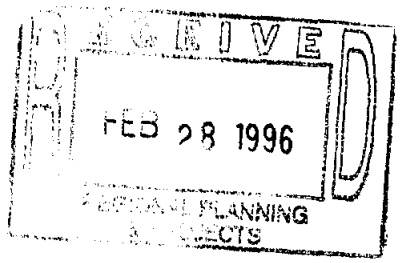
Lower Colorado River Authority's

Flood Protection Planning Study
Draft Report

February 1996
TWDB Contract No. 94-483-035



LOWER COLORADO RIVER AUTHORITY'S

FLOOD PROTECTION PLANNING STUDY

Draft Report

February 1996
TWDB Contract No. 94-483-035

Prepared by:

RDS Flood Mitigation Services

ACKNOWLEDGEMENT

This study was made possible by a matching grant provided by the Texas Water Development Board with funds from the Board's Research and Planning Fund.

Much of the work was conducted by LCRA staff with final assistance from RDS Flood Mitigation Services.

LOWER COLORADO RIVER AUTHORITY'S

FLOOD PROTECTION PLANNING STUDY

Table of Contents

LCRA FLOOD PROTECTION PLANNING STUDY

INTRODUCTION

Christmas Day, 1991. This day will not be remembered by many Texans as a warm family gathering celebrating the holiday spirit. Instead, for several thousand people living along the Colorado River in Central Texas, this day will be remembered for the horrors of a devastating flood. On December 25, 1991, the Lower Colorado River Authority (LCRA) recorded a record reservoir flood level of 710.55 feet msl on Lake Travis, exceeding the previous record level set in 1957 by three feet. Upstream and downstream of the Highland Lakes, a chain of six dams and reservoirs operated by the LCRA, record to near record flood levels were recorded on the Colorado River and it's tributaries.

Over 300 homes along the shoreline of Lake Travis, built below the 100-year flood elevation of 716 feet msl, were damaged or destroyed while hundreds more homes and businesses were destroyed along the Colorado River. The Federal Emergency Management Agency (FEMA) received 1,346 applications for disaster assistance from residents in seven of the ten counties comprising the LCRA district. Through the National Flood Insurance Program (NFIP) approximately $4.2 million in flood insurance claims were paid to flood ravaged residents for losses incurred from floods occurring from December 17 through December 25, 1991.

Flooding did not end on Christmas Day, in fact, it would be well into the new year before flood levels dropped on Lake Travis to allow home owners access to their flooded homes and to begin the long clean-up and rebuilding process. But, the recovery effort was dealt another blow when heavy rains in February, 1992, again forced floodwaters back into many of the previously flooded homes. Historically, the Colorado River basin has suffered at least 15 major floods between 1843 and 1938. Since the creation of the Lower Colorado River Authority in 1934 and the completion of Lake Travis in 1942, the only flood control reservoir on the lower Colorado River, major floods have occurred during the 1950's, 1981, and 1987.

The Christmas Flood of 1991 was also a turning point for the LCRA. Previously, the Authority's efforts were directed at structural flood control while non-structural floodplain management was left mostly to local governments as part of their participation in the NFIP. Public input following the flood indicated that many residents within the District did not understand the relationship between structural and nonstructural mitigation measures relying to heavily on the effects of the LCRA's dams on the Colorado River. In other words, people along the Colorado were not aware of the "current danger" of living in floodplains.

To improve the public's perception of the flood danger and to foster better understanding and coordination among local governments and the LCRA, the Authority embarked on a massive public awareness campaign. This campaign is detailed in Chapter II of this report. Continuing previous efforts, the LCRA sought and received a grant from the Texas Water Development Board to conduct a flood protection planning study within the LCRA's 10-county statutory area. The purpose of the study is to assess the status of floodplain management throughout the district and identify problems communities are experiencing in the administration of their floodplain

management programs. The planning study will also identify what types of technical assistance LCRA might provide to communities to improve the effectiveness of local programs. Chapter III of this report will summarize the planning study while the remainder of the report will be devoted to detailing the results of the study.

CHAPTER I

THE NATIONAL FLOOD INSURANCE PROGRAM

In the United States, billions of dollars have been spent for the construction of dams, levees, dikes, and other flood protection devices to keep floodwater away from people at risk in the nation's floodplains. Yet, flood losses have continued to rise and more billions are spent in disaster response and recovery. There are several reasons for this increase in flood losses. First, as the number of people increase in this country, the need for housing and logistical support of the population has put development pressure on lands previously reserved as wetlands or floodplains. A second reason for the trend is that new development continues to be built in flood-prone areas without regard to the flood hazard risk. Another contributing factor is that unregulated development in the nation's watersheds has contributed to runoff which in many areas has increased the flood levels along rivers and streams, putting more structures at risk.

Perhaps one of the major causes of increasing flood losses is that there was no mechanism to "break the cycle" of repetitive flood losses. It was common practice for structures to be damaged by flooding, receive funds from the government to rebuild on the same site, only to be damaged by the next flood. And the cycle continued.

In response to this situation, the U.S. Congress passed the National Flood Insurance Act of 1968 which created the National Flood Insurance Program (NFIP). The NFIP emphasizes a nonstructural approach to flood loss reduction by stressing comprehensive land use planning for flood-prone areas as an alternative to the development of structural flood control projects. In common language, "Keep the people away from the water rather than keep the water away from the people."

The NFIP is a two-fold program administered by the Federal Emergency Management Agency (FEMA). Cities and counties (local governmental agencies) that choose to participate in the NFIP must adopt and enforce minimum development criteria established by FEMA and assure the proper and wise use of land in flood hazard areas. These criteria do allow for construction in floodplain areas, but do require that structures be elevated or flood proofed above identified flood levels. In return for this commitment to regulate floodplain development, the federal government through the Federal Insurance Administration makes flood insurance available to all residents within the participating community and federal disaster assistance will be available in the event of a federally declared flood disaster area.

The concept sounds simple enough as the NFIP has become a major federal, state and local effort to combat flood loss but it is not without controversy. One area of concern was the establishment of an appropriate flood level for regulatory purposes. The NFIP has embraced the 100-year flood as the standard necessary to accomplish a significant reduction in flood damages. Many feel the standard should be the 500-year flood while others feel a lower standard such as the 50-year flood is more reasonable and there is even confusion over what is the 100-year flood. It is not a flood which occurs once every one hundred years. Instead, it is a flood which has a one percent chance of occurring in any given year. The term "100-year" is a measure of the size

of a flood instead of how often it occurs. For reference purposes the Christmas Flood was somewhere between a 50-year and a 75-year flood reoccurrence interval. This does not mean we will not have another flood like this for another 50 years, instead just under a 2% probability exists that a flood of this nature could occur in any given year.

