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FREE TRADE AND THE ENVIRONMENT: A CASE STUDY OF THE TEXAS COLONIAS

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Abstract. *Colonias are unincorporated subdivisions located in the rural, largely unregulated portion of counties where building codes and regulations are either nonexistent or unenforceable. Colonias are characterized by Third World living conditions where basic infrastructure services such as wastewater collection and treatment, drainage, paved streets, and, in some cases, electricity is lacking. Housing is substandard, with poor plumbing, heating and cooling systems. In Texas, there are approximately 1,193 colonias (home to an estimated 280,000 people, mostly Hispanic) concentrated outside of El Paso, and in counties comprising the lower Rio Grande Valley. In 1989 and 1991, voters approved constitutional amendments that authorized the sale of \$250 million in water development bonds to help finance water projects for the colonias. Presently, 25 such projects are in various stages of development and construction. This paper examines colonia geographical distribution, voting patterns produced by two constitutional amendment elections, and outlines procedural guidelines for the economically distressed areas program.*

Considerable international effort has focused on the globalization of free trade through continuing negotiations involving the General Agreement on Trade and Tariffs (GATT). Multilateral attempts to create regional trading blocs have paralleled these negotiations. For example, the Europe 1992 initiative (Crookwell 1991) is designed to create a single European market making the region more competitive against the United States and Japan. The Europe 1992 initiative features regional economic integration involving the eventual removal of barriers on product standards, the establishment of health and safety rules, and environmental regulations. Another example of a regional trade initiative is the U.S.-Canada Free Trade Agreement (CAFTA), which went into effect on January 1, 1989 (Delal Baer 1991). CAFTA, largely initiated by Canadian desire to secure access to the U.S. market, also satisfied U.S. interests to expand its trade in services. While designed to enhance the

economic benefits for both parties CAFTA largely avoided the issue of environmental regulations (Shrybman 1990).

In June 1990, Mexican President Carlos Salinas de Gortari requested a similar free trade agreement with the United States. The North American Free Trade Agreement (NAFTA), evolved with the intention to facilitate the free flow of goods and services by removing trade barriers between Canada, Mexico and the United States. In contrast to CAFTA where little discussion took place in the United States over the agreement's ratification (Crookwell 1991; Delal Baer 1991) NAFTA, negotiated by the Bush administration, has generated considerable controversy and debate. Currently, the Clinton administration is conducting negotiations with representatives from Mexico and Canada to resolve two-key side issues, the protection of worker rights and the environment.

Environmentalists are concerned that U.S. companies to escape higher pollution-control costs will relocate in Mexico and turn it into a pollution haven. Environmental impacts, associated with NAFTA are not confined to Mexico's pollution problems. Transboundary resource conflicts along the Mexican-American border are especially severe in sister city urban complexes such as Ciudad Juárez, Chihuahua, and El Paso, Texas. A particularly challenging problem in U.S. border counties, most notably in New Mexico and Texas, is how to improve living conditions of people residing in colonias. The purpose of this Texas case study is to examine the handling of basic water supply and treatment infrastructure needs of some 280,000 colonia residents. Specifically, this paper:

- 1) briefly reviews some of the environmental issues associated with NAFTA
- 2) examines the geographical distribution of Texas colonias
- 3) analyzes voting patterns produced by two referenda that authorized the creation of the Texas Economically Distressed Areas Program (EDAP), which embodies the colonias assistance plan, and discusses the procedural guidelines of the EDAP
- 4) reviews EDAP implementation and progress through October 1992

The problems inherent in providing funding and assistance programs for economically disadvantaged communities is not unique to the colonias or Texas. The information and insights gained from the Texas experience could serve as a guide to other states facing the challenges of financing improvements to their water supply and treatment infrastructure.

