

THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
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MANAGEMENT AND FINANCING CONSIDERATIONS OF URBAN DRAINAGE AND FLOOD CONTROL

by HORACE L. SMITH

The Denver Area is making some progress with respect to the implementation of drainage and flood control facilities, functions and activities.

Under the auspices of the Denver Regional Council of Governments (DRCOG) or its predecessor, the Inter-County Regional Planning Commission (ICRPC), a number of drainage and flood control studies have been completed with varying degrees of acceptance and utility: The most notable is the *Urban Storm Drainage Criteria Manual*; the one with the most utility is the flood plain information series developed by the Corps of Engineers using base data (surveying) provided by local jurisdictions, either directly or through their contributions to DRCOG (this program is now being carried on by the Urban Drainage and Flood Control District - UD&FCD); Project REUSE has provided good base data with respect to Basin Identification and the coding thereof; the rainfall and runoff monitoring program will provide long-term technological benefit (this project was in cooperation with the United States Geological Survey - USGS.)

The Urban Drainage and Flood Control District has, recently, provided a real productive planning program which has the fantastic dimension of Metropolitan cooperation. This effort has resulted in the implementation of a joint construction project between the City and County of Denver and the City of Englewood for the drainage control of Little Dry Gulch, and there are several similar situations in the planning and negotiation stage.

The continuing process of negotiating contracts for planning and engineering is developing a comprehensive model of scope of work and contract for this purpose.

Additionally, the provision of review, by the various jurisdictions involved in the projects, has provided quality control in regard to the performance of the scope of work by the various consultants on the projects.

COST BENEFIT ANALYSIS

One of the most important steps, in the writer's opinion, has been the incorporation of Cost-Benefit Analysis within the planning for Flood Control Facilities by the UD&FCD. It has provided the Board of Directors of the District and the local jurisdictions with an identification of tangibles and intangibles, and thereby a basis for making logical decisions in regard to the level of drainage and flood control to be provided.

Irrespective of the aforementioned progress, the development of a practical management and financing plan for drainage and flood control is still somewhat elusive. It must be noted that the most progress has been made in the area of concern with gulch and stream situations within an urbanizing area. This is what the writer refers to as the inoculation for the disease.

The City and County of Denver has multiple problems related to the control of drainage and flooding, and most of those problems are related to existing urbanization rather than the ability to prevent problems. In other words, urbanization has outstripped the prevention process with regard to drainage and flood control.

VALVERDE PROJECT CITED

A classic example of the situation referred to is the Valverde Area of the City of Denver. Within this area
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HUD Awards \$503,000 Grant for Sanderson Gulch

Great relief was felt in the Denver-Lakewood area on February 9, 1973, when it was announced by Representative Donald G. Brotzman and Senator Peter H. Dominick that HUD had awarded a water and sewer grant of \$503,000 for drainage improvements on Sanderson Gulch. The money will go to Lakewood, Denver and the Urban Drainage and Flood Control District.

Total cost of improvements on Sanderson Gulch including engineering is estimated to be \$1,476,300. In addition to the funds from the Department of Housing and Urban Development, the State of Colorado has appropriated \$350,000 for the project. The remainder amounting to \$623,000 will be supplied by Lakewood and Denver. The Urban Drainage and Flood Control District will manage the effort, and a covering agreement has been negotiated between Lakewood, Denver and the District.

Although the grant from HUD was apparently

approved prior to the President's freeze of HUD water and sewer grant funds, the monies had been held up temporarily and funding was jeopardized. The strong support of the Denver Regional Office of HUD, headed by Robert Rosenheim, did much to make the grant a reality.

Negotiations will begin soon with Frazier and Gingery, engineers who prepared the preliminary plans, for final design engineering. Negotiations with property owners for drainage rights-of-way and easements also will be started without delay.

The Sanderson Gulch project is the first of its kind in the Denver area. It is not only the first actual project undertaken by the Flood Control District, but it is the first such urban effort to involve state funding. It also serves as an example of multi-jurisdictional cooperation in solving problems that cross local government boundaries. (See pictures on pages 4 and 5).

Urban Drainage and FLOOD CONTROL DISTRICT

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Dominick J. Gianola, District Civil Engineer
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Jack Gianola Joins Staff as District's Civil Engineer

Dominick J. Gianola, "Jack", joined the District's staff on February 1, 1973. Jack assumed responsibility as the District's Civil Engineer.



