

Water Resources Management
Spring 2017
Roger C. Bales

	Date	Topic	Reading	In class	Homework
1	1-20	Water Resources, water security, historical challenges			
2	1-27	Hydrologic context, California & western U.S.			HW1-2
3	2-3	Water law, Water rights			HW3
4	2-10	Water institutions – California, IRWM			HW4
5	2-17	Demand context, valuing water, agriculture, urban, environmental			HW5
6	2-24	Diversions, accounting, full natural flow, water information, modeling			HW6
7	3-3	Groundwater regulation, depletion, conjunctive use			HW7
8	3-10	Conservation, agriculture, urban, environmental, sustainability			HW8
9	3-17	Droughts, extent, climate context, adaptation			HW9
10	3-24	Floods & flood control, frequency, climate context			HW10
	3-31	Spring break			
11	4-7	Sacramento-San Joaquin Delta			HW11
12	4-14	Natural capital, forest & watershed management			TBD
13	4-21	Hydropower, facilities, pumped storage, latitude of operation			TBD
14	4-28	TBD	none	–	–
	5-5	Open week	–	–	–
		Finals week – dates TBD	project presentations	students	–

Week 1-2 reading

ICA 2012-08. *Global Water Security, Intelligence Community Assessment*.

UN 2013. *Water Security & the A UN-Water Analytical Brief Global Water Agenda*, Ch 1.

E. Hanak et al., ch 1 Floods, Droughts, and Lawsuits: A Brief History of California Water Policy. In *Managing California's Water, From Conflict to Reconciliation*. PPIC 2011.

CWP 2013 *Highlights. California Water Plan Update*.

CWP 2013 ch1.3. California water today, in *California Water Plan Update*, vol 1 The Strategic Plan.

Week 1-2 background

C. Sadoff & M. Muller, *Water Management, Water Security and Climate Change Adaptation: Early Impacts and Essential Responses*, Global Water Partnership Technical Committee, TEC paper no. 14.

C. Vorosmarty et al., Global threats to human water security and river biodiversity, *Nature*, 2010.

Mount, J. F. (1995). *California Rivers and Streams: The Conflict Between Fluvial Process and Land Use*. University of California Press. See ch 8 & part of ch 9.

Week 3 reading

Water Education Foundation. *Layperson's Guide to Water Rights Law*, 2013

Week 3 background

Sawyer, California Water Rights: An Introduction

Week 4 reading

CWP 2013 ch1.3. Strengthening Government Alignment, in *California Water Plan Update*, vol 1 The Strategic Plan.

Week 4 background

F.G. Mukhtarov, Intellectual history and current status of Integrated Water Resources Management: A global perspective. in *Adaptive and Integrated Water Management*; C. Pahl-Wostl, P. Kabat, J. Möltgen eds. Springer, 2008.

Week 5 reading

W. M. Hanemann, The economic conception of water, in *Water Crisis: myth or reality?* Eds. P.P. Rogers, M.R. Llamas, L. Martinez-Cortina, Taylor & Francis plc., London, 2006.

Week 5 background

D.S. Brookshire, L.S. Eubanks, C.F. Sorg. Existence Values and Normative Economics: Implications for Valuing Water Resources, *Water Resources Research*, 22:11, 1509–1518, 1986

Week 6 reading

Harou, Julien J., Manuel Pulido-Velazquez, David E. Rosenberg, Josué Medellín-Azuara, Jay R. Lund, and Richard E. Howitt. "Hydro-Economic Models: Concepts, Design, Applications, and Future Prospects." *Journal of Hydrology* 375, no. 3–4 (September 15, 2009): 627–43. doi:10.1016/j.jhydrol.2009.06.037.

Week 6 background

Loucks. Ch 2 in *Water Resource Systems Modelling: Its Role in Planning and Management* in Loucks, Daniel P., Eelco van Beek, Jerry R. Stedinger, Jozef P. M. Dijkman, and Monique T. Villars. 2005. *Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications*. Paris : UNESCO

Week 7 reading

Faunt et al., Groundwater Availability in California's Central Valley, Chapter B in *Groundwater Availability in California's Central Valley*, ed C.C. Faunt, USGS Professional Paper 1766, 2009.

Week 7 background

Conjunctive Management and Groundwater Storage, v 3, ch 9 in California Water Plan, Update 2013.

Week 8 reading

California Water Plan, Agricultural Water Use Efficiency, Chapter 3, in Vol 3, Resource Management Strategies, pp 18-30.

California Water Plan, Urban Water Use Efficiency, Chapter 3, in Vol 3, Resource Management Strategies, pp 5-30.

Week 8 background

H. Cooley, J. Christian-Smith, P.H. Gleick. More with Less: Agricultural Water Conservation and Efficiency in California, Special Focus on the Delta. Pacific Institute, 2008.

LADWP. Urban Water Management Plan, Executive Summary, 2010.

Week 9 reading

G.M. MacDonald, Severe and sustained drought in southern California and the West: Present conditions and insights from the past on causes and impacts, *Quaternary International*, 173–174 (2007) 87–100.

Week 9 background

CADWR, California's Drought of 2007–2009.

Week 10 reading

J. Lund, Flood Management in California, *Water* (2012) 4, 157-169.

Week 10 background

California Water Plan 2013, Vol 3, Ch 4. Flood Management.

P.C.D Milly (2002) Increasing Risk of Great Floods in a Changing Climate. *Nature* 415 (6871): 514–17.

Week 11 reading

Executive summary & Chapter 3 in J. Lund, Comparing Futures for the Sacramento-San Joaquin Delta, PPIC report, 2008.

Week 11 background

Executive summary & Chapter 7 in J. Lund, Envisioning Futures for the Sacramento-San Joaquin Delta, PPIC report 2007.

Week 12 reading

T. Gartner, "Natural Infrastructure: Investing in forest Landscapes for Water Protection in the United States", World Resources Institute.

Week 13 reading

Egré, D., and Milewski, J. C. (2002). "The diversity of hydropower projects." *Energy Policy, Hydropower, Society, and the Environment in the 21st Century*, 30(14), 1225–1230.

Oud, E. (2002). "The evolving context for hydropower development." *Energy Policy, Hydropower, Society, and the Environment in the 21st Century*, 30(14), 1215–1223.

Frey, G.W., and Linke, D. M. (2002). "Hydropower as a renewable and sustainable energy resource meeting global energy challenges in a reasonable way." *Energy Policy, Hydropower, Society, and the Environment in the 21st Century*, 30(14), 1261–1265.

Week 13 background

Chen, Q., Zhang, X., Chen, Y., Li, Q., Qiu, L., and Liu, M. (2015). "Downstream effects of a hydropeaking dam on ecohydrological conditions at subdaily to monthly time scales." *Ecological Engineering*, 77, 40–50.