



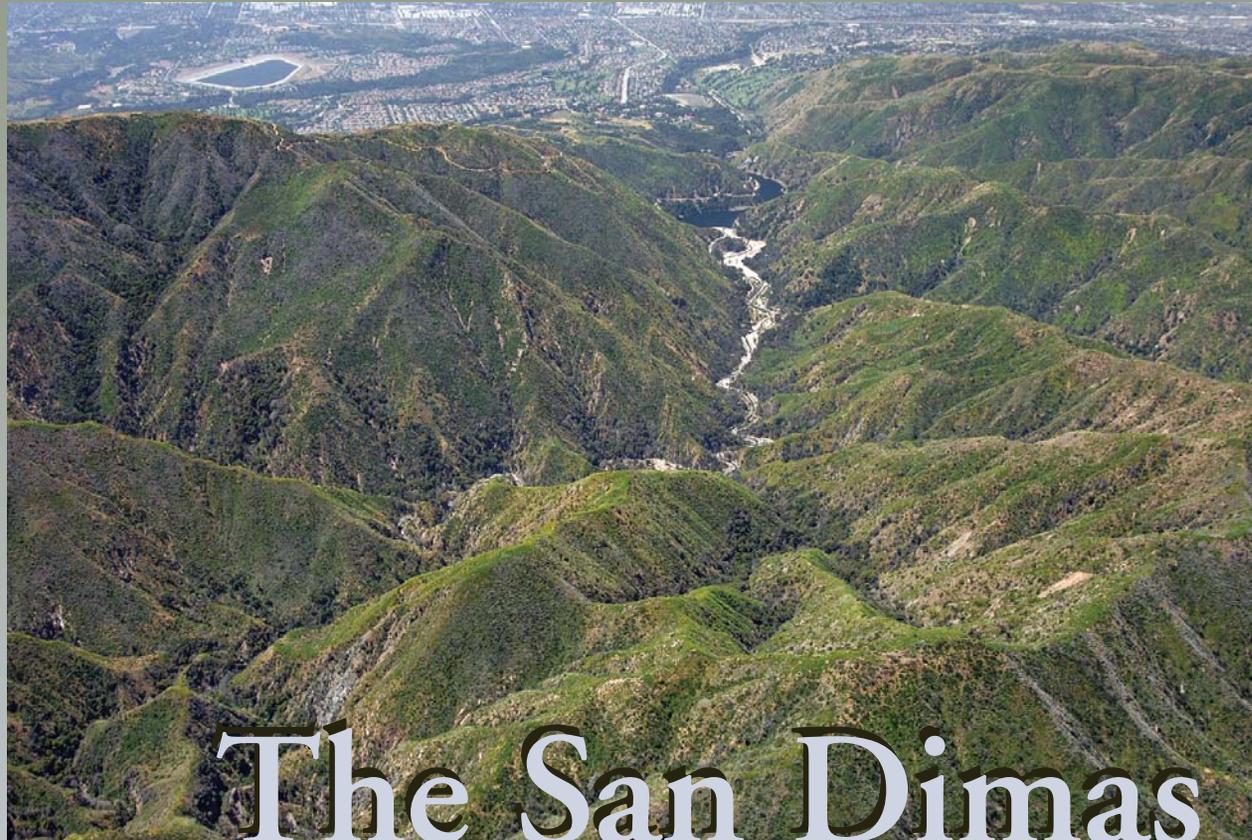
United States  
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*United States Department of Agriculture Forest Service  
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# The San Dimas

