

# NATIONAL PARK SERVICE

# WILDLAND FIRE REPORT

1991

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### Table of Contents

Wildland Fire Activity Summary2
Program Accomplishments7
Table 1 - Fire Management Authorizations Fiscal Year 199115
Table 2 - Interagency Fairshare Programs Fiscal Year 199116
Table 3 - Fire Severity Funding Fiscal Year 1991
Table 4 - NPS Normal Fire Year Statistics
Table 5 - National Fire Activity 199119
Table 6 - Wildfires and Acres by Size Class 1991
Table 7 - Wildfires by Cause 199120
Table 8 - Large Wildfires 199121
Table 9 - Wildfires by Region 199122
Table 10 - Wildfires 1982 - 199123
Table 11 - Wildfire Suppression History24
Table 12 - Mutual Aid Responses by Region 1991
Table 13 - Mutual Aid Responses 1982 - 1991
Table 14 - False Alarms 1982 - 199127
Table 15 - Support Action Personnel by Region 1991
Table 16 - Support Actions 1985 - 1991
Table 17 - Management Ignited Prescribed Burns by Region 199130
Table 18 - Management Ignited Prescribed Burns 1982 - 199131
Table 19 - Large Management Ignited Prescribed Burns 199132
Table 20 - Prescribed Natural Fires 1982 - 1991
Table 21 - Prescribed Fire History
Table 22 - Interagency Hotshot Crew Workload Distribution35
Table 23 - Interagency Hotshot Crew Wildfire Assignments 199137
Appendix - National Fire Weather Report 1991

#### <u>Alaska</u> <u>Region</u>

The Alaska Region had a total of 14 fires within park units, one outside a park that was suppressed by NPS personnel and two false alarms. The cause of a fire that grew to over 32,000 acres at Yukon Charley Rivers National Preserve is being investigated. There is some evidence to suggest that flares from military aircraft may have caused this fire.

The state of Alaska had a lively fire season with a record number of fire starts in the month of June caused by lightning combined with record low precipitation during May and June.

By mid-July most parts of the state, except the interior of Alaska, started receiving normal moisture. Because of the dry conditions in the interior, most fires in "Limited" suppression zones continued to burn until the end of September.

#### Mid-Atlantic Region

A total of 71 NPS suppression actions occurred in 1991 for a total of over 15,000 acres on both NPS lands and on areas protected under mutual aid agreements.

Mid-Atlantic Region experienced a very busy Fall fire season as a result of the drought conditions that existed in 1991. Presuppression funding enabled New River Gorge to provide an effective initial attack on many fires, including 1 Class G, and 1 Class F fire in the Fall. Of note, the Gauley and Gauley Mountain Fires' acreage totaled in excess of 13,000 acres. During this episode, NPS resources were instrumental in saving the town of Arnsted, West Virginia, and in the rescue of an entrapped crew of volunteer firefighters on a nearby statemanaged fire. Fire activity during a three week period in late October and early November provided significant challenges. During this period, a total of 350,000 acres burned in West Virginia, stretching interagency resources to their limits.

Through teamwork and cooperation between an NPS emergency presuppression crew and local park rangers, two local individuals were apprehended and arrested, and subsequently indicted for four counts of wildland arson in New River Gorge.

#### Midwest Region

As a result of a relatively quiet fire season nationally, the Midwest Region experienced no major out-of-Region mobilization of resources this year. In fact, the Midwest was a net receiver of resources in late summer when there was a flurry of fire activity along the Canadian border in late August and early September. Both Voyaguers and Isle Royale National Parks experienced a rash of multiple lightning ignitions starting August 27. Twelve fires at Voyaguers and 4 at Isle Royale during that period taxed park resources. Voyaguers was forced to go to full suppression since the conditions exceeded the prescription for prescribed natural fires. Isle Royale also was forced to exercise full suppression due to lack of an approved prescribed natural fire management plan. Two of Voyaguers' fires, the Lucille Lake and the Net Lake Fires went into significant attack, with the latter utilizing a Minnesota Type II overhead team. Both fires doubled in size on Labor Day due to high winds. Canada assisted with CL-215 water bombers, and Superior National Forest provided assistance to both parks' fires, especially with it's Beaver float plane water droppers.

#### North Atlantic Region

The 1991 calendar year saw 49 wildland fires burn a total of 148 acres within the region. Only very minor property damage resulted from these fires despite the fact that much of the coastal portion of the region was experiencing severe drought conditions during the months of July and August.

During this period Acadia National Park, Cape Cod National Seashore, Fire Island National Seashore, and Gateway National Recreation Area were authorized to establish separate fire severity accounts and expend funds on a variety of approved presuppression activities. These activities included the placement of one helicopter, 2 Type III Incident Commanders, the purchase of needed fire fighting supplies, and the training/qualification of 30 additional NPS personnel as initial attack firefighters.

In late October and early November, 2 overhead and 13 firefighters were dispatched to aid in presuppression and suppression efforts in the states of West Virginia and Virginia. These firefighters and 1 overhead were attached to the NPS Arrowhead Hotshot Crew for a three week period. This experience provided all of these individuals both an excellent training and a quality fire fighting experience.

#### <u>National</u> <u>Capital</u> <u>Region</u>

The 1991 Fall fire season in the Appalachians lived up to its advanced billing. Wildfires blackened hundreds of acres of forest lands and threatened countless homes and other structures located in or near national and state forests from Maryland to Tennessee. National Capital Region (NCR) assisted in the suppression of these fires by dispatching crews and overhead personnel from NCR parks to fires burning in five states. A total of 65 firefighters and overhead were dispatched to 13 fires. Overall, 610 firefighter days were committed to this interagency effort by the NCR parks.

A Job Corps fire crew was organized and equipped at Harpers Ferry Center, and after completing training, provided suppression assistance on fires in the George Washington National Forest and lands administered by the Appalachian Trail Commission in West Virginia.

The high fire danger in Virginia resulted in the closure of all NPS lands in the region to open campfires and smoking. A shortlived ban on entry into lands outside developed areas was instituted in concert with the Commonwealth of Virginia, but was rescinded when Virginia's Governor, who had initiated the ban, withdrew his Proclamation.

#### <u>Rocky Mountain Region</u>

Most of the Region experienced heavy snowfall during the early winter but this condition did not continue throughout the entire winter. By late March, and early April, many areas had dried to severe conditions. Expectations of a severe wildfire season were realized in early April when the Shirttail Fire burned 1,600 acres of Wind Cave National Park and 2,400 acres of adjacent Black Hills National Forest. An interagency Type II Incident Management Team was called to manage the Shirttail Fire, while a Type I Team was mobilized at the same time for the Horse Creek incident, a 1,500 acre escaped prescribed burn on the Black Hills National Forest near Jewel Cave National Monument.

