Preliminary Engineering Report
Wastewater System Improvements Project
for the
Bosque Loop Area
Sandoval County, New Mexico

June 2014

Souder, Miller & Associates
2904 Rodeo Park Drive East, Suite 100
Santa Fe, New Mexico 87505
(505) 473-9211

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Submitted to:
Sandoval County Public Works Division
Public Works Department
1500 Idalia Road Building D
Bernalillo, NM 87004

Submitted by:
Souder, Miller & Associates
2904 Rodeo Park Drive East, Suite 100
Santa Fe, New Mexico 87505
Phone: 505-473-9211
Fax: 505-471-6675

Jody Garcia P.E. Project Manager
SMA Project No.: 6421284

7/16/14

Jody Garcia, P.E. NM License #17622

This Preliminary Engineering Report (PER) was prepared by Souder, Miller & Associates under RUS Bulletin 1780-2 (4/4/13) "Preliminary Engineering Reports for the Water and Waste Disposal Program."

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Table of Contents

List of Figures

List of Tables

Appendices

APPENDIX A **EXHIBITS**

Exhibit 1: Location Map with Existing Sewers
Exhibit 2: NRCS Soil Map
Exhibit 3: Wetlands Map
Exhibit 4: FEMA Flood Flood Hazard Areas
Exhibit 5: Alternative #2 – Pressure Sewer Conceptual Layout
Exhibit 6: Alternative #3 – Gravity Sewer Conceptual Layout
Exhibit 7: Alternative #4 – Vacuum Sewer Conceptual Layout

APPENDIX B **ENVIRONMENTAL RESOURCES PRESENT**

USDA NRCS Custom Soil Resource Report
SHPO Correspondence

APPENDIX C **POPULATION AND GROWTH DATA**

MRCOG Report

APPENDIX D **TOWN OF BERNALILLO DOCUMENTS**

Sewer Connection Fees
Sewer Rate Schedule
Financial Data

APPENDIX E **COST ESTIMATES**

1. PROJECT PLANNING

Souder, Miller and Associates (SMA) was contracted by Sandoval County to complete a Preliminary Engineering Report (PER) for wastewater system improvements within the "Bosque Loop" area of Sandoval County. This report is intended to provide Sandoval County and the residents of the Bosque Loop area with information regarding potential engineering solutions, probable costs, and a recommended solution to provide wastewater service to the area.

A. Location

The Project Planning area, commonly referred to as the "Bosque Loop Area" is located within Sandoval County, New Mexico. The project planning area is bounded by the Rio Grande River on the west, the Town of Bernalillo to the North and East, and Sandia Pueblo to the south. The project planning area is approximately 250 acres in size, including a 40 acre parcel that is owned by the Pueblo of Sandia. Figure 1 shows the project planning area outlined in red. Exhibit 1 in Appendix A provides a vicinity map which shows the location of the Bosque Loop area within the State of New Mexico.

Figure 1: Project Planning Area Boundary

B. Environmental Resources Present

Farmland

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) provides detailed soil maps and identifies soils as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland as a part of the National Cooperative Soil Survey (NCSS). Approximately 27% of the land within the project planning area is comprised of soils that are considered to be prime farmland if irrigated. A NRCS Soils

map is included as Exhibit 2 in Appendix A. The complete NRCS custom soil report and maps are included in Appendix B.

Rangeland
The majority of the soils within the project planning area (~87%) are considered bottomland. There are currently no free roaming herds within the project planning area. A Rangeland soils map is include in the NRCS custom soil report in Appendix B.

Forestland
There are no forestland soils within the project planning area. A Forestland soils map is include in the NRCS custom soil report in Appendix B.

Wetlands
There are no wetlands within the project planning area. A wetlands map of the area from the U.S. Fish and Wildlife Service is included in Appendix A as Exhibit 3.

100/500 Year Floodplains
The majority of the project planning area is designated as Zone A by the Federal Emergency Management Agency (FEMA). A map of the project planning area showing the FEMA flood hazard areas is included in Appendix A as Exhibit 4. Zone A designation is subject to the 1% annual chance of flooding. FEMA also references that a hydraulic study has not been done so no Base Flood Elevations (BFE) or flood depths are given. The remaining portion of the project planning area is designated Zone D by FEMA. Zone D designation indicates that the area has a possible but undetermined flood hazard based on a lack of analysis of the area.

Historic Sites
SMA communicated with the New Mexico State Historic Preservation Office (SHPO) to identify any historic sites within the project planning area. At the time of this report there were no documented historic sites within the project planning area, although a recent survey by the Bureau of Indian Affairs in the area had indicated an archeological site in the area. Details of the site and location were not yet reported to the SHPO therefore an archeological survey of the project planning area is recommended prior to project design and construction.

C. Population Trends

According to the 2010 United States Census, the area encompassing the project planning area has an average population density of 2.86 persons per household. The project planning area contains 126 homes indicating an estimated population of 360 people in 2010.

Population projections were calculated using the growth rates published in the 2007 report "2030 Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region Council of Governments (MRCOG) Region". Table 1 summarizes the reports annual growth rate projections for Sandoval County from 2010 through 2030. The complete MRCOG report is included in Appendix C of this report. The growth rate from 2030 to the end of the planning period is assumed to be the same as for the period from 2025 to 2030.

Table 1: MRCOG Population Growth Rate Projections

Projected Annual Population Growth Rate				
2011 - 2015	**2016 - 2020**	**2021 – 2025**	**2026 - 2030**	**2031 - 2035**
2.86%	2.50%	2.17%	1.91%	1.91%

The estimated population, using the MRCOG annual population growth rate from Table 1, for 2014 is 403 people and the projected population is estimated to be 619 people at the end of the 20-year planning period. Table 2 shows the population projections for the project planning area at five years intervals through the end of the planning period.

Table 2: Population Projections for Project Planning Area 20-year Period

2010 Population Estimate	2014 Population Estimate	2019 Population Estimate	2024 Population Estimate	2029 Population Estimate	2034 Population Estimate
360	403	458	511	563	619

D. Community Engagement

Sandoval County is the lead government agency for this Preliminary Engineering Report (PER). All community engagement activities related to the proposed project will be held in and staffed by Sandoval County.

The Town of Bernalillo is a key partner for this proposed project however the Town of Bernalillo is not responsible the project or any decisions arising from this PER.

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2. EXISTING FACILITIES

A. Location Map

The Project Planning Area is located to the southwest of the Town of Bernalillo in Sandoval County, New Mexico. There is currently no public wastewater infrastructure within the project planning area. Exhibit 1 of Appendix A is a location map of the project planning area. Figure 2 below demonstrates the lack of wastewater facilities within the planning area and shows the existing sewer infrastructure in the surrounding populated area.

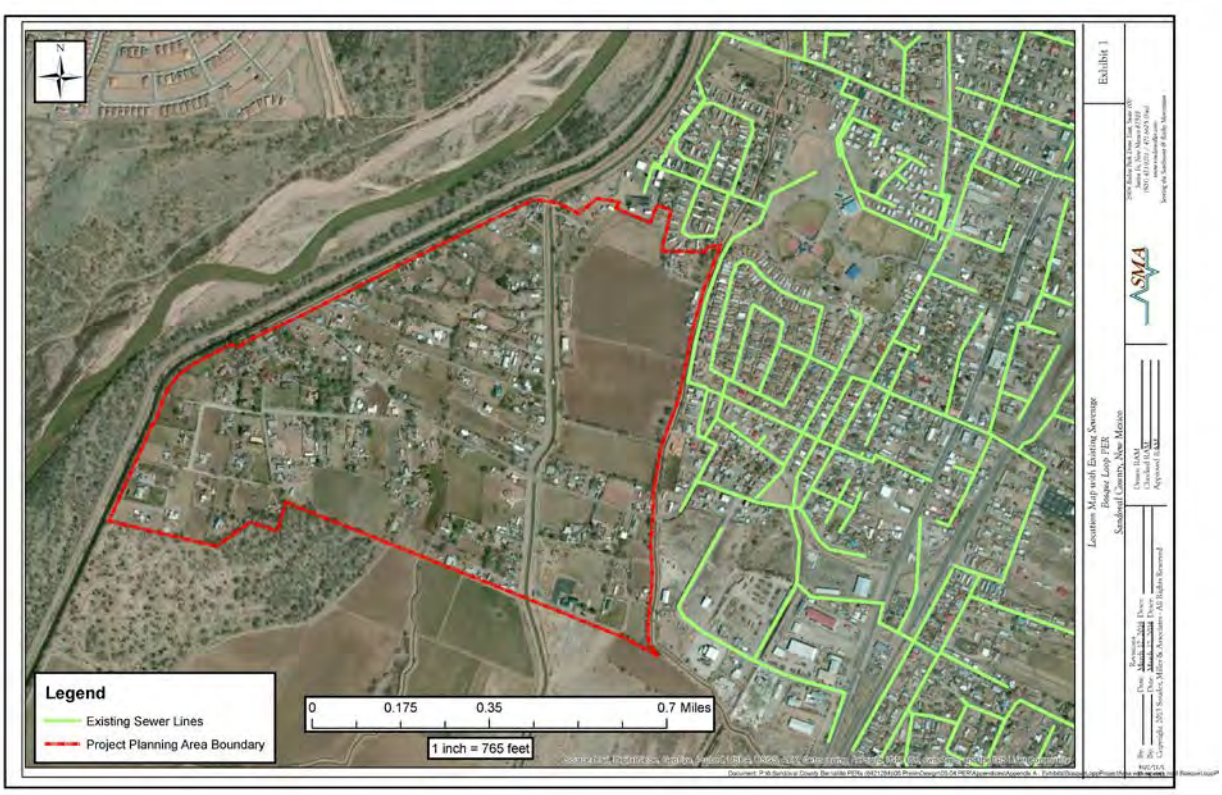

Figure 2: Existing Facilities

B. History

The project planning area is currently served by individual private septic tanks and leach field systems serving 126 existing homes on 165 parcels. These systems have been installed by private owners as needed.

C. Condition of Existing Facilities

The condition of the existing facilities is not fully known at this time. New Mexico Environment Department (NMED) is responsible for regulating wastewater systems in the state. NMED has only 89 permitted onsite septic systems in the project planning area for 126 existing homes. The rest of the onsite septic systems are assumed to have been installed prior to the 1970's when the NMED began requiring permits for residential onsite wastewater systems.

The systems within the area are assumed to be operational although their efficacy is unknown. The systems that have been permitted by NMED have generally been mound type, or elevated, drain fields within the project planning area, due to elevated ground water levels.

The Town of Bernalillo's wastewater system consists of collection lines, interceptors, lift stations, wastewater treatment, and disposal. The Town of Bernalillo's wastewater treatment plant (WWTP) is an extended aeration, activated sludge process with a capacity of 1.2 million gallons per day (mgd). The WWTP currently treats an average of 600,000 gpd of wastewater. The existing system has approximately 600,000 gpd of excess capacity. The WWTP is currently capable of treating the projected wastewater flows from the Bosque Loop area. Appendix D includes data and information on the existing Town of Bernalillo system.

D. Financial Status of any Existing Facilities

There is no public entity responsible for the wastewater systems within the project planning area. This report is intended to provide a proposed project that will enable the residents of the project planning area to connect to a new collection system that will be operated by the Town of Bernalillo. The most recent financial information for the Town of Bernalillo is provided in section 6F of this report.

E. Water/Energy/Waste Audits

At the time of this report the Town of Bernalillo did not have a water audit, energy audit, or waste audit.

3. NEED FOR PROJECT

A. Health, Sanitation, and Security

Residents, businesses and institutions in the planning area rely on on-site septic systems. Even with regular maintenance, septic systems can pollute local groundwater supplies, especially in areas with high groundwater and high population density. Septic systems that do not receive regular, proper maintenance are an even greater risk to groundwater. Groundwater within the planning area ranges from about 8' to 25' below the surface according to NM OSE records. It is well documented that even properly functioning septic systems can contaminate groundwater supplies with nitrates which pose a significant health risk, especially to infants; while poorly functioning systems are a significant source of groundwater contamination from bacteria, protozoa and viruses which can cause diseases including cholera, hepatitis A, and typhoid. Continued reliance on on-site septic systems, poses an increased health risk to residents in the area. This risk will be significantly higher for those residents that still rely on domestic wells without disinfection or other treatment for household water.

Because homes with existing systems have requested the installation of replacement systems, it is safe to assume that other systems in the area are either failing or will fail in the near future. Failing on-site systems present an even greater risk of contamination of the groundwater aquifer due to untreated human waste entering the groundwater.

The majority of the homes within the project planning area are connected to the Town of Bernalillo water system, but there are still domestic water wells in use at individual homes. According to the New Mexico Office of the State Engineer (NMOSE) records there are currently 36 active domestic wells within the project planning area. There are 125 current connections to the Town of Bernalillo water system and it is assumed that some of these properties also have working domestic wells. The homeowners that are not connected to the Town of Bernalillo water system are at the greatest risk from contaminated drinking water caused by septic systems in the area. Establishing a centralized wastewater collection and treatment system for the area would significantly reduce the health risks to the residents that still rely on domestic wells for their drinking water.

B. Aging Infrastructure

There are approximately 126 on-site wastewater treatment and disposal systems within the project planning area. It is assumed that approximately 37 of these systems were originally installed prior to the implementation of NMED septic tank permitting requirements which indicates that many of these systems are more than 35 years old. These systems are not routinely inspected so a failing system may go unnoticed for an extended period of time before the homeowner notices a problem and initiates a repair. It is reasonable to believe that some systems within the planning area are regularly discharging untreated, or poorly treated, wastewater into the soils. The high groundwater in the area is very susceptible to contamination from these periodic system failures. In the Bosque Loop area some of the septic systems are being replaced. As they are replaced they are required to meet NMED regulations for irrigated conditions. There are approximately 200 acres according the Middle Rio Grande Conservancy District (MRGCD) that are irrigated within the project planning area. The older systems within the project planning area will continue to contribute to soil and groundwater contamination until they are replaced.

C. Reasonable Growth

There are approximately 403 people who currently live in the Project Planning Area and the projected population in the year 2034 will increase to an estimated 619. The purpose of this report is to develop a project that will connect the existing and future additional users to the Town of Bernalillo WWTP. These new users will pay for their individual use of the system based on the Town of Bernalillo wastewater rate structure. These new users will represent approximately $3,450 of additional monthly revenue for the Town of Bernalillo system in the beginning. This revenue will grow to a projected $5,920 per month at the end of the planning period based on projected growth and the current rate structure. Section 6, subheading I of this report provides a breakdown of all sources of income including a proposed rate schedule.

4. ALTERNATIVES CONSIDERED

The alternatives evaluated for the project planning area are:

1. No action
2. Pressure sewer system with connection to the Town of Bernalillo WWTP
3. Gravity sewer system with lift stations and connection to the Town of Bernalillo WWTP
4. Vacuum sewer system with connection to Town of Bernalillo WWTP

Each alternative is described in detail in the following sections.

A. Alternative #1 – No Action

i. Description

For this alternative no action would be taken to change, improve, or expand wastewater systems within the project planning area. System management, maintenance and operation would continue to be the responsibility of the individual homeowners within the project planning area and the probable groundwater contamination would remain.

ii. Design Criteria

There are no design criteria for this alternative.

iii. Map

A map of the project planning area is provided in Appendix A as Exhibit 1.

iv. Environmental Impacts

The most likely environmental impacts for this alternative are related to the continued use of on-site wastewater treatment and disposal systems. Septic systems and disposal fields commonly transmit pathogens, nitrates and other contaminants into groundwater causing concern for human health in the area. The area has high ground water levels, between 7 and 25 feet below ground surface (bgs), which can be easily contaminated by septic systems.

v. Land Requirements

There will be no land requirements with this alternative.

vi. Potential Construction Problems

There is no construction for this alternative.

vii. Sustainability Considerations

The current individual septic systems are not a sustainable method of disposing of sewage since the continued contamination of groundwater will increase the probability of causing health issues for residents in the area.

a. Water and Energy Efficiency

Not applicable

b. Green Infrastructure

Not applicable.

c. Other

This alternative promotes sustainability by continuing to use the existing system which eliminates the need to manufacture and install new sewer collection lines within the area. Initially this alternative will require much less energy and material than any alternative that requires new construction. As systems fail and are replaced, the differential will be less pronounced.

viii. Cost Estimates

Not applicable

B. Alternative #2 – Pressure Sewer System

i. Description

This alternative consists of a pressure sewer system with a connection to the Town of Bernalillo WWTP. The pressure sewer system would consist of grinder pump stations located at each residence, pressure sewer lines, and a connection to the existing Town of Bernalillo system. The grinder pumps for each service connection will be connected to the homeowner's power system and the cost of the power for operating these pumps will be the responsibility of the homeowner. There will be two tie-in points to the existing system. One tie in will be into an existing manhole directly adjacent to the Waste Water Treatment plant that will gather the majority of the sewage. The other connection will be into a manhole on Calle Laguna to meet the needs of the small area on the north east corner of the Project Planning area.

Each grinder pump station would collect the wastewater flow from the residence, grind the sewage, and pump the wastewater into the service lines that would discharge into a main collection line. The combined pressure from the grinder pump stations would force wastewater flows through the collection lines, which would flow generally north, and discharge into a manhole near the existing Town of Bernalillo WWTP. This alternative includes approximately 19,000 linear feet to 2 to 4 inch piping and approximately 216 grinder pump stations to serve the area at the end of the 20-year planning period. The system also includes approximately 3,300 feet of pressurized transmission line that would extend north along the Albuquerque Main Canal to a connection at the Town of Bernalillo's WWTP.

ii. Design Criteria

Pressure sewers generally use smaller pipe diameters than conventional gravity sewers and are operated by small pumps instead of gravity flows. Pressure sewer systems can be considered a practical option for providing sewer service for low density rural areas. They are typically used in areas of hilly terrain, high water table, and congestion areas where gravity sewer lines my not be practical. Excavation and line costs are lower for pressure sewers due to the small diameter pipes and the shallow depths at which they can be buried. Pressure sewers are typically constructed in trenches that follow the natural grade of the terrain. The collection lines typically range from 2-4 inches in diameter and are typically buried 4 feet below the ground surface. Table 3 provides a summary of the design criteria for this alternative.

