



CALIFORNIA WATER PLAN, UPDATE 2013

SEPTEMBER 12, 2012

ECONOMIC VALUE OF ECOSYSTEM SERVICES

1:45 PM – 3:45 PM

Session Goals and Purpose:

- Show how an *ecosystem services approach* can advance the California Water Plan Environmental Stewardship Strategy
- Share challenges and opportunities that agencies have encountered
- Increase engagement among organizations on this approach

MEETING SUMMARY

Welcome and Introduction to Panel Discussions:

Michael Perrone (DWR) welcomed the participants to the panel discussions and provided background on the Public Advisory Committee's recommendation on economic value of ecosystem services in the California Water Plan. Mr. Perrone previewed the four case studies and noted that they each show the 21st century initiative for protecting biodiversity and ecosystems in California. All four are voluntary processes, not driven by regulations or court orders. These projects were selected deliberately because they show where people are using the land for economic gain, not creating a nature preserve. Each of the projects has made efforts to include stakeholders, both upstream and downstream, and worked to be inclusive. All projects are ongoing.

Mr. Perrone stated that participants were looking for feedback and opinions. Much of the time in the agenda was dedicated to audience participation. The presentations are short, and high level, and followed by discussions. What we hear today will have an impact on Update 2013, and how the Department writes the chapter. In the long run we hope to build new avenues for increased collaboration. Descriptions of the four projects will appear in the Regional Reports of the Water Plan.

Panel #1: Integrated Management of Fire, Water, and Floods: Santa Ana and Mokelumne:

Jeff Beehler, Santa Ana Watershed Project Authority (SAWPA)

Mr. Beehler introduced the Santa Ana watershed – one of the largest and most populated coastal watersheds in the State. Mr. Beehler noted that groundwater is the primary source of water in the Santa Ana watershed, and that the urbanized areas of the watershed fall under SAWPA. SAWPA is made up of five water agencies. In 1969 there were massive lawsuits that named thousands of litigants that led to the creation of the current organization. The planning agency was formed as a JPA out of this court case to manage interagency coordination and planning. A couple of key facts:

- 33% of the watershed is managed by the U.S. Forest Service (USFS)
- 90% of the precipitation that falls in the watershed lands in USFS land.

Mr. Beehler continued: In 2003, the entire front face of our forested watershed burned. We discussed the enormous water quality and water supply problems that were going to result from the fires. SAWPA and the USFS signed an MOU detailing projects in four areas, including water quality, sediment and fuel reduction. The biggest problem was sharing data. It took six months to successfully exchange data. We worked to quantify hazardous fuels reduction. Two things were highlighted in these discussions:



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- Forest stands were too thick
- Sediment from fires comes down into our recharge and flood control basins.

SAWPA looked primarily at avoided costs. We used these planning numbers, and they are on our website:

- 40 to 100 dollars in benefit due to thinning the forest
- 50 an acre in avoided sediment removal.

SAWPA is now looking at submitting pilot projects for working with the USFS, and we are starting a task force to implement projects in the National Forest to benefit the water users below. That is a major step forward.

Kim Carr, Sierra Nevada Conservancy

The Sierra Nevada Conservancy is a non-regulatory state agency, charged with implementing sustainability throughout the entire Sierra Nevada range. Its focus includes forests, forest management, water, and climate change. The Mokelumne project covers all of these bases.

At its heart, the Mokelumne project is a cost-benefit analysis. The primary partners are the residents of the local watersheds, Sierra Pacific Industries, State and Federal Agencies, Environmental Defense Fund, PG&E and EBMUD. We are looking at money that EBMUD and PG&E can save by preventing catastrophic wildfire in the Sierra. We are getting at what costs can be avoided by improving the health of the headwaters.

We are calculating the economic value of assets in the upper watershed. This is difficult because all of the Sierra drains to the Delta, and assets such as water and power are then distributed. We chose the Mokelumne because of its degree of organization and the dependence of the East Bay on that watershed.

Forests are overgrown and susceptible to high-intensity fires. Fires have consequences to fisheries, water quality, stream stability, et cetera. The cost of fire is increasing and the risk of fire is getting greater with climate change. Those that are living within the watersheds are bearing some of the costs of these issues.

We want to see if the case is there for PG&E to invest in forest restoration to reduce the probability of severe fire. “We realize the water does not come from the streams, it comes from the forests” is a quote from Denver’s water utility. We understand this is a new paradigm.

