

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT THE SECOND 10 YEARS

INTRODUCTION

July 1, 1989, marked the 20th birthday of the Urban Drainage and Flood Control District. During that time the District has gradually increased its capabilities, in a carefully planned manner, to a current staff level of 17 employees and 1989 expenditures of \$12,043,200. The December, 1979, issue of *Flood Hazard News* contains a description of the origin and evolution of the District, for those readers who might be interested in how the District came to be. The purpose of this article is to look at changes which have occurred over the last ten years, and to take a look at some unique and interesting District projects.

All District activities are carried out through one of its five programs: Master Planning, Flood Plain Management, Maintenance, Design and Construction, and South Platte River. Revenues are derived from four property tax mill levies. The District can levy a maximum of 0.1 mill for the general fund which includes office expense and support staff in addition to the Master Planning and Flood Plain Management Programs. The District can also levy maximums of 0.4 mill for each of the Design and Construction and Maintenance Programs; and 0.1 mill for the South Platte River Program (excluding the Boulder County part of the District).

SIGNIFICANT DEVELOPMENTS OF THE LAST 10 YEARS

Maintenance Program takes shape. The Maintenance Program was in its infancy in 1979, but has grown to be a vital part of the District's overall effort. The 1989 maintenance service expenditures were \$4,798,200; and maintenance activities were provided in three categories of effort: routine, restoration and rehabilitation. Routine maintenance consists of mowing, weed control, debris pickup, silt removal, etc. Restoration activities require a higher level of effort and include projects like detention pond mucking, tree thinning, local erosion repair and revegetation. Rehabilitation projects are major construction projects meant to reclaim and rejuvenate existing facilities which are experiencing serious problems. Rehabilitation projects require engineering design and go through a bidding process on a project-by-project basis. Routine and restoration

contractors are chosen annually through a selection process which considers unit costs, past experience and past performance.

Newest Program. The newest District program, the South Platte River Program, was authorized by the State Legislature in 1987. This program is involved in planning, design, construction and maintenance of projects along the South Platte River. The impetus for creating the program was the completion of a master plan for the 40 miles of river from Chatfield Dam to the downstream District boundary. That master plan is now being used to aid in decisions concerning construction and maintenance projects along the river.

Annexation. In 1989 the State Legislature added 408 square miles to the District's area to include newly developing areas in Denver, Adams and Arapahoe Counties around the proposed Denver International Airport, as well as in northern Douglas County. The District now covers an area of 1608 square miles.

New Board Members. At the same time the Legislature added a provision to the District's statute which gives each city with a population over 100,000 a seat on the Board of Directors. The immediate effect of the legislation was to give seats on the Board to Aurora and Lakewood. The Board now totals 17 members.

INTERESTING AND UNIQUE PROJECTS

The District has completed many drainage and flood control projects, and a number of them have had interest or value beyond their flood control benefit. Some of those projects are described below.

Boulder Creek Flood Warning. In 1977 the District, Boulder and Boulder County completed an investigation of flood warning alternatives for Boulder Creek. As a result of that investigation, the sponsors chose to install the ALERT technology (radio reporting rain and stream gages) in the Boulder Creek drainage basin. The District also decided to hire a private meteorological service (PMS) to provide forecasts of flood potential tailored to the District area.

Now, the District has completed its 11th year with a PMS, and the ALERT system has been expanded to three additional basins in Boulder County and six basins in Denver and

surrounding suburban areas. A total of 49 gauging stations are now in place with 24 more planned for 1990.

As a side benefit, the Denver Water Board is using the rainfall data collected by the ALERT gages to assist them in developing their daily ET (evapotranspiration) ratings for their water conservation program. Similarly, the City of Aurora is using the rainfall data to schedule watering in its parks, and has projected significant savings using the data.

Cherry Creek. In 1977, Denver, Glendale, Arapahoe County and the District completed a master plan for Cherry Creek from the South Platte River to Cherry Creek Dam. Part of the plan called for the rehabilitation of the three mile reach of channel between the river and the Denver Country Club, which is contained between two vertical concrete retaining walls.

The rehabilitation, which included construction of a concrete maintenance trail in the walled section and a series of access ramps to the trail, was completed in 19xx. The trail has become perhaps the most heavily used recreational and commuting trail in the Denver Area, offering three miles of grade-separated trail.

Little Creek/Littleton RR Depression. When the City of Littleton and the Colorado Department of Highways (CDOH) depressed the mainline railroad tracks through the city, the depression had to cross Little Creek, and it also had to have a drainage system. Also, Little Creek had been obliterated by development between the railroad corridor and the South Platte River.

Littleton, CDOH and the District joined forces to construct a flood control channel for Little Creek which also was compatible with the depression. An enlarged channel was constructed from the South Platte to the downstream side of the railroad corridor, where a large, stepped drop structure was constructed. A triple box culvert was then constructed over the depression and connected to the top of the drop structure. Finally, a 48" reinforced concrete pipe was constructed under and adjacent to the channel until it could daylight into the channel to provide drainage for the depression.