Environmental Concerns and NAFTA

Two themes are evident in the linkages between the environment and NAFTA. First, how domestic environmental policy in Mexico has been influenced by Mexico's economic crisis of the mid-1980s and more recently by the prospects of NAFTA. Second, are problems inherent in managing transboundary resources and what is being done to address such issues as hazardous waste production associated with the twin-plant maquiladora program, and air and water pollution in the sister city urban complexes located along the U.S.-Mexico border (Herzog 1991; Mumme 1992).

Mumme, Bath, and Assetto (1988) point out that Mexico's primary domestic concern has been economic development and that a lack of investment capital has compromised the implementation of Mexican environment policy. Despite this, the environment has increasingly become a more important domestic issue, especially in light of public concern over such publicized examples of environmental degradation as air quality in Mexico City (Mumme 1991). More recently, Mumme and Sanchez (1992) argue that the Salinas administration, driven in part by environmental concerns raised by the NAFTA negotiations, has initiated a number of environmental reforms including increased staffing for the Secretariat of Urban Development and Ecology (SUDUE) and aggressively pursuing external financial assistance for pollution abatement. Since NAFTA is anticipated to further accelerate Mexican industrial development, interest in the relationship between the environment and the economy will play a salient role in future U.S.-Mexican negotiations.

Environmental degradation of air and water resources in the border area has attracted much attention. Frumkin and Avila (1992) assert that public health in the border area is endangered by sewage and industrial discharge, hazardous waste, and exposure to chemicals. For example, the birth of over 50 anencephalic babies (congenital absence of all or part of the brain) in the Brownsville, Texas-Matamoros, Tamaulipas area is alarming and has raised public suspicion over the correlates between environmental degradation and human health (*Dallas Morning News*, May 8, 1992). Lewis, Kaltofen, and Ormsby (1990) note that a discharge near the Finsa Industrial Park in Matamoros contained xylene at 2.8 million parts per billion—a level so high that the sample itself was hazardous. In the El Paso, Texas-Ciudad Juárez area, a combination of air and water quality problems, sewage treatment and toxic emissions resulted in El Paso being named one of the most environmentally stressed cities in the United States (*Dallas Morning News*, January 17, 1993). In response to these problems, the U.S. Environmental Protection Agency and SUEDE in 1992 released an integrated plan for the Mexican-U.S. border area

(U.S. EPA 1992) which outlines in broad terms objectives for bilateral environmental protection. One of the problems identified in the report specific to the U.S. side of the border is the occurrence of makeshift residential housing subdivisions called colonias.

Texas Colonias

Colonias are subdivisions or communities located in the unincorporated and largely rural portions of counties where basic services such as water supply, wastewater collection and treatment, drainage, paved streets and in some cases electricity are generally lacking. In one colonia, San Elizario, located southeast of El Paso, Texas, an estimated 35% of the children have contracted hepatitis A by age 8, while 90% of adults contracted the disease by age 35 (*Dallas Morning News*, March 17, 1993). Colonia residents are primarily Mexican-American and many live below the poverty line. In 90 colonias situated in Starr County located on the Texas border in the lower Rio Grande Valley, 60% of the residents live below the poverty line (*Dallas Morning News*, February 8, 1993) ranking it as the poorest county in Texas and second poorest in the United States. Many Mexican-Americans have been drawn to Texas border counties by the perception of employment opportunities associated with the twin-plant maquiladora program. Speculation on the economic benefits to the area that would result from NAFTA has contributed to the rapid population growth along the border. For example, the Laredo Metropolitan area grew by 40.9% from 1980 to 1990, and by 4.9% from 1990 to 1991 (*Dallas Morning News*, March 18, 1993).

Colonias originate when land is subdivided by developers and lots made available without basic services. Generally, this process takes place in unincorporated areas where building codes and zoning ordinances are either minimal or not enforced. Because the land is subdivided with no basic infrastructure, the cost of a lot is relatively low making it affordable for many low income families. Families that purchase the property usually do so on an installment plan and build their own houses with whatever materials are available. Housing is often substandard with poor plumbing, heating and cooling systems. Once the developer has sold the lot there is no incentive to improve the property and the buyer often does not have the financial means for installing water supply and sewage hook-ups even if such utilities are available. A U.S. General Accounting Office (GAO) study (1990) reported that efforts by rural water supply corporations and municipal utilities resulted in 60% of the Texas colonias having access to public water supplies. Unfortunately, it also found that less than 1% of the colonias have sewage systems.