Another continuing area of concern is the identification and mapping of flood-prone areas. The NFIP requires the federal government to designate flood-prone communities in the U.S. and to publish maps identifying the 100-year floodplain. This is an on going effort. The National Flood Insurance Program was established with two phases, Emergency and Regular. Under the Emergency Phase, FEMA provides local governments with maps which simply identify boundaries of Special Flood Hazard Areas, designated as zone A on the official Flood Hazard Boundary Maps. This initial mapping effort is completed by FEMA , but the approximate flood boundaries often prove to be inaccurate in many communities and leave them lacking data suitable for administration of a local floodplain management program. The second mapping effort, called the Regular Phase of the NFIP, calls for FEMA to conduct detailed flood insurance rate studies which provide more accurate maps detailing the boundaries of the 100-year floodplain with appropriate Base Flood Elevations. These maps, called Flood Insurance Rate Maps, depict the 100-year floodplain as numbered A zones or other A zone combinations along with the 500-year floodplain. Many of the studies also include an additional map entitled "Flood Boundary and Floodway Map". The floodway concept is another tool for local governments in regulating development. Recent FEMA mapping efforts have produced county-wide Flood Insurance Rate Maps which include incorporated areas and the floodway delineation. Exhibit 1 is a sample of this new map, while Exhibit 2 is a legend of map terms.

All 10 counties in the LCRA district are currently participating in the NFIP. Within those counties, 33 municipalities participate as well as two Water Conservation Improvement Districts. There are 5 municipalities which have been designated as flood-prone by FEMA and have been provided flood hazard boundary maps, but have yet to enter the program. These communities are considered sanctioned communities by the federal government and run the risk of losing federal grants, especially disaster assistance. Approximately half of the participating communities have detailed maps with base flood elevation data. The remainder of the communities continue to struggle with a lack of data and outdated maps in their attempt to regulate development and maintain program compliance. Exhibits 3 & 4 depict program participation in the lower Colorado basin.

Is the program successful? There are 7,533 flood insurance policies in force within the basin protecting approximately $597 million in property, (Exhibit 5) but estimates range from only 10 to 15 percent coverage on all structures located in the 100-year floodplain. And one might ask, "If floodplain management regulations are in effect throughout the basin, why were so many structures damaged during the '91 flood?'' The Federal Interagency Flood Hazard Mitigation Team which investigated the disaster area, found that most of the damaged structures were constructed in the floodplain prior to the establishment of floodplain management criteria by the local government. The fact that newer structures, built above the 100-year base flood elevation, were not damaged, indicated that the flood program is having some degree of success in areas where the NFIP is adequately enforced.

CHAPTER II

AFTERMATH OF THE CHRISTMAS FLOOD OF 1991

As the flood began to take shape in mid-December, LCRA realized that it was necessary to inform the residents all along the Colorado River of the conditions above and around the Highland Lakes and downstream to the Gulf of Mexico. Beginning December 19, 1991, LCRA utilized every means available to alert citizens, state and local officials and the media about the coming disaster. During the flood, river condition updates were faxed to approximately 60 locations every two hours. Locations included radio stations, newspapers, television stations, local officials (county judges and mayors), local emergency management coordinators, the National Weather Service and other key agencies and personnel. Approximately 30 press releases were issued over the next three months containing vital information to inform citizens about the floods and recovery efforts. Press conferences and interviews were conducted during critical events and were carried by local, state, and national television stations. The Mansfield Dam Observation Area became a point of information during the first week of January, 1992, as LCRA personnel distributed information and answered questions. Approximately 1,900 information sheets were distributed.

A telephone lake level number was established where a recorded message was updated around the clock. During the month of December, 1991, a total of 17,666 calls were received. In January, 1992, 9,564 calls were taken and 24,683 calls were answered in February. (Note: The increase in calls in February was due to the reoccurring flood mentioned in the Introduction.)

LCRA then literally "hit the road" to take it's message to the public and to answer questions about the flood and LCRA's operation of the dams. A series of eight "Town Hall" meetings were held with Mark Rose, LCRA general manager, and other LCRA staff on hand to exchange information and answer questions. Two meetings were held around Lake Travis, at Lago Vista, and Lake Travis Middle School near Lakeway. One meeting was held at Buchanan Dam while additional meetings were held in the cities of Bastrop, Smithville, LaGrange, Columbus, and Wharton. These informative and somewhat lively meetings proved highly successful as the public gained answers to their questions and a large number of information packets were distributed.

LCRA also helped 12 communities along the Colorado River by distributing water sample testing kits for use by private well owners. As samples were tested and results issued, it became apparent that this effort was a vital element in addressing the public safety after floodwaters contaminated so many private water supplies.

The pro-active efforts of the LCRA continued to gain momentum as more public awareness initiatives were undertaken. A Flood Exhibit was created, depicting the history of Mansfield Dam (Lake Travis), previous floods, and the Christmas Flood of 1991. This exhibit has been shown throughout the LCRA area and will no doubt be used at many future meetings. Extensive ads were placed in area newspapers to explain how the Highland Lakes chain of dams

worked to protect the citizens of Central Texas. In addition, a 23 minute video entitled "Wave Length - Floods Along the Colorado" was produced. The video, with spectacular aerial coverage of flooding in progress, discusses the LCRA's actions to manage the floodwaters and hold property damage to a minimum.

Building on the success of previous efforts, LCRA sought and was awarded a Hazard Mitigation Grant from FEMA. The grant, administered through the Texas Department of Public Safety - Division of Emergency Management, consisted of four projects: a floodplain management publication and supplemental map, development of detailed topographic data for key areas around Lake Travis, establishment of bench marks and high water marks throughout the district, and definition of approximate A zone boundaries on Flood Insurance Rate Maps.

The publication, entitled Flooding on the Colorado River: Current Danger was developed in cooperation with FEMA and contains 20 pages of information explaining the flood risks that exist for those who live in the lower Colorado River basin and examines the aspects of floodplain management utilized in the basin to mitigate future flood losses. Current Danger is designed to illustrate that structural and nonstructural flood hazard mitigation measures must work together if either is to be successful. (Exhibit 6)

As a supplement to Current Danger, a map entitled "Colorado River Flood Warning Guide" was also published. (Exhibit 7) The map depicts the Highland Lakes and the lower Colorado River with pertinent information about each reservoir. The location of all USGS stream gages is also shown with the 100-year flood elevation warning stage, bank full stage, flood stage, and historical high water level in both feet and mean sea level. The map/guide is designed to provide an overview of LCRA flood operations. Both of these publications have enjoyed widespread distribution and have received high praises for their content and effectiveness. In fact, the Texas Floodplain Management Association nominated the LCRA public awareness project for a national award of recognition. During the Association of State Floodplain Managers 1993 Conference held in Atlanta, Georgia, the LCRA was awarded the "Local Award for Excellence" for its public awareness campaign. This national award is a fine testament to the excellent work of staff and focused leadership of management at the LCRA.