Jack is a registered Professional Engineer in the State of Colorado. He received his Bachelor of Science Degree in Civil Engineering in June 1966 from the University of Wyoming. He was athletic manager of all sports while at the University of Wyoming and his college expenses were financed by an NCAA Athletic Scholarship.

Since March 1970, Jack has been a plant engineer with the Western Electric Company at its Broomfield facility. While with Western Electric, he served as field inspector of construction of a manufacturing building and as soils inspector with control of excavation and back filling of building sites. He also was involved in soil testing, inspection of storm and sanitary sewers, and inspection of concrete paving, curb and gutter, curb and inlets and slab on grade. His jurisdiction included quality control of concrete, inspection of asphalt paving and gravel, estimating work; contract writing including bid invitations, analysis of construction problems, checking of shop drawings, and general association with building construction.

Jack also spent several months as a soils engineer with Woodward-Clevenger & Associates, and as a highway engineer with Wyoming Highway Department.

He spent two years with the U.S. Army Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire as a Civil Engineering Assistant. His Army experience included basic research in ballistics, instrumentation, and drilling of a 6" diameter hole through the Antarctic ice sheet. During the months Jack spent in the Antarctic, his drilling crew recovered 7,100 feet of core 4½ inches of diameter, consisting of ice with some volcanic ash, and dirt from the bottom of the hole.

Jack and his wife, Janice have one child, a boy Michael, who was one year old in February 1973. Jack and his family are living in Arvada.

Jack's interests include practically all types of athletic activities, especially football, skiing and basketball, in addition to photography and participation in community projects. He is a member of the Colorado Society of Professional Engineers and National Society of Professional Engineers.

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Working to Protect You and Your Property from Floods

WALDEN DWIGHT TOEVS

Representing Boulder County



County Commissioner Walden Dwight Toevs is a Presbyterian Minister specializing in work with young people. He has had extensive teaching experience and plays an active role in community development programs.

Born in 1927 at Aberdeen, Idaho, he attended the College of Idaho, Whitworth College and San Francisco Theological Seminary, winning BA, BD and STD degrees. He is married

and has five children, who keep things lively at the family home in Boulder.

Dr. Toevs was pastor of churches in Idaho, Utah and Washington state before settling in Boulder in 1962. He was Presbyterian University Pastor at the University of Colorado 1962-1970, and is now Director, United Ministries in Higher Education for the Denver-Boulder metropolitan area, with his office in Denver at 3006 Zuni St.

He has received numerous grants for his work with young people, and has organized and led many institutes and seminars on timely social and religious issues. One was an innovative school for middle-class high school drop-outs, although most of his work deals with college students, campus and community relationships. Seminars for clergy and faculty members have engaged his attention at times, as have summer camps for under-graduates and adult education programs for prison inmates.

As a member of the Board of County Commissioners of Boulder County, Dr. Toevs brings a fresh viewpoint backed by extensive experience in community betterment programs. He is an interesting and valuable addition to the Board of the Flood Control District.

JERRY GRANT

Representing Adams County



No stranger to politics and programs for community improvement, Jerry Grant served his first term in public office in 1960. He is a member of the Board of County Commissioners of Adams County. From 1964 to 1966 he served as district aide to former Congressman Roy McVickers.

Jerry was born in New York City in 1938, and has lived in the Denver metropolitan area for the past 14 years. His home is in Northglenn, where he is active in the Jaycees and in the Northglenn Kiwanis Club. He is married and has three children. Always interested in athletics, he plays basketball as a hobby on Monday evenings.

Among his many community activities, Jerry has served as a member of the Aurora Citizens Advisory Committee. He served in Adams County as chairman of the business solicitation committee for the March of Dimes. Another of his charitable activities has been serving as chairman of the Easter Seal Drive for Adams County.

Jerry is keenly interested in flood control problems and the other matters that come up for consideration by the Board of the Urban Drainage and Flood Control District. Some of these problems are the same or similar to the matters that confront a Board of County Commissioners in a county such as Adams, where there is a mixture of urban and rural development.

Flood Plain Zoning Case Upheld by Colorado Supreme Court

The Colorado State Supreme Court recently upheld an Adams County District Court ruling on a flood plain zoning case.