## Experimental Forest: A Vision



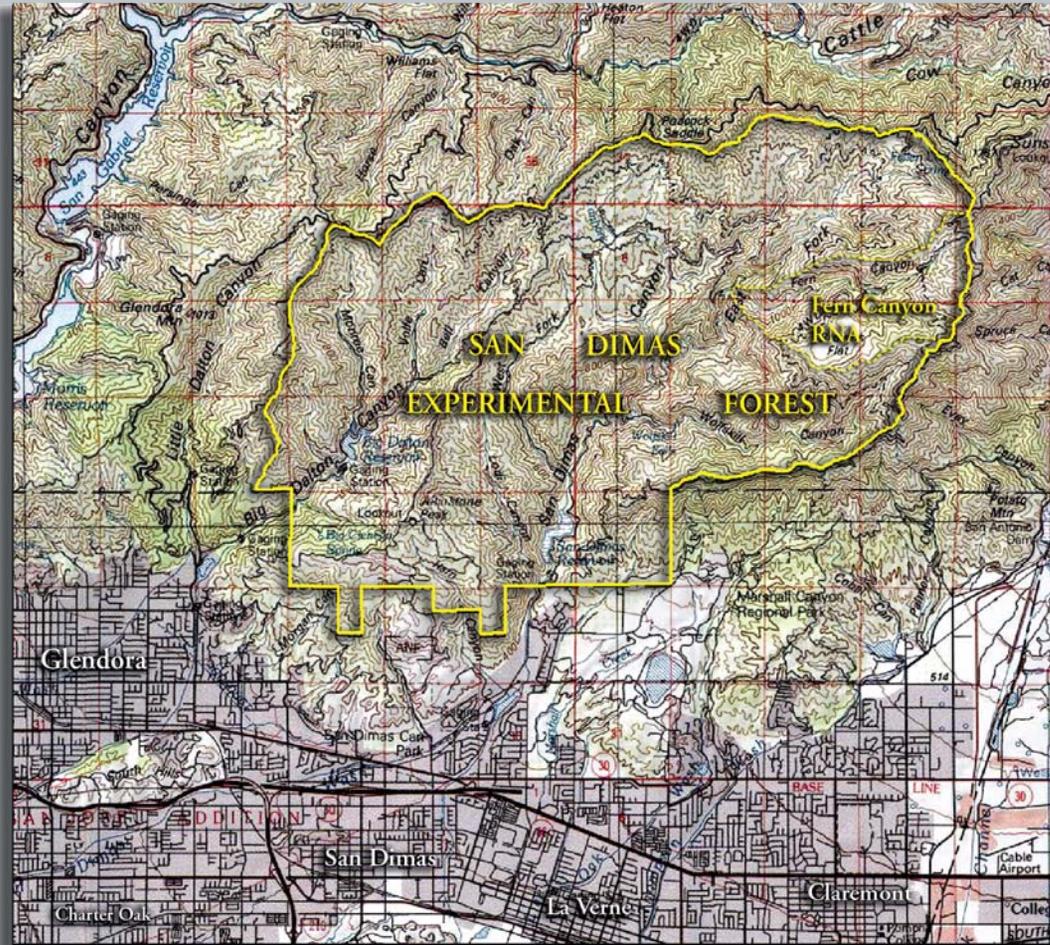
*"Few other mountain areas of comparable size on earth have been as thoroughly and painstakingly examined, as has the San Dimas Experimental Forest. There is, quite literally, no plant, no type of soil, no rock, no form of animal life that is unknown to the forest sleuths of Tanbark Flats."*

*Edward Colman, forester, 1938*



Fern Canyon Research Natural Area, within San Dimas Experimental Forest

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*“Wedged snugly between the lower reaches of San Gabriel and San Antonio canyons is a 32-square mile rectangle of mountain country little known to most southern Californians. Here, enclosed by lofty ridges on three sides, are the watersheds of Little Dalton, Big Dalton and San Dimas Canyons, a sinuous region of chaparral-coated hills, little forested flats and delightful creeks luxuriant with live oak, alder, bay and sycamore. Here lies the San Dimas Experimental Forest, an extensive outdoor laboratory dedicated to learning about soil, vegetation and erosion in mountain watersheds.”*

*John Robinson,  
San Gabriel Mountain historian, 1985*

## Our Vision

The San Dimas Experimental Forest (SDEF) offers a unique oasis of opportunity for providing an internationally recognized wildland-urban interface research facility where all land within the proclaimed boundary is used by federal, state, university, and international scientists to develop information and solutions for current and future resource management questions; where outdoor education is provided on the chaparral and woodland ecosystems adjacent to the rapidly growing Los Angeles Basin; and where local communities benefit from the activities at the experimental forest. We envision the SDEF as the preeminent facility for natural resource science research in Mediterranean-type ecosystems.

The SDEF is managed by the USDA Forest Service Pacific Southwest Research Station (PSW) as a field laboratory for ecosystem, watershed, and natural resource science research in chaparral and related Mediterranean-climate ecosystems. Since its establishment in 1933, the SDEF has been a center for hydrologic research in mountain watersheds. This research has included intensive monitoring of precipitation and water yield in mountainous terrain and manipulation of the natural vegetation across watersheds to maximize water yield. More recently, research has investigated the impact of wildland fire on watershed processes and air quality and the effects of chronic air pollution from the Los Angeles basin on stream water quality and the biogeochemistry of nitrogen. Other recent experiments have studied processes and rates of soil development and erosion, patterns in plant community development, avian population dynamics, and remote sensing of fire and ecosystem processes.