The second portion of the grant dealt with the Lake Travis Topographic Survey. This project consisted of a detailed topographic survey of two densely populated areas on Lake Travis, Hudson Bend and Jonestown, using aerial photography. The photographs identify existing development relative to the 100-year base flood elevation of 716 feet msl which is delineated on the photo. The survey data presented in the photographs is extremely useful to Travis County and Jonestown permit officials as well as all property owners in the area. The flood information is more precise and is easy to use since individual structures are clearly shown.

The third portion of the hazard mitigation grant called for the establishment of high water marks and bench marks. High water marks actually consist of a ten inch wide staff gage which extends from near the normal water level up to and above the 1991 high water mark. The gage is marked off in one-foot increments with the stage level marked every five feet using six-inch numbers. The high water mark is denoted by a line on the staff gage and by an aluminum cap on

the concrete apron of the bridge. Staff gages were installed at nine bridge locations downstream of Austin. Highway signs direct the public to the gages and high water marks.

In regards to bench marks, the grant proposal was to install nine permanent bench/elevation reference marks in key areas along the Colorado River that would denote the 100-year flood elevation at those sites. Bench marks assist surveyors and local permit officials who regulate development in local communities. Due to cost limitations, only four permanent bench marks were installed, two near Garfield in Travis County and two near Bastrop in Bastrop County. A total of 17 temporary bench marks were established during the process and these will also prove useful to surveyors if they are maintained.

The last portion of the mitigation grant was a proposal to assign elevations in flood-prone areas where 100-year flood elevations have not been determined. The elevations would be approximate and based on contours delineated on USGS topographic maps. Many floodplain administrators already utilize this method, so there was a lack of local interest in the project. This portion of the grant was terminated because it did not constitute an effective use of project funds.

Starting Memorial Day and extending through the end of June 1993, the LCRA and KXAN-TV Channel 36 in Austin teamed up to promote flood awareness and offered the public a free "Flood Awareness Pack" which contains the publication Current Danger and the "Flood Warning Guide" as well as other pertinent information. As a result of the effort, over 3,000 packs were distributed to individuals in 46 Texas counties, 20 states, in Canada and Australia. Since two counties, Wharton and Matagorda, were not in the TV station broadcast area, news releases were issued in those counties regarding the availability of the public awareness information. Flood Awareness Packs were provided to chambers of commerce throughout the ten counties for direct distribution.

By utilizing television air-time during weather casts, the LCRA and KXAN were able to reach over 375,000 households to the mutual benefit of both entities at a very low cost. The television campaign was extremely cost effective. It gave the LCRA the capability of reaching more than 750,000 people in eight Central Texas Counties at a very low cost - less than $3,000. Without KXAN-TV sponsorship, the campaign could have cost over $35,000 to purchase the television air-time that the station provided for free.

To commemorate the second anniversary of the Christmas Flood, ads were run in every local newspaper throughout the 10-county district during Christmas, 1993. These ads continued the LCRA's effort to make citizens along the Colorado aware of the current danger of flooding and promoted the availability of the free flood awareness information. Flood Awareness Packs were mailed to 367 landowners in Bastrop County and 5,724 landowners in Travis County with property in close proximity to the Colorado River. Mailings were also made available to property owners in the remaining eight counties.

Besides continuing distribution of flood information to counties and cities in the district, a number of agencies such as the American Red Cross, Computer Service Corporation, FEMA,

TNRCC, and the Texas Floodplain Management Association continue to distribute these publications on behalf of the LCRA.

As of February 1, 1994, 7,054 copies of Current Danger, 5,548 copies of the "Flood Warning Guide" and 8,035 Flood Awareness Packs containing both publications have been distributed since the campaign's inception. A new LCRA brochure entitled "Danger: Flooded Roadway Ahead" was published in late 1994 and has been added to the packet of flood awareness information.

With a highly successful and continuing public awareness campaign under it's belt, the LCRA turned it's attention to local administration of the National Flood Insurance Program focusing on the special requirements and assistance needs of the local floodplain administrator. Is there a way that LCRA can effectively support local government in managing community floodplain management programs? The answer to this question can be found in the results of the Flood Protection Planning Study which is profiled in the following chapter.

CHAPTER III

THE FLOOD PROTECTION PLANNING STUDY - THE CURRENT PROJECT

The LCRA began to shift gears after the floods of '91 and '92 from an agency with a mission of structural flood control to an agency more service oriented and more in tune to the needs of its district. The floods revealed that many local governments struggled with compliance and enforcement of local floodplain management regulations brought about with participation in the National Flood Insurance Program. But, is there a role for the LCRA in nonstructural floodplain management? Nonstructural floodplain management criteria are adopted by local governments pursuant to their authority under the Texas Flood Control and Insurance Act (Section 16.315 of the Texas Water Code). The Act also identifies the Texas Natural Resources Conservation Commission as the "state coordinating agency" responsible for aiding, advising, and coordinating efforts of "political subdivisions" in their adoption of a floodplain management program qualifying for participation in the NFIP. And of course, FEMA is the federal agency responsible for administering the program. So where does the LCRA fit into this political hierarchy of floodplain management and are there program needs within the 10-county area which are not being met with the current structure of assistance providers? To answer this and other pertinent questions involving the status of the NFIP within the LCRA's jurisdiction, the LCRA sought and was awarded a flood protection planning study grant from the Texas Water Development Board in November, 1993.

Development is located throughout the identified 100-year floodplain of the Colorado River and it's tributaries. The planning study will address this problem in the following way: determine the flooding problems of local officials and the general public; assess which local floodplain management programs could benefit from technical assistance provided by LCRA, and the proper scope of that assistance; and ultimately, the risk of flood loss to future development should be significantly reduced as a result of more effective floodplain management programs at the local level.

The scope of the planning study called for community visits to be conducted throughout the 10-county district with each visit consisting of a tour of flood-prone areas and a meeting with local officials. The tour provided an opportunity to determine the severity of flood problems and the extent of developmental pressure on floodplains. This also provided an opportunity to see local floodplain management in action. Elevated structures and hazard mitigation projects were viewed and photographed throughout the area.