Mr. Joseph V. Famularo had purchased about 150 acres in Adams County. Part of his purchase was in a mineral conservation district and part in a flood plain control district. Mr. Famularo requested that a major portion of his land be placed in a mobile home district with a small part zoned for commercial use. The requested rezoning was denied by the Board of County Commissioners. Mr. Famularo sought relief from the District Court which upheld the Commissioners' refusal to rezone. The District Court ruling was subsequently upheld by the Colorado Supreme Court in a 6 to 1 decision.

Mr. Justice Groves of the Colorado Supreme Court delivered the majority opinion, as follows:

The plaintiff, Joseph V. Famularo, purchased approximately 150 acres of land in the unincorporated area of Adams County. At the time of purchase, a major part of the land was within a mineral conservation district, a

portion was in a flood control district, and a very small part was zoned for industrial use. Several months after purchasing the land, the plaintiff sought to have the property rezoned. Specifically, the plaintiff requested that the major portion of his land be placed in a mobile home district with a small part of the land zoned for commercial use. The requested rezoning was denied by the defendant Board of County Commissioners.

Thereafter, the plaintiff sought review of the commissioners' decision in the district court pursuant to C.R.C.P. 106(a)(4). Pursuant to C.R.C.P. 57, he also sought a judgment declaring that he had been deprived of his property without due process of law. Following a hearing on each claim, the district court held that the commissioners' refusal to rezone the plaintiffs property was not an abuse of discretion or in excess of the commissioners' jurisdiction. The court further held that the plaintiff had not been deprived of his property without due process of law. We affirm.

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Flood Control Management

(Continued from Page 1)

there is no real definable natural drainage way, although there is a natural swale which does contain a small ditch, or draw, as the low point within the basin. There has been such an urban development that, for the most part, the drainage within the basin has been restricted from reaching the ditch, or draw, and is, in fact, intercepted by the street systems. This type of drainage condition, therefore, reflects a situation which needs corrective measures in order to alleviate an existing problem. In other words, the disease needs treatment. The people of Denver have approved a \$20 million Bond Issue for the purpose of improving its sanitary and storm sewer systems, and the Valverde project was related as a priority consideration.

It has been stated that the design of drainage and flood control facilities is more related to *the flow of money* than it is related to the flow of water. This is particularly true with existing drainage problems. Arbitrary standards of protection cannot be justified, as a rule, for cases like Valverde. The writer is referring to the provision of protection for a 100-year storm, which some authorities promote. This question, then, is to what extent and degree of protection should be provided.

"EXTENT OF SERVICE"

Classes of "Extent of Service" with appropriate definitions for each class are listed below:

1. *Preventive*: This type of service is provided before the fact by such measures as flood plain zoning, land use control, on-site storage or any other measure which tends to decrease or minimize the contact of flood and drainage water with an urban system. Its implementation and enforcement must, of necessity, be through the legislative and administrative process of government. Its logical application would, of course, be prior to or in conjunction with urbanization.

2. *Outfall*: This class of service provides a storm sewer, or channel, into a drainage basin along a route that constitutes the valley of the basin.

3. *Natural*: This class of service is provided by nature in the form of rivers, creeks, gulches, and draws. It performs the same service as does an *Outfall*.

4. *Improved*: This class of service is a *Natural System* that has been improved to carry increased runoff produced by urban development and, thereby, allows for, or protects adjacent land improvements.

5. *Main*: This class of service is an extension of branch sewers into a drainage basin away from either an *Outfall*, *Natural*, or *Improved System*.

6. *Submain*: This class of service is provided by the extension of two, or more, sewers from a *Main*.

7. *Lateral*: This class of service is provided by the extension of sewers from *Sub-mains* to the extent of the extremities of the drainage basin.

8. *Comprehensive*: This class of service provides a storm sewer in each street throughout the drainage basin which it serves. It has as its components an *Outfall*, *Mains*, *Submains*, and *Laterals*.

9. *Street*: This class of service does not provide storm sewers but rather has curb and gutters for the purpose of transporting storm water runoff.

10. *Protective*: This class of service is afforded to properties not contributing storm water runoff into the drainage facilities serving the property but is served by virtue of the fact that the facilities intercept the storm water runoff that would have flowed across that property.

11. *Partial*: This class of service denotes that the system cannot be clearly defined into one of the aforementioned classes. A *Partial Submain Class* indicates that not all submains are installed or that a portion of a submain is lacking.

