

Case Study: Arroyo Seco Foundation

Watershed: Arroyo Seco Watershed

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Year	Grant Program	Project Title	Watershed	Award Amount
2004-2007	Department of Conservation Watershed Coordinator Grant	Arroyo Seco Watershed Coordinator	Arroyo Seco	\$214,360
2005	CALFED Watershed Program	Arroyo Seco Watershed Sustainability Campaign	Arroyo Seco	\$391,380
2008-2011	Department of Conservation Watershed Coordinator Grant	Arroyo Seco Watershed Coordinator	Arroyo Seco	\$343,629
2012-2014	Department of Conservation Watershed Coordinator Grant	Arroyo Seco Watershed Coordinator	Arroyo Seco	\$274,029

Overview

The Arroyo Seco watershed figures prominently in the developmental history of the Los Angeles basin of southern California. For over a century, the natural features and waters of this tributary of the Los Angeles River have been the subject of struggles between development and preservation forces in this rapidly growing region. Early projects in the watershed focused on the creation of a transportation corridor between Los Angeles and Pasadena, as well as channelization and dam construction for flood control.

As in many densely-populated urban environments today, the natural features of the Arroyo Seco (and the Los Angeles River) are highly valued by local communities. The watershed provides recreational opportunities, aesthetic qualities, habitat for various species, and ground water storage for a drought-prone landscape. Over the last few decades, numerous small-scale “ecosystem restoration” projects by diverse stakeholder groups have been conducted, but in a watershed where concrete stream beds are the norm, the task is huge.

In contrast with more rural watersheds of California, the impacts of CAL-FED watershed project grants and Department of Conservation (DOC) watershed coordinator grants cannot be evaluated in isolation from concurrent planning efforts and projects in the heavily-urbanized Arroyo Seco. Grant funds were used to leverage existing strategic plans and projects, and increase the momentum of stakeholder engagement.

At present, there are conflicting visions about the future of the Los Angeles River and the Arroyo Seco. This regional “conversation” is about how to restore natural functions to the most degraded portions of the Los Angeles River watershed (including the Arroyo Seco), while simultaneously enhancing human communities adjacent to channel (“Will the Los Angeles River Become a Playground for the Rich?,” n.d.). This controversial vision for regional development involves numerous local, state, and federal

stakeholder groups, and in this study provides a context and rationale for goals and activities undertaken by the grant recipient organization.

Arroyo Seco Watershed

The Arroyo Seco is a 46.7 square miles (121.0 km²) watershed in Los Angeles County, California, a subwatershed of the Los Angeles River system. The upper reaches of the watershed are in the San Gabriel Mountains, part of the Angeles National Forest. The Devils Gate dam, constructed in 1920 for flood control, demarcates the upper reaches from the lower elevation portion of the watershed, an area encompassing a number of densely-populated urban communities in the Los Angeles basin.

Most of these lower reaches have been channelized to manage storm water and municipal runoff. As a result, a large part of the natural habitat has been lost, and subsequent declines in water quality have led to a “303(d) listing” by the Los Angeles River Regional Water Quality Control Board.¹ A significant concern for surface waters and groundwater are perchlorates and other volatile organics from the Superfund site linked to nearby Jet Propulsion Laboratory, Pasadena. Other common components of municipal runoff include nitrates, fecal coliform bacteria, trash, and diverse chemical contaminants.

In addition to the historical factors that have degraded Arroyo Seco habitat and water quality, a large scale, intense wildfire in 2009 set the stage for massive erosion, sedimentation, and debris deposits in the stream channel and reservoir above Devil’s Gate dam. A proposal by the Los Angeles County Flood Control District to remove this material by fleets of trucks—thereby reducing flood risk—has been met with resistance and a major lawsuit. On another front, the City of Pasadena’s plan to restore habitat and enhance groundwater recharge above the dam and reservoir is also facing legal challenge. The city holds water rights and diverts runoff from Arroyo Seco, but amounts are limited by the number of “credits” earned from current groundwater recharge rates (Pasadena, n.d.)

Organizations and Grants

The Arroyo Seco Foundation (ASF) was established in 1989, and as a 501(c)(3) non-profit organization in 1991, but had its origins in the early 1900s. Its mission is to “preserve and enhance the Arroyo Seco River and its watershed through education, community involvement, improvement projects, and advocacy” (“About,” n.d.). Its founder continues to participate in the organization, and now serves as managing director. Though small in size, ASF has a high public profile and is a significant influence in local water issues of the Arroyo Seco. This is a reflection of successful funding strategies and long-standing relationships with government agencies, political leaders, and other stakeholders in the surrounding communities.

By the time the DOC Watershed Coordinator Grant Program opened to non-profits (2004), the ASF was already deeply involved in its mission. For example, ASF partnered with agencies and another non-profit, North East Trees (NET), to conduct the 2002 *Arroyo Seco Watershed Restoration Feasibility Study* (“Arroyo Seco Foundation,” n.d.). The purpose of the study was to “develop an environmentally-sensitive and sustainable plan to manage and restore the Arroyo Seco watershed.” As a technical advisory committee for this study, the ASF and its partner co-facilitated formation of the Council of Arroyo Seco Agencies (CASA), a loose affiliation of key agencies and municipalities with operational or regulatory responsibilities in the Arroyo Seco (“CASA,” n.d.).

¹ Under section 303(d) of the Clean Water Act, a list of impaired and threatened waters is submitted by states for EPA approval every two years. The list identifies pollutants when known, and assigns a priority for development of Total Maximum Daily Loads. Source: <https://www.epa.gov/tmdl/program-overview-303d-listing-impaired-waters>

Two years later, a second organization, the Council of Arroyo Seco Organizations (CASO), was formed by ASF to “promote communication and cooperation between community-based organizations working to improve and enhance the Arroyo Seco region...” (“CASO,” n.d.). The “dream,” according to one participant, was to build a coalition to advocate for ASF goals. But as a volunteer organization with no clear agenda and no “annealing force,” the CASO was “hard to get off the ground.”² As such, the organization with its differing agendas was seen as having a limited impact, yet was valued as a forum for information sharing.³ In addition, because the CASA and the CASO have been vehicles for building stakeholder involvement, they were an obvious vehicle for watershed coordinators working at the ASF.

