



### ***1. Organizational Approach to GIT:***

The California Department of Forestry and Fire Protection (CDF) (<http://www.fire.ca.gov/>) is located within the state's Resources Agency (<http://resources.ca.gov/>). CDF and other departments in the Agency make extensive use of remote sensing (RS) and GIS. The Fire and Resource Assessment Program (FRAP) (<http://frap.cdf.ca.gov/>) is a leading user of GIT, and has lead responsibility for GIS implementation within CDF. CDF collaborates with a multitude of agencies on GIT related matters. For example, CDF is in the process of moving towards an enterprise system for collaborative fire planning, with the development of an enhanced network, and is receiving funding and technical assistance, as well as one dedicated GIS person from the Bureau of Land Management (BLM) for this effort. CDF currently supports GIS users at its Sacramento Headquarters (HQ), Regional offices in Fresno and Santa Rosa, and at various Unit Headquarters and field offices throughout the State. Twelve full-time GIS personnel are supported: seven FRAP personnel at Sacramento HQ, two personnel within the State Fire Marshal's Office, one person at the State Forest near Fort Bragg, and one person each at the Santa Rosa and Fresno Regional Offices. In addition, numerous CDF personnel throughout the state have been trained to serve as GIS Technical Specialists on emergency incidents. The Forest and Resource Assessment Program Manager serves as Chair for the CDF GIS Committee, comprised of representatives from different programs and levels within the organization, and represents CDF in the California Mapping Coordinating Committee (CMCC) and in other collaborative efforts, as discussed below. The CDF GIS Committee, a sub-committee of CDF's Information Technology Advisory Committee (ITAC), develops policies and proposals to advance GIS within CDF. The Manager also maintains the GIS component of the [Enterprise Architecture Plan](#). Use of GIT within CDF has improved project efficiency and increased the professionalism of CDF's GI products. The major impediment to realizing the full potential benefits of GIS for the CDF is the lack of high quality standardized base data in California.

### ***2. GIT Applications and Data Utilized:***

In general, CDF relies heavily upon GIT for pre-**fire** planning, emergency response, **watershed** analysis, and **forest assessment** and monitoring. GIS data utilized for these applications include 1:24,000 road layers from the U.S. Geological Survey and commercial sources, 1:24,000 hydrography layers, seamless vegetation data developed in cooperation with the U.S. Forest Service (USFS), surface fuels data developed from vegetation data, 10-meter digital elevation models (DEMs), fire perimeters (1900-present), fire ignition data, Timber Harvesting Plan boundaries, U.S. Census data, digital orthophotos and LANDSAT Thematic Mapper (TM) imagery.

To support the California Fire Plan ([http://frap.cdf.ca.gov/fire\\_plan/](http://frap.cdf.ca.gov/fire_plan/)), CDF has a pre-fire engineer (PFE) in each Unit. These personnel are Fire Captains that have been trained in ArcView. PFEs develop pre-fire management plans based on a standard methodology involving analysis of fuels, fire weather, assets at risk, and CDF Level of Service. CDF has been extremely active in adapting GIS, GPS and RS technology for use on major fires and other emergency incidents. The FIRESCOPE (<http://firescope.oes.ca.gov/>) GIS Committee, a collaboration of various emergency services providers, has developed standard data, tools, and procedures for use on emergency incidents. Many personnel throughout the state are trained to serve as GIS Technical Specialists on emergency incidents, and are now a standard component of CDF emergency response. These personnel are assigned to each Incident Command Team, are listed in the Emergency Resource Directory, and can be requested like any other emergency response resource.

CDF is in the process of implementing an SDE/Oracle-based enterprise system that will support diverse user needs at various locations. The Fire Plan effort, which is being collaboratively developed with the BLM, involves the development of an enterprise system that will serve not only CDF fire needs but the fire planning needs of cooperating agencies as well. This effort involves migrating file server-based data into the SDE/Oracle data warehouse, integrating existing custom software tools into the enterprise, and establishing connectivity with cooperators.