Research and environmental monitoring at the SDEF have developed an extensive database on chaparral ecology and mountain hydrology and climate.

## A Changing Mission

The current mission of the San Dimas Experimental Forest is to serve as a field laboratory where scientists and managers can gain basic knowledge of physical, biological, and social science that can be applied to issues important to the southern California national forests and other wildlands. Through limited tours and scheduled visits, it also serves as an outdoor learning center for local youth.

In the future, research will continue on these vital issues, but we will increase our capacity to study integrated watershed management from the forest through the city to the sea. Studying fire in the urban interface will be a priority focus area. Our mission will expand to include research related to the social and recreational components of the complex southern California environment. The SDEF's utility as a field laboratory will also be expanded to include public and school educational opportunities, interpretive services, and environmental education curriculum.

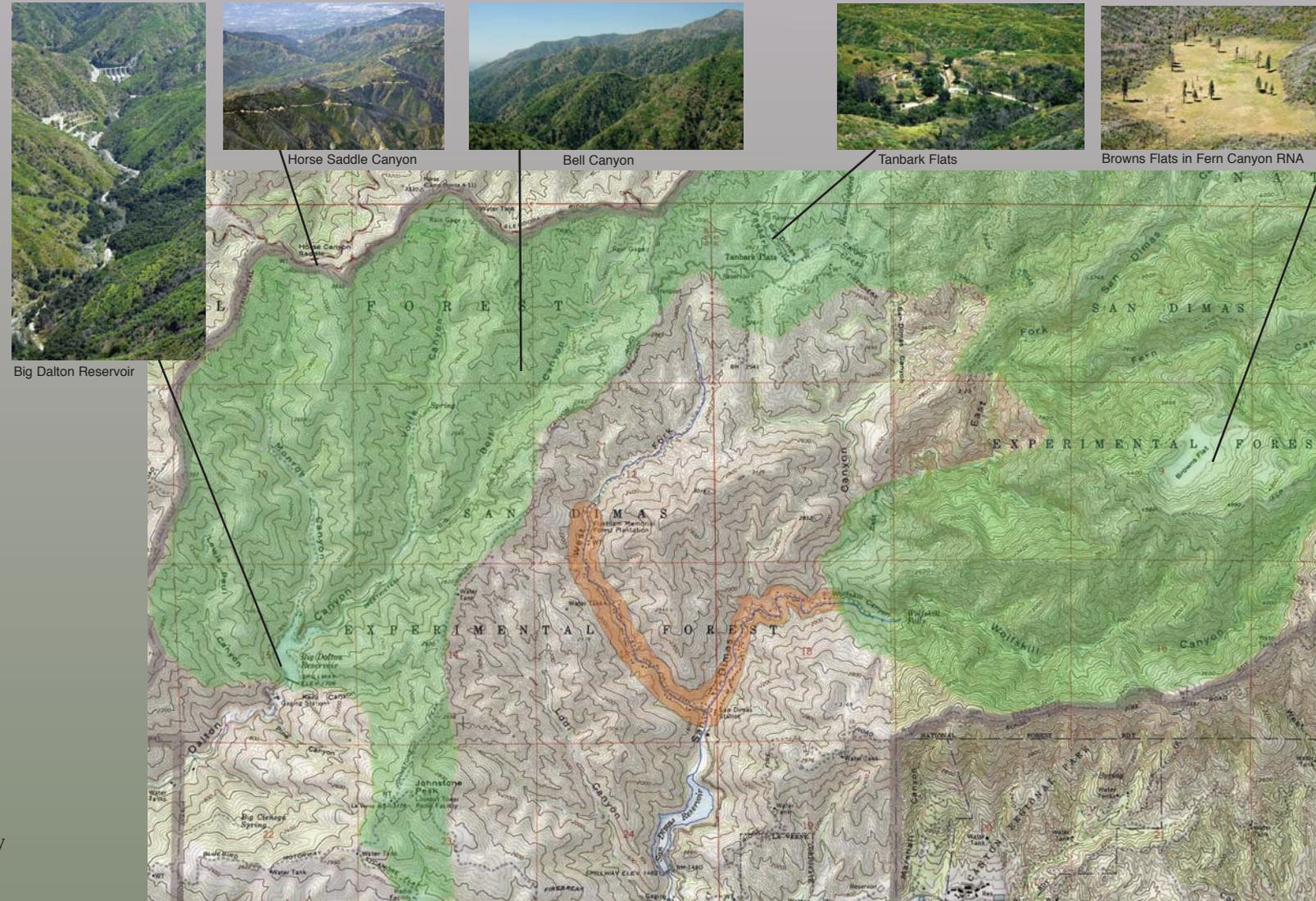
## Research Questions for SDEF

Originally, SDEF was created to answer hydrologic questions, such as how to get more water from the watershed with management. Over time, the value of SDEF to answer a broader array of questions was recognized.

Research economists found that the costs of erosion abatement are extremely high. The SDEF is ideally suited to test the hypothesis that management of chaparral can indeed reduce sedimentation.

Fire is an integral part of ecosystem functions. The SDEF is an outdoor laboratory to answer questions about fire ecology and fire effects, as well as restoration effectiveness following fires.

In addition to physical and biological research, SDEF is strategically located to address social and urban issues with research and environmental education.



Current research is confined to the green areas located above the perennial streams. Riparian areas affected by roads and the recreational residence tracts are shown in orange.

## Integrating Social and Riparian Components into SDEF Research

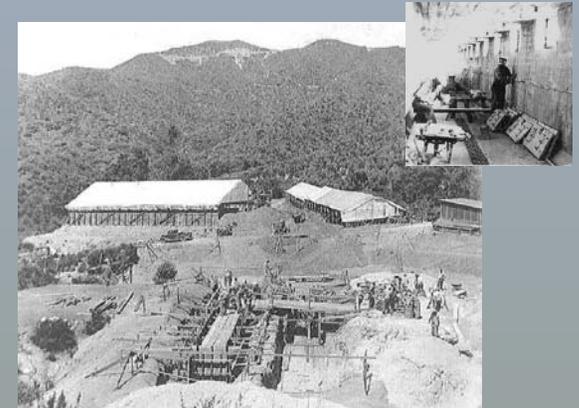
The SDEF is a hub for Wildland Urban Interface research studying not only the effects of people on the landscape studied, but also the values of the landscape to people. Instead of serving as an inviolate preserve, SDEF will serve three purposes: (1) to serve as an experimental area to reconcile people's demand for recreation and the need to maintain functioning ecosystems, (2) to bring knowledge of the past to the needs of the future, and (3) to model ways to involve the various sectors of the wildland urban interface in land management planning.