The community meeting was a necessary element of the study to identify the nature and extent of any administrative problem that the community was experiencing. Work was begun on the project in February, 1994, by staff of the Water Resources Division of the LCRA. On August 3, 1994, the initial coordination meeting was held at the LCRA headquarters in Austin, Texas. The purpose of the meeting was to explain the study, answer questions and gain public input.

Work continued on the project through the remainder of 1994, but it became apparent that the initial deadline of February 28, 1995, for submittal to the TWDB of a draft report on the planning study would not be met. On January 30, 1995, the LCRA sought and was granted a one year extension of the project deadline. It appears that LCRA fell victim to it's own successes. As local governments within the district learned of LCRA's willingness to help and with continued responses to the public awareness campaign, work loads began to increase dramatically. More and more calls for assistance came in and as a result, work on the project slowed down. With the departure of Diana Simms, the principal investigator for the project, the LCRA faced an approaching deadline with reduced staff.

To fill the void, RDS Flood Mitigation Services was contracted with in November 1995. Roy D. Sedwick, the firm's principal agent has nearly 25 years of experience in Central Texas dealing with the National Flood Insurance Program and flood hazard mitigation issues. His previous experience with the State's NFIP Coordinating Agency gave him first hand knowledge of the local floodplain management programs within the Colorado basin.

A detailed community interview was developed and utilized during the community visit. Use of the interview form allowed for concentration on a number of NFIP issues and administration procedures. The LCRA also mailed out a floodplain management survey with questions on a number of issues already identified through the planning study. (Exhibit 8) Results of the interview and survey served as a basis for determining the potential elements of a technical assistance program which LCRA could integrate into a nonstructural floodplain management program. These program needs are explained in subsequent chapters of this report.

One expanded area of the project was developing a profile of a local floodplain administration (FPA). In the past, little attention has been given to the needs of the FPA, but this author feels that a dedicated, well trained professional administrator is the key to a successful local floodplain management program. Chapter IV takes an in-depth look at the FPAs and offers suggestions on improving their abilities to cope with the ever increasing responsibility of managing growth and development in floodplains.

CHAPTER IV

THE FPA - KEY TO SUCCESS

One disturbing trend began to take light as the community tours and interviews progressed. It appears that successful local floodplain management programs depend more on the abilities and dedication of the local Floodplain Administrators than on the commitment of local elected officials to the program. This is not to say that elected officials are not important to the program. They are very important. After all, they are the people who make the decision to participate in the NFIP, pass the necessary ordinances and court orders establishing floodplain management criteria, rule on variance requests, and they provide a budget for the program. But, it is the floodplain administrators who hold the key to success.

A number of communities within the district have lost talented and experienced FPA's to retirement, promotion, seeking a new job, and even death. Regardless of the reason for the loss, it is apparent that local floodplain management programs suffer until that experience and dedication is replaced. Evidence of this can be found within varying degrees in the City of Llano, City of Bastrop, Burnet County, City of Flatonia, City of Jonestown, Fayette County, and City of Wharton.

So who is this FPA who holds the key to success and can a profile be developed of a typical floodplain administrator? It is difficult to use the term typical, a local FPA could be male or female, young or old, and usually has a number of other job responsibilities. In fact, the official title of Floodplain Administrator is rarely used by the person who handles the NFIP at the local level. Designated FPA's in local governments within the district carry other titles such as County Judge, Mayor, City Manager, City Secretary, Building Official, Code Enforcement Officer, Health and Sanitation Officer, Environmental Director, etc. In fact, only in Matagorda County did the FPA carry a title of Floodplain Manager. Most of the FPA's have three to four other job responsibilities besides floodplain management.

There are some similarities, however, within the group of designated FPA's. Out of all the FPA's interviewed only six have college degrees and only two are registered professional engineers. Almost all of the FPA's have not had any type of formal training for the NFIP through FEMA's Training Academy in Maryland or from any recognized college or university (mainly because most universities do not have curriculum for floodplain management). Some of the FPA's have received specialized training in courses offered by the Texas A&M Extension Service, but none of these pertained to floodplain management. However, most of those interviewed have attended one or more NFIP workshops or training seminars conducted by FEMA and/or the Texas Natural Resources Conservation Commission.

About 50% of the FPA's are professionally oriented, that is they belong to one or more professional associations such as Building Officials Association of Texas (BOAT), Code Enforcement Association of Texas (CEAT), etc., yet only ten FPA's belong to the Texas Floodplain Management Association and none of the FPA's interviewed belong to the National Association of State Floodplain Administrators. About 50% hold some type of professional

certification or license, mostly plumbing, sanitation (septic tank), water and waste water. There is no professional certification program for Floodplain Administrators at this time.

Among the FPA's within the lower Colorado basin, the average length of experience is seven years, however, experience ranges from less than one year to over 23 years. Even within this range of experience, the knowledge of specific NFIP program areas varies widely. For instance, only 44% know what the Community Rating System is and 45% knew about the program variance procedures issued by FEMA.

So what are the needs of the FPA's and how can LCRA help? The following needs have been identified:

1. Formal Training and Education

All FPA's interviewed indicated that this is a very high priority. The Texas Floodplain Management Association has worked with FEMA to improve efforts in this area, and now FEMA Region VI has agreed to bring their four day Floodplain Administrator Training Course from the Emergency Management Institute down to the region which includes the states of Texas, Oklahoma, New Mexico, Arkansas and Louisiana. At least two offerings will be made each year starting in 1996. LCRA should work with FEMA, TNRCC and TFMA to bring one of these training courses to Central Texas and act as cosponsor for the event.

2. Continuing Education

Again all FPA's indicated that this is a major need to enhance their professional capabilities. This need is now met with and will continue to be met with local workshops, training seminars, and conferences. LCRA should again get involved in this effort and work with FEMA, TNRCC, TFMA, Texas DEM and NFIP-CSC to cosponsor and bring these valuable training opportunities to the lower Colorado basin. LCRA might consider developing it's own workshop.

3. Professional Certification

All FPA's indicated that professional certification of floodplain administrators would raise the level of floodplain management to a higher standard. Currently emergency management coordinators can seek certification through their national association and local code enforcement officers are certified through CEAT and the Texas Department of Health. As stated previously, there is no professional certification program for FPA's, however, the TFMA and ASFPM are currently developing such a program. LCRA should support this effort and work with the associations in developing a certification program.

