

**New Mexico Border Region
Environmental Infrastructure
Needs Report
(NM-EINR)**



April 2009.



**Border Environment Cooperation Commission
Comisión de Cooperación Ecológica Fronteriza**

New Mexico Border Region Environmental Infrastructure Needs Report (NM-EINR)

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| Table of Contents | |
|--|-----------|
| Introduction..... | 1 |
| Methodology and Report Format..... | 2 |
| State of New Mexico – General Characteristics and Comparison with other Border States | 4 |
| Border Counties in New Mexico..... | 4 |
| Infrastructure Status – Sector Analysis..... | 7 |
| Water Infrastructure Status | 8 |
| Wastewater Infrastructure Status | 12 |
| Solid Waste Infrastructure Status | 17 |
| Air Quality Conditions and Related Infrastructure | 21 |
| Infrastructure Investment Needs..... | 24 |
| Water and Wastewater Infrastructure Investment | 24 |
| Solid Waste Infrastructure Investment | 30 |
| Air Quality related Infrastructure Investment | 30 |
| Conclusions..... | 31 |
| Information Resources..... | 33 |
| Appendix A – New Mexico Data Bank..... | 35 |

1. INTRODUCTION

As a measure to address environmental concerns along the United States-Mexico Border, the US and Mexico established the US-Mexico Border Environment Cooperation Agreement, formally executed as the *Agreement Between the Government of the United States of America and the Government of the United Mexican States Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank*, signed November 16 and 18, 1993 and subsequently amended through Protocol of Amendment signed November 25 and 26, 2002, which entered into effect on August 6, 2004. This international agreement (the Charter) created the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB) “to help preserve, protect and enhance the environment of the border region in order to advance the well-being of the people of the United States and Mexico.”

The BECC/NADB Charter defines the border region as 100 km (62 miles) north and 300 km (186 miles) south of the US/Mexico border. Although the general perception may be that environmental infrastructure is more commonly available in US communities, there continue to be populations in the US without adequate water, wastewater, solid waste services and paved roads. Where these types of basic services exist, there is a prevalent condition of aged, deteriorated and over-burdened infrastructure which poses a threat to the environment and human health of residents in the border region. These conditions are further influenced by the rapidly growing population and trans-economic activity experienced in this region.

The US/Mexico Border Counties Coalition published a report titled, *At the Cross Roads: US/Mexico Border Counties in Transition*, in March 2006. This report compares the 24 US Border Counties¹, as the 51st State, to the other 50 US States in regard to several economic, political, and social conditions. As a summary, the report describes that if the 24 border counties were the 51st State, they would compare to the rest of the nation as follows:

2nd in incidence of tuberculosis.

2nd in the percentage of its population that is under the age of 18.

3rd in deaths due to hepatitis.

5th in unemployment, 2nd without the San Diego County work force.

13th in population with 6.7 million people (15th in growth rate).

22nd in allocation of federal highway planning and construction expenditures.

29th in receipt of total federal government expenditures.

37th in home affordability; 45th without San Diego.

39th in infant mortality.

51st in per capita income if San Diego County is not included, and 40th with San Diego², with 80% of the counties earning a per capita income of less than \$21,000.

As described above, these US counties experience economic and social conditions that are affected by and also impact the lack of adequate environmental infrastructure in the region.

¹ These counties are directly contiguous to the border with Mexico.

² San Diego's income is greater than the collective incomes of the remaining 23 southwest border counties.

Incidences of waterborne disease, such as hepatitis, are likely linked to inadequate water and wastewater treatment infrastructure throughout the border region. High incidence rates of chronic health conditions, such as asthma, are likely related to poor air quality conditions exaggerated by unpaved roads and poor transportation infrastructure. In addition, other health risks may be increased due to environmental conditions related to illegal dumping in areas without sufficient waste collection services. Finally, with the limited economic strength of border county residents, the ability to afford the necessary level of investment required to implement infrastructure projects is significantly restricted.

To help the Border States and local governments to plan a mitigation strategy for these conditions, the BECC has initiated an important State-by-State planning process to support border communities (local, state & regional) to identify environmental infrastructure needs and develop strategies to address those needs. The first step in the planning task is intended to document the condition of water, wastewater, solid waste and air quality as well as characteristics of the communities and service utilities, resulting in a **Border Region Environmental Infrastructure Needs Report (EINR)** for each State. BECC began the effort for US Border States with the State of New Mexico and will expand these efforts to the other Border States, following the experience and model diagnostic reflected in this report.

2. METHODOLOGY AND REPORT FORMAT

The approach for this effort began with the development of a detailed New Mexico Data Bank (NMDB). Summary sheets for each infrastructure sector are included as Appendix A of this report. The NMDB serves as the repository for the data gathered on the communities in the New Mexico border region and includes general statistics for the areas and, to the extent possible, specific information on the existing water, wastewater, solid waste management, and paved roadway infrastructure as well as the analysis of some key indicators for evaluating the ability of infrastructure to meet the needs of border residents.

The NMDB is extensive and presents information for the New Mexico border region in multiple levels, including region-wide summaries, through a county-wide perspective, and at community-level³ detail. In the case of Doña Ana County, data analysis is also presented for three sub-regions, which include several unincorporated communities without specific jurisdiction limits or designation in the US Census system. Extensive research was done to develop the NMDB including the review of materials, such as:

- State/Regional/Local Plans or other development planning efforts.
- Annual Performance Reports – local, regional, state and national (utility, agency, government, etc).
- Government/Funding Program project investment archives.
- BECC resources (previous planning, certified projects, needs assessments-questionnaires/ surveys, health/environmental indicators, benchmarking guidelines).

³ Communities include incorporated communities and/or Census Designated Places (CDPs), as available.

- Regulatory changes, issued non-compliance findings or inter-governmental environmental goals.
- Census or other demographic/economic/health data bases
- Technical Studies (SCERP, etc).
- Public financial records (audited statements, rate information, investment trends).

A more specific list of resources is provided under Section 8 of the report. These data sources were used to collect information related to the common baseline indicators, infrastructure conditions, proposed capital improvement projects, and to compute coverage percentages for infrastructure. The information was analyzed to determine how to extract meaningful data for purposes of evaluating the existing infrastructure conditions and needs. The NMDB progressed through multiple iterations to determine what additional information was needed, what was considered valuable and reliable data, and what information would not result in reasonable conclusions.

After extensive consideration of the data, the findings and conclusions regarding the characteristics of the region and conditions of important environmental infrastructure were developed and are presented in this report. The contents of the **New Mexico Border Region EINR** include the following:

State of New Mexico – General Characteristics and Comparison to Other Border States - Discusses the State’s general statistics such as population, growth rates, surface area, border length, and other related facts. Includes a discussion on how the State of New Mexico compares with the other U.S. Border states.

Border Counties in New Mexico – Provides general characteristics and a comparative analysis at the county-level, including statistics such as population, growth rates, incomes and other related facts. This section includes a discussion of planning area profiles, utilities, and sub-regions within the counties.

Infrastructure Status by Sector – Provides discussion and details on the infrastructure systems evaluated for the report which includes water, wastewater, solid waste and air quality.

Capital Investment Forecasts – Provides a discussion on estimating capital investment needs focused on meeting the sector needs identified above, with greatest emphasis given to achieving 100% coverage for water and wastewater services. In addition, existing capital improvement plans, submitted by communities and utilities for consideration from State funding mechanisms, are discussed.

Conclusions – Provides general conclusions based on the results of this effort.

Information Resources – Provides a detailed list of resources used for the study and a description of the structure and content of the NMDB.

3. STATE OF NEW MEXICO – GENERAL CHARACTERISTICS AND COMPARISON WITH OTHER BORDER STATES.

The State of New Mexico is one of four US states that border Mexico. Table 1 provides a brief comparison of data for the four Border States which includes land area, border lengths, population and growth, and income levels. Table 1 is followed by conclusions of the State-by-State general comparison.

Table 1
Comparison of General Characteristics of New Mexico and Border States

| Data | New Mexico | California | Arizona | Texas |
|---|------------|------------|-----------|------------|
| Land Area (square miles) | 121,300 | 155,959 | 113,634 | 261,792 |
| Border Length (km/miles) | 274/170 | 223/139 | 626/389 | 2018/1254 |
| Population (2000) | 1,819,046 | 33,871,648 | 5,130,632 | 20,851,820 |
| Growth Rate (2000 to 2006) | 7.5% | 7.6% | 20.2% | 12.7% |
| Median Household Income (2004) | \$37,838 | \$49,894 | \$43,696 | \$41,645 |
| Individual % Below Poverty Level (2004) | 16.7% | 13.2% | 14.6% | 16.2% |

Source: U.S. Census Bureau, 2000 Census

New Mexico’s total border length is 2nd smallest, with California representing a slightly smaller length of territory directly contiguous to Mexico. Texas covers the longest stretch of the US-Mexico border, over 7 times the length of New Mexico’s border with Mexico. New Mexico is the least populated Border State (ranked 36th in the US) and contains less than 10% of populations of Texas (ranked 2nd in the U.S) or California (ranked 1st in the U.S.). New Mexico, as a whole, experienced the slowest population growth rate for 2000 to 2006. Finally, the economic distress of this State’s residents is reflected in the fact that it has the lowest Median Household Income (MHI), which is about 20% lower than the average of the other three states, and a high individual poverty ratio, slightly over Texas, but several points higher than California and Arizona.

4. BORDER COUNTIES IN NEW MEXICO

There are three New Mexico counties contiguous to the US-Mexico border - Hidalgo, Luna, and Doña Ana. Doña Ana County and Luna County are almost entirely located within the 100 km border region. In addition, Grant, Otero and Sierra Counties have some surface territory within the defined border limits; however, for the purposes of this study, Sierra County has not been evaluated since its applicable border area is minimal. The five counties and their respective areas within the 100 km border region with Mexico included in this infrastructure diagnostic are shown in Figure 1.



Figure 1

Tables 2 and 3, below, provide demographic and economic statistics for the State of New Mexico and each of its border counties. Statistics are also presented for sub-regions within Doña Ana County to establish consistency with the sub-region analysis conducted for each infrastructure sector in the next section of this report. For Otero County, relevant Block Group and Census Tract data was obtained to estimate these characteristics for the portion of the county within the 100 km border region.

Table 2
Comparison of Population Data for New Mexico and Border Counties

| Entity Name | Population (2000) | Housing Units | Persons per Household | Growth Rate (5 yr) |
|------------------------|-------------------|----------------|-----------------------|--------------------|
| New Mexico | 1,819,046 | 850,095 | 2.6 | 7.5% |
| Hidalgo County | 5,932 | 2,848 | 2.1 | -14.2% |
| Grant County | 1,827 | 852 | 2.1 | -3.9% |
| Luna County | 25,016 | 11,291 | 2.2 | 8.8% |
| Dona Ana County | 173,330 | 64,488 | 2.7 | 11.0% |
| <i>North Area</i> | <i>5,587</i> | <i>1,907</i> | <i>2.9</i> | <i>11.0%</i> |
| <i>Central Area</i> | <i>117,775</i> | <i>47,288</i> | <i>2.5</i> | <i>11.0%</i> |
| <i>South Area</i> | <i>49,968</i> | <i>15,293</i> | <i>3.3</i> | <i>11.0%</i> |
| Otero County | 6,067 | 1,960 | 3.1 | 11.0% |

Source: U.S. Census Bureau, 2000 Census

As reflected in Table 2, Doña Ana County (DAC) makes up about 82% of the total population represented by the five New Mexico counties. The number of persons per household in DAC and Otero County are greater than that of the State. The average person per household for the border counties is 2.4, which is similar to the state-wide average of 2.6. Population growth for the counties of Luna, Doña Ana, and Otero is significant at 11% which is higher than the state-wide 7.5% growth rate. Interestingly, two counties – Hidalgo and Grant - experienced negative growth rates during the period between 2000 and 2006.

Table 3
Comparison of Incomes for New Mexico and Border Counties

| Entity Name | Median Household Income (MHI) | Per Capita Income (dollars) | % Below Poverty Level (Ind.) |
|---------------------------------|-------------------------------|-----------------------------|------------------------------|
| New Mexico | \$37,838 | \$17,261 | 16.7% |
| Hidalgo County | \$24,819 | \$12,431 | 27.3% |
| Grant County | \$29,134 | \$14,597 | 18.7% |
| Luna County | \$20,784 | \$11,218 | 32.9% |
| Dona Ana County | \$29,808 | \$13,999 | 25.4% |
| <i>North Area₁</i> | <i>\$19,123</i> | <i>\$11,750</i> | <i>39.8%</i> |
| <i>Central Area₁</i> | <i>\$30,667</i> | <i>\$15,907</i> | <i>22.9%</i> |
| <i>South Area₁</i> | <i>\$24,829</i> | <i>\$8,653</i> | <i>34.1%</i> |
| Otero County | \$22,692 | \$10,033 | 31.3% |

Source: U.S. Census Bureau, 2000 Census

Note 1: Sub-region income data has been calculated using a weighted average based on the population of residents within each community with US Census data availability.