The ASF received a total of three watershed coordinator grants (Department of Conservation) spanning the years 2004 to 2014, and one watershed project grant (CAL-FED) in 2005 entitled, *Arroyo Seco Watershed Sustainability Campaign*. The three watershed coordinator grants have supported the ASF’s Arroyo Seco Watershed Coordinator Program over the course of 10 years. Because the organization maintained a coherent vision for watershed coordinator activities on a single watershed, the three grants will be discussed as a single programmatic effort.

CALFED watershed program grant (2005)

The ASF received \$391,380 in support of its *Arroyo Seco Watershed Sustainability Campaign* (“Watershed Sustainability,” n.d.). The campaign was developed in partnership with the CASO and the CASA, with an overall goal to “improve the reliability and management of local water resources in the Arroyo Seco.” The campaign built on the recommendations, planning goals, and framework for restoration elucidated in the 2002 *Arroyo Seco Watershed Restoration Feasibility Study*.

Project grant process and outcomes

The grant supported the campaign’s five key tasks, *Source Water Awareness*, *CASO/CASA Greenway Agreement*, *Watershed Assessment*, *Local Supply Reliability*, and *Conservation Campaign*:

Task 1. Source water awareness (\$62,000)⁴

The goals of the Source Water Awareness task was to inform and educate the public about the relationship with the Bay/Delta ecosystem and local water sources, emphasizing water quality and the importance of stewardship. Task deliverables consisted of (1) three public presentations focusing on CALFED Bay/Delta issues in various parts of the watershed; (2) training 20 volunteer Arroyo Seco Stream Team members to develop and deliver educational programming (one presentation each to a community group) related to water sources and quality, with an emphasis on imported sources, e.g., the State Water Project; (3) scheduling and delivering programming for watershed neighborhood associations, civic clubs, and the general public at a wide variety of venues, targeting at least 1,000 people; and (4) preparing, presenting, and documenting usage of a website with interactive maps informing the public about important characteristics of the watershed, particularly water quality, including CALFED Bay/Delta links.

² Respondent D, pers. comm.

³ Respondents C and F, pers. comm.

⁴ Budgeted amounts. These figures do not include \$50,180 budgeted for administrative and reporting tasks. Source: Grant Agreement No. 4600004705, Kevin Marr, California Department of Water Resources, Urban Streams Restoration Program.

As documented in its monthly and annual reports to the California Bay-Delta Authority, and corroborated by respondents, the ASF generally met or exceeded promised deliverables and products related to *Task 1, Source Water Awareness*. There was a diverse array of outreach activities, presentations, trainings, and website developments in the course of the grant. Emphasis was on creating awareness of the impact of local water use on local watershed as well as distant watersheds such as the Bay-Delta ecosystem.

Most of the work in this task was conducted with significant engagement by ASF watershed coordinators, as documented in subsequent sections of this case study. Typically, the source water awareness “message” was well-integrated with other communications about water quality and conservation. In this respect, the watershed coordinators were instrumental in fulfilling the objectives of both watershed coordinator grants and Task 1 of the CALFED funded *Arroyo Seco Watershed Sustainability Campaign*.

Task 2. CASO/CASA Greenway Agreement (\$64,200)

The goals of the Greenway Agreement task was to support, expand and empower CASO and CASA through program development, staffing support and implementation of a “Greenway Agreement” that incorporates watershed management goals. Task deliverables consisted of (1) coordination and administrative support to CASO and CASA as documented in meeting minutes; (2) drafting and negotiating final language of a *Greenway Agreement* with key agencies and stakeholders; and (3) presenting the Greenway Agreement to relevant agencies and organizations for approval, forming a governance structure, beginning implementation, and collecting resolutions from agencies and organizations documenting approval.

The ASF’s program director for this project was involved heavily in this phase, working with the ASF watershed coordinator to bring multiple stakeholders in the lower Arroyo Seco into the process.⁵ Both individuals made numerous presentations to CASA and CASO, outlining a vision for “specific areas of cooperation (trail continuity, recreational improvements, parklands expansion, water quality improvement programs, water conservation objectives and watershed restoration projects)” (“Arroyo Seco Greenway,” n.d.).

The Greenway Agreement was seen as an essential element of a “demo project” for greening the entire lower Arroyo Seco channel, from Pasadena to its confluence with the Los Angeles River. Much progress in terms of stakeholder involvement was made, but significant resistance from agencies was encountered. In one participant’s estimation, the agreement got “bogged down” as it was not a priority for participating agencies.⁶ Los Angeles County. This was at the time of California’s bond funding freeze, and also the occasion of “decreased momentum.”⁷

In the end, the various municipalities, agencies, and county government never signed a formal Greenway Agreement.⁸ However, one participant claims there remains an informal agreement among CASA participants to continue work towards the greenway concept.⁹ The beginning of such work may rest in the

⁵ Respondent G, pers. comm.

⁶ Respondent C, pers. comm. after review of draft document.

⁷ Respondent G, pers. comm.

⁸ Potential signatories included County of Los Angeles, the cities of Los Angeles, South Pasadena, La Canada Flintridge, the Santa Monica Mountains Conservancy, California Department of Transportation, U.S. Department of Agriculture, U.S. Army Corps of Engineers, and various non-governmental agencies. See Appendix A, Arroyo Seco Watershed Assessment.

⁹ Respondent G, pers. comm.

fact that the Arroyo Seco Watershed Assessment identifies five major projects as key links in an Arroyo Seco Greenway. This is described in the following section.