4. Professional Association

Members of professional associations tend to be the more educated and motivated individuals in any given profession. They are more involved in their work and are kept abreast of new developments within the profession through association activities. The Texas Floodplain Management Association and the National Association of State

Floodplain Managers, Inc. are organizations which could benefit local floodplain administrators. Through their conferences, newsletters, membership directories, and the National Flood Resource Center, members tend to gain professional insight of new program initiatives and generally are the driving force behind successful local mitigation projects. LCRA has in the past, and should continue supporting the activities of both associations and work towards cosponsorship of state, regional, and national conferences.

5. Hands On Personal Training

This need typically exists when a new person with no previous experience is brought in to administer a local flood program. It may be months before an opportunity opens to attend a State/FEMA workshop, and yet these new FPA's need immediate help. One suggestion from Matagorda County was to form a voluntary group of NFIP instructors from the ranks of experienced FPA's. These veteran program administrators would be available to travel to neighboring communities to help set up a program and provide guidance to the new administrator. It was also suggested that the Texas Floodplain Management Association take the lead in recruiting volunteers from it's membership. Again, LCRA could help in this area as cosponsor of such a project and also providing staff to function as volunteers.

CHAPTER V

TECHNICAL ASSISTANCE NEEDS

Program Administration and Permitting

Each community participating in the National Flood Insurance Program is responsible for administering it's local floodplain management program. The majority of participating communities have passed ordinances or court orders establishing minimum development criteria based on sample ordinances/court orders furnished by FEMA or the state. These samples may not be sufficient to adequately control development in communities with large floodplains and rapid growth. Additional regulations may be necessary to regulate watershed development, storm water runoff, on-site or regional detention, non-point pollution control, etc. Of the communities surveyed, 33 had ordinances/court orders with the minimal requirements of elevation of first floors up to or above the base flood elevation with the remainder requiring elevation of one foot or more above base flood elevation. Only 27% of the communities had passed additional ordinances/court orders dealing with some of the problems listed above.

Subdivision regulations were established in the majority of the cities and counties surveyed, but the floodplain development standards varied widely from city to city and county to county. Many of the community subdivision regulations did not have adequate language requiring plats to have flood boundaries, floodway, and 100-year base flood elevation, delineated with all lots lying within the floodplain clearly identified.

Most cities do not allow on-site septic systems to be utilized in new developments within their corporate limits, but most address septic tanks in older developments as problems arise. All but one county, San Saba County, in the lower Colorado basin has adopted septic tank regulations. The majority have adopted the state standards established by TNRCC while Burnet, Llano, and Travis Counties participate in a regulatory program with the LCRA to protect the water quality in and around the Highland Lakes. Most of the FPA's surveyed indicated their responsibilities included septic tanks where they are allowed, but there needs to be program coordination when the flood program and septic tank program is handled by different people or different agencies.

In order to make floodplain management regulations effective, communities must utilize some type of permitting system. Again, there is wide variety in local permit programs and a number of communities do not have an adequate permit and record keeping system to document program compliance. In the majority of cities, where building codes have been adopted and buildings are inspected for code compliance, floodplain requirements are handled as part of the general building permit process. However, some of these permit programs did not have a flood check-off system (Exhibits 9 & 10). Counties in Texas do not have code enforcement authority, so their permit systems dealt only with floodplain management program requirements. About 73% of the communities surveyed utilize FEMA's Flood Elevation Certificate as part of their permit process.

The FEMA floodplain maps are not the best tool to utilize in the permit process. Not all streets are shown and no lot or property boundaries are shown. Some cities such as Lago Vista, have overlaid the 100-year flood boundaries from the FEMA maps on to detailed city maps with all streets, lots, and current corporate limits shown. These work maps typically will have detailed contour intervals making it much easier for the FPA to determine if a specific building site is located within the 100-year floodplain.

A majority of the FPA's interviewed did not have copies of the many program tools available such as manuals, technical bulletins, publications, FEMA regulations, variance guidelines, etc. About 80% had access to computers, but only four communities actually utilize a computerized data management system for their floodplain management program. Utilization of the computer provides rapid access to permits, records, files, etc. and eliminates the "paper trail" which many communities have trouble producing when called upon to document program compliance.

The LCRA could address some of the above needs with the following assistance:

1. Develop a sample floodplain management ordinance/court order and encourage basin wide adoption.

2. Develop a sample permitting system with proper forms and encourage basin wide adoption.

3. Draft standardized floodplain management requirements for subdivision regulations and encourage basin wide adoption.

4. Coordinate the LCRA septic tank program and non-point source pollution program with local floodplain administrators.

5. Utilize LCRA staff draft persons to overlay flood boundaries on current city/county maps supplied by local government. Provide these maps to the communities and to FEMA so the federal mapping contractors will have current delineation of corporate limits.

6. Develop some type of lease/purchase assistance program to help communities acquire computers.

7. Develop a computer-based permit and record keeping program. Make software programs available to communities within the basin.

8. Obtain manuals, publications, technical bulletins, etc. from FEMA and TNRCC to utilize in building local FPA's flood reference library.

9. Contact LCRA power customers to determine if they will help local governments with program compliance by notifying the FPA when someone makes an application for a meter loop or power hook-up.

Maps and Flood Data

Most communities have indicated that improvements are needed in the FEMA floodplain maps and flood data. Only 50% of the communities have maps with detailed flood boundaries, base flood elevations and floodway delineations. There also is a need for more permanent elevation reference marks located within and near the floodplain where development is taking place.

Only three of the FPA's interviewed are professional engineers and about 22% of the communities surveyed do have an engineer available (either a volunteer or on contract) to assist in technical review of flood data. The remainder of the communities do not have a source for technical engineering review of projects dealing with floodplain modifications or alterations.

About 41% of the FPA's surveyed knew about FEMA's letter of map amendment process but only seven indicated they have actually been involved in a map amendment or map revision process. Most communities indicated that it was not common practice to notify FEMA when corporate limits change or if projects involving floodplain modifications have been completed.

Possible LCRA assistance to address these technical needs might include:

1. Develop hydrologic data for use in defining the 100-year floodplain around the Highland Lakes and along the Colorado River and it's tributaries.

2. Assist communities in the review of hydrologic and/or hydraulic data pertaining to proposed floodplain development or floodplain modifications.

3. Establish bench marks in communities throughout the 10-county district.

4. Provide information to the local FPA's on the various FEMA map amendment and map revision procedures.

5. Assist communities with technical requirements during map amendment or map revision processes, including corporate limit changes, new incorporations, new survey data, channel modifications, flood control structures, and other flood hazard mitigation projects.