As described above, the MHI for these counties are all significantly lower than that of the State. A typical indicator of economic distress in US communities is an MHI below 75% of the State MHI (referred to as Economic Distress Factor, later in this report). For the New Mexico border counties, only two, Grant County and DAC have a MHI just slightly above the 75% State MHI indicator or approximately \$28,400. The other three border counties and 2 of the 3 sub-regions of DAC fall well below this commonly-used economic distress indicator.

The per capita income in 2000 for the entire State of New Mexico was lower than the average per capita income described for the US border counties in the Border Counties Coalition report referenced earlier. All of New Mexico's border counties earn significantly less per capita income than that of the State. With low per capita income conditions and high percentages of residents living below the poverty level, the picture of economic distress is clear in New Mexico's border counties. **The ability to commit infrastructure investment becomes an important concern given the economic conditions existing in New Mexico's border counties. Subsidy programs are likely a necessary component to an affordable investment structure and will probably be required from a variety of sources.**

5. INFRASTRUCTURE STATUS – SECTOR ANALYSIS

The *Infrastructure Status – Sector Analysis* presents findings related to the existing conditions of environmental infrastructure in the New Mexico border counties. The infrastructure evaluated for this report includes water, wastewater, solid waste and public infrastructure related to air quality conditions. Each sector evaluation includes general characteristics, indicators evaluated to describe the status of the sector, and conclusions of analysis. The report focuses on the county-level conditions and provides only a few references to individual communities, utilized primarily where the county-level conclusions need to be clarified in consideration of the infrastructure status in the main population centers or municipalities within the county. However, significant detail at the community- and system-level is available for further review in the NMDB.

In addition, it is important to note that this analysis relies on census data and information available through public sources regarding data such as the number of residential service connections. This methodology creates some risk for error in the analysis findings related to the following influences:

- An inconsistent definition of “household” exists when comparing the census term and utility services. For example, one residential utility connection could serve multiple “households”.
- Many of the unincorporated communities in the region are not officially documented in the census process. Some areas are recorded as a “census designated place” or CDP; however, the CDP limits most times do not match specific utility service areas.
- Utility service areas are not formally defined outside of municipal boundaries, making it difficult to determine exact coverage rates.

The focus of the analysis at the county-level provides greater validity to the findings by mitigating these influences and the potential margin of error that could be associated with each.

5.1 WATER INFRASTRUCTURE STATUS

There are a variety of public and private utility systems that provide water service for communities in the NM border region. In fact, DAC has nearly 70 public water systems. Water systems in the state are regulated by the New Mexico Environmental Department (NMED). NMED also administers the federal Safe Drinking Water Act which establishes standards for drinking water quality throughout the state.

For purposes of evaluating the existing water infrastructure, the analysis distinguishes the New Mexico border region into the following defined areas: County, Incorporated Communities, Census Designated Place (CDP), and Sub-Regions for the DAC. The NMDB includes detailed data related to the water systems for these areas. The indicators used to evaluate the current conditions of this sector include: 1) **Coverage** – Determining the number of existing households in an area without a connection to a centralized water system; 2) **Drinking Water Supply (Quantity)** – Discussing the apparent availability of drinking water resources, water allocation versus production and other water-use related tendencies; and 3) **Water Quality** – Identifying any compliance issues to water quality standards. Data for this analysis was primarily obtained through public documents available from NMED with limited direct verification with the water utilities.

Although there is a high expectation that infrastructure in this region may require significant rehabilitation and replacement investment, the physical condition and capacity of existing infrastructure is not part of this assessment at this stage in the planning effort. Some information related to these needs is included in the capital investment forecast section.

Coverage - Figure 2 reflects the concept of water service coverage for centralized systems in the NM border area. The coverage is based on the number of water connections (to a centralized system) versus the number of household units existing for that area. This indicator helps describe the need for water system expansion to serve 100% of the population.

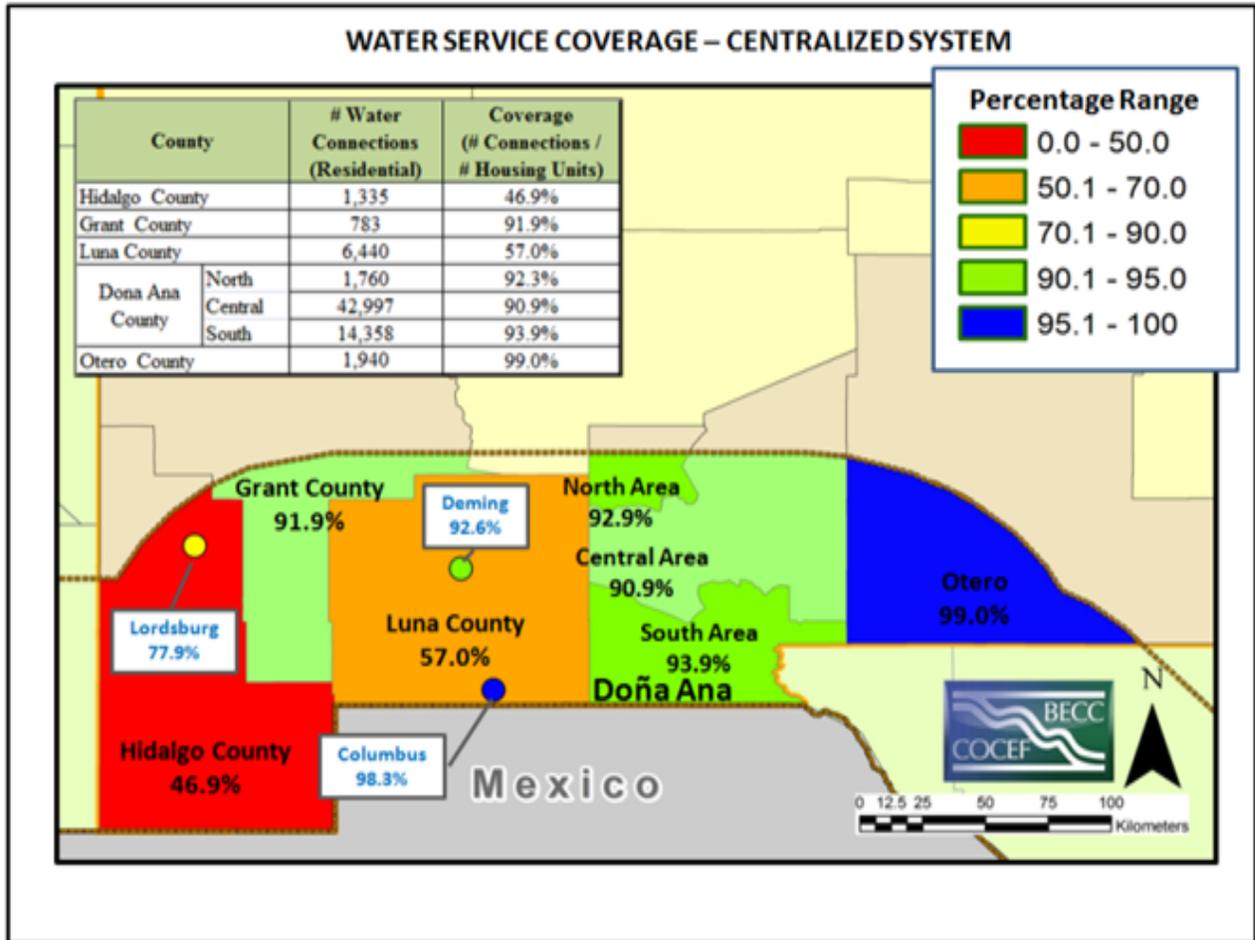


Figure 2

As shown in Figure 2, the overall water system coverage for Grant, DAC and Otero Counties is above 90% and the counties of Hidalgo and Luna are in the range of only 40% to 60%. **Most of the main population centers within each county are served by public water systems, achieving coverage rates at or above 90% within the incorporated communities, with the exception of Lordsburg where just over 20% of the household units are not served by the municipal system.** While it appears that the primary gap in coverage most likely exists in the rural setting where access to centralized systems may not be feasible to offer, there continues to be some need for investment to expand coverage in the urbanized areas. In addition, those unserved household units in the rural area should not be overlooked since increased risks for poor water quality and harmful human health effects may exist. Further analysis and determination of appropriate solutions to mitigate these risks may be required.

In addition, DAC's water system coverage is over 93% which, in and of itself, does not raise concern; however, there are more than 70 water providers in the County, which signifies the need to consider a comprehensive effort to regionalize, at least, in terms of aligning critical water management perspectives especially related to protecting quality, assuring quantity and providing service efficiencies.

Drinking Water Supply (Quantity) – DAC is the only New Mexico border county with direct access to surface waters, as the Rio Grande River flows North to South through the entire county. Even so, groundwater is still the primary drinking water source for DAC and all the other border counties. Groundwater is also often extracted for industrial and agricultural use. Furthermore, the availability of groundwater resources is influenced by the interstate and bi-national location of area aquifers, which provide a critical source for drinking water and other domestic use in the neighboring States of Texas and Chihuahua, Mexico.

As described in NMED's *Bordering New Mexico* website, groundwater from the Mimbres Bolson (Mimbres Basin) is the sole source of water for the Deming/Columbus area. The Mesilla Bolson aquifer, which extends from Caballo Reservoir in New Mexico into Mexico, constitutes the major source of groundwater for southern DAC. Groundwater from the Hueco Bolson is a source of water for both Southeast DAC and Otero County and is also a major water source for the cities of El Paso, TX and Ciudad Juárez, CHIH, Mexico.

Data was gathered on water supply and production for the water systems from the New Mexico Office of the State Engineer (OSE) in an effort to identify potential water supply availability risks such as above-normal water use tendencies and/or high water loss conditions. This data includes water rights availability for a given system and water well production for a one year period. Average demand usage in gallons per capita per day was computed where reasonable data was available.

Specific data was available for 34 of the 70 water systems. The NMDB includes information that was available for each system. For the water systems with available data, only 5 are currently using more than 2/3 or 67% of their available water rights for production; however, two of those systems are utilizing more than 85% of their supply allocation. Eleven of the systems reflected high per capita water use (>150 gpcd), which may indicate opportunities to implement water conservation efforts or technical solutions to address high water losses to further secure the availability of water resources.

With significant shared demands, some signs of high water use tendencies and common periods of drought in an already arid region, the long-term availability and protection of the aquifer supply is of great concern to the tri-regional area⁴. **The development of strategies to improve the management of New Mexico's groundwater resources is critical to this area and should consider a variety of options including but not limited to conservation practices, development of alternative water sources (surface water), and other tri-regional investment solutions.** The City of Las Cruces is currently developing a project to construct a surface water treatment plant, which could potentially serve as a regional water source. Other local water providers have also initiated efforts to evaluate the feasibility of adding surface water as a drinking water source to supplement current groundwater supply.

Water Quality – As described above, NMED is responsible for the administration of the Safe Drinking Water Act, which establishes Primary Drinking Water standards for public water systems. These standards set limits for various contaminants in drinking water. One water

⁴ The tri-regional area refers to Doña Ana County, New Mexico, El Paso County, Texas and Chihuahua, Mexico.

quality problem existing in the groundwater supply in the border region is Coliform contamination which is suspected to be caused primarily by the lack of centralized wastewater treatment infrastructure (use of on-site wastewater disposal systems in high density areas), poor condition/capacity of existing infrastructure, and agricultural influences. Fortunately, adding chlorine as a disinfectant is typically an adequate solution to addressing this problem.

In evaluating the existing water systems, it was also noted that many systems are experiencing high levels of uranium, arsenic and fluoride. Recent changes to drinking water quality regulations related to contaminants such as arsenic have driven several NM Border water systems into a non-compliant status, resulting in a significant need for drinking water treatment investment. The cost of compliance can be expensive; thus, many systems look at various alternatives including deactivating wells and/or blending water supplies from other sources.

Private water wells and smaller water systems serving fewer than 15 connections are not regulated under the Safe Drinking Water Act and are not required to conduct water quality testing and therefore water quality for these systems is not available. Increasing the risk for poor water quality production from these systems are insufficient operation and maintenance practices, shallow groundwater extraction and exposure to immediate contamination sources such as on-site wastewater treatment systems. In addition, extended periods of drought increase the vulnerability of, not only, quantity but also water quality. As water depth changes in wells, levels of naturally occurring contaminants are often increased. This problem could affect all of the water systems in the border area; however, small water systems and individual users, which typically operate shallower wells, face the greatest risk for these negative effects.

Recent investments in water treatment projects in Lordsburg, Columbus, Anthony, and other water utilities in DAC will improve water quality related to long-existing problems with arsenic, fluoride and nitrate contamination existing in the NM border region.

IMPORTANT FACTS & CONCLUSIONS FOR WATER INFRASTRUCTURE

- Water service coverage in the communities with municipal-owned utilities is typically above 90%; however, some service gaps exist in the urbanized area.
- For the two counties with the lowest coverage, the main population centers are served by municipal systems.
- Although centralized water system coverage is high in all 3 regions of DAC, the need to regionalize the multiple water providers is an important objective to better protect the area's natural resources and provide more efficient water service.
- The primary drinking water source in the border region is groundwater. Water quantity concerns and water quality issues such as elevated levels of nitrate, uranium, arsenic and fluoride have been documented.
- Private Wells and water systems that serve fewer than 15 connections are not regulated under the Safe Drinking Water Act and therefore are not required to conduct water quality testing.
- Risks for poor water quality and harmful human health effects are increased by the low rural centralized water system coverage's in Hidalgo and Luna Counties.

