



DAVID POWDRELL

# FIRE AND FLOW FORUM

## Strategic Plan

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A STAKEHOLDER RESPONSE TO RISING CLIMATIC THREATS  
IN SOUTHERN CALIFORNIA WATERSHEDS

# FIRE AND FLOW FORUM STRATEGIC PLAN

This plan represents a compilation of prioritized recommendations focused on the long-term resiliency of Southern California watersheds—from headwaters to ocean. We would like to acknowledge and thank the wide variety of experts that contributed to the Fire and Flow Forum.

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We apologize for any errors or omissions in the above participant list. Every effort was made to ensure its accuracy.  
Photographs courtesy of David Powdrell, Mauricio Gomez, Jason White and Lea Boyd.

While the Forum solicited recommendations and input from a wide variety of regional experts to develop the highest level of priorities, this document does not necessarily reflect the official position of the agencies and project partners.

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# EXECUTIVE SUMMARY

During December 2017, the Thomas Fire ravaged Southern California. Driven by persistent Santa Ana winds and exacerbated by severe lack of rainfall, the fire burned 281,893 acres in Santa Barbara and Ventura counties. It resulted in an estimated \$2.2 billion in damages and was one the largest wildfires in California history. Immediately following the Thomas Fire containment, an intense rainstorm battered charred mountainsides, triggering deadly debris flows in Montecito. Since then, multiple fires in California have exceeded the destruction caused by the Thomas Fire and subsequent debris flows. In the weeks leading up to this document's completion, the Woolsey Fire burned an additional 97,000 acres in Los Angeles and Ventura counties, while the Northern California Camp Fire became the deadliest fire in Californian history.

Despite their destructive forces, natural disasters have a way of binding communities together with empathy and compassion. This creates a unique energy that allows for collaboration across traditional boundaries to provide avenues toward recovery, relief, and resiliency. In this light, the Fire and Flood Forum was created to bring together private, non-profit, academic, local, state, and federal stakeholders with the **MISSION to coordinate and develop environmentally minded priorities that address and prepare for rising climate hazards to take advantage of funding and restoration opportunities. The shared VISION is aimed at redefining the long-term environmental mindset and coordination effectiveness needed to maximize restoration and planning in Southern California.**

It is important to note that wildfire is a natural part of the Southern Californian landscape and plays an integral role in ecosystem functions. However, wildfires in Southern California are becoming more severe and frequent due to anthropogenic influences and subtle shifts in climate. Although the fires and debris flows of the winter of 2017 and 2018 were extreme natural disasters, they may represent the new normal. Six of California's 10 most destructive wildfires took place in the last four years. Scientists predict that California will suffer from more significant wildfires and extreme rainfall events as our greenhouse gas emissions increase. These current and predicted climatic variances underscore the importance for expanded collaboration and preparedness for future events.

The **PURPOSE** of the Fire and Flow Forum Strategic Plan is to guide watershed recovery and resiliency building. Its intended use is to motivate new projects, support ongoing projects and assist in securing funding by communicating regionally significant priority actions to funders and decision makers. Its broad scope was designed to allow for application by public and private groups with wide-ranging missions, while its specificity provides for practical application.

In this case, the Thomas Fire and the Montecito Debris Flows mobilized a diverse expert stakeholder group to develop a regionally cohesive and prioritized strategic plan. The strategic plan and the process used to create it can serve as a guide for stakeholder collaboration to meet the needs of diverse interests throughout Southern California that are facing similar threats. **The Fire and Flow Forum Strategic Plan developed five priority focus areas that cover 17 goals and 100 SMART (Specific, Measurable, Attainable, Relevant, and Timely) objectives needed to achieve their shared mission and vision. The Forum collaboratively prioritized 10 high priority watersheds and 25 high priority objectives.**

Although this strategic plan was catalyzed by the Thomas Fire and Montecito Debris Flows, its relevance extends beyond any specific disaster. With California now facing a yearlong fire season and the potential for more frequent, more destructive wildfires and storms, this strategic plan and the priorities articulated within will guide work in other geographic regions affected by similar climatic threats. Rising climatic threats addressed in the document focus on fires and floods, but resiliency planning needs to consider other largescale threats to our landscapes that are increasing with changing climate.

The Thomas Fire will soon be forgotten by those not directly impacted, but it is important to remember that the impacts to our watersheds will echo for years to come. This strategic plan provides foresight into creating resilient watersheds now and into the future.