6. Coordinate with FEMA and TNRCC in establishing priorities for new flood insurance rate studies and Limited Detailed Flood Studies within the basin. If LCRA pursues Item #1 above and makes this data available to FEMA it may be possible to lower costs of new flood studies and expedite study efforts for communities in the lower Colorado basin.

7. Obtain current corporate limit maps for cities within the lower Colorado basin and overlay the FEMA flood boundaries and base flood elevations.

Public Awareness

Many cities and counties have never been involved in a local public awareness campaign although all the communities have benefited from the extensive public awareness campaign initiated by the LCRA (See previous description of campaign in Chapter II). It is imperative that local government undertake on a periodic basis some type of awareness program to notify the community about the NFIP, the need for and availability of flood insurance, and the local development requirements. Only two counties, Colorado and Matagorda, have been involved in recent awareness campaigns. Colorado County included a mailer in tax notices sent to property owners in the county. (Exhibit 11)

Matagorda County has been more active in taking their message to the public. First, they developed and printed a county brochure explaining the NFIP and local permit requirements. (Exhibit 12) This brochure was mailed out to residents in the county and continues to be available in public areas for distribution. The Environmental Health Department of Matagorda County also participates each year in the County fair. They set up a booth with flood literature, show flood videos (including the LCRA video), and have the flood maps on display. Many people stop by the booth, ask questions and look on the flood maps to find their property. So far, this effort has been a great success.

A previous FPA in Burnet County developed a fairly active campaign by placing placards on bulletin boards and in store front windows in the business community. These placards notified residents that they must apply for a septic tank and floodplain development permit prior to the start of construction on property located within the County. (Exhibit 13) On several occasions, this placard announcement was also placed in several local newspapers. Sadly, this effort to educate the public withered away with the departure of the FPA and the decreased emphasis on the NFIP by the county government.

During the community interview, only 19% of the FPA's indicated that they addressed civic groups (such as Lions Club, Chamber of Commerce, etc.) and professional groups such as the Board of Realtors and insurance agents on the need for the National Flood Insurance Program in the community. Also, less then half of the communities had display racks for free distribution of literature and even fewer had flood brochures on display.

Use of the flood insurance program varies widely within the lower basin from 2,932 policies in force in the City of Austin to no policies within the City of Flatonia. Yet, conservative estimates by FEMA indicate that only 10-15% of the structures within the 100-year floodplain are covered by flood insurance. There are also many misunderstandings about who can and who can't buy insurance, where it is mandatory and even the risk of flood loss outside the identified 100-year floodplain. In fact, nationwide, about 30% of the flood losses paid to

policy holders are for losses outside the 100-year floodplain. Very few of the FPA's and even fewer of the residents even know about FIA's Preferred Risk Policy. This flood insurance policy is designed for those property owners with structures outside the identified floodplain and provides ample coverage on structure and contents at a very low cost.

The LCRA could address these public awareness needs with the following tasks:

1. Assist in drafting and publishing a community brochure much like the Matagorda County brochure. The brochure would explain the NFIP and the local program and should be mailed out to residents and put on display in public areas.

2. Assist in developing an NFIP flyer (like Colorado County's) for use as a mailer in tax or utility bills.

3. Coordinate with LCRA's power customers (Pedernales Electric Coop., etc.) on including such mailers or brochures in their utility bills sent to local customers.

4. Help local governments set up a public display of local NFIP information and other appropriate brochures. This may include assistance in purchasing or obtaining the display rack or literature stand and providing quantities of brochures. (Most will be free from FEMA, Red Cross, TNRCC, etc.)

5. Help establish within local libraries a reference section on the National Flood Insurance Program and disaster assistance programs. If appropriate, may want to include flood videos.

6. Assist local government in developing news articles, flood placards and other NFIP notices. Help coordinate efforts to place articles in newspapers and placing informational placards in store windows and on community bulletin boards.

7. LCRA has developed a web-site on the Internet, but there is no floodplain information on it at the present time. LCRA should consider adding floodplain information and utilizing the electronic bulletin board to share information and promote NFIP successes within the lower Colorado River basin.

8. Develop a staff speakers' pool and address local civic and professional groups concerning the NFIP and LCRA's involvement in flood control and floodplain management. This effort should always include the local FPA's and would be very effective with audio visual aids.

9. Organize town hall meetings or public forums to discuss the National Flood Insurance Program. This effort should include FEMA, TNRCC, other appropriate state agencies, local government, LCRA and the CSC (servicing agent for the NFIP).

10. Cosponsor and participate in all workshops and seminars conducted by FEMA and/or TNRCC within and around the lower Colorado River basin. Also participate in the insurance and mortgage lenders workshop conducted by CSC.

11. Continue the already successful LCRA public awareness campaign as described in Chapter II.

Emergency Management and Flood Warning

All communities in the lower Colorado River basin have a designated Emergency Management Coordinator (EMC). In a few cases, the EMC also serves as the Floodplain Administrator. Most communities have also adopted Emergency Operating Plans as required by the state, however, it is not clear if all plans adequately address flood hazards. Also it became clear during the community visit that there is not much coordination between the community FPA and EMC. There are no set responsibilities or procedures for the FPA to follow during a flood event and there are no set responsibilities or coordination procedures for the EMC to follow after the flood emergency has passed. The Texas Floodplain Management Association and the Emergency Management Association of Texas are currently developing a joint project to deal with this problem. Input from LCRA would be a valuable asset to improving coordination and communication between the FPA and EMC.

Only the City of Austin has it's own automated flood detection and warning system. None of the communities in the basin have worked with the National Weather Service to set up county-wide networks of volunteers to report rainfall and streamflow. In most cases, NWS will provide rain gages free of charge. Information from these volunteers serve as a valuable data base for the NWS in forecasting floods.

The LCRA operates an extensive "Hydromet" system to monitor rainfall and streamflow on the Colorado and its tributaries. Utilizing information from this system, the LCRA has been able to pass flood alerts and warnings to local governments within the basin through radio, telephone and fax. A full time meteorologist is now on staff and prepares a daily weather bulletin which is faxed to a number of cities, counties and other agencies in the basin. Although many do receive weather and flood alerts from the LCRA and the National Weather Service through fax, radio, telephone and television, you still hear the complaint that "no one warned me a flood was coming".

