletion Across Nation


*Water follies: the environmental consequences of groundwater pumping* given by Robert Glennon, Morris K. Udall Professor of Law and Public Policy, University of Arizona.

California Colloquium on Water: Glennon

*Managing groundwater resources* given by David Todd, President, Todd Engineers and Professor Emeritus, UC Berkeley

California Colloquium on Water: Todd
6. **Sep 11** Surface Water Impoundments

Water Supply Forecasts:

http://www.wcc.nrcs.usda.gov/wsf/

US Water Use by category:


*Rotten foundations - the Reclamation Act and urbanization of the west* - given by Gray Brechin, noted historian and author of *Imperial San Francisco: Urban Power, Earthly Ruin*. http://graybrechin.net/

California Colloquium on Water: Brechin

*When myth trumps history: the Reclamation Bureau and the family farm, 1902-1935* given by Donald Pisani, Merrick Professor of History, University of Oklahoma.

California Colloquium on Water: Pisani

*Big Dams of the New Deal Era:* http://books.google.com/books?id=XP5LkSQMM5QC&dq=Big+Dams+of+the+New+Deal+Era:+A+Confluence+of+Engineering+And+Politics&printsec=frontcover&source=bl&ots=DN05ukAk-p&sig=YukG6MBQ4pTC9w1hHyC0kVnZkZQ&hl=en&ei=w0h-SpnGDoWtswPT0LHvCg&sa=X&oi=book_resul
Texas' Thirst for Dams Bucks National Trend, Wendee Holtcamp, Aug. 4, 2011

http://www.miller-mccune.com/environment/texas-thirst-for-dams-bucks-national-trend-34541/

Student Video: Failure of Grand Teton Dam: (Grade A)

GTE Project - teton dam failure

Student Video: Failure of Grand Teton Dam: (Grade B)

Teton Dam failure

Video of Grand Teton Dam Failure: Teton Dam Collapse

7. Sep 16  Water Quality & Treatment
Chlorine by products:

http://www.southerndatastream.com/thm/index.html - Introduction

Restoration - Watershed Initiative Video

Urban Runoff P2: Southern CA marsh protection-20 minute thumb video:

http://www.algalita.org/watershed_mov.html

8. Sep 18 Urban Water Distribution: Public vs. Private Systems

Water Distribution Power Point http://galileo.phys.virginia.edu/classes/605.ral5q.spring04/lectures/water_distribution.pdf

Gold and Water in Them Thar Hills


9. Sep 23 Coastal Protection

California Colloquium on Water: Douglas

Saving the coast: A job that's never done; given by Peter Douglas, Executive Director, California Coastal Commission; Examines desalting plant impacts

California Colloquium on Water: Douglas

Coastal Communities and the Blue Planet

Meg Caldwell, Woods Institute for the Environment, Stanford University
10. Sep 25  Urban Stormwater Management

PRINCIPLES OF FLOOD MANAGEMENT AND FLOODPLAIN RESTORATION
http://www.friendsoftheriver.org/fotr/BeyondFloodControl/no1.html
http://www.friendsoftheriver.org/fotr/BeyondFloodControl/no2.html
http://www.friendsoftheriver.org/fotr/BeyondFloodControl/no3.html
http://www.friendsoftheriver.org/fotr/BeyondFloodControl/no4.html

CA Dept. of Water Resources Floodplain Management
http://www.water.ca.gov/floodmgmt/lrafmolfmb/

Low Impact Development – Sustainable Storm Water Management

Urban Runoff Pollution Prevention Program/North Santa Clara County:
http://www.scvurppp-w2k.com/default.htm

11. Sep 30  Water for Agriculture, Ag Runoff

Cotton Farming in Tulare Lake: King of California
http://books.google.com/books?id=QqIF0o8ZXx8C&dq=King+of+California%2BMark+Arax&printsec=frontcover&source=bl&ots=Qhd8iRRjbn&sig=zmdaLEWy6xRMfPrijndeTO
Ag water use Efficiency: SCVWD web page:
http://www.valleywater.org/programs/agriculture.aspx

Pollution from agriculture
http://www.naturegrid.org.uk/rivers/gt stour case study-pages/plln-frm.html