12. *Minimal*: This class of service is, as the name implies, whatever drainage facilities, or control, that are provided are a fraction of the amount that would be required to escalate the service to its full potential, or requirement.

THE PICTURES: SCENES ALONG SANDERSON GULCH





“TYPE OF SERVICE”

In conjunction with the extent of service, it is necessary to define “Type of Service.” Type of Service is really the purpose, or benefit, of providing drainage and flood control, as follows:

1. Protection to life.
2. Alleviation of health hazards.
3. Alleviation of traffic obstructions and hazards.
4. Alleviation of property damage.
5. Alleviation of street maintenance.
6. Enhancement of land use or value.
7. Alleviation or discharge of legal responsibility for uncontrolled drainage.

In conjunction with the questions of extent of service, type of service to be provided is an overriding question of *degree of service* to be provided. Whereas extent is related to area, or exposure, the degree is related to volume, frequency, or severity. The combination of “extent of service” and “degree of service” provides the base for the determination of the cost of drainage and flood control. An evaluation of the type of services afforded by any particular combination of extent and degree of service will then relate the benefits received from the drainage, or flood, control system.

A MANAGEMENT RESPONSIBILITY

It is submitted that the issues, or questions, of the
(Continued on Next Page)

The Author

HORACE L. SMITH

Born in Rising Star, Texas in 1925, Horace L. Smith was graduated from Rising Star High School in 1943. He received a B.S. degree in civil engineering from Texas Technological College in 1948.

He worked as estimator and design engineer for the U.S. Bureau of Reclamation from 1948 to 1950, on irrigation and drainage projects in Tucumcari and Fort Sumner, New Mexico.

Mr. Smith was design and resident engineer on drainage; water supply, storage and distribution; and wastewater collection and pumping facilities for numerous projects in West Texas. At this time, 1950 to 1954, he was with the consulting engineering firm of H. N. Roberts and Associates, of Lubbock, Texas.

He was Director of Public Works and Utilities, combined with City Engineer, for the City of Snyder, Texas from 1954 to 1956.

Moving to Denver in 1956, Horace Smith (known as Ace) worked until 1961 as Assistant Sanitary Engineer in charge of design and construction of drainage and wastewater collection facilities for the Department of Public Works of the City and County of Denver.

From 1961 through 1966 he was Chief Sanitary Engineer for the Department, in charge of all wastewater and drainage functions and activities. About the only thing not included at that time was wastewater collection maintenance.

From 1966 to the present, Mr. Smith has been Director of the Wastewater Control Division of the Department of Public Works of the City and County of Denver. He is responsible for all functions and activities relating to wastewater and drainage control.

Among his professional memberships and activities he is past director and chairman of the wastewater collection committee of the Water Pollution Control Federation. He is a past president of the Colorado-Southern Wyoming Chapter of the American Public Works Assn., and a member of its Water Resources Committee. He has served on the board of directors of the Colorado Society of Engineers, and has been a member of the board of governors of the Engineering Club. He is a member of the American Water Works Assn.

In the Denver Regional Council of Governments (DRCOG), Mr. Smith is past chairman of the Water Pollution Control Advisory Committee; past vice president and president of the Urban Drainage and Flood Control Advisory Committee; and a member of the Water Resources Advisory Committee.

Mr. Smith serves the Metropolitan Denver Sewage Disposal District No. 1 as a member of the board of directors, and member of the Future Programs Committee. He has served on the Executive and Operations Committees, and is past chairman of the Engineering Committee.

He is a member of the Technical Advisory Committee of the Urban Drainage and Flood Control District.

Among his papers and presentations are: “A Balanced Urban Drainage Control System,” “The Influence of Urbanization on the Hydraulic Design of Storm Sewers,” and “Planning for Urban Water Resources Facilities.”



Flood Plain Zoning Upheld

(Continued from Page 3)

I

Chapter 8 of the Adams County zoning regulations relates to conservation districts in general and flood control and mineral conservation districts in particular. The plaintiff contends that all of Chapter 8 is void for the reason that counties have no statutory or constitutional authority to exercise the powers here involved. This contention is without merit.

The state has specifically granted county commissioners the authority to regulate, by resolution, the uses of land in unincorporated areas for "trade, industry, residence, recreation, or other purposes, and for flood control." 1967 Perm. Supp., C.R.S. 1963, 106-2-12(1). This statute further authorizes the establishment of districts or zones in order to accomplish such regulation. Clearly, the Adams County commissioners were statutorily authorized to establish flood control districts by resolution.