Large-scale precipitation events occurring throughout April and May brought up to 12 inches of precipitation to park areas in Montana, Wyoming, North Dakota, South Dakota, and Colorado. Not all areas, however, received this amount of moisture. Severity funded helitack operations were implemented in Rocky Mountain National Park in conjunction with the Arapaho and Roosevelt National Forests, but terminated with the onset of increased precipitation.

For the remainder of the summer, no other large fires occurred. Yellowstone National Park had the largest incident, the Pelican Fire, at 245 acres. Zion National Park experienced numerous multiple fire days but initial attack kept fires to size class A, B, and C. One fire, the Big Fire, was jointly managed with the Bureau of Land Management. Numerous NPS personnel were involved in interagency Type II crew mobilizations.

During October, normally the close of fire season, significant wildfire activity occurred throughout Montana and Wyoming. Although no large wildfires occurred on NPS lands, greater interagency support was provided and more involvement occurred during this month than had occurred during the June-September period. NPS personnel supported fires in California, Oregon, Idaho, Washington, Montana, Wyoming, West Virginia, Virginia, and Kentucky.

Three parks restarted their prescribed natural fire programs (Glacier, Grand Teton, and Dinosaur). No large prescribed natural fires occurred, but each park managed multiple fires during the season.

#### Southeast Region

The January to May fire season for South Florida parks (Big Cypress and Everglades) was low in fire intensity as compared to previous years. The Florida Division of Forestry indicated that the severity of the Florida fire season may be due to El Nino events. There appears to be a correlation between winter precipitation in Florida and sea surface temperatures in the central and eastern Pacific Ocean. The higher the sea surface temperatures, the greater the amount of winter precipitation and consequently the smaller amount of acres burned.

Fire activity was low during the Spring fire season, which is usually the most severe of the Fall/Spring fire seasons experienced by most of the Southeastern parks. NPS personnel provided assistance to cooperating agencies in suppressing wildfires on the Jefferson, Chattahoochee, and Daniel Boone National Forests; National Forests in Alabama, and the Wichita Mountains National Wildlife Refuge.

Although Southeastern parks experienced extended periods of high to extreme fire danger, fire activity was typically low during the Fall fire season. On the other hand, major fire activity occurred in the Appalachian Mountains on neighboring National Forests. Park fire personnel assisted cooperators on project wildfires occurring on the George Washington, Cherokee, and Daniel Boone National Forests. Southeast Region fire personnel also assisted on wildfires threatening the New River Gorge National River in Mid-Atlantic Region. At the peak of the "Appalachian" mobilization, Southeastern parks provided 50 firefighters and 32 overhead personnel. Two of the project fires on the George Washington National Forest burned onto the Blue Ridge Parkway.

#### Southwest Region

The growing El Nino in the Pacific resulted in virtually no fire activity in the Southwest as record rains and snows battered most of the Region. Most parks had few, if any ignitions, and these were generally limited to class A and B sizes. El Malpais was the only park to have a significant fire, the Lava Fire, which burned into the park from BLM lands, and required assistance from the Zone Type II Incident Management Team. The only other significant wildfire activity involved the late season mobilization of interagency resources to assist major suppression efforts in California, the East Coast, and the Pacific Northwest.

Prescribed fire activity was also hindered by the wet weather. With the approval of the new fire management plan, prescribed natural fire was again available to Carlsbad Caverns but the few lightning ignitions were self extinguished. Management ignited prescribed burn programs at Bandelier, Guadalupe Mountains, Big Thicket, Pea Ridge, Lyndon B. Johnson, and Buffalo River were likewise washed out with the planned burns being rescheduled into 1992.

#### Western Region

Although the region had no major mobilizations of Type II handcrews within the parks, there were several significant prescribed natural fires and wildfires, and some notable mutual aid fires on adjacent lands in 1991.

Yosemite, Sequoia and Kings Canyon National Parks experienced multiple starts on July 21 due to lightning activity. Partially due to support of severity-funded firefighters, 18 fires were kept at Class A size shortly after initial attack. The same parks had lightning activity on July 30 which resulted in 7 small prescribed natural fires (PNF) within Sequoia/Kings Canyon, and 1 small PNF in Yosemite.

In Yosemite, the Frog and Ill wildfires began as prescribed natural fires. The Frog Fire burned nearly 2,450 acres just north of Hetch Hetchy, and the Ill Fire burned nearly 3,800 acres within the Illouette Valley. Both started as lightning strikes on September 6 and 7, within Prescribed Natural Fire Zones, but due to excess smoke and erratic fire behavior, they were converted to wildfires on September 21 and suppressed at a cost exceeding 1.5 million dollars.

In Sequoia and Kings Canyon National Parks, the Deer Creek prescribed natural fire began as a lightning strike on September 26 and burned a total of nearly 1,000 acres.

Pinnacles National Monument had 2 lightning-caused wildfires for a total of 20 acres on September 27. These were the first lightning-caused fires since 1933.

In Oakland and Berkeley, California, the Tunnel Fire began on October 21 and involved 25 fatalities and over 3,000 structures. Both Golden Gate National Recreation Area and Point Reyes National Seashore sent engines to assist with the suppression effort.

#### Branch of Fire and Aviation Management

Three members of the NPS Alpine Hotshot Crew - Jim Mattingly, William Moe, and David Niemi - were named as recipients of the Department of Agriculture's Valor Award for actions they took to prevent injury and loss of life to members of their crew and to obtain medical treatment and safe transport from a lifethreatening situation for a badly burned firefighter from another crew while working on the Dude Fire in June, 1990. The three were also nominated for the Department of the Interior (DOI) Valor Award. The entire crew was nominated for the DOI Exemplary Act Award, and three other members - Mike Kaib, James Higgins, and Mike Beasley - were recommended for individual Exemplary Act In addition to the above honors, Mattingly received BIFC Awards. "Employee of the Quarter" recognition in 1991 for "his calm leadership and professional skill at a time of 'great danger and stress'" during the Dude Fire incident.

Three new user's guides were completed for the Wildland Fire Management Computer System (WFMCS). The "Incident Qualifications" menu area user's guide is now available via an on-line viewing and printing option. The "FIREPRO" user's guide was distributed to the field in May. A user's guide for the remaining menu areas was distributed in December. Many program enhancements developed in the "Qualifications" menu area in 1991 will be carried over into other menu areas in 1992 in order to make the system more user-friendly. User's guide will be updated accordingly and redistributed.