The Resource Management Section of CDF regulates timber harvests on **state** and **private** lands in accordance with the California Forest Practice Act of 1973 (<http://www.fire.ca.gov/ResourceManagement/ForestPractice.asp>). Regional GIS offices in Fresno and Santa Rosa collect historical and proposed Timber Harvesting Plans to provide a spatial accounting of harvest activities for watershed analysis and cumulative effects analysis. Also, CDF collaborates with the Department of Fish and Game, the Department of Conservation, the North Coast Regional Water Quality Control Board, and the Department of Water Resources through the North Coast Watershed Assessment Program (NCWAP), which is utilizing GIS to conduct coarse watershed assessments on individual North Coast watersheds. To support these analyses, NCWAP has collected 10-meter DEMs, 1:24,000 scale hydrography layers that meet BLM Watershed Handbook standards, 1:24,000 scale enhanced roads layers, and 1:24,000 Geology and Geomorphic Features data. However, the lack of higher quality enhanced hydrography and roads data has constrained these watershed assessment efforts.

In addition, CDF-FRAP is charged with assessing current conditions and trends across ownerships for California's forests and rangelands. FRAP is co-located with the USFS for the purpose of seamless vegetation mapping and monitoring. The California Land Cover Mapping and Monitoring Program uses a coordinated schedule to integrate vegetation mapping, use of LANDSAT imagery to monitor vegetation changes over 5-year increments (including causes of change) and the remapping of vegetation for areas of significant **land cover** change ([http://frap.cdf.ca.gov/projects/land\\_cover/index.html](http://frap.cdf.ca.gov/projects/land_cover/index.html)). This program provides the most cost-effective method for capturing high quality vegetation and monitoring data across all ownerships in the State. In addition, CDF uses GIS in **forest health**, such as monitoring Monterey Pine Pitch Canker ([http://frap.cdf.ca.gov/pitch\\_canker/](http://frap.cdf.ca.gov/pitch_canker/)) and Sudden Oak Death, and utilizes a GIS layer of historic fire perimeters to analyze fire return intervals. CDF has contracted with the Pacific Northwest Forest Inventory and Analysis (PNW-FIA) program to integrate FRAP vegetation data with FIA plot data to provide statistical samples of structural information cross-linked to mapping classes. CDF is currently in the process of working with a private contractor to assess the need for and develop a state standard for Digital Land Record Information (parcels).

CDF is also implementing a new Computer Aided Dispatch (CAD) System that requires a complete digital road network, with addresses. High-resolution aerial imagery would be extremely useful for validating road data used within the CAD system. However, such imagery is not available statewide. The CAD system operates without high-resolution imagery at this time.

### ***3. Statewide and Other GIT Linkages:***

The Office of the California Geographic Information Officer (GIO), created in July 2000, serves as the lead statewide organization for GI/GIT in California (<http://gis.ca.gov>). Statewide GI/GIT efforts are being coordinated through and with five groups, including the GIS Executive Sponsors Committee (GIS-ESC). The GIO reports to the GIS-ESC, providing a collaborative and neutral approach to GI/GIT activities. The role of the GIS-ESC is to establish strategic direction, set priorities, policies, and funding strategies, and provide resources to achieve the goals and objectives of the Statewide GI Strategic Plan. Additional groups involved in coordination are the California Mapping Coordinating Committee (CMCC), which coordinates GIS activities within state government, the Federal Geographic Coordinating

Committee of California, the Statewide GIS Council, and the California Geographic Information Association (CGIA). CDF is a member of, and has been extremely active within the CMCC, promoting new funding initiatives for capture and maintenance of base data, and is represented on the Statewide GIS Council through the Resources Agency representative.

CMCC has developed a new California Spatial Information Library (CASIL) (<http://gis.ca.gov>). In addition to CASIL, the CMCC is in the process of developing a Web Portal and a series of GI-related web pages to provide information on related State activities, access to statewide data, and links to the larger California GIS community (<http://gis.ca.gov>). The CMCC has is also distributing statewide physical and cultural GI to the public for free through servers at the California Environmental Resources Evaluation System (CERES) (<http://ceres.ca.gov>) in the Resources Agency and at the National Aeronautical and Space Agency (NASA) Ames Research Center. CERES and NASA-Ames are partners in a NASA-funded project known as the California Land Science Information Project (CaLSIP) that was initiated to increase data access (<http://ceres.ca.gov/calsip>). CaLSIP partners include UC Berkeley's Research Program in Environmental Planning and GIS (REGIS) ([www.regis.berkeley.edu](http://www.regis.berkeley.edu)) and the Governor's Office of Emergency Services. Digital Orthophotos for California (600 to 700 megabytes) will be added to the archive at NASA-Ames and accessible via CASIL early in 2002. In addition, some NASA ER-2 aerial photography will be available on the Ames server. Additional access is provided via the NASA and CERES sites, and will grow higher as the availability of digital orthophotos and other data at CASIL becomes widely known.