RINCON BEACH, JANUARY 2018

## HOW TO USE THIS PLAN

**STEP 1:** Identify high priority objectives that meet **YOUR** organization's goals and objectives.

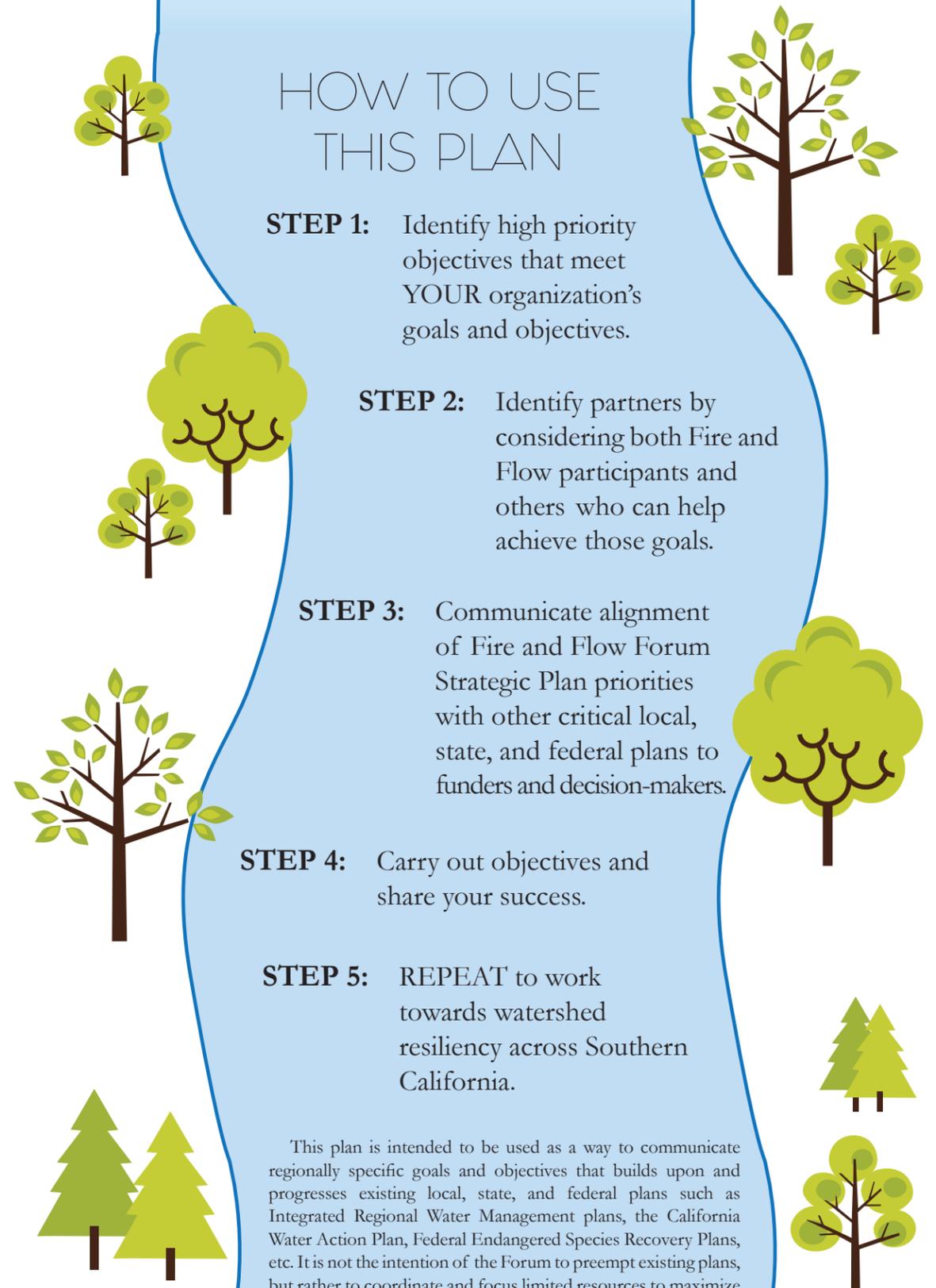
**STEP 2:** Identify partners by considering both Fire and Flow participants and others who can help achieve those goals.

**STEP 3:** Communicate alignment of Fire and Flow Forum Strategic Plan priorities with other critical local, state, and federal plans to funders and decision-makers.

**STEP 4:** Carry out objectives and share your success.

**STEP 5:** **REPEAT** to work towards watershed resiliency across Southern California.

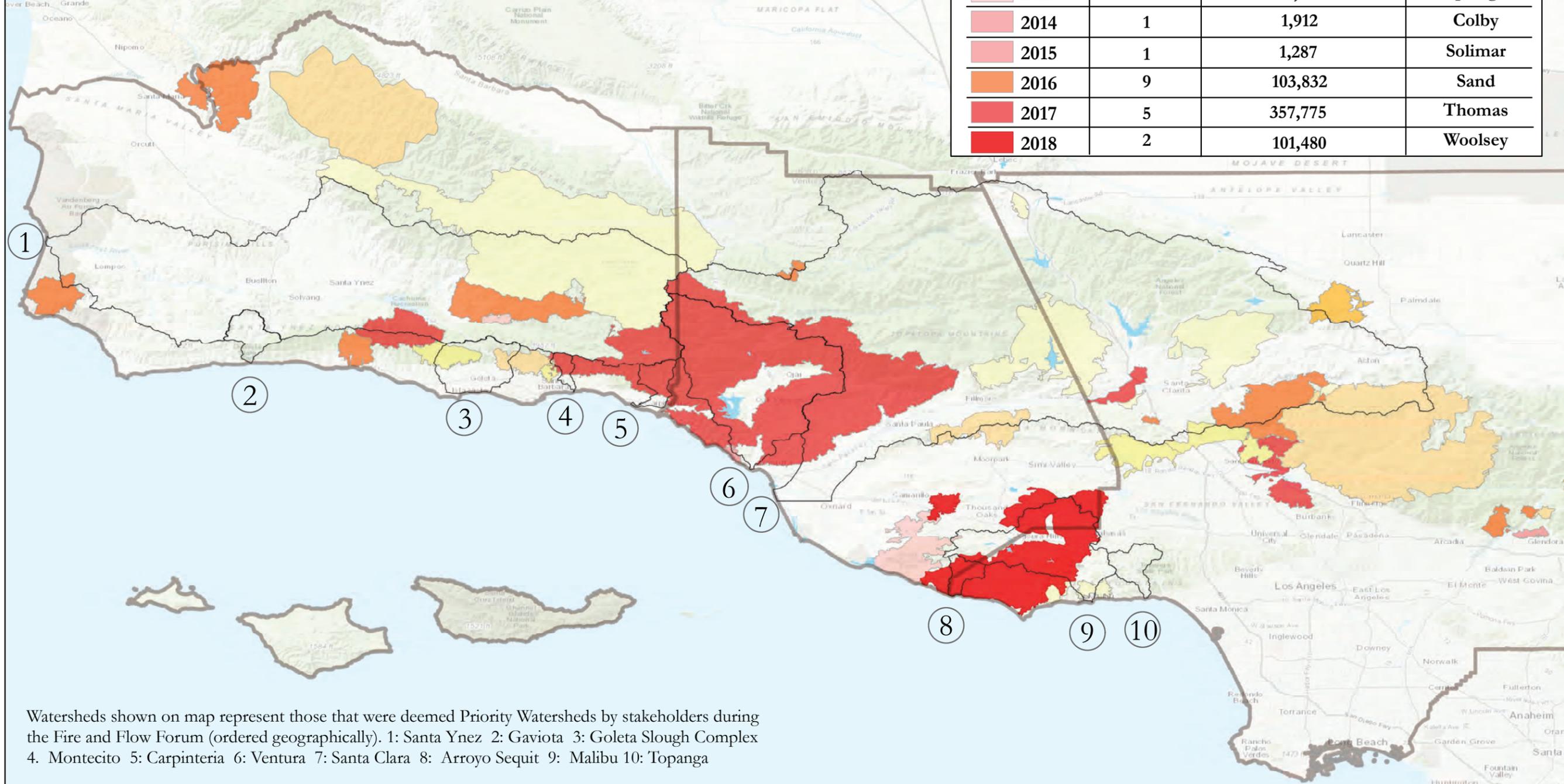
This plan is intended to be used as a way to communicate regionally specific goals and objectives that builds upon and progresses existing local, state, and federal plans such as Integrated Regional Water Management plans, the California Water Action Plan, Federal Endangered Species Recovery Plans, etc. It is not the intention of the Forum to preempt existing plans, but rather to coordinate and focus limited resources to maximize restoration and planning efforts in Southern California.