Tropical Storm May Have Kept Gulf ‘Dead Zone’ in Check,
By PAUL QUINLAN of Greenwire, August 1, 2011

Pollution from Forestry

Lawmakers aim to overrule court on water runoff,
By STEVE BROWN, Capital Press, August 01, 2011
http://www.capitalpress.com/oregon/SB-logging-runoff-080511-art

18. Oct 2 Water Pricing, Externalizing Costs

Napa City Council to address water rate hike
http://napavalleyregister.com/news/local/council-to-address-water-rate-hike/article_6a80f8f6-bcb8-11e0-80a3-001cc4c002e0.html

Recycled Water Pricing/San Jose/SBWR: http://www.sanjoseca.gov/sbwr/rates.htm

13. Oct 7 Water Use Efficiency:

Paying More For Less Water and More Growth

6 Simple Ways to Bring the Water Revolution Home

US EPA Water Sense http://www.epa.gov/watersens

14. Oct 9 Sewage Treatment & Water Factories

Wastewater Treatment: http://ga.water.usgs.gov/edu/wwvisit.html

Onsite systems/Austin: http://www.ci.austin.tx.us/wri/faq.htm

San Jose-Santa Clara WPCP: http://www.sanjoseca.gov/esd/wastewater/water-pollution-control-plant.asp

http://www.bls.gov/oco/ocos229.htm

GHG Emissions from Treatment Plants: Video: Dr. Perry McCarty @UCBerkeley Water Colloquium:
California Colloquium on Water - Perry L. McCarty

15. Oct 14 Water Recycling and Reuse


Recycled Water Frequently Asked Questions  http://www.pvwma.dst.ca.us/project_operations/recycled_water.shtml#q1

Grey Water:  http://www.oasisdesign.net/greywater/

**16. Oct 16  Desalination and Privatization**

Desalination, With a Grain of Salt: A California Perspective

Heather Cooley: Senior Researcher, Pacific Institute.  California Colloquium

on Water - Heather Cooley

Desalination issues in the United States; given by Kevin Price, Manager of the Water Treatment Engineering Research and Development Group, U.S. Bureau of Reclamation.  California Colloquium on Water: Price
Gold and Water in Them Thar Hills

Merger agreement: American Water Works will merge with a subsidiary of RWE AG
http://www.aquamedia.at/templates/index.cfm/id/1461

17. Oct 21  Water Project Financing, Public Outreach & Participation

MWD Video: *Thirst*: Thirst

18. Oct 23  The Sacramento-San Joaquin Delta & The Peripheral Canal/CA WaterFix/EcoRestore

California’s Delta Water Blues, January 3, 2011m Miller-McCune
http://www.miller-mccune.com/science-environment/californias-delta-water-blues-26552/#

Debating the Delta (56 min. PBS video)
http://vids.kvie.org/video/2017614881/

Hell and high water in the Delta: The fate of California's water supply hub

California Colloquium on Water: Mount
Confluence, Confusion, or Catastrophe: Prospects for Ending the Delta Stalemate

California Colloquium on Water: John Cain

Sacramento-San Joaquin Delta: An Ecosystem & Water Delivery System in Crisis
California Colloquium on Water - Richard M. Frank

California Colloquium on Water - Richard M. Frank

VIDEO: Worries about peripheral canal dominate
http://www.centralvalleybusinesstimes.com/stories/001/?ID=19004

Pat Ferraro Blog Posts:
http://neverthirstpatferraro.blogspot.com/2008/06/fixing-sacramentosan-joaquin-delta.html


Saving the West Coast's Largest Estuary/EDF Delta Web Page
http://www.edf.org/page.cfm?tagID=574

19. Oct 28  Colorado and Columbia River Projects
20. Oct 30 Owens Valley Water Project

The Owens Valley Land
Grab [http://www.usc.edu/libraries/archives/la/scandals/owens.html](http://www.usc.edu/libraries/archives/la/scandals/owens.html)

Parts of Cadillac Desert Video Series:

- Expansion of L. A. - destruction of Owens River & Valley

- Destruction of Owens River & Valley

Construction of the Owens Valley Project

[Construction of the Owens Valley](http://www.usc.edu/libraries/archives/la/scandals/owens.html)

