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ABSTRACT

The Lower Rio Grande Valley of South Texas consists of three counties: Cameron, Hidalgo, and Willacy. Poverty pervades in the Valley, especially in the colonias ("a poor, rural unincorporated community with 20 or more dwelling units, where home ownership is the rule"). Colonia residents are almost exclusively Mexican Americans. Contributing to the problems of colonia residents is the physical and legal isolation of the colonias. The colonias are physically isolated from urban areas where the residents might obtain health care, education, low-cost food, and other necessities. Since the colonias are not part of towns and cities, they cannot benefit from those governmental units' taxes, nor from the Federal and state programs administered by towns and cities. Colonias are also faced with water-related problems, i.e., access to clean drinking water and sanitary sewage disposal. A 1975-76 Policy Research Project examined the water-related problems of the colonias. This report gives a brief overview of the demographic and economic characteristics of the Valley, presents an overview of the Valley's water resources, examines the current water supply and sewage disposal systems of the colonias, considers the cost estimates for provision of water and sewage systems of the colonias, explores the institutional alternatives for water and sewage treatment, and examines the current situation of land-use management in Texas and in the Valley. Appended is a discussion of the colonias as rural housing. (NQ)

LYNDON B. JOHNSON SCHOOL OF PUBLIC AFFAIRS

POLICY RESEARCH PROJECT REPORT

LYNDON B. JOHNSON SCHOOL OF PUBLIC AFFAIRS

Number 18

COLONIAS IN THE LOWER RIO GRANDE VALLEY OF SOUTH TEXAS: A SUMMARY REPORT

A Report by
The Lower Rio Grande Valley Policy Research Project
The Lyndon B. Johnson School of Public Affairs
The University of Texas at Austin
1977

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FOREWORD

The Lyndon B. Johnson School of Public Affairs has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the Policy Research Project in which a team of several faculty members, each from a different profession or discipline, and graduate students with diverse backgrounds work together on an important public policy issue. These projects have a user orientation and bring the students in direct contact with administrators, legislators, and other officials involved in the policy process.

This summary report was produced by a 1975-76 Policy Research Project which focused on development in the Lower Rio Grande Valley of Texas. It is a summation of a much larger report prepared by the Policy Research Project, which also may be obtained from the LBJ School. In addition to the reports, the project also produced a color film presentation entitled *The Magic Valley*.

We express appreciation to the Office of the Governor of Texas; the National Science Foundation, Division of Research Applied to National Needs; the Ford Foundation, and the Lyndon B. Johnson Foundation, for support for the project.

It is the intention of the LBJ School to develop men and women with the capacity to perform effectively in public service and to develop information that will enlighten and inform those in decision-making roles. It is our hope that this report on the problems faced by the *colonias* of South Texas and its recommendations for dealing with these problems will be of value both to policy makers and to the public.

Alan K. Campbell
Dean

PREFACE

During the 1975-76 academic year a Policy Research Project of the Lyndon B. Johnson School of Public Affairs focused on development in the Lower Rio Grande Valley. Several organizations had an interest in and supported the project This support included a primary grant from the Lyndon B. Johnson Foundation, which stimulated the focus on South Texas. A contribution from the National Science Foundation, Division of Research Applied to National Needs, encouraged interaction with the Texas Coastal Zone Resources Research Project working in the Lower Rio Grande Valley. A grant from the Texas Governor's Office was given to the project in order to continue development of social impact analysis within a resource policy framework. Finally, the Ford Foundation provided important indirect support through its institutional development grants for programs and schools engaged in public policy research.

The project concentrated on examining the water-related problems of the colonias of the the Lower Rio Grande Valley of South Texas. We believe, as a result of the findings of our study, that through the "208" Regional Water and Waste Water Planning Program of the Federal Government there is a rare opportunity for the state and the region to create the environment within which positive local decisions can substantially assist an important but poverty stricken group within the Lower Rio Grande Valley.

It would not have been possible to carry out this study without the cooperation and support of many individuals in both the public and the private sectors of the region. In particular, we wish to acknowledge the assistance of Alejandro Moreno, Jr., managing director of Colonias del Valle, Inc., San Juan, Texas, and his staff.

This report will be of interest to the State of Texas and its citizens, but more importantly, we hope that it will create the basis for understanding and knowledge required to bring public policy to bear on the pressing problems of colonia residents. The challenge is great and the task is long overdue.

Kingsley E. Haynes
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INTRODUCTION

This report is a summary of a much larger report prepared by the Policy Research Project. As a summary it has the advantage of informing the reader quickly and concisely of the findings of the researchers. For some readers, however, this summary will lack the depth and detail necessary for research, planning, and decision making. Copies of the full report are available from the Office of Publications of the Lyndon B. Johnson School of Public Affairs.

Briefly, the full report contains the following.

Part One presents a comprehensive overview of the Lower Rio Grande Valley in an attempt to define the setting within which public policy decisions must be made. *Chapter Two* and *Chapter Three* examine the demographic and economic characteristics of the Lower Rio Grande Valley. *Chapter Four* presents a regional factorial ecology study. *Chapter Five* details the institutional structure of government at all levels in the Lower Rio Grande Valley.

Part Two focuses on the socio-economic characteristics of colonias and on public policy alternatives for providing them with water-related services. *Chapter Six* presents a comprehensive overview of colonias, examining their origins, their physical characteristics, the characteristics of their residents, the problems facing them, and their future outlook. *Chapter Seven* presents detailed estimates of the costs involved in providing fresh water and sewage treatment to colonia residents. Chapter Seven also analyzes the institutional alternatives for providing and funding these services as well as major public policy issues related to such efforts. *Chapter Eight* examines the current institutional controls of land use in the region and analyzes alternative land-use policies as they pertain to existing colonias and their future development.

Appendices to the report contain methodologies used for research and cost estimating, copies of pertinent legislation, and other related materials.

FILM SYNOPSIS .
"THE MAGIC VALLEY"

One product of this study is the film *The Magic Valley*. This is a 28½ minute color/sound film available in 16mm. It was prepared on location in the Lower Rio Grande Valley by Cary White, a graduate student in radio, television, and film in the School of Communications at The University of Texas.

The film focuses on the water-related problems faced by colonia residents in the Lower Rio Grande Valley: flooding, impure drinking water, and inadequate sewage disposal. Interviews with public officials reveal the magnitude of the problems and the difficulties that local governments face in solving them. Tours of the colonias show the viewer the physical aspects of those communities.

Also shown is the life of a typical seasonal farm-laborer and his family who live in a Valley colonia. Their story serves to illustrate life in a colonia and the serious consequences of not having pure water available.

The film is a good introduction to the colonias. It should be excellent for television and classroom use and as a discussion builder for group meetings.

Persons interested in *The Magic Valley* should contact the Office of Publications of the Lyndon B. Johnson School of Public Affairs.