Task 3. Watershed Assessment (\$95,000)

The goal of the Watershed Assessment task was to work with Los Angeles County and the U.S. Army Corps of Engineers to develop a prioritized list of ecosystem restoration projects based on a complete review of existing assessments, studies, and plans, and a technical assessment of the watershed. Task deliverables consisted of (1) creating a prioritized list of stream restoration and water quality projects; (2) documentation of competitive selection process for, and contracting with a technical consultant; (3) creating a review summary of completed relevant work; (4) developing criteria for a multivariate Project Ranking Criteria Matrix; (5) conducting an assessment of watershed hydrology, hydraulic and project cost factors, transportation, economic benefits.

Of the five key tasks and objectives of the campaign, the largest proportion of the project budget was allocated for the *Arroyo Seco Watershed Assessment*, completed in 2011 (“Arroyo Seco Watershed Assessment,” 2011). The assessment had three main goals:

- Projects – Outline and prioritize future projects that address the needs of the Arroyo Seco watershed
- Collaboration – Create an *Arroyo Seco Greenway Agreement*, a cooperative program and inter-agency governance structure for decision-making for project development and implementation
- Framework – Provide a framework for adding new projects to the planning process

To prepare the watershed assessment, the ASF retained the services of an engineering and construction firm, CDM Smith. The company and its Southern California-based project manager had previously worked with the ASF and the City of Pasadena on the *Central Arroyo Stream Restoration Program*, completed in 2008 (“Central Arroyo Stream Restoration Program,” n.d.). The company is well regarded for this work, due in part to the ecological authority gained by a Native American engineer and employee who was able to bond on a deeper level with communities.¹⁰

The resulting 2011 assessment focused on flood and stream management and habitat restoration, and was developed cooperatively with the U.S. Army Corps of Engineers. This process coincided with Corp’s own work in the watershed as it conducted the *Arroyo Seco Watershed Ecosystem Restoration Study*, also published in 2011 (“Arroyo Seco Watershed Assessment,” 2011).

Although the watershed assessment process built on previous studies and plans, it nonetheless relied on an extensive stakeholder outreach process, including tours, scoping meetings, public workshops, web-based information, and the involvement of the CASA and the CASO. Additional momentum among stakeholders was gained in an effort to forge an *Arroyo Seco Greenway Agreement*, which, if signed, would have formalized collaborative planning and decision-making across many agencies and municipalities in the watershed.

The outcome and value of the Arroyo Seco Watershed Assessment can be assessed using various criteria. As shown in Figure 1, the assessment was the culmination of a body of plans, studies, and projects stretching back to 2001 and into the early parts of the 20th century. For example, in its “Hydrology, Hydraulics, and Sediment Management” section, the assessment reviewed the current state of knowledge, three studies by engineering firms and the US Army Corps of Engineers. Similar syntheses of existing

¹⁰ Respondent B, pers. comm.

knowledge were made for biological resources and water quality and supply issues, including methods of improvement, mitigation, and restoration.

While a synthesis and compilation of the best available scientific information can be invaluable to future planning efforts, the Arroyo Seco Watershed Assessment went a step further. According to the California Watershed Assessment Manual, “[o]ne of the most important uses of a watershed assessment is to support watershed-scale decisions that protect or restore watershed function” (Shilling, Sommarstrom, Kattelmann, et al. 2005). The assessment not only provided decision support in this manner, it also defined an approach to evaluating and ranking current and future restoration projects. Based on this approach and its criteria for selection, five “top tier” restoration projects for the Arroyo Seco were identified. The proposed projects span the entire length of the watershed, and packaged as they are—part of a vision of a greenway backed by an in-depth watershed assessment—they may be appealing candidates for future funding.

Figure 1. Antecedents to the Arroyo Seco Watershed Assessment. A partial list of plans, studies, and projects used as a knowledge base to develop the ASWA.

- 2002: Arroyo Seco Watershed Restoration Feasibility Study (ASF, North East Trees)
- 2006: Arroyo Seco Watershed Management & Restoration Plan (North East Trees)
- 2007: The Central Arroyo Stream Restoration Project (ASF, City of Pasadena)
- 2011: Arroyo Seco Watershed Assessment (ASF)

Task 4. Local Supply Reliability (\$60,000)

The goal of the Local Supply Reliability task is to improve the reliability of local water resources through public education and outreach regarding key groundwater management issues, including contamination, storage and management. Task deliverables included (1) promoting via an action plan the Raymond Basin Conjunctive Use Program (i.e., groundwater “bank”); (2) informing the public of local water quality challenges, including perchlorate, VOCs (volatile organic carbons), and TMDLs;¹¹ (3) training and directing 20 volunteer members of the Arroyo Seco Stream Team to perform water quality monitoring; and (4) developing public support for Pasadena’s water recycling program Source Water Awareness presentations (Task 1).

As in Task 1 (Source Water Awareness), many of the presentations and trainings related to Task 4 were conducted in conjunction with watershed coordinator grant activities. As such, they have been documented in a subsequent section of this case study. However, one sub-task, the *Action plan for groundwater management in Raymond Basin*, stood out as a significant work of advocacy by the ASF.

The culmination of this work was the report, *Action Plan for Groundwater Management in the Arroyo Seco–2010* (“Action Plan,” 2010). The primary challenge arising from this impaired local water source was stated thusly:

The Raymond Basin has been overdrawn or overdrafted for one hundred years. The addition of imported water beginning with Colorado River water in 1941 has slowed but not eliminated the draw down. Even with large amounts of imported water to supply local needs and a legal adjudication program that restricts pumpers, the Raymond Basin today is still suffering a significant annual overdraft.

The action plan included recommendations to (1) arrest aquifer depletion; (2) remove groundwater contaminants; (3) use the basin’s storage capacity as a buffer against drought.

¹¹ Under the Clean Water Act, a Total Mean Daily Load refers to the maximum amount of a pollutant allowed in a waterbody.

The ASF's work in this domain was primarily as catalyst in bringing attention to this systematic drawdown of Raymond Basin groundwater, which, according to one respondent, occurs at a rate of over 7000 acre-feet per year. This significance of this figure is highlighted by the fact that "local groundwater use now makes up forty percent of Pasadena's water supply" ("Action Plan," 2010).