5.2 WASTEWATER INFRASTRUCTURE STATUS

Wastewater infrastructure for this analysis is defined as centralized collection system networks and treatment facilities. For some areas within the border counties of New Mexico, individual on-site treatment systems may also be considered adequate infrastructure; however, in areas which are densely populated (homes on less than 3/4 acre lots) and have high groundwater levels and/or non-permeable soils, on-site systems cannot be considered effective means of treatment. In fact, the risk of human exposure to untreated or inadequately treated wastewater is significantly increased for residents living in these conditions. The issue is further influenced by economic conditions which do not support adequate design and installation or proper maintenance of such systems.

The level of analysis for wastewater infrastructure is similar to the water in terms of the defined areas. The indicators used to evaluate wastewater infrastructure needs include the following: 1) **Coverage 1** – number of sewer connections in comparison to the number of total households; 2) **Coverage 2** – number of sewer connections in comparison to the number of water connections; and 3) **Coverage 3** - Treatment Capacity. Each of these indicators is discussed in this section and important facts and conclusions for wastewater infrastructure are provided.

With recent investments occurring in the development of wastewater infrastructure in places like rural DAC, the expectation for deficiencies in the physical condition and capacity of the existing wastewater infrastructure is less than that described previously for water infrastructure. However, this problem may be significant for some smaller communities such as Sunland Park, Columbus, Lordsburg, and others where the age of infrastructure exceeds 20 or more years.

Coverage 1 (# Connections/# Household Units) - Figure 3 provides a summary table of this indicator for each County and the map presents the wastewater coverage for each County and for the incorporated communities in the region. The coverage is based on the number of sewer connections (to a centralized system) versus the number of household units (HU) for that area.

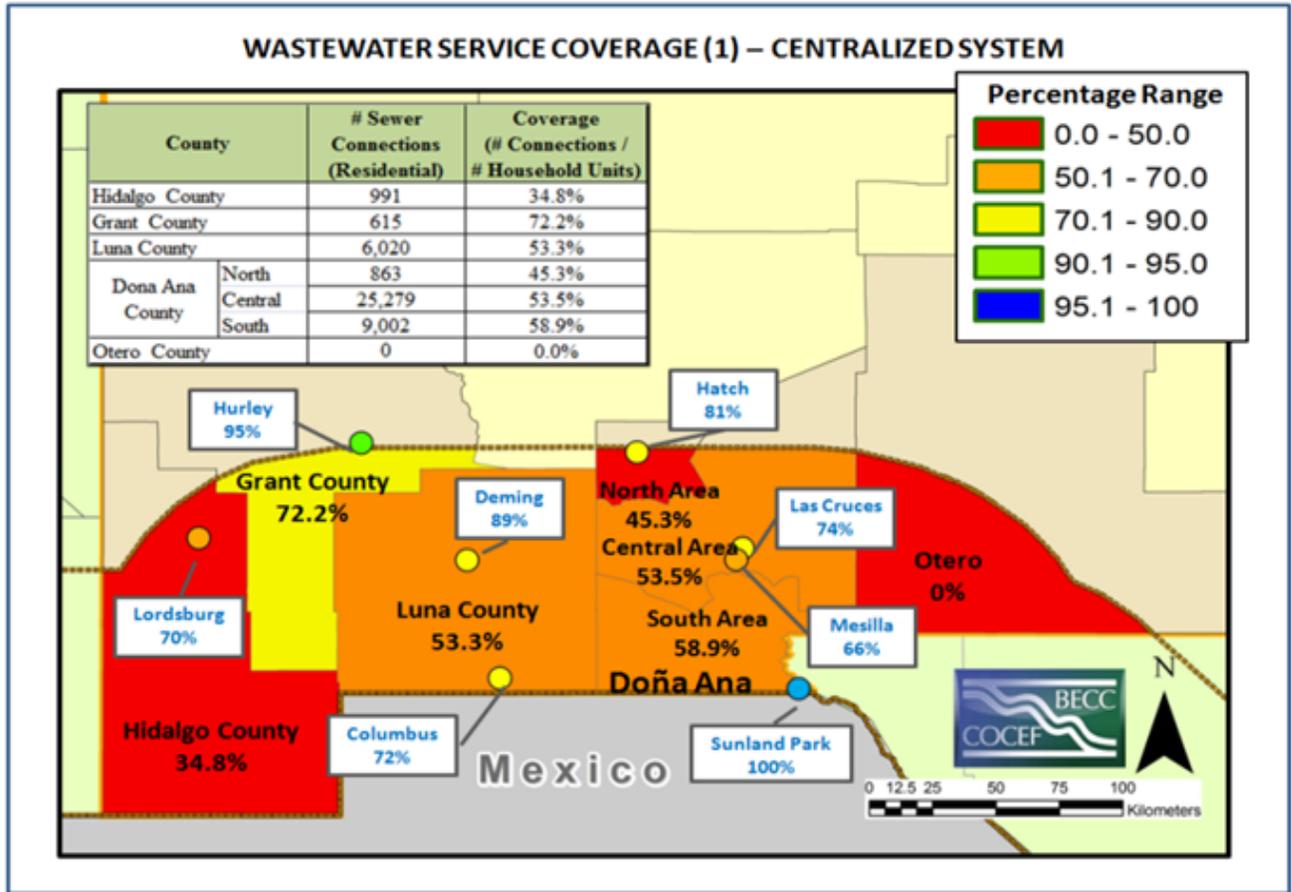


Figure 3

As shown on the figure, Otero County has zero coverage due to the lack of any centralized systems in this area. However, it should be noted that the community of Chaparral (which includes much of the Otero County portion within the 100 km border region) is currently developing a wastewater project that will provide wastewater service to that community; however, the \$35 million investment required to complete this project will require several years to complete. Hidalgo County is in the range of 20% to 40%, Luna County and DAC are in the range of 40% to 60% percent, and Grant County is in the range of 60% to 80%. Although the coverage ratio for the incorporated communities is less dramatic, any coverage below 90% should merit significant attention for potential investment, and 6 of 8 of the incorporated communities highlighted above show less than this minimum coverage goal⁵.

Coverage 2 (# Sewer Connection/# Water Connections) - Figure 4 provides a summary table and illustrates the existing sewer connections (to a centralized system) versus the number of water connections (centralized system) for each County.

⁵ As described in the introduction to the *Infrastructure Status – Sector Analysis*, some margin of error exists related to the definition of “household”, which could influence the low coverage of incorporated communities, such as Las Cruces.

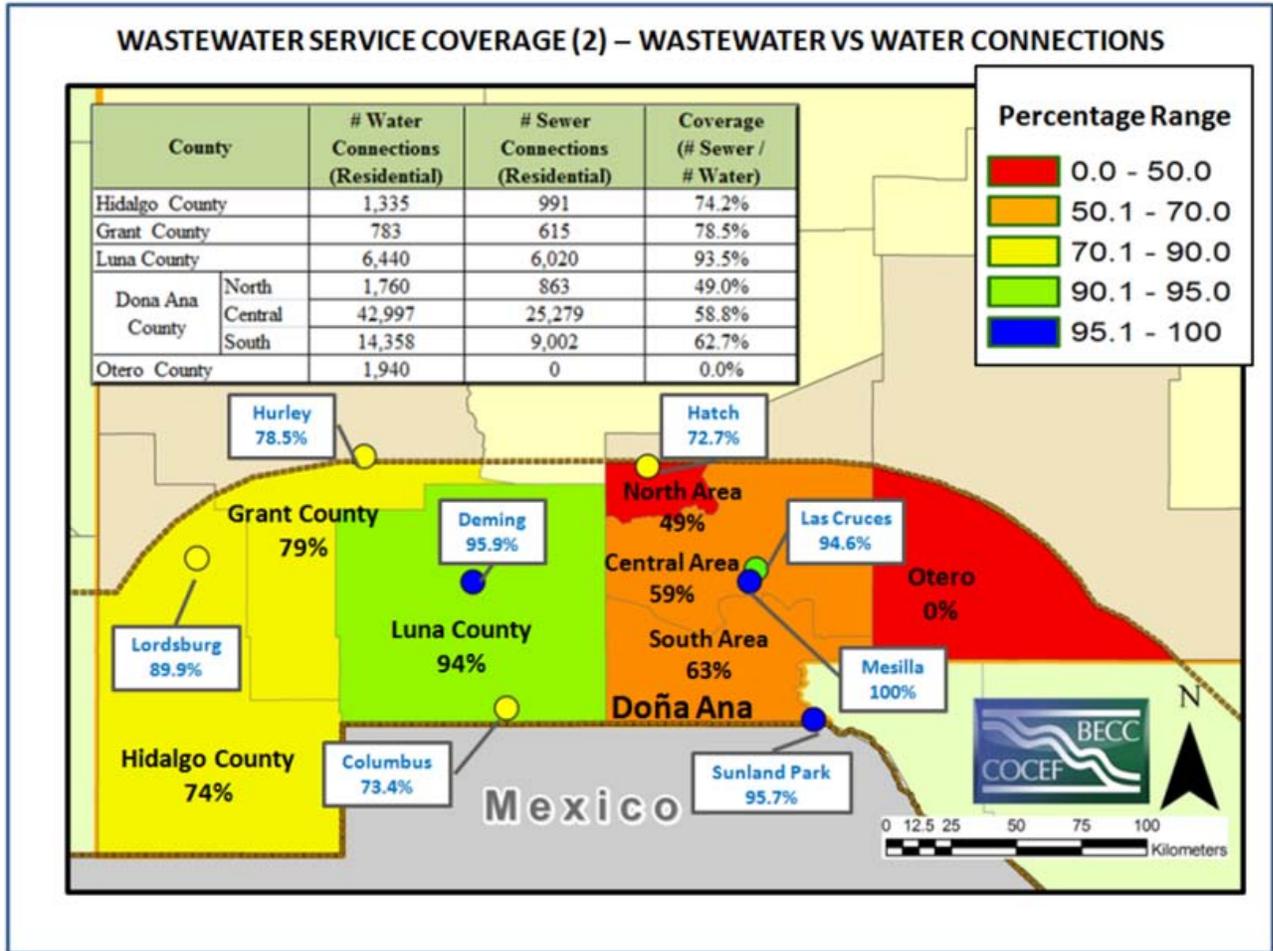


Figure 4

As shown on the figure, Otero County is again reflecting 0% because of the lack of any centralized wastewater systems; DAC reflects a range of 49% to 63%; Hidalgo County is at 74%; Grant County is above 78%; and Luna County is at nearly 94% for Wastewater Service Coverage 2. The gap in coverage reflected by this analysis merits the most immediate attention. Residents connected to centralized water systems tend to be higher water users causing a greater burden on wastewater disposal methods, especially individual on-site systems. This, coupled with the density of development likely existing for centralized water system infrastructure, increases the risks of exposure to untreated or inadequately treated wastewater caused by potential surfacing of effluent due to over-fed septic tanks or leach fields along with high water tables and/or poor soil conditions.

Coverage 3 (Treatment) – Data was gathered where possible on wastewater treatment processes, quality of treatment and treatment capacities of the facilities in New Mexico’s border counties. Information on treatment facilities and capacities are noted in the NMDB. Coverage based on treatment capacity for any specific community was inconclusive due to the difficulty of assessing specific service area boundaries; however, a brief analysis was conducted to consider the total wastewater treatment capacity constructed/permitted versus the anticipated

treatment capacity need calculated for 100% coverage, using the assumption of 100 gallons per capita per day (gpcd). Table 4 provides the results of this general analysis.

Table 4
Coverage 3: Calculated Wastewater Treatment Capacity Coverage

| Entity Name | 2008 WW Treatment Capacity (Gallons per Day) | 2008 WW Treatment Need Existing Connections ₁ (Gallons per Day) | 2008 WW Treatment Need 100% Coverage ₂ (Gallons per Day) | 2018 Projected WW Treatment Need 100% Coverage ₃ (Gallons per Day) |
|------------------------|--|--|---|---|
| Hidalgo County | 600,000 | 208,110 | 593,000 | 600,000 ₄ |
| Grant County | 153,000 | 129,150 | 183,000 | 200,000 ₄ |
| Luna County | 3,096,000 | 1,324,400 | 2,502,000 | 4,076,000 |
| Dona Ana County | 19,284,000 | 9,540,680 | 17,333,000 | 28,234,000 |
| <i>North Area</i> | <i>566,000</i> | <i>250,270</i> | <i>559,000</i> | <i>911,000</i> |
| <i>Central Area</i> | <i>13,824,000</i> | <i>6,319,750</i> | <i>11,778,000</i> | <i>19,185,000</i> |
| <i>South Area</i> | <i>4,894,000</i> | <i>2,970,660</i> | <i>4,997,000</i> | <i>8,140,000</i> |
| Otero County | 0 | 0 | 608,000 | 990,000 |

Note 1: Calculated by multiplying # Connections by average person per household times 100 gpcd.

Note 2: 100% coverage assumes 100% of the population of the County would be served by a centralized WWTP.

Note 3: Based on a projected 5% growth per year for 10 years.

Note 4: The coverage capacity need was not modified, since these communities, historically, have not experienced similar population growth rates as the other border counties.