Table 3: Design Criteria for Alternative #2

System Element/Condition	Criteria
Minimum Pipe Diameter	2-4 inches
Minimum Velocity	3-7 fps
Minimum slope	Natural slope of existing topography
Minimum Desired Depth of Cover	4 feet, typically below frost line
Acceptable Pipe Materials	Poly Vinyl Chloride (PVC) or High Density Polyethylene (HDPE)

iii. Map

Exhibit 5 in Appendix A shows the conceptual layout of Alternative 2.

iv. Environmental Impacts

The environmental impacts of this alternative would primarily consist of the disruption and disturbance of the existing roadways. The area is already developed and most construction would be within existing right of ways and previously disturbed areas. Construction taking place

along the canal will need to take measures to prevent erosion and runoff into the canals or Rio Grande River channel.

v. Land Requirements

The land required for this alternative would be minimal. Small diameter sewer lines would be constructed under the existing roadways and are in shallow and narrow trenches that follow the existing topography. Grinder pumps would be installed on private property requiring easements from each homeowner. In some cases, adjacent homes may need access from neighbors land.

vi. Potential Construction Problems

Due to the high ground water within the project planning area some portions of construction may encounter groundwater during excavation and construction. Construction activities, noise and traffic, can cause a disturbance to homeowners in the area and will need to be monitored and planned to minimize the negative impact. Construction within the roadways may impact traffic flows on some of the narrow residential roadways within the area and the costs for asphalt replacement can be a significant factor. Access during construction could be limited due to area confinements and minimal roadway and driveway widths and lengths. Coordination with homeowners to gain access to each private property to install the sewer connection from the existing right-of-way to the point the existing sewer service connects to the septic tank will also be required. Also, some funding agencies prohibit work on private property with public funds.

vii. Sustainability Considerations

a. Water and Energy Efficiency

This alternative is less energy efficient than other alternatives considered.

b. Green Infrastructure

Not applicable

c. Other

Not Applicable

viii. Cost Estimates

The total capital cost for Alternative #2 is estimated at $ 4,307,651. A summary of the cost estimate is shown in Table 4. Appendix E includes the capital and operational costs for this alternative.

Annual operation and maintenance costs are estimated for this alternative based on the Town of Bernalillo managing the proposed system and treating the wastewater. The annual operation and maintenance costs are estimated to be approximately $19,150 per year for the utility. Each homeowner will also be responsible for the power costs for operating the grinder pump for their residence which is estimated at $420 per year.

Table 4: Budget Estimate for Alternative #2

Item	Cost Estimate
Construction Costs	$ 3,076,894
Non-Construction Costs	$ 1,230,758
Total Estimated Project Cost	$ 4,307,651

C. Alternative #3 – Gravity Sewer System with Lift Station

i. Description

This alternative includes gravity sewer lines flowing into centrally located lift stations that pump the wastewater through a force main to discharge into the Town of Bernalillo WWTP.

The gravity collection system for this alternative would consist of 8 inch collection lines, two lift stations, and 4 inch force main that would discharge into a manhole located just north of the planning area. The system includes approximately 30,000 linear feet of 8 inch gravity sewer line, 5,000 linear feet of force main sewer line, 92 manholes, two lift stations and approximately 19,000 linear feet of 4 inch service lines.

ii. Design Criteria

Table 5 describes the system element and the criteria for each item[1].

Table 5: Design Criteria for Alternative #3

System Element/Condition	Criteria
Minimum Pipe Diameter	8 inches
Minimum velocity	2 fps at Average Daily Flow
Slope Between manholes	Sewers shall be laid with uniform slope between manholes
Design Flow Depth	½ Pipe Diameter
Steep Slope Protection	Sewers on 20% slopes or great shall be anchored securely with concrete, or equal
Minimum Pipe Slope for 8 inch pipe (ft. /100 ft.)	0.40
Minimum Service lateral Diameter	4 inch
Minimum Service Lateral Slope	1.5%
Minimum Desired Depth of cover	4 feet
Maximum Depth of cover	Depending on soil and loading and pipe field strength
Acceptable Pipe materials	Polyvinylchloride (PVC) HDPE high density polyethylene
Manholes-minimum diameter	4 feet

iii. Map

Exhibit 6 in Appendix A provides a conceptual layout of this alternative.

iv. Environmental Impacts

The environmental impacts of this alternative would primarily consist of the disruption and disturbance of the existing roadways. The area is already developed and most construction would be within existing right of ways and previously disturbed areas. There will be temporary disruptions to property owner's land to install gravity service connections to each home. Construction taking place along the canal will need to take measures to prevent erosion and runoff into the canals or Rio Grande River channel.

v. Land Requirements

The land required for this alternative would be minimal. Sewer lines would be constructed in the center of the roadways with manholes spaced approximately 400 feet apart and at intersections.

[1] New Mexico Environment Department Construction Programs Bureau, *Recommended Standards for Wastewater Facilities*, 2003

The land required for the lift station would consist of approximately 700 square feet that could be obtained through an easement from the Town of Bernalillo, MRGCD, or a private land owner.

vi. Potential Construction Problems

Due to the high ground water within the project planning area some portions of construction may encounter groundwater during excavation and construction that will need to be mitigated. Construction activities, noise and traffic, can cause a disturbance to homeowners in the area and will need to be monitored and planned to minimize the negative impact. Construction within the roadways may impact traffic flows on some of the narrow residential roadways win the area. Access while in construction could be limited due to area confinements and minimal roadway and driveway widths and lengths. The possibility of sandy soil conditions may require wider trenches for worker safety which could significantly increase the cost of the project, especially in paved areas. Coordination with homeowners to gain access to each private property to install the sewer connection from the existing right-of-way to the point the existing sewer service connects to the septic tank will also be required. Also, some funding agencies prohibit work on private property with public funds.

vii. Sustainability Considerations

a. Water and Energy Efficiency

This alternative relies on gravity for much of the wastewater flow into the two lift stations. This alternative is more energy efficient than other alternatives considered.

b. Green Infrastructure

Not applicable.

c. Other

Not applicable

viii. Cost Estimates

Total capital costs for this alternative are estimated at $ 7,865,368. A summary of the cost estimate is shown on Table 6. Appendix E contains the detailed cost estimate for this alternative.

Annual operation and maintenance costs are estimated for this alternative based on the Town of Bernalillo managing the proposed system and treating the wastewater. The annual operation and maintenance costs are estimated to be approximately $22,750.

Table 6: Budget Estimates for Alternative #3

Item	Cost Estimate
Construction Costs	$ 5,618,120
Non-Construction Costs	$ 2,247,248
Total Estimated Project Cost	$ 7,865,368

D. Alternative #4 – Vacuum Sewer System

i. Description

This alternative considers the construction of a vacuum sewer system to serve the area. A vacuum sewer system is comprised of gravity lines from each residence that connect to a vacuum valve pit. The valve pits are often designed to receive the sewage from more than one residence and do not require power to operate. The valve pit is connected to vacuum sewer mains that transport the sewage by a combination of gravity and vacuum suction to a central vacuum station. The vacuum station includes a vacuum pump, a storage tank and sewage pumps that transmit the sewage via force main. The sewage would be delivered to an influent manhole located within the Town of Bernalillo WWTP site.

Vacuum sewers use a combination of gravity flow and vacuum suction to transport waste from individual homes to the WWTP. Wastewater is captured as it exits the home and flows by gravity to a small vacuum-valve pit that would be shared with nearby residences. When the pit reaches a specified level the valve would open and vacuum from the main lines would pull the waste from the pit and into the main lines moving towards the WWTP. The main sewer lines have vacuum applied from a central vacuum station. The main lines are laid in a saw-tooth pattern where wastewater will flow by gravity for a length and then reach a small vertical lift where the vacuum system will lift the sewage into another gravity flow section. The vacuum applied to the main line will lift the wastewater through incremental vertical rises until it reaches the vacuum station. The sewage is collected at the vacuum station before being pumped from the station to the WWTP through an 8-inch force main.

One of the major advantages to a vacuum system is the ability to keep wastewater lines relatively shallow to avoid problems associated with constructing pipes in areas with shallow groundwater tables. The depth of the wastewater lines is dependent on the length of gravity flow pipe between lifts; the greater the distance between lifts, the fewer lifts needed but the deeper the wastewater lines need to be buried to maintain slope between the lifts. By installing more lifts, the pipes can be laid at shallower depths saving on construction cost for the piping, but the number of lifts is limited by vacuum station capacity.

ii. Design Criteria

The project planning area is relatively flat, with elevation differences between areas typically being less than 10 feet. The canal that flows north to south and divides the planning area near the eastern portion of Bosque Loop creates an additional challenge for the layout of the system.

Table 7 provides a summary of the design criteria considered for this alternative.

Table 7: Design Criteria for Alternative #4

System Element/Condition	Criteria
Design Flow Depth	½ Pipe Diameter
Minimum Pipe Slope (ft. /ft.)	0.2%
Minimum Service lateral Diameter	4 inch
Minimum Desired Depth of cover	4 feet
Maximum Depth of cover	Depending on soil loading and pipe field strength
Preferred Pipe materials	SDR 21 PVC
Vacuum stations	1

iii. Map

Exhibit 7 in Appendix A provides a conceptual layout of this alternative.

iv. Environmental Impacts

This alternative is designed specifically for high groundwater and a flat terrain which is appropriate for the Project Planning area. There are no wetlands, endangered species or any documented historical or archaeological sites within the project area.

v. Land Requirements

Homeowner easements and land requirements for construction would be needed for the construction of the vacuum stations, and in some cases for the vacuum valve pits, and would be imperative for the project to be completed. Most of the construction would take place within existing roadways and right-of-ways. Homeowner cooperation would be needed for services to be connected from homes to the collection lines that would be appropriately installed in the roads or right of ways.

vi. Potential Construction Problems

Due to the high ground water within the project planning area some portions of construction may encounter groundwater during excavation and construction. Although mitigated to some extent by the vacuum system, it will likely be an issue for the construction of the vacuum stations. Construction activities, noise and traffic, can cause a disturbance to homeowners in the area and will need to be monitored and planned to minimize the negative impact. Construction within the narrow roadways may impact traffic flows on some of the narrow residential roadways within the area. Access while in construction could be limited due to area confinements and minimal roadway and driveway widths and lengths. Coordination with homeowners to gain access to each private property to install the sewer connection from the existing right-of-way to the point the existing sewer service connects to the septic tank will also be required. Also, some funding agencies prohibit work on private property with public funds.

vii. Sustainability Considerations

a. Water and Energy Efficiency

This alternative relies on gravity for the major portions of the system, but due to the inherent inefficiency of vacuum systems will result in increased energy costs over other alternatives.

A study was performed by Daniel G. Burden P.E. on the efficiency of vacuum sewers. [2] The area of study was one square mile in the state of Florida. The area is similar to the Project Planning area in size and population. What was discovered was that vacuum systems were not as efficient as other alternatives and specifies that one traditional hydraulic lift station could be operated at a fraction of the cost of one vacuum lift station. The benefits of a vacuum system become apparent when each vacuum station can eliminate more than four or five traditional lift stations.

b. Green Infrastructure

Not applicable

c. Other

[2] Daniel G. Burden, P.E., Public Works Magazine, September 2013, Energy Costs: gravity vs. vacuum sewers

Not applicable

viii. Cost Estimates

Total capital costs for this alternative are estimated at $ 6,575,454. A summary of the cost estimate is shown on Table 8, and a detailed cost estimate is included in Appendix E of this report.

Annual operation and maintenance costs are estimated for this alternative based on the Town of Bernalillo managing the proposed system and treating the wastewater. The annual operation and maintenance costs are estimated to be approximately $39,600.

Table 8: Budget Estimates for Alternative #4

Item	Cost Estimate
Construction Costs	$ 4,696,753
Non-Construction Costs	$ 1,878,701
Total Estimated Project Cost	$ 6,575,454

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5. SELECTION OF AN ALTERNATIVE

This section evaluates each of the alternatives based on both monetary and non-monetary factors.

A. Life Cycle Cost Analysis

The life cycles costs for each alternative evaluated are summarized in Table 9. Detailed cost estimates are included in Appendix E of this report.

Table 9: Summary of Life Cycle Costs

Category	Alternative 1 No Action	Alternative 2 Grinder	Alternative 3 Gravity	Alternative 4 Vacuum
Planning Period in Years	20			
20-Year Discount Rate	0.8%			
Present Value of Capital Cost (C)	$ 0	$ 4,307,651	$ 7,865,368	$ 6,575,454
Present Value of Total Annual O&M Costs (O&M)	$ 0	$ 352,470	$ 418,965	$ 729,216
Present Value of Salvage Value (S)	$ 0	$ 2,600,637	$ 5,313,192	$ 4,342,548
Net Present Value (NPV)	$ 0	$ 2,059,484	$ 2,971,141	$ 2,962,122

B. Non-Monetary Factors

i. Suitability

Each alternative considered is evaluated against the stated goals and objectives of Sandoval County, the Town of Bernalillo and the residents of the project planning area. The alternative that most completely addresses the stakeholders' objectives, including addressing public health and safety concerns, was assigned a rank of 4 and other alternatives are ranked from 3 to 1 according to their suitability.

ii. Ease of O&M

Each alternative considered has different O&M requirements. The alternatives considered are ranked against each other with the alternative requiring the least amount of O&M receiving a score of 4 and the alternative requiring the most receiving a score of 1.

iii. Operator Training Requirements

The Town of Bernalillo wastewater utility staff are currently trained to operate and maintain the existing system. Each of the alternatives considered are evaluated against the need to provide the existing staff with additional training for the operations and maintenance of the specific alternative. If no additional training is required the alternative received a score of 4. If the alternative considered would require additional training the alternative was ranked against other alternatives that would also require training, with the alternative requiring the least amount of training receiving a lower score.

A selection matrix was developed to evaluate each of the proposed alternatives and assist determining a recommended solution. The matrix includes the net present value of each alternative and the following non-monetary criteria:

- Suitability
- Ease of O&M
- Operator Training Requirements

The selection matrix in Table 10 scores each alternative from 1 to 4 against the 4 criteria with a score of 4 being the best. Each criterion is assigned a weighting factor to reflect the importance of that factor relative to the other criteria. The assigned weight for each of the criteria is then multiplied by its respective score, which returns a weighted score (WS). The weighted scores for each of the criteria under its respective alternative are then summed, which produces a final weighted score for each alternative considered. Each alternative is then ranked according to the weighted score.

Table 10: Selection Matrix

	Life Cycle Costs (4)	Suitability (3)	Operations & Maintenance (2)	Training Requirements (1)	Raw Score	Weighted Score	Overall Rank
Alternative 1 No Action	4	1	1	1	7	22	4
Alternative 2 Grinder	3	3	2	3	10	25	2
Alternative 3 Gravity	1	4	4	4	13	28	**1**
Alternative 4 Vacuum	2	2	3	2	9	25	2

The selection matrix indicates that Alternative 3, gravity sewer with lift stations, is the preferred alternative.

6. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

The recommended alternative is to install a gravity sewer system with lift stations to serve the residents of the project planning area. A conceptual layout is provided in Appendix A as Exhibit 6.

A. Preliminary Project Design

i. Collection System/Reclaimed Water System Layout

The project will install new sewer lines throughout the project planning area. Lines will be placed within the roadway wherever possible to minimize environmental impacts, easements and other concerns related to disturbing previously untouched areas.

The proposed project will include approximately 30,000 linear feet of 8-inch PVC gravity sewer lines installed within the roadways. Gravity sewer lines will discharge into two lift stations (described in the next section). Homes in the extreme north-east portion of the project planning area will have their wastewater diverted directly into the Town of Bernalillo system by gravity. 48-inch diameter circular, precast concrete manholes will be installed at all sewer line intersections and along straight sections at intervals of approximately 400 feet. The project will include approximately 91 Manholes. The new system will connect to the existing Town of Bernalillo collection lines either at existing manholes, or a new manhole installed as part of the project, at two points. No analysis has been completed to verify the capacity of the receiving sewers. This effort must be completed as part of the preliminary design phase of the project.

Approximately 5,000 linear feet of 4-inch PVC force main sewer line will be installed from the lift stations to discharge manholes shown on the layout. The force mains will be installed within the existing roadways.

In addition the project will require the installation of approximately 19,000 linear feet of 4-inch PVC line for individual service connections. The alignment for each service connection line will be determined during the design phase in conjunction with the design engineers, the Town of Bernalillo and individual property owners.

ii. Pumping Stations

The project will include two new lift stations. The first lift station will be located near the intersection of Camino Del Bosque and Calle Dominguez. This lift station will handle the wastewater generated by the western portion of the project planning area. The second lift station will be located along the Bosque Loop approximately 400 feet north of Camino Del Bosque. This lift station will handle the wastewater for the majority of the remainder of the project planning area. The proposed locations for these lift stations are based on preliminary engineering design. Because lift stations can cause odor issues, SMA recommends that full consideration of all stakeholders be considered prior determining the final lift station location to attempt to avoid future disputes with landowners in the area. The proposed locations are also dependent upon the ability of the County to reach an agreement with a landowner regarding an easement.

The lift stations will require electrical power service. Overhead power lines are present in both proposed lift station locations. The proposed lift stations would be secured by an 8’ tall perimeter fence.

iii. Storage
Not Applicable

iv. Treatment
Not Applicable

B. Project Schedule

The proposed project schedule is dependent on Sandoval County and the Town of Bernalillo priorities and funding availability. Estimated dates are not available at the time of this report. For scheduling purposes it is estimated that once the project implementation begins the design phase of the project will require approximately 6 months and the construction phase may take between 12 and 24 months depending on the amount of dewatering required and the groundwater conditions during construction.

C. Permit Requirements

Town of Bernalillo, MRGCD, NMED, Sandoval County

D. Sustainability Considerations

i. Water and Energy Efficiency
The proposed project makes use of gravity sewers to collect wastewater at the proposed lift stations thereby minimizing the energy required to operate the system. The proposed project is the most energy efficient of the alternatives considered.

ii. Green Infrastructure
Not applicable

iii. Other
The proposed project uses familiar technology that is currently in use by the Town of Bernalillo and therefore provides a level of operational sustainability that the other alternatives considered could not match.

As sewer service becomes more readily available, the opportunity to subdivide existing parcels will increase the density in the area. This increased density will increase the flow and potential revenue generated from the area. An analysis of the potential impact on the wastewater treatment plant indicated that the impact on the wastewater treatment plan will vary depending on how the area develops. Potential developed flows for the area were calculated based on information provided by Sandoval County, regarding potential lot densities. A value of 375 gpd per connection was used to predict flows, and the potential total wastewater flow from the area for each lot size is included in Table 11 below.

Table 11: Flow Estimate Based on Lot Size

Acreage	Quantity of lots in area	Gallons per day projected
1 acre	266 lots	99,750 gpd
.75 acres	286 lots	107,250 gpd
.5 acres	328 lots	123,000 gpd
.25 acres	453 lots	169,875 gpd

The wastewater treatment plant was designed for 1.2 million gallons per day and is currently operating at half capacity (approximately 600,000 gpd). Based on the table above, if the area were to develop at the highest possible density, the additional flows would not exceed the treatment capacity within the treatment plan. In addition the proposed system would only require an upgrade to the lift stations in order to handle the additional flow from future development. The proposed pipe sizes are sufficient for the possible future flow.

Based on this information, it is recommended that the lift station be designed with the capacity to either increase the pump sizes or the number of pumps to accommodate the additional flow, and the wet well be sized accordingly.

E. Total Project Cost Estimate

Project costs are estimated in detail in Table 12.