CHAPTER I

THE LOWER RIO GRANDE VALLEY

The Lower Rio Grande Valley of Texas, shown on the map in Figure 1, is bordered on the east by the Gulf of Mexico and on the south by the Republic of Mexico. More than three-quarters of its residents are of Mexican origin. Once part of Mexico, this region still has strong cultural and commercial ties with that nation. In fact, to many of the residents of the Valley and the northeastern part of Mexico, the international boundary line between the two nations exists more in theory than in reality.

The Valley consists of three Texas counties Cameron, Hidalgo, and Willacy. Cameron (population 140,368*) and Hidalgo (181,535*) have many medium- and small-sized towns, the largest of which is Brownsville (52,522*). Approximately one-fourth of the residents of these two counties live in rural areas. Willacy County (15,570*), by contrast, has only one town of any consequence, Raymondville (8,212*), and nearly half of Willacy's residents are located in rural areas. United States Census figures show a decline in Valley population from 1960 to 1970. Calculations by the Census Bureau and by this project's researchers indicate that this decline has continued. Other experts, however, feel that the population of the region is in fact increasing.

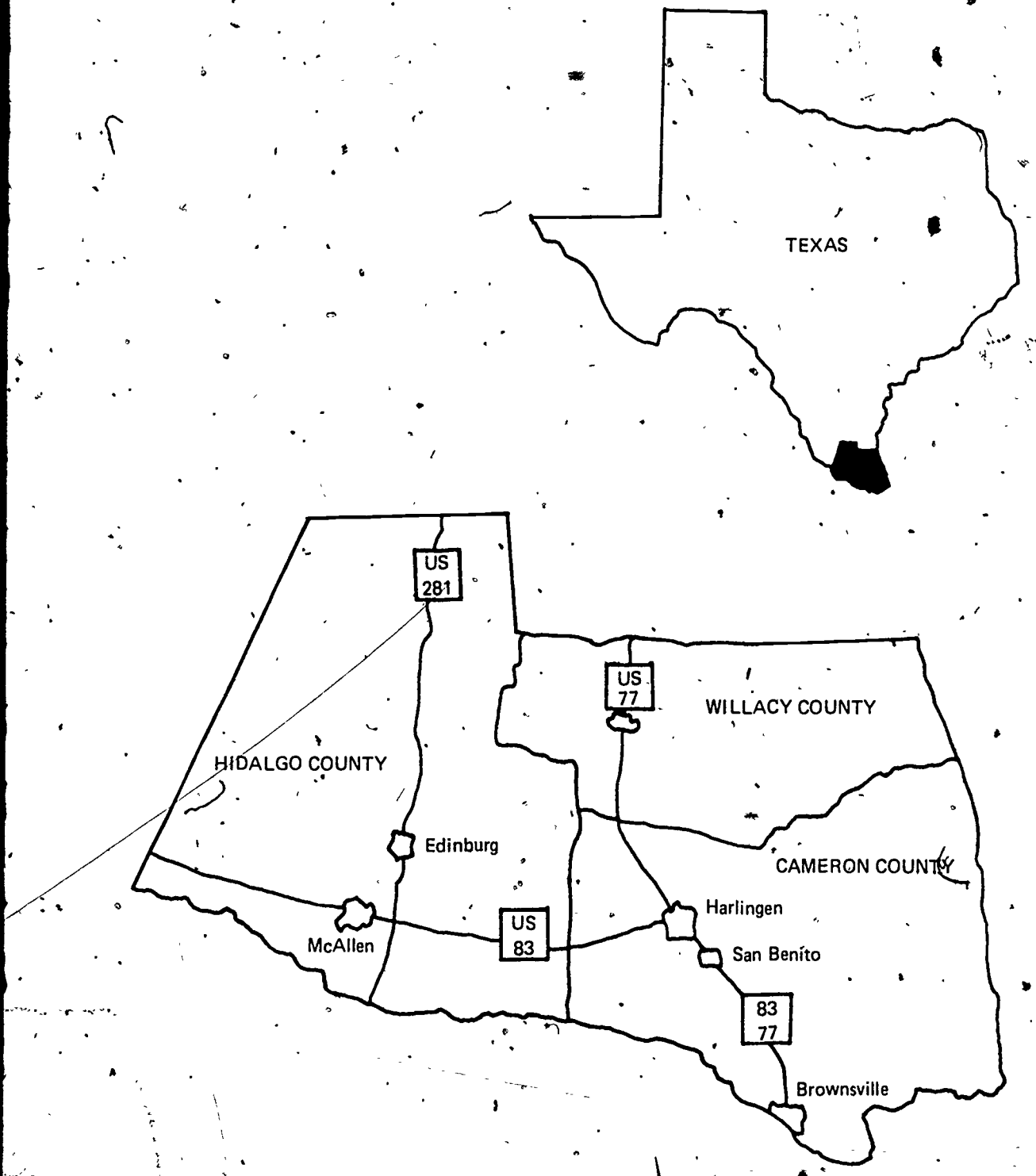
The region known as the Lower Rio Grande Valley is first mentioned in the journals of 16th-century Spanish explorers. Early settlements were started along the Rio Grande River and slowly spread northward with the extension and development of irrigation systems. For most of its history the Valley economy was dependent on agriculture and on trade with Mexico. The discovery of oil, gas, and mineral deposits more recently added new jobs and capital to the region. Since World War II manufacturing and other light industries have become increasingly important and may represent the Valley's prime economic component in the future. Finally, the last few decades have seen a dramatic increase in tourism.

Notwithstanding its economic growth over the last 50 years, the Lower Rio Grande Valley remains one of the poorest regions of America. More than 40 percent of the Valley's families fell below the poverty line in 1970, according to U.S. Census reports. Wages are uniformly low and unemployment high. Since many Valley workers are employed in agricultural industries, their jobs are seasonal at best, sporadic at worst. Formal education levels are the lowest in Texas, although there has been significant improvement during the last few years.

*1970 United States Census figures.

FIGURE 1

THE LOWER RIO GRANDE VALLEY REGION



CHAPTER II

THE COLONIAS OF THE LOWER RIO GRANDE VALLEY

Poverty pervades the Valley and is nowhere more apparent than in the colonias. As defined by the researchers, a colonia is a poor, rural unincorporated community with 20 or more dwelling units, where home ownership is the rule. Colonias residents are almost exclusively Mexican-American.

Colonias have no formal ties with the governments of cities and towns. Therefore they often do not benefit from the kinds of services and amenities offered in urban areas such as piped water, treated sewerage, and street maintenance. On the other hand, the colonia residents do not have to pay the high property taxes of town dwellers, nor do they have such restrictions as zoning ordinances and building codes.

For the purpose of this report, two factors may be seen as contributing to the problems of colonia residents. First is the factor of poverty, and as one planning agency has put it, the colonia residents are "the poorest of the poor". Second is the factor of isolation. The colonias are physically isolated from urban areas where residents might obtain essential services such as health care and education. Also, many of the social services designed to help poor people are located in urban areas. Finally, residents of colonias are isolated from urban commercial centers where they might obtain low-cost food, clothing, and other necessities. Besides the physical isolation common to colonias there is also the problem of legal isolation: the colonias are not part of towns and cities and thus cannot benefit from those governmental units' taxes, nor may they benefit from the many federal and state programs that are administered by towns and cities. Programs aimed at rural areas often are not set up so as to aid the peculiar institution known as the colonia in the solution of its problems. The one branch of government to which colonias might normally turn – the county – is often too poor and too powerless itself to be of much assistance.