The project focuses on the upper watershed, but ecosystem services are looked at throughout the watershed. The technical pieces are still being built to evaluate the risk factor of damages. We work hand in hand with EBMUD and PG&E to reduce costs to them down the road. The cost/benefit analysis will be finished in February 2013, and this will kick off a discussion period about implementation.

Ann Hayden, Environmental Defense Fund (EDF)

Ms. Hayden described EDF’s role as a partner in the Mokelumne project. The Mokelumne study faces the key issue of billions spent on mitigation and restoration after large wildfires, without reducing risks to



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water supplies and habitat. Because of the lack of understanding of cause and effect, we have not been able to track progress. This has resulted in a lack of political will or landowner interest to continue restoration projects.

“We are working on developing a quantitative framework that will lead to more strategic and efficient investments that increase environmental return. We are also looking to engage more investors beyond government, and get more creative at how we look at financing these projects. This program has an array of partners in the watershed, and is premised on finding conservation practices that result in measurable improvements. Hopefully this leads to high priority, high yield potential projects outside of traditional infrastructure solutions. The Mokelumne watershed provides a huge range of ecosystem services, but many are degraded or at risk.”

Our approach includes a needs and opportunities assessment for the entire watershed, and we are developing tools to measure the environmental uplift from restoration. We are also doing a lot of outreach throughout the watershed, and we are doing a demand analysis that looks at potential cost savings for private users. And finally, we are developing the accounting framework – monitoring and tracking the activities in the watershed over time.

Rick Leong – East Bay Municipal Utility District (EBMUD)

We serve 1.3 million customers in Alameda and Contra Costa Counties – and 90% of our water supply comes from the Mokelumne River. Despite that statistic, we actually have direct management of only a tiny portion of the watershed. Any impacts to operations and delivery are important, and that is why we are involved in this process. We have had sediment that has shut down Pardee reservoir in high turbidity events. Our interest is chiefly in improving water quality, avoiding future costs, and being involved in the watershed community. Participating in the collaborative process has inherent benefits in improving communication with other partners in the watershed. The bottom line is important too. This will guide the benefits of future investments.

Q: Could you address variability related to wildfire, like erosion of sediment, especially on the Santa Ana?

A: To get absolute (SAWPA) Board support, they want hard, consistent cost-benefit assessment – not variability. We looked at a variety of studies to develop a probability model called “at risk” to calculate a range of benefits to communicate. We will see less benefit in a drought year – that’s understood, but we have to make a case that shows effects closer to our infrastructure. Most water folks and engineers are not comfortable with the variability present in an ecosystem.

Q: Could you list the metrics in the accounting framework, and how do you evaluate the impacts to fish habitat.

A: One metric is functional riparian habitat, which works to capture a suite of salmonid benefits - like temperature and bank stability. We will measure in the lower watershed, and then move upstream. We see positive impacts to bird populations as well. We use a tool called the “Shade-a-lator” to measure shaded riverine habitat and its benefits to water temperature. Evaluations are cost-based.

Panel # 2: Mountain Meadow Improvements



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Jeff TenPas – U.S. Forest Service

A lot of our alpine meadows are in poor condition due to disturbance of the last 100 to 150 years. Where you used to have tiny, stable streams – now we have gullies that are 20 feet wide and 20 feet deep. It varies depending on what is controlling the base elevation of the meadow. This gullying has created a “dry meadow” environment, and limiting water storage capacity in the meadows. This has hurt sediment retention, groundwater recharge and habitat. At lower elevations we have seen negative impacts as well. These streams are not going to come back on their own, and have eroded thousands of years of sediment potentially out of those meadows.

We have had projects that have been successful at bringing them back. It depends quite a bit on investment, but studies have shown measurable improvements – including better ground water recharge in the springtime. We currently have a study with DWR, UC Merced, UC Davis, and EDF that is examining those benefits in a quantitative manner. In a lot of these cases, no single ecosystem service is going to pay for the restoration, but if you add in other benefits, we can bring together complete programs.