Table 12: Proposed Project Cost Estimate

Item	Description	Unit	QTY	Unit Price	Amount
1	Connect new 4 inch service line to owner's home, complete in place, including double cleanout, trenching, backfilling and testing	EA	126	$ 250	$ 31,500
2	4 inch service line, complete in place, including trenching, backfilling and testing	LF	19,000	$ 25	$ 475,000
3	Connect new 4 inch service line to sewer main complete in place, including trenching, backfilling and testing	EA	126	$ 250	$ 31,500
4	6 inch C-900 PVC sewer force main, complete in place, including trenching, backfilling and testing	LF	5,000	$ 25	$ 125,000
5	8 inch gravity SDR 35 sewer line including, trenching, backfill, compaction, and all appurtenances, CIP	LF	30,000	$ 40	$ 1,200,000
6	Jack and Bore/Directional Drill 18 inch Diameter and 1/2 inch thick Under MRGCD canals (including all material, labor, 8 inch SDR 35 carrier pipe, with restraints, end seals, casing spacers, fittings, bore pipe excavation, tracer wire, backfill, sheeting, shoring, location and temporary support of existing utilities, and other temporary measures as necessary for site protection and restoration including MRGCD provisions), CIP	LF	250	$ 400	$ 100,000
7	4' diameter Type E precast concrete manhole, cover, collar, tracer wire port , and connection of new sewer line for manholes (incl. materials, labor, excavation, backfill and site restoration), CIP	EA	91	$ 4,850	$ 441,350
8	Rehabilitate Existing Manhole at WWTP including all material, labor, and appurtenances. CIP	LS	1	$ 3,000	$ 3,000
9	Fiberglass packaged sewer lift station, including manhole, concrete/fencing/bollards, interior piping, valve vault, pumps, electrical & controls, electrical service riser, concrete slab, backfill, compaction, testing, including connections, CIP	LS	2	$ 225,000	$ 450,000
10	Electrical service for lift station, including power drop/pole, load center, meter box w/ meter, all conduit, wiring, switches, lights, outlets, concrete slab, backfill, compaction, testing, including connections, etc. CIP	LS	2	$ 25,000	$ 50,000
11	Waterline Crossing	EA	150	$ 300	$ 45,000
12	Dewatering for sewer line, up to 4’ drawdown, CIP	LF	11,000	$ 50	$ 550,000
13	Dewatering for sewer line, 4’ to 8' drawdown, CIP	LF	1,500	$ 60	$ 90,000
14	Dewatering for structure, up to 4’ drawdown, CIP	EA	48	$ 8,000	$ 384,000
15	Dewatering for structure, 4’ to 8’ drawdown, CIP	EA	12	$ 9,000	$ 108,000
16	Dewatering for structure, more than 8’ drawdown, CIP	EA	2	$ 10,000	$ 20,000
17	Abandon existing septic tank, including salvaging all equipment to owner, filling existing tank with sand, removing any above-ground equipment.	EA	126	$ 750	$ 94,500
18	Asphalt removal and replacement	SY	16,000	$ 35	$ 560,000
19	Chain Link Fence (8' tall) with 6' gate at each lift station site	LF	300	$ 40	$ 12,000
20	Purchase Easement for lift station placement	EA	2	$ 20,000	$ 40,000
21	Post Construction CCTV inspection of all sewer lines	LF	30,000	$ 2.50	$ 75,000
22	Provide, implement, and maintain Storm water Prevention Plan (SWPPP)	LS	1	$ 10,000	$ 10,000
23	Testing Allowance	LS	1	$ 25,000	$ 25,000
24	Construction Staking	LS	1	$ 30,000	$ 30,000
25	Traffic Control	LS	1	$ 75,000	$ 75,000
26	Potholing/ private line locating	HR	40	$ 250	$ 10,000
27	Mobilization/Demobilization	LS	1	$ 251,793	$ 251,793
	Construction Subtotal				$ 5,287,643
	NMGRT @ 6.25%				$ 330,477
	Construction Total				$ 5,618,120
	Construction Contingency @ 20%				$ 1,123,624
	Professional Services @ 15%				$ 842,718
	Private Property Access Mitigation @ 5%				$ 280,906
	Non-Construction Total				$ 2,247,248
	Total Project Cost				**$ 7,865,368**

F. Annual Operating Budget

The proposed project will be funded through Sandoval County and other funding agencies. The Town of Bernalillo will not provide funding, nor will they incur costs to implement the proposed project. The costs will be shared among the residents of the Project Planning Area and Sandoval County.

i. Income

The Town of Bernalillo Ordinance Number 159 establishes the current sewer system connection fees for the wastewater system and is included in the Appendix D of this report. The connection fee is based on the size of the customer's water meter and ranges from $1,200 for a customer with a ¾" water meter to $14,600 for a customer with a 4" water meter. The project planning area contains single family residences that are assumed to have 3/4" water meters resulting in a $1,200 connection fee for every new customer that the project connects. Assuming all 126 homes choose to connect to the system at the time of project construction the Town of Bernalillo would receive $151,200 in new user connection fees.

The Town of Bernalillo Ordinance Number 210 governing wastewater user rates is included in Appendix D of this report. The minimum residential user rate is set at $21.93 per month for anyone using 4,000 gallons of water or less per month. Each additional 1,000 gallons is charged at a rate of $3.38 during the winter months (based on the average water meter reading from the months of December, January and February), or at the user's 3-month average during the summer months. The ordinance notes a 25% surcharge on accounts that are outside of the Town limits. The project planning area is not within the Town limits and users would be subject to the 25% surcharge on wastewater rates.

Assuming the 126 new connections pay the minimum service fees, based on using less than 4,000 gallons of water per month, the Town of Bernalillo would receive approximately $3,500 per month in additional revenue upon project completion.

ii. Annual O&M Costs

The annual O&M costs of the proposed project are primarily estimated based on a general cost of pipeline maintenance, energy required to operate the lift stations, and the costs of maintaining the short-lived assets such as pumps and motors. The limited size of the project, when compared to the existing Town of Bernalillo system, indicate that the additional O&M costs are minimal in relation to the overall system.

The 2014 O&M budget for the Town of Bernalillo wastewater department is approximately $778,000. The proposed project is estimated by multiplying the 20 year present worth of $418,965 by the 20 year capital recovery factor of 0.054306 to increase the annual O&M costs by approximately $22,750, or approximately 3.5%. This expense will be more than offset by the expected increase in revenue from the new customers. The O&M Projections spreadsheet is located in Appendix E

iii. Debt Repayments

The Town of Bernalillo Wastewater Department has a current annual budget (2014) of approximately $778,000. A detailed budget breakdown for the fiscal year that ended on June 30, 2013 is included in Appendix D of this report.

The Town of Bernalillo provided information indicating the Town currently has three separate debt obligations tied to its public utilities. The debts are summarized in Table 13. More detailed information about the debts, including the reserve requirements, were not provided to SMA at the time of this report.

Table 13: Town of Bernalillo Utilities Debt Summary

Debt Issue Date	Principal	Annual Debt Service	Debt Retirement Date
2005	$ 2,938,111	$ 361,000	2015
2006	$ 3,280,329	$ 256,750	2027
2007	$ 8,815,000	$ 654,000	2028

The proposed project would require approximately $7.234 million to complete. For the purpose of this report it is assumed that the project would be funded by a combination loan financing and partial payment from municipal reserves. This report considers a loan for 90% of the project cost, or approximately $6.51 million in debt financing. A 20-year loan term for $6.51 million at an estimated interest rate of 3%[3] the annual debt service would be approximately $435,000.

iv. Reserves

- Debt Service Reserve – The debt reserve requirements for this project are conservatively estimated to be equal to 1 annual payment, or approximately $435,000. If this fund is to be established over the course of 1 year the Town of Bernalillo would be required to deposit approximately $36,000 per month for the first year of the loan.

- Short-Lived Asset Reserve - The proposed project short lived assets are shown in Table 14. The establishment of a reserve account for these assets would require an estimated $12,650 per month to be set aside for replacement and repair costs.

Table 14: Short Lived Assets

Short-Lived Asset	Expected Useful Life (years)	Estimated Replacement Cost (Current $)	Annual Reserve Required (Current $)
Pumps (6)	10	$ 46,500	$ 4,650
Pump Controls (2)	10	$ 20,000	$ 2,000
Pump Motors (6)	10	$ 60,000	$ 6,000
Totals		$ 126,500	$ 12,650

[3] 2014 NMFA Clean Water State Revolving Loan Fund Guidelines

7. CONCLUSIONS AND RECOMMENDATIONS

The residents of the project planning area are at risk of negative health consequences from the continued reliance on individual on-site wastewater treatment and disposal systems. The proposed project provides an opportunity for these residents to eliminate these health risks by connecting to a centralized wastewater collection and treatment system. The system would be operated and managed by professional staff that are properly trained and regulated by various agencies to ensure that the system is operated in a safe and effective manner.

The proposed project will need to gain acceptance among residents within the project planning area, and secure funding in order to be realized, but these are minor obstacles when compared to the long-term benefits to the residents of the area, and the environment. The design process is estimated to take 6 to 12 months. Once the design is completed construction can begin and the new collection system can be expected to be operational within 12 months of the start of construction.

This report considers the project to be a single project, but the area can easily be divided into smaller sections with construction being phased over a longer period to minimize the impact to the area and distribute the amount of funding needed over a longer time period. The possibilities of project phasing should be addressed during the design phase of the project with input from all of the project stake-holders and the project engineer based on the funding available.

It is the County's view that while a wastewater system will require participation from all active County properties in the Bosque plan area and that this will also require the closure and elimination of septic systems, this process will not require that all Bosque area residents connect to the Town water system and will not require residents to discontinue using a well for their water supply. The current levels of toxicity in the Bosque area soil, even with the approval, construction, and operation of a wastewater system, will take some time to resolve. It is important that Bosque residents are aware of this and that they have the Town water system option available to them to secure a safe water supply should they choose.

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APPENDIX A

Exhibits

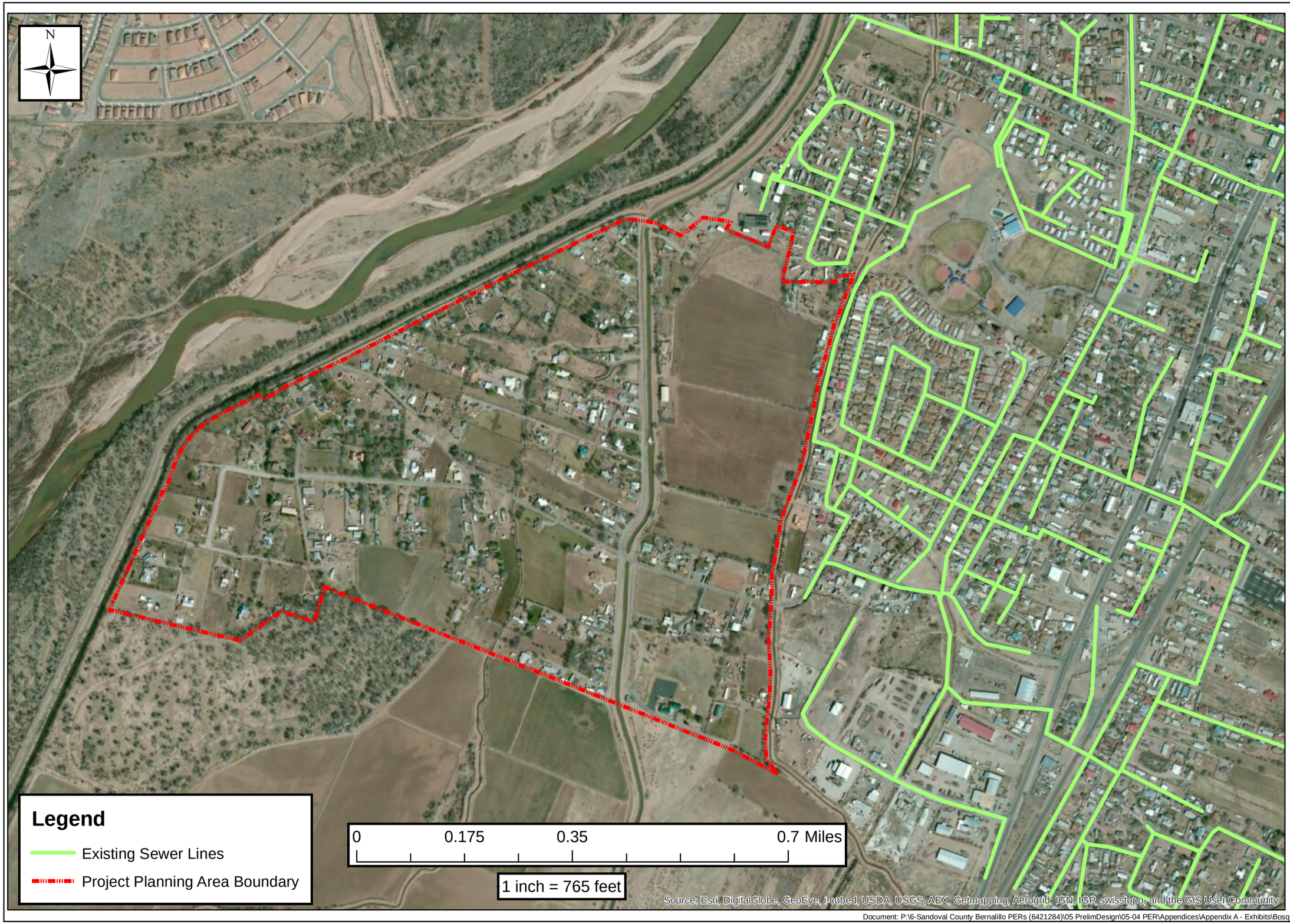

Exhibit 1

Location Map with Existing Sewerage
Bosque Loop PER
Sandoval County, New Mexico

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N

0 0.125 0.25 0.5 Miles

1 inch = 667 feet

Legend

Project Planning Area Boundary

MUSYM, taxclname

- 10 Sandy, mixed, mesic Typic Torrifluvents
- 11 Sandy, mixed, mesic Typic Torrifluvents
- 20 Coarse-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 22 Coarse-loamy over sandy or sandy-skeletal, mixed, calcareous, mesic Typic Torrifluvents
- 25 Coarse-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 27 Coarse-loamy over sandy or sandy-skeletal, mixed, calcareous, mesic Typic Torrifluvents
- 29 Sandy, mixed, mesic Typic Torrifluvents
- 418 Fine-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 421 Coarse-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 423 Coarse-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 426 Coarse-loamy over sandy or sandy-skeletal, mixed, calcareous, mesic Typic Torrifluvents
- 428 Coarse-loamy over sandy or sandy-skeletal, mixed, calcareous, mesic Typic Torrifluvents
- 431 Sandy, mixed, mesic Typic Torrifluvents
- 433 Coarse-loamy, mixed, calcareous, mesic Typic Ustifluvents
- 437 Coarse-loamy, mixed, calcareous, mesic Typic Ustifluvents
- 51 Fine, mixed, calcareous, mesic Typic Ustifluvents
- 823 Coarse-loamy, mixed, calcareous, mesic Typic Torrifluvents
- 850 <Null>
- Bosque UPC Parcels

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Document: P:\6-Sandoval County Bernalillo PERs (6421284)\CAD\GIS\BosqueLoopSoils.mxd BosqueLoopSoils

Exhibit 2

NRCS Soils Map
Bosque Loop PER
Sandoval County, New Mexico

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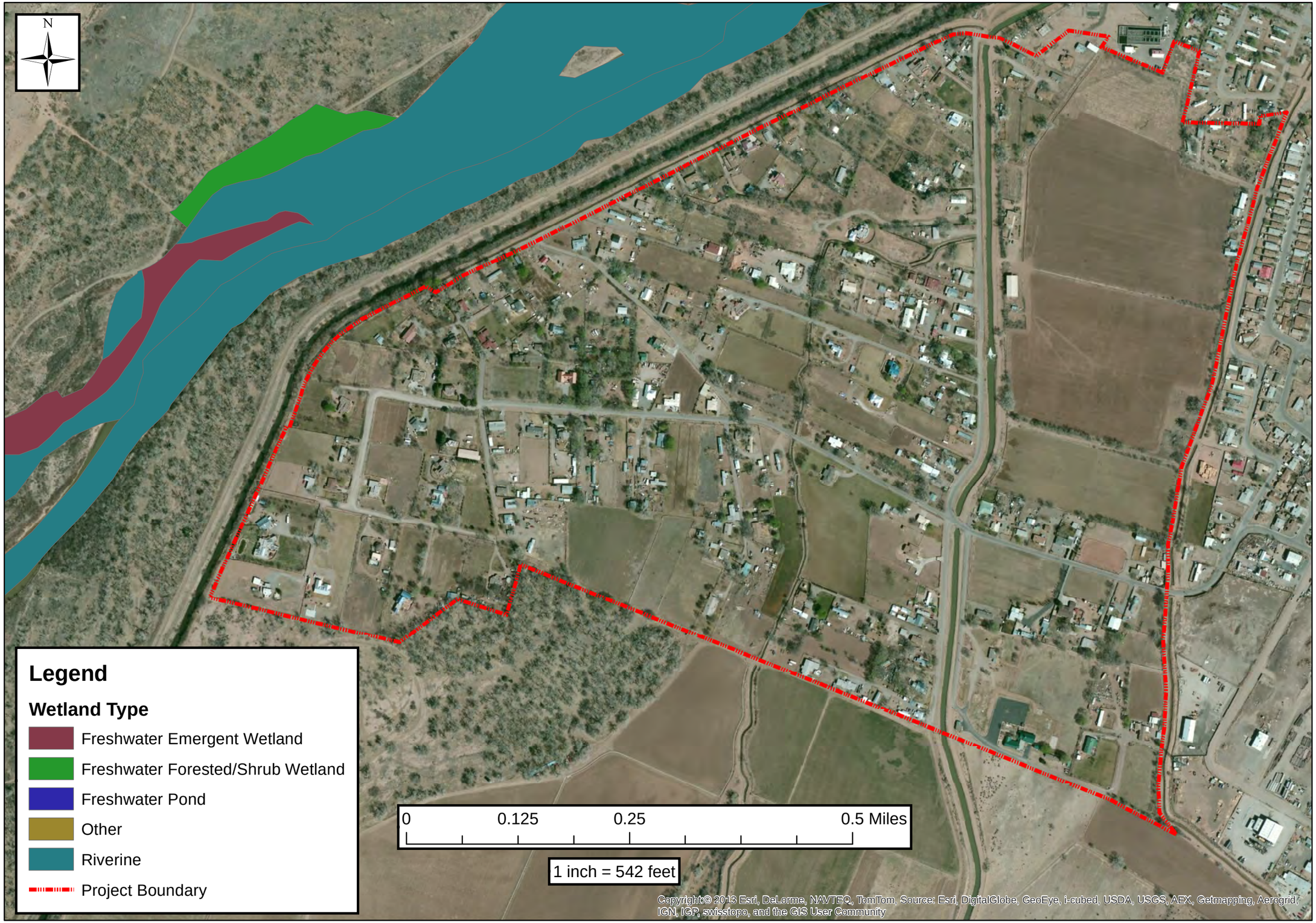

Document: P:\6-Sandoval County Bernalillo PERs (6421284)\CAD\GIS\Bosque Loop Wetlands Mapper.mxd Bosque Loop Wetlands Mapper