The colonias differ from poor urban neighborhoods in the Lower Rio Grande Valley in three important ways: the residents of the colonias are poorer than those in the city, it is more difficult for them to obtain access to regular services, and the universe of solutions to their problems is much smaller.

While the problems facing colonia residents (and the problems colonias present the rest of the Valley) are many, this report focuses on water-related problems, including access to clean drinking water and sanitary sewage disposal. These are some of the most immediate, tangible concerns of colonia residents and serve to illustrate the depth of poverty prevalent in these communities. These problems, which have clear technical solutions, also show the difficulty of finding real-life solutions in rural areas under the existing structure of public institutions and programs.

PROFILE OF THE COLONIAS AND THEIR RESIDENTS

Data on colonias was obtained by a complete house count of all communities in the Lower Rio Grande Valley meeting the researchers' definition, and by a one percent spatially stratified random sample of colonia households. Data was collected during February and March, 1976.

Researchers identified 65 colonias in Cameron and Hidalgo Counties, but none in Willacy County. Assuming an average household size of 5.5 persons, total colonia population was estimated at 34,000 with 9,500 persons found in 21 Cameron sites and 24,500 in 44 Hidalgo sites. Approximately 10 percent of the Valley's total population resides in colonias. These communities range in size from 100 to 1,500 residents. Locations of colonias are shown on the map in Figure 2 and their estimated populations in Table 1.

The predominate structure found in colonias is a single-family wooden dwelling, constructed by or for the current owner, with an average of four rooms (including bathroom and kitchen). Most of these homes would be considered substandard by any set of criteria. Houses are generally constructed on small lots and construction of several houses on a single small lot is not uncommon.

Streets in colonias are uniformly unpaved. Many colonias are poorly drained, and frequent rains, even though they may be light, regularly bring floods to these communities. Lighted streets are the exception rather than the rule.

More than three-fourths of the households surveyed were owned or being purchased by their residents. These residents purchased lots from realtors or land owners, and most built their own houses. Purchase of lots was made through conventional mortgages, or, quite often, by contract for sale, where the seller retains equity until the debt

TABLE 1

COLONIAS IN CAMERON AND HIDALGO COUNTIES, TEXAS

FEBRUARY, 1976

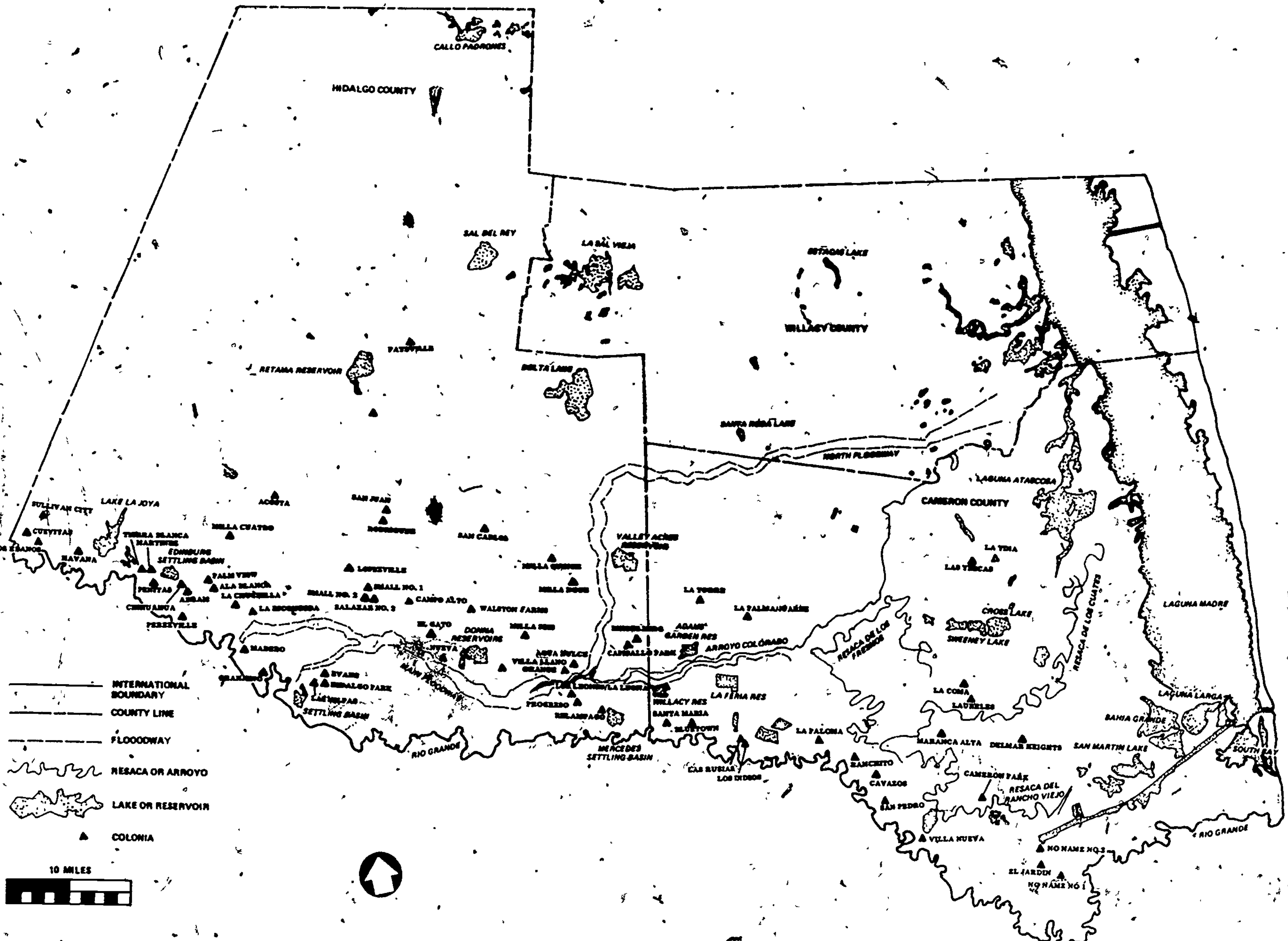
Colonia Name	Total Units	Vacant Units	Units For Sale	Under Construction	Mobile Homes	Occupied Units	Estimated** Population
Hidalgo County	4736	213	13	50	338	4460	24541
Abram	168	10	0	1	10	157	864
Acosta	21	1	0	0	1	20	110
Ala Blanca	56	0	0	2	33	54	297
Agua Dulce*	86	9	0	1	11	76	418
Campo Alto	108	10	0	1	3	97	534
Capisallo Park	102	6	3	0	8	93	512
Chihuahua*	28	3	0	0	2	25	138
Cuevitas	48	4	0	0	3	44	242
El Gato	42	0	0	0	1	42	231
Evans	111	1	0	0	5	110	605
Faysville	61	5	0	1	0	55	303
Granjeno*	100	0	0	1	5	99	545
Havana	32	0	0	0	4	32	176
Heidelberg	99	7	0	1	5	91	501
Hidalgo Park	248	9	1	0	20	238	1309
La Cuchilla	186	3	1	7	12	175	963
La Escondida	70	9	0	0	15	61	336
La Leona/Los Leones*	42	3	0	2	5	37	204
Las Milpas	77	0	0	0	6	77	424
Lopezville	178	7	0	0	11	171	941
Los Ebanos	150	0	0	0	0	150	825
Lull	241	29	2	5	12	205	1128
Madero	141	9	0	0	4	132	726
Martinez*	30	1	0	0	1	29	160
Milla Cuatro*	20	1	0	0	3	19	105
Milla Seis	148	6	0	6	11	136	748
Milla Doce	62	0	0	2	4	60	330
Milla Quince	50	0	0	0	2	50	275
Nueva	111	2	0	0	6	109	600
Palm View	136	5	1	4	20	126	693
Penitas	194	10	1	3	14	180	990
Perezville	57	0	0	0	3	57	314
Progreso	280	0	0	0	17	280	1540
Relampago	39	0	0	0	7	39	215
Rodriguez	76	2	2	0	2	72	396
Salazar #2	63	1	0	0	3	62	341
San Carlos	180	16	2	2	0	160	880
San Juan	173	3	0	1	10	169	930
Small #1	105	5	0	0	3	100	550
Small #2	152	7	0	3	6	142	781
Sullivan City	180	8	0	3	8	169	930
Tierra Blanca*	47	3	0	1	8	43	237
Villa Llano Grande*	124	7	0	1	6	116	638
Walston Farms	114	11	0	2	27	101	556