We will study community involvement and participatory decisionmaking in planning and implementing the vision for SDEF, leading to collaborative planning models with diverse urban communities for the urban national forests in southern California and throughout the world. We will also study approaches for improving policy/issue communications with affected publics, forest interpretation, conservation education, and postfire education to improve community understanding of forest management. Future recreation will study the recreation needs of urban populations and will examine public views on natural spaces and their management.

Small riparian areas in southern California are critical habitat for many species and have been severely altered by human use, including recreation. We will investigate techniques to restore riparian function in the lower reaches of the West and Main Forks of San Dimas Creek (where significant changes have occurred because of use over the past 90 years) and investigate how riparian areas recover from the impacts of roads and recreational residence tracts. We will implement a landscape-scale research project to determine the appropriate use of prescribed fire to manage chaparral in a wildland-urban interface setting. The new emphases on social science and riparian restoration will be integrated with long-term research on air pollution, water quantity, water

quality, chaparral ecology (plant and animal), weather, erosion and sedimentation, and postfire rehabilitation. New and refurbished federal buildings within the SDEF boundary will be used to accomplish these activities.

Facilities at the SDEF include the historical Tanbark Flats Research Station; operating streamwater discharge gauging stations in Bell and Volfe Canyons; inoperable streamwater discharge gauging stations in West Fork and Main Fork of San Dimas Creek; sediment collection basins in Bell Canyon; a network of precipitation gauges; the historical Tanbark Flats lysimeters, which have recently been a focus of soil development studies; and a network of roads and trails. Tanbark Flats facilities include living quarters and barracks, a small laboratory, mess hall, and shops. Facilities for stream gauging could be restored below small watersheds in Fern Canyon, lower Bell Canyon and the West Fork of San Dimas Canyon, and in the main Fern and Monroe Canyons. Thirteen recreational residences remain in lower San Dimas Canyon since the Williams Fire--four in the Main Fork and nine in the West Fork, accessed by forest roads.