The Adams County mineral conservation district is designed to conserve sand and gravel resources located in the county by prohibiting extensive or permanent development over sand and gravel deposits until such deposits have been removed. Uses of land within the district are limited, and there are provisions relating to the manner of excavating and processing sand and gravel and to the rehabilitation of areas subject to sand and gravel extraction. Uses are similarly limited in the flood control districts.

We have previously held that a board of county commissioners has a "wide prerogative in classifying and regulating uses of land for trade, industry, recreation and other purposes..." BOARD OF COUNTY COMMISSIONERS OF BOULDER V. THOMPSON, _____ Colo. _____, 493 P.2d 1358 (1972). We view the grant of authority contained in 1967 Perm. Supp., C.R.S. 1963, 106-2-12(1) as sufficiently broad to authorize the establishment of a mineral conservation district such as the one established by the Adams County commissioners.

II

The plaintiff next argues that all of Chapter 8 of the zoning regulations is invalid because of an unlawful delegation of power to the Adams County Planning Commission in paragraph 8-B-1:

"No structures shall be allowed for any use unless specifically authorized by the Planning Commission pursuant to the provisions of these regulations."

The defendant states that the inclusion of the term "by the Planning Commission" in paragraph 8-B-1 resulted from an editing error and that this term should be deleted from the provision. It is true that other provisions of the regulations are such that paragraph 8-B-1 would be meaningful if the words "by the Planning Commission" were deleted. It is further true that the zoning regulations would still be viable and operable if paragraph 8-B-1 were entirely deleted. The regulations contain a severability clause. Assuming ARGUENDO that paragraph 8-B-1 is invalid, it is not involved in this case and any invalidity would not effect the portions of the regulations which are involved here.

III

The plaintiff further urges that the regulations relating to mineral conservation districts so limit the uses of land included in such districts as to be unconstitutional on their face under Colo. Const. art II, §25 and U.S. Const. amend. XIV. The plaintiff states that the regulations prevent all property owners in mineral conservation districts from using their property for any reasonable purpose or for any length of time without the express permission of the defendants. We do not agree.

It is well established that a zoning regulation is presumed to be valid and that the invalidity of the regulation must be shown beyond a reasonable doubt. BOARD OF COUNTY COMMISSIONERS OF BOULDER V. THOMPSON, SUPRA. No such showing has been made here. The zoning regulations relating to mineral conservation districts provide for at least three uses by right, requiring no permission and having no time limit; two uses by right subject to application for a permit; four temporary uses; and, additionally at least eight permitted uses and at least four special uses. Although the uses of land in mineral conservation districts are limited, limitation upon land use is one of the fundamental purposes of zoning (BAUM V. DENVER, 147 Colo. 104, 363 P.2d 688 (1961)) and, in this case, is necessary to achieve the purposes of the mineral conservation district. Further, sufficient uses are allowed in the districts so that we cannot say the regulations, on their face, amount to a taking of property without due process of law.

IV

The plaintiff argues that the mineral conservation district regulations, as applied to his property, are unconstitutional under Colo. Const. art. II, §25 and U.S. Const. amend. XIV. He further argues that the defendants could not refuse to place the major part of his property in a mobile home district under the same constitutional provisions since the only reasonable use for the property is as a mobile home park.

As stated in NOPRO V. TOWN OF CHERRY HILLS VILLAGE, Supreme Court No. 25467, announced December 18, 1972, _____ Colo. _____, _____ P.2d _____:

"[T]his Court has often announced the fundamental rule that to sustain an attack upon the validity of a zoning limitation, the aggrieved property owner must show that the enforced restriction upon his property will preclude its use for any purpose to which it is reasonably adapted. Accordingly, where the reasonableness of a zoning ordinance is fairly debatable, it must be upheld. MADIS V. HIGGINSON, SUPRA; HUENEKE V. GLASPY, 155 Colo. 593, 396 P.2d 453; BAUM V. DENVER, supra."

Implicit in the trial court's holding here is a finding that the mineral conservation zone does not preclude the use of plaintiff's property for any purpose to which it is reasonably adapted.

The following uses are included within the list of "permitted" or "special" uses or uses by right in the mineral conservation district: farming; residences; horse and dog racetracks; greenhouses and plant nurseries; fur farming; drive-in theatres; auto race tracks and drag strips; and outdoor shooting ranges. The regulations state that the uses listed as "special" or "permitted" are examples and not limitations on the uses of land within these categories.