Ashley Rood, Environmental Defense Fund (EDF)

Meadows provide a lot of key value to the ranching community. They provide water in the summer months and provide valuable range at higher elevations. EDF worked on a collaborative project with American Rivers, Cosumnes American Bear and Yuba Integrated Regional Water Management Plan (CABY IRWMP) and Tuolumne County Public Works. The two benefits are building good science and building community. There is controversy about what actually defines a meadow. We looked to build a foundation of workable data and concepts that a community can build around. In our process we did a lot of stakeholder outreach and we heard a couple things:

- Listen to stakeholders first. They have the best on the ground intelligence. They are going to be most cognizant of benefits and impacts.
- We need to integrate grazing management plans into the solution. Ranchers and landowners have concerns that need to be addressed.
- Ranchers and landowners are interested in building watershed-wide solutions. They are already there, we are catching up.
- Stakeholders want to see collaborative efforts, both within and between partners.

Q: Can you describe the ranchers concerns about meadow restoration?

A: I think that they are some of the issue that I discussed - there is no plan if something goes wrong. We however found that they are mostly interested and want the projects to move along faster. During the time that permitting takes, they see these thin streams turn into massive gullies.

Q: Our experience on the Feather River is that if you don't take care of the fuels upstream, you can get blown up in a fire event. I think you have to work top to bottom. I didn't hear anything about relationships with Tribal entities as stakeholders, and I feel that is really important.

A: There is more room for more outreach, and we do go through the full NEPA processes.

Q: Has anyone done an analysis on the forest wide impacts on what could be restored?



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A: Yes, the USFS has done a gross estimation of 50,000 acres available for restoration.

Q: With private landowners, how do you overcome their fears?

A: Sitting down with them at the table before we came knocking saying that we are going to be doing a project was the most important piece. Sitting down and really talking to them first was key. We mostly worked with the UC Davis Cooperative Extension to achieve this.

Q: When you think about carbon storage, what do you consider?

A: That is still an up and coming process, quantifying carbon sequestration, in the context of ecosystem services. The USFS does have studies going on to look at this.

Panel #3: Carbon Capture Wetlands in the Delta

Campell Ingram, Delta Conservancy

We were created by the Delta Reform Act in 2009 to support the goals of environmental conservation and economic development. In June 2012 we completed our first strategic plan, outlining how we can add value in the community. It includes specific strategies on carbon sequestration to promote economic well-being as well as environmental benefits.

We have had 20 – 25 feet of subsidence in the Delta since the gold rush, as peat soil has been tilled and carried off of the land. 1% of California's carbon emissions are due to the ongoing removal of peat soil in the Delta. DWR and the USGS did a study on Twitchell Island in growing tules to stop and reverse subsidence. They found quickly that they could stop the loss caused by agriculture and add one to two inches a year in of elevation in conjunction with growing tules. They also recognized the opportunity for carbon sequestration.

We wanted to take a look at the overall feasibility from a social, economic, and environmental standpoint in this effort in the Delta. The study compared the current commodities in the Delta with future conditions. It showed enough potential benefit to scale this up to farm scale. We wanted to show farmers that they could grow tules for economic benefits. We needed to build a framework for trading carbon credits, and now we are seeing more studies going forward on Twitchell Island. We have an opportunity that has major statewide importance, but have remained in something of a test phase for 15 years, as we have been denied USDA grants.

Randall Neudeck, Metropolitan Water District of Southern California

Why is this important to us? Because we receive water from the state water project, and are a member of the water community. We want to look at whether there is direct benefit to water supply and quality in the Delta?

Peat soils have benefits to lowering seismic risk, and to fighting seepage. Any peat soil less than four feet, and we are going to see lands going out of service due to seepage. By working with State partners, and NGOs, we can do these carbon sequestration projects and see the benefits for the entire state. We are looking ahead to how we see the Delta in 2050.



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Q: Given that there is not much of a carbon market now, how do you assign value to the sequestration in the Delta? Also, is there potential to stack ecosystem services?

A: To the first one, the analysis looked at what current commodities are producing per acre, and made a lot of assumptions to what carbon credits would cost under cap and trade. We also looked at potential subsidies from other government programs. Some of the information coming out relating to methyl-mercury production is also showing that carbon sequestration in the Delta could help with that as well. There is a lot of opportunity for stacking.

Q: How can we approach this as a mitigation question, as well as adaptation to climate change?

A: We have thought about that - there are a lot of potential benefits. However, we could use some studies there.

Q: What is the mechanism to align incentives to change the farming structure, given the day to day costs? How do you include the generic benefits like overall ecosystem stability?

A: That is the big question. Those linkages are hard to make, but we do think about those things. As far as farmers go, the carbon markets are one step in that direction. From an agricultural standpoint, it is an issue of changing over to growing something different. That already happens normally in the agricultural cycle, but it has to be profitable.