Exhibit 3

Wetlands Map
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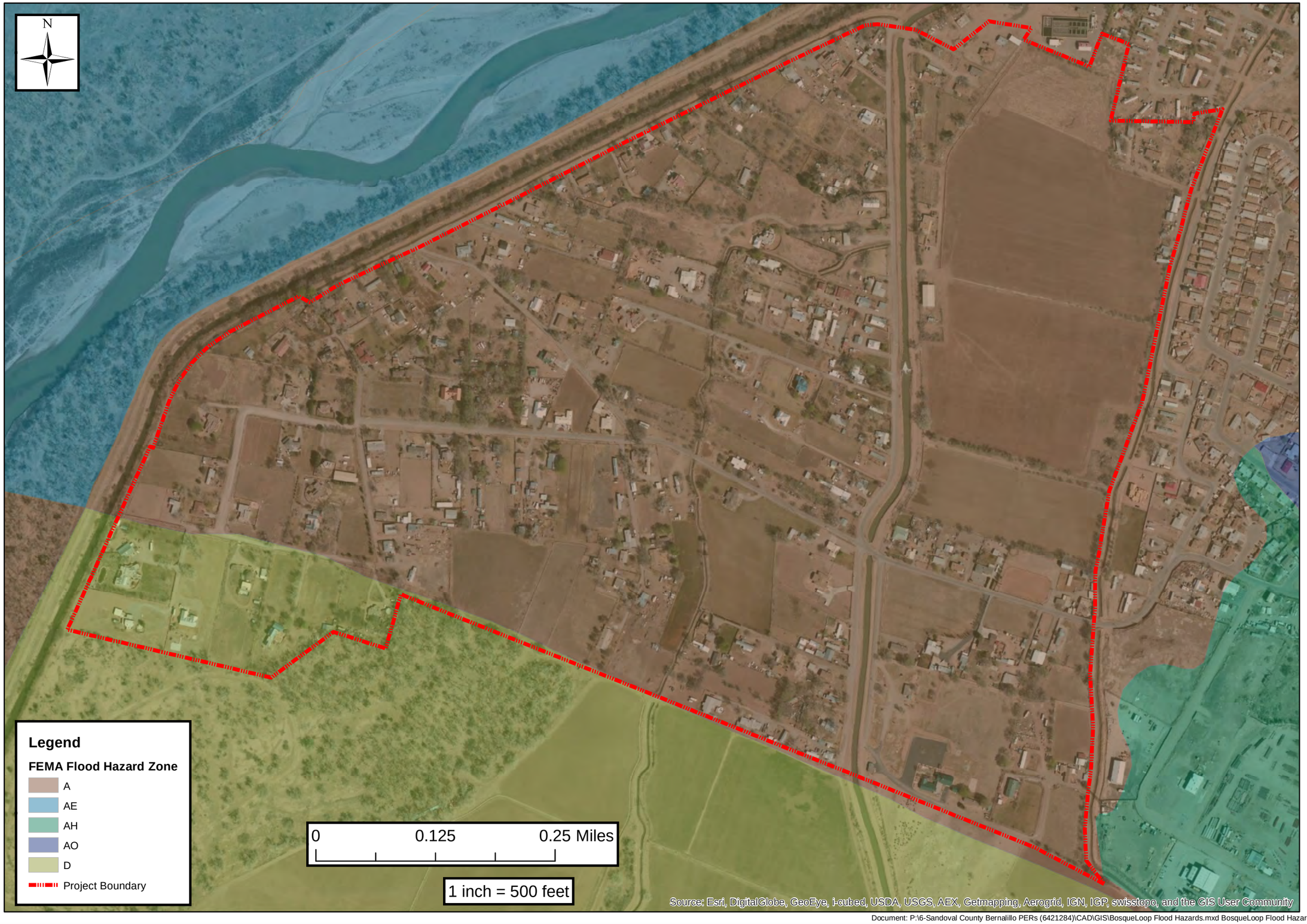

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Exhibit 4

FEMA Flood Hazard Areas
Bosque Loop PER
Sandoval County, New Mexico

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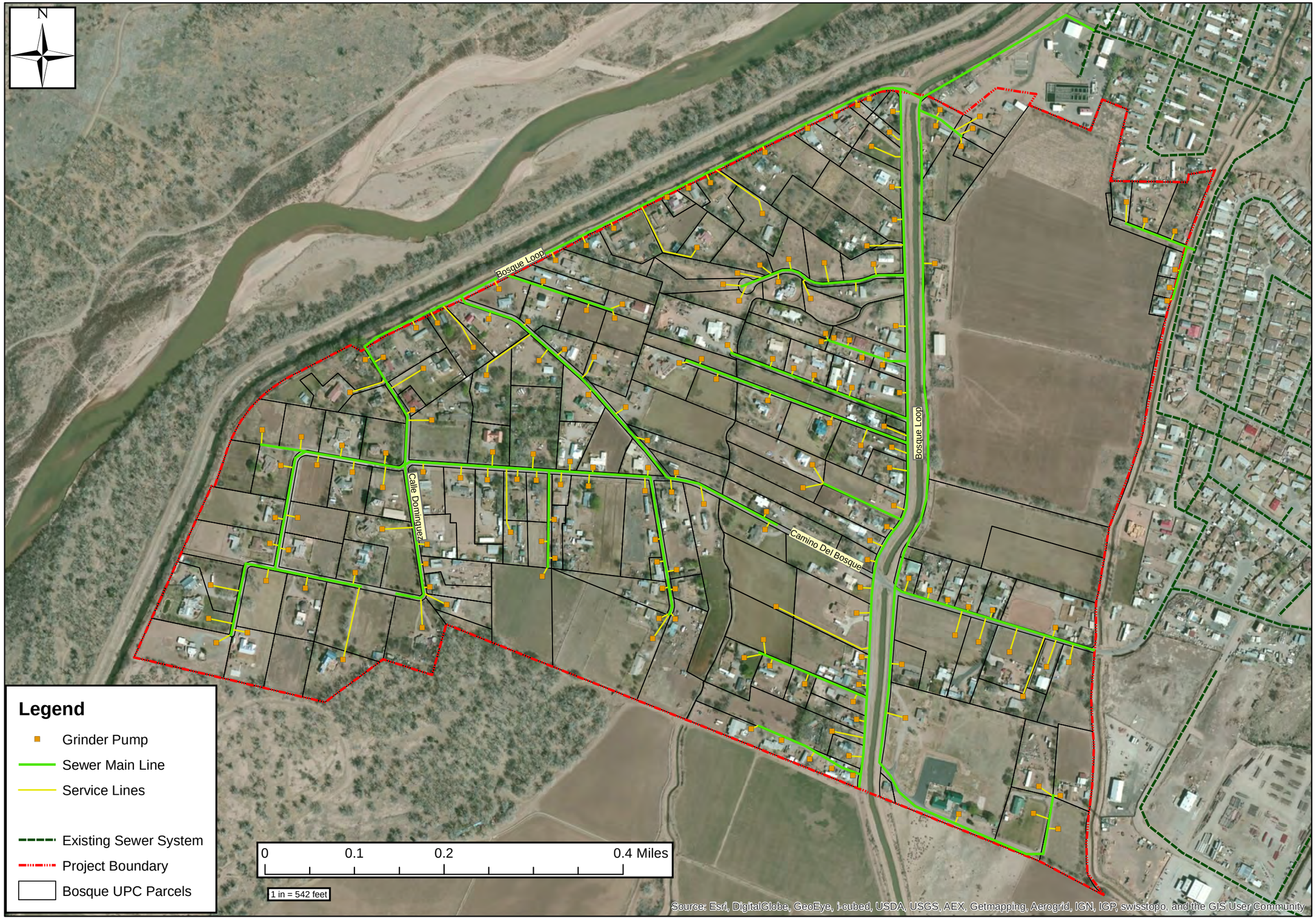

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Exhibit 5

Pressure Sewer Conceptual Plan
Sandoval County Bernalillo PER
Bernalillo, New Mexico

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Exhibit 6

Gravity Sewer Conceptual Layout
Bosque Loop PER
Sandoval County, New Mexico

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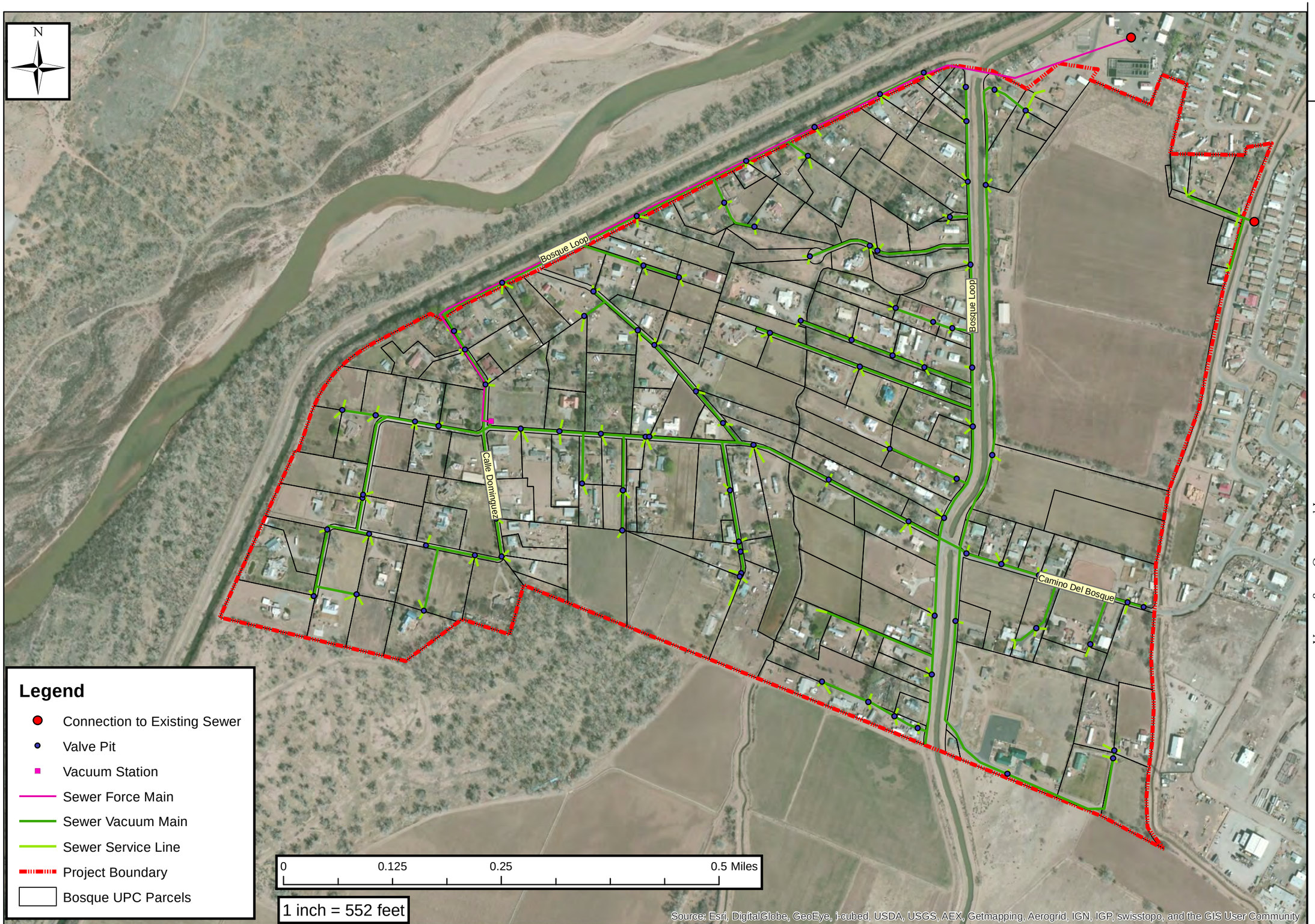
Exhibit 7



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Vacuum Sewer Conceptual Layout
Bosque Loop PER
Sandoval County, New Mexico

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APPENDIX B

Environmental Resources Present

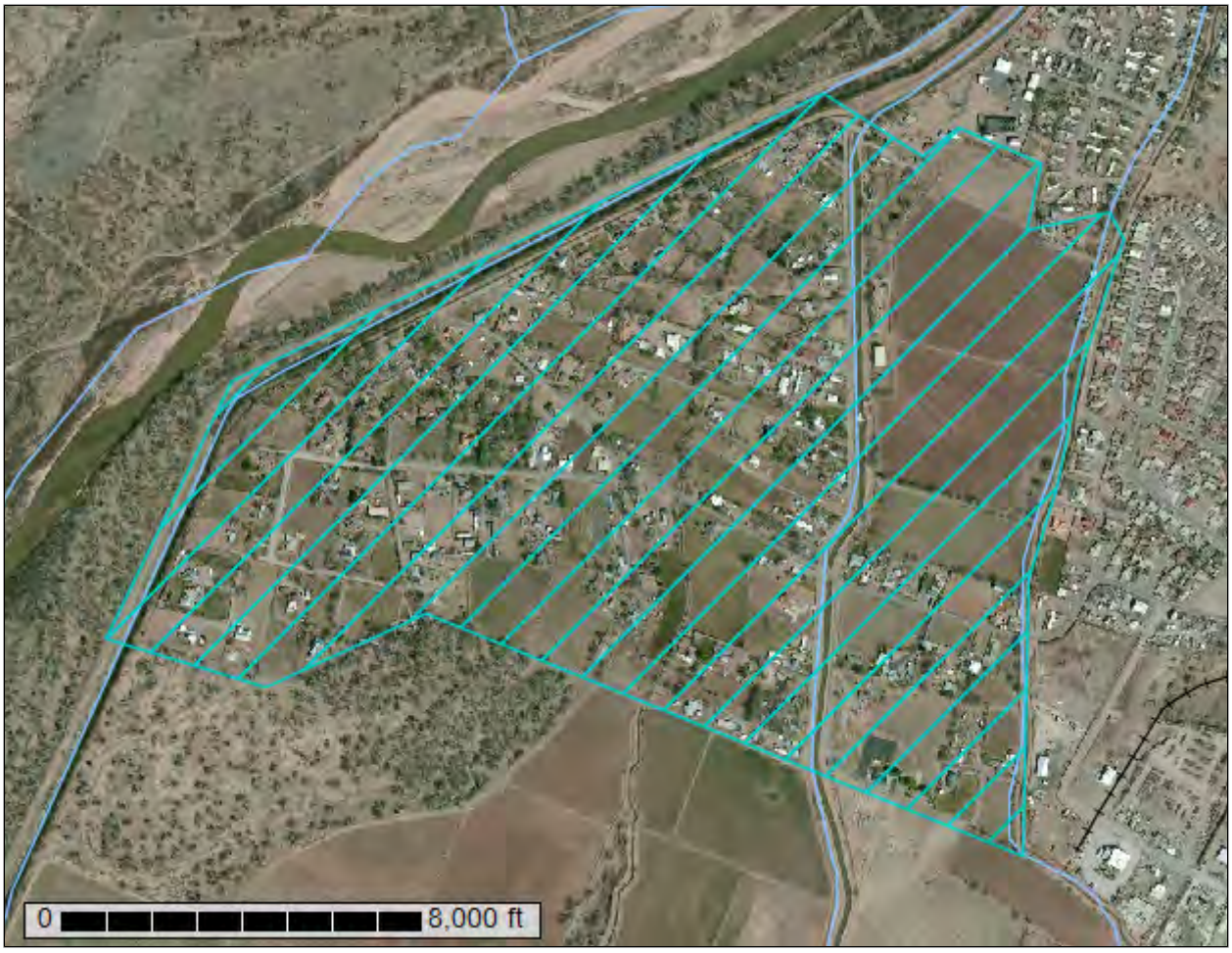
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties

Bosque Loop Project Planning Area



January 27, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

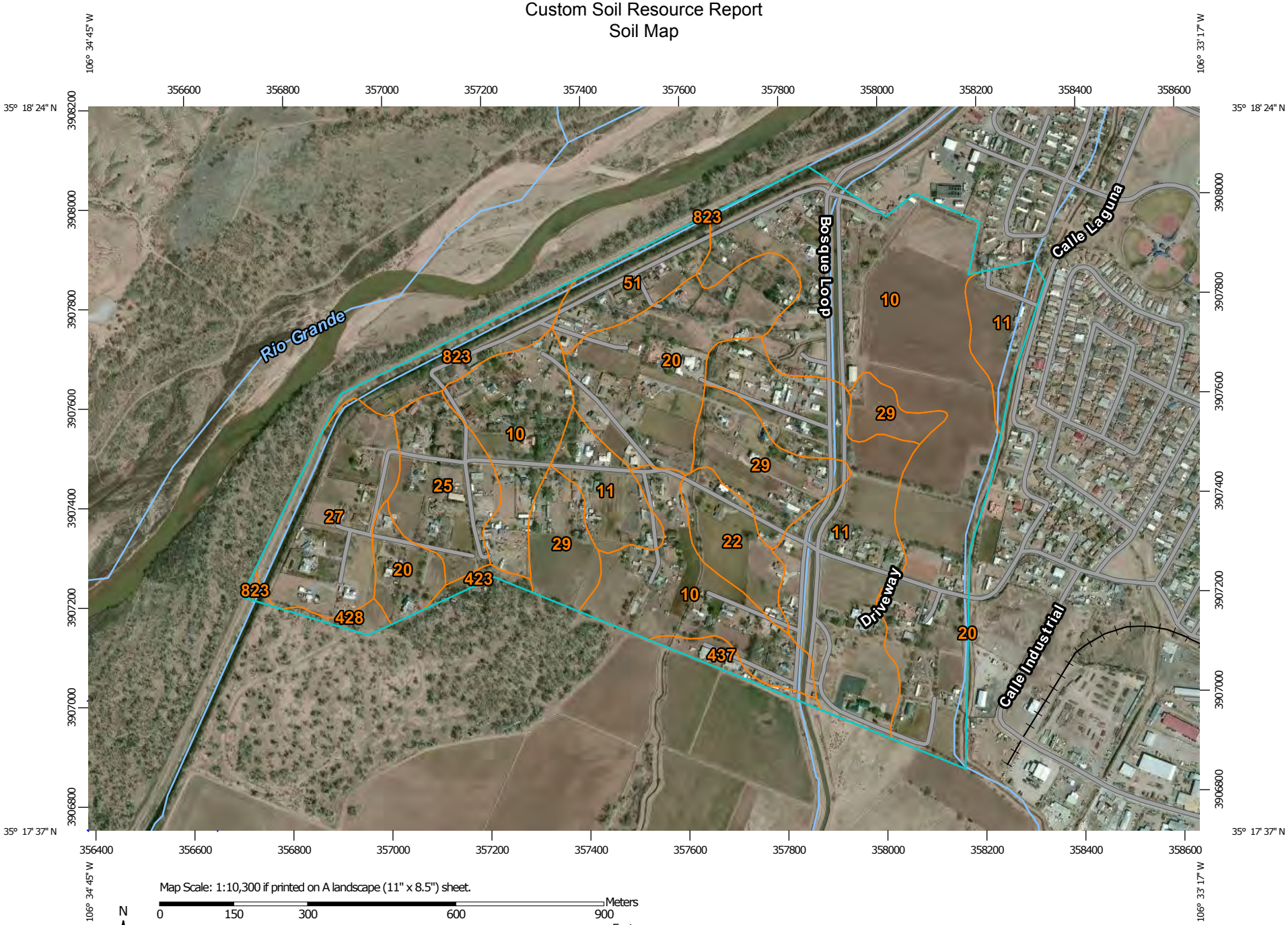
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties
Survey Area Data: Version 8, Dec 27, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 23, 2011—May 4, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties (NM656)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
10	Trail silty clay loam, 0 to 1 percent slopes	105.4	38.3%
11	Trail fine sandy loam, 0 to 1 percent slopes	50.8	18.5%
20	Gilco clay loam, 0 to 1 percent slopes	30.5	11.1%
22	Aga silty clay loam, 0 to 1 percent slopes	8.3	3.0%
25	Gilco loam, 0 to 1 percent slopes	14.2	5.2%
27	Aga loam, 0 to 1 percent slopes	19.7	7.2%
29	Trail loamy sand, 0 to 1 percent slopes	23.0	8.4%
51	Sparham clay loam, 0 to 1 percent slopes	9.3	3.4%
423	Gilco loam, 1 to 4 percent slopes	1.3	0.5%
428	Aga loam, moderately saline, sodic, 1 to 3 percent slopes	1.4	0.5%
437	Peralta loam, moderately saline, sodic, 1 to 3 percent slopes	2.4	0.9%
823	Gilco loam, 1 to 4 percent slopes, unprotected	9.0	3.3%
Totals for Area of Interest		**275.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called

noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties

10—Trail silty clay loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Trail and similar soils: 85 percent