Interest in the WFMCS and it's capabilities is picking up in other agencies. The U.S. Fish and Wildlife Service provided funding to transfer the software to their mainframe and provide them technical support in their use of the programs. Other agencies have shown interest in the Qualifications component of the software.

The FIREPRO III budget system was automated during the summer, allowing parks and regional offices to directly input baseline data necessary for budget analysis.

A FIREPRO Steering Committee, whose charter is to serve as an advisory group to guide the development and implementation of the FIREPRO budget planning and allocation process, was established The committee meets biannually, and members include in 1991. Steve Botti (Chairman) and Dean Berg, Branch of Fire and Aviation Management; Chris Cameron, WRO; Dan O'Brien, NARO; Mike Warren, Sequoia-Kings Canyon; Kevin Kacer, Big Cypress; Len Dems, Shenandoah; Bill Adams, Blackhills Area/Wind Cave; and Steve Jakala, Voyaquers. Several key issues were discussed and acted upon in the committee's first two meetings, including: fire season analysis; conversions of temporary positions to permanent status; development of additional benchmark position descriptions for fire management; reviewed logic in Rx burning analyses; and develop verification procedures for the initial attack model used in FIREPRO analyses. Members can be used as a means for field and regional staff to convey their concerns to the committee.

The Prevention Analysis Handbook was completed (with assistance from Grand Tetons' staff) and distributed to field areas in February. The analysis process is the first of its kind to be implemented by a wildland fire agency, and is the first step in bringing prevention formally into the fire management analysis picture in the National Park Service. Assistance was provided to Big Cypress, Everglades and Yellowstone in the development of their plans.

Site visits for the purpose of program review and assistance continued to be a high priority for Branch staff. Program reviews were conducted in Everglades, Big Cypress, Wind Cave, Jewel Cave, Mount Rushmore, Devil's Tower, Badlands, Lake Mead, and the Alaska Region's Fire Management Office. Review of severity conditions were conducted at Acadia, Cape Cod, Fire Island, and Gateway. Branch staff also participated in a Student Conservation Association (SCA "Warm Shots") fire crew program review at Mount Rainier and Olympic, and reviewed Alpine Interagency Hotshot Crew housing needs and project work at Zion, Rocky Mountains, and in the Black Hills. FIREPRO program audits were conducted at Grand Canyon, Everglades, Big Cypress, and Yosemite. The Structural Fire Specialist conducted numerous site visits, provided structural fire follow-up at Timpanogos Cave where the visitor center was damaged by fire, and assisted in a fire safety inspection of the AOD building in Reston, Virginia.

Branch staff participated in fire reviews of the McAllister Fire (North Cascades National Park), and the 1990 Yosemite Fires.

The National Park Service's observance of the 50th Anniversary of the bombing of Pearl Harbor, located at the USS Arizona, was the largest such agency event of this complexity and duration to be managed under the Incident Command System. The flexible, modular concept of the ICS, while not specifically designed to manage special events, again proved to be an excellent management tool. The Service's newly established Type I all-risk management team (under Incident Commander Rick Gale) assisted park staff in planning and managing the week's activities. A total of 105 NPS employees and 250 volunteers assisted in the various events. Branch personnel spent a total of 62 work days on this special event.

Assistance was provided to the Mid-Atlantic Region in developing 2 Type II all-risk, Incident Management Teams.

Program announcements and selections were made for the recently established Incident Overhead Personnel Development Program. A total of 318 suppression and 47 prescribed fire positions were filled.

Assistance is being provided to support a BLM initiative to expand the logistical coordination role at the Boise Interagency Fire Center (BIFC) to include support for all-risk and FEMA declared emergencies. BLM began reorganization in 1991 which will place their national program leadership for fire, aviation, and law enforcement at BIFC.

The National Park Service is providing contract service for the

purchase of interagency INCINET systems. Branch staff are also participating as members of the INCINET Steering and Caching Committees.

In the realm of training, Branch staff conducted a second session of the new "Fire Management for Managers" course. This course has received such wide acclaim that in it's third offering in 1992, it has been combined with a similar U.S. Forest Service course and offered on an interagency basis as "Fire Management for Agency Administrators." Branch staff also served as Chair of the Steering Committee for I-520/620 (Advanced Incident Management/Area Command); conducted MAC Group training; and assisted in the instruction and evaluation of the "National Parks and Wilderness Fire Management" course.

"Advanced Fire Behavior" (S-490) was handed off to the regions this year, and will be available through Publications Management System (PMS).

The two week RX-90 Burn Boss course was revised again, and held at Big Thicket National Preserve in Texas. Subsequently, the package was rewritten and submitted for printing by the Publications Management System at BIFC. Preparations were made for the next presentation at Shenandoah National Park in Virginia in October, 1992.

Regional Fire Management Officers were given the authority and responsibility to input their geographic area's training schedules into the Multi-Agency Training Schedule. Distribution is handled by the Branch to NWCG member agencies via hard copy, DataGeneral, and the NPS/BIA VAX.

Work proceeded on two videos for the NPS: "Fire Behavior Indicators" that will serve as a stand-alone package, and as a review module in the new S-290 Fire Behavior course (available March, 1992); and "Fire Management in the National Park Service" (available January, 1993).

The NWCG suppression curriculum proposal was reviewed by the field and comments were consolidated by the Training Working Team as a final proposal to NWCG with costs and alternatives. NWCG approved the preferred alternative in September, and funding procedures will be determined in January, 1992.

A Branch staff recommendation to the Training Working Team established NWCG instructor standards based upon NPS standards, and a formalized instructor handoff process for certain courses.

Structural fire safety presentations were made to a variety of groups, including: "Critical Issues - Museum Security and Fire Protection" course; "Safety Training for Line Managers"; "Introduction to NPS Operations"; and Chief Ranger conferences.

Branch interest in developing NWCG entrapment investigation guidelines resulted in assignment of the Fireline Safety Committee to development of guidelines. Branch employees assisted in developing those standards which go to NWCG for approval in early 1992. Through the combined efforts of Branch staff and the Mid-Atlantic Regional Safety Manager, a National Institute for Occupational Safety and Health (NIOSH) research team has become involved in studying health hazards of smoke effects on wildland fire personnel. The NIOSH team was dispatched to two fires in 1991. The Branch Training and Safety Specialist participated on the NWCG Health Hazards of Smoke research technical committee, giving direction to NWCG research dollars for mitigating those hazards.