Colonia Name	Total Units	Vacant Units	Units For Sale	Under Construction	Mobile Homes	Occupied Units	Estimated** Population
Cameron County	1825	80	1	16	94	1728	9508
Bluetown	80	8	0	0	3	72	396
Cameron Park*	130	17	1	9	8	103	567
Cavazos	44	2	0	0	2	42	231
Delmar Heights*	41	3	0	4	1	34	186
El Jardin	99	2	0	0	16	97	534
La Coma*	30	0	0	0	4	30	165
La Palma/Juarez*	233	14	0	1	13	218	1199
La Paloma	137	5	0	0	3	132	726
Las Rusias	63	1	0	0	5	62	341
Las Yescas*	45	1	0	1	0	43	237
La Tina*	61	3	0	0	4	58	319
La Torre*	75	0	0	0	1	75	413
Laureles*	68	2	0	0	2	66	363
Los Indios	136	4	0	0	6	32	726
Maranca Alta*	34	0	0	0	0	34	187
No Name #1*	23	0	0	0	4	23	127
No Name #2*	49	0	0	0	8	49	270
Ranchito	144	5	0	0	1	139	765
San Pedro	149	5	0	0	5	144	792
Santa Maria	150	8	0	1	6	141	776
Villa Nueva*	34	0	0	0	2	34	187
Cameron and Hidalgo Counties: Total	6561	293	14	66	432	6188	34049

Source: Survey based on house counts by project field researchers.
Notes: *Not served by public water system.
**Estimated population calculated by multiplying the number of occupied units by 5.5, the assumed number of persons per unit.

Note: Some *Colonias* are known by two or more names. Where this occured, the researchers used official designations as recorded in county records.

FIGURE 2


HIDALGO COUNTY
WILLACY COUNTY
CAMERON COUNTY
SAL DEL REY
LA SAL VIEJA
RETAMA RESERVOIR
DELTA LAKE
NORTH FLOODWAY
LAKE LA JOYA
EDINBURG SETTLING BASIN
VALLEY ACRES RESERVOIR
DONNA RESERVOIRS
ARROYO COLORADO
LA FERIA RES
MERCEDES SETTLING BASIN
LAGUNA ATASCOSA
CROSS LAKE
SWEENEY LAKE
RESACA DE LOS CUATES
LAGUNA MADRE
LAGUNA LARGA
BAHIA GRANDE
SAN MARTIN LAKE
SOUTH BAY
RIO GRANDE
INTERNATIONAL BOUNDARY
COUNTY LINE
FLOOODWAY
RESACA OR ARROYO
LAKE OR RESERVOIR
COLONIA
10 MILES

is retired. In this latter manner residents are able to purchase a lot for "a few dollars down and a few dollars a week". While the real interest rate over time may be quite high under the contract for sale system, low down payments and low monthly installments make land ownership a possibility for even the poorest.

Of the households surveyed, 97.5 percent had electricity and utilized butane or propane gas. Only about 44 percent had a telephone and less than 30 percent received garbage removal service.

An estimated 57 percent of all colonia houses do not receive treated water, although 45 of the 65 colonias identified in the study had access to treated drinking water. Of the households surveyed, 46 percent obtained water from a public water supply system, 40 percent from wells, 6 percent from irrigation ditches, and 7.5 percent from other sources.

Of the households surveyed, about half disposed of sewage by cesspool or septic tank and about half by outhouse. None of the colonias has access to a sewage treatment facility.

The household survey revealed that about 56 percent of the colonia population is under 20 years of age. The median age of colonia residents was found by the survey to be 16.4 years, as compared with 26.5 years for all Texas residents and 19.3 years for all Spanish-surnamed Texas residents.

The household survey also revealed that the median years of school completed for colonia residents age 25 and older was 4.8 years, as compared with 11.6 years for all Texas residents and 7.2 years for all Spanish-sumamed Texas residents. About 28 percent of colonia residents age 25 and older reported that they had no formal education, as compared to 3 percent for all Texans and 15.3 percent for all residents of Cameron and Hidalgo Counties combined. Only 6.7 percent of these colonia residents reported completing the 12th grade, compared to 48.8 percent of the Texas population and 32.3 percent of the combined Cameron and Hidalgo Counties populations.

Of those persons surveyed who were employed, 44 percent reported working as farm laborers and most of the remainder said they were engaged in blue collar work. Of those who worked, 32.5 percent reported working in a Valley urban community and only 6.1 percent said they worked within their own colonia.

The mean amount of time worked by all employed persons 16 years of age and over in 1975 was seven months, according to the survey. About 16 percent of all households in the survey reported no wage earners. Given that employment is apparently sporadic and low-paying, and that unemployment is high, it is no surprise that nearly two-thirds of the households surveyed reported an annual income in 1975 of $4,000 or less.

THE DEVELOPMENT OF THE COLONIAS

Colonias apparently developed in three fashions. About one-fourth originated as small communities of farm laborers employed by a single rancher or farmer. Another 15 percent were started as townsites by realtors between 1908 and 1948. The remainder were started as subdivisions, most since 1948. Since townsite and sub-division development was apparently fairly similar, the two should probably be viewed as the same.