# SOUTHERN CALIFORNIA FIRES

Greater than 1,000 Acres (2007-2018)

Fires by Year	# of Fires	Total Acreage Burned	Largest Fire
2007	9	357,707	Zaca
2008	5	42,026	Senson
2009	5	287,145	Station
2010	1	12,582	Crown
2012	1	4,192	Williams
2013	2	25,971	Springs
2014	1	1,912	Colby
2015	1	1,287	Solimar
2016	9	103,832	Sand
2017	5	357,775	Thomas
2018	2	101,480	Woolsey



Watersheds shown on map represent those that were deemed Priority Watersheds by stakeholders during the Fire and Flow Forum (ordered geographically). 1: Santa Ynez 2: Gaviota 3: Goleta Slough Complex 4: Montecito 5: Carpinteria 6: Ventura 7: Santa Clara 8: Arroyo Sequit 9: Malibu 10: Topanga



PARTICIPANTS AT THE FIRST FFF,  
SANTA BARBARA ZOO FEBRUARY 2018

## PROCESS

This collaborative process consisted of four meetings over a nine-month period starting in February of 2018. The meetings were held throughout Santa Barbara and Ventura counties and included over 150 participants. Participants represented government (local/state/federal) entities, non-profit groups, as well as private consultants, academics, and members of the public. The initial meeting was designed to create a forum where individuals could share impacts from the fires and floods. By gathering those with regional expertise and knowledge and asking them a simple question, “What is your top concern, right now, as it relates to watersheds in response to impacts of the fire and flood?” the forum leads were able to categorize and identify five priority focus areas (not in order of priority):

- 1. INFRASTRUCTURE & RESTORATION**
- 2. COMMUNITY SCIENCE & OUTREACH**
- 3. RESEARCH AND MONITORING**
- 4. FUTURE MANAGEMENT, PREPAREDNESS, RESILIENCY**
- 5. COORDINATION & PRIORITIZATION**

Through two subsequent meetings, the Fire and Flow Forum participants were asked to develop initial SMART (Specific, Measurable, Attainable, Relevant, and Timely) objectives through group discussion and exercises. Goals and objectives developed in the meetings were publicly shared with all participants, who were allowed to refine or to make additions over a two-month period. Working group phone calls were utilized to further refine and consolidate goals. The goals and objectives intentionally lacked the specificity of who should carry them out with the hopes participants will collaborate across sectors to achieve these resiliency actions.

Participants were asked to participate in two rounds of prioritization. The first round involved prioritizing where the actions should take place. Utilizing maps that detailed the extent of the fire, relative debris flow risk, and highlighting National Marine Fisheries Service core streams, participants were asked to utilize their expertise in their professional capacity to vote on streams using a weighted prioritization scheme. It is not the Forum’s intention to exclude any watershed impacted or threatened by climatic threats, but rather to identify where to prioritize funding and efforts based on regional expertise and resource knowledge. The list includes both impacted and unimpacted watersheds and represents the top 10 priority streams identified through the process, shown geographically from North to South (not in order of priority). It should be noted that this prioritization exercise occurred prior to the November 2018 Woolsey Fire in which the entirety of the Malibu and Arroyo Sequit watersheds were burned.

- 1) SANTA YNEZ RIVER**
- 2) GAVIOTA CREEK**
- 3) GOLETA SLOUGH COMPLEX**
- 4) MONTECITO CREEK**
- 5) CARPINTERIA CREEK**
- 6) VENTURA RIVER**
- 7) SANTA CLARA RIVER**
- 8) ARROYO SEQUIT**
- 9) MALIBU CREEK**
- 10) TOPANGA CREEK**

Finally as part of the last gathering of the Fire and Flow Forum, participants were asked to prioritize 139 draft objectives using a group workbook activity for each of the five priority focus areas. Participants were asked to prioritize objectives as either high-priority immediate resiliency actions or high-priority long-term (greater than 2-year time frame) resiliency actions. In an effort to further consolidate the final list of objectives, a final round of refinement and consolidation based on participants comments resulted in 100 objectives, 25 of which were ranked as high priority objectives by the group.



HIGHWAY 101, DECEMBER 2017



CARPINTERIA CREEK WATERSHED, DECEMBER 2017



GOBERNADOR CREEK, SPRING 2018

## INFRASTRUCTURE & RESTORATION

Rising climate threats, such as fires and floods, reveal the extent of connectedness between our watersheds and community supporting infrastructure (e.g. roads, bridges, utilities). **By developing and implementing large-scale restoration plans for riparian corridors and whole watersheds (i.e., headwaters to ocean approach) (Goal 1),** we strengthen the overall resiliency of these vital systems. **Preserving and restoring native species in addition to reducing invasive species and disease transmission (\*Goal 3)** will facilitate recovery in response to disastrous events. Communities in flash flood and fire prone Southern California need to **prioritize the design and construction of infrastructure that maintains and improves ecosystem function and habitat connectivity (\*Goal 2)** to create fully functioning watershed ecosystems that yield the highest level of environmental and economic benefits for the region. Infrastructure designed with ecosystem function in mind provides greater levels of public safety, reduction in costs associated with maintenance, and invests in the community's connection with nature through access and job creation. The ability to achieve ecosystem service goals requires working at a local level while striving to inform regulators and decision makers. **Bringing together federal, state, and local regulatory agencies and utilities to strengthen restoration efforts and create ecologically informed infrastructure (Goal 4)** is greatly needed for the region.

*Note: High priority goals and objectives are indicated by an \*.*

### GOAL 1 DEVELOP AND IMPLEMENT LARGE-SCALE RESTORATION PLANS FOR RIPARIAN CORRIDORS AND WHOLE WATERSHEDS (I.E., HEADWATERS TO OCEAN APPROACH).