HR 3360, the "Federal Fire Safety Act of 1991", was introduced September 24, 1991, by Rep. Rick Boucher (D-VA). If passed, the new law would require fire safety measures, including installation of automatic sprinkler systems in some federal office buildings, housing for federal employees and certain categories of federally subsidized housing. The NPS Structural Fire Specialist provided technical information to the legislative staff of the House Committee on Science, Space and Technology in support of the enhanced fire safety requirements.

For several years, the NPS has supported the activities of the National Wildland/Urban Interface Fire Protection Initiative. The Initiative is a coalition of agencies concerned about fire activity in the wildland/urban interface areas and includes the National Fire Protection Association (NFPA), the U.S. Forest Service, the National Association of Foresters, the Bureau of Land Management and the United States Fire Administration. In April, 1991, the Structural Fire Specialist was assigned to represent the NPS on the Initiative Steering Committee. The NPS continues to take an active role in the important fire safety activities of the Initiative. One result of this participation was the inclusion of a videotaped message from the Director of the National Park Service in the satellite broadcast over Emergency Education Network (EENET) as a part of a program on the wildland/urban interface fire problems.

As a departure from fire management activities, Branch staff had the privilege of hosting the NPS Regional Chief Rangers' Conference in October, and serving as one of the facilitators for the first NPS Women's Conference.

#### Midwest Region

Two new faces were added to the region's fire management staff. Mary Palensky, an Army Corps of Engineers employee, was selected to fill the regional fire program clerk position. Charlie Putnam, an employee from the Mark Twain National Forest, was selected to fill the vacant Fire Management Officer position at Ozark National Scenic Riverways.

#### North Atlantic Region

The vacant Regional Fire Management Officer position was filled by the selection of Dan O'Brien, FMO from Buffalo River.

The North Atlantic Region in cooperation with the Mid-Atlantic and National Capital Regions developed a two week long training academy. The collective thought was that this academy would provide needed training on a more cost effective basis than if these courses were separately sponsored by each region. An anticipated secondary benefit is that this training will provide a basis for these individuals to progress into the NPS Overhead Development Training Program. The academy will help qualify the majority of the participants as Type IV Incident Commanders. The academy is scheduled for February, 1992.

The Fire Management Office assisted a variety of regional and park personnel in the development of a regional inventory, survey and assessment of structural fire equipment and problems. The final product of this effort is a format that parks can use to write structural fire management plans that assess problems, develop priorities, and provide alternatives for implementation of solutions on an individual park basis. The Regional FMO will assume responsibility for implementation of this project in the Spring of 1992.

The Regional Fire Office assisted Fire Island National Seashore in the development of a program that would establish an "All Risk" Incident Management Team. This effort will attempt to integrate NPS personnel and officials from numerous neighboring communities into a unified command team (ICS). It is hoped that this program will be adopted by other parks that are faced with a similar situation.

#### National Capital Region

Indiana Dunes' Resource Management Specialist Carl Douhan was selected as the Region's Fire Management Officer to replace Tom Monroe who retired in 1990.

Initial meetings to develop a new organization, the Eastern Regional Coordination Committee were held on 2 occasions in 1991. The purpose of the Committee is to coordinate activities and to insure representation and participation of all federal agencies in decisions and activities pertaining to fire management in Region 9. Carl Douhan was selected to represent the four NPS Regions within the Region 9 geographical area, and was elected Vice-Chairman of the Committee. Midwest Region Fire Management Officer Ben Holmes was chosen to serve as Carl's alternate. Other members of the Committee include representatives from the U.S. Fish and Wildlife Service, Bureau of Indian Affairs, and U.S. Forest Service.

#### <u>Rocky Mountain Region</u>

Regional and park personnel were actively involved in participation in interagency coordination activities. Regional staff participated on three geographic area coordinating groups (Northern Rockies, Rocky Mountain, and Great Basin). The Great Basin Coordinating Group was newly established and coordinated involvement of all wildland fire management agencies. This group resolved a long-standing problem of dispatch coordination in the Great Basin by implementing a two-area coordination center concept. Reno, Nevada will serve as the area coordination center for Nevada, and Salt Lake City, Utah, was selected as the site for the remainder of the Great Basin. The Regional Office hosted the Great Basin Type I Incident Management Team meeting in Salt Lake City, Yellowstone National Park hosted the Northern Rockies Type I Team meeting, and NPS participated as co-host of the Rocky Mountain Area Fire Management Officer and Incident Management Team meetings. Fire management personnel from Rocky Mountain parks served as primary and alternate members of Type I Incident Management Teams in all three geographic areas.

Special assistance was provided to Mount Rushmore during incident management of the 50th Anniversary and dedication ceremonies, the Western States' Governors' Conference, and the Sturgis Motorcycle Rally.

Interagency training courses were sponsored including S-490, Advanced Fire Behavior Predictions; M-590, Fire Behavior for Managers; and Smoke Management Techniques. Instructors were provided for the Fire Management for Managers, and National Park and Wilderness Fire Management courses at the National Advanced Resources Technology Center. Personnel participated on interagency working committees and task groups for fire effects courses development; establishment and training of interagency buying teams; interagency dispatch center analysis; and area coordination center study.

#### Southeast Region

The long awaited HMMV's ("Hummers") arrived during the summer months and are currently being outfitted for wildland fire suppression and prescribed fire. One HMMV is located at Big Cypress, and two are for use at Everglades. These were the first three off the production line for non-military use. The forth off the production line was purchased by Arnold Schwarzenegger ....sorry to keep you waiting, ARNOLD.

The Regional Fire Office provided support to Virgin Islands National Park in training and outfitting a "Caribbean" fire crew comprised of personnel from the park and Virgin Islands Government Fire Service. The Virgin Islands crew is a part of an interagency effort to develop two fire crews in the Caribean. The second crew is comprised of personnel from the Caribean National Forest and NPS staff from San Juan National Historic Site in Puerto Rico.

The Great Onyx Job Corps (Mammoth Cave National Park) crew became available for fire duty during the Spring fire season and consequently became involved in prescribed fire holding actions on the Daniel Boone National Forest, and in suppression activities on the Daniel Boone (Spring and Fall fires) and at Mammoth Cave.

Big South Fork initiated their prescribed fire program during the Spring focussing on maintenance of cultural scenes. Attempts to initiate an 80-acre management ignited prescribed burn at Congaree Swamp failed to materialize when the area did not come into prescription. Assistance for the Congaree effort was provided by the Southern Interagency Hotshot Crew, with the Francis Marion/Sumter National Forest Fire Management Officer serving as the Burn Boss.

Prescribed Burn Boss II staff were certified at Big South Fork, Cape Hatteras, and Gulf Islands in 1991.