Because development cost is low, realtors and other landowners may offer colonia lots to potential buyers at low cost. With easy terms available and with no costs for installation of water, sewer, and gas lines, colonia lots are attractive to the poor of the Valley. However, cheap land is not the only reason for living in a colonia.

Asked why they chose to live in a particular colonia, most of the household heads surveyed responded that they wished to live near relatives. Indeed, 80 percent reported relatives living in other households in the same colonia. Other reasons given for living in a colonia were a preference for rural living, the availability of cheap land and housing, and a desire to be a home owner rather than a tenant.

Colonias appear to be expanding and multiplying rapidly, and this increase in population has apparently been fed by internal Valley migration. As was mentioned earlier, most colonias were developed after 1948, with peak development occuring during the 1960s. Eighty percent of all households surveyed were first occupied by their current residents since 1960, and one-third since 1971. The average length of occupancy for a colonia household was found to be nine years. That this is new construction, and not turnover, is further affirmed by the finding that 80 percent of households surveyed were occupied by their original owners. Finally, 80 percent of the colonia household heads indicated that they lived in the Valley prior to moving to their current home, with 56 percent coming from other colonia households.

Rough projections of colonia population growth reveal a 48 percent increase every five years. This would result in a increase in the total colonia population from 34,000 in 1975 to more than 50,000 in 1980 and more than 115,000 by 2000, if all else remains equal.

THE PROBLEMS OF THE COLONIAS

Isolation as a problem of colonia residents has already been mentioned, as has the problem of poverty. The problem of poverty may be subdivided into a number of different sub-problems: low income, poor health, poor education, lack of opportunity, frustration, alienation. The social milieu formed by the colonia residents and by the

physical aspects of colonias is at once the product of these types of problems and also a factor in causing their continuation. The physical and legal isolation of the colonias as communities, and the social and cultural isolation of their residents, makes it all the more difficult for people within and without the colonias to find solutions to these problems.

One problem area that can be partially solved now is that of communicable disease. Higher levels of certain communicable diseases have been recorded in the Lower Rio Grande Valley than in almost any other part of the United States. These include viral hepatitis, bacillary and amoebic dysentary, and typhoid. What each of these diseases have in common is that they are spread by water-borne fecal contamination. Also, personal hygiene is connected with the spread of other communicable diseases and with skin ailments. Finally, certain stomach and intestinal ailments may be due to contamination of water supplies by pesticides and other chemicals.

Within virtually any population such diseases may be eliminated, for all practical purposes, with the introduction of treated drinking water and sanitary sewerage treatment. Treatment of water and sewage destroys the virus and bacteria that cause diseases, eliminates harmful chemicals, and, by making personal hygiene more convenient, encourages its practice.

Health improvement due to introduction of treated water and sewerage has several direct benefits that accrue to the residents of colonias and to the Valley as a whole. First is the improved physical and mental comfort that will come to healthier colonia residents. Second, colonia workers and students will have fewer absent days and, because they are healthier, will be more productive. This latter benefit is important to the Valley economy as a whole. Third, less money will be needed for health care and services. Reducing health care costs benefits both the poor colonia family by giving it more money for other needs, and local, state, and federal governments, which often have to pick up the tab for indigent medical care. Fourth, communicable diseases existing within colonias have the potential of being spread to other parts of the Valley. Several of the diseases mentioned, such as amoebic and bacillary dysentary and typhoid, may also be transmitted through human and insect vectors which may contaminate even areas with treated drinking water. Finally, flooding of colonias pushes raw sewage onto the land surface. The waters containing this sewage enter floodways which drain into the main drinking water sources of the entire Lower Rio Grande Valley.

The Cameron County Health Department lists the lack of proper sanitary sewage disposal facilities as one of the three problems creating major health hazards among the rural population of the county. This Health Department reported handling 695 environmental health problems related to sewage during 1975. Similar problems have been reported in Hidalgo County.

In summary, the link between water-borne disease and improper sanitation is well documented. Conditions conducive to disease transmission exist in the colonias. This poses a serious threat to the well-being of the residents of the colonias in particular and the Lower Rio Grande Valley in general. This threat can be largely eliminated by providing safe drinking water and sanitary waste water disposal systems to the colonias.

CHAPTER III

WATER RELATED SERVICES FOR COLONIAS

This chapter presents an overview of water resources in the Lower Rio Grande Valley. The current water supply and sewage disposal systems of the colonias also will be examined, and cost estimates for provision of water and sewage systems for the colonias will be considered. Finally, the institutional alternatives for water and sewage treatment will be explored.

WATER RESOURCES IN THE LOWER RIO GRANDE VALLEY

The Lower Rio Grande Valley is a semi-arid region where average rainfall is approximately 24 inches per year. The evaporation rate is more than double that average. Less than 2 percent of the Valley area consists of fresh surface water resources.

Historically, flooding has been a serious problem in the Valley due to its flat terrain and inadequate drainage. The danger of major floods has been reduced by construction of three dams on the Rio Grande River. Also, two main floodways constructed across the region now supplement the natural floodway of the Arroyo Colorado. However, heavy local rainfall can still cause severe flooding during any month of the year.

The majority of communities in the Valley discharge their effluent into the Main and North Floodways and the Arroyo Colorado floodway. These floodways are shown on the map in Figure 2. All three are heavily polluted by organic wastes, particularly during periods of low flow. In the segment of the Rio Grande River from the Brownsville International Bridge to the western border of Hidalgo County the river's water quality is poor. Here there are low levels of dissolved oxygen, high fecal coliform counts, and high concentrations of suspended solids. The Texas Water Quality Board does not consider this river segment suitable for contact recreation.

Groundwater resources in the Valley are generally of poor quality also. Even the better groundwater does not usually meet public health drinking water standards. High dissolved solids concentrations preclude the use of groundwater for extensive irrigation. In addition, the Valley groundwater is threatened with contamination from domestic waste.

The Rio Grande River supplies 98 percent of the fresh water for all uses in the Valley. Wells, however, supply about 10 percent of the municipal and industrial water requirements. There are 50 major water supply systems serving approximately 330,546 persons in the Valley. Ground water supplies 8 of these systems and surface water 36 systems. Six systems rely on both ground and surface water.

In 1974 the Texas Public Health Department reported that all wells tested violated standards set by the United States Public Health Service for the amount of dissolved solids permitted in "good quality" water. All but one well system and all surface water systems exceeded the maximum concentration of total dissolved solids permitted in drinking water considered permissible only "where no better water is available."

WATER SUPPLY IN THE COLONIAS

Among the 65 colonias identified, 45 have access to public water supply systems. Yet in these colonias many houses are not connected to the systems. These unconnected houses and those in the 20 colonias without any access to public systems have approximately 15,000 residents. These residents must rely on shallow wells and/or water from irrigation ditches as their only sources of fresh water. As has been shown, the quality of this fresh water is marginal at best.

The estimated total cost for providing fresh water to all unconnected colonia households in the Lower Rio Grande Valley is $2,130,000. This includes:

- the cost of connecting households to an existing system in those colonias having access to a public system and
- the cost of expanding existing municipal or rural water supply systems to provide services to households in colonias not presently having access to such systems.