The completed project allows trains to travel through Littleton without tying up traffic as they did in

FLOOD PLAIN MANAGEMENT PROGRAM NOTES

by
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FLOOD WARNING SYSTEMS

Development reviews continued at a low level of effort through most of 1989, although the number of referrals began to increase in the latter part of the year. We took the time which in past years had been spent on development reviews to make major strides in our flood warning efforts. Kevin Stewart was assigned to spend about 95% of his time developing warning plans, and designing and installing flood detection networks using the ALERT technology.

During 1989, the District worked with Arvada, Jefferson County, Denver and Aurora in the installation of three rain gauges, one weather station and 12 combination rain and stream gauges in four drainage basins. We also installed a repeater which will give us direct access to 53 gauges in Boulder County which we have not been able to receive directly in the past. We will also be installing three new gauging stations along the South Platte river which are funded by that program. Finally, as the year comes to an end, we are finalizing an agreement with Jefferson County, Lakewood and Morrison to expand the system into the Bear Creek basin.

COAL CREEK IMPLEMENTATION

In 1987 the District and Boulder County completed a unique type of master plan for Coal Creek and Rock Creek in Boulder County, Louisville, Lafayette and Broomfield. The flood plains are mostly undeveloped, and what makes the plan unique is that it identifies those undeveloped areas where special efforts will be expended to keep them as prime open space, rather than allowing them to be developed in the typical fashion of channelization or filling fringe areas.

In 1989 we began implementation of the plan in Louisville. The first small piece, a 3000 ft. length of gravel maintenance/recreation trail, was completed in November. Final design is underway on two road crossings and a railroad crossing. They will be under construction in early 1990.

ACQUISITION EFFORTS

As we go to press the District has two land acquisition deals pending using funds from the District's preservation fund. The first involves

the purchase of two houses, which contain a total of six apartments, which are located in the Boulder Creek floodway in Boulder. The city and the District are providing matching funds to buy the houses. They will be removed and the land used as an extension of the Boulder Creek greenway. By next spring we should have six fewer apartments in the floodway.

The other acquisition involves an attempt to acquire right-of-way for a future channelization project on Little Dry Creek. The owner has mined the property and is refilling it with construction debris. We want to acquire the property before it is completely refilled, which would put us in the position of having to remove the construction debris in order to construct the channel. In this case the preservation fund will pay for 100% of the purchase price, and the District's Board has reserved the option of requiring the construction project to reimburse the preservation fund at the time of construction.

CONFERENCE COMES TO DENVER

The third annual conference of the Southwest Association of ALERT Systems (SAAS) will be coming to Denver the last week in September, 1990. SAAS is composed of local and regional government users of the ALERT technology for flood warning systems in the eight state area of Arizona, Arkansas, Colorado, Kansas, Louisiana, New Mexico, Oklahoma and Texas.

For more information contact Kevin Stewart at the District.

COUNTY AND W/S DISTRICT FORM PARTNERSHIP

by
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Flood Plain Management Program

On March 24, 1988, Arapahoe County and the East Cherry Creek Valley Water and Sanitation District (ECCV) entered into an agreement which defines the roles and functions of each for providing storm drainage planning, facilities and services within the ECCV District. The Urban Drainage and Flood Control District (UDFCD) applauds this significant accomplishment and acknowledges the efforts of the many individuals involved with negotiating the various terms and conditions of the agreement. This agreement provides a model for other local governments

interested in achieving similar levels of cooperation between entities having over-lapping jurisdictions. The partnership which has been formed between Arapahoe County and ECCV represents one of the most comprehensive and efficient approaches to addressing multi-jurisdictional drainage problems.

State statute has provided ECCV with certain authority concerning storm drainage. Since both Arapahoe County and UDFCD also have authority over storm drainage, the over-lapping responsibilities greatly complicated development approval processes within ECCV. It became apparent that significant benefits could be realized if the roles and responsibilities of each entity were better defined. In addition, ECCV took the initiative to conduct master drainage planning studies which were officially adopted by both the County and ECCV in 1986. The master plans set forth a regional system of detention facilities to be implemented by ECCV and developers.

The 1988 agreement evolved through ECCV's active interest in implementing the adopted master plans and participating in development review processes. Through this agreement, procedures have been streamlined and flood plain management has become an integral part of each entity's review. Flood plains are being regulated in a manner consistent both with Arapahoe County and UDFCD flood plain regulations. In addition, UDFCD's maintenance eligibility requirements are recognized and incorporated in the planning, design and construction of each new facility. ECCV has accepted the responsibility for ownership, design, construction and maintenance of the "regional storm drainage system." Arapahoe County has accepted responsibility for "local storm drainage" facilities and services as well as the administration of flood plain regulations. The two entities have also coordinated on issues such as phosphorus control, fee assessments and arbitration.

UDFCD has been involved with development reviews in this area for a number of years. The partnership recently formed between ECCV and Arapahoe County compliments UDFCD's program and reduces the time required to complete reviews. UDFCD would like to express its appreciation to ECCV and Arapahoe County for their efforts in making this cooperative venture a success.