The currently available wastewater treatment capacity appears adequate to serve expected wastewater flows from existing connections, with only Grant County approaching 85% of treatment capacity available already used by the calculated flows (75% is a typical indicator used to trigger the initiation of planning for treatment capacity expansion and at 85% best practices indicates that expansion should be under development). However, if 100% of the population was served by the centralized wastewater treatment facilities, available treatment capacity would fall short for 3 areas, including Grant County, the South Sub-region of DAC, and Otero County. Hidalgo County and the North Sub-region of DAC would be at or above 90% of available treatment capacity. Luna County and the Central Sub-region of DAC would be at or around 85%. Finally, when the analysis is conducted for the projected 10-year need, the capacity gap becomes a more significant concern with anticipated flows far exceeding wastewater treatment capacity available throughout the New Mexico border counties.

Development of wastewater infrastructure has received significant investment over the past several years. Projects have been made feasible through a combination of funding sources including Colonias Construction Funding from the State, USDA/RD, EPA, BECC, and NADB. In particular, the communities located in DAC have received over \$60 million in wastewater infrastructure in the past several years. However, the results of this sector analysis reflect a critical need to invest in environmental infrastructure projects to address coverage gaps and

planning efforts to prepare for capacity expansion needs to provide adequate wastewater services for existing and future populations in this border area.

IMPORTANT FACTS & CONCLUSIONS FOR WASTEWATER INFRASTRUCTURE

- Wastewater service coverage in the communities with municipal-owned utilities experiences higher coverage rates; however, coverage deficits for some reach as high as 30%.
- Risks for exposure to untreated wastewater discharges and harmful human health effects are increased in the un-served areas of the NM Border Counties
- Households not served by a centralized wastewater system typically use individual, on-site systems for wastewater disposal, many of which are non-compliant septic tanks or illegal means of on-site disposal such as cesspools or latrines.
- Because of population densities and high groundwater tables along the Rio Grande, both compliant and non-compliant one-site systems in DAC pose a higher risk for human exposure to inadequately treated discharges and high concentrations of pollutants affecting groundwater and surface water resources.
- Households with centralized drinking water connections tend to be higher water users and therefore, produce more wastewater for disposal. This in conjunction with population densities and high water table/poor soil conditions further increases the risk for negative human health or environmental effects.
- Risks for exposure to untreated wastewater discharge and harmful human health effects are further increased by the low coverage of sewer connections where centralized drinking water connections already exist. This condition is prevalent in DAC.
- Immediate investment for assuring adequate wastewater treatment capacity is necessary and significant capital resources will be required in the mid- to long-term to meet treatment expansion needs.
- The identified service coverage gap will help facilities to prioritize system improvements.

Affordability of Self-Financed Capital Investment Resources – Water/Wastewater

In planning for infrastructure investment, one of the first steps should be evaluating the user's ability to support the investment need. Ideally, operation and maintenance costs for utility services as well as investment funds for capital projects are fully supported by the user fees paid by the utility customers. However, this is often an unreasonable demand in communities of high economic distress, like many of the communities in New Mexico's border counties. To analyze the anticipated investment capacity of residents in New Mexico' border counties, the following factors are reviewed: medium household income (MHI) levels, an economic distress factor, water and wastewater rates, and the calculated rate burden for each County area.

The Economic Distress Factor is the percentage of the MHI for each area relative to the State MHI, where a result of less than 75% is an indicator of financial hardship and a likely need for subsidize funding sources to make projects affordable. The water

and wastewater rates are combined to evaluate the average Rate Burden for each area, which is calculated by multiplying the combined monthly user rates by 12 months and dividing by the MHI for that area. The Rate Burden can provide some indication of a need to raise rates to meet utility service operation and capital investment needs. On a national basis, a Rate Burden of 2.5 may be acceptable; however, in a community, and State, with a significant portion of its population experiencing an alerting Economic Distress Factor, spending priorities are increasingly pressured to meet many basic needs and the percentage of income available to support utility costs is further limited. For this analysis, the calculated Rate Burden for the State of 1.22% is used as the minimum rate burden standard.

The following table provides a summary of these factors for each county.

| County | MHI | Economic Distress Factor (NM MHI=\$37,838) | Water Rates \$/month Res. (Average) (NM Avg=\$20.68) | WW Rates \$/month Res. (Average) (NM Avg=\$17.91) | Rate Burden (Combined Rate vs MHI) (NM Avg=1.22%) | |
|-----------------|----------|---|---|--|---|-------|
| Hidalgo County | \$24,819 | 66% | \$16.60 | \$15.00 | 1.53% | |
| Grant County | \$29,134 | 77% | \$16.11 | \$10.48 | 1.10% | |
| Luna County | \$20,784 | 55% | \$18.98 | \$7.25 | 1.51% | |
| Dona Ana County | North | \$19,123 | 51% | \$24.93 | \$18.75 | 2.74% |
| | Central | \$30,667 | 81% | \$27.06 | \$24.88 | 2.03% |
| | South | \$24,829 | 66% | \$20.91 | \$15.93 | 1.78% |
| Otero County | \$22,692 | 60% | \$33.11 | \$0.00 | 1.75% | |

Only 2 county areas experience an economic distress factor above 75%, representing significant economic distress in the border communities compared to the economic status state-wide. Even with these existing economic conditions, several of the areas are faced with water and/or wastewater rates higher than the state average and all but one county experiences a Rate Burden above that calculated for the State. Grant County has a MHI above 75% of the State MHI and has a calculated Rate Burden below the State's, which may indicate an opportunity to modify rates to accommodate operations and capital improvement investments for water and wastewater services. For communities in DAC and Otero County, increasing rates to support capital investment projects will place significant hardship on these residents. **Grant resources and subsidized loan programs must be maximized to achieve an affordable investment scheme to address the needed improvements in water and wastewater infrastructure, while expecting user rates to continue to support the cost of operations and maintenance.**

5.3 SOLID WASTE INFRASTRUCTURE STATUS

Solid waste in the border area is managed by local government or the private-sector and regulated by the New Mexico Environment Department (NMED). The border counties are part of Enforcement Area III as designated by the NMED Solid Waste Bureau, which includes the counties of Doña Ana, Hidalgo, Luna, Otero, and Sierra. The annual Solid Waste Report covering January 1 thru December 31, 2007, published by NMED in July 2008, and the 2007 NMED Solid Waste Management Plan have been referenced for information relative to the capacity of existing solid waste management infrastructure. In addition, other NMED website material and some direct inquiries to the solid waste management entities have informed the review of this sector.

For purposes of evaluating the solid waste infrastructure within the New Mexico border region, the analysis reviews the conditions of services at the County level. Service indicators include; 1)

General Landfill Data (Facility Capacity, Fees, and Management of Special Wastes); **Recycling/Waste Reduction efforts**; and 3) **Access to Disposal and Collection Services**.

General Landfill Data - There are five solid waste landfills serving New Mexico's border region. Table 5 identifies the solid waste landfills serving New Mexico's border region.

Table 5
Summary of Solid Waste and Landfill Information for NM Border Counties

| County | Management Authority | Landfill Name/Location | Landfill Capacity (SWB Report) | Landfill "Tipping Fee" | Accepted Special Wastes |
|-------------------|--|--|---|------------------------|--|
| Hidalgo and Grant | Southwest Solid Waste Authority | Silver City | 20 | \$43.00 | Offal |
| Luna | Municipal-owned | Deming | 0 | \$25.00 | - |
| | Municipal-owned | Butterfield Trail Regional Landfill, 15 mi. west Deming, Under Construction | 20 (Phase 1 – 100 years @ full project) | TBD | Industrial, Offal, PCS ¹ , Municipal Sludge |
| DAC | South Central Solid Waste Authority | Corralitos, 15 mi. west of Las Cruces | 15 | \$24.80 | Municipal Sludge |
| | Private – Waste Connections, Inc | Camino Real - Sunland Park | 10+ ¹ | \$10.50/cy | Industrial, PCS ² , Municipal Sludge |
| | Private – Rhino Environmental Services | Chaparral – Permitted but not constructed | 0 | - | - |
| Otero | Otero/Lincoln Counties Solid Waste Authority | Regional Facility, 24 mi. South of Alamogordo | 15 | \$13.90 | Asbestos Waste, PCS ¹ , Municipal Sludge |

Note 1: On 7/24/2008, NMED issued a temporary 1-year extension to the Camino Real permit; however, the landfill had requested a permit through 2020. A permit approval is expected to occur in 2009.

Note 2: PCS = petroleum contaminated soils

DAC also manages a liquid waste disposal facility which accepts septic tank or cesspool sewage from commercial haulers at the rate of three cents per gallon. Landfills permitted to accept any special wastes must submit a disposal management plan and receive approval from the NMED Solid Waste Bureau (SWB) for each special waste accepted at the landfill. Although the facilities are permitted to handle such wastes, some may choose not to accept it. NMED reports that the existing facilities appear to be handling these and general municipal solid waste materials without adverse impact to the environment. To understand the magnitude of the solid waste management task for these border region facilities, the analysis first reviews the comprehensive management demand in the State.

As described in NMED’s annual Solid Waste Report, solid waste facilities throughout the state managed a total of 3,891,571 tons of waste in 2007. Figure 5 provides the characteristics of solid waste generation for the State and DAC.

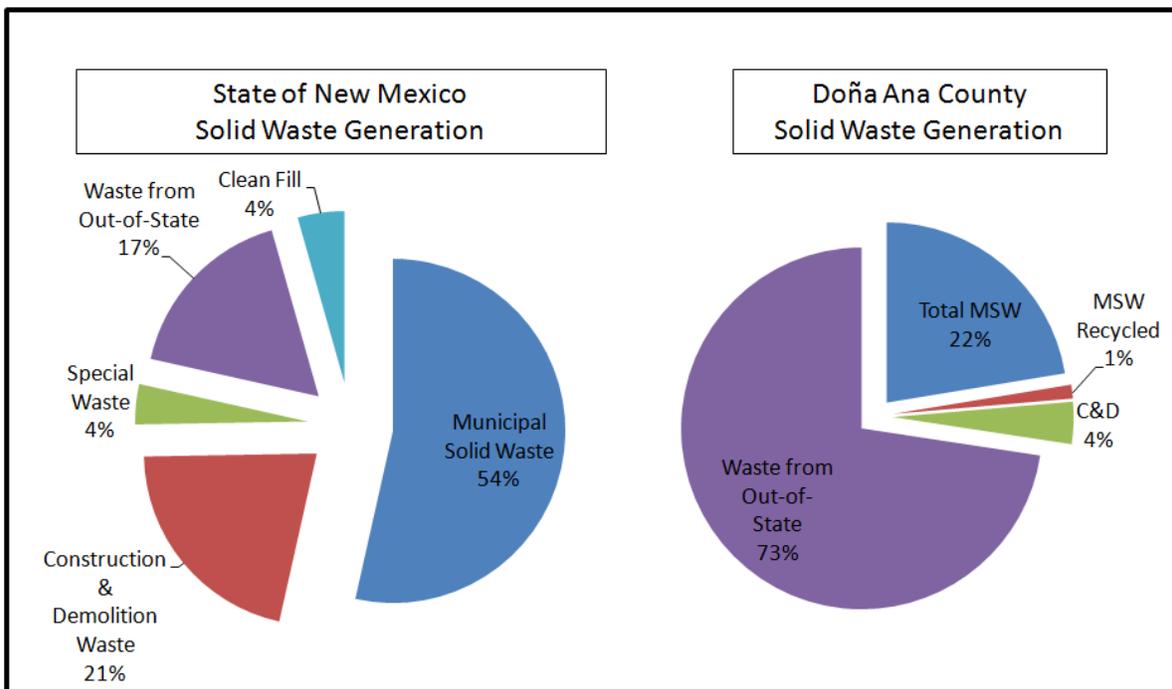


Figure 5.

The import of solid waste to New Mexico’s landfills is one of the most important influences affecting the management of solid waste disposal capacities in the southern counties. The Camino Real landfill, a privately-owned landfill located in Sunland Park, managed the greatest tonnage of solid waste in the State, more than 600,000 tons in 2007, of which a significant portion comes from out-of-state origins, namely Texas and Mexico. It is essential to plan for the proper disposal of the imported waste; however, estimating the annual volume is not always predictable, since it is dependent on activities outside of the jurisdiction of the local and state government.

In addition, New Mexico does not regulate the movement of solid waste across state or international borders. This along with the requirement of NAFTA to return certain wastes to the US will continue to place pressure on New Mexico’s border counties to prepare – with or without certainties of quantity - for the proper disposal of out-of-state waste. Currently, this condition does not have a major impact on publicly-owned facilities; therefore, public investment resources are not expected to be required to address this demand. However, should the ability of the existing privately-owned facility be interrupted or constrained to accept these wastes, these demands could be shifted to other area landfills.

Waste Reduction/Recycling - One of the lost opportunities described in NMED’s Bordering New Mexico report is the limited public and private collection of recyclable materials from in-state and out-of-state waste generation. Increasing recycling programs and diversion practices

could decrease the rate of landfill capacity depletion and increase economic opportunities for New Mexico and other Border States. Table 6 describes the current recycling efforts and waste diversion rates in the border facilities.