So how do local governments warn all its residents about an impending flood disaster once a warning is issued? Many people along the river have weather radios at home tuned into NWS broadcasts, unfortunately this broadcast is not received in all areas. In fact in the Austin area, AM 1610 is utilized by the City of Austin to pass on airport information. Most cities and counties indicated that citizens would be alerted mostly by loud speakers on fire and police vehicles as they drive through affected neighborhoods. A few communities have "telephone calling trees" to alert residents, but both methods have limitations and short comings. A number of communities do have sirens located in strategic areas but none are utilized for flood warning.

Another area of concern is the level of knowledge among residents. Do they know what actions to take to save lives and property once a warning is issued?

The LCRA is currently developing Emergency Action Plans for areas downstream of the Highland Lakes in the event of dam failure. These plans will contain high water elevations referenced to mean sea level and travel times throughout the lake and lower river. These plans will need to be incorporated into local emergency response plans.

To address some of the needs dealing with emergency management and flood warning, the LCRA might consider:

1. Establishing a computer aided telephone dialing system to pass flood bulletins along to key personnel within the basin. (Note: A system called the Public Notification System (PNS) has already been installed and will be utilized in future flood emergencies.)

2. Assist in the purchase and placement of personal emergency warning devices. These initially could go to each community EMC and FPA as well as elected officials, fire and police departments.

3. Assist the National Weather Service in expanding its coverage of the weather radio broadcasts. Once full coverage is in place, residents could purchase inexpensive weather radios with tone alerts providing a personal in-house warning system.

4. Determine the feasibility of enhancing the AM 1610 radio broadcast and expanding it's broadcast range. (Note: With the expansion of LCRA's weather observation capabilities, the National Weather Service reports are now rebroadcast on AM 1530. This station has a stronger signal and wider broadcast area.)

5. Make sure that all communities have fax machines and receive the LCRA weather bulletins. (Maybe necessary to provide some communities with fax machines and/or PC's.)

6. Make sure that all weather faxes are distributed to appropriate community officials such as the EMC, the FPA, mayor, county judges, etc.

7. Work with the National Weather Service and local governments to set up a system of volunteers ("weather watchers") to monitor a network of rain gages and stream staff gages. LCRA should consider providing rainfall data from it's observers and the hydromet system to the National Weather Service.

8. Help communities develop a flood action plan which will insure that local residents receive flood warnings and will take action to reduce property losses and save lives.

9. Develop a brochure that informs residents of appropriate action to take once flood warnings are posted. Might consider a series of public workshops or work this topic into a public awareness campaign as previously discussed.

10. Coordinate with FEMA, TFMA, EMAT and Texas Division of Emergency Management in developing appropriate local flood action plans with special emphasis on coordination between FPA's and EMC's.

11. Help local governments identify hazardous low water crossings and determine appropriate actions (signs, gages, barricades, etc.) to warn motorists of the danger. Continue to distribute the LCRA Low Water Crossing Brochure.

12. Consider adding additional monitoring sites to the automated hydromet system providing flood detection on additional streams. The current system is not well suited for flash flood detection in small watersheds. LCRA may consider converting existing hydromet system to an alert system.

13. Help set up effective Emergency Operating Centers in local communities.

Floods, Mitigation and Multi-Objective Management

When a flood devastates a community, there always is a need for assistance. When large numbers of structures are damaged, the one or two local building inspectors or FPA's tend to be overwhelmed with requests for repairs or rebuilding permits. Yet, in each case, an evaluation of the amount of damage must be made on every structure. If the damage to a structure equals or exceeds 50% of the pre-disaster value of the property (excluding land), then reconstruction must conform to the NFIP standards. After the Houston area floods in 1994, the TFMA, FEMA, and BOAT joined forces to develop a voluntary force of professional building inspectors to help with this problem. These volunteers traveled to Montgomery County and helped local officials inspect and evaluate over one thousand flood damaged structures. A process that probably would have taken several months to complete with local resources was completed in about two weeks. LCRA should consider taking part in this activity during future flood disasters within the lower Colorado River basin. LCRA staff would work with FEMA to become a part of the mutual aid agreement and receive formal training.

As floods occur in the basin, there is always a continuing need for information. As documented in a previous chapter of this report, LCRA has done much to improve communication during disasters. And these efforts should continue. During recovery, residents must deal with polluted water wells and debris (including ruined household contents). Again, LCRA has met the need with water purity tests, providing trash dumpsters and front-end loaders, and crews to deal with debris removal. These efforts should continue.

None of the communities surveyed had any type of flood mitigation plan in effect. Typically, these plans are developed by local governments to guide their recovery and mitigation efforts after a flood. If a plan of action is already developed, it is much easier to obtain

mitigation grants from FEMA. Only 32% of the community FPA's interviewed even knew about mitigation grants and only the City of Austin has been successful in obtaining a mitigation grant.

Mitigation after floods has been sparse in the lower Colorado River Basin. In the City of Austin, there have been a number of property acquisitions and relocations of flooded home owners, at least one flood by-pass tunnel, numerous channel modifications and improvements, small levees, flood proofing of damaged commercial structures, etc. In Matagorda County, a flood by-pass on the lower Colorado River has reduced flood damage potential to a number of structures along the lower reaches of the river. The floodplain tour of local communities also revealed a number of channel improvements on local creeks, however, in many cases, these improved channels do not always contain the 100-year flood.

Multi-objective management is a concept that is coming of age within the floodplain management community. The best example of this management practice is the use of flood-prone land for recreation, parks, greenbelts, etc. Up and down the Colorado, you can see the success of the LCRA's Colorado River Trail program. This program provides funds from LCRA, the Texas Parks and Wildlife Department, and local government to develop parks and recreation areas along the river. The majority of these parks provide access to the water resources of the lower Colorado basin. At least 80% of the communities surveyed did have some type of park or recreation area located in the 100-year floodplain.

Incorporating requirements for dealing with non-point source pollution into the on-site and regional detention process has been a practice for some time in Austin and Travis County. These structures control flood water and stormwater run-off while filtering out pollution and improving the quality of run-off reaching drainage tributaries of the Colorado. With the help of new LCRA ordinances, the quality of stormwater run-off is now being addressed around the Highland Lakes. One prime example of this effort can be seen at the new Super Wal-Mart Store in Marble Falls, Burnet County, Texas. Here, an elaborate system of run-off collection, filtering beds, and final holding ponds has reduced the run-off from a very large impervious parking lot and has improved the quality of the run-off reaching the tributaries of the Colorado. An automated water monitoring system has also been installed by the LCRA at this location.