Description of Trail

Setting

Landform: Alluvial fans, flood plains, channels, valley-floor remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Eolian deposits over stream alluvium derived from sandstone

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 6 inches: Silty clay loam
6 to 30 inches: Stratified loamy sand to sandy loam
30 to 45 inches: Sand
45 to 60 inches: Loamy fine sand

11—Trail fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 56 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Trail and similar soils: 85 percent
Minor components: 3 percent

Description of Trail

Setting

Landform: Alluvial fans, flood plains, channels, valley-floor remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Eolian deposits over stream alluvium derived from sandstone

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 9 inches: Fine sandy loam
9 to 36 inches: Stratified loamy sand to sandy loam
36 to 60 inches: Sandy loam

Minor Components

Riverwash

Percent of map unit: 3 percent
Landform: Channels, streams

20—Gilco clay loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Gilco and similar soils: 85 percent

Description of Gilco

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 10.4 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 6 inches: Clay loam
6 to 60 inches: Stratified fine sandy loam to loam

22—Aga silty clay loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Aga and similar soils: 85 percent

Description of Aga

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 8 inches: Silty clay loam
8 to 24 inches: Loam
24 to 60 inches: Sand

25—Gilco loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Gilco and similar soils: 85 percent

Description of Gilco

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 4 inches: Loam
4 to 34 inches: Stratified silt loam to loam to fine sandy loam
34 to 60 inches: Stratified fine sandy loam to loam

27—Aga loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Aga and similar soils: 85 percent

Description of Aga

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 10 inches: Loam
10 to 23 inches: Loam
23 to 43 inches: Sand
43 to 60 inches: Sand

29—Trail loamy sand, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Trail and similar soils: 85 percent

Description of Trail

Setting

Landform: Alluvial fans, flood plains, channels, valley-floor remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Eolian deposits derived from sandstone over stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Deep Sand (R042XA054NM)

Typical profile

0 to 6 inches: Loamy sand
6 to 60 inches: Stratified loamy sand to sandy loam

51—Sparham clay loam, 0 to 1 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 16 inches
Mean annual air temperature: 53 to 56 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Sparham and similar soils: 85 percent
Minor components: 5 percent

Description of Sparham

Setting

Landform: Alluvial fans, flood plains, valley sides
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stream alluvium derived from sandstone and shale

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 4 to 10 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to moderately saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: High (about 11.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: Clayey (R036XB002NM)

Typical profile

0 to 6 inches: Clay loam
6 to 20 inches: Clay loam
20 to 36 inches: Clay
36 to 60 inches: Clay loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Channels, streams
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

423—Gilco loam, 1 to 4 percent slopes

Map Unit Setting

Elevation: 5,300 to 5,500 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Gilco and similar soils: 85 percent

Description of Gilco

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 9.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B

Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 8 inches: Loam
8 to 14 inches: Loam
14 to 60 inches: Stratified fine sandy loam to silt loam

428—Aga loam, moderately saline, sodic, 1 to 3 percent slopes

Map Unit Setting

Elevation: 5,200 to 5,500 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Aga, moderately saline, sodic, and similar soils: 85 percent

Description of Aga, Moderately Saline, Sodic

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Low (about 5.5 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Salty Bottomland (R042XA055NM)

Typical profile

0 to 4 inches: Loam
4 to 16 inches: Very fine sandy loam
16 to 22 inches: Loam

22 to 60 inches: Stratified sand to loamy sand

437—Peralta loam, moderately saline, sodic, 1 to 3 percent slopes

Map Unit Setting

Elevation: 5,000 to 5,400 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Peralta, moderately saline, sodic, and similar soils: 85 percent

Description of Peralta, Moderately Saline, Sodic

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: Salty Bottomland (R042XA055NM)

Typical profile

0 to 4 inches: Loam
4 to 60 inches: Stratified loam to fine sandy loam to loamy sand

823—Gilco loam, 1 to 4 percent slopes, unprotected

Map Unit Setting

Elevation: 5,000 to 5,500 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 140 to 160 days

Map Unit Composition

Gilco, unprotected, and similar soils: 85 percent

Description of Gilco, Unprotected

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 9.6 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Bottomland (R042XA057NM)

Typical profile

0 to 8 inches: Loam
8 to 60 inches: Stratified fine sandy loam to loam to silt loam

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Sanitary Facilities

This folder contains a collection of tabular reports that present soil interpretations related to sanitary facilities. The reports (tables) include all selected map units and components for each map unit, limiting features and interpretive ratings. Sanitary facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Sewage Disposal (Bosque Loop Area)

This table shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Sewage Disposal (Bosque Loop Area)

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Sewage Disposal–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
10—Trail silty clay loam, 0 to 1 percent slopes					
Trail	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		
11—Trail fine sandy loam, 0 to 1 percent slopes					
Trail	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.40	Seepage	1.00
Riverwash	3	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
20—Gilco clay loam, 0 to 1 percent slopes					
Gilco	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.47	Seepage	0.53
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		
22—Aga silty clay loam, 0 to 1 percent slopes					
Aga	85	Somewhat limited		Very limited	
		Depth to saturated zone	0.94	Seepage	1.00
		Slow water movement	0.47	Flooding	0.40
		Flooding	0.40	Depth to saturated zone	0.40

Sewage Disposal–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
25—Gilco loam, 0 to 1 percent slopes					
Gilco	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.47	Seepage	0.53
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		
27—Aga loam, 0 to 1 percent slopes					
Aga	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.94	Flooding	0.40
		Flooding	0.40	Depth to saturated zone	0.40
29—Trail loamy sand, 0 to 1 percent slopes					
Trail	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		
51—Sparham clay loam, 0 to 1 percent slopes					
Sparham	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00		
Riverwash	5	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Depth to saturated zone	0.40
		Depth to saturated zone	0.94		
423—Gilco loam, 1 to 4 percent slopes					
Gilco	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.47	Seepage	0.53
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40	Slope	0.08

Sewage Disposal–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
428—Aga loam, moderately saline, sodic, 1 to 3 percent slopes					
Aga, moderately saline, sodic	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		
437—Peralta loam, moderately saline, sodic, 1 to 3 percent slopes					
Peralta, moderately saline, sodic	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.47	Seepage	0.53
		Flooding	0.40	Flooding	0.40
823—Gilco loam, 1 to 4 percent slopes, unprotected					
Gilco, unprotected	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.47	Seepage	0.53
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40	Slope	0.08

Soil Information for Forestland

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Prime and other Important Farmlands (Bosque Loop Area)

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands (Bosque Loop Area)

Prime and other Important Farmlands–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties		
Map Symbol	**Map Unit Name**	**Farmland Classification**
10	Trail silty clay loam, 0 to 1 percent slopes	Not prime farmland
11	Trail fine sandy loam, 0 to 1 percent slopes	Not prime farmland
20	Gilco clay loam, 0 to 1 percent slopes	Prime farmland if irrigated
22	Aga silty clay loam, 0 to 1 percent slopes	Prime farmland if irrigated
25	Gilco loam, 0 to 1 percent slopes	Prime farmland if irrigated
27	Aga loam, 0 to 1 percent slopes	Prime farmland if irrigated
29	Trail loamy sand, 0 to 1 percent slopes	Not prime farmland
51	Sparham clay loam, 0 to 1 percent slopes	Not prime farmland
423	Gilco loam, 1 to 4 percent slopes	Not prime farmland
428	Aga loam, moderately saline, sodic, 1 to 3 percent slopes	Not prime farmland
437	Peralta loam, moderately saline, sodic, 1 to 3 percent slopes	Not prime farmland
823	Gilco loam, 1 to 4 percent slopes, unprotected	Not prime farmland

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forestland Productivity (Bosque Loop Area)

This table can help forestland owners or managers plan the use of soils for wood crops. It shows the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate,

quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National forestry manual.

Report—Forestland Productivity (Bosque Loop Area)

Forestland Productivity–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties				
Map unit symbol and soil name	**Potential productivity**			**Trees to manage**
	Common trees	**Site Index**	**Volume of wood fiber**	
			Cu ft/ac	
10—Trail silty clay loam, 0 to 1 percent slopes				
Trail	—	—	—	—
11—Trail fine sandy loam, 0 to 1 percent slopes				
Trail	—	—	—	—
20—Gilco clay loam, 0 to 1 percent slopes				
Gilco	—	—	—	—
22—Aga silty clay loam, 0 to 1 percent slopes				
Aga	—	—	—	—
25—Gilco loam, 0 to 1 percent slopes				
Gilco	—	—	—	—
27—Aga loam, 0 to 1 percent slopes				
Aga	—	—	—	—
29—Trail loamy sand, 0 to 1 percent slopes				
Trail	—	—	—	—
51—Sparham clay loam, 0 to 1 percent slopes				
Sparham	—	—	—	—

Forestland Productivity–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties				
Map unit symbol and soil name	**Potential productivity**			**Trees to manage**
	Common trees	**Site Index**	**Volume of wood fiber**	
			Cu ft/ac	
423—Gilco loam, 1 to 4 percent slopes				
Gilco	—	—	—	—
428—Aga loam, moderately saline, sodic, 1 to 3 percent slopes				
Aga, moderately saline, sodic	—	—	—	—
437—Peralta loam, moderately saline, sodic, 1 to 3 percent slopes				
Peralta, moderately saline, sodic	—	—	—	—
823—Gilco loam, 1 to 4 percent slopes, unprotected				
Gilco, unprotected	Rio grande cottonwood	—	—	—

Soil Information for Rangeland

Ecological Site Assessment

Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

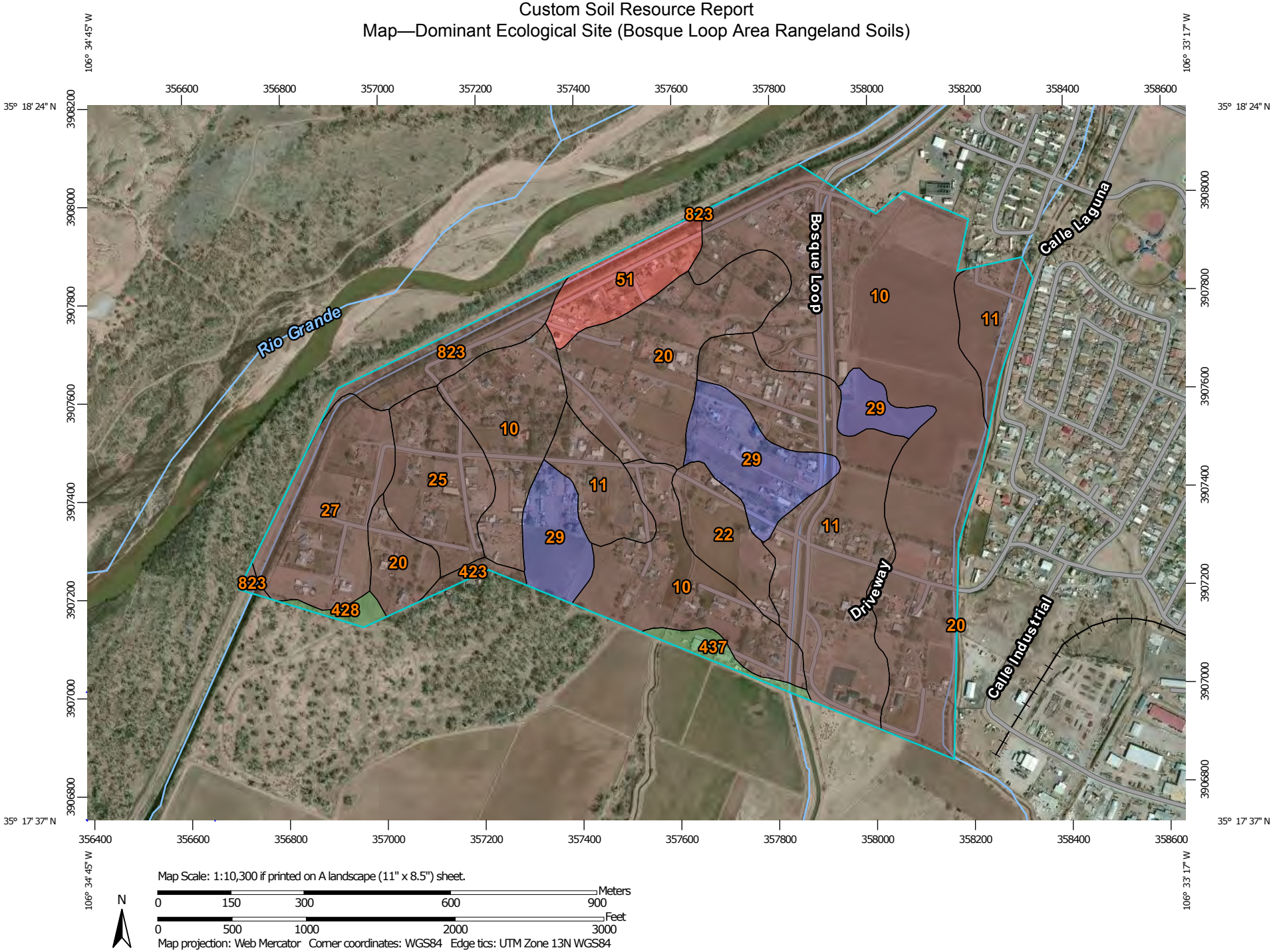
All Ecological Sites — Rangeland (Bosque Loop Area Rangeland Soils)

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.

Custom Soil Resource Report
Map—Dominant Ecological Site (Bosque Loop Area Rangeland Soils)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- R036XB002NM
- R042XA054NM
- R042XA055NM
- R042XA057NM
- Not rated or not available

Soil Rating Lines
- R036XB002NM
- R042XA054NM
- R042XA055NM
- R042XA057NM
- Not rated or not available

Soil Rating Points
- R036XB002NM
- R042XA054NM
- R042XA055NM
- R042XA057NM
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties
Survey Area Data: Version 8, Dec 27, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 23, 2011—May 4, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Ecological Sites by Map Unit Component (Bosque Loop Area Rangeland Soils)

Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties					
Map unit symbol	**Map unit name**	**Component name (percent)**	**Ecological site**	**Acres in AOI**	**Percent of AOI**
10	Trail silty clay loam, 0 to 1 percent slopes	Trail (85%)	R042XA057NM — Bottomland	105.4	38.3%
11	Trail fine sandy loam, 0 to 1 percent slopes	Trail (85%)	R042XA057NM — Bottomland	50.8	18.5%
		Riverwash (3%)			
20	Gilco clay loam, 0 to 1 percent slopes	Gilco (85%)	R042XA057NM — Bottomland	30.5	11.1%
22	Aga silty clay loam, 0 to 1 percent slopes	Aga (85%)	R042XA057NM — Bottomland	8.3	3.0%
25	Gilco loam, 0 to 1 percent slopes	Gilco (85%)	R042XA057NM — Bottomland	14.2	5.2%
27	Aga loam, 0 to 1 percent slopes	Aga (85%)	R042XA057NM — Bottomland	19.7	7.2%
29	Trail loamy sand, 0 to 1 percent slopes	Trail (85%)	R042XA054NM — Deep Sand	23.0	8.4%
51	Sparham clay loam, 0 to 1 percent slopes	Sparham (85%)	R036XB002NM — Clayey	9.3	3.4%
		Riverwash (5%)			
423	Gilco loam, 1 to 4 percent slopes	Gilco (85%)	R042XA057NM — Bottomland	1.3	0.5%
428	Aga loam, moderately saline, sodic, 1 to 3 percent slopes	Aga, moderately saline, sodic (85%)	R042XA055NM — Salty Bottomland	1.4	0.5%
437	Peralta loam, moderately saline, sodic, 1 to 3 percent slopes	Peralta, moderately saline, sodic (85%)	R042XA055NM — Salty Bottomland	2.4	0.9%
823	Gilco loam, 1 to 4 percent slopes, unprotected	Gilco, unprotected (85%)	R042XA057NM — Bottomland	9.0	3.3%
Totals for Area of Interest				**275.2**	**100.0%**

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition (Bosque Loop Area)

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports vegetation, the ecological site, plant association, or habitat type; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

An *ecological site, plant association, or habitat type* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site, plant association, or habitat type is typified by an association of species that differs from that of other ecological sites, plant associations, or habitat types in the kind and/or proportion of species or in total production. Descriptions of ecological sites are

provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS). Descriptions of plant associations or habitat types are available from local U.S. Forest Service offices.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Characteristic vegetation (the grasses, forbs, shrubs, and understory trees that make up most of the potential natural plant community on each soil) is listed by common name. Under *rangeland composition and forest understory*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The percentages are by dry weight for rangeland. Percentages for forest understory are by either dry weight or canopy cover. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National range and pasture handbook.