SEWAGE TREATMENT FOR COLONIAS

None of the 65 colonias in the Valley have public sewer systems. The most common means of sewage disposal in

these communities are outdoor privies and indoor facilities which drain into either a cesspool, septic tank with field, or unlined pit.

Total daily wastewater discharge from all colonias identified is estimated at 1,650,000 gallons. This wastewater is discharged into sub-surface excavations and must go somewhere. It is reasonable to assume that it will trickle down and have some effect on the quality of the groundwater. Since groundwater aquifers are interconnected, groundwater pollution may impact surface water quality in the Rio Grande River and the floodways.

Because the water table is relatively high throughout the Valley, the use of septic tanks, cesspools, and privies periodically creates a potential non-point source of pollution. Heavy floods regularly occur in the Valley and, because the terrain is flat, stormwater is inadequately drained. Colonias are particularly susceptible to this type of localized flooding due to their locations in low-lying areas or in floodplains. The seepage resulting from this flooding often raises the level of the water table sufficiently to push raw sewage onto the land surface. This, of course, creates a serious health problem.

For a number of reasons septic tanks do not offer a good solution for the sewage problems of colonia residents. The high densities found in most colonias limit the safe use of septic systems. Also, soil conditions are considered "poor" for septic tanks in 13 colonias. Soil conditions in 23 other colonias are described as both "good and poor" depending on the specific location of a septic system. Finally, the National Flood Insurance Act denies federal insurance to new homes with unsealed sewage facilities located in floodplains. This makes septic tanks an inadvisable option for many low-lying colonias.

The provision of sanitary waste disposal systems in Hidalgo County colonias could be accomplished by either of two treatment methods. First, these colonias could be connected to an areawide wastewater treatment system. Second would be the installation in each colonia of separate package treatment facilities. Cameron County colonias would require package treatment facilities exclusively. Their distance from the main interceptors of the areawide system precludes their connection to it.

The cost of providing for sanitary waste disposal systems in colonias may be expressed in terms of:

- capital cost;
- annual costs (amortized capital costs plus operating costs);
- average annual cost per household (annual costs divided by the number of households being served).

These are the cost estimates for the colonias in Cameron and Hidalgo Counties:

	PACKAGE TREATMENT SYSTEM		CONNECTION TO AREA-WIDE SYSTEM
	Cameron County	Hidalgo County	Hidalgo County
Capital cost	$2,882,000	$7,215,000	$10,668,000
Annual cost	402,000	942,000	1,071,000
Average annual cost per household	232	210	240

The problems involved in securing water and sewage treatment for the colonias are two-fold. The first problem is to locate, or create, an organization which could accomplish the installation of the systems. The second problem is to secure funding for installation. Although there are a few organizations which might include colonias in their frameworks and a few funding programs for which colonias might be eligible, the fit into these categories is not exact.

INSTITUTIONAL ALTERNATIVES FOR WATER SUPPLY

Rural Water Supply Corporations

In most cases the rural water supply corporation represents the colonias' best opportunity to acquire potable water. In the past, funding of water supply systems for colonias has been accomplished by funding from the Farmers Home Administration (FmHA). An example of this is the Military Highway Rural Water Supply Corporation, which has recently brought water to 13 Cameron and Hidalgo County colonias. The Corporation received loan funds from FmHA. A majority of the rural residents it serves are low-income colonia residents, many of whom are migrants.

FmHA loan funding remains sizable, and $200 million in grant funds were included in the agency's fiscal 1977 budget. Grant funds are distributed to applicant projects on the basis of low per capita income, high costs of service, or some combination of these factors. The colonias would certainly be potential candidates for these funds.

Municipal Water Supply Systems

The Farmers Home Administration limits its funding to communities with less than 10,000 residents. Therefore colonias which must rely on municipal water supply systems cannot benefit from FmHA monies. The municipalities which run these systems could use their entitlement grants under the Community Development Program of the Department of Housing and Urban Development (HUD).

That they will do so willingly is doubtful, however. These communities are already under severe budgetary constraints in serving their own residents. The municipalities could apply for HUD discretionary grants to fund system extensions to colonias. However, there is a good deal of competition for the small amount of funds available under this program.

EDA Public Works Grant Program

A further option would be to apply for funding under the Economic Development Administration's Public Works Grant Program. Several institutions which now exist or which could be created could be eligible for funding under this option. The severe economic problems facing the Lower Rio Grande Valley would appear to make this a logical program for consideration. It would certainly assist some of the poorest counties in the United States.

INSTITUTIONAL ALTERNATIVES FOR SEWAGE TREATMENT

In 1972 Congress passed a comprehensive and far-reaching water pollution control legislation, PL 92-500, known as the Federal Water Pollution Control act amendments. This bill established the elimination by 1985 of the discharge of pollutants into navigable waters as a national goal. It requires that planning agencies be designated to conduct areawide planning of wastewater treatment to achieve this goal. Funds are authorized to conduct planning and up to 75 percent of construction costs necessary to achieve this goal. The Environmental Protection Agency administers the relevant parts of this act. The Lower Rio Grande Development Council, a council of governments, has been designated the planning agency under section 208 of this act.

Colonias should be included in the 208 areawide sewage treatment plan in the Lower Rio Grande Valley region. Colonias generate residual wastes which can affect water quality. The disposition of these wastes in pnvies and cesspools in an area where the water table is high and local flooding prevalent constitutes a threat to both ground and surface water quality. Texas Water Quality Board guidelines for review of 208 plans states that:

> . . . The plan shall include: . . . a process to identify, if appropriate, and control to the extent feasible (including land-use requirements) nonpoint sources of pollution, including . . . disposal of pollutants on land or in subsurface excavations. . .

Inclusion under the 208 planning process would make the construction of sewage treatment facilities for colonias eligible for 75 percent federal funding. However, this would not insure funding. First, the amount of federal funds available in Texas for 208 projects is limited. Second, sewage collection systems are not on the Environmental Protection Agency's priority list for construction grant funds. Third, given their low incomes, colonia residents might find it difficult to obtain the 25 percent local matching funds required by the program.

One answer to this problem may lie with the Texas Water Quality Board. The Board administers a well-funded water quality enhancement program which could provide loans for covering the 25 percent local match requirement. Still, given their depressed economic situation, colonia residents may find even a small loan program too costly to be met from local resources.

CHAPTER IV

COLONIAS AND LAND-USE MANAGEMENT

Colonias in the Lower Rio Grande Valley have proliferated and expanded without constraint largely because of the absence of effective land-use controls. This lack of control is typical of the rural, unincorporated areas of Texas. If services such as water supply and sewage treatment are provided for colonias, an incentive will be created for further growth of these substandard communities. The cost of providing services to isolated, small, rural developments is high. Also, substandard developments in areas of high density creates additional problems, and crowding is common in many colonias.