Water & Power, Wm Kahrl, 1982, UC Press, Berkeley
21. Nov 4  Hetch Hetchy Water Project

Part 1: Rebuilding the Historic Hetch Hetchy Regional Water System

Paul Mazza and Daniel Jaimes — Dec 28, 2011  

Temples of Water

http://neverthirstpatferraro.blogspot.com/2008/08/temple-of-water.html

Hetch Hetchy Valley: Water and California's Future; given by Sarah Null, Doctoral Student, Geography, UC Davis; Spreck Rosekrans, Economic Analyst, Environmental Defense; and Jay Lund, Professor of Civil and Environmental Engineering, UC Davis.

California Colloquium on Water: Null, Rosenkrans and Lund

Restore Hetch Hetchy

http://www.hetchhetchy.org/resources.html#education

U.S. Supreme Court

UNITED STATES v. CITY AND COUNTY OF SAN FRANCISCO, 310 U.S. 16 (1940)

http://caselaw.lp.findlaw.com/scripts/getcase.pl?navby=case&court=us&vol=310&page=16 Supreme Court decision holding the City of San Francisco is violating the Raker Act by selling electrical power from the Hetch Hetchy dam.

Congressman Wants to Raise Hetch Hetchy Rent a Thousandfold

Proposal would increase San Francisco’s annual fee to $34 million from $30,000
By John Upton, January 5, 2012

http://www.baycitizen.org/water/story/raise-rent-hetch-hetchy-water/

22. Nov 6 Central Valley Project and San Felipe Division

Effluent for the Affluent/Inside Poop of San Felipe Aqueduct

http://neverthirstpatferraro.blogspot.com/2008/06/effluent-for-affluentinside-poop-on-san.html

23. Nov 11 Central Valley Project Improvement Act

Central Valley Project Improvement Act (CVPIA)

http://www.usbr.gov/mp/cvpio/

Text of TITLE 34 - CENTRAL VALLEY PROJECT IMPROVEMENT ACT

http://www.fws.gov/stockton/afrp/title34.cfm

2012 Draft CVPIA Annual Workplans

http://www.usbr.gov/mp/cvpio/docs_reports/awp/2012/index.html

Alien invaders, endangered natives, and declining fisheries: a history of fish in the upper San Francisco estuary; given by Peter Moyle, Professor of Fish Biology, UC Davis.
24. Nov 13  Water Reuse in SoCal (Irvine Ranch, Orange Co, West Basin) and Northern CA & South Bay Water Recycling Projects

Recycled Water: Conveying the Message to Non-Water Experts; given by Roy Herndon, Chief Hydrogeologist, Orange County Water District

California Colloquium on Water: Herndon

Planet LA – Water

Planet LA - Water

US Bureau of Reclamation Awards More Than $2 Million to Fund 13 Title XVI Feasibility Studies in the San Francisco Bay Area, August 01, 2011

http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=36943

South Bay Water Recycling: http://www.sanjoseca.gov/sbwr/


25. Nov 18  Water & Power

LADWP In Crisis Video; LA Department of Water and Power in Crisis

A Clear Blue Future
http://www.nrdc.org/water/lid/


The Right to Water

Thirsty South Asia's river rifts threaten "water wars"
http://www.reuters.com/article/2012/07/23/us-water-southasia-idUSBRE86M0C820120723

The Role of Water Policy in Mexico: Sustainability, Equity, and Economic Growth Considerations

28. Dec 2  Flood Protection, FEMA and Watershed Stewardship
Fear of FEMA Revisited


Federal Emergency Management Agency

From Wikipedia


Report: Criticism of FEMA’s Katrina response deserved

http://www.cnn.com/2006/POLITICS/04/14/fema.ig/index.html

Smart Growth 2 (Flooding)

FEMA - Smart Growth Part 2

Smart Growth 3 (Flooding)

FEMA - Smart Growth Part 3

Smart Growth 4 (Flooding)

FEMA - Smart Growth Part 4

29. Dec 4

Student Presentations
30. Dec 9

Student Presentations

31. Dec 16

Final Exam Due 12:00 PM

Final Exam should be submitted by email to ptferraro5@gmail.com and posted on Canvas as MS Word file with .doc or .docx suffix