Full Panel Discussion

Michael Perrone prompted a group discussion with the full panel.

Q: So we can measure inches gained and lost with the tules in the Delta. Have we looked at similar things at higher elevations away from food production?

A: Ducks Unlimited has proposed something similar called the walking wetlands concept. It is creative, and I think it should work, but we need to make it quantitative.

Q: A couple decades ago, we had the point of view that natural processes had value. This is more about manipulating disturbed ecosystems to get benefit out of them. These are not quite the same as restoration – even the tule example. How do we balance these things, with the intent of recreating naturally occurring services?

A(1): I think our starting point was that our forests were not functioning ecosystems, and that through years of mismanagement, we had found ourselves with reduced functionality and negative impacts. Really what we need to develop is a ledger system.

A(2): At EDF we do it in the light of maintaining working lands to meet the goals of our organization.

Q: How do you get back to the resource valuation question? Many costs get externalized and we forget about them. How do we get at those accurate resource valuations? The issue of cap and trade gets at market issues, but doesn't get at what a salmon is worth in the environment.

A(1): The quantification tools we are using on the Mokelumne study are getting at that. The functional riparian habitat metric will come up with a specific number of acres accrued from doing specific practices, and that is the goal of tools we are developing.



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A(2): I think it's two things. There is always a balance, sometimes with regulations like Endangered Species Act – you have to meet it. The agencies have the power. The solution is to fix the environmental problem; the Bay Delta Conservation Plan (BDCP) represents a look at how we do that. There are tradeoffs, but not when it comes to the law.

Q: There is a lot of uncertainty, and if we are talking about more or less uncertainty, then do we have the governance to deal with that?

A(1): Agreed, there is uncertainty.

A(2): The State water project is an example of operating with uncertainty. It works well, and they manage in the context of the uncertainties of nature. However, some of this is brand new, and the taste for uncertainty will vary.

Q: There may be a fundamental problem here, and that is that markets require a certain level of certainty to make investments. A separate model is the Public Health model, which does not require specific quantities for money. It shows that these investments have broad benefits.

A(1): These benefits may not be interchangeable, and we will have to rely on partners for choosing projects. If it's not cap and trade, it may be broad partnerships.

A(2): I think that's a good point – the Mokelumne “cost avoided” process is somewhere between the two scenarios you laid out. When it came down to “what's the number”, it wasn't important. The linkage and new partnerships to manage resources were more important than quantifying to finest degree.

A(3): Several agencies in this country have already made the decision that they didn't need to quantify ecosystem value before taking action. Rather, we have seen water agencies move to protect the long term reliability of supply for future generations.

A(4): If you look around California, we have seen major cuts to water supply because of regulations – so in a way its already happening from a water users' standpoint. That has to be taken into consideration. There are current laws out there, so how do we deal with the risk they pose. At MWD, we have 250,000 new customers in our service area each year, but have conserved supply so as not to increase imports from the SWP.

Q: To follow up on different states and agencies, what is the investment strategy over time to sustain over the long term the health and productivity of the watershed? Who pays to ensure these services?

A: Ratepayers

Q: What do the panelists recommend in regard to ecosystem services and regulatory improvements? How do you see your projects working into the regulatory process like CEQA and NEPA? Do you have any recommendations for the Water Plan?

A(1): One concept is providing more flexibility to meet regulations on their own – through the market or the progra. Allowing that to work would provide the types of incentives we are describing.

A(2): You mention mitigation. In my office we refer to credit stacking as “unicorn agreements” because everyone knows what it looks like, but no one has seen it. There is a fear about double dipping in mitigation,so our system, our ledger, needs to be clear enough that we can follow it over time in a transparent manner.



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Comment: I want to offer a couple thoughts on ecosystem services and the development of accounting and counting tools. My first thought is that the CWP should have a recommendation that the state should do accounting for larger scale areas. “*Counting*” is most accurate at the watershed scale, but “*accounting*” could scale up to be more effective. Once that evaluation information is available, everyone needs to start showing it as an asset to place a value on it. Accounting systems that governments use need to start making changes to change how we do this. In terms of IRWM, there is a role for ecosystem services, and it should be called out as a specific area for funding. There is only a handful of people working on this around the state, and it is still news to a lot of people in the water world – so there is a role to play in the education.

Meeting Close