#### OBJECTIVES

- \* 1.1 Implement existing watershed plans; reassess and revise plans following watershed-altering events (e.g., fires, floods). Establish watershed plans for impacted watersheds that lack existing plans.
- 1.2 Utilize the Southern California Wetland Recovery Project Regional Strategy Work Plan to restore high priority watershed ecological functions targeting hydrologic connectivity with wetlands.
- \* 1.3 Facilitate watershed-wide collaborative restoration (between neighboring landowners and agencies) through streamlined and innovative permit processes (e.g., List of Expedited/Simplified Permitting for Voluntary Habitat Restoration Projects) that can reduce duplicative permitting and mobilization costs.
- 1.4 Assess existing stream crossings to identify potential future hazards to watershed functionality (e.g., do bridges, culverts, and low flow crossings meet Federal Emergency Management Agency, California Department of Fish and Wildlife, and National Marine Fisheries Service guidelines?).
- 1.5 Create long-term watershed-wide stewardship by educating and collaborating with landowners and the general public about watershed-scale restoration needs/opportunities to inform rebuilding of private lands and public access spaces (e.g., access, design, prioritize, permit, fundraise, etc.).

### \* GOAL 2 PRIORITIZE THE DESIGN AND CONSTRUCTION OF INFRASTRUCTURE THAT MAINTAINS AND IMPROVES ECOSYSTEM FUNCTION AND HABITAT CONNECTIVITY.

#### OBJECTIVES

- 2.1 Create a prioritized list of restoration projects that address habitat needs for threatened or endangered species and that incorporate existing recovery and watershed planning strategies.
- 2.2 Identify high priority properties and a timeframe for their acquisition for conservation and re-establishment of wildlife corridors.
- 2.3 Develop and implement comprehensive plans/best management practices for bank stabilization in riparian areas impacted by or at high risk to fires and floods.
- 2.4 Update the California Department of Fish and Wildlife's Passage Assessment Database (CDFW PAD) with creation/remediation of new barriers post episodic events in order to develop prioritization of barrier removals. Incorporate input from resource agencies and local partners (counties, cities, resource conservation districts, non-profits, etc).
- 2.5 Assess public trails in impacted areas and prioritize their reconstruction using best management practices that incorporate multi-benefit uses and preserve ecosystem functionality.
- 2.6 Reconstruct excavated creek channels resulting from emergency actions to reflect natural stream geomorphology (i.e., bankfull channel, floodplains, natural meandering, pool formation, and maintenance) and to provide for effective sediment transport.
- \* 2.7 Remove barriers to fish passage in high-priority areas (e.g., Matilija Dam, Harvey Diversion, Sisar Canyon, Wheeler Gorge, Rose Valley, Santa Felicia Dam, Rincon Creek, San Ysidro Creek, Montecito Creek, Dos Pueblos Creek, Santa Ynez River, Gaviota Creek).
- \* 2.8 Prioritize restoration projects that facilitate habitat connectivity through re-establishment of natural stream flow, replacement/removal of artificial bank/barrier structures, and restoration of native species.

*Note: High priority goals and objectives are indicated by an \*.*

\*GOAL 3

PRESERVE AND RESTORE NATIVE SPECIES; REDUCE INVASIVE SPECIES AND DISEASE TRANSMISSION.

OBJECTIVES

- 3.1 Designate a task force that is responsible for Southern California steelhead preservation, relocation, and conservation hatcheries in response to disastrous events such as fires and floods. Similar task forces should be developed for additional federally and state listed species when possible.
- 3.2 Establish viable emergency relocation facilities for sensitive species (e.g., redesign and manage Watercress facility at Fillmore Fish Hatchery to support seasonal wetlands and emergency fish relocation).
- 3.3 Install riparian corridor exclusionary cattle fencing to reduce impact to native steelhead streams (public lands and private lands through landowner agreements).
- 3.4 Establish watershed-specific guidelines for opportunistic removal of invasive species after a disaster to prevent exclusion of native species (e.g., crayfish removal in steelhead streams).
- 3.5 Reintroduce unlisted landlocked Southern California steelhead into upper reaches of streams that recently lost their populations due to fire, flood, and/or drought. Focus on streams above the uppermost impassable barriers to avoid implications with the Endangered Species Act (e.g., Jameson Reservoir and Harding Canyon).
- \* 3.6 Conduct regional prevention, early detection, and rapid response training, monitoring, and treatment with groups (e.g., non-profits, County Weed Management Areas, U.S. Forest Service) to assist landowners in invasive flora and fauna (e.g., bark beetles, Arundo donax, New Zealand mudsnail, etc.) control.
- 3.7 Use local native plant species for restoration by utilizing seed collection and propagation efforts to preserve native plant species.
- 3.8 Coordinate fire fuel break planning with preservation of sensitive species and habitat.
- 3.9 Implement infrastructure/restoration projects in adjacent unaffected watersheds to support source populations of native plants and animals for impacted areas.



COLD SPRINGS TRAILHEAD, 2018

GOAL 4

BRING TOGETHER FEDERAL, STATE, AND LOCAL REGULATORY AGENCIES AND UTILITIES TO STRENGTHEN RESTORATION EFFORTS AND CREATE ECOLOGICALLY INFORMED INFRASTRUCTURE.

OBJECTIVES

- \* 4.1 Develop an increased community-level restoration ethic, buy-in, and enthusiasm through public engagement and coordination of focused restoration working groups to facilitate collaboration among stakeholders to support multi-benefit projects.
- 4.2 Educate utilities and special districts (e.g., water, sanitary, gas, etc.) on the environmental impacts of their required instream and riparian corridor work.
- 4.3 Promote collaboration among agencies during the permit processes by developing a permit matrix for restoration and MOUs between permit agencies where needed, and by creating collaborative working groups focused on restoration.
- 4.4 Promote and implement water conservation projects that replenish groundwater as a preferred alternative to stream diversion.
- 4.5 Quantify the percentage of treated stormwater run-off in coastal municipalities in order to design and implement plans to incrementally increase the proportion of treated run-off and potential for reuse.
- 4.6 Encourage cities, counties, and utilities to incorporate criteria from the Federal Emergency Management Agency, Caltrans (SB857), and County Flood Control into best management practices for post-event construction, restoration of fish passage, in-stream habitat, and bank stabilization.



CARPINTERIA CREEK WATERSHED, JANUARY 2018

Note: High priority goals and objectives are indicated by an \*.