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties								
Map unit symbol and soil name	**Ecological Site, Plant Association, or Habitat Type**	**Total dry-weight production**			**Characteristic rangeland or forest understory vegetation**	**Composition**		
		Favorable year	**Normal year**	**Unfavorable year**		**Rangeland**	**Forest understory**	**Forest understory**
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	*Pct cover*
10—Trail silty clay loam, 0 to 1 percent slopes								
Trail	Bottomland (R042XA057NM)	4,000	2,400	800	alkali sacaton	35	—	—
					giant sacaton	10		
					fourwing saltbush	5		
					other perennial grasses			
					other perennial forbs			
11—Trail fine sandy loam, 0 to 1 percent slopes								
Trail	Bottomland (R042XA057NM)	4,000	2,400	800	alkali sacaton	35	—	—
					giant sacaton	10		
					fourwing saltbush	5		
					other perennial grasses			
					other perennial forbs			
20—Gilco clay loam, 0 to 1 percent slopes								
Gilco	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties								
Map unit symbol and soil name	**Ecological Site, Plant Association, or Habitat Type**	**Total dry-weight production**			**Characteristic rangeland or forest understory vegetation**	**Composition**		
		Favorable year	**Normal year**	**Unfavorable year**		**Rangeland**	**Forest understory**	**Forest understory**
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	*Pct cover*
22—Aga silty clay loam, 0 to 1 percent slopes								
Aga	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			
25—Gilco loam, 0 to 1 percent slopes								
Gilco	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			
27—Aga loam, 0 to 1 percent slopes								
Aga	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties								
Map unit symbol and soil name	**Ecological Site, Plant Association, or Habitat Type**	**Total dry-weight production**			**Characteristic rangeland or forest understory vegetation**	**Composition**		
		Favorable year	**Normal year**	**Unfavorable year**		**Rangeland**	**Forest understory**	**Forest understory**
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	*Pct cover*
29—Trail loamy sand, 0 to 1 percent slopes								
Trail	Deep Sand (R042XA054NM)	4,000	2,400	800	Indian ricegrass	20	—	—
					black grama	15		
					dropseed	10		
					other shrubs			
					other perennial forbs			
					sand sagebrush			
51—Sparham clay loam, 0 to 1 percent slopes								
Sparham	Clayey (R036XB002NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			
423—Gilco loam, 1 to 4 percent slopes								
Gilco	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition–Sandoval County Area, New Mexico, Parts of Los Alamos, Sandoval, and Rio Arriba Counties								
Map unit symbol and soil name	**Ecological Site, Plant Association, or Habitat Type**	**Total dry-weight production**			**Characteristic rangeland or forest understory vegetation**	**Composition**		
		Favorable year	**Normal year**	**Unfavorable year**		**Rangeland**	**Forest understory**	**Forest understory**
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct dry wt*	*Pct dry wt*	*Pct cover*
428—Aga loam, moderately saline, sodic, 1 to 3 percent slopes								
Aga, moderately saline, sodic	Salty Bottomland (R042XA055NM)	2,000	1,500	1,000	alkali sacaton	30	—	—
					fourwing saltbush	15		
					giant sacaton	10		
					inland saltgrass	5		
					greasewood			
					other perennial forbs			
437—Peralta loam, moderately saline, sodic, 1 to 3 percent slopes								
Peralta, moderately saline, sodic	Salty Bottomland (R042XA055NM)	900	600	300	alkali sacaton	30	—	—
					fourwing saltbush	15		
					giant sacaton	10		
					inland saltgrass	5		
					greasewood			
					other perennial forbs			
823—Gilco loam, 1 to 4 percent slopes, unprotected								
Gilco, unprotected	Bottomland (R042XA057NM)	4,000	2,400	800	giant sacaton	45	—	—
					alkali sacaton	15		
					fourwing saltbush	10		
					other perennial grasses	5		
					other perennial forbs			

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NMCRIS DCA
Core Spatial Application

CTA Training and Documentation
Web Mapping Application Help

Editor PLSS Quad IDs Quad Names Geog Names Surveys Sites Structs Bldgs Objects Linear Props Dists Print

Results
- Surveys (1)
  - Archaeological Surveys (1)
    - 127136

Map Contents
- nmcris
  - Archaeological Sites
  - Architectural Resources
  - Properties and Districts
  - NMCRIS Activities
  - Other Layers
- Background Reference Layers
  - Counties
  - Towns
  - DRGs
- NM 2009 NAIP Color Aerial Photos
- Satellite Imagery
  - ESRI_Imagery_World_2D

From: Ensey, Michelle, DCA
To: Richard Madrid
Subject: RE: Map of Bosque Loop area
Date: Friday, November 08, 2013 2:30:19 PM
Attachments: NMCRIS printout.pdf

Richard,

I checked our database and an archaeological survey has been conducted on two ifferent parcels. One survey of 126 acres occurred in two different parcels of land in the western part of the project area. This survey identified an archaeological site; however, our database does not contain any information about the site nor is the location of the site plotted in our GIS database. I have attached a print out so you can see what I am describing. The survey areas are the linear or irregularly shaped white areas. There are archaeological sites surrounding the project area, but I have disappeared their locations.

The survey was conducted by the Bureau of Indian Affairs (BIA) in August 2013 in advance of a wildland urban interface project whereby they thin vegetation either by mechanical means, by use of hand tools, or prescribed fire. BIA has not submitted a report to this office yet, and I'm not sure why they didn't plot the location of the archaeological site. If you are wondering if an archaeological survey should be conducted, I recommend yes. However, a survey wouldn't need to be done of the three parcels that were just surveyed but the archaeologist would need to contact BIA and see if he/she can get information on the site that they was documented.

Michelle

Michelle M. Ensey
Archaeologist
NM State Historic Preservation Office
407 Galisteo Street, Ste. 236
Santa Fe, NM 87501
(505) 827-4064
www.nmhistoricpreservation.org

From: Richard Madrid [mailto:richard.madrid@soudermiller.com]
Sent: Friday, November 08, 2013 11:09 AM
To: Ensey, Michelle, DCA
Subject: Map of Bosque Loop area

Michelle,
Thank you in advance for checking on this for me. Here is the map of the area. It is located south of the Town of Bernalillo, east of the Rio Grande, West of I-25 and north of the Sandia Pueblo. The area consists of 250 acres total. If there is anything you need let me know.

Rick Madrid
Construction Administration and Observation
Souder Miller And Associates

1201 Parkway Dr.
Santa Fe, New Mexico 87507
(505) 473-9211 or (505) 299-0942
Cell: (505) 903-9530

APPENDIX C

Population and Growth Data

2030 Socioeconomic Forecasts By Data Analysis Subzones For the MRCOG Region

Methodology and Forecast Summary

Population, Housing and Employment Variables

Bernalillo, Sandoval, Torrance, Valencia and Southern Santa Fe Counties of Central New Mexico

July 2007

Mid-Region Council of Governments of New Mexico

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Mid Region Council of Governments of New Mexico

Lawrence Rael, Executive Director

Principal Author:
Kendra Watkins, Senior Data Analyst

Contributing Staff:
Dave Abrams, Demographer
Shohreh Day, GIS/Systems Analyst
Carol Earp, GIS Analyst/Cartographer
Carol Foster, Research Analyst
Jack Lord, Transportation Program Manager
Mark Sprick, Transportation Planning Manager
Loretta Tollefson, Special Projects Manager

Other Key Contributors:
Bureau of Business and Economic Research, University of New Mexico
New Mexico Department of Workforce Solutions
MRCOG Transportation Program Technical Group
MRCOG Transportation Coordinating Committee
Planning Technologies, LLC
Regional Economic Models, Inc.
Municipal officials and planners
Tribal Governors and planners
Land Grant Presidents and planners

Table of Contents

FIGURES

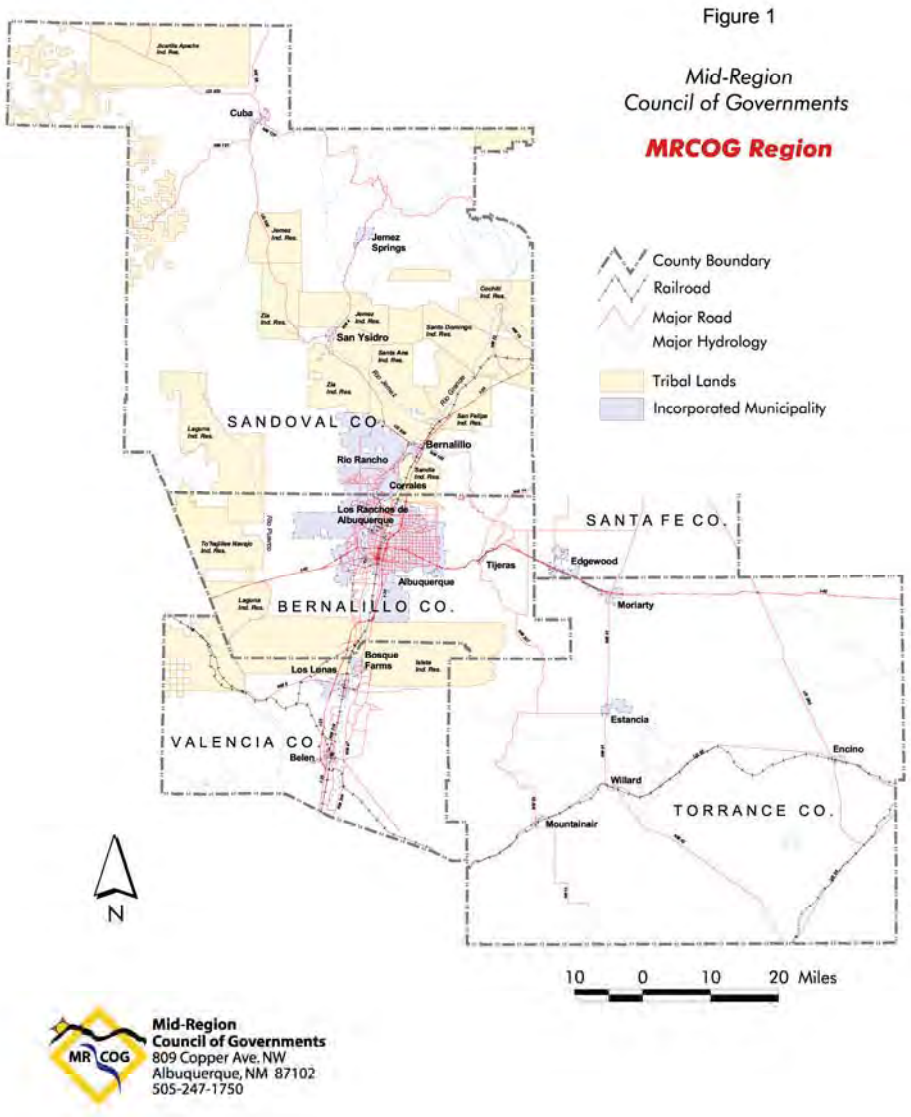
TABLES

APPENDICIES

Executive Summary

Introduction

MRCOG develops socioeconomic forecasts every 4 years in fulfillment of the federal requirements as a Metropolitan Planning Organization (MPO). While the MPO guides the transportation planning processes for the metropolitan area, socioeconomic forecasts encompass the entire four county area of Bernalillo, Sandoval, Torrance and Valencia, as well as southern Santa Fe County (Figure 1). The primary function of MRCOG's socioeconomic forecasts is to serve as inputs to MRCOG's travel demand model in order to plan for future transportation needs. However, they serve a variety of other purposes including informing local plans and land use policy and evaluating transportation project alternatives. MRCOG's socioeconomic forecasts are also available to member governments and planning agencies for their own use.



Forecast data include population, housing, and employment. These variables are forecast to small geographic units called Data Analysis Subzones (DASZs). Forecasts are created for DASZs because these are the geographic units required by the travel demand model. The socioeconomic forecasts developed by MRCOG are unique in that they are the only small area forecasts in the region. The socioeconomic forecast by DASZ for 2030 is included in Appendix C and the DASZ Maps are shown in Appendix D.

The 2030 Socioeconomic Forecast presented in this document was based on the approved roadway network in the 2030 Metropolitan Transportation Plan (MTP). This served to close the feedback loop between MRCOG's transportation and land use forecasts. That is, throughout the MTP process socioeconomic forecast data have been fed to the travel demand model, and as the transportation networks evolved, they were fed back into the land use model. This connection ensures that land use and transportation forecasts inform one another.

A base year estimate for 2004 was used to create the 2030 Socioeconomic Forecast. Therefore, the forecast period represents the 26 years between 2004 and 2030. This report summarizes the methodology used to create the socioeconomic forecast datasets by DASZ and presents key results. It functions as a stand alone document and an appendix to the 2030 MTP.

Data Collection

The 2030 Socioeconomic Forecast draws on a variety of different resources. The U.S. Census Bureau was the basis for the 2000 demographics upon which the 2004 base year estimate was built. The 2004 update also relied heavily on locally maintained land use inventories, rural addressing files, aerial photography, and New Mexico Department of Workforce Solutions employer address files. Ongoing development was closely tracked through review of development and subdivision cases, major zoning changes, and tracking local news in various newspapers in the region. New development was also tracked through the collection and geocoding (spatial address matching) of residential and commercial building permits from individual permit issuing entities in the region.

County-level population forecasts are generously provided to MRCOG by the Bureau of Business and Economic Research (BBER) at the University of New Mexico. BBER establishes the population "control totals" by county, and then MRCOG allocates that population to create smaller area forecasts.

Employment forecasts are also based on forecasts from BBER. However since BBER's employment forecasts are developed for the near term only, MRCOG supplements them to create a 2030 employment forecast. Other data sources include the New Mexico Department of Workforce Solutions, Bureau of Labor Statistics, and the Regional Economic Models, Inc. Policy Insight Model.

Substantial data collection occurred at face-to-face meetings, as MRCOG staff gathered with municipal planners, government officials, school facilities planners and major developers in the region. Others meetings were held with planning and consulting firms in order to gain clarification or assistance regarding specific projects. The public was also consulted at several public outreach meetings. Maps were created and edited according to participant responses regarding current land use, the location of current or near term development, and what might be reasonably expected to occur in the long term. These participants were depended on not only for their initial input, but also for feedback as draft forecasts were developed. A list of contributing individuals and agencies is shown in Appendix A.

Data collection also included a review of existing planning policy documents, which are collected by MRCOG and set the parameters for allowable future land uses and densities. Approved comprehensive plans, sector development plans, and area plans were incorporated into the forecast, as well as other policy documents including adopted resolutions from the City of Albuquerque's Planned Growth Strategy.

Information from approved master plans including phasing, land use, and anticipated population and jobs were also considered in the forecasting process.

Land Use Allocation Model

MRCOG operates a Land Use Allocation Model (LAM) designed specifically for the Middle Rio Grande Region by Planning Technologies in 1996. LAM serves as the engine for the socioeconomic forecast.

The major advantage of basing population and employment forecasts on land use is that it ensures that projected densities are reasonable and appropriate. This avoids the potential for forecasting excessive development among small areas, and makes certain that forecast development is consistent with current and proposed zoning and land use plans for a given area. It should be understood however that the location of forecast land uses may be approximate in many cases, and the 2030 forecast should not be used as a forecasting tool for specific parcels of land.

In short, LAM automates the process of distributing new housing and employment throughout the region based on three main user defined inputs:

1. 'Existing' development – This input layer consists of an inventory of current land use that serves as the base for future allocation.
2. 'Known' development – This input layer informs the model regarding what is currently being built, has been permitted, or can reasonably be expected to build in the near term future.
3. 'Planned' development – This input layer is allocated last, and contains information regarding land use policy, long term master plans and projects, and expectations from the planning and development communities about the region's future.

There are several rules imbedded in the model that have been created based on past trends and planner and developer input that guide it in determining site suitability. Some of the factors considered in the allocation process include existing and planned activity centers, places of interest, the planned roadway network, and water service areas.

In 2003, MRCOG had identified a number of improvements to enhance the functions of LAM and contracted with Planning Technologies, LLC to implement them. LAM's allocation process was refined, special modules such as school enrollment and forecasts on pueblo land were modified to work more efficiently, and the model was recalibrated with more recent data about what drives development. By the time draft socioeconomic forecasts were being produced for the 2030 MTP, a significant enhancement process was completed and LAM was a stronger forecasting tool. The 2030 Socioeconomic Forecast is the first to be developed using the new and improved LAM.

Population Forecast

The region is forecast to grow by just over 327,000 people, or 41%, by 2030. The region is expected to climb to well over a million people over the next 26 years, reaching a total population of 1,129,472.

Figure 2: Historical and Forecast Population, MRCOG Region

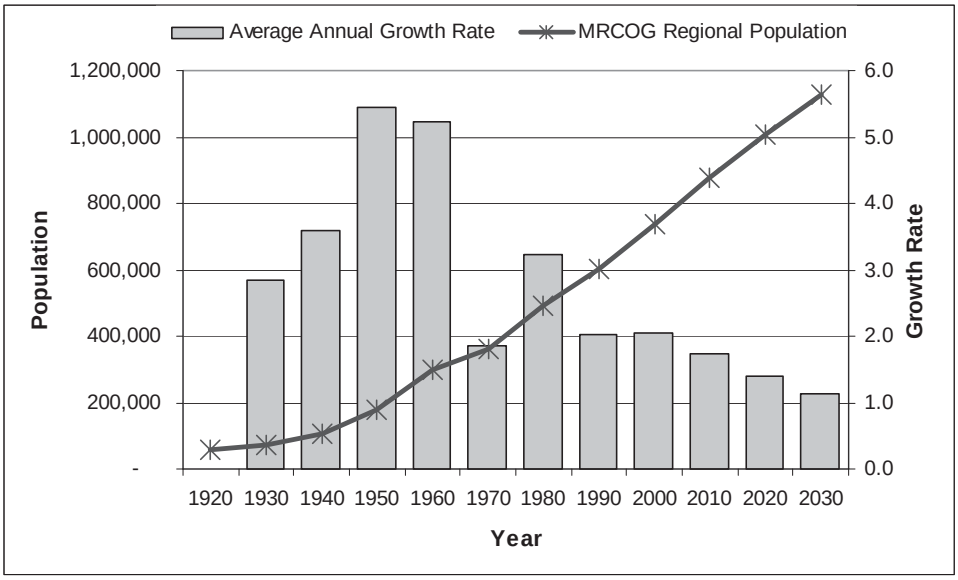


Figure 2 shows how the growth rate of the region compares to total population growth. It illustrates the growth spurt that occurred post World War II when the pace of growth averaged over 5% annually and the population climbed quickly. Looking into the future, it shows that although the population is expected to continue growing steadily in numbers, the pace of growth is projected to slow over time.

The counties that comprise the MRCOG region will experience growth to varying extents. Table 1 shows the estimated population in 2004, and the forecast population for 2030, by county.

Table 1: Forecast Population Change by County

	2004	2030	# Growth	% Change
Bernalillo	602,413	759,000	156,587	26.0%
Sandoval	102,462	197,182	94,720	92.4%
Torrance	17,695	27,479	9,784	55.3%
Valencia	69,754	128,922	59,168	84.8%
So. Santa Fe	9,786	16,889	7,103	72.6%
MRCOG Region	802,110	1,129,472	327,362	40.8%

Bernalillo County will continue to experience the bulk of population growth, capturing almost half of all new persons. Sandoval County will capture an increasing share with nearly 95,000 new people and a growth of 92% over the forecast period. Valencia County is second only to Sandoval County in terms of pace of growth, growing by 85% and gaining nearly 60,000 new people. Torrance County and Southern Santa Fe County, combined, are forecast to add another 15,000 people to the region.

The following charts show how the regional share of the population by county are projected to change over the forecast period.