Audits of FY90 FIREPRO expenditures and fire program reviews were conducted at Big Cypress, Everglades, Blue Ridge Parkway, Great Smoky Mountains, Natchez Trace Parkway, and Cumberland Island.

In February the Regional Fire Office co-sponsored, with the Florida Division of Forestry and the Southern Multi-Agency Coordinating Group, a meeting of South Florida state and federal wildfire management agencies at Big Cypress National Preserve to discuss agency mandates, policies and constraints, suppression strategies, cooperative management ignited prescribed burning, mutual aid, and legislated expansion areas at Big Cypress and Everglades National Park.

Fire management personnel from the southeastern parks continued to facilitate interagency training and conducted a wide range of fire training opportunities in several advanced skills-based offerings. Instructors were provided for the "National Park and Wilderness Fire Management course at the National Advanced Resource Technology Center; provided assistance in the NWCG Fire Behavior Working Group's rewriting of S-290/390; and hosted the South Florida Prescribed Burner Workshop.

#### Southwest Region

The all-risk Incident Command System concept continued to grow in the Southwest with the Service taking the lead role in utilizing the fire dispatch and support system to sustain the nation's largest-ever cave rescue at Carlsbad Caverns, a multiple homicide at Big Bend, and provide inter-regional support to a law enforcement incident at Mount Rushmore.

Project Diablo, an international effort between Big Bend and the Mexican State of Chihuahua, continued its progress towards becoming a reality. A full Type II crew of Mexican nationals was recruited, trained and equipped and, after lengthy negotiations with the Immigration and Naturalization Service, finally approved for use in the United States. Late in the season the crew was brought into Big Bend and executed a management ignited prescribed burn to reduce hazard fuels in the Panther Junction developed area. This is the only organized crew on either side of the border in the entire Big Bend region, and is a tribute to the efforts of the park staff and the dedication of the Mexican citizens across the Rio Grande who make up the crew.

Some new faces graced the Southwest this year. El Malpais was added to the parks receiving base FIREPRO funding and added several initial attack firefighters to its staff for the 1991 season. Mary (Beth) Gale joined the Regional Office staff as a full-time dispatcher assigned to the Southwest Area Coordination Center (SWCC) in Albuquerque as the Center's first fulltime NPS representative. Sammy Lail was selected as the Fire Management Officer at Buffalo River, replacing Dan O'Brien who transferred to the North Atlantic Regional Office.

#### Western Region

Several personnel actions took place during the year in various fire management positions. Ken Hay transferred from Lava Beds National Monument to fill the Fire Program Assistant vacancy in the Regional Fire Office. Tom Nichols, Sequoia-Kings Canyon, replaced Tom Gavin as the Regional Prescribed Fire Specialist. Ken Castro was selected as the Fire Management Officer at Lassen Volcanic, and John Krashaar replaced Kevin Dempsey as Fire Management Officer at Whiskeytown after Kevin transferred into a new Department of the Interior Coordinator position at North Zone Dispatch/Training Center in Redding, California.

The Region held it's two week suppression training "Skills Academy" in February at the Regional Mobilization Site in Golden Gate National Recreation Area. Thirty trainees, selected from 75 nominees, participated in the consolidated training in S-200, 201, 211, 212, and 215. Trainees represented NPS staff from parks both in and outside the region, as well as trainees from the Bureau of Land Management (BLM).

Sequoia-Kings Canyon provided several advanced courses (S-336, I-403, and Rx-80). Joshua Tree National Monument coordinated and conducted a Fire Engine Operator's course in June for a class of 34 NPS and BLM trainees.

Twelve parks received initial severity funding allocations totalling \$374,300 to prepare for an apparent severe fire season. A 90-day helicopter contract was awarded, 39 additional seasonal firefighters were hired, existing seasonal personnel appointments were extended, and increased prevention efforts were undertaken.

A national review of the 1990 Yosemite fires was conducted by reviewers including personnel from other NPS regions, the U.S. Forest Service, and the California Department of Forestry.

Reviews were conducted for the Western Region Fire Effects Program, and the Region's Structural Fire Training Program. Nine structural fire training courses were held in 1991, and new structural fire engines were ordered or received by Grand Canyon, Hawaii Volcanoes, and Lake Mead.



Values in above graph stated in thousands. Program Mgmt/Presuppression above includes PWE 340, 341, 342, 346.





Primary work elements 340 and 341 were established to support Prescribed Natural Fire operations and Hazard Fuel Reduction programs respectively. The Annual Operating Program for Program Management (PWE 342) was established to support national and regional overhead activities, training development, interagency fairshare activities and permanent staffing. Emergency Presuppression (PWE 343) included funding for step-up plans implemented during periods of very high and extreme fire danger. Suppression funding (PWE 344) includes costs of wildfire suppression actions, and Emergency Rehabilitation (PWE 345) provided funding for rehabilitation actions implemented in association with, and immediately after suppression. Presuppression funding (PWE 346) includes initial attack preparedness, training, capitalized equipment, and support for 2 interagency hotshot crews.

REGION	PARK	PROGRAM ITEM(S)	COST
Alaska		Alaska Fire Service	\$149,300
Pacific Northwest		Airtanker Operations, Coordination Center	\$59,100
Rocky Mountain		Smokejumper Operations, Air Tanker Operations, Coordination Center, Helicopter Contracts	\$94,000
	Dinosaur	Helicopter Contract	\$4,700
	Wind Cave	Helicopter Contract	\$5,500
Southeast		Helicopter Contract, Coordination Center, Region Fire Cache	\$17,500
	Great Smoky Mtns.	Air Tanker Operation	\$20,700
Southwest		Fire Crew, Lookout Tower, Helicopter Contract, Aerial Detection	\$5,000
Western		Coordination Centers, Air Tanker Operation, Prevention Program, Smoke Mgmt. Coordinator	\$105,000
	Joshua Tree	Coordination Center	\$3,000
	Lassen Volcanic	Lookout Tower Staffing	\$100
	Redwoods	Aerial Recon Contract	\$12,000
	Saguaro	Helicopter Contract	\$6,500
Branch of Fire Mgmt		National Wildfire Coordination Group, BIFC Operation	\$187,393
		GRAND TOTAL	\$664,293

Table 3. Fire Severity Funding Fiscal Year 19	le :	e 3	. Fire	Severity	Funding	Fiscal	Year	199
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REGION	REQUESTOR	AMOUNT
Western	Death Valley	\$20,200
	Golden Gate	\$29,000
	Grand Canyon	\$4,300
	Great Basin	\$300
	Lassen Volcanic	\$17,300
	Lava Beds	\$28,700
	Pinnacles	\$23,600
	Redwood	\$1,500
	Santa Monica Mountains	\$40,400
	Sequoia-Kings Canyon	\$8,900
	Whiskeytown	\$87,900
	Yosemite	\$112,200
Rocky Mountain	Rocky Mountain NP	\$91,500
Pacific Northwest	Regional Office	\$45,000
North Atlantic	Regional Office	\$600
	Acadia	\$38,600
	Cape Cod	\$1,800
	Fire Island	\$81,300
	Gateway	\$39,300
	TOTAL APPROVED FUNDING:	\$672,400

Severity funding must be approved by the Branch of Fire and Aviation Management, Boise Interagency Fire Center.