To address some of the needs of local governments and residents, the LCRA should consider the following:

1. Continue the LCRA Public Awareness Campaign with new updates and innovations as needed.

2. Continue water well tests and providing clean up assistance.

3. Continue efforts to help local governments establish parks and recreation areas in floodplains.

4. Provide local FPA's with information on the various grant programs available for mitigation. Additional information on the need for mitigation and successful mitigation projects would be helpful.

5. Help local governments draft flood hazard mitigation plans and help locals apply for mitigation grants when the opportunity arises.

6. Work with Texas-DEM, TNRCC, FEMA, and TFMA to develop a hazard mitigation workshop and conduct at least two of these workshops in the Colorado River basin.

7. Consider expanding into other counties the LCRA efforts to require on-site/regional detention of stormwater run-off with requirements to deal with non-point source pollution.

8. Provide additional funding for mitigation projects.

Community Rating System

The Community Rating System (CRS) is a program designed by the Federal Insurance Administration to encourage local government to accomplish more with their floodplain management programs than is required by the minimum criteria of the NFIP. The CRS has a number of established tasks which if accomplished in a community, will reduce flood losses. As a community embraces these tasks and actually begins to develop an effective flood loss reduction program, local officials should consider applying for participation in the Community Rating System program. By participating in the CRS, local communities will save their citizens money on the cost of flood insurance through premium discounts.

Unfortunately, out of 50 communities within the lower Colorado River basin only the City of Austin participates in the CRS at this time. During the community interviews, 56% of the FPA's indicated they did not even know about the CRS program. Those FPA's who did know about CRS indicated they did not have the time or knowledge to pursue CRS qualifications. Some even indicated that the benefits of the CRS did not justify the time and resources spent on the application. Matagorda County previously submitted a CRS application, but had it rejected by FEMA. They have not made another attempt to qualify. All of the FPA's indicated that they would like more information on CRS and would probably try to pursue qualification if they had outside assistance.

To address some of these problems, LCRA might consider:

1. Working with FEMA, TNRCC, ISO, and TFMA in conducting CRS workshops within the basin.

2. Obtaining CRS manual, computerized application forms, Elevation Certificate, and draft plans.

3. Obtaining from FEMA listings of premiums paid by community and a list of repetitive loss communities. The LCRA could use the premium data to establish CRS priorities. In other words, where are the most policies and where would be the most savings. Repetitive loss communities will need a plan to address the problem of repetitive flood losses.

4. Using the CRS draft plans to develop a sample plan which will fit the needs of communities within the basin.

5. Helping communities document CRS tasks and prepare the CRS application.

NOTE: Many of the activities listed as community needs in previous pages of this report are also CRS task elements. The LCRA should proceed with implementation of their technical assistance program prior to providing assistance for CRS applications since many of the previously mentioned activities must be in place before a community can claim points for CRS credits.

Non-Participating Communities

Five communities (Fayetteville, Round Top, Schulenburg, Richland Springs and Bertram) have been designated as flood-prone communities by FEMA and have floodplain maps published identifying the boundaries of the 100-year floodplain. These communities have so far chosen not to participate in the NFIP. Since one year has passed since publication of the flood maps, FEMA now considers these communities to be sanctioned. No flood insurance is available and the ability to obtain federal grants, especially federal disaster assistance may be jeopardized. All of the communities are relatively small with relatively insignificant floodplains. Most have little development within the floodplain and almost no new development pressure. However, it would still be an advantage to the community to participate. If a community does not participate in the NFIP, citizens within the community are denied the opportunity to purchase flood insurance. If, in the event, a rare flood occurs, and there is significant property damage, affected property owners may try to hold the community liable for damages because they were unable to purchase flood insurance to cover their property against flood loss.

One community, Round Mountain in Blanco County, has annexed areas along a creek and a newly incorporated town, Highland Haven in Burnet County, is no longer covered by Burnet County's participation in the NFIP. Both of these communities should be provided information on the NFIP.

To help these communities, the LCRA should:

1. Meet with the mayor and local building official to discuss benefits of the NFIP. May need to address the city council.

2. Provide cities with means to participate in the NFIP (applications, sample ordinances, and permit forms).

3. Provide guidance to cities on how to implement program with existing staff and resources.

CHAPTER VI

A VIEW OF THE FLOODPLAIN

As previously discussed, part of the LCRA Flood Protection Planning Study involved a tour of the community's floodplain. The purpose of this tour was to determine the severity of the flood hazard and judge development pressure on the floodplain. The tour was designed to look for structural and nonstructural flood control projects, new development or structures located within the identified floodplain, compliance with the NFIP, mitigation and multi-objective management projects. Pictures were taken in each community and will be utilized in LCRA's community files for future floodplain management assistance.

Complete write-up of the community visits and floodplain tours can be found in the County Appendices of this report.

SUMMARY AND CONCLUSIONS

Since a number of potential activities have been identified throughout this report, a special pullout section has been developed which summarizes potential LCRA involvement in non-structural floodplain management.

Clearly, there are a number of needs within local government that are not currently being met by the existing NFIP infrastructure. All of the communities interviewed felt that LCRA could and should have a role in floodplain management. However, most expressed a concern that LCRA assistance should not duplicate existing efforts, add another layer of bureaucracy or be forced on local government.

Since there are a number of agencies already involved with the National Flood Insurance Program, it is highly recommended that the LCRA take the lead in forming a Intergovernmental Flood Protection Task Force to deal with the issues identified in this study. The Task Force should, at a minimum, include representatives from Federal Emergency Management Agency, Texas Natural Resources Conservation Commission, Texas Department of Public Safety-Division of Emergency Management, Texas General Land Office, Texas Floodplain Management Association, Emergency Management Association of Texas, Building Officials Association of Texas, U.S. Army Corps of Engineers, U.S. Geological Survey, U.S. Department of Agriculture, National Weather Service, Computer Science Corporation, several elected officials, governor's office, and of course Lower Colorado River Authority. Utilization of the Task Force will allow those agencies already involved with the NFIP an opportunity to step up and undertake some of the assistance needs. There should also be agreement as to which areas LCRA would be involved with and which agencies might provide cooperative assistance. The Task Force could also address possible funding sources for assistance and provide input for needed state floodplain management legislation.

The planning grant calls for a public meeting after the completion of the draft report. The LCRA should consider holding two meetings, one upstream in the Highland Lakes area and one downstream in the lower basin. It is anticipated that these meetings will be scheduled some time in March, 1996.

In conclusion, there are a number of assistance needs within the floodplain management community which currently are not being met. The field is wide open for another player so LCRA should just "go for it" by finding a source of funding, developing adequate staff and establishing one of the best floodplain management programs in the country!