Table 6
Summary of Solid Waste Recycling and Diversion Rates for NM Border Counties

| County | MSW ₁ Totals (tons) | Recycling Rate | Total of all Materials that could be diverted | Beneficially Used Waste | % Diversion Rate |
|---------|--------------------------------|----------------|---|-------------------------|------------------|
| Hidalgo | 4,283.46 | 1.83% | 4,541.46 | 409.19 | 10.74% |
| Grant | 32,311.16 | 4.58% | 39,440.30 | 7,249.14 | 22.26% |
| Luna | 18,440.00 | 3.27% | 31,404.43 | 562.20 | 3.75% |
| DAC | 189,764.20 | 5.50% | 313,408.62 | 4,685.21 | 4.91% |
| Otero | 62,430.66 | 5.85% | 91,431.61 | 24,667.10 | 31.12% |

Note 1: Municipal Solid Waste (MSW) does not include out-of-state waste, construction and demolition, clean fill, industrial waste, infectious waste, and other special waste.

Although Diversion Rates of 3 counties are competitive with other state-wide efforts to reduce the demands on landfill capacity through recycling and diversion of waste for beneficial use, the recycling rates in all New Mexico border counties is low and should be **identified as a valuable opportunity for investment in this sector**. Lincoln County produces the most successful recycling rate at 67%, a likely driver to the recycling rate for the State of New Mexico which is 11%. The national recycling goal is 33% and California, as another border state, recycles more than 50% of its MSW.

Just as important as the effect of waste reduction, recycling and diversion to extend the life of landfill facilities, there are also energy savings and greenhouse gas reductions that result from these environmentally-conscious efforts. Using EPA's Waste Reduction Model (WaRM), NMED estimates that the total energy saved by 2007 recycling efforts in New Mexico reduced energy consumption by 4,457,300 million BTUs, which is equivalent to 35,638,032 gallons of gasoline, 768,500 barrels of oil, or 25,534 annual household energy consumption. The greenhouse gas emission reduction represented by these efforts is 145,895 or the equivalent of removing 115,789 passenger cars for a year.

NMED proposes in its Bordering New Mexico report that collaborative efforts with Arizona, Texas and Mexico should be made for market development for recyclables and alternatives to landfill disposal. NMED has also recommended strengthening legislation to promote and reward recycling and waste diversion programs throughout the State. This additional State support along with a strong outreach program about the environmental benefits of these efforts could have a significant impact on solid waste management practices in the border communities and result in new economic opportunities for the region.

Access to Disposal and Collection Services - Finally, municipal solid waste collection services are available in all incorporated communities in the border counties, with the exception of the City of Sunland Park. Public collection services cost between \$12.00 and \$16.00 per month. At a cost that may exceed twice the cost of public services, residents of Sunland Park and many rural communities contract with private-hauling companies for curb-side trash collection service. To deter tendencies for significant illegal dumping problems influenced by the lack of access to more affordable municipal services, DAC manages 7 transfer stations where residents can self-haul domestic (household) waste to the regional location and dump at no charge.

IMPORTANT FACTS & CONCLUSIONS ON SOLID WASTE INFRASTRUCTURE

- Existing landfill capacity appears to be adequate for local needs for some period of time.
- Out-of-state waste poses a significant demand on the landfill capacities in the southern counties, especially in DAC, where the Camino Real Landfill handles the largest tonnage of waste in the State.
- Strengthened reduction, reuse and recycling (3R) programs provide opportunities to divert the demand on landfill capacity, increase energy savings and reduce greenhouse gas emissions, as well as provide new economic development growth in the border counties.
- Interstate and regional cooperation along with additional legislative and funding support will be necessary to enhance the success of 3R programs.
- Public solid waste collection services are typically available in the urbanized communities in the New Mexico border region; however, some incorporated areas and the rural unincorporated areas depend on private trash collection services or self-hauling to transfer stations or landfill sites, resulting in increased risks for illegal dumping and mishandling of wastes.

5.3 AIR QUALITY CONDITIONS AND RELATED INFRASTRUCTURE

With the arid climate, desert terrain, agricultural cultivation and strong wind events in New Mexico's border region, air quality naturally experiences problems with contaminants such as PM₁₀ (particulate matter less than 10 micrometers in aerodynamic diameter, such as dust). In addition, air quality along the border is influenced by transboundary and interstate factors, such as industrial, transportation, and other emission-producing activities, resulting in problems with PM_{2.5} (particles with aerodynamic diameters less than 2.5 micrometers) and compliance with Ozone standards. The variety of contributing sources makes it difficult to identify specific causes for some air-borne contaminants and even more difficult to independently develop mitigation strategies to improve air quality and its associated environmental health effects. Thus, it is critical to address many air quality strategies through extensive bi-national and multi-state coordination.

Different than the other sectors included in this infrastructure diagnostic, air quality, as the sector-title, is not the target for investment but is the driver for investment results. Proposed investments, in this case, are primarily related to addressing pavement needs influencing high

PM₁₀ levels. In addition, policy and programs focused on air quality improvements also require investment attention. For purposes of establishing air quality-related infrastructure needs along the New Mexico border region, the analysis reviews information available at the county level including: 1) EPA Air Quality Designation (attainment/non-attainment) and 2) Coverage - Paved Roadways. A brief discussion of climate change initiatives by the State is also provided.

EPA Air Quality Designation - EPA sets national air quality standards for commonly occurring air pollutants, including: ground-level ozone (O₃) or smog, particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO_x), and lead (Pb). Upon evaluating the level of pollutants in an area, EPA designates the area (county, MSA⁶, city) one of the following:

- Nonattainment – area does not meet the standard or has sources that contribute to a nearby area not meeting the standard
- Attainment – area meets the standard and does not contribute to nearby nonattainment area
- Unclassifiable – area cannot be classified based on available data

New Mexico has the following designated nonattainment and maintenance areas: (1) O₃ in Sunland Park; (2) PM₁₀ in Anthony; and (3) SO₂ in Grant County. In addition to these three areas, there are 2 areas that meet air quality standards by a slim margin, DAC (PM₁₀ NAAQS) and San Juan County (8-hour ozone NAAQS), the latter of which is not in the border region of the State. Luna County has also experienced periodic exceedence of PM₁₀ standards.

NMED operates 6 ozone monitoring stations in DAC and has documented violations of the ozone air quality standard in Sunland Park (March 08) and at the Desert View Elementary School, located near Sunland Park (3-year average). NMED has reported that it intends to identify the “nonattainment” status to EPA in 2009, to provide greater opportunities for the State and community to determine necessary mitigation actions. Following the State’s finding and notification, a “nonattainment” designation by EPA is anticipated to be issued in 2010. This designation will likely require stricter permitting requirements; offsets for new sources; investment in a transportation analysis; and a formal program and air quality control plan to re-establish attainment.

NMED also operates 11 particulate matter monitoring stations in DAC. Exceedence of PM₁₀ standards has been documented. A Natural Event Action Plan (NEAP), to address PM₁₀ air quality problems caused by high levels of wind-blown dust in the County, was submitted to EPA in December of 2000. The State is required to reevaluate a NEAP every five years.

The nearby urban areas of El Paso and Juarez are suspected of being the source of much of the air pollution in this area. A Joint Advisory Committee (JAC) for air quality improvements in the tri-regional area has already been established and strong collaboration for regional solutions

⁶ Metropolitan Statistical Area

is already occurring. Strategies related to private-sector and public-sector policy and investment is required to mitigate the air quality issues experienced in the region.

Coverage: Paved Roadways - A significant contributor to air quality pollution for the area is frequently traveled un-paved roads in the border area. The majority of federal, state and municipal-owned roadways, especially within the incorporated city limits, are expected to be paved and thus have not been assessed in this analysis. However, rural routes and county-owned roads may experience a notable frequency and volume of travel. Based on the data gathered, the rural unincorporated areas of Hidalgo, Grant, Luna, and the small portion of Otero Counties have minimal paved roads, ranging from zero to less than 8 percent paved. Approximately 27 percent the roads in the unincorporated areas of DAC are paved. It is estimated that approximately 2,000 miles of the just over 3,000 miles of rural road infrastructure is unpaved.

This infrastructure gap likely influences air quality problems, especially in areas of high traffic frequency and volume, which exist in DAC and Otero County because of the substantial population densities in the unincorporated areas of these counties. While it is not feasible or necessary to pave every rural roadway, it is important to target investments to the roads that are a significant source to the overall PM₁₀ concentrations and create the greatest opportunity to improve the environmental health conditions of area residents. BECC is currently coordinating with the New Mexico Department of Transportation, in their cooperative effort with other Border States, to identify transportation infrastructure needs through the Border Infrastructure Needs Study (BINS).

| New Mexico Climate Change Initiatives | |
|---|--|
| <p>New Mexico Governor Bill Richardson signed Executive Order 05-033 on June 5, 2005. The Executive Order had the following effects:</p> | <p>To support further progress, Governor Richardson issued Executive Order 06-069, New Mexico Climate Action, on December 28, 2006. This EO assigns 5 tasks to NMED Air Quality Bureau:</p> |
| <ul style="list-style-type: none">• Established the New Mexico Climate Change Advisory Group (CCAG) to provide specific, measurable proposals to the Action Council to reduce greenhouse gas emissions in New Mexico. Their work was completed in October, 2006 and the final report of that group can be reviewed at www.nmclimatechange.us.• Developed an inventory of New Mexico greenhouse gas emissions as an appendix to the report, "New Mexico Greenhouse Gas Inventory and Reference Case Projections, 1990-2020".• Mandated the creation of "The Potential Effects of Climate Change on New Mexico", a report on potential impacts of global warming on New Mexico.• Required a report on water resource predictions that has been prepared by the Office of State Engineer. It is titled "The Impact of Climate Change on New Mexico's Water Supply and Ability to Manage Water Resources". | <ul style="list-style-type: none">• Greenhouse gas emissions (GHG) mandatory reporting• Oil and Gas Emissions Reduction Study• Clean Cars Regulation Development• Financial Incentives for Clean Cars• Idling Regulation Development• Western Climate Initiative (New Mexico Implementation) |
| | <p>New Mexico's GHG targets aim to reduce GHG emissions to 2000 levels by 2012, and 10% below 2000 levels by 2020. According to the New Mexico Climate Change Advisory Group's 2006 Final Report, these recommendations are projected to create net economic savings of over \$2 billion for the State's economy over the period 2007-2020. Although data was not available to document current reduction accomplishments, the commitment reflected in the State's action and coordination efforts, which include partnerships for similar commitments by neighboring border states of Arizona and Chihuahua (Texas has not committed its participation to the Western Climate Initiative), is expected to drive positive results for air quality in the region.</p> |
| | <p><i>Source: NMED Website</i></p> |

IMPORTANT FACTS & CONCLUSIONS ON AIR QUALITY

- NMED operates monitoring stations to document ground-level ozone (O₃) or smog, particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO_x), and lead (Pb).
- The following designated nonattainment and maintenance areas exist in NM border counties: (1) O₃ in Sunland Park; (2) PM₁₀ in Anthony; and (3) SO₂ in Grant County. In addition to these three areas, there is one area that meets air quality standards by a slim margin, DAC (PM₁₀ NAAQS). Luna County has also experienced periodic exceedence of PM₁₀ standards.
- Air quality problems in southern DAC and Luna County are also impacted by cross-border activity such as the highly traveled unpaved roads, vehicle emissions exacerbated by old vehicles and port-of-entry wait times, and emissions from commercial activity on both sides of the border.
- While some high concentrations of PM₁₀ may be associated with high-wind events in the area, this condition is also influenced by highly traveled unpaved roads in densely populated rural areas such as DAC where less than 30% of the county-maintained roads are paved.
- New Mexico is a partner in the Western Climate Initiative and has implemented planning initiatives to mitigate or adapt to climate change effects including developing a greenhouse gas emission inventory, setting aggressive emission reduction goals, and reporting on emission status.

6.0 INFRASTRUCTURE INVESTMENT NEEDS

Fortunately, infrastructure investment occurs on an annual basis in New Mexico's border counties and during the last several years, significant investment for water and wastewater facilities has occurred to improve the environmental and human health conditions that exist in the densely populated unincorporated areas, like the existing colonias of DAC. Yet, a substantial infrastructure gap continues to exist. This section of the report provides a general analysis of the present condition investment needs. Greater detail exists for estimated investment needs for water and sewer systems than other sectors, since household service coverage indicators developed previously provide an effective basis for calculation. For all of the infrastructure sectors, the capital improvement projects submitted by local entities through the FY2009-2013 Infrastructure Capital Improvement Plan (ICIP), compiled by the New Mexico Department of Finance and Administration, have been incorporated, as considered appropriate and non-duplicative. The assumptions utilized in the investment estimates are explained for each sector.

6.1 Water and Wastewater Infrastructure Investment

Investment needs for **water infrastructure** for this analysis are focused on increasing access to a centralized water distribution system. These investment calculations do not account for infrastructure needs related to rehabilitation and replacement or assuring sufficient water quality

or quantity, all of which are likely required by various water systems in New Mexico’s border region. The investment need for water service coverage is calculated utilizing \$7,400⁷ per household unit for “rural” area and \$5,500 per household unit for “urban” areas. Table 7 provides a summary of the investment costs for water service based on the 2008 water coverage that was developed previously.