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CALIFORNIA NEWT, CARPINTERIA CREEK, DECEMBER 2017

## RESEARCH & MONITORING

After fires and floods ravage a landscape, the extent of ecological damage should be understood before it is corrected. In order to understand the scope of the impacts and to maximize restoration potential, it is important to **assess resource needs to assist in developing specific research questions, objectives, and funding opportunities (Goal 6)**. Groups focused on getting the greatest value out of their efforts must **coordinate research and monitoring efforts to prevent overlap, fill data gaps, and inform restoration planning and implementation (Goal 5)**. Agencies and non-profits tasked with recovery and restoration should **develop protocols and implement post-disaster ecological assessments that allow for cross-agency and community science support (Goal 7)**. Sharing protocols and knowledge can allow monitoring and restoration to translate to restoration at an accelerated pace.

### GOAL 5

#### COORDINATE RESEARCH AND MONITORING EFFORTS TO PREVENT OVERLAP, FILL DATA GAPS, AND INFORM RESTORATION PLANNING AND IMPLEMENTATION.

##### OBJECTIVES

- \* 5.1 Develop and/or utilize an existing accessible database to store and share data and allow for an ecological approach to resource assessment by identifying existing data and information related to the resiliency of specific watersheds (e.g., U.S. Forest Service Burned Area Emergency Response team and Watershed Emergency Response Team) to then assemble and curate a library of documents and biological maps (e.g., consolidated threatened and endangered species maps) and make it accessible to practitioners.
- \* 5.2 Coordinate efforts to conduct ecological surveys across agencies/organizations to reduce redundancy. Incorporate community science data efforts (when feasible) to increase data collection potential. Identify who, what, when, and where surveys are planned.

*Note: High priority goals and objectives are indicated by an \*.*

- 5.3 Use completed surveys from areas where sensitive and endangered species may have been affected by disasters to make recommendations for future restoration efforts. Engage agencies and landowners in the process.
- 5.4 Develop planning-specific research projects with input from universities, agencies, and landowners to assist in post-disaster recovery efforts that integrate best management practices for rebuilding to improve ecological function.

### GOAL 6

#### ASSESS RESOURCE NEEDS TO ASSIST IN DEVELOPING SPECIFIC RESEARCH QUESTIONS, OBJECTIVES, AND FUNDING OPPORTUNITIES.

##### OBJECTIVES

- \* 6.1 Create a platform to disseminate information about fire and debris flow recovery efforts across agencies that includes tracking achievements of all Fire and Flow Forum Strategic Plan goals and objectives.
- 6.2 Document and expand plans to maintain genetic diversity to direct conservation efforts for native species (e.g., southern steelhead). Partner with universities and utilize community science partnerships (e.g., focused coalitions/groups) to create robust genetic catalogs and genetic conservation plans.
- 6.3 Create a streamlined and/or blanket permit from Section 10 of the Endangered Species Act to allow for collection of Southern California steelhead genetic samples.
- \* 6.4 Identify geospatial layers and remote sensing imagery that align with established research objectives to best incorporate post-disaster geo-referenced habitat assessment surveys. Coordinate with NASA DEVELOP program or similar existing programs for assistance.
- 6.5 Quantify time and economic value of the many benefits humans gain from the natural environment (i.e., ecosystem services) for the purpose of communicating restoration/conservation significance (e.g., Healthy Lands and Healthy Economies).
- 6.6 Identify and assess areas impacted by oil drilling, sedimentation, and loss of native habitat.

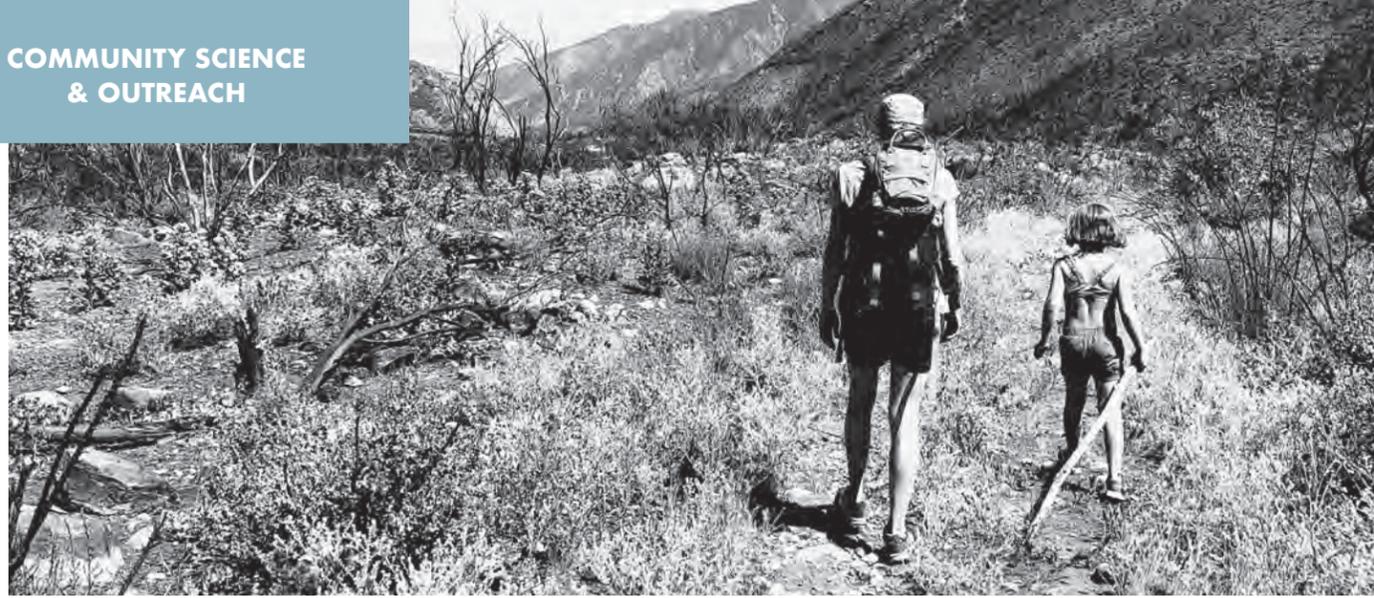
### GOAL 7

#### DEVELOP PROTOCOLS AND IMPLEMENT POST-DISASTER ECOLOGICAL ASSESSMENTS THAT ALLOW FOR CROSS-AGENCY AND COMMUNITY SCIENCE SUPPORT.