Advocacy of land-use control in order to prevent the unconstrained growth of colonias presents a difficult social policy issue. On the one hand, the colonias provide the poorest Valley residents with cheap housing. On the other hand, encouragement of expansion of existing colonias and of the creation of new substandard communities can have serious consequences for the entire Valley.

Wholesale bulldozing of the colonias may seem cheap and expedient. Yet the displacement of 34,000 people, one-tenth of the Valley population, is unlikely and certainly morally untenable. Better answers lie in improving existing colonias and guiding new home seekers to them, and in preventing the development of new substandard colonias. Land-use control is necessary to accomplish this.

This section examines the current situation of land-use management in Texas and in the Lower Rio Grande Valley. It will serve as background for recommendations as to what some Valley governments can do now. It will also be a background for recommendations for future action by the Texas Legislature.

INSTITUTIONAL CONTROLS OF LAND USE

1. Federal Government

Federal mechanisms for land-use management are decentralized. Much of the responsibility for land-use control has been delegated to state and local governments. The federal Department of Transportation, the Department of Housing and Urban Development, the Environmental Protection Agency, and the Department of Interior are all involved in some degree in land-use control. Their efforts are, however, directed toward urban areas. These efforts have not yet been related to counties, which have jurisdiction over rural, unincorporated areas.

2. State Government

Existing state land-use control mechanisms are also decentralized. Here most responsibility has been delegated to local governments. The primary role of Texas state government has been to enact legislation enabling cities to regulate land development and utilization within their territorial jurisdiction. Additionally, state agencies with land management functions include those responsible for state lands, for coordinating special districts, and for controlling environmental pollution.

3. Regional Councils

Another form of government involved in land-use management are regional councils of government, which are voluntary associations of local governments. Such councils have these functions:

- to assist local governments in solving problems affecting more than one jurisdiction;
- to encourage the development of inter-governmental relations;
- to review local planning activities;
- and to maintain an areawide comprehensive planning process.

The regional councils may make recommendations, but do not have the power to enforce the recommendations.

4. County Government

Counties with populations of more than 190,000 are authorized to require land developers in unincorporated areas to provide 60-foot rights-of-way (*Vernon's Annotated Revised Civil Statutes of the State of Texas* [VACS], art: 2732K [1951]). These counties may also establish specifications for road construction. These provisions may only be enforced by a county's refusal to approve maps or plats not providing minimum rights-of-way or by requiring a performance bond. Under VACS, art. 6626a (1957, as amended 1961) developers of unincorporated land in counties of less

than 190,000 population must file a plat with the county clerk before subdividing land. These counties are given limited authority to provide for rights-of-way and to establish construction and drainage specifications for roads and streets. These counties may also require a performance bond and refuse to approve deficient plats.

Existing county land-use control authority has a major drawback. The sale of subdivision lots based on metes and bounds descriptions is not covered under current statutes. Cities are not permitted to extend services to a developed subdivision unless a plat has been filed with the county clerk. But what if a developer has no intention to provide services to a subdivision? Then there is no incentive to record the subdivision with the county. This is the case with many colonia-type subdivisions. Without a recorded plat there is no control point at which the city or county will come in contact with the new subdivision. Therefore there is no regulation.

Compliance with the National Flood Insurance Program requires rather extensive land-use authority in areas threatened by flood hazards. In 1969, in order to comply with the program, the Texas Legislature enacted certain legislation. VACS, art. 8230-13 (1969) authorizes counties in Texas to make land-use adjustments to constrain the development of land in flood plains. The counties are authorized to guide the development of land in flood plains. The counties are authorized to guide the development of future construction away from flood hazard areas. This legislation supplements older authority granted to the counties (VACS, art. 1581e [1949]) Here counties may exercise the right of eminent domain to condemn and acquire real property, easements, and rights-of-way for the flood-control construction. This includes the making and digging of canals, drains, levees, and other improvements for flood control and for drainage related to flood control. The full extent of county powers under art. 8230-13 and art. 1581e has not yet been tested. However, this legislation may enable counties with potential flood hazards to excercise some control over development in unincorporated areas.

5. Municipal Government

Municipal mechanisms for the regulation of land use include zoning laws, building and housing codes, and subdivision ordinances. All Texas cities have the authority to implement these controls within their corporate limits. The effect of this authority varies from city to city. This variation depends on the quality of the regulatory mechanism and on the stringency of ordinance and code enforcement.

Cities have some authority in unincorporated areas which lie within the boundaries of their extra-territorial jurisdiction (ETJ). The ETJ of a city consists of all the contiguous unincorporated area, not a part of another city, within a specified limit of the city's corporate limits. VACS, art. 970a (1963) establishes ETJ limits ranging from one-half mile to five miles depending on the size of the city. Cities are permitted only to extend subdivision ordinances to unincorporated areas within their ETJs. However, the city can neither impose nor assess any fine for ordinance violation. It may not consider these violations as misdemeanors. A city may refuse to extend services to a subdivision which fails to comply with its ordinances. The city may also seek injunctive relief in the courts.

LAND-USE CONTROLS IN THE LOWER RIO GRANDE VALLEY

1. County Government

In 1971 Cameron County developed a set of standards which apparently has put a stop to new sub-standard subdivision development. The County Commissioners' Court uses these standards as a guide when deciding whether to approve subdivision plats in unincorporated areas. Among the requirements of the standards are.

- that new subdivisions must be connected to an approved sewage disposal system;
- there must be provision for drainage easements and rights-of-way along water courses,
- there must be minimum lot sizes,
- a layout of the entire subdivision must be filed, showing the proposed layout of streets, blocks; drainage, sewage, and water systems, and other improvements to the area.

These guidelines were adopted under the authority of floodplain legislation enacted by the Texas Legislature. While the legality of these guidelines has not been tested in court, they have been generally accepted by developers.

2. Municipal Government

A March, 1976, telephone survey of 15 larger cities in the Valley indicates that most are attempting to control new development within their ETJ areas through the extension of municipal subdivision ordinances. The survey further revealed that:

- Thirteen cities have extended ordinances which specify minimum standards for street construction and drainage in new subdivisions;
- Eleven cities have extended ordinances which establish minimum lot sizes;
- Nine cities, of which eight are in Hidalgo County, have extended minimum specifications for water and sewer lines;
- Brownsville, Edinburg, and Mission have recently started to use injunctions to halt substandard devel-

opment within their ETJ areas.

Approximately one-third of the 65 colonias are located within the ETJ boundaries of the larger cities of the Lower Rio Grande Valley. These cities have the authority to control the development of new substandard subdivisions within these boundaries. They have no legal right, however, to regulate land use in existing colonias. Under current law, annexation is the only method by which municipalities can exercise the full range of land-use control on existing colonias. Broad scale use of this approach seems unlikely. the costs resulting from the annexation of a typical colonia would likely outweigh the return in revenue generated from use fees and *ad valorem* taxes on colonia property.

CHAPTER V

RECOMMENDATIONS

A. Water Supply

Each colonia in the Lower Rio Grande Valley should be provided with access to a public water supply system.