The major thrust of the action plan is to support creation and implementation of the *Raymond Basin Conjunctive Use Program*, a long-term vision of the City of Pasadena and various Raymond Basin water agencies. In essence, conjunctive use entails storing water in groundwater basins during periods of abundance to provide security during drought cycles. However straightforward this sounds, it nonetheless would entail a complex set of agreements among agencies and municipalities, which so far has proven elusive and litigious.

Complicating the issue is the significant level of groundwater pollution—perchlorates and other volatile organics—deriving from past activities at Jet Propulsion Laboratory, Pasadena. Progress on this issue is exemplified by the Monk Hill Water Treatment Plant located in Pasadena, which began operation in 2011. The ASF was deeply involved in the groundwater contamination issue, attending hearings, monitoring activities, touring sites, and submitting public comments.¹²

Task 5. Conservation Campaign (\$50,180)

The goal of the Conservation Campaign task was to reduce per capita consumption of water through coordinated conservation programs involving water agencies and the public, featuring a California Friendly Landscaping Campaign. Task deliverables included (1) updating *A Water Budget for the Arroyo Seco Watershed* with GIS tools to make it spatially explicit with current use patterns and sources of water; (2) working with local water agencies and stakeholder groups to develop a water conservation campaign; (3) working with water agency partners to conduct public outreach and education on landscape irrigation and outdoor water use; (4) reestablishing a nursery site at Hahamongna Watershed Park to grow native trees and plants for restoration plantings and to provide a living laboratory and educational center about habitat and California Friendly landscaping.

Of these deliverable tasks, many participants pointed to the establishment of the Hahamongna Native Plant Nursery as a signature achievement.¹³ Although only \$10,000 was budgeted from this grant for the activity, the ASF leveraged extensively. As part of the \$3.27 million IRWM grant it helped secure (i.e., for Pasadena's Arroyo Seco Canyon Project), the ASF engaged in a three-year contract with the city, receiving in the process about \$300,000. With this and support from California Institute of Technology and Pasadena City College, the nursery now flourishes ("ASF Wins," n.d.; "Hahamongna Nursery," n.d.).¹⁴

Located in Pasadena's Hahamongna Watershed Park, the nursery is volunteer driven, and plans are in place to grow nearly 50 local native plant species, in large part for watershed restoration by the Arroyo Seco Canyon Project. The nursery's native plants and other materials were selected to help create a "California-Friendly" xeric landscaping, thereby also promoting source water awareness (Task 1). Two former watershed coordinators praised the nursery, emphasizing the educational aspect as well as the strategic direction of the ASF that was reflected.¹⁵

¹² Source: Compilation of monthly and annual reports from the 2005 CALFED Watershed Program grant to Arroyo Seco Foundation as provided by Kevin Marr, California Department of Water Resources, Urban Streams Restoration Program.

¹³ Respondent G, pers. comm.

¹⁴ Respondent A, pers. comm.

¹⁵ Respondents D and F, pers. comm.

The ASF has a grand vision for the nursery in terms of “increased capacity for future restoration projects and the proliferation of climate-appropriate landscaping in the watershed” (Arroyo Seco Foundation, 2015, p. 4). However, because funding for the Arroyo Seco Canyon Project has been held up by a lawsuit, the fate of the nursery and its tenure in the park remains unclear (“Hahamongna Cooperative Nursery Update,” n.d.; Uhrich, 2015). Moreover, as one participant opined about residents of La Cañada Flintridge and Beverly Hills, the “rich won’t listen.” This individual explained that in organized efforts to promote water conservation, “one size does not fit all,” and “tailor-made inducements” are needed. In this case, it was suggested that high profile movie stars would be instrumental in public outreach efforts to motivate conservation. Beyond that, this participant cited academic work conducted in Orange County suggesting that conservation education is not nearly as effective in changing consumption patterns as are monthly water budgets and tiered rate structures.¹⁶

Watershed coordinator grants (2004-2007; 2008-2011; 2011-2014)

According to the ASF, the most significant accomplishment of its watershed coordinator program has been “to empower the Arroyo Seco Foundation... and this region to dramatically expand...education, outreach and coordination functions and promote better watershed management.” Watershed coordinator positions were funded by the Department of Conservation’s Watershed Coordinator Grant Program between 2004 and 2014.

In total, the ASF obtained three grants that supported several individuals with varying degrees of tenure in the position. Turnover and vacancy in the position were increased by the California bond funding freeze from December 2008 into 2010, during which time the ASF Managing Director, Tim Brick, took over many of the watershed coordinator duties (Rau, 2009; Fin, 2010). In each of the grant cycles, the ASF maintained two individuals in the watershed coordinator position, Brick at 10 hours per week and an external hire at 30 hours per week. Because of this arrangement, the managing director was able to step into the watershed coordinator role during the state fiscal crisis. This shared role also afforded what one informant (not affiliated with ASF) called “good mentoring” for watershed coordinators, who due to the relatively rapid turnover in the position, would need close direction.¹⁷

Goal, objectives, activities, and outcomes

The overarching goal of each watershed coordinator grant proposal was drawn from Goal 2 of the ASF’s 2002 Watershed Restoration Feasibility Study: *To Better Manage, Optimize, and Conserve Water Resources and Improve Water Quality* (“Arroyo Seco Watershed,” 2001). In the first grant cycle, 2004 to 2007, three general objectives were delineated, *water conservation*, *water quality*, and *stakeholder involvement*. In subsequent grant cycles (2008-2011 and 2012-2014), a fourth objective was added, *community outreach*. This reflected the expanded use of social media and videos to augment previous outreach activities.

Objective 1. Water Conservation. In the most recent grant cycles, the water conservation objective was to “[p]romote sustainable water use through improved water management and conservation campaign directed towards reducing imported water supply from the Bay-Delta system.”¹⁸

¹⁶ Respondent G, pers. comm.