##### OBJECTIVES

- \* 7.1 Establish standardized protocols and data sheets (allowing for cross-agency and community science support) for assessments and baseline analyses to guide watershed-wide and landscape-level analyses. Update existing monitoring protocols, such as California Department of Fish and Wildlife's Coastal Monitoring Protocols (CMP), to better reflect current Southern California conditions and needs.
- 7.2 Develop protocols and implement post-disaster presence/absence surveys for endangered and threatened species.
- \* 7.3 Develop protocols and implement post-disaster habitat assessment of present and historic Southern California steelhead migration barriers (roads, bridges, drainage pipes, dams, etc.) including evaluation of stream channels reconstructed after disasters in order to assess changes.
- 7.4 Develop protocols and implement post-disaster monitoring of debris flow impacts to riparian wetlands and coastal salt marsh ecosystems.

*Note: High priority goals and objectives are indicated by an \*.*



MATILJA CREEK, MAY 2018

## COMMUNITY SCIENCE & OUTREACH

Disasters like the Thomas Fire and ensuing floods bring tremendous hardship and devastation, but they also unify communities around a common cause. Disasters open people's eyes to what could have been done to prevent and reduce the horrific impacts. They create a unified and energized community focused around community recovery, restoration, and resiliency building. In the wake of these events, it is crucial to **leverage public energy to support watershed recovery and monitoring efforts (Goal 9)**. While public support is high and the devastation of the events still echoes, the time is right to **leverage the impact of recent disasters to motivate decision makers, agencies, and regulators to act on behalf of watersheds (Goal 10)**. Both during and after fires, floods, and other events that impact humans and the environment, there is ample opportunity to **raise public awareness of natural disasters and their impact on watershed health (\*Goal 8)**. A more educated and aware public will act as environmental stewards, vote as environmental stewards, and contribute to a culture of environmental stewardship.

### \* GOAL 8

#### RAISE PUBLIC AWARENESS OF NATURAL DISASTERS AND THEIR IMPACT ON WATERSHED HEALTH.

##### OBJECTIVES

- \* 8.1 Create and distribute natural disaster toolkits with practical resources (e.g., restoration templates, list of do's and don'ts, links to online resources, and funding options) that are tailored to various stakeholder groups (e.g., landowners, agricultural community, cities, and resource managers). Include public relations materials in toolkits (e.g., Ready Santa Barbara County) that include public service announcements, expert contact lists, and frequently asked questions. Consider private public partnerships with marketing experts to maximize information reach, accessibility, and dissemination.
- 8.2 Establish clear lines of communication with existing central portals (e.g., Ready Ventura, Ready Santa Barbara, Ventura County Recovers) or create new portals for information delivery that include physical locations (e.g., local government offices, local businesses, evacuation centers, public libraries). Use social media and traditional media to connect with the public and disseminate timely resources. Identify local physical locations where the public can access information when risk is high, as disaster unfolds, and as recovery efforts proceed. Provide non-English language materials as population needs dictate.
- \* 8.3 Identify local volunteer coordinators and utilize their channels of communication to inform community members and volunteers about what and where needs exist and limits to volunteer service (e.g., when work must be completed by only adult volunteers, or only professionals, or where certain activities, such as seed-distribution, may be counterproductive). If needed, form new volunteer groups to address specific needs.
- 8.4 Provide fire safe councils, Community Emergency Response Teams (CERT), and other disaster focused public outreach groups with best management practices for watersheds in response to fire and flow events.

*Note: High priority goals and objectives are indicated by an \*.*

- 8.5 Inform the public about the difference between chaparral versus fire fuel and forest land management (e.g., controlled burns). Work with fire agencies, CERT teams, land managers, and utility companies to reach a wide audience.
- 8.6 Hold public information forums that correspond with "trigger days" (e.g., start of fire season, brush clearing deadline, etc.).
- 8.7 Provide outreach to organizations that work with the homeless community (e.g., Disadvantaged Community Involvement Program of the Department of Water Resources) about safety, health concerns, and relocation.

### GOAL 9

#### LEVERAGE PUBLIC ENERGY TO SUPPORT WATERSHED RECOVERY AND MONITORING EFFORTS.

##### OBJECTIVES

- \* 9.1 Create new community scientist research teams made up of volunteers from existing groups (e.g., local non-profits and fire consortiums) to address research and monitoring questions. Connect community scientist teams with appropriate research projects, facilitate collection of baseline data in local watersheds (e.g., photopoints and vegetation monitoring) and then incorporate community science data efforts into large-scale research programs (e.g., iNaturalist and bio-blitz efforts).
- 9.2 Provide community scientists with an identification guide to locate and report invasive plants alongside public trails (possible use for iNaturalist app or trail guide companions).
- 9.3 Establish photo-monitoring in prioritized watershed locations so community scientists can document landscape change.
- 9.4 Promote watershed recovery campaigns (e.g., "weed, don't seed," water conservation efforts, etc.) that communicate the importance of ecosystem services in terms of economic value to the community through the messaging power of organizations with access to constituents.
- 9.5 Provide nurseries and botanic gardens with messaging toolkits that contain educational materials about responsible post-disaster planting efforts and volunteer opportunities.
- 9.6 Offer grants to affordably achieve habitat restoration and litter removal goals without incurring the high cost of public agency clean-up crews.

### GOAL 10

#### LEVERAGE THE IMPACT OF RECENT DISASTERS TO MOTIVATE DECISION MAKERS, AGENCIES, AND REGULATORS TO ACT ON BEHALF OF WATERSHEDS.

##### OBJECTIVES

- \* 10.1 Lobby for new state laws and county regulations that prioritize watershed resiliency and post disaster restoration by communicating to elected officials how recent disasters impacted their trust resources (e.g., threatened and endangered species, species of special concern, and coastal resources).
- 10.2 Advocate for new grant funds to be dedicated to post-natural disaster response by using recent events as evidence of need.
- 10.3 Propose and promote local resolutions to require annual preparedness/readiness public forums.
- 10.4 Develop sustainability offices, positions within existing offices, or duties in existing positions that incorporate resiliency planning (e.g., fire, planning, watershed, and public works).
- \* 10.5 Craft language for a statewide emergency proclamation to communicate the socio-economic value of post disaster environmental restoration for use in emergency response mechanisms (e.g., governor's proclamations, emergency permits) to promote and expedite habitat restoration and to avoid sub-par practices (e.g., "replace in kind").