1. Where feasible, the water supply needs of colonia residents should be provided through rural water supply corporations. To provide funding for these projects, the Farmers Home Administration rural water and sewer services grant program should be reinstated.

2. Where rural water supply corporations utilization is not feasible, water supply needs should be provided by extension of service from the nearest water supply system. Financial support for this should be sought under the Economic Development Administration public works grant program.

B. Sewage Treatment

Each colonia in the Lower Rio Grande Valley should be provided with access to a public sewage treatment system.

1. The sewage treatment needs of colonia residents should be included in the regional treatment plan under Section 208 of the federal Water and Waste Water Program.

2. Funding for sewage treatment facilities should first be sought under the Environmental Protection Agency construction grant program, where up to 75 percent funding can be obtained. To provide for the 25 percent required local match needed under this program, the Texas Water Quality Board loan program for water quality enhancement should be used.

C. Land-Use Management

Future land-use plans and controls adopted in the Lower Rio Grande Valley should be used to prevent the development or uncontrolled expansion of rural communities, such as colonias, which lack basic services.

1. Under the authority of floodplain enabling legislation, Hidalgo and Willacy Counties should adopt guidelines relating to approval of subdivision plats similar to those already used by Cameron County.

2. The Texas Legislature should enact enabling legislation providing for land use management in unincorporated areas. This should be done on a staged basis:

Stage 1: Passage of legislation such as the County Development Standards draft bill prepared by the Texas Advisory Commission on Intergovernmental Relations (TACIR). This would give counties more extensive subdivision control coupled with an effective enforcement mechanism.

Stage 2: Passage of legislation such as th City Standards in Areas of Extra-Territorial Jurisdiction draft bill prepared by TACIR. This would authorize cities to extend their building ordinances into their areas of extra-territorial jurisdiction.

Stage 3: Passage of legislation such as the County Land Protection and Management draft bill prepared by TACIR. This would grant counties zoning authority.

Stage 4: Passage of legislation such as the County Ordinance Authority bills (H.B. 1694 and J.B. 894) introduced in the 64th Legislature. This would grant "home rule" status to counties.

APPENDIX

COLONIAS AS RURAL HOUSING

The U.S. Census defines rural communities as those having populations of 2,500 or less, making all *colonia* housing rural housing. Where, then, do *colonias* lie in relationship to all other rural housing?

Growth is the main difference. Although *colonias* closely resemble the poor farmworker communities of the San Luis Valley of Colorado and the San Joaquin Valley of California, neither of these areas has experienced the phenomenal growth found in the *colonias*. Small farmworker communities in central Florida also resemble *colonias*, except that in those communities renting rather than home ownership is the rule.[1]

The similarities of *colonias* to all rural housing are largely economic and political. Most rural homeowners face the problems of distance and of economies of scale.[2] The cost of providing services to scattered rural houses and communities adds to the cost of owning a rural home. The small size of these communities makes difficult the achievement of economies of scale in construction and other capital projects, not to mention the ongoing maintenance of services. These factors hold for rich and middle-class rural homeowners as well as the poor.

Distance and economy-of-scale factors are implicit in the research done on the *colonias*. Physical isolation, a corrolary of distance, is also discussed extensively. Not discussed in this research effort is the factor of housing credit, verbally reported as a problem by some officials in the Lower Rio Grande Valley. Compared to that of urban areas, rural housing financing requires larger down payments, higher interest rates, and shorter loan terms. Also, due to a variety of factors, there is a general housing credit shortfall in rural areas.[3] While this is a problem for all economic classes in rural areas, it is particularly difficult for the poor, adding to their already grave credit problems.

Although the rich and the poor share common problems in rural housing, poverty and the special difficulties of minority and disadvantaged groups add special dimensions to these problems. The poor simply cannot afford to build standard and adequate homes. Many government programs for construction and rehabilitation are designed to aid all poor people. Why, then, cannot the poor in rural areas avail themselves of these programs?

To begin with, there is not enough government housing money nationwide to solve all housing problems. Many of the direct and indirect housing subsidies available go to the upper and the middle classes. Also, implicit in the federal government housing finance pattern is a distinct urban bias, with a disproportionate amount of funding going into the cities. This neglect is due in part to the greater political leverage of urban areas. It is also due to the belief in "Metropollyanna" held by many of the nation's chief policy makers.

Metropollyanna is the belief that sooner or later everyone will move to big cities and live happily ever after.[4] This belief holds that the place for people who are in trouble in rural areas and small towns is obviously in bigger towns with electricity, inside plumbing, paved streets, and medical facilities all constructed more cheaply on a per capita basis and much more accessible.[5] However, it is now beginning to occur to policy makers that this may not be the best of all possible worlds. Pollution, congestion, and the breakdown of government service in some of the nation's largest cities indicates that there may also be diseconomies of scale, that there is a maximum size that can be reached, after which the quality of life begins to degenerate. While recognizing the clear need of large cities for housing assistance, it is important that the smaller towns and rural areas not be neglected. Those who would move all *colonia* residents to Valley cities and towns should examine the impact this would have on these urban areas—impact in terms of water, of other utilities, of municipal services, and on the quality of life within existing municipalities. A town of 10,000 can be overburdened if its population grows to 15,000; New York City does not represent the single maximum size permissible in every given area.

Too, there is already a revival of population growth in nonmetropolitan areas of the country, indicating an increasing interest by citizens and industry in locating in rural areas. This may make many rural areas in the country much more viable as places to live. Policy makers should take note of this trend and plan housing policy based on people's preferences rather than on "right-angle" planners' computations.

What about the government housing money that could be made available to poor rural areas? The availability of this money is largely dependent on the willingness and skill

of local agencies and institutions to "hustle" grants and loans. In poor rural areas, the government agencies which could fulfill these functions are often weak, ineffectual, or nonexistent. In the case of *colonias* there is no government agency to represent their interests in the housing field. Those non-profit organizations which could aid the *colonias* in this problem are too small and poorly funded to be very effective. More technical assistance from Austin and Washington in obtaining grants and loans for the Valley, as well as a commitment by local and state government to improving the quality of life in all rural housing, would be an important first step towards solving the problems of *colonias*.

Providing the needed technical and financial assistance to the *colonias* will be expensive:

> Particularly in low income, low density rural counties, per capita federal outlays may need to be higher than in high income, densely settled urban counties because of (1) the limited ability of low income counties to raise state and local moneys to finance government services, (2) the inability of more sparsely settled counties to achieve economies of scale (lower costs per person in providing comparable government services), and (3) the frequent need for more capital investment, on a per capita basis, to compensate for past inequities.[6]

This research effort has directed its attention to the water and sewer problems of the *colonias*. These are by no means the only housing problems found in these communities. The houses themselves are more often than not delapidated, poorly constructed, and too small for the families they hold. Even if sewer and water service is provided for all *colonia* houses there will remain much work to be done. Further study of home construction and repair needs, credit needs, and the development of institutional structures to insure progress is needed and needed now. Beyond study and development there is needed a concentrated effort, based on sound policy decisions, to ensure a good standard of living in *colonias* and in all rural areas.

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