¹⁷ Respondent B, pers. comm.

¹⁸ In the previous grant cycle, the objective was worded as “[r]educe local reliance on imported water through conservation and improved water management.”

From the outset, the ASF's watershed coordinators were successful in leveraging a number of concurrent activities and projects that facilitated *education* and *conservation*. For example, they were instrumental in “spreading the word about the vital Importance of the Bay Delta ecosystem,” an activity in support of the *Source Water Awareness* task in the previously discussed 2005 CALFED Watershed Program Grant. In the first grant cycle, coordinators conducted five public forums focused on the dependence of California on water from the Bay-Delta, including how local water use impacts this water source. News updates relating to the statewide water “scene” were posted on the web-based *Arroyo Seco News*.

In 2009, during the second grant cycle, ASF sponsored “Family Water Festivals” in three cities in the watershed, with an emphasis on source water (Bay-Delta) awareness and water conservation. Over the years, the organization maintains that their educational and informative activities (e.g., newsletter, social media) have promoted a “high level of interest and involvement in Bay Delta issues and in programs to reduce our region's dependence on water supplies imported from the Bay Delta region” (Arroyo Seco Foundation, 2015, p. 2)

This growing awareness of the region's dependency on outside water sources—not to mention a drought of crisis proportions—likely enhanced local interest in the ASF's conservation message. The message took various forms, for example, as an appeal for effective groundwater management of the Raymond Basin, the aquifer that underlies part of the Arroyo Seco watershed. Two issues there have created social and legal conflicts: (1) past contamination from testing grounds of Jet Propulsion Laboratory (JPL; now a Superfund site), and (2) insufficient groundwater replenishment over many decades that allowed a significant overdraft of the basin leading in 1949 to its “adjudication,” i.e., a legally-mandated form of groundwater management.¹⁹

The watershed coordinators were able to play a “small but important role” in developing support for a “conjunctive use agreement” between Pasadena and the Metropolitan Water District (Arroyo Seco Foundation, 2008, p. 5). The current fate of the program is unknown, but at the time it was purported to expand storage in the Raymond Basin by 60,000 acre-feet, a “back-up” supply for drought years. Coordinators also played a role in the receipt by ASF and the City of Pasadena of a \$3.27 million Integrated Regional Water Management (IRWM) grant, which, in part, would expand existing “spreading basins” to enhance groundwater recharge and allow the city to increase its diversion of surface waters (City of Pasadena Water and Power Department, 2011a).²⁰ The grant is now administered primarily by the City of Pasadena, packaged as the *Arroyo Seco Canyon Project* (“Arroyo Seco Project,” n.d.). One vocal opponent of the project has long challenged the effectiveness of the planned spreading basins, citing an earlier engineering study on infiltration capacity.²¹ In addition, the project's funding was held up by a lawsuit claiming that the city's CEQA process did not adequately consider the possibility of groundwater contamination from the JPL Superfund site. This lawsuit was ultimately successful, and the city is currently in the early stages of planning for a more thorough analysis via an Environmental Impact Report.

On other conservation fronts, ASF watershed coordinators identified high water-usage neighborhoods in the watershed, then targeted the “extravagant water use” of La Cañada Flintridge in partnership with Valley Water Company. The goal was to promote water efficiency in outdoor irrigation of landscaped areas typically populated with non-native plants. Coordinators also participated in developing a *Water*

¹⁹ Adjudication by the courts is one of the strongest forms of groundwater management in California. Adjudication of the Raymond Basin dates from 1949, and like other adjudicated aquifers in California, focuses on groundwater supply and restrictions on groundwater extraction by all parties. Source: California's Groundwater—Update 2003. (2003). Bulletin 118 Publications. State of California Department of Water Resources, Chapter 2. Retrieved October 30, 2017, from http://www.water.ca.gov/groundwater/bulletin118/docs/Bulletin_118_Update_2003.pdf

²⁰ Respondent E, pers. comm.

²¹ Respondent E, pers. comm.

Integrated Resource Plan for the City of Pasadena, emphasizing “water use efficiency, conservation, and enhancing local resources” (City of Pasadena Water and Power Department, 2011b).

Objective 2. Water Quality. In the most recent grant cycles, the water quality objective was to “[i]mprove water quality in the Arroyo Seco Watershed.”²² ASF watershed coordinators participated in several programmatic efforts to improve water quality in the Arroyo Seco. The Arroyo Seco Stream Team was developed as a group of volunteer “citizen scientists” engaged primarily in water quality monitoring and stream clean-ups. Hundreds of local residents participated in ten stream cleanups during the second grant cycle. A core group of the Stream Team trained in water quality sampling protocols drew from eleven sites in the watershed. The results—and data on the degraded condition of the stream—were featured in local newspapers as well as the ASF website (“Water Quality in the Arroyo,” n.d.).

A particular water quality issue involving watershed coordinators was the presence of perchlorate and volatile chemical compounds in groundwater stemming from the Superfund site at JPL, located above Devil’s Gate dam. Coordinators worked with representatives from JPL, NASA, and Pasadena Water & Power to promote to local residents a plan to return five contaminated wells to service.

The ASF, in partnership with the City of Pasadena, designed and developed the *Central Arroyo Stream Restoration Program*, retaining the services of CDM Smith to handle technical aspects of the \$2.5 million program (“Central Arroyo Stream Restoration Program,” n.d.). Watershed coordinators worked with the city to install trash screens on storm drain inlets in the watershed, a tactic that measurably enhanced stream conditions. This habitat improvement dovetailed with efforts to reintroduce the native Arroyo chub fish below Devil’s Gate dam (“Arroyo Chub Collection,” n.d.). This work, as well as habitat improvements to the stream, were documented in a video, *A River’s Journey to Rebirth* (“A River’s Journey to Rebirth,” n.d.). Other habitat improvements included trail enhancements and “water quality islands” in the Rose Bowl parking lot, “landscaped islands featuring native plants...[to] capture and cleanse rainwater flowing across the parking lot” (“CASRP Goals,” n.d.).