Severity funding is intended to increase initial attack preparedness and fire prevention in response to an anticipated long term fire potential greater than the normal fire year. The severe fire potential may be the result of long term drought, unusual fuel conditions or other objective conditions.

Severity differs from step-up planning in that step-up plans are approved by the regional fire management officer; are driven by staffing classes which are determined by the burning index. Step-up plans are shorter term increases in preparedness and prevention.

Severity funds must be terminated as soon as conditions return to the normal fire year.

SIZE CLASS IN ACRES	NUMBER OF WILDFIRES	NUMBER OF PRESCRIBED NATURAL FIRES
A (0 - 0.2)	445	81
B (0.3 - 9)	257	33
C (10 - 99)	67	23
D (100 - 299)	22	14
E (300 - 999)	14	9
F (1,000 - 4,999)	10	7
<u>    (5,000  +)</u>	5	2
TOTAL	820	169

Start days: 538 Peak number of starts in a day: 24

The normal fire year calculation displayed here is based on an analysis of NPS fire history for ten years from 1982 through 1991. "Normal" occurrence is defined as the third worst year in a ten year analysis period, and the statistics for each size class may be derived from different years.

FIRE TYPE	# FIRES	NPS ACRES
Suppressed on NPS lands by NPS full control strategy	632	81,707
Suppressed on NPS lands by NPS modified control	30	25,728
Suppressed on NPS lands by other federal agency	7	24
Suppressed on NPS lands by non-federal agency	39	281
TOTAL WILDFIRES	708	107,740
Prescribed natural fires	48	1,354
Management ignited prescribed burns	117	45,433
TOTAL PRESCRIBED FIRES	165	46,787
Natural out on NPS lands	156	137
Mutual aid by NPS on other lands	257	
Support actions (non-local)	467	
False Alarms	90	

#### Table 5. National Fire Activity 1991

Table 6. Wildfires and Acres by Size Class 1991

	SIZE CLASS IN ACRES	AGENCY FIRES	( LANDS ACRES	OTHER FIRES	LANDS ACRES	ALL FIRES	LANDS ACRES
А	(0-0.2)	458	50	95	11	553	61
В	(0.3-9)	157	296	88	214	245	510
С	(10-99)	54	1,645	31	1,219	85	2,864
D	(100-299)	18	2,423	10	2,266	28	4,689
E	(300-999)	14	5,826	9	5,215	23	11,041
F	(1,000-4,999)	3	9,704	4	12,430	7	22,134
G	(5,000-)	4	87,796	1	10,010	5	97,806
TOT	TAL	708	107,740	238	31,365	946	139,105

There were 708 wildfires reported on NPS land in 1991, which is 86% of the normal fire year calculation (Table 14). Approximately 87% of the wildfires were controlled at under 10 acres in total size. The only fire size classes that exceeded the agency norm were those ranging in excess of 1,000 acres.

CAUSE	AGENCY # FIRES	LANDS # ACRES	AGENCY % FIRES	LANDS % ACRES
Lightning	268	68,368	37.9	63.5
Campfire	150	300	21.2	0.3
Smoking	37	211	5.2	0.2
Debris Burning	21	29	2.9	0
Incendiary	72	1,120	10.2	1.0
Equipment Use	17	700	2.4	0.7
Railroads	16	9	2.3	0
Children	15	590	2.1	0.5
Misc/Unknown	112	36,413	15.8	33.8
TOTAL	708	107,740	100	100

Table 7. Wildfires by Cause 1991

REG.	PARK	SUPPRESSION STRATEGY	FIRE NAME	NPS ACRES	TOTAL ACRES
ARO	Denali	Contain	B664	3,940	3,940
	Gates of the Arctic	Contain	B436(AFS)	13,290	13,290
	Gates of the Arctic	Control	B614	33,910	33,910
	Yukon-Charley	Control	B339	34,260	34,260
MAR	Shenandoah	Control	Piney Mtn.	0.00	1,425
RMR	Wind Cave	Control	Shirtail	1,600	4,000
	Wind Cave	Control	Dewey 2	0.00	1,400
SWR	Big Bend	Contain	Stockton	6,336	6,336
	Chickasaw	Control	Arbuckle	0.00	10,000
WRO	Puukohola Heiau	Control	Shakelford	0.00	1,430
	Joshua Tree	Control	Jinho	0.00	3,000
	Yosemite	Control	Frog #1	1,950	1,950
	Yosemite	Control	I11	3,814	3,814

### Table 8. Large Wildfires 1991





22





YEAR	HUMAN-CAU NUMBER	SED FIRES ACRES	LIGHTNING-CAU NUMBER	SED FIRES ACRES	COMBINE NUMBER	D TOTALS ACRES
1982	60	3,975	743	34,985	803	38,960
1983	81	8,306	502	6,401	583	14,707
1984	62	7,230	639	13,479	701	20,709
1985	104	1,880	538	11,343	642	13,223
1986	172	83,985	491	34,072	663	118,057
1987	149	10,038	578	27,763	727	37,801
1988	219	202,849	687	893,499	906	1,096,348
1989	158	125,525	668	48,764	826	174,289
1990	106	118,199	556	49,375	662	167,574
1991	836	81,796	510	70,998	1,346	152,794

Table 11. Wildfire Suppression History

SUPPRESSION COSTS (approximate)							
1982	\$3,326,000	1987	\$6,296,000				
1983	\$806,100	1988	\$29,673,000				
1984	\$1,628,000	1989	\$33,840,000				
1985	\$6,723,000	1990	\$17,525,000				
1986	\$9,922,000	1991	\$5,410,214				



KEY:

all time high of 240 incidents.