**Table 7
Investment Projections: Drinking Water Infrastructure**

| Entity Name | Total Housing Units (HU) | Water Service Coverage (%) | # of HU without water connections | Investment Need (2008) ₁ | # of HU Urbanized Areas ₂ (Un-Served) | Short-term Investment Need (2008) | |
|-----------------|--------------------------|----------------------------|-----------------------------------|-------------------------------------|--|-----------------------------------|--------------|
| Hidalgo County | 2848 | 46.9% | 1513 | \$10,400,000 | 400 | \$2,200,000 | |
| Grant County | 852 | 91.9% | 69 | \$500,000 | 0 | \$0 | |
| Luna County | 11291 | 57.0% | 4851 | \$34,800,000 | 600 | \$3,300,000 | |
| Dona Ana County | North | 1907 | 92.3% | 147 | \$900,000 | 100 | \$600,000 |
| | Central | 47288 | 90.9% | 4291 | \$25,600,000 | 3225 | \$17,700,000 |
| | South | 15293 | 93.9% | 935 | \$6,000,000 | 500 | \$2,800,000 |
| Otero County | 1960 | 99.0% | 20 | \$200,000 | 0 | \$0 | |
| TOTAL | | | | \$78,400,000 | TOTAL | \$26,600,000 | |

Note 1: Calculated using urban factor of \$5,500 for anticipated un-served HU in urbanized areas and the rural factor of \$7,400 for all remaining un-served HU.

Note 2: Identified as follows: Un-served HU in incorporated communities of Hidalgo, Grant and Luna counties, 50% of un-served HU in DAC North and South sub-regions and 75% of DAC Central sub-region. Un-served HU of Otero County are assumed to be rural.

The estimated investment need for extending water distribution to achieve 100% water distribution service coverage is \$78.4 million with the highest costs anticipated for Luna County and the central sub-region of DAC. However, as described in the sector analysis, it may not be feasible or necessary to connect all existing households in each county to a centralized water system – due to their remote siting or adequate private well source. Considering this, a short-term investment need has also been calculated which includes connections anticipated to be within or nearby the urbanized area (see Note 2, above). **The more immediate short-term investment need for access to water distribution infrastructure is estimated to be \$26.6 million.**

Investment needs for **wastewater infrastructure** for this analysis are focused, like for water infrastructure, on increasing access to centralized wastewater collection services to 100% of the existing housing units (Coverage 1). In addition, calculations have been applied to estimate the cost of increasing access to centralized wastewater collection services to 100% of the housing units with an existing water connection (Coverage 2 with an adjustment to consider the

⁷ It should be noted that costs per connection (or household) vary substantially depending on the size of the system, location, and factors such as water source and regulatory requirements. The resources reviewed to determine this assumption include the USEPA Water Survey costs for small systems, USDA RD Community Programs Director email, and the Texas Water Development Board estimate for water projects.

additional urbanized water coverage expansion described above) and assuring sufficient wastewater treatment capacity to serve 100% of the existing households (Coverage 3). These investment calculations do not account for infrastructure needs related to rehabilitation and replacement, which may be required by various wastewater systems in New Mexico’s border region.

Table 8 provides the estimated investment need for extending wastewater collection service to 100% of the existing housing units in each border county. The cost per household assumption⁸ is \$12,000 for a “rural” areas and \$9,000 for an “urban” area where existing infrastructure is already likely established and within a reasonable distance to access. For purposes of this evaluation, the “urban” cost is used for anticipated connections related to Coverage 2 and the rural cost factor is used for all other potential connections.

Table 8
Coverage 1 Investment Need: 100% Wastewater Collection Coverage

| Entity Name | | Total Housing Units (HU) | Wastewater Service Coverage (%) | # of HU without water connections | Investment Need (2008) |
|-----------------|---------|--------------------------|---------------------------------|-----------------------------------|------------------------|
| Hidalgo County | | 2,848 | 34.8% | 1,857 | \$20,100,000 |
| Grant County | | 852 | 72.2% | 237 | \$2,300,000 |
| Luna County | | 11,291 | 53.3% | 5,271 | \$60,200,000 |
| Dona Ana County | North | 1,907 | 45.3% | 1,044 | \$9,500,000 |
| | Central | 47,288 | 53.5% | 22,009 | \$201,300,000 |
| | South | 15,293 | 58.9% | 6,291 | \$57,900,000 |
| Otero County | | 1,960 | 0% | 1,960 | \$17,700,000 |
| TOTAL | | | | | \$369,000,000 |

Similar to the water coverage investment, it may not be reasonable, feasible or necessary to extend centralized wastewater collection infrastructure to every household unit in the county. In fact, some properties, especially large, rural properties, may be served sufficiently with individual, on-site wastewater disposal systems. **The \$369 million investment need described by these calculations should be considered a long-term investment estimate, rather than a short-term priority.** However, the next investment projection reflects a more pressing necessity.

Table 9 provides a summary of the cost calculations related to extended sewer coverage to 100% of the housing units with a water connection (Coverage 2), including those housing units anticipated to be connected with the short-term water coverage expansion described in Table 7. As described earlier in the report, the immediate extension of service to these existing households should be considered a priority as households with centralized drinking water connections are located in more densely populated areas. In addition, these users tend to be

⁸ These estimated household costs have been developed by reviewing numerous sources and defining a reasonable average. The resources reviewed include the USEPA, USDA, the Texas Water Development Board sewer project costs and the DAC Colonias wastewater projects completed in 2005.

higher water users and therefore, produce more wastewater for disposal. In conjunction with high water table/poor soil conditions that likely exist, this coverage gap threatens the region with an increased risk for negative human health and environmental effects.

Table 9.
Coverage 2 Investment Need:
100% Wastewater Collection Coverage to Existing Water Coverage

| Entity Name | | # Water Connections ¹ (Residential) | # Sewer Connections (Residential) | Coverage % ₂ | Difference | Investment Cost (2008) ₃ |
|-----------------|---------|---|--------------------------------------|-------------------------|------------|-------------------------------------|
| Hidalgo County | | 1735 | 991 | 57.1% | 744 | \$6,700,000 |
| Grant County | | 783 | 615 | 78.5% | 168 | \$1,500,000 |
| Luna County | | 7,040 | 6,020 | 85.5% | 1,020 | \$9,200,000 |
| Dona Ana County | North | 1,860 | 863 | 46.4% | 997 | \$9,000,000 |
| | Central | 46,222 | 25,279 | 54.7% | 20,943 | \$188,500,000 |
| | South | 14,858 | 9,002 | 60.6% | 5,856 | \$52,500,000 |
| Otero County | | 1,940 | 0 | 0.0% | 1,940 | \$17,500,000 |
| TOTAL | | | | | | \$285,100,000 |

Note 1: These water connections include existing connections plus the un-served urbanized HUs anticipated to be addressed with the short-term water coverage expansion described in Table 7.

Note 2: The coverage ratio has differs from that presented in Figure 4 above, due to additional water connections described in Note 1.

Note 3: The urban cost factor or \$9,000 has been utilized to calculate this investment need, based on the assumption that the HUs served by water service exist in an urbanized setting.

The more immediate \$285.1 million investment need, described above, requires a well-planned strategy. The approach must consider the capacity of existing infrastructure to convey and treat the additional wastewater flows from the extended services and the investment costs of any of those related improvements. It also must consider the expectation that the total investment need will not be funded by grant dollars and the users' ability to pay for loan repayment is limited.

Finally, it is important to review projected costs for maintaining sufficient wastewater treatment coverage, especially with recommended expansion needs identified in this study. Best practices suggest that when a wastewater treatment facility reaches 75% of its treatment capacity, planning for necessary capacity expansions should be initiated. Once a facility is at 85% of capacity, an expansion should be under construction. According to the analysis described early, the current wastewater treatment capacity may be sufficient to accept new flows from implementing Coverage 1 service extensions, all areas will exceed 75% of available capacity and most will exceed 85%, which indicates that expansion of service to meet Coverage 1 should include at least the planning task for the timely expansion of treatment capacity.

For this analysis, the investment need has been calculated using a cost factor of \$6.00/gallon and includes the necessary treatment capacity to allow at least a 25% capacity reserve. Since implementing service to all households in Coverage 1 may not be feasible or necessary, a

second coverage and investment need is presented in the columns where an investment need is required to meet the new treatment demands of Coverage 2. Table 10 provides an estimated investment need to meet Coverage 1 and Coverage 2 service demands.

Table 10.
Coverage 3 Investment Need: Wastewater Treatment Coverage

| Entity Name | | 2008 WW Treatment Capacity | Treatment Capacity for Coverage 1 ₁ | Estimated Cost Coverage 1 ₂ | Treatment Capacity for Coverage 2 ₁ | Estimated Cost Coverage 2 ₂ |
|-----------------|---------|----------------------------|--|--|--|--|
| Hidalgo County | | 600,000 | 750,000 | \$900,000 | 460,000 | 0 |
| Grant County | | 153,000 | 230,000 | \$460,000 | 210,000 | \$340,000 |
| Luna County | | 3,096,000 | 3,130,000 | \$200,000 | 1,940,000 | 0 |
| Dona Ana County | North | 556,000 | 700,000 | \$800,000 | 630,000 | \$380,000 |
| | Central | 13,824,000 | 14,730,000 | \$5,440,000 | 14,450,000 | \$3,760,000 |
| | South | 4,894,000 | 6,250,000 | \$8,140,000 | 5,020,000 | \$760,000 |
| Otero County | | 0 | 760,000 | \$4,560,000 | 760,000 | \$4,560,000 |
| TOTAL | | | | \$20,500,000 | TOTAL | \$9,800,000 |

Note 1: Includes 25% treatment capacity reserve, rounded up to the nearest 10,000 gallon.

Note 2: Investment cost = \$6.00/gallon for each gallon over 2008 WW Treatment Capacity

The investment need for wastewater treatment coverage to meet the demands of the recommended priority collection system coverage expansion – Coverage 2 – is estimated to require approximately \$9.8 million. Investment needs to meet Coverage 1 demands are more than twice that cost. For all areas except Luna County, investment in wastewater treatment capacity should be considered an immediate short-term investment priority.

In addition to the investment estimates provided above, BECC is currently supporting the development of infrastructure projects with Sunland Park and Anthony and has received applications for funding from the FY2009/2010 BEIF-PDAP Prioritization Process⁹. The estimated costs for constructing these projects are:

- Sunland Park Wastewater Treatment Project - \$18.1 million¹⁰
- Anthony Water Treatment Project - \$2.3 million
- FY09/10 Prioritization Process NM Applications - \$36.2 million

Considering the FY2009-2013 ICIP, cumulatively, the border counties submitted estimated investment needs through this State planning process which total approximately \$200 million for water infrastructure. The most significant water projects included in this infrastructure list include \$9 million for water treatment in Lordsburg, which is already fully funded, with funding

⁹ The Border Environment Infrastructure Fund (BEIF) and the Project Development Assistance Program (PDAP) are programs administered by BECC and NADB and funded by EPA for water and wastewater infrastructure.

¹⁰ Overall costs for this project have been estimated at \$39.3 million; however, approximately \$21 million of the required investment is expected to be supported through the private-sector participants influencing some system improvements.

participation by BEIF, and in construction; more than \$31 million for Luna County, some of which has already been funded through USDA; \$35 million for a water projects in the area served primarily by Doña Ana Mutual Domestic Water Consumers Association (DAMDWCA), which likely includes a new surface water treatment facility; approximately \$47 million for the City of Las Cruces, which also likely includes a new surface water treatment plant; and, over \$70 million in the south sub-region of DAC, most likely to cover significant costs to address non-compliant water quality conditions related to the removal of arsenic in the drinking water supply.

The border counties submitted an estimated need of \$240 million for wastewater infrastructure projects required over the next 5-years. The capital projects included in the ICIP include proposals for expansion of service to un-served areas and new treatment capacity as well as rehabilitation and improvements to some wastewater systems. Over \$130 million has been requested to support wastewater collection and treatment system expansion for un-served connections in the central sub-region of DAC, again, primarily served by DAMDWCA. Approximately \$80 million included in the \$240 million investment need is related to drainage and flood control infrastructure, needs which are not analyzed with this report but should be considered in the overall short-term investment need estimates.

Expecting that the ICIP duplicates some of investment needs developed by this analysis, Table 11 presents a summary of short-term investment recommendations, slightly rounded, to meet water and wastewater investment needs for each county.