In the third grant cycle, and continuing today, watershed coordinators and the ASF committed to playing a key educational role in “sediment management” in the Arroyo Seco, focused primarily on the area behind Devil’s Gate dam. In their view, storm water and sediment are natural resources to be managed sustainably. This stance ultimately led to a legal conflict with the County of Los Angeles when the county announced a program—without environmental review—that would “remove 2.4 million cubic yards of sediment, dirt and plants using 425 trucks a day for five years,” ostensibly for flood control (“Devil’s Gate Dam sediment,” 2017). Starting with a petition that ultimately prompted a full environmental review, the ASF, along with Pasadena Audubon Society, prevailed (February 14, 2017) in its “No Big Dig” lawsuit that challenged the cumulative environmental impacts analysis in the Final Environmental Impact Report (FEIR). The project’s future is unclear as the county determines if it will amend the current EIR or begin anew.

Objective 3. Stakeholder Involvement. In the most recent grant cycles, the stakeholder involvement objective was to “[i]ncrease community and governmental support for watershed management efforts through stakeholder outreach and the continued development of the Council of Arroyo Seco Organizations and the Council of Arroyo Seco Agencies programs.”²³

In the view of the ASF, one of the most significant accomplishments of its watershed coordinator grants

²² In the first grant cycle, the objective was to “[i]mprove water quality in the Arroyo Seco watershed by monitoring and education (2004-2007).”

²³ In the first grant cycle, the objective was to “[i]ncrease financial, governmental and community support for watershed improvement efforts through stakeholder outreach and education and the development of the Council of Arroyo Seco Organizations.”

was to enhance stakeholder involvement. In large part, this was accomplished via establishment of the Council of Arroyo Seco Organizations (CASO), a “formal council of stakeholder organizations.” The watershed coordinators “nurtured that body through more than three years of development and 15 quarterly meetings.” Ultimately, assistance was provided to more than 35 CASO organizations in the “publication and promotion of watershed improvement activities, particularly those involving volunteers” (Arroyo Seco Foundation, 2008, p. 4).

ASF watershed coordinators also provided support for the Council of Arroyo Seco Agencies (CASA), formed previously with North East Trees as a technical advisory committee on the *Arroyo Seco Watershed Restoration Feasibility Study*. The coordinators provided program and staff support to more than fifteen agencies in the Arroyo in a collaborative focus on Arroyo Seco environmental issues (“CASA,” n.d.).

With its watershed coordinators in place, the ASF became even more effective in creating a “buzz” about the Arroyo Seco, providing numerous web-based news articles and announcements for educational and informative events. Public outreach included more than 50 presentations made to neighborhood associations and public forums. Nine well-attended workshops were hosted, with a focus on how to improve local rainfall retention and storm water “best management practices.”

A cohesive group of nearly 300 volunteers, the Arroyo Seco Stream Team, was formed to engage in watershed care and maintenance (“Arroyo Seco Stream Team,” n.d.). In the view of one watershed coordinator, the most notable contribution of this group was water quality monitoring, conducted in partnership with the City of Pasadena’s laboratory.²⁴ Another coordinator expressed a contrary opinion that the monitoring effort had resulted in “useless data.”²⁵ This individual expressed a desire to implement stricter data quality protocols, but a persuasive argument was made by ASF against “analysis paralysis” and for a “launch and learn” strategy that emphasized action and social engagement. Notably, the results of this water quality monitoring effort have been included in the U.S. Army Corp of Engineer’s *Arroyo Seco Watershed Ecosystem Restoration Study* of 2011.

Finally, ASF watershed coordinators were successful in obtaining new funding. Nearly \$3 million in funding for “watershed improvement programs” were obtained, including the 2005 CALFED Watershed Program Grant described above, and a \$2.5 million grant from Pasadena and the California Water Resources Control Board to support the Central Arroyo Stream Restoration Program, described previously (“Central Arroyo Stream Restoration Program,” n.d.).

Objective 4. Community outreach. The community outreach objective was to “[p]romote environmental awareness through diverse means of media outreach, inter-organizational communication and community coordination.” Although the community outreach objective was not articulated until the second grant cycle, the ASF has always reached out to scores of stakeholder groups and Arroyo Seco communities. From the outset of the program, watershed coordinators were enlisted in the task of “creating a buzz about the Arroyo Seco.” The ASF website hosted hundreds of news articles about educational and informative events. In the first grant cycle, scores of presentations to neighborhood associations and public forums were made with thousands in attendance. For students, there were tours and hands-on activities, and walks for the general public.

With the rise of social media as a tool of engagement in the early 2000s, the ASF was able to extend its presence via a Facebook page, conceived as the main outlet for watershed coordinators. The page, as well as the website, hosts numerous videos, for example, “Hahamongna Walkabout,” a visual appeal to the

²⁴ Respondent F, pers. comm.

²⁵ Respondent E, pers. comm.

public to stop the county's plan for sediment removal (pccsoc, 2012). Meanwhile, the subscriptions to the email-based Arroyo Seco News (now renamed *Arroyo Currents*) continued to grow, in the second grant cycle from 280 to 360, and to 1,596 in the third.

Volunteer activities as exemplified by the Stream Team have always been an important component of ASF's outreach. In the third grant cycle's drought extension period, a significant shift in volunteer focus took place, from Stream Team activities to the native plant nursery in Hahamongna Watershed Park and in opposition to the Devil's Gate Reservoir Sediment Removal and Management Plan. Overall, growth in volunteer activity has significantly exceeded performance threshold stated in final reports (Arroyo Seco Foundation, 2015).