Figure 3: Forecast Population Distribution by County

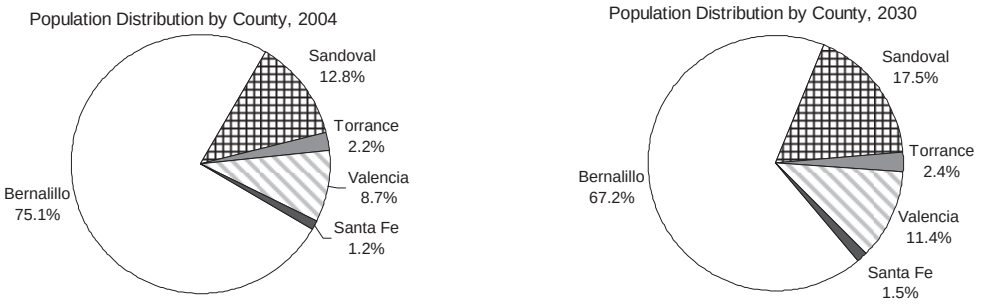
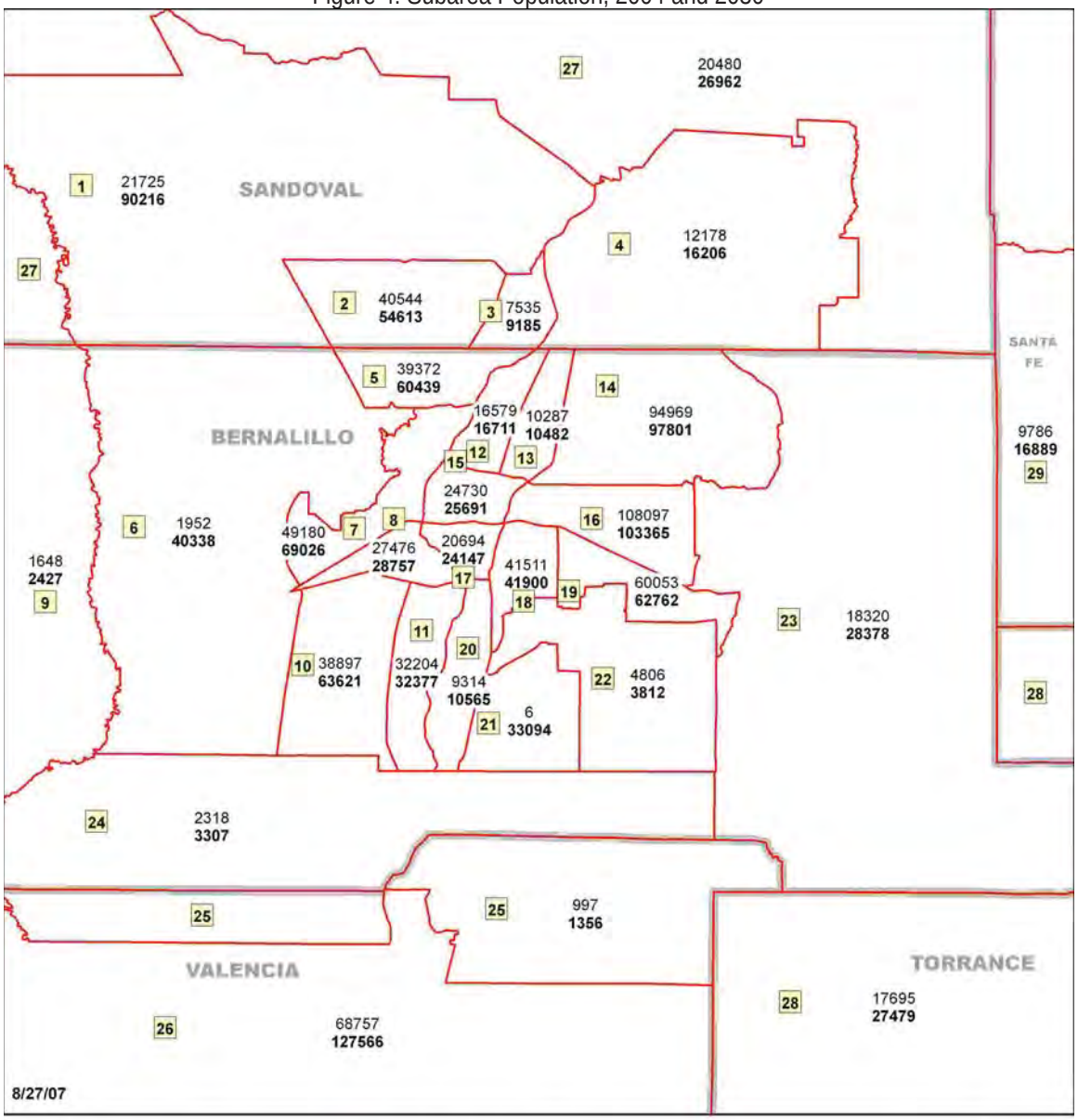


Figure 3 illustrates an increasing shift over the next several years of population to the counties that surround Bernalillo County, most noticeably to Sandoval and Valencia Counties. By 2030 Bernalillo County will still be home to over 67% of the region's population, however, this is down from 75% in 2004.

Subareas have been created as a convenient geography to present data, as they present a more detailed picture of growth than the larger counties, but are not as cumbersome as the 891 DASZ's in the region. Subareas allow us to see general shifts in the region in terms of population growth and loss. Figure 4 shows the 2004 estimate and 2030 forecast for population by subarea.

Figure 4: Subarea Population, 2004 and 2030



Total for MRCOG Region:
2004 = 802,110
2030 = 1,129,472

Subarea Boundary

22 Subarea Number

4420 2004 Population

5500 2030 Forecast Population

Figure XX

2004 Population and 2030 Forecast by Subareas of the MRCOG Region

Mid-Region Council of Governments
809 Copper Ave. NW
Albuquerque, NM 87102
505-247-1750

Subarea boundaries extend to county boundary where full extent of subarea not shown except for Subarea 29 which only includes southern Santa Fe County.

Sources: BBER and MRCOG.

The most rapid growth is forecast for subareas 21 and 6 are due to the anticipated development of Mesa del Sol and Volcano Heights, respectively. General patterns include decreased population densities in the near north and southeast heights of Albuquerque. High growth areas also include the west and far northeast parts of Albuquerque, Rio Rancho, and Los Lunas.

As households become smaller in size, the traditionally dense areas in the region will appear to "thin out" a bit. This doesn't mean that there are fewer homes, but fewer people living in existing homes. And because households are smaller, the region will require more homes than ever to accommodate a growing population. The majority of growth will continue to occur where there is consolidated land available for development outside of Albuquerque's immediate core.

However growth is also vibrant inside of the core as well. A variety of infill projects and loft style developments are being built and will continue to sprout up throughout areas within the urban core, contributing to the diversity of the region's housing stock. Subarea 17, essentially Albuquerque's downtown, is forecast to increase its population by 17% by 2030.

Employment Forecast

The region is anticipated to gain approximately 160,000 jobs since 2004, reaching 560,000 jobs in 2030.

Figure 5: Historical and Forecast Employment, MRCOG Region

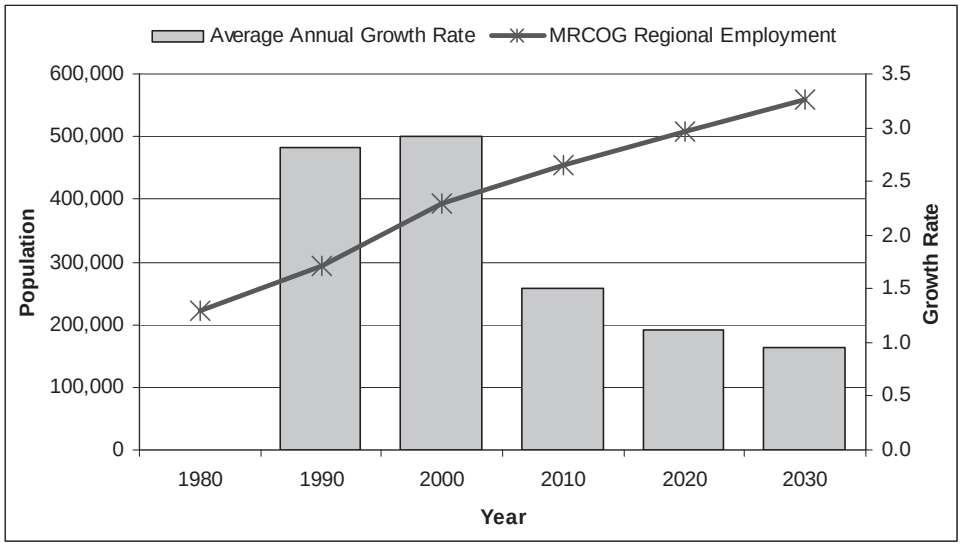


Figure 5 shows that employment growth peaked between 1990 and 2000, averaging a 3% increase per year. Similar to the population forecast, the pace of job growth is expected to slow down, but remain steady.

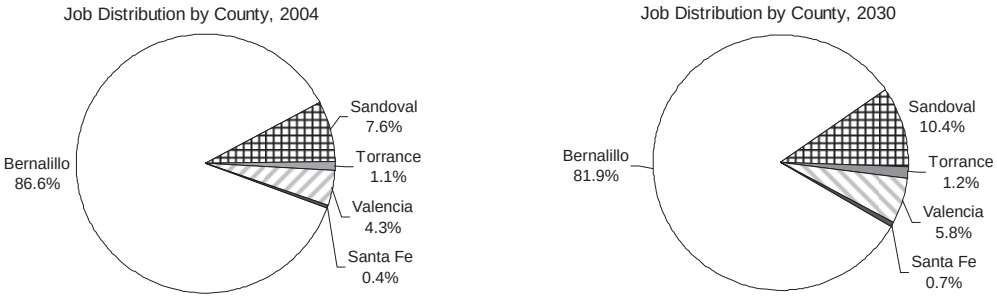
Table 2: Forecast Employment Change by County

	2004	2030	# Growth	% Change
Bernalillo	347,831	458,505	110,674	31.8%
Sandoval	30,361	58,333	27,972	92.1%
Torrance	4,545	6,685	2,140	47.1%
Valencia	17,451	32,541	15,090	86.5%
So. Santa Fe	1,451	3,796	2,345	161.6%
MRCOG Region	401,639	559,860	158,221	39.4%

All counties will add jobs and Bernalillo County will continue to serve as the employment hub of the region, capturing approximately 110,000 of the 160,000 new jobs. In terms of the percent change, however, all counties surrounding Bernalillo will experience faster growth. Southern Santa Fe leads the region in rapid growth, more than doubling the base year in number of jobs. Sandoval County is next, with a percent growth of 92%. Valencia County trails only slightly with an 87% growth in jobs. Torrance County will also grow primarily due to activity in and around Moriarty.

While Bernalillo County will continue to serve as the economic engine for the region, the following pie charts show how the surrounding counties are expected have an increased role in the regional economy.

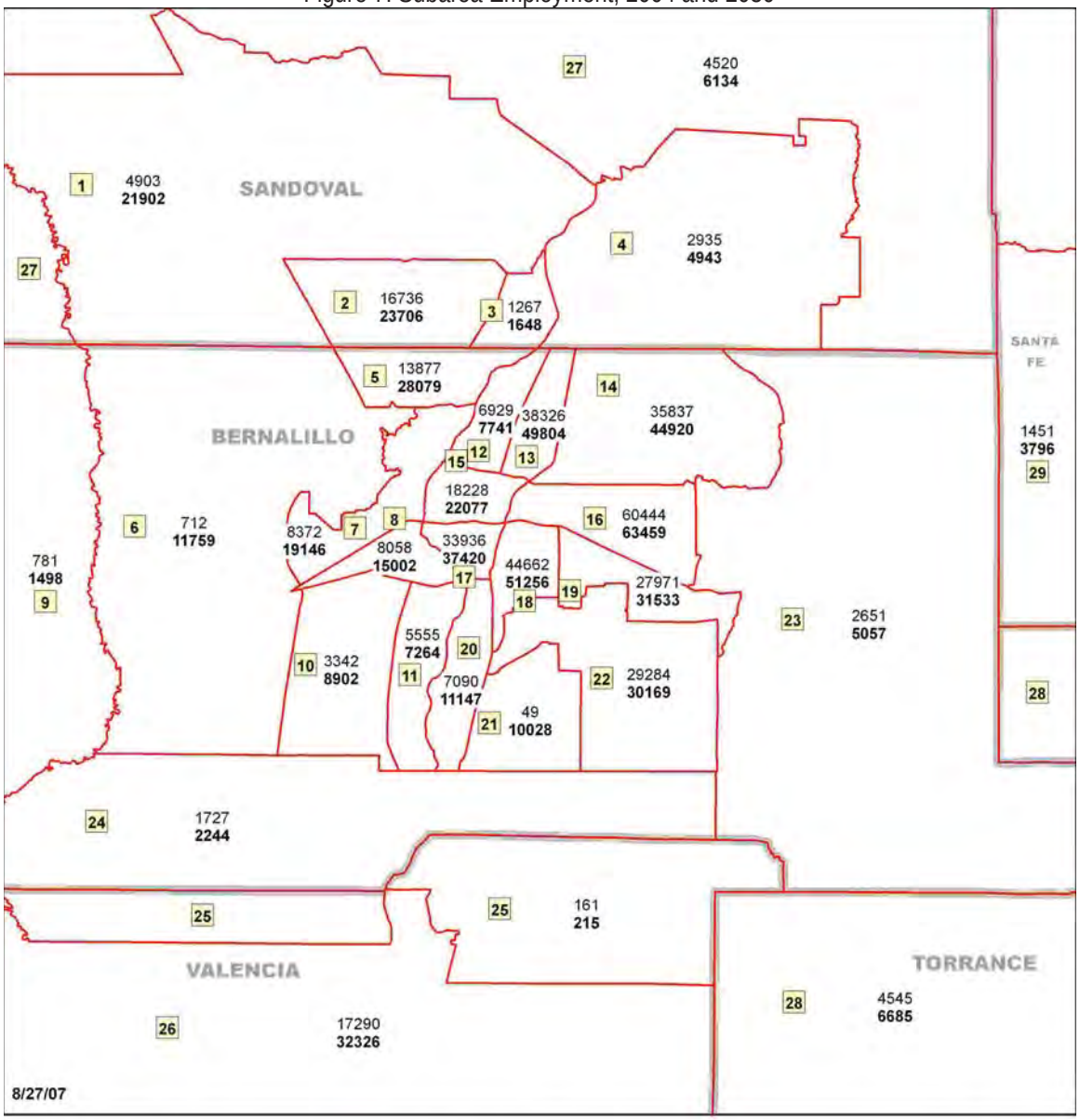
FIGURE 6: Forecast Employment Distribution by County



Bernalillo County is expected to drop in its share of the regional jobs by 5 percentage points, which will be captured primarily by Sandoval and Valencia Counties. Torrance County and Southern Santa Fe County combined will hold about 2% of the regions jobs.

The following look at employment change by subarea adds more detail regarding where growth is anticipated over the forecast period.

Figure 7: Subarea Employment, 2004 and 2030



Total for MRCOG Region:
2004 = 401,639
2030 = 559,860

Subarea Boundary
22 Subarea Number
4420 2004 Employment
5500 2030 Forecast Employment

Figure XX

2004 Total Employment and 2030 Forecast by Subareas of the MRCOG Region

Mid-Region Council of Governments
809 Copper Ave. NW
Albuquerque, NM 87102
505-247-1750

Subarea boundaries extend to county boundary where full extent of subarea not shown except for Subarea 29 which only includes southern Santa Fe County.

Sources: NM Dept. of Workforce Solutions and MRCOG.

Subarea 21 is forecast to experience the fastest growth in jobs due to expected activity at Mesa del Sol. At the time of the forecast several employers had already located or committed to locating within the new community forming in southeast Albuquerque. Another area that is expected to see exponential growth lies west of Paseo del Volcan and north of I-40, due primarily to a rapidly expanding industrial park as well as planned expansion of Eclipse Aviation at Double Eagle II Airport.

Growing employment centers are an important part of the region's economic future, some of which include Rio Rancho's City Center, a new SuperWalmart for Edgewood, and Valencia County's Los Morros Business Park. Educational campuses are expanding to the south and north, along with new medical facilities such as the new Presbyterian Branch in Los Lunas and another planned for Rio Rancho. Meanwhile substantial job growth continues within the urban core and traditionally dense employment corridors, north I-25 in particular, are projected to continue to absorb a high number of new jobs.

Methodology

Overview

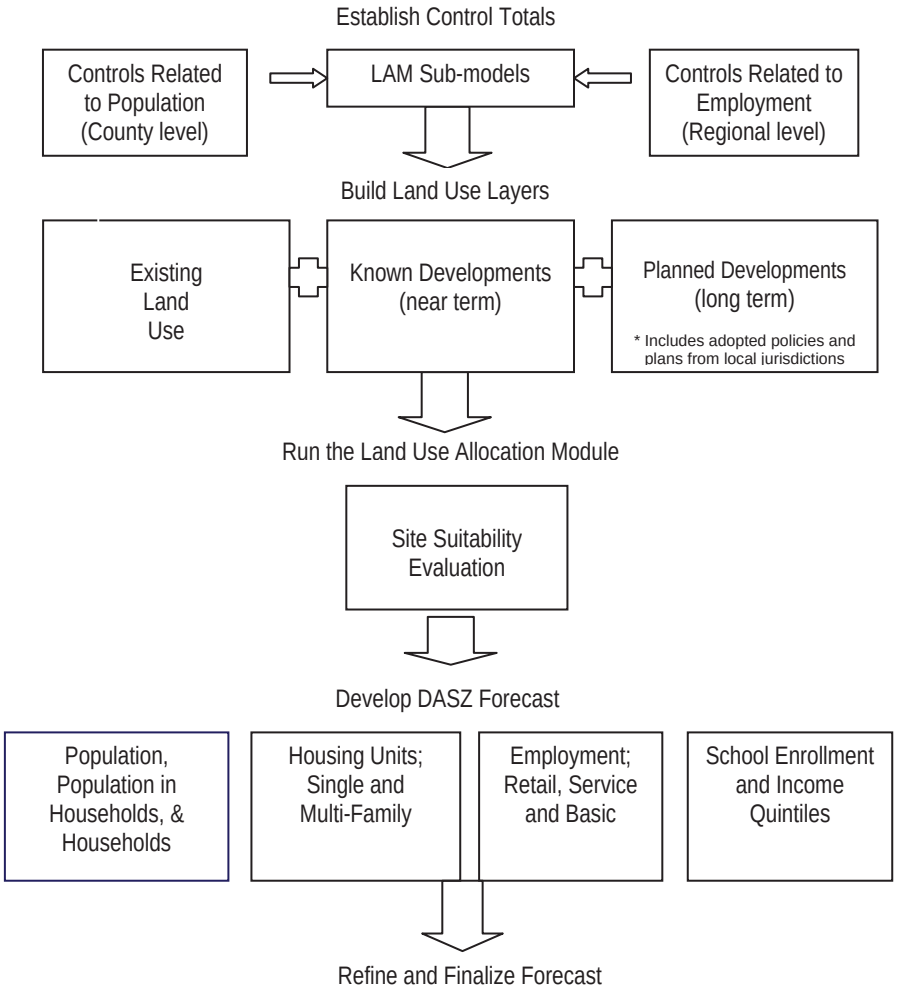
The goal of the socioeconomic forecasting process is to first define where the region is today in terms of population, housing, jobs and land use, and then to determine where current activity, plans, and policies are leading all of these things in the future. This process takes the better part of two years for MRCOG and includes rigorous information gathering, analysis, and input from the public, member governments, and other stakeholders in the region.

The entire process can be summarized into five steps.