MAR	-	Mid-Atlantic Region	SWR	-	Southwest Region
MWR	-	Midwest Region	NCR	-	National Capital Region
ARO	-	Alaska Region	RMR	-	Rocky Mountain Region
SER	-	Southeast Region	PNR	-	Pacific Northwest Region
NAR	-	North Atlantic Region	WRO	-	Western Region

Mutual aid responses are defined as suppression assists to other agencies under a Memorandum of Understanding, interagency agreement, or contract. Mutual aid responses also include NPS suppression action taken on other lands to prevent fire spread onto NPS lands. Mutual aid responses are geographically local, and do not include mobilizations of personnel from one geographic area to another. National Park Service personnel have been requested for, and have responded to, more and more mutual aid fire suppression actions each year. The number of mutual aid responses reported in 1991 reached an

25







Table shows maximum single-day commitment of people to interagency fire suppression in 1991.

Table 16. Support Actions 1985 - 1991



Support actions are primarily wildfire suppression assists to nonlocal areas. They do not include local, mutual-aid responses. National mobilizations of National Park Service personnel for interagency wildfire suppression efforts were unheard of until 1985. Since that time many agency personnel, including those whose regular job assignments are not fire-related, have been trained and dispatched to fire assignments.

The above table displays the number of support action dispatches reported for the past seven years. The actual number of individuals dispatched is substantially greater. These figures do not include people who were involved in mutual aid or local suppression activities, or the people involved in fire-related support positions at their home units.

In addition to personnel, NPS helicopters, engines, and other equipment were used during mobilizations.









REGION	PARK	FIRE NAME	ACRES	FUEL TYPE	COST/ACRE
RMR	Badlands	Northeast	1,280	Grassland	\$9.00
	Wind Cave	Gobbler	2,100	Open Pine	\$6.28
SER	Big Cypress	Hiwaycorr	2,759	Sawgrass	\$0.31
	Big Cypress	Pace'sdike	11,522	Sawgrass	\$0.32
	Big Cypress	Copelandrx	9,973	Palmetto	\$1.08
	Big Cypress	Wootenbird	1,500	Sawgrass	\$1.67
	Everglades	Block KLM	1,156	Palmetto	\$2.81
	Everglades	E.Boundary	1,975	Sawgrass	\$2.82
SWR	Big Thicket	FMU1501	1,930	Palmetto	\$4.57

Table 19. Large Management Ignited Prescribed Burns 1991

There were 117 management ignited prescribed burns completed during 1991, for a total of 45,433 acres treated.





YEAR	RX BU NUMBER	JRNS ACRES	RX NATUR NUMBER	AL FIRE ACRES	COMBINED NUMBER	) TOTALS ACRES
1982	115	16,303	89	7,014	204	23,317
1983	105	16,594	93	10,154	198	26,748
1984	121	17,711	217	43,386	338	61,097
1985	141	37,266	170	46,950	311	84,216
1986	119	36,448	147	49,035	266	85,483
1987	115	28,999	169	14,733	284	43,732
1988	98	21,351	150	55,670	248	77,021
1989	154	55,208	-	-	154	55,208
1990	165	82,924	32	3,046	197	85,970
1991	117	45,433	48	1,354	165	46,787

Table 21. Prescribed Fire History

Year	Number of Fires	% time Wildfire Suppression	% Time Prescribed Fires	% Time Other Projects
*1982*	22	22	18	28
*1983*	19	20	18	26
*1984*	55	53	10	14
1985	42	65	5	13
1986	35	50	13	17
1987	35	63	4	15
1988	31	79	3	3
1989	32	68	10	6
1990	26	54	9	12
1991	30	51	5	20

\* 1982 - 1984 statistics include Alpine, Arrowhead, and Bison crews
1985 - 1991 statistics include Alpine and Arrowhead crews

The National Park Service presently manages 2 of the 63 Interagency Hotshot Crews as part of its contribution to national interagency fire suppression resources. The crews' primary function is hot-line wildfire suppression. When not needed for suppression activities, the crews are able to make significant contributions on interagency prescribed fire operations and other physically demanding natural resource projects.

The National Park Service crews are assigned to duty stations at host parks. The Arrowhead crew is based at Sequoia-Kings Canyon National Parks, and the Alpine crew is based at Zion National Park. In 1992, the Alpine crew will be relocated to the Black Hills area with Wind Cave National Park serving as the administrative home unit.

In 1991, Alpine crew project work included completion of tamarisk reduction in the Horseshoe Bend area of Zion National Park, and tree thinning in over 450 acres on the Pine Valley Ranger District on the Dixie National Forest. Crew personnel presented a version of S-230 (Single Resource Boss, Crew) training to 26 participants from the NPS, USFS, and BLM. Prescribed fire assignments included the Navajo Lake project on the Dixie National Forest, and a burn prep for the East Boundary project in Zion National Park.

Construction of a new mess hall/office building at Sequoia-Kings Canyon dominated the Arrowhead crew's project time. By the end of the season, the project was approximately 50% completed. Additional work accomplishments in the host park included trail maintenance; roadside brushing; and splitting of over 500 cedar posts and rails for park visitor areas. Trail construction and site preparation for a timber sale were accomplished in neighboring Sequoia National Forest. While on presuppression standby at Shenandoah National Park, the crew completed approximately 50% of a labor-intensive hazard fuel reduction project adjacent to park structures.

CREW	FIRE NAME	LOCATION	DATES
Arrowhead	Sugarbowl	Kings Canyon, NPS	5/25
Alpine	Edmonds Hole	Dixie NF, USFS	6/7-9
Arrowhead	Bautista	San Bernardino, USFS	6/19-21
Alpine	Squaw Canyon	AZ Strip, BLM	6/23-25
Alpine	ABC Misc/Standby	Salmon NF, USFS	7/14-16
Arrowhead	Hook	San Bernardino, USFS	7/15-17
Alpine	Soldier Pass	Cedar City, BLM	7/21-22
Alpine	Bernard	Salmon NF, USFS	7/23-25
Alpine	ABC Misc/Standby	Salmon NF, USFS	7/25-26
Arrowhead	ABC Misc.	Sequoia NF, USFS	7/30-8/2
Arrowhead	Long	Sequoia NF, USFS	8/3-6
Alpine	Bull Pen	Zion NP, NPS	8/7-9
Alpine	Kitchen	Salmon NF, USFS	8/14-20
Arrowhead	Stockton	San Bernardino, USFS	8/21-25
Alpine	ABC Misc/Standby	Boise NF, USFS	8/22
Alpine	Thorn Gulch	Boise, BLM	8/22-23
Alpine	Hill Creek	Boise, BLM	8/23-25
Alpine	McKim	Salmon NF, USFS	8/26-9/4
Arrowhead	Kern	Sequoia NP, NPS	8/30-9/1
Alpine	Big	Cedar City, BLM	9/4-7
Alpine	Chimney Hill	Dixie NF, USFS	9/22-23
Arrowhead	Frog	Yosemite NP, NPS	9/23-27
Arrowhead	111	Yosemite NP, NPS	9/27-10/2
Alpine	Fawn	Payette NF, USFS	9/27-10/4
Alpine	Alice	Bridger-Teton, USFS	10/4-8
Arrowhead	Wauna	Mt. Hood NF, USFS	10/6-10
Arrowhead	Falls	Mt. Hood NF, USFS	10/11-14
Arrowhead	Warner	Williamette NF, USFS	10/15-22
Arrowhead**	Gauley	New River Gorge, NPS	10/30-31
Arrowhead**	Gauley Mtn.	New River Gorge, NPS	10/31-11/4

\*\*Included 7 Alpine crewmembers combined with remaining Arrowhead members.