Key Findings

In nearly every respect, the Arroyo Seco Foundation (ASF) has been highly successful in meeting the objectives of its three watershed coordinator grants and single watershed project grant. The individuals who served in watershed coordinator roles over the years generally lauded the coordinator program, reporting positive experiences and outcomes. One informant described an "overall consciousness raising" concerning Southern California's reliance on Bay-Delta water, the result of the grant's "source water awareness" objective for watershed coordinators.²⁶

Without exception, informants in this study bemoaned the cancellation of the watershed coordinator grant program, lauding its many benefits, tangible and intangible. Though difficult to monitor in an adaptive management sense, based on findings from this case it can be argued that "education breeds conservation." If true, then the value of watershed coordinators as "go-betweens" among local communities and government is significant.²⁷ For instance, one former watershed coordinator sees himself as "organizer" for the CASO, a group focused primarily on information sharing with "speakers brought in," and no "specified outcome."²⁸ The absence of an agenda beyond information sharing may be key to successfully communicating among groups with diverse interests.

It can be safely argued that the primary activities of watershed coordinators and the ASF have been education and advocacy in the service of its four watershed coordinator grants objectives: water conservation, water quality, stakeholder involvement, and community outreach. One coordinator framed the program as an effort to build at the "grass roots" level.²⁹ It is apparent that the ASF's roots run deep in this watershed, and that years of educational accomplishments have strengthened its credibility as a change agent and advocate for a restored Arroyo Seco watershed. Nowhere is this more clearly manifested than in ASF's capacity to garner public interest and financing for a successful "No Big Dig" lawsuit against the county's plan for sediment removal above Devil's Gate dam (Pasadena Now, n.d.). It should be noted that participants in these interviews were not unanimous in viewing this controversial litigation as a success story, notwithstanding a ruling that was favorable to plaintiffs. One participant maintained that a win on procedural grounds under CEQA constitutes a "low level of proof" about the underlying issues.

The Arroyo Seco Watershed Assessment, a previously discussed component of the CALFED watershed project grant, saw significant involvement by ASF watershed coordinators.³⁰ Because of the technical

²⁶ Respondent C, pers. comm.

²⁷ Respondent D, pers. comm.

²⁸ Respondent D, pers. comm.

²⁹ Respondent A, pers. comm.

³⁰ Respondent G, pers. comm.

rigor afforded by CDM Smith's involvement, the greatest impact of this assessment may be felt in future planning efforts. One obvious place is the extensive restoration work planned by the U.S. Army Corp of Engineers for the Los Angeles River, including 10 miles of the Arroyo Seco just below the Devil's Gate Dam ("US Army Corps of Engineers," n.d.). A former program director with the ASF maintains that the assessment's focused priorities already have been incorporated into the Corp's planning process for the Arroyo Seco, most recently in its 2011 document, *Arroyo Seco Watershed Ecosystem Restoration Study* ("Arroyo Seco Watershed," n.d.). Notably, water quality monitoring data from the ASF Stream Team are featured in the study, and, according to one participant, the confluence of the Arroyo Seco and the Los Angeles River was included in the study area following advocacy on the part of ASF watershed coordinators.³¹ One knowledgeable informant suggests that funding for future U.S. Army Corps of Engineering projects in the Arroyo Seco watershed could reach \$800 million, and even more (\$1.2 billion) for the entire Los Angeles River watershed.³² This may augur well for the ASF as a voice for diverse stakeholders. However, the on-again off-again planning and evaluation process continues, with environmental impacts analyses under NEPA and CEQA still to come.

Lessons Learned

In the course of this study, we asked informants how, based on past experience, they would improve any aspect the process, beginning with program design and ending with on-the-ground deployment (and monitoring) of watershed projects and watershed coordinator positions. One participant claimed that the watershed coordinator grants became the ASF's "bread-and-butter" funding. This was critical, as there was a "small staff" with little capacity to meet demands outside of fund raising. The funds also fostered independence for the ASF, to not be " beholden to local interests."³³ Another participant, however, expressed a contrary view that one of the undesirable outcomes was that the ASF used watershed coordinator funds to "build power" and create a "one-way conduit of information," referring to the CASA. In this individual's view, the process was "not democratic," and was a "betrayal of collaboration spirit."³⁴

That perceptions of the ASF differ markedly among individuals in various stakeholder groups is hardly surprising, given the highly politicized landscape of the Arroyo Seco. It is highly likely that the watershed coordinator funds did function to enhance the power base of the already politically-savvy ASF, though it is also clear that this empowered the organization to increase social consensus around contentious issues of water and the watershed.

Programmatic administration

Other "lessons learned" themes were heard, some pointing towards the programmatic origins of the grants discussed here. One informant questioned if watersheds are an appropriate "geography" for a projects like this, noting that the ASF is "spread very thin" across a large, complex urban landscape where watershed boundaries are nearly invisible. The organization is "most rooted" in Pasadena, but most of the population lies southward, in South Pasadena and north Los Angeles.³⁵

³¹ Respondent F, pers. comm.

³² Respondent B, pers. comm.

³³ Respondent D, pers. comm.

³⁴ Respondent C, pers. comm.

³⁵ Respondent D, pers. comm.

Another critique of the funding programs was heard, in that there was a lack of collective statewide benchmarks and expectations. For example, one participant suggested there should have been a mandate that grant recipients create standardized protocols for water quality testing, which might have enhanced data quality and yielded robust inferences at a state-wide level.³⁶ This relates to the larger issue of watershed coordinator training and knowledge sharing, the lack of which was frequently observed. Several informants argued post hoc for more rigorous training and more frequent opportunities to exchange insights, e.g., via social media or state-wide meetings. Two individuals even suggested that in the future the state should “be more strict” regarding program objectives and accountability.^{37,38}

Based on the diverse technical and social skillset required of coordinators, the paucity of direction and cohesiveness suggests that a more laissez-faire approach to program administration was taken. This type of leadership is a two-edged sword, as one can either capitalize creatively on the wide latitude given, or flounder in uncertainty and ambiguity. To some extent, both outcomes were in evidence in the Arroyo Seco, as different individuals came to serve in a watershed coordinator role.

Education and outreach

In terms of education and outreach, one former watershed coordinator emphasized the importance of the “huge linkage between watersheds,” specifically referring to the region’s critical reliance on imported water from the San Francisco Bay Delta Watershed.³⁹ The power of this message may derive from its implicit call for water security by reducing dependence on imports. Awareness of this dependency on outside sources—and the risks it represents—may spur conservation efforts.

