Final Report: Water
Cross Disciplinary Learning and Teaching Initiative
Spring 2014
Jan Crouter, Coordinator

Summary:

The purpose of the CDLTI-Water workshop was to provide its participants some background in the various disciplinary aspects of water and to facilitate a discussion of how these might be brought together in useful way so that an Environmental Studies course might be developed and taught (hopefully) in spring 2016. This course will serve as an option for Environmental Studies students seeking to fulfill the interdisciplinary requirement for the major.

The eight workshop participants represented a wide range of disciplines across the three divisions of the College, and this broad scope of perspectives enriched discussions in each of our eight sessions (seven two-hour seminar sessions and one afternoon/evening field trip). Five seminar sessions featured presentations of the assigned readings for a topic by two or more faculty and vigorous discussion of the material and ideas for its use in a course. Another seminar session was a viewing and follow up discussion of a streamed panel discussion on water from the University of Colorado's Silicon Flatiron Center's April 3, 2014 conference, "Property Rights in Spectrum, Water, and Minerals," and the last seminar session was devoted to a discussion of how we might organize a course. For the six workshop participants who were able to attend, the highlight of the workshop was probably the field trip to Mission, Oregon, organized by Ellen Bishop, where we met with Eric Quaempts, Director of Natural Resources of the Confederated Tribes of the Umatilla Indian Reservation, Mission, Oregon. The workshop syllabus (in a separate attachment) contains the specifics regarding the sessions and the assigned readings. The syllabus, readings and discussion notes for each session were all posted to the workshop's CLEo website.

Participants' Assessments:

Nick Bader (Geology)

The goal of this workshop was to develop the broad outlines and content for an interdisciplinary course on water, to be taught at first by Jan Crouter with support from other workshop participants. This goal was successfully achieved, and we have a draft syllabus incorporating the group's ideas.

This workshop was intended to create a plan for a new course, rather than to augment the participants' individual courses. Nevertheless, I intend to incorporate new material from the workshop, particularly from our session on water institutions, into my Hydrology course next semester. This workshop will have broader impact when the interdisciplinary water course is first offered to students.

I have no concerns about the design and organization of this workshop. In fact, I hope all of my future meetings meet the high standard of organization set by Jan Crouter in this workshop. The organization and background work provided by Jan was instrumental to the success of this project.

Ellen Bishop (Geology and Environmental Studies)

Bob Carson (Geology and Environmental Studies)

1. Success: most valuable for me was interacting with colleagues on a topic of mutual interest. I learned the most from Frank, an expert on the science, engineering, and environmental significance in terms of quantity and quality. I learned more about the economics of water problems from Jan. I got to know and hear the views of two new professors in sociology and history.

2. Incorporation into instruction:

A. I do not plan to develop any new courses. (I used to teach an interdisciplinary course on water; that has been replaced with Nick's course on hydrology.) However, I now have the opportunity to alter (yet again) ES 120, Introduction to Environmental Studies. I could change part of my lecture and discussion sessions (two) on water to having students investigate and report on (orally or in writing) specific water problems, near home or elsewhere on Earth. (This should be no problem for students from California.) I could add some of the material I learned from Frank.

B. Most exciting is the idea/plan for an interdisciplinary course on water. I would love to join faculty from other disciplines in such an adventure (even tho' I may be officially retired then). The interdisciplinary course on Canada was rewarding to both students and me. I got to hear professors in the liberal arts make presentations on the Quebec problem, First Peoples issues, history, and politics. I imagine learning more about water problems and potential solutions from a diverse array of faculty. If individual students or teams of students are asked to tackle water issues and the make oral or poster presentations, that would be an additional learning experience.

3. Concerns: None. (Scheduling is always a problem.)

Alissa Cordner (Sociology)

a) workshop's success at encouraging cross-disciplinary activity
This workshop was fantastically cross-disciplinary. The mix of the sciences, social sciences, and humanities was exceptionally strong and made for fantastic dialogue between/across/within disciplinary perspectives and bases of knowledge. Speaking to half a dozen people from outside of my discipline also forced me to think clearly about both the big picture in my discipline and the details I thought were especially important.

b) how the workshop will impact my pedagogy

Although I do not expect to be able to teach or co-teach the Water course in the near future, I hope to be a guest lecturer on sociological topics when it is offered. Beyond that, this workshop impacted my pedagogy in at least two ways. First, the cross-disciplinary model was extremely useful for me in thinking about how to structure and teach interdisciplinary capstone courses for Environmental Studies majors. Second, I learned a ton about water! I am much more familiar with the history and regulation of water in the US, and learned some really cool facts and theories about water properties and water scarcity. The sessions on water contamination were particularly relevant for my work on environmental health risks.

c) concerns

Some weeks there was too much reading (hundreds of pages). Since not all of us had read all of the readings each week, sessions were often more lecture-based than discussion-based. Placing some sort of cap on the amount of reading that can be assigned for any given session would allow for more reasonable reading expectations.