*Note: High priority goals and objectives are indicated by an \*.*



FRANKLIN TRAIL, JANUARY 2018

## FUTURE MANAGEMENT, PREPAREDNESS, RESILIENCY

In the wake of a disaster, it is imperative to look beyond the colossal tasks of the present by anticipating and preparing for the future. Additional threats are inevitable as understanding of prolonged threats (e.g., “fire has no season”) become the new normal. **Restructuring existing and/or creating new frameworks that build environmental resiliency (\*Goal 12)** will ensure ecosystem function. By providing much needed ecosystem services, this effort serves the community and benefits species diversity. Our vision for our communities in the future needs to **reshape developed areas to accommodate natural processes (Goal 11)** so that our communities are capable of withstanding and recovering from the next disaster. While we adapt our infrastructure in preparation for whatever climate threats may arrive next, we must also reduce the chances of new disasters **by adapting land management practices that increase vulnerability to climate threats (Goal 13).**

### GOAL 11 RESHAPE DEVELOPED AREAS TO ACCOMMODATE NATURAL PROCESSES.

#### OBJECTIVES

- \* 11.1 Change land use planning (e.g., zone codes and permit requirements) to better incorporate ecological processes (e.g., NMFS Fish Passage Criteria, Resilient and Connected Landscapes, meeting updated FEMA setbacks and floodplain management, Natural Solutions Toolkit).

*Note: High priority goals and objectives are indicated by an \*.*



GOBERNADOR CREEK, DECEMBER 2017

- 11.2 Identify ecologically important areas within a transformed landscape and target them for property acquisition, conservation easements, and partnerships with land trusts.
- 11.3 Increase stakeholder involvement at early stages of project planning to promote incorporation of ecological process that facilitate project buy-in.
- 11.4 Increase current efforts to reduce vulnerability of existing urban infrastructures to climate threats by requiring proactive measures (e.g., defensible space, weed abatement, etc.).
- 11.5 Optimize use of controlled burns, fuel reduction practices and setbacks in urban/wilderness interface to increase resiliency and reduce disaster potential.
- \* 11.6 Enforce minimum standards that provide important ecological benefits for the renovation and rebuild of structures in higher flood/fire risk areas. Incentivize rebuilding that is more resilient and ecologically sensitive through streamlined permit approval and/or rebate programs for rebuild projects that incorporate best management practices and protective measures in high risk areas.

### \* GOAL 12 RESTRUCTURE EXISTING AND/OR CREATE NEW FRAMEWORKS THAT BUILD ENVIRONMENTAL RESILIENCY.

#### OBJECTIVES

- \* 12.1 Incorporate best available science for fire and flood management and education into multi-agency framework (e.g., local, state, and federal) as well as a mechanism to bring materials back to fire safety councils to disseminate to the community to build simultaneous environmental and community resiliency.

*Note: High priority goals and objectives are indicated by an \*.*

- 12.2 Integrate greater natural resource planning (e.g., stormwater resource plans and Integrated Regional Water Management) into large-scale planning efforts (e.g., general plans, Local Coastal Plans, and Integrated Regional Water Management Plans).
- 12.3 Create local revenue sources (e.g. bed tax, bond measure, and local foundations) to fund resiliency projects, both preventive and responsive.
- 12.4 Incorporate into framework requirements for existing infrastructure and new infrastructure to accommodate for more extreme events.
- 12.5 Combine land and water strategies by incorporating fire suppression, fuel, and sediment management approaches and Integrated Regional Water Management objectives.
- 12.6 Support sustainable rebuilding by incorporating site analyses conducted by local planning agencies into a multi-agency framework. Hire experienced local individuals, targeting residents, to accomplish mission-critical tasks to build resiliency within their own watersheds.
- 12.7 Utilize resiliency principles in planning (e.g., visioning the future, governance structures, social and economic justice for impacted areas, planning tools, and transformative land use).
- 12.8 Monitor sustainability and adaptive management of ongoing operations and maintenance of restoration and infrastructure.
- 12.9 Evaluate insurance risk to accurately match government and non-profit risk related to disaster response, restoration, and resiliency work (e.g., activities in the Santa Clara River Floodplain).
- \* 12.10 Utilize Fire and Flow Forum Strategic Plan to continue development of methods to prioritize management and restoration that ensure greatest resiliency. Incorporate restoration and management prioritization into framework that includes critical information (e.g., number of acres restored, biological sensitivity, potential to support biodiversity, critical migration corridors, critical habitat of threatened and endangered species, and feasible implementation) and uses best management practices for threatened and endangered species, reduces spread of invasive species and pathogens, and restores ecological processes.
- 12.11 Utilize debris basins and flood control practices that provide greatest overlap in ecological and public protection. Consider debris basins or catchment systems that take into account ecological function (e.g., fish passage, instream complexity, sediment distribution) with input from agencies.
- 12.12 Use existing models (e.g., Natural Resource Damage Assessment) where feasible as a template for disaster assessment with environmental impacts to watersheds.

### GOAL 13

#### ADAPT LAND MANAGEMENT PRACTICES THAT INCREASE VULNERABILITY TO CLIMATE THREATS.

#### OBJECTIVES

- 13.1 Reduce site-specific erosion by enhancing public understanding of episodic events and appropriate responses (e.g., guidance from natural resource experts, erosion management, and “weed, don’t seed” campaigns).
- 13.2 Reduce ignition points by working with agencies/organizations (e.g., California Conservation Corps, Caltrans, counties, U.S. Forest Service, etc.) to adopt and implement appropriate roadside best management practices that incorporate best available science.
- 13.3 Create and implement protocols for restoration of illegal cannabis cultivation sites on public lands.
- 13.4 Enforce existing regulations to reduce illegal water diversions and increase water conservation efforts to benefit instream flows.
- 13.5 Address homeless camp trash accumulation/sanitation issues in high risk fire and flood areas, especially within streams (e.g., near high pressure gas line at Harbor Bridge over Santa Clara River in Ventura).