Still, such message may fall on deaf ears. One informant states simply that “the rich won’t listen,” referring to the high per capita water consumption levels in upscale communities like La Cañada Flintridge and Beverly Hills.⁴⁰ She suggests that “one size does not fit all,” and that tailor-made inducements may be required, such as messages from movie stars or even changes in rate structures.

Financing

One issue that engendered widespread agreement was the “hardship” of working with the state’s billing system, specifically ASF’s lack of cash reserves to sustain operations over the long intervals between reimbursements.^{41,42} One informant suggested that in the future, the state should consider a hybrid program that gives first year funding up front, with performance criteria for receiving subsequent funding.⁴³

For one informant, the fact that the ASF received three watershed coordinator grants became an issue, as he was critical of the ASF’s practice of “power building.” He suggested instead to “spread resources around,” as a means to dilute this practice.⁴⁴ This refrain about how the ASF capitalized politically on grants received is a small minority voice among those heard in the course of this study. Although insinuations of unethical conduct were voiced by one respondent, at no point was it claimed that the ASF

³⁶ Respondent G, pers. comm.

³⁷ Respondent E, pers. comm.

³⁸ Respondent E, pers. comm.

³⁹ Respondent E, pers. comm.

⁴⁰ Respondent G, pers. comm.

⁴¹ Respondent A, pers. comm.

⁴² Respondent F, pers. comm.

⁴³ Respondent G, pers. comm.

⁴⁴ Respondent C, pers. comm.

used its enhanced “power” in ways that were incongruent with its mission and the objectives of the watershed coordinator grant program.

Capacity and sustainability

As mentioned previously, by the time of the first coordinator grant cycle, the ASF was already deeply involved in its mission, with a record of managing projects and building “bridges” in Arroyo Seco communities, including agencies, municipalities, non-profits, and the general public. For example, the CALFED-funded 2011 watershed assessment was built on an extensive array of existing studies and analyses (Figure 1). This level of social and technological sophistication is typically not seen in watershed assessments.

The ASF’s internal capacity for capitalizing on the opportunities of these grant programs is embodied primarily in its founder and current managing director, an individual who for nearly 30 years was member, and sometimes chair of the Board of Directors for the Metropolitan Water District of Southern California. One informant likened the ASF leader to the Wizard of Oz, a “large presence” engineered by one man behind a curtain.⁴⁵

One of the key functions of watershed coordinators is to develop local capacity for improved watershed management, including on-the-ground projects (California Department of Conservation, n.d.). Ideally, one of the long-term outcomes generated by this “investment” in watershed coordinators would be a self-sustaining process that builds or maintains that capacity after the supporting program terminates. Indeed, the DOC’s initial 2004 call for proposals specified an interest in “funding proposals with the potential to result in long-term sustainable benefits” and “to sustain the watershed coordinator position beyond the life of the grant...”

To some extent this ideal of sustainability has been incorporated by the ASF, with the continued development of the CASA and the CASO, diverse educational activities, deep connections with stakeholder groups, and environmental advocacy. In their words:

The Arroyo Seco Watershed Coordination Program is no longer funded by the California Department of Conservation... We believe the program is an important one...so we are continuing to run the program using public support and contributions (Arroyo Seco Foundation, 2016).

[w]e have incorporated the...position into our long-term staffing plan. We will emphasize the selection of a watershed coordinator skilled in organizational development, including fund-raising, to ensure that [the program] can continue on a stand-alone basis without DOC funding...(Arroyo Seco Foundation, 2007).

Though the ASF has committed to sustaining the role of watershed coordinator, the question of sustaining the organization itself arises. The apparent “flatness” and small size of the ASF points to what is likely a lean, efficient, low-overhead structure for administering grant monies. Its effectiveness, or “power,” derives primarily from its well-connected founder and long-term leader. For this reason, the ASF has had remarkable successes in its time, but lacking a “deep bench,” how long will it be able to sustain its presence in the communities of the region?

One informant has suggested that the task of sustaining watershed coordinator positions should not fall to small non-profit organizations that face sustainability problems of their own. Instead, the role should be

⁴⁵ Respondent F, pers. comm.

institutionalized, for example, as part of an Enhanced Infrastructure Financing District now being considered to support revitalization and redevelopment along the Los Angeles River.^{46,47}

Finally, one informant suggests a simple solution to the difficulty faced by smaller organizations that lack the infrastructure and capacity to maintain a steady flow of grant dollars for watershed coordinators. In light of the combined social, technical, and grant-writing skills required of a watershed coordinator, she maintains that these individuals should be paid an appropriate, six-figure salary.⁴⁸ Although said somewhat in jest, it is clear that turnover in these positions has been fueled in part by financial issues.

Methods

Key individuals involved in Arroyo Seco watershed coordinator grants (DOC) and a watershed project grant (CALFED) were identified from grant-related documentation (Appendix A). These individuals were contacted via email and telephone to conduct three preliminary telephone interviews, to schedule future on-site interviews, and to solicit suggestions for additional interviewees. Subsequently, two researchers traveled to Los Angeles and Pasadena to conduct seven in-person, semi-structured interviews. Interview participants included a representative of the Arroyo Seco Foundation (ASF), three former ASF watershed coordinators, a natural resource planner a former project manager with CDM Smith, an engineer with Los Angeles County's Department of Public Works, and a citizen science advocate. Subsequently, an in-depth telephone interview with a former program director of the ASF was conducted.

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⁴⁶ Respondent D, pers. comm.

⁴⁷ EIFDs are a separate government entity created by a city or county within a defined area to finance infrastructure projects with community-wide benefits. As this includes projects with benefits to watersheds, the approach is an appealing way to institutionalize the role of watershed coordinators. See California Community Economic Development Association, 2016.

⁴⁸ Respondent G, pers. comm.

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