Construction of the the lysimeters



SDEF meeting, 1930s



SDEF mess hall, 1930s



Volfe Canyon gauging station



Gauging station, 1930s

## Why Here?

Located in the foothills of the San Gabriel Mountains, the SDEF is the largest chaparral experimental forest in the United States. It also contains the Fern Canyon Research Natural Area, which is part of the Forest Service natural reserve system. The U.S. Man and the Biosphere Program has designated the SDEF as a biosphere reserve. Biosphere reserves are known as “landscapes for learning” and “laboratory regions of sustainable development” because of their role in associating research and education with conservation and development issues. They provide a means for integrating conservation, research and monitoring, education and training, and involving local populations in conservation and development issues in areas of outstanding ecological, scientific, and educational importance.

The San Dimas-Big Dalton watershed was chosen as an experimental forest over the many other watersheds in southern California for several reasons. First, its vegetation pattern was typical of the southern California mountains: chaparral in the lower and middle reaches, streamside woodland in the canyons, and conifers on the higher ridges and flats. The region is separated from the main mass of the San Gabriel Mountains by the deep San Gabriel and San Antonio Canyons, an isolation factor considered ideal for controlled study of water flow. Further, the two major drainages contain numerous small tributaries suitable for a variety of experiments. And lastly, both San Dimas and Big Dalton Canyons were harnessed by L.A. County flood-control dams, providing controls for measurement of water flow. No other similar-sized area in southern California possessed all these advantages (Lawrence W. Hill, *The San Dimas Experimental Forest*, 1963).



San Gabriel River Watershed to the Pacific

## Management Challenges

Today the burgeoning population growth of the Los Angeles basin is placing increasing demands on national forests for a variety of resources. Recreation use of national forests has skyrocketed, as has the complex interface between land covered with homes and the remaining native vegetation. Riparian areas are popular locations for many types of recreation. Shrinking areas of habitat on private lands mean that public lands, including national forests, are the last refuge for many rare species. Controversy exists over fire management in chaparral. Billions of dollars are spent to get water into and out of the Los Angeles urban area served by the San Gabriel River system. These issues are increasing in importance on public lands near urban areas nationwide, with the national forests of southern California in the forefront.

The SDEF is uniquely situated to use innovative research approaches to address these management challenges through social, biological, and physical science. However, the presence of private inholdings, forest development roads, and the recreation residence tracts in the West and Main Forks of San Dimas Creek significantly limit the ability to conduct needed research. The recreation residence tracts and forest development roads within and adjacent to the riparian area pre-date the establishment of the experimental forest. Their location is not conducive to current Forest Service practice or standards, nor do they meet the vision of the experimental forest in meeting educational and scientific needs and demands. The tracts of land that support the recreation residence are part of the experimental forest. The Angeles National Forest administers the recreation residence permits only. Today, there is increasing

Access to recreational residence tracts washed out by flooding within the riparian areas, 2003-2005.



Road wash out in San Dimas, early 1930s.



Developed area south of Big Dalton



West Fork road lost to flood waters within the riparian area.

recognition that the SDEF is unique as part of a national network of experimental forests, that it needs a more controlled environment to utilize its full potential for a variety of research studies, and that to achieve that purpose it must be restored and maintained.

## Next Steps

Working with our partners in local communities, other agencies, and universities, the SDEF provides an exceptional site to:

- Better define the objectives of research in the San Dimas Experimental Forest and how that research will add to the body of knowledge about Mediterranean ecosystems gained through 70 years of data collected at the SDEF.
- Determine our role in adding benefits to local communities.
- Explore the relationship between urban populations and wildland recreation areas.
- Better define the role of wildland watersheds in the integrated management of the water supply of the greater Los Angeles Basin.
- Pursue opportunities to purchase private inholdings, discontinue use of recreation residence tracts, and decommission roads along these tracts to restore use of the land and evaluate impacts and recovery of the West and Main Forks of San Dimas Creek.



Sunset in Fern Canyon

*“Western man has often attempted to improve his environment. Nowhere is this more evident than in the work of the San Dimas Experimental Forest. This extensive outdoor library, dedicated to learning about the influences of geology, soil and vegetation on mountain watersheds occupies almost all of the San Dimas and Big Dalton watersheds. The knowledge gained in almost a half century of forest research has benefited not only southern California but the whole world.”*

*John Robinson, San Gabriel Mountain historian, 1985*

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