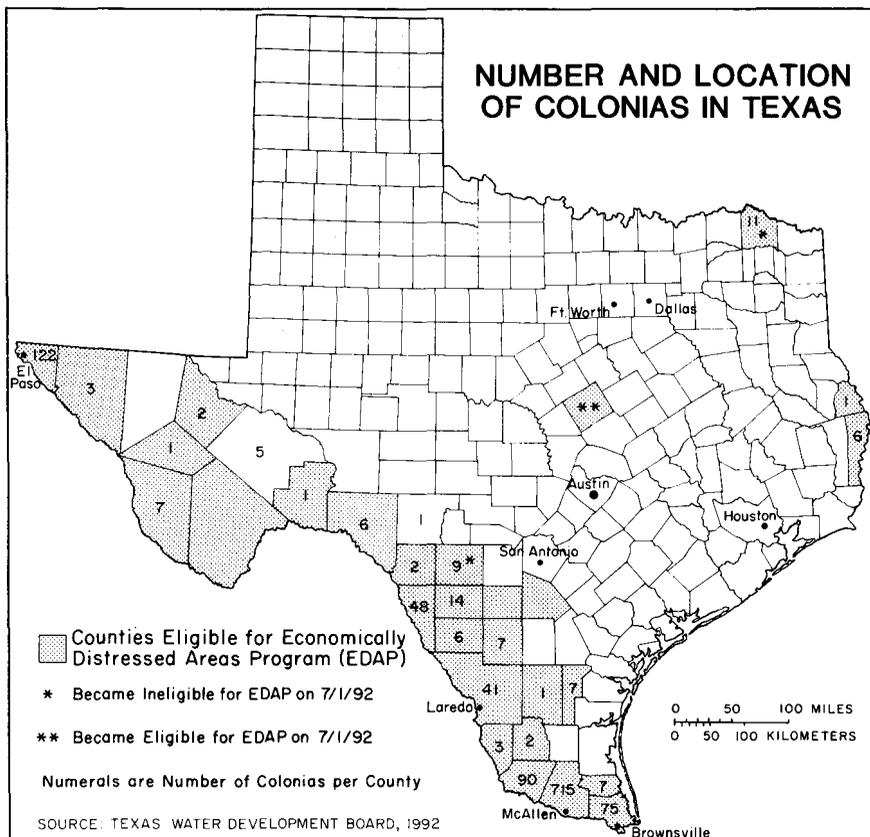


Figure 1. Texas Colonias and EDAP counties. (Texas Water Development Board 1992a)

The magnitude of the problem was underscored by a Texas Water Development Board (1992a) survey which identified 1,193 colonias, with a combined estimated population of 280,000 people (Fig. 1). Colonias are primarily located in Texas border counties (Texas Water Development Board 1987, 1992a). Approximately 76% of the colonias are located in the counties containing the cities of El Paso (El Paso), McAllen (Hidalgo), and Brownsville (Cameron). Despite this concentration, the number and geographic distribution of the colonias within a county exacerbates the problem of building and financing the water supply and treatment infrastructure. The Texas Water Development Board (1992a) estimates that it will take a total of \$696 million to provide water and wastewater service: \$147.9 million for water supply,

\$467.3 million for wastewater treatment, and \$80.8 million for connection fees and indoor plumbing improvements. Financing such an extensive public works project, even during economically prosperous times, is a difficult undertaking for state and local government.