Although the plaintiff has farmed the land, there is nothing in the record to show that he has sought to devote it to other "permitted" or "special" uses listed, or uses similar to those listed. Nor has the plaintiff shown that the nature of the land will not permit any of these other uses.

There was evidence in the record that the plaintiff's property could be used for agricultural purposes, some commercial purposes and residential purposes. Although the evidence is conflicting as to the possible uses of plaintiff's land, there was sufficient evidence to support the trial court's finding. In such a case, we will not substitute our opinion for that of the trial court. KEARNEY INVEST. V. CAPITOL FED., 169 Colo. 30, 452 P.2d 1010 (1969). Since the reasonableness of the zoning regulation, as applied to plaintiff's property is fairly debatable, it must be upheld. NOPRO V. TOWN OF CHERRY HILLS VILLAGE, SUPRA.

Although there was testimony to the effect that other uses of plaintiff's land would not be as profitable as mobile home use, this court has consistently held that the validity of zoning regulations is not determined by the "highest and best use concept or in terms of dollars and cents profitability." NOPRO V. TOWN OF CHERRY HILLS VILLAGE, SUPRA.

VI

We find no merit in plaintiff's argument that the trial court erred by confining the hearing on the claim brought pursuant to C.R.C.P. 106(a)(4) to a review of the record of the proceedings before the defendants and the Adams County Planning Commission. BOARD OF COUNTY COMMISSIONERS OF JEFFERSON COUNTY V. SIMMONS, _____ Colo. _____, 494 P.2d 84 (1972).

The judgment is affirmed.
MR. JUSTICE KELLEY dissents.

Flood Control Management

(Continued from Page 5)

extent and degree of service is a management responsibility. The discharge of that responsibility, however, must be supported by proper and appropriate analysis and evaluation of costs and benefits.

In the past, engineers have been circumventing the management process through the establishment of arbitrary design criteria which, in turn, established the cost of control.

Another elusive component of the "Drainage Equation", and probably the most perplexing, has been the financial methods and sources drainage control.

Historical methods of financing drainage and flood control facilities through either local public improvement districts or general bond issues are in fact related to the value of property and do not reflect the *equity of service*.

BASIS FOR SERVICE CHARGES

Drainage control facilities, functions, and activities which provide the tangible services, related earlier in this paper, could be financed through service charges based upon the contribution of storm water to the facilities being financed.

In conclusion, when the management issues of extent and degree of service is compared with the type of service provided and the cost of that service is allocated to the recipients of the service, then the "Urban Drainage Equation" will have been balanced. The implementation, however, is another process which the writer will avoid by stating that it is beyond the scope of this paper.

Tucker-Talk

by L. SCOTT TUCKER



Timely Comment from the District's Executive Director

"SPECIAL REVENUE SHARING" GRANTS VS. FEDERAL GRANTS

A battle is shaping up between Congress and the President of the United States. On January 9, 1973, the President through Secretary Romney announced that most water and sewer facility grants (in addition to other categorical grants) of the Department of Housing and Urban Development were frozen as of January 5, 1973. The original announcement indicated a "temporary" freeze of 18 months.

Although the HUD Denver Regional Office was able to carry through with the award for the Sanderson Gulch project of Lakewood, Denver, and the Urban Drainage and Flood Control District, the freeze most likely will affect future HUD support.

More recently, the President in his proposed budget eliminated about 30 categorical grant programs including the HUD water and sewer facility grant program. The President's basic intention is to substitute "special revenue sharing" funds for the present grant system. Congress approved general revenue sharing last year and the President is now trying to extend his foothold. The special revenue sharing program would replace "70 outmoded narrower categorical grant programs." One of these special revenue sharing programs would be for community development (\$2.3 billion for FY 1974) which would include drainage improvements. The President's total request for special revenue sharing programs is \$6.9 billion, which is about equal in dollars to the categorical grant programs except for a public service job program which the President intends to eliminate.

Unfortunately, the Urban Drainage and Flood Control District is not eligible for special revenue sharing funds. Since the Flood Control District gets involved only in multi-jurisdictional flooding problems, it needs a source of funding to go with local and state funds.