1. Establish Control Totals
2. Build Land Use Layers
3. Run the Land Use Allocation Module
4. Develop DASZ Forecast
5. Refine and Finalize Forecast

The following sections describe the steps of the forecasting process in detail. Figure 8 is a visual representation of MRCOG's socioeconomic forecasting process.

Figure 8: MRCOG's Socioeconomic Forecasting Process



MRCOG employs a Land Use Allocation Model (LAM) that is central to the forecasting process. The LAM was developed specifically for MRCOG and is a valuable tool in guiding the determination of what the future of the region may look like by the year 2030. The internal processes within LAM are complex, and this document does not serve as a technical documentation for LAM. However, an overview of LAM is critical to understanding the forecasting methodology.

The following components of LAM are important to understanding the forecasting process:

Sub-Models – LAM is fed a series of linked spreadsheets that serve as inputs to the model. Their function is to tell LAM the regional and county control totals for population, housing, employment and other variables forecast by MRCOG.

Land Use Layers – LAM is also fed a series of geographic shapefiles that are created by MRCOG staff in preparation for the LAM allocation. They tell LAM about existing land use, near term development, and long term development plans. They also contain information about redevelopment, not developable or preserved land, and allowable uses and densities set by planning policy.

Allocation Module – This module distributes housing and employment throughout the region. It pulls from the sub-models in determining how much it can allocate, and the land use layers in determining where it can allocate growth. The allocation is guided by a series of calibrated equations imbedded in the model that were based on observed behaviors of growth in the region.

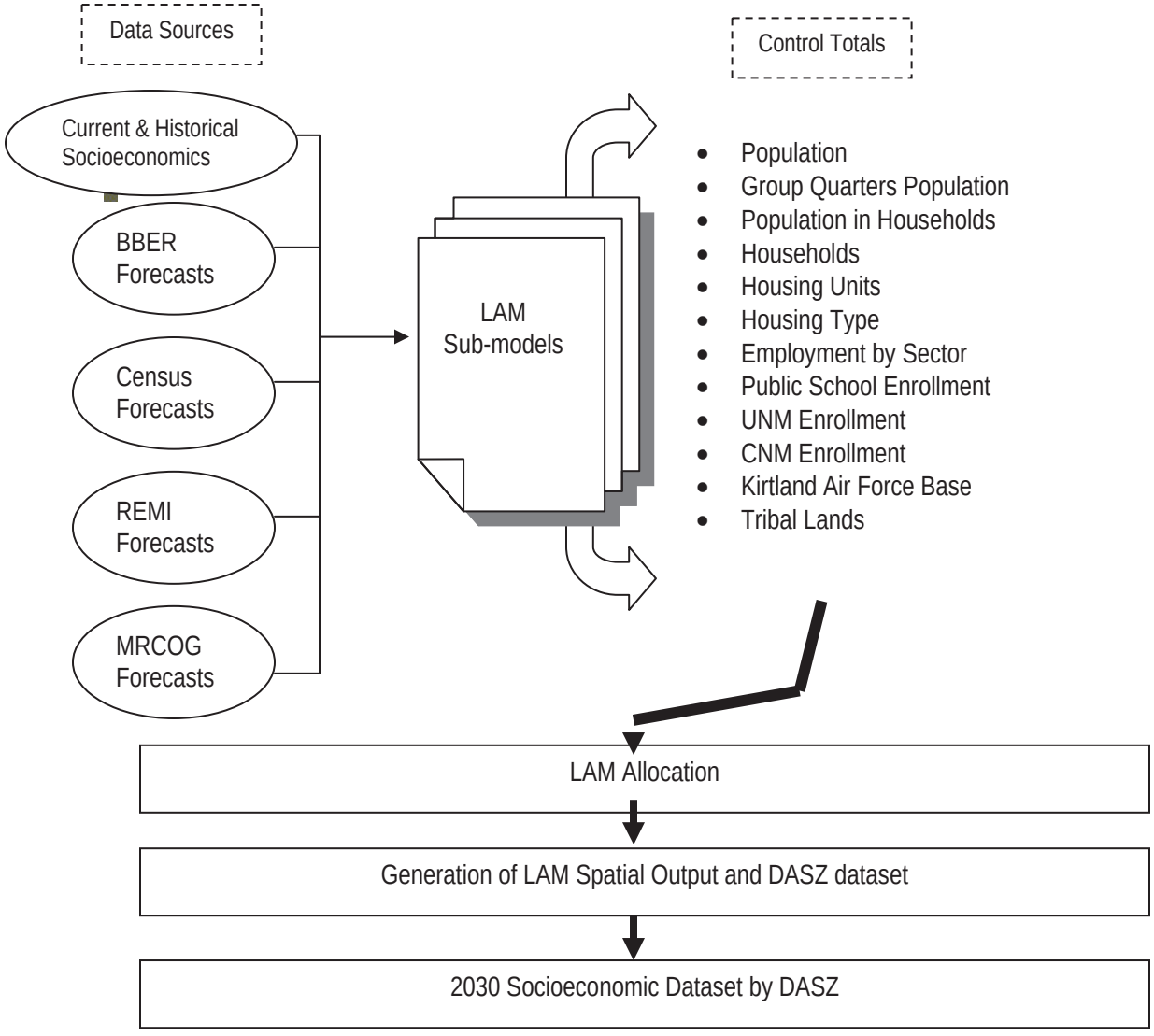
DASZ Module – This module automates the creation of a DASZ output from LAM. It calculates the variables that are derived from LAMs housing and employment allocation, including population, households, and employment by industry, and sums all variables by DASZ. It also inserts values from the sub-models that apply to KAFB and tribal areas into the appropriate DASZs. The DASZ module outputs a DASZ dataset that can be fed directly into MRCOG's travel demand forecasting model.

1. Establish Control Totals

The first step in developing small area socioeconomic forecasts for the region is establishing the control totals. Control totals serve as a target for the region to reach when the small areas are summed. In that sense, they set a ceiling on growth. They are read into LAM through a series of linked spreadsheets called "sub-models" which essentially tell LAM when to stop in the allocation, or distribution, of housing and jobs.

The following figure depicts how the sub-models relate to the overall forecasting process.

Figure 9: Sub-Model Integration within the Land Use Modeling Process



Population

Population control totals are developed by the Bureau of Business and Economic Research (BBER) of the University of New Mexico. BBER's projections are developed using a cohort component method, which is demographic technique for forecasting population. Births, deaths, and migration rates are calculated based

on historical trends and carried forward in time by each age cohort. Two trends that are critical to the forecast are a declining birth rate and an increase in life expectancy.[1]

MRCOG developed population control total for Southern Santa Fe County since BBER does not currently project population for geographies below a county level. However the MRCOG forecast is tied to the BBER forecast for Santa Fe County because it relies on the relationship between the southern part of the county in comparison to the whole county. This methodology has been detailed in a separate document available at MRCOG upon request.

Table 3: Forecast Population by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
*2004	602,413	102,462	17,695	69,754	9,786	802,110
2010	631,839	126,294	21,690	86,708	11,211	877,742
2015	666,114	144,377	23,475	97,330	12,514	943,810
2020	698,832	162,409	24,979	108,064	13,933	1,008,217
2025	729,750	179,998	26,318	118,593	15,408	1,070,067
2030	759,000	197,182	27,479	128,922	16,889	1,129,472

** This table is based on a 2004 estimate by County that was developed by BBER in 2005. A revised 2004 estimate was later released by BBER.*

BBER projects population at a county level, therefore LAM is designed to hit population control totals for each county within the region. Since population related variables are all derived from the BBER projection, they are also designed to be read by LAM as county level controls.

Group Quarters Population

The Group Quarters sub-model generates regional control totals by county for five categories of group quarters: dormitory residents (military and college), adult correctional population, nursing home residents, other institutional residents (mental health facilities, hospital wards for chronically ill or disabled, and juvenile detention facilities), and other non-institutional residents (group homes, religious group homes, workers' dormitories, job corps dormitories, shelters, and the homeless). The projection of group quarters data is based on historical Census data.

Table 4: Forecast Group Quarters Population by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
2004	11,871	769	572	1,663	0	14,875
2010	11,503	1,269	582	1,599	0	14,953
2015	12,437	1,539	626	1,796	0	16,398
2020	13,552	1,848	662	1,999	0	18,061
2025	15,109	2,209	694	2,227	0	20,239
2030	16,702	2,619	726	2,473	0	22,520

[1] It is important to note that the 2030 Socioeconomic Forecast was developed during a housing boom in the region. Since the cohort component method for forecasting population does not take into consideration current market forces, the forecast had the appearance of being conservative during a time of growth. However, history shows that housing market behavior tends to behave cyclically, and that times of high growth are eventually moderated as market forces shift. This was already beginning to take place at a national level during the time of production. By using a demographic model to forecast population, this moderation is inherent to the forecast.

Dormitory population is a required input to the travel demand model and therefore an important component of group quarters forecasts. It contains both college and military dormitory population. College dormitory population is located at the UNM central campus and the Southwestern Indian Polytechnic Institute (SIPI). At the time of the forecast UNM had added dormitory rooms since 2000 and was considering building more rooms. Given the possibility of growth at UNM the college dormitory population was calculated as a proportion of the age 18 - 24 population for Bernalillo County, as that is the most likely age range for dorm residents. There were no anticipated additional rooms at SIPI, so the 2004 number was held constant. Military dormitory population is located at Kirtland Air Force Base (KAFB). At the time of the forecast there was no information that suggested a decline or an increase in this population so the military dorm population was also projected as a constant.

Correctional population was projected as two components; the local jail population and regional jail population. In calculating the local jail population, its proportion to the regional population age 18 – 64 was computed. An assumption was made that the statewide trend since 1970 was an accurate measure of the increase in incarcerations. There is no evidence to suggest that local trends are significantly different from the State's trends. Therefore, the proportion for the local jail population was increased at the same rate as the State. The projected proportions were applied to the projected regional population age 18 – 64 to produce a forecast for local jail population.

The regional jails include the State facilities in Los Lunas and the private jails that house prisoners both from the region and from elsewhere. Calculating regional jail population was more complicated considering a recent trend in private jails that house many prisoners from outside the region, which has in turn produced a large increase in the correctional population. After reviewing several approaches it was decided to use a mean of the ratio to the total population from 1990 (before private jails) and 2000 (after private jails). Lacking any specific data on the future of private jails, this approach allows for the likelihood of additional private facilities and the growth in the proportion of incarcerated persons without forecasting a boom in this industry. This ratio was used to project a regional proportion of incarcerated persons.

The total correctional population was the sum of local and region jail projections. The correctional population was allocated to counties based on the 2000 Census distribution.

Nursing home population was projected as a constant proportion of the population age 75 and over. 2000 Census data was used to calculate a proportion for each county of the population age 75 and over residing in nursing homes (4.7 percent). The nursing home population is forecast to increase over time as the BBER forecasts an increase in the portion of the population aged 75 and over. This is consistent with both the aging of the baby boomer generation and longer life expectancies. A regional total as well as totals for each county were projected using proportions specific to the county or the region and the county projections were adjusted to the independently projected regional total.

Other institutional population was projected as a constant proportion of the total population. Currently the only institutions in this category are located in Bernalillo and Valencia Counties. The allocation of the 'other institutional' population between these two counties was based on 2000 Census data.

Other non-institutional population is a collection of a variety of groups and was projected as a constant of the total population. A regional total was calculated for each forecast year as well as a county total; the initial county projections were adjusted to the independently projected regional total.

Population in Households

Population in households was computed for each county as the total population minus population in group quarters.

Table 5: Forecast Population in Households by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
2004	587,707	104,403	16,728	69,234	9,786	787,858
2010	620,336	125,025	21,108	85,109	11,211	862,789
2015	653,677	142,838	22,849	95,534	12,514	927,412
2020	685,280	160,561	24,317	106,065	13,933	990,156
2025	714,641	177,789	25,624	116,366	15,408	1,049,828
2030	742,298	194,563	26,753	126,449	16,889	1,106,952

Households

Total Households is the equivalent of total occupied housing units. A control total for households was generated indirectly from the population in households and a projection of average household size. Therefore, the methodology for calculating average household size must be explained.

The household size forecast is based on the assumption that there is a relationship between change in household size at the national level and the local level. The societal factors that drive the downward trend of household sizes affect all areas of the nation. At the time of this forecast the U.S. Census Bureau had projected the national household size to 2010. MRCOG extended the Census forecast to 2030 using a least squares trend method. The average household size is expected to decline at a slow rate over the next 30 years. Given the expectation on a national level of a slow decline in average household size, and given the slow historical rate of decline in MRCOG counties, it is reasonable to suggest that the future rates of change in household size in this region will continue to be slow. Therefore, the average household size for each county is projected to decline at the same rate as the national average.

The results of dividing household population by the initial projection for average household size by county to calculate the number of households was further adjusted to a regional control total for households. This was calculated from regional data in the same manner that it was for the counties. Regional data is expected to be more accurate than the sum of the counties as the change in the national average household size and the regional average household size has been very close in since 1990. Therefore, this adjusted number of households was used as the county controls and average household size by county was recomputed based on the adjusted household control total.

Table 6: Forecast Average Household Size by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
2004	2.45	2.82	2.70	2.84	2.88	2.53
2010	2.41	2.77	2.66	2.79	2.81	2.50
2015	2.39	2.75	2.63	2.77	2.79	2.49
2020	2.37	2.72	2.61	2.74	2.76	2.47
2025	2.35	2.70	2.59	2.72	2.74	2.45
2030	2.33	2.68	2.56	2.69	2.71	2.43

Table 7: Forecast Households by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
2004	240,987	36,096	6,346	24,007	3,396	310,832
2010	257,140	45,073	7,945	30,468	3,986	344,612
2015	273,473	51,973	8,681	34,518	4,490	373,135
2020	289,320	58,956	9,323	38,673	5,045	401,317
2025	304,438	65,871	9,912	42,812	5,629	428,662
2030	319,057	72,732	10,442	46,939	6,226	455,396

Housing Units

The total number of housing units is the product of the sum of occupied housing units (households) and vacant housing units. Vacant housing units are calculated by dividing the number of occupied units by the projected occupancy rates. The occupancy rates are projected based on historical data for each county. The Census Bureau has reported occupancy rates since 1970. There has been considerable variation over time as well as between counties. An occupancy rate for the projection was assigned for each county based on a review of the county specific data available.

The occupancy rate for Bernalillo County was very similar from 1980 through 2000. The rate for Bernalillo County was projected as the mean of 1980, 1990 and 2000.

Sandoval County's occupancy rate declined after 1970 but has had an increase in each period since 1980. The most recent rate from the 2000 Census was used in the projection. Historically, Sandoval County has had a lower occupancy rate than Bernalillo County; this technique continues that historical relationship. At the same time, the urbanization in Sandoval County should produce a rate close to that of Bernalillo County, which it does.

Torrance County has historically had the lowest occupancy rate in the region. The 2000 Census rate was the most reasonable rate to use as it was nearly identical to the 1970 and 1980 rates. The 1990 rate was omitted because it would have skewed the occupancy rate for the county.

Valencia County has a pattern similar to that of Sandoval County and the most recent rate is the highest. The 2000 Valencia rate was almost as high as that of Bernalillo County. The assumption is that increased urbanization in Valencia County should continue to make it similar to Bernalillo County so the 2000 rate was used.

For a number of years Southern Santa Fe County had an occupancy rate that was similar to that of Torrance County, its rural neighbor. In recent years, it has experienced growth with the construction of single family houses which are mostly owner-occupied units. The occupancy rate in 2000 was more comparable to the rates for the more urban counties than for Torrance County. Future growth in southern Santa Fe County is expected to continue to be exurban type growth, it is therefore reasonable to use the 2000 rate for the projection for this area.

Finally an occupancy rate for the region was projected. The regional occupancy rates reported by the Census Bureau have been very similar for the past three censuses. Therefore, the mean of the 1980, 1990, and 2000 Census reports was calculated and used as the projected regional average. The projected occupied housing units were divided by the projected occupancy rates to generate an initial number of total housing units for each county and the region. However due to the long term consistency in the regional

occupancy rates the regional number of housing units, the initial forecasts of housing by county were adjusted to the regional projection.

Table 8: Forecast Occupancy Rates by County
(*held constant throughout forecast)*

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG Region
All Years	0.93	0.90	0.83	0.92	0.91	0.92

Table 9: Forecast Housing Units by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG REGION
2004	260,982	39,579	7,411	26,168	3,683	337,823
2010	277,669	50,062	9,577	33,124	4,376	374,807
2015	295,217	57,708	10,461	37,516	4,928	405,829
2020	312,247	65,445	11,232	42,021	5,535	436,480
2025	328,493	73,105	11,939	46,508	6,175	466,221
2030	344,205	80,706	12,575	50,982	6,829	495,297

Housing Type

The total number of housing units was divided into housing type (single family and multifamily) by first projecting the number of multifamily units. The number of single family units was the product of total units minus multifamily units.

Historically, multifamily housing has been cyclical. At the time of the forecast, multifamily construction was slow but it is anticipated that a new cycle of multifamily housing will begin. Various economic factors have affected the ups and downs of the multifamily housing market. In the past, tax benefits associated with multifamily housing drove a lot of apartment development. Presently, low mortgage rates make single family home ownership more affordable which has reduced the demand for multifamily housing. Rather than attempt to forecast the multifamily cycles, a forecast has been prepared that smoothes the cycles in an effort to projects the eventual proportion of housing that will be multifamily.

Historical data for housing by county and type and an estimate for the current base year were analyzed. As expected, the majority of multifamily units have consistently located in Bernalillo County, with small percentages in the surrounding MRCOG counties. An examination of the type of housing constructed by decade reveals that the proportion of multifamily housing built during the 1970's and 1980's was almost the same: about 30 percent of the total new units. During the 1990's the multifamily percentage dropped to only 15 percent of all new units. Multifamily housing construction has dropped even further since 2000 and residential permits to date indicate that only 11.5 percent of new units in the region are multifamily units.

Multifamily units were forecast for the region by considering historical trends over a long period of time so as to capture the highs and lows. During the period from 1970 to 2000 Census data show that the average percentage of new homes built that were multifamily units was 25.3 percent. It was determined that the 30-year historical figure for multi-family, 25.3 percent of new housing, was a reasonable target for the following 30 year period. Therefore, while just 11.5 percent of all housing units allocated in 2004 went to multi-family housing that percentage was increased gradually throughout the forecast period, reaching 25.3 percent by 2030.

The assumptions behind this determination are as follows:

1. The single family housing market seems strong for the immediate future;
2. Tax advantages to build multifamily housing are gone so the construction of new multifamily housing will have to make economic sense;
3. There is a developing "urban" market as evidenced by the construction of new lofts and apartments in the core but this is still a relatively small segment of new housing and it will take time to gradually build this market;
4. The increasing proportion of the population in older age brackets will create more demand for senior multifamily housing over time;
5. Although the recent trend of multi-family construction has been downward, the cyclical nature of the market would suggest a rise in the future.

The regional projection was divided into county projections based on the historical proportions of multifamily housing in each county.

Table 10: Forecast Multi-Family Housing by County

Year	Bernalillo County	Sandoval County	Torrance County	Valencia County	Southern Santa Fe County