**Table 11.
Water and Wastewater Infrastructure Investment Needs Summary:
Short-term Investment Recommendations**

| Entity Name | | Water Coverage (Urbanized) | Other Water Needs | Wastewater Coverage 2 | Treatment Capacity ww Coverage 2 | Other Wastewater Needs (includes drainage) | Total Short-term Investment Need |
|-----------------|---------|----------------------------|---------------------------|-----------------------|----------------------------------|--|----------------------------------|
| Hidalgo County | | \$2,200,000 | \$500,000 | \$6,700,000 | 0 | 0 | \$9,400,000 |
| Grant County | | \$0 | \$4,000,000 | \$1,500,000 | \$340,000 | 0 | \$5,840,000 |
| Luna County | | \$3,300,000 | \$20,000,000 | \$9,200,000 | 0 | \$30,000,000 | \$62,500,000 |
| Doña Ana County | North | \$600,000 | \$750,000 | \$9,000,000 | \$380,000 | \$11,500,000 ₂ | \$22,230,000 |
| | Central | \$17,700,000 | \$30,000,000 ₁ | \$188,500,000 | \$3,760,000 | \$35,000,000 | \$274,960,000 |
| | South | \$2,800,000 | \$60,000,000 | \$52,500,000 | \$760,000 | \$40,600,000 ₃ | \$156,660,000 |
| Otero County | | \$0 | 0 | \$17,500,000 | \$4,560,000 | 0 | \$22,060,000 |
| TOTALS | | \$26,600,000 | \$115,250,000 | \$284,900,000 | \$9,800,000 | \$117,100,000 | \$553,650,000 |

Note 1: Considers only 1 surface water treatment plant for the short-term investment recommendations, although both the City of Las Cruces and DAMDWCA are evaluating the feasibility to implement this type of project.

Note 2: In the ICIP, DAC proposed nearly \$23 million for Flood Control and Drainage projects throughout the county. This figure has been distributed above to the North and South sub-regions of DAC.

Note 3: Includes \$18.1 million for Sunland Park Wastewater Treatment Project as well as the flood control and drainage projects included in the ICIP.

With the addition of projects identified from the capital improvement needs submitted to with the ICIP, **the overall immediate investment need for water and wastewater infrastructure in New Mexico's border counties is estimated to be approximately \$554 million.**

6.2 Solid Waste Infrastructure Investment

The capacity at the existing landfills appears to be adequate for this area and the availability of land for expansion has also been adequately considered; therefore, investment need calculations have not been developed for this sector. However, that is not to say that the need for critical funding resources does not exist. In the FY2009-2013 ICIP, the following funding needs are listed:

Grant County - \$72,000 for solid waste expansion

Luna County - \$4.1 million for implementation of solid waste convenience stations and a transfer facility

Doña Ana County - \$954,000 for purchase of a truck and compactors, containers and dump truck

In addition to these direct funding requests, **totaling just over \$5 million for solid waste capital projects**, all of New Mexico's border counties, in coordination with the State, would benefit from identifying investment needs to support greater recycling capacities as well as broad community awareness efforts for reducing waste generation and the reuse and recycling of municipal solid waste. It is also critical for New Mexico's border counties to support specialized waste tracking systems that monitor hazardous waste imports into the State.

6.3 Air Quality related Infrastructure Investment

With approximately 2,000 miles of the, just over, 3,000 miles of rural road infrastructure unpaved, a quick investment need estimate, assuming the cost of \$400,000¹¹ per mile of pavement, would suggest that **approximately \$800 million is required to improve the air quality conditions in New Mexico's border counties directly related to those unpaved roadways**. The FY2009-2013 ICIP reflect an investment need for this sector with Hidalgo and Luna Counties requesting more than \$14 million in combined capital improvements; Luna County requesting more than \$60 million in road infrastructure needs; and, DAC and its incorporated communities appealing for more than \$100 million in investment needs for this sector. The more limited investment needs reflected in the ICIP likely represent the hesitation of local government to acquire ownership of all unpaved roadways within their jurisdiction, which would increase the obligation for long-term maintenance investments on already constrained local resources. Additional efforts must be made to identify the most critical pavement needs in order to convince local entities to accept this burden for the purpose of improving public health conditions.

¹¹ \$400,000 per mile is referenced considering a 24-foot wide roadway at an estimated \$23 per square yard of pavement plus design, surveys, contingencies, and other such costs (MCA email 1/27/09).

Unfortunately, the air quality in southern New Mexico is also influenced by a lack of well-developed roadway infrastructure in the neighboring state of Chihuahua, Mexico. BECC is working with the States in Mexico to define their infrastructure investment needs and hopes to induce funding investments required to address this infrastructure need south of the US-Mexico Border, as well.

Finally, although an investment need has not been calculated, increasing funding resources are likely required to mitigate non-compliant emission levels required to maintain EPA air quality attainment status as well as to adequately implement the aggressive climate change agenda proposed by New Mexico's Governor. Funding is needed to support GHG inventories and monitoring capabilities; incentive and rebate programs to support energy efficiency and renewable energy projects, as well as clean cars and idling regulation development; and broad outreach efforts related to reducing the carbon footprint of home- and work-based activities.

7.0 Conclusions

This analysis evaluates basic infrastructure needs for the US-Mexico border region of the State of New Mexico focused on defining gaps in accessing drinking water and wastewater services, solid waste facilities and management conditions as well as air quality issues and related infrastructure influences. The effort also accomplishes the following:

- The introduction of the term “coverage”, defining the number of households without access to centralized utility services and challenging previous assumptions that 100% access to service is the norm.
- The development of a methodology to determine a focus for funding programs and to prioritize investment needs (by sector, by county, by population center).
- The definition of baseline conditions and standard indicators which will provide an important basis for measuring the results of programs, services and investments.
- The establishment of a basis for comparing the infrastructure conditions within the border region of each state, a factor that could influence funding and program priorities.

As a first look at the sector baseline conditions and basis for future comparison, the evaluation of infrastructure sector needs and the projected short-term investment need can be summarized for New Mexico's Border Region as:

| Infrastructure Sector | Coverage | Projected Short-Term Investment Need |
|--------------------------|----------|--------------------------------------|
| Drinking Water | 85.5% | \$554,000,000 ₁ |
| Wastewater (1) | 52.5% | |
| Wastewater (2) | 57.5% | |
| Wastewater Treatment (3) | 100.0% | |
| Solid Waste Disposal | 100.0% | \$5,200,000 |
| Paving (rural roadways) | 33.3% | \$500,000,000 ₂ |
| TOTAL | | \$1,059,200,000 |

Note 1: Estimated short-term investment need for water and wastewater, as identified by this analysis and supplemented by projects in the FY2009-2013 ICIP.

Note 2: Represents the \$200 million investment need as submitted in the FY2009-2013 ICIP plus \$300 million of additional pavement needs, assuming approximately 1/2 of the unpaved roads should be prioritized for short-term investment [(\$800M minus \$200M represented in ICIP) divided by 2].

For water and wastewater, access to service needs have been narrowed to primarily urbanized areas, water quality concerns and flood control and drainage investments, all of which require immediate attention and a well-planned approach for influencing such a significant investment. For paving, the gap in services primarily exists outside of the incorporated areas or municipalities. The paving coverage gap will need to be further defined for investment purposes, considering high traffic volume and impacts to environment and human health as a priority. In addition, other actions and related investments may be necessary to address all non-compliant air pollutant levels and to mitigate climate change effects in the border counties. As a final note, the coverage described for Solid Waste Landfill Capacity does not reflect the gaps in solid waste collection services that exist primarily in Doña Ana County, a need which merits continuing consideration by local officials of current and potential impacts to the environment, health and economic conditions of DAC's residents.

Finally, it is important to consider the overall economic situation under which the residents of the border counties exist. With the majority of region's residents living far below the State's medium household income levels and utility rates already carrying a burden above that experienced state-wide, it will be difficult to consider funding all necessary capital improvements through user-base revenue generation, while expecting the residents to support necessary operation and maintenance costs of the service. **Subsidized program resources will be necessary to address the more than \$1 billion of short-term investment needs.**

This report is intended to be useful for decision-makers in the Federal, State and local government, creating a better understanding of the magnitude of environmental infrastructure needs in the 100 km border region. The findings of this report promote the need for maximized funding allocations to infrastructure investment programs as well as the need to further investigate specific priorities for investment in sectors such as air quality. As a subsequent phase in the development of an effective strategy to address these environmental infrastructure

needs, BECC will seek to work with State and local entities to determine goals for each infrastructure sector and indicators to help further determine funding priorities; examine obstacles and legal matters affecting the resolution of infrastructure needs; and, identify potential financing scenarios to support the implementation of the strategy, including opportunities to target BECC and NADB funds to eligible technical assistance or project implementation tasks. The overall planning process is expected deliver an Environmental Infrastructure Plan (EIP) for the State that will be useful in facilitating short- to medium-term infrastructure investment in the border region.

BECC will initiate the next phase of the planning process through the distribution of the NM Environmental Infrastructure Needs Report and with a series of presentations to local, state and federal stakeholders. The response to this initial phase will influence the approach to complete the proposed planning process. Stakeholders interested in obtaining more information on the NMDB and/or participating in the development of the New Mexico EIP should contact BECC's Planning and Technical Assistance Department.

8.0 Information Resources

This publication has been developed by the Border Environment Cooperation Commission (BECC) with the support of J. Samora & Associates Inc. The New Mexico Data Bank (NMDB) is an extensive database which includes infrastructure sector data for each New Mexico border county and many of the communities, incorporated and unincorporated, within each county. The NMDB, developed in Microsoft Excel, includes more than 50 sheets of data groups, including County and County Sub-region profiles, sector profiles for each county, as well as individual data sheets for several water systems and ICIP investment requests. The NMDB sector summary sheets are included in Appendix A. Further review of the NMDB can be requested through BECC.

The following is a list of references used to develop the NMDB and to prepare this report.

1. U. S Census Data – research on websites, population, demographic and economic data.
2. Research on specific county websites.
3. Border Environment Cooperation Commission (BECC) – planning documents, certified projects, Project Management Information System (PMIS) research, needs assessments and surveys, and discussion with BECC staff.
4. North American Development Bank (NANMDB) – Joint status report, research on the website.
5. Southwest Consortium for Environmental Research and Policy (SCERP) – Border Institute Summaries and SCERP's Monograph Series, The U.S.-Mexican Border Environment Needs, Risk and Costs, Border 2012 document.
6. New Mexico Environment Department (NMED)
 - a. Air Quality Section – Research website: Nonattainment Areas in New Mexico,
 - b. Construction Programs Bureau –Clean Water State Revolving Loan Fund (CWSRF) priority listings, Project Status Reports, Water and Sewer Charge Surveys,

- c. Drinking Water Bureau – Drinking Water Watch (web based program that provides details on all water systems), Capacity Development Programs and Strategies, SFY06 Annual Report, SY08 Intended Us Plan (IUP), Financial Planning Guide, Source Water Assessment and Protection Program (SWAPP) and other documents. This effort included meeting with the Bureau and accessing water system detail information where available.
 - d. Ground Water Quality Bureau
 - e. Liquid Waste (Septic Tank) Program – various reports.
 - f. Solid Waste Bureau – April 2007 Solid Waste Management Plan, 2006 New Mexico Solid Waste Annual Report.
 - g. Surface Water Bureau
 - h. “Bordering New Mexico” – reports on border issues and strategies.
7. Department of Finance & Administration (DFA), Local Government Division (LGD) – Infrastructure Capital Improvement Planning,
 8. USDA Rural Development (RD)
 9. USEPA – Reports on status of infrastructure along the border.
 10. NM State Engineer – Meter reports to obtain water production and demand data for water systems including water rights availability.
 11. Interviews and meetings with Engineering Consultants and utilities.

APPENDIX A

NEW MEXICO DATA BANK SECTOR SUMMARY SHEETS

**NEW MEXICO BORDER REGION
ENVIRONMENTAL INFRASTRUCTURE NEEDS ASSESSMENT**

**NEW MEXICO DATA BANK
WATER SECTOR**

SUMMARY OF WATER INDICATORS - AREA

| COMMUNITY | | BASELINE INDICATORS - WATER SERVICE | | | | | | | |
|----------------|-----------------------------------|-------------------------------------|-------------------------------------|---------------------------------|-------------------|-----------------------------|----------------|-------------------------|-------------------------------------|
| Entity Name | # Water Connections (Residential) | Water Source | Water Rights Available (Acre-ft/yr) | Water Production (Gallons/Year) | GPCD (calculated) | Coverage (# Connects/ # HU) | Quality Issues | Compliance/ Enforcement | Water Rates \$/month Res. (Average) |
| Hidalgo County | 1335 | GW | 0 | 255,198,460 | 175 | 46.9% | See Detail | See Detail | \$16.60 |
| Grant County | 783 | GW | 0 | 73,492,000 | 86 | 91.9% | See Detail | See Detail | \$16.11 |
| Luna County | 6440 | GW | 0 | 1,389,385,000 | 197 | 57.0% | See Detail | See Detail | \$18.98 |
| DAC North Area | 1760 | GW | 2314.5 | 250,651,106 | 130 | 92.3% | See Detail | See Detail | \$24.93 |
| DAC Central | 43295 | GW | 37926.7 | 8,120,570,935 | 171 | 90.9% | See detail | See Detail | \$27.06 |
| DAC South | 14358 | GW | 9225.86 | 1,384,853,034 | 88 | 93.9% | See detail | See Detail | \$20.91 |
| Otero County | 1,940 | GW | 0 | 0 | 120 | 99.0% | See Detail | See Detail | \$33.11 |