The possible elimination of water and sewer facility grants as a source of funding for District projects is forcing us to look at other possible methods of financing. These include special assessments or service charges on a basin-by-basin basis, and/or an increase in the present 1/10 mill levy. A master plan will be prepared and adopted that will be closely tied with funding plans available.

BIG DRY CREEK PROJECT APPROVED

At the meeting in December 1972 the Board of the Flood Control District approved Phase A of the Big Dry Creek project. The Board also authorized the engineer to proceed into Phase B of the project, and to develop a master drainage plan for the flood plain. The local governments involved in this project are the City of Westminster, Adams County, and Jefferson County. The master plan is scheduled to be completed in early March 1973. The Wright-McLaughlin firm is engineer for the project.

SAFETY OF ENGLEWOOD DAM

At the December meeting the Board authorized the Flood Control District to undertake a study on the safety of Englewood Dam. This study is in cooperation with Arapahoe County, Greenwood Village, Cherry Hills Village, Englewood, Cinderella City, and SMS Joint Ventures, Inc. The dam is now owned by SMS Joint Ventures, Inc., which is planning to develop the land upon which the dam is situated. SMS Ventures has indicated a desire to deed the dam and the flood pool area behind it to a public agency or agencies. However, there is concern about the structural stability of the dam, and before a public agency can assume responsibility for the structure, a thorough analysis and determination of its safety must be made. The engineering firm selected to perform the stability analysis is Woodward-Clevenger & Associates of Denver. The engineers started work in early January 1973 and hope to complete the first phases of the analysis by mid-February.

ELEVEN DRAINAGE MASTER PLANNING PROJECTS APPROVED.

The Board has approved 11 drainage master planning projects in the 1973 work program of the District. These projects and the involved local governments are:

1. WESTERLY CREEK: Aurora, Denver, Arapahoe County and Lowry Air Force Base.
2. FIRST CREEK: Adams County and Rocky Mountain Arsenal.
3. GRANGEHALL CREEK: Thornton, Northglenn and Adams County.
4. LENA GULCH: Wheatridge, Lakewood, Golden and Jefferson County.
5. LAKEWOOD/MCINTYRE GULCH: Lakewood, Denver and Federal Center.
6. VAN BIBBER CREEK: Arvada and Jefferson County.
7. BASIN 4309: Lakeside, Mountain View, Wheatridge, Denver and Jefferson County.
8. BIG DRY CREEK: Douglas County, Arapahoe County, Greenwood Village, Littleton and Englewood.
9. SOUTH BOULDER/BOULDER CREEK: City of Boulder and Boulder County.
10. HIGHLINE CANAL: Denver Water Board.
11. WEST TOLL GATE CREEK: Aurora and Arapahoe County.

The Board hopes to see most of these projects implemented during 1973.

TIMELY AND AVAILABLE

URBAN DRAINAGE CRITERIA MANUAL

The Urban Drainage District, Reprint 1970.

The most popular manual of its kind, now in use all over the world!

Originally published by the Denver Regional Council of Governments under a grant from HUD, the manual was done under the direction of Wright-McLaughlin Engineers of Denver and involved contributions from both regional engineers and nationally recognized hydrologists.

The first printing of 500 copies was quickly exhausted. As one of the initial actions of The District, a reprinting of 300 sets was ordered. These are being consumed at a rapid rate.

Over 800 pages, the Manual covers 16 sections and discusses engineering data as well as the policy and philosophy so necessary to understand and cope with urban drainage problems today.

Copies are available through the Urban Drainage District. Cost is \$45.00 for the set. Postage is 85¢ per set to domestic purchasers.

Some Current Publications

BROCHURE AND COLORED MAP showing drainage basins and status of studies and master plans, free from Urban Drainage and Flood Control District, Lucas Bldg., 181 East 56th Ave., Denver, Colo. 80216.

This brochure, prepared in 1972, describes briefly the situation that caused creation of the Flood Control District. It includes a list describing the 11 Flood Plain Information Reports issued by the Corps of Engineers, along with lists of Master Plans Completed and Master Plans Underway.

These brochures are available for general distribution to the public and can be supplied by the Flood Control office for use at meetings where there is discussion of flood plain regulations, flood insurance, and related matters.

The Flood Control Office also has maps and other visual aids useful in such public presentations.

DEDICATED:

*to the health and safety of persons living in the urban area
to reducing the danger to property and minimizing flood losses*

THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
Lucas Building, 181 East 56th Avenue
Denver, Colorado 80216

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