Jan Crouter (Economics)

a) The workshop's purpose was to lay the groundwork for creating an interdisciplinary course, and in my view, the workshop was very successful. Not only did I learn a lot about aspects of water and water problems from other disciplinary perspectives, I was also forced to think creatively about how a course might be structured to incorporate these aspects in a coherent way, and I am very enthusiastic about the group's recommendation of a problem-based case studies approach for a course. In addition, the field trip inspired a lot of excitement about the prospect of a case study based upon the Umatilla Basin, including the "First Foods"-based water management scheme of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Umatilla Basin Project. The concrete outcome of the workshop is a draft syllabus outline that emerged from our last session.

b) I plan to use only a little of what I've learned from the workshop in my Econ 477 course on Environmental & Natural Resource Economics next fall by selecting water as the theme for that semester's course project. More importantly, however, I anticipate that the workshop will eventually lead to an Environmental Studies course (perhaps in Spring 2016) that will provide majors a way of satisfying the interdisciplinary course requirement. Ideally, this would be team-taught in its first year, with two instructors in different divisions. If the course were to prove successful enough to be offered again, either experienced instructor could teach the course alone, or an experienced instructor could team-teach the course with a new instructor so as to develop a wider pool of faculty who might teach the course. Whether team-taught or individually taught, the course will rely on the occasional participation of other faculty, and we will seek funding for this (and for field trips) through the Innovations in Teaching and Learning (ITL) program to support this.

c) I have two recommendations. The first is based upon my concern that there were some sessions with too much reading. I, as the organizer, should have cracked the whip and insisted that every session's faculty leaders adhere to the limit of two chapters or two articles for their assigned readings, and that is my first recommendation to other organizers. Second, I think the funds expended for a dinner (on the field trip) and for refreshment (for our last session) were very well spent. We built a lot of camaraderie that will hopefully pay dividends later when people are asked to participate in the teaching of a course (either as a co-teacher or as a visitor), and the discussions of water problems and a water course over the dinner and refreshments were terrific. So my second recommendation is to continue funding of such things.

Frank Dunnivant (Chemistry)

I found the passion of the members of the workshop to be very instrumental in our success in outlining a multidisciplinary on Water. Our interests covered all imaginable natural science, social science, and humanity areas of water. I plan to use our reference literature sources in expanding my Chem100 and Chem388 classes to include more water-human history, social aspects, and writing from the humanities on water, including national and international topics. If scheduling conflicts can be avoided, I hope to be part of the multi-faculty effort to teach a new course in Water. This was a great opportunity for cross-campus interaction and bridge building.

Laura Ferguson (History)

a) I found the interdisciplinary nature of this workshop tremendously valuable. The participants not only represented many different disciplines but also spanned the three divisions of the college. Through sessions in which a presenter looked at water through the lens of their own discipline, we had a chance to think about our own disciplinary perspectives and how we might draw on knowledge from across the college to enrich the material we present to and discuss with our students. One of my favorite sessions was our final meeting, in which we talked specifically about how we might design an interdisciplinary course that encouraged students to draw on a range of knowledge to grapple with some of the most pressing problems surrounding water today. In this final session, we made many interdisciplinary connections and discussed ways that we might encourage students to consider water through multiple lenses.

b) I found our group discussions/presentations and trip to meet with Eric Quaempts very helpful. I will definitely draw on the knowledge I gained in this workshop for my currently-offered History of the American West course. If I do have the opportunity, I would like to participate in developing a new course as well. We had a productive meeting, in which we discussed various approaches to a Water course. In addition to discussing the specifics of a water course, I found our broader pedagogical conversations very helpful. We discussed a problem-based course as a way to engage students and encourage them to draw on multiple types of knowledge. These pedagogical discussions offered insights that I know I will return to as I design courses in the future.

c) One of my central questions about the design of the workshop was the intent of our readings and presentations. I was uncertain as to whether our goal was to offer background information, which any of us as potential instructors of a water course should be familiar with, in which case our central goal was to help one another expand our depth of knowledge about water. Or, was our goal to present information and suggest readings that we thought might work well in the classroom? Most likely, our goal was to do a bit of both. I think it might have been helpful for us to discuss this a bit (if I had formulated this question sooner, I realize that I just needed to ask!). Talking about this as a group might have helped to guide the readings we selected and how we presented them. At times, the reading load was a bit heavy. Clarifying our goals with the readings might have enabled us to be specific about sources we wanted to flag for one another as helpful resources versus specific readings to consider for the classroom. We might have created readings lists of each for future reference and then been a bit more specific about what we wanted one another to read and discuss as a CDLTI group.