# FIRE WEATHER REPORT 1991

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# NATIONAL FIRE WEATHER REPORT 1991

## **INTRODUCTION**

The purpose of this report is to review the meteorological conditions preceding and during the wildfire events of the 1991 fire season. Data sets used in this report are from statistics kept at WSFO Boise, and the graphical information originates in part from the National Meteorological Center and Climate Analysis Center.

The Western United States drought continued unabated through the 1990-1991 winter season. This was cause for great concern by Fire Management officials in all agencies. Abundant spring precipitation, a favorable summer weather pattern and an aggressive initial attack program on the part of Land Management agencies greatly alleviated the potential for an even more destructive fire season.

# TABLE OF CONTENTS

Weather Conditions Antecedent to the 1991 Fire Season	1
Figure - Average Winter Upper Air Pattern (500 mb) (December 90 - February 91)	1
Figure - Average Spring Upper Air Pattern (500 mb) (March - May 91)	2
Figure - Average Summer Upper Air Pattern (500 mb) (June - August 91)	3
Figure - Average Fall Upper Air Pattern (500 mb) (September - November 91)	4
Influence of Persistent Drought	5
Figure - Percent of Normal Precipitation - Winter (December 90 - February 91)	6
Figure - Palmer Drought Index (February 2, 1991)	6
Figure - Percent of Normal Precipitation - Spring (March - May 91)	7
Figure - Palmer Drought Index (May 25, 1991)	7
Figure - Percent of Normal Precipitation - Summer (June - August 91)	8
Figure - Palmer Drought Index (September 28, 1991)	8

# WEATHER CONDITIONS ANTECEDENT TO THE 1991 FIRE SEASON

Fall of 1990 once again saw the development of a ridge of high pressure over the Western United States. Eastern Pacific storm systems typically rode northeastward bringing some precipitation to portions of the Pacific Northwest and northern Rockies, then dropped southeast into the midsection of the country. The subtropical jet stream was also active around the bottom portion of the ridge of high pressure and brought unusual amounts of precipitation to portions of Arizona and most of New Mexico. This pattern was very persistent through the winter months.

It was evident by the end of February 1991 that California, Southern Oregon and the interior of the West were severely deficient in snowpack and total precipitation for the water year. At this point it appeared that another early and severe fire season would occur.



March was the beginning of a turnaround in the weather pattern with the storm track readjusting. Eastern Pacific storm systems penetrated the northwest states and tracked southeastward, and in a few cases, developed just off the California coast. This wet period lasted through the remainder of the spring. What could have been a very early fire season was tempered by this rainfall.

Alaska for most of the winter and spring experienced above normal rainfall and snowfall. So much snow fell that during breakup in the spring, flooding occurred through the interior of Alaska. Late Spring and early summer turned warm quickly and fire activity increased correspondingly.

The remainder of the United States during the late winter and spring of 1991 remained quite wet. Areas of the Upper Midwest did dry out in the spring but the Southeast continued in a wet regime.

#### AVERAGE SPRING UPPER AIR PATTERN (500MB) MAR, APR, MAY 1991



As spring turned to summer, high pressure situated itself near the Rocky Mountains. This kept a fairly persistent weak trough of low pressure along the West Coast. This trough had the effect of keeping marine layer well inland over the West Coast states, as well as creating an unstable atmosphere for thunderstorms to develop.

Fortunately this thunderstorm pattern did not follow the norm for most summers in the West as most were associated with beneficial rains. Lightning fire starts certainly did occur, but with higher humidities and some precipitation, initial attack forces were able to keep most fires small.



An indication of how severe the summer fire season could have been, given the right set of meteorological circumstances, took place in late September and October. With a strong ridge of high pressure along or just off the West Coast, above normal temperatures, low relative humidities and periodic high wind events replaced the pattern of spring and summer.

The result was widespread destructive fire activity through the Pacific Northwest and California. This was short lived however as the high pressure pattern broke down allowing wet Pacific storm systems to traverse the West.

Fire activity in the Appalachians picked up in late October and November. West Virginia, Kentucky and Tennessee were particularly hard hit. Rainfall and cooler temperatures during the first part of November helped rein in the fires.

### AVERAGE FALL UPPER AIR PATTERN (500 MB) SEP, OCT, NOV 1991



# INFLUENCE OF PERSISTENT DROUGHT

There are many ways to measure dry conditions in any one particular location. Over the past several years the Palmer Drought Index has been used as one measure of relative dryness. This index is long term and will only be moderately influenced by a short term wet periods. This index, along with measurements of both live and dead fuel moisture combined with longer range forecast charts becomes another tool in forecasting where the greatest fire potential exists.

Drought conditions for the past several years have been well documented in the Western United States. These conditions once again persisted for the 1991 fire season. Large areas of severe to extreme drought continued over the West through the winter months of 1990-1991 into early spring. Abundant spring rains decreased the indices somewhat by the end of May. This slightly wetter regime continued through the summer with sporadic but timely rainfall. An area of increasing drought became evident in the Mid Atlantic states and Ohio Valley as summer progressed into fall. The particularly dry regime of years past in the Southeastern states disappeared as abundant recurring rainfall fell through the spring and summer.

It should be noted that long term drought is only one indicator of high fire potential areas. Effects of short term dryness and well above normal temperatures can contribute greatly to high fire potential, even if a particular area is not in a long term drought situation.



### PERCENT OF NORMAL PRECIPITATION DEC 1990-JAN-FEB 1991

### PALMER DROUGHT INDEX THROUGH FEBRUARY 2, 1991



### PERCENT OF NORMAL PRECIPITATION MARCH-APRIL-MAY 1991



# PALMER DROUGHT INDEX MAY 25, 1991



### PERCENT OF NORMAL PRECIPITATION JUNE-JULY-AUGUST 1991



8