*Note: High priority goals and objectives are indicated by an \*.*



GOBERNADOR CREEK, SPRING 2018

## COORDINATION & PRIORITIZATION

Every year offers new potential for disastrous fires, floods, and other episodic events, and pinpointing when and where a disaster will strike remains impossible. Coordinating efforts and developing priorities before, during, and after a disaster may not improve predictability but will improve outcome. We must invest time and resources in order to **collaboratively ensure that our landscapes are resilient to future threats (Goal 14)**. The idea of how we protect and restore natural habitats has changed since the Thomas Fire and floods that followed, and will continue to change as new events punctuate the landscape and make new headlines. Rather than reinventing the wheel, resources are best spent **utilizing existing agency programs to develop fire recovery strategies (Goal 16)**. We must **coordinate efforts to ensure that preparedness, recovery, and restoration strategies are in place before the next disaster (Goal 17)**. A vetted regional prioritization is a powerful tool to **communicate Fire and Flow Forum Strategic Plan priorities to potential funders (\*Goal 15)** to secure and maximize the use of recovery and restoration funds.

### GOAL 14

#### COLLABORATIVELY ENSURE THAT OUR LANDSCAPES ARE RESILIENT TO FUTURE THREATS.

#### OBJECTIVES

- 14.1 Generate assessments for resiliency and use them future prioritization and coordination (e.g., fuels load, burn history and impact, species distribution, human/wildland interface, and sea level rise, watershed hydrologic studies).
- 14.2 Implement an evaluation program for watershed resiliency work. Use meaningful performance metrics to analyze effort and success.
- 14.3 Analyze and utilize existing documents for post-fire adaptation of wildlands and wildfire preparedness (e.g., “Watershed Wise: Station Fire Recovery and Rehabilitation,” Wildfire Preparedness and Recovery in San Diego County).
- 14.4 Evaluate existing plans/priorities, from local to federal levels, through the lens of recent disasters for alignment of Fire and Flow Forum Strategic Plan in concert with key local, state, and federal agencies (e.g., Caltrans, USFWS, NMFS, CDFW, CalFire, and Flood Control).
- 14.5 Bring watershed resiliency planning and restoration into existing local stakeholder regular meetings or hold special meetings for cities, counties, and non-profits to collaborate to undertake Fire and Flow Forum Strategic Plan priorities in order to avoid duplicating efforts and to maximize restoration and resiliency planning ability.
- \* 14.6 Develop an integrated map that identifies where state and federal priorities intersect with watershed restoration priorities to better utilize match-funding opportunities and coordinate with partners.

*Note: High priority goals and objectives are indicated by an \*.*

GOAL 15\*

**COMMUNICATE FIRE AND FLOW FORUM STRATEGIC  
PLAN PRIORITIES TO POTENTIAL FUNDERS.**

**OBJECTIVES**

- \* 15.1 Communicate vulnerability of Southern California fire-prone ecosystem (chaparral) for funding prioritization through collaboration with other groups (e.g., fire agencies, Community Emergency Response Teams, Integrated Regional Water Management, range managers, and utility companies).
- \* 15.2 Collaborate with other local practitioners and partners outside the Fire and Flow Forum to set course of action, funding, and timeline for high priority goals and objectives.
- 15.3 Develop template letters to local, regional, and state legislators calling for preventive and post-event funding for restoration priorities. Utilize template letters to support Fire and Flow Forum members and regional partners in pursuing grant funds.
- \* 15.4 Identify funders specific to southern California funding (e.g., [www.socalgrantmakers.org](http://www.socalgrantmakers.org), Proposition 68) as well as identifying and coordinating with other state, federal, and foundations to secure funding for prioritized recovery projects (e.g., Proposition 1, Legislative Analyst's Office's Fire Recovery Proposals, NOAA Restoration Center Community-based Restoration Program, USFWS Partnership and Coastal Programs, National Fish and Wildlife Foundation).

GOAL 16

**UTILIZE EXISTING AGENCY PROGRAMS TO  
DEVELOP FIRE RECOVERY STRATEGIES.**

**OBJECTIVES**

- 16.1 Develop materials that identify highly vulnerable biological resources in areas likely to be susceptible to fires by synthesizing existing information and models. Specifically, compile historic and recent fire perimeter and intensity maps from U.S. Forest Service and CalFire, and overlay with species distribution and predictive modeling.
- 16.2 Streamline permitting for post-fire restoration activity through coordination with U.S. Army Corps of Engineers, National Marine Fisheries Service, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and Regional Water Quality Control Board, and local agencies (e.g., cities, counties).
- 16.3 Advance integrated catchment management to incorporate regional fire and watershed management by integrating all existing agency plans into plans under developing (Integrated Regional Water Management, fire, forest service).

GOAL 17

**COORDINATE EFFORTS TO ENSURE THAT PREPAREDNESS,  
RECOVERY, AND RESTORATION STRATEGIES ARE IN  
PLACE BEFORE THE NEXT DISASTER.**

**OBJECTIVES**

- 17.1 Create a Weed Strike Team with funding in place to adaptively manage invasive species.
- 17.2 Develop emergency action template for priority areas. Emergency action plans should contain regionally specific detail on who (both entity and contact person) could conduct species surveys assessments (e.g., U.S. Fish and Wildlife Service, CalFire, county, city, and non-profits) in response to emergency events.
- 17.3 Coordinate restoration efforts to maximize multi-benefit by encompassing invasive eradication, instream habitat restoration, instream flow restoration, and riparian corridor restoration.
- 17.4 Coordinate field assessment efforts to maximize multi-benefit by encompassing field conditions, trail system improvements, and forest road improvements.

DEDICATION

This document reflects the effort and input of dozens of individuals and organizations who work in Southern California watersheds. Synthesizing such a vast array of ideas proved both invigorating and challenging, and the result is something much bigger than any single organization or agency. It is our greatest hope that these goals and objectives will spark new projects and encourage collaborative work to benefit ecosystems before, during, and after floods, fires, droughts, and other climatic events. Though the final product is imperfect, its robust set of strategies should serve as a roadmap for restoration and resiliency building, as well as a tool to secure funding for such work.

We thank the contributors to this document. Their diverse experiences and expertise are the substance and significance of this strategic plan.

We gratefully recognize the first responders who courageously put their lives on the line during the disasters California has recently faced, and we dedicate this document to all those who lost their lives in these deadly events.

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TIGER LILY, GOBERNADOR CREEK, SPRING 2018