Texas tax and spending limits and state-level financial assistance programs are tied to constitutional restrictions. The issuance of general obligation bonds which can be used to finance water projects is subject to statewide voter approval of constitutional amendments referred to as propositions. A proposed amendment must be approved by two-thirds of the Texas Legislature and supported by a simple majority of voters if it is to be ratified. Two constitutional amendments relating to the Texas colonias were ratified in 1989 and 1991. An analysis of the voting patterns produced by this form of participatory democracy is useful in assessing public opinion regarding financial assistance and program development for the colonias.

1989 and 1991 Colonia Propositions

Proposition 2 (November, 1989 ballot) proposed to increase the authorization for the Water Development Fund, the state's primary general obligation fund for financing water projects, by \$500 million. In addition to increasing bonding authority, Proposition 2 also stipulated that the Texas Water Development Board (the agency charged with managing the fund) would allocate 20% of the \$500 million (\$100 million) to areas in qualifying counties where residents cannot afford adequate water and sewer services. In particular, the colonia subdivisions located along the Rio Grande were targeted for this money.

Procedural guidelines for implementing the colonia provision of Proposition 2 were contained in accompanying legislation approved by the Texas Legislature in 1989 and contingent upon amendment ratification. This legislation established the Economically Distressed Areas Program (EDAP). An economically distressed area is defined as one where:

- 1) 80% of the dwellings in the project area were occupied by June 1, 1989
- 2) the financial resources of the area are inadequate to meet needs
- 3) water supply and sewage systems are unable to meet minimum state standards.

In addition, the economically distressed area must be located in an eligible county where per capita income is 25% below the state average and unemployment 25% above the state average for the last three years, or are next to the U.S.-Mexico border. Figure 1 presents the spatial distribution of counties eligible for participation in the EDAP. Given the eligibility criteria it is not surprising that the majority of counties are located either adjacent or in proximity to the international border. All political subdivision including counties, water districts, cities, and water supply corporations can apply for financial assistance to the Texas Water Development Board subject to meeting eligibility requirements. Another stipulation is that the county where the proposed project is located must adopt rules for the regulation of subdivisions in unincorporated areas thus hindering the proliferation of additional colonias.

In 1989, the Texas Water Development Board reported that applications for financial assistance to the Water Development Fund were increasing in response to new water quality standards and that unless bonding authority was increased the fund could be exhausted by 1992 (House Research Organization 1989a). Proponents of Proposition 2 argued that general obligation bonds continue as the most cost effective method for financing water projects. They also noted that specifically targeting the colonias for financial assistance increased the likelihood of these areas receiving much needed state-level financial assistance. The *Dallas Morning News* and other newspapers ran editorials endorsing Proposition 2. While articles frequently cited the direct benefits that would accrue to the local areas if the amendment were ratified, they also recognized the social and moral imperatives of assisting the colonias. Opponents argued that of the \$1.38 billion in water development funds approved in 1985 and 1987 (Schoolmaster 1992), \$1.09 billion remained unsold, and until such time that those bonds were sold there was no need to increase bonding authority. Moreover, they suggested that the colonia problem was a product of failed regulation at the local level and that it should be addressed at that level (House Research Organization 1989b). In November, 1989, voters ratified Proposition 2. It received 59.8% of the vote and carried 165 of Texas' 254 counties.

When the Texas Legislature met in 1991, most of the \$100 million dedicated to the colonias had been allocated to 17 projects. At this time the Texas Water Development Board arrived at its estimate of approximately \$700 million to "fix" the colonia problem. To address the need for additional funds the Texas Legislature approved another constitutional amendment, Proposition 12, for the November, 1991 ballot which would increase from 20 to 50% the portion of the \$500 million authorized by voters in 1989. Increasing this

percentage would earmark an additional \$150 million for the colonias bringing the total EDAP authorization fund to \$250 million.

While the 1989 Proposition received widespread support, the 1991 request to reallocate previously approved bonds generated controversy. Now the *Dallas Morning News* editorials opposed Proposition 12 suggesting that additional financial assistance for the colonias should come from direct appropriations rather than the sale of bonds to save interest costs on bond repayment. Opponents complained that until the 17 projects under construction were completed and evaluated no additional funds should be allocated. Others voiced concern over the ability of colonia residents to repay the loans from the Texas Water Development Fund (Texas League of Women Voters 1991).

Support for Proposition 12 came from state leaders and numerous grassroots community action groups such as EPISO (El Paso Interreligious Sponsoring Organization) in El Paso (Villerreal 1988), the Texas Industrial Area Foundation, and the Greater Dallas Community of Churches (Texas Legislative Clipping Service 1991a). Arguments for Proposition 12 included:

- 1) providing assistance to residents of the colonias was the socially and morally correct thing to do
- 2) the prevention of disease and improved public health through increased sanitation would actually save the state money by reducing health care costs
- 3) the potential impacts from the North American Free Trade Agreement would be greatest in Texas border counties and that improvements in municipal infrastructure would facilitate economic development (Texas Department of Commerce 1991)
- 4) assisting colonia residents that are primarily Mexican-American in background was illustrative of a new period of cooperation between the U.S. and Mexico

In November, 1991, Proposition 12 received approval from 54.5% of the voters and carried in 142 of 254 Texas counties.

A spatial analysis of the voting patterns for Propositions 2 and 12 was effected by comparing the election outcomes on a county-by-county basis and mapping the results (Schoolmaster 1987). For any enumeration district four combinations or outcomes are possible when comparing the results between a pair of elections. A majority of voters in a county could decide to ratify both propositions. Similarly a majority could defeat both amendments. In either case, when the outcome for a pair of elections is the same it is suggestive of a

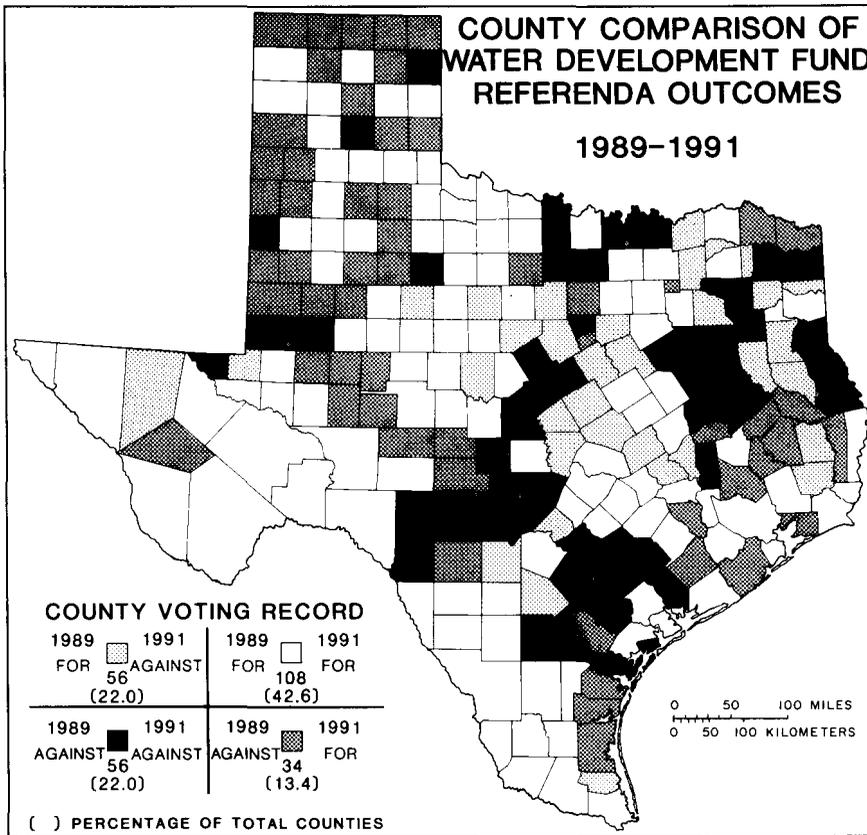


Figure 2. Comparison of Proposition 2 and 12 election returns. (Texas Secretary of State Office 1989, 1991)

relatively stable position on the issue for voters living in that county. The other two outcomes are indicative of changing or unstable positions on an issue. A majority of voters could support the first proposition and then reject the second, or vice versa. By mapping the county voting records for the 1989 and 1991 propositions we are able to gain a geographical perspective on the elections and possibly enhance our understanding of why voters responded to the propositions in the way they did (Fig. 2).

Residents in 108 of 254 Texas counties supported both propositions. Support was consistent in the border counties were a majority of the Texas

colonias are located, in the county (Harris) containing Houston, and in the urbanized counties of the Interstate-35 corridor including the cities of San Antonio, Austin, Ft. Worth, and Dallas. Particularly important in the El Paso area was the influence of EPISO which worked to encourage voter awareness and support for the colonia propositions. Opposition was consistent in 56 predominately rural counties clustered in North, East, and South Central Texas where voters had a history of not supporting previous water development legislation (Schoolmaster 1984).

Election outcome changes were registered in a total of 90 counties. In 56 of these, most located in the central and eastern portions of Texas, voters who supported Proposition 2 (1989) rejected Proposition 12 (1991). In part this shift could be attributed to concern over the ability of the colonia residents to repay the loans and the cost of debt service especially during the economic down turn of the late 1980s (Texas Legislative Clipping Service 1991b). A favorable shift in voter support was recorded in 34 counties, mostly located in the Texas Panhandle and throughout East Texas. Voters in the Panhandle had long been supportive of water development propositions, however, in 1989 they expressed dissatisfaction over targeting the colonias for funding (Schoolmaster 1991). In 1991, this opposition was not as evident in the election returns. In summary, Propositions 2 and 12 achieved ratification carrying urban areas with growing Hispanic populations such as Houston, Dallas, El Paso, San Antonio, and Rio Grande Valley counties where the economic self-interest and direct benefits of the \$250 million allocated to the EDAP would be greatest.

EDAP Implementation and Progress

Since 1989, when the EDAP was created by the Texas Legislature and implemented by voter approval of Proposition 2, eight projects have received construction funding. In addition, 17 other projects have received planning grants which enable applicants to fund engineering studies that precede the actual application for financial assistance for project construction. Although the number of projects under construction may appear few in number, implementation of the EDAP has been complex involving the promulgation of rules and regulations, program staffing, needs assessment, and the special requirement that counties where a project is located must adopt rules to regulate subdivisions (Texas Water Development Board 1992a).

Six of the eight projects are located in El Paso, Hidalgo, and Cameron counties (Table 1). The total project costs of approximately \$28 million for

TABLE 1

ECONOMICALLY DISTRESSED AREAS PROGRAM PROJECT
SUMMARY (AS OF OCTOBER 1992)

County	Project Type	Colonia Residents	Project Cost
El Paso			
1. Lower Valley Water District	Water	1,940	\$ 1,600,000
2. Westway	Water	2,412	889,800
		<u>4,352</u>	<u>2,489,800</u>
Maverick			
3. City of Eagle Pass	Wastewater	6,300	11,070,000
Hidalgo			
4. City of Edinburg	Water/Wastewater	1,296	1,450,000
5. City of Mission	Water/Wastewater	1,247	2,890,000
		<u>2,543</u>	<u>4,340,000</u>
Cameron			
6. City of Brownsville	Water/Wastewater	4,398	6,110,000
7. Hacienda Gardens Colonia	Wastewater	308	477,800
		<u>4,706</u>	<u>6,587,800</u>
Willacy			
8. Sebastian Colonia	Wastewater	1,904	3,020,000
Program Totals		19,805	\$27,507,600.¹

¹ Total includes \$3,256,000 from state revolving fund loans and \$24,247,600 from EDAP funds.

Source: Texas Water Development Board, 1992b.

TABLE 2

SUMMARY OF PLANNING GRANTS AND ESTIMATED PROJECT
CONSTRUCTION COSTS (AS OF OCTOBER 1992)

County	Project Type	Colonia Residents	Projected Cost
El Paso			
1. Socorro	Water/Wastewater	21,269	\$ 31,209,000
2. San Elizario	Water/Wastewater	5,200	12,934,000
		<u>26,469</u>	<u>44,143,000</u>
Hudspeth			
3. Sierra Blanca Valverde	Wastewater	1,100	1,350,000
4. Cienegas Terrace	Water/Wastewater	1,412	3,825,200
Maverick			
5. Quemado	Water/Wastewater	1,500	2,000,000
Zavala			
6. Batesville	Water/Wastewater	1,200	1,300,000
Webb			
7. Mines Road	Water	1,850	3,993,300
Cameron			
8. Olmito	Water/Wastewater	3,800	2,600,000
9. San Rosa	Water/Wastewater	1,615	8,122,300
		<u>5,415</u>	<u>10,722,300</u>
Hidalgo			
10. El Paraiso	Wastewater	625	850,000
11. Alton	Wastewater	6,535	7,350,000
12. Weslaco	Water/Wastewater	2,545	5,214,000
13. Las Milpas	Water/Wastewater	9,918	13,627,400
14. Mercedes	Water/Wastewater	2,800	3,800,000
15. Alamo	Wastewater	2,450	2,051,300
16. San Juan	Water/Wastewater	1,710	2,600,000
17. Palmview	Water/Wastewater	6,942	9,900,000
		<u>33,525</u>	<u>\$45,392,700</u>
		72,471	\$112,726,500

Source: Texas Water Development Board, 1992b.

meeting the water and wastewater needs of eight colonias with a combined population of 19,805 reflects the high costs of improving these infrastructure systems.

Table 2 summarizes the status of the planning grants and the estimated construction costs for 17 other projects. If the statistics for the 25 projects listed in Tables 1 and 2 are combined, the needs of some 92,276 colonias residents have been addressed by the EDAP and \$137 million of the \$250 million in EDAP bonds have been allocated. This means that roughly 1,168 colonias with a total population of about 188,000 residents are awaiting assistance. What remains to be determined is how, when, and from what sources the additional revenues for water and wastewater projects will come once the remaining \$113 million in EDAP bonds are exhausted.

If the original Texas Water Development Board (1992a) estimate of total colonia costs is correct (\$696 million) then there is a remaining need for some \$340 million. Congress has passed two sources of funding, one for \$25 million through the Department of the Interior's Farmers Home Administration and the second for \$50 million from the U.S. Environmental Protection Agency which will require a 50% match from Texas. Part of what remains to "fix" the colonia problem will have to come from state-level financial sources. What remains to be seen is whether or not Texas voters will again be asked to approve constitutional amendments to increase authorization for EDAP bonds. And, if they are, will the propositions be ratified? The answer to the first question is probably yes, in light of the fact that the Water Development Fund is the primary source of state-level financial assistance for water projects. An answer to the second question is more tentative given that voters would again be asked to approve the expenditure of a large amount of money on a relatively small number of people living in the colonias.

Conclusions

If the North American Free Trade Agreement is enacted it will impact, in yet unknown ways, the relationships between Canada, Mexico and the United States. For Texas, some of the consequences of increased interaction between Mexico and the United States as a result of the twin plant-maquiladora program are already evident. Environmental concerns ranging from air and water quality to public health and the management of solid and hazardous waste will require new levels of bilateral cooperation that will strain the financial resources of federal, state, and local governments on both sides of the border.

This case study has examined the development of an assistance program and state-level financial mechanism for addressing the water resource and infrastructure needs of the Texas colonias. To date, two propositions authorizing \$250 million for the colonias have been approved by voters and 25 construction projects are either underway or in the planning phase. Attention is now focused on monitoring the success of the Economically Distressed Area Program and the ability of the colonia residents and political jurisdictions that have received financial assistance to repay the loans. Such program performance information will play an important role in shaping public opinion as future funding initiatives for the colonias are considered.

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