SUMMARY OF WATER INDICATORS - COMMUNITY (Incorporated or CDP)

| COMMUNITY | | BASELINE INDICATORS - WATER SERVICE | | | | | | | |
|------------------|-----------------------------------|-------------------------------------|-------------------------------------|---------------------------------|-------------------|-----------------------------|---------------------------|-------------------------|-------------------------------------|
| Entity Name | # Water Connections (Residential) | Water Source | Water Rights Available (Acre-ft/yr) | Water Production (Gallons/Year) | GPCD (calculated) | Coverage (# Connects/ # HU) | Quality Issues | Compliance/ Enforcement | Water Rates \$/month Res. (Average) |
| Lordsburg | 1102 | GW | 2030 | 253,945,460 | 210 | 77.9% | Flouride Uranium | SIA, SIE SIA, SIE | \$16.60 |
| Hurley | 783 | GW | 0 | 73492000 | 114 | 100.0% | NA | NA | \$16.11 |
| Columbus | 708 | GW | 2304.34 | 53,156,000 | 84 | 98.3% | Flouride | SIA, SIE | \$25.00 |
| Deming | 5732 | GW | 4415 | 1336229000 | 213 | 92.6% | NA | NA | 12.96 |
| Hatch | 707 | GW | 862.5 | 146,007,316 | 189 | 100.0% | NA | NA | \$15.30 |
| Rincon | 213 | GW | 1452 | 29,698,060 | 113 | 100.0% | NA | NA | \$27.00 |
| Salem | 244 | GW | No use of Right or POD | 74,945,730 | 211 | 100.0% | Nitrate-Nitriate Coliform | SIA, SIE SIA, SIE | \$32.50 |
| Las Cruces | 24870 | GW | 24854.5 | 6,280,000,000 | 231 | 82.7% | NA | NA | \$14.68 |
| Mesilla | 600 | GW | 483.9 | 88,426,186 | 135 | 87.7% | Coliform | SIA, SIE | \$13.13 |
| Dona Ana Village | 3133 | GW | 2718.23 | 444,193,566 | 131 | 100.0% | Lead & Copper | SIF, SIA, SIE | \$30.56 |
| Anthony | 2500 | GW | 2244.9 | 391,702,229 | 120 | 100.0% | Coliform | SIA, SIE | \$21.00 |
| Chaparral | 2047 | GW | NA | NA | 120 | 95.92% | Lead & Copper | SIA, SIE | \$21.50 |
| Mesquite | 1400 | GW | 875.42 | 263,137,717 | 150 | 100.0% | NA | NA | \$16.80 |
| Santa Teresa | 1615 | GW | 0 | 15,749,000 | 120 | 100.0% | Uranium | SIA, SIE | \$13.92 |
| Sunland Park | 4002 | GW | 4016 | 486,234,862 | 90 | 100.0% | NA | NA | \$13.92 |
| Vado | 222 | GW | 242 | 852426.216 | 120 | 27.3% | Lead & Copper | SIA, SIE | 21.63 |

Use 100% for areas of complete coverage

Indicates water rights and water production is not conclusive.

**NEW MEXICO BORDER REGION
ENVIRONMENTAL INFRASTRUCTURE NEEDS ASSESSMENT**

**NEW MEXICO DATA BANK
WASTEWATER SECTOR**

SUMMARY OF WASTEWATER INDICATORS - BY AREA

| COMMUNITY | BASELINE INDICATORS - WASTEWATER SERVICE | | | | | | | Based on 5% growth | | |
|-----------------------|--|-----------------------------------|-----------------------------|----------------|--------------------------------|--------------------------|---|-------------------------------------|-------------------------|---------------------------|
| | Entity Name | # Sewer Connections (Residential) | Coverage (# Connects/ # HU) | # Septic Tanks | Coverage (#Septic Tanks/ # HU) | Treatment Capacity (GPD) | Total Current Flow Requirements (#HH * PPH * 80 gpcd) | Sewer Rates \$/month Res. (Average) | Flow Needs (@ 100 gpcd) | 2018 Flow Needs (80 gpcd) |
| Hidalgo County | 991 | 34.8% | 1857 | 65.2% | 600,000 | 474,560 | \$15.00 | 593,000 | 773,011 | 966,000 |
| Grant County | 615 | 72.2% | 237 | 27.8% | 153,000 | 146,160 | \$10.48 | 183,000 | 238,080 | 298,000 |
| Luna County | 6020 | 53.3% | 5271 | 46.7% | 3,096,000 | 2,001,280 | \$7.25 | 2,502,000 | 3,259,885 | 4,076,000 |
| DAC County | | | | | 19,284,000 | 13,866,400 | | 17,333,000 | 22,586,979 | 28,234,000 |
| DAC North Area | 863 | 45.3% | 1044 | 54.7% | 566,000 | 446,960 | \$18.75 | 559,000 | 728,053 | 911,000 |
| DAC Central | 25279 | 53.5% | 22009 | 46.5% | 13,824,000 | 9,422,000 | \$24.88 | 11,778,000 | 15,347,496 | 19,185,000 |
| DAC South | 9002 | 58.9% | 6291 | 41.1% | 4,894,000 | 3,997,440 | \$15.93 | 4,997,000 | 6,511,430 | 8,140,000 |
| Otero County | 0 | 0 | 1960 | 100% | 0 | 486,080 | NA | 608,000 | 791,776 | 990,000 |

SUMMARY OF WASTEWATER INDICATORS - BY COMMUNITY (Incorporated or CDP)

| COMMUNITY | BASELINE INDICATORS - WASTEWATER SERVICE | | | | | | | | |
|------------------|--|-----------------------------|----------------|--------------------------------|--------------------|---|---------------------|-------------------------|---------------------------|
| Entity Name | # Sewer Connections (Residential) | Coverage (# Connects/ # HU) | # Septic Tanks | Coverage (#Septic Tanks/ # HU) | Treatment Capacity | Components | Discharge (Permits) | Compliance/ Enforcement | Sewer Rates \$/month Res. |
| Lordsburg | 991 | 70.1% | 423 | 29.9% | 600,000 | Aerated lagoon system followed by constructed wetlands. | 0 | 0 | \$15.00 |
| Hurley | 615 | 94.6% | 35 | 5.4% | NA | NA | 0 | 0 | \$16.11 |
| Columbus | 520 | 72.2% | 200 | 27.8% | 96,000 | Lagoon System, Reclaimed water to 46 acre | 0 | 0 | \$7.50 |
| Deming | 5500 | 88.8% | 692 | 11.2% | 3,000,000 | Aerated lagoons, trickling filters (bio-towers). | 0 | 0 | \$7.00 |
| Hatch | 511 | 80.5% | 124 | 19.5% | 300,000 | WWTP is a Sequencing Batch Reactor (SBR) system with aerobic sludge digestion and sludge drying beds. Disinfection is chlorination followed | 0 | 0 | \$14.25 |
| Rincon | 108 | 100.0% | 0 | 0.0% | 66,000 | Fixed Film Aeration, Collection, GW discharge. | 0 | 0 | \$21.00 |
| Salem | 244 | 100.0% | 0 | 0.0% | 200,000 | WWTP is a Sequencing Batch Reactor (SBR) system with aerobic sludge digestion and sludge drying beds. Disinfection is chlorination followed by dechlorination. Effluent disposal to the Rio Grande. | 0 | 0 | \$21.00 |
| Las Cruces | 23523 | 74.2% | 8159 | 25.8% | 13,500,000 | Activated Sludge WWTP, filters, chlorination/dechlorination, effluent discharge to river. | 0 | 0 | \$17.38 |
| Mesilla | 650 | 66.3% | 331 | 33.7% | 138,000 | Forcemain and lift station to City of Las Cruces WWTP | 0 | 0 | \$0.00 |
| Dona Ana Village | 270 | 58.1% | 195 | 41.9% | NA | Forcemain and lift station to City of Las Cruces | 0 | 0 | \$26.03 |
| Anthony | 2518 | 88.0% | 0 | 0.0% | 980,000 | Anthony WWTP | 0 | 0 | \$19.50 |
| Chaparral | 0 | 0.0% | 2134 | 100.0% | NA | NA | 0 | 0 | \$0.00 |
| Mesquite | 335 | 100.0% | 0 | 0.0% | 44,000 | Wetlands and small diameter sewers | 0 | 0 | \$0.00 |
| Santa Teresa | 40 | 4.0% | 967 | 96.0% | 500,000 | WWTP | 0 | 0 | \$10.60 |
| Sunland Park | 3829 | 100.0% | 0 | 0.0% | 2,000,000 | WWTP | 0 | 0 | \$10.65 |
| Vado | 650 | 79.9% | 164 | 20.1% | 1,050,000 | Part of South Central WWTP | 0 | 0 | \$0.00 |

Use 100% for areas of complete coverage (i.e., no. connection is greater than no. HU)

**NEW MEXICO BORDER REGION
ENVIRONMENTAL INFRASTRUCTURE NEEDS ASSESSMENT**

**NEW MEXICO DATA BANK
SOLID WASTE SECTOR**

SUMMARY OF SOLID WASTE INDICATORS - COUNTY

| COMMUNITY | BASELINE INDICATORS - SOLID WASTE | | | | | | | | | | | |
|-----------------|---|--------------------------------|-------------------------------|--|-------------------------------|---|------------------|--|---|------------------------|------------------------------------|------------------|
| Entity Name | Landfill Name/Location | Authority | Landfill Capacity (07 SWB AR) | Users | MSW Generation (#/capita/day) | Total SW Generation (County Population X MSW) | % Recycling Rate | Collection Services? | Recycling/Waste Reduction Programs? | Landfill "Tipping" Fee | Collection Rates (Typical Average) | Illegal Dumping? |
| Hidalgo County | Silver City, 5.5 miles south of center. | Southwest SWA, Grant & Hidalgo | 20 | Hidalgo County, Grant County Silver City, Lordsburg, Hurley, Santa Clara, Bavard | 4.8 | 28,474 | 2.65% | 4 Convenience Stations, Transfer Site. | Yes | \$43.00 | \$12.92 | Yes |
| Grant County | Silver City | Southwest SWA, Grant & Hidalgo | 20 | Hidalgo/Grant Counties | 4.8 | 148,810 | 5.28% | Yes, Silver City | Yes | \$43.00 | 15.75/quarter | Yes |
| Luna County | Deming | NA | UNK | Deming, Luna County, Columbus | 4.8 | 120,077 | 0.04% | Yes, Deming , Private in County | Yes | \$25.00 | \$15.00 | Yes |
| Dona Ana County | Corralitos, 15 miles west of Las Cruces | South Central | 15 | Las Cruces, DAC | 4.8 | 838,474 | 9.47% | For Las Cruces, weekly curbside pickup and twice a month grapppler pickup. For DAC, transfer stations, private collection. | Yes, Six Satellite centers to accept various materials. | \$24.80 | \$15.10 | Yes |
| | Camino Real - Sunland Park | South Central | 7 | Sunland Park, Southern DAC, El Paso, Maquiladora Plants, Mexico | 4.5 - 4.8 | See above for DAC | 9.47% | Various collections servces Sunland Park, El Paso, Private | Yes, through various communities | \$10.50/cy | \$15.00 | Yes |
| | White Sands Main Post | South Central | UNK | DAC | 4.8 | See above for DAC | 9.47% | No | No | UNK | UNK | Yes |
| Otero County | Otero/Lincoln County Regional, 24 miles South of Alamogordo | Otero/Lincoln County | 15 | Otero & Lincoln Counties, Chaparral | 4.8 | 299,030 | 6.10% | Yes, Alamogordo City, Private for County | Recycling Center accepting materials. No fees charged. | \$13.90 | \$15.00 | Yes |

Includes 0.3 lb/person/day recycling rate

**NEW MEXICO BORDER REGION
ENVIRONMENTAL INFRASTRUCTURE NEEDS ASSESSMENT**

**NEW MEXICO DATA BANK
AIR QUALITY SECTOR**

SUMMARY OF AIR QUALITY INDICATORS - COUNTY

| COMMUNITY | | BASELINE INDICATORS - AIR | | | | | | | |
|-----------|-----------------|--|-----------------------|---------------------------------|---------------------|---------------|------------------------------|--|------------------|
| No. | Entity Name | Paved Roads (Miles) | Unpaved Roads (Miles) | Unpaved (Private) Roads (Miles) | Total Roads (Miles) | % Paved Roads | Paved Road Area | Non-Attainment Areas (NMED Air Quality Bureau) | Attainment Areas |
| | Hidalgo County | 40.3 | 481.4 | UNK | 521.7 | 7.7% | County Maintained or Private | NA | NA |
| | Grant County | 0 | 200 | UNK | 200 | 0.0% | County Maintained or Private | NA | NA |
| | Luna County | 40.3 | 481.4 | UNK | 521.7 | 7.7% | County Maintained or Private | NA | NA |
| | Dona Ana County | 553.3 | 982.14 | 520 | 2055.44 | 26.9% | County Maintained or Private | See Below | NA |
| | Hatch | Only air quality data was obtained at the community-level for this analysis. | | | | | | Ozone Maintenance Area - Sunland Park | |
| | Las Cruces | | | | | | | PM10 nonattainment area in Anthony | |
| | Mesilla | | | | | | | DAC Natural Events Action Plan (NEAP) for PM10 | |
| | Sunland Park | | | | | | | DAC Natural Events Action Plan (NEAP) for PM10 | |
| | Otero County | 0 | UNK | UNK | 0 | UNK | County Maintained/Private | NA | NA |



Border Environment Cooperation Commission / Comisión de Cooperación Ecológica Fronteriza

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