Don Snow (Environmental Humanities)

a. The workshop's success:

Of the three CDTLI workshops I have been part of over the years, this water workshop was the most successful in stimulating the planning of an actual course (which was the expressed goal of our adventure all along). As to "encouraging creative inquiry," I suppose the key lies in how one defines "creative." In my estimation, the water workshop did an excellent job in stimulating creative thought about how to narrow the massive topic of "water" in ways that could lead to a shapely, interesting, and valuable course for Whitman students. The key to "creativity" in this case lies in the assembly of talents and interests of the participants: with 4 people in the natural sciences, 3 in the social sciences, and 1 in the humanities, our group brought an immense store of knowledge to the task. Because of our combined expertise, we were able to discuss water in terms of chemistry, hydrology, geology, climate, policy, law, economics, and history. The specific assembly of creative thinking will occur when the course we were beginning to design is actually placed on paper in the form of a syllabus (we did end up with a first-draft course syllabus at the end of our deliberations); but the minds around the table, and the readings we assigned to one another, laid an excellent foundation for that final task of planning.

b. How I plan to incorporate the results of the workshop into my instruction:

The CDTLI water workshop came at a serendipitous time for me. In 2014-2015, I'll return to teaching ES 479, the Environmental Studies senior seminar. ES senior seminars in the recent past, led by Phil Brick (with some seminars team-taught) have focused on issues related to climate change. I have decided to continue next year with the climate change theme, but to narrow the focus mostly to questions of how climate change and population/economic growth impact water supply. It was the water workshop that provided me with this idea. I am currently in the process of preparing the syllabus for ES 479, which is offered both Fall and Spring semesters. I'll be taking an interdisciplinary

approach, perhaps using some of the readings we used in the workshop, and offering at least one field trip per semester.

c. Concerns:

Truthfully, none. Our workshop was extremely well-organized and well-orchestrated. Prof. Crouter's leadership was exemplary from start to finish. Faculty participated enthusiastically and well. Our finale – a field trip to the Umatilla Reservation – was perhaps the highlight of the workshop (though unfortunately not all were able to attend).

CDLTI Water Workshop, Spring 2014

Ending Syllabus and Schedule

The current plan of the workshop is to have seven sessions, most of which will be held from 3:00-5:00 on Friday afternoons. The tentative session topics and dates are listed, but will be finalized only after (and if) the workshop proposal is accepted. The organization of session topics is based upon the readings submitted by workshop participants (NB = Nick Bader, EB = Ellen Bishop, BC = Bob Carson, AC = Alissa Cordner, JC = Jan Crouter, FD = Frank Dunnivant, LF = Laura Ferguson, and DS = Don Snow). The discussion of each reading will be led by the submitter.

Session 1: Friday, January 31, 2014, 3:00-5:00, The Big Picture, and a Big Change in the Big Picture

(FD) Kandel, Robert S. 2003. *Water from Heaven: The Story of Water from the Big Bang to the Rise of Civilization and Beyond* (New York: Columbia University Press), selected chapters.

(EB) Intergovernmental Panel on Climate Change. 2008. *Climate Change and Water*. IPCC Technical Paper VI, found at: http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf.

Session 2: Friday, February 21, 2014, 3:00-5:00, Physical Dimensions of Water Quantity and Quality

(NB) Winter, T.C., et al. 1998. *Ground Water and Surface Water: A Single Resource*. U.S. Geological Survey Circular 1139 (Denver, Colorado), found at: http://pubs.usgs.gov/circ/circ1139/.

(NB) Focazio, Michael J. 2002. *Assessing Ground-Water Vulnerability to Contamination: Providing Scientifically Defensible Information for Decision Makers*. U.S. Geological Survey Circular 1224 (Reston, Virginia), found at: http://pubs.usgs.gov/circ/2002/circ1224/

(EB) Morace, J. 2012. *Reconnaissance of Contaminants in Selected Wastewater-Treatment-Plant Effluent and Stormwater Runoff Entering the Columbia River, Columbia River Basin, Washington and Oregon, 2008–10*. USGS Scientific Investigation report 2012-5068 found at: http://pubs.usgs.gov/sir/2012/5068/.

(EB) Green, T. R. et al. 2011. Beneath the surface of global change: Impacts of climate change on groundwater. *Journal of Hydrology* 405: 532–560. OR Taylor, et al. 2013. Ground water and climate change. *Nature Climate Change* 3: 322-329.

Session 3: Friday, February 28, 2014, 3:00-5:00, Water Institutions

(AC) Freeman, David. 2000, "Wicked water problems: Sociology and local water organizations in addressing water resource policy." *Journal of the American Water Resources Association* 36(3): 483-491.

(AC) Agnew, John. 2011. "Waterpower: Politics and the geography of water provision." *Annals of the Association of American Geographers*. 101(3):463-476.

(AC) Lopez-Gunn, Elena, and Manuel Ramon Llamas. 2008. "Re-thinking water scarcity: Can science and technology solve the global water crisis?" *Natural Resources Forum* 32: 228-238.

(JC) Convery, Frank J. 2013. Reflections--Shaping Water Policy: What Does Economics Have to Offer? *Review of Environmental Economics and Policy* 7(1)(Winter): 156-174.

(JC) Tir, Jaroslav and Douglas M. Stinnett. 2012. Weathering Climate Change: Can Institutions Mitigate International Water Conflict? *Journal of Peace Research* 49(1): 211-25.

Session 4: Friday, March 14, 2014, 3:00-5:00, Water Quality

(FD) Dunnivant, n.d. Our Clean Rivers and Safe, Inexpensive Drinking Water, Chap. 1 in *Environmental Success Stories*.

(FD) Dunnivant, n.d. Effective Treatment of our Waste Water, Chap. 2 in *Environmental Success Stories*.

(JC) Olmstead, Sheila M. 2010. The Economics of Water Quality. *Review of Environmental Economics and Policy* 4(1): 44-62.

Session 5: Thursday, April 3, 2014, Panel Session on Water, Silicon Flatiron Center's conference, "Property Rights in Spectrum, Water, and Minerals."

Session 6: Friday, April 25, 2014, 2:00 and on, Field Trip/Meeting with Eric Quaempts, Director of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, Mission, Oregon

(EW) Jones, Krista L., et al. 2008. *Umatilla River Vision*. October 1. http://ctuir.org/DNRUmatillaRiverVision.pdf

(EW) Confederated Tribes of the Umatilla Indian Reservation. No Date. "Our History and Culture: Part Three, Life Cycle and Foods." http://ctuir.org/hist3.html#lifecycle

Session 7: Friday, May 2, 2014, 3:00-5:00, Water in the U.S. West

(BC) Reisner, Marc and Sarah Bates. 1990. *Overtapped Oasis: Reform or Revolution for Western Water*, pp. 11-110.

(BC) Retallack, G. J. No date. Oregon 2100: Projected Climatic and Ecological Changes. Manuscript. See pp. 8-14.

(DS) Dunbar, Robert. 1983. A New Property Right in Western Waters (Chap. 7) and The Colorado System of Water-Right Enforcement 9 (Chap. 8). In *Forging New Rights in Western Waters.* University of Nebraska Press. Some related readings are posted on CLEo, but are not required for the session:

Bates, Sarah F., et al. 1993. Losing Sight of the Headwaters. Chap. 6 in *Searching Out the Headwaters*. Natural Resources Law Center, University of Colorado School of Law.

Getches, David H. 2001. The Metamorphosis of Western Water Policy: Have Federal laws and Local Decisions Eclipsed the States' Role? *Stanford Environmental Law Journal* 20(3): 3-72.

McCool, Daniel. 2002. *Native Waters*: Contemporary Indian Water Settlements and the Second Treaty Era. Tucson: University of Arizona Press. Pp. 7-24.

(DS)Yelm History Project. 2010. Part VI-The Boldt Decision (1974-1978). In *The Seventies - 1971-1980, Yelm: The Post War Years (1946-Present).* Posted on May 7, 2010.

(DS) Turner, Chrisi. 2014. Boldt Ruling to let natives manage fisheries is still vastly influential, 40 years later. *High Country News, Goat Blog*. 14 February.

(LF) Deverell, William. 2004. Remembering a River. Chap. 3 in *Whitewashed Adobe.* University of California Press.

Session 8: Friday, May 9, 2014, 3:00-5:00, "What Would the Interdisciplinary Course "EnvS 3XX, Water" Look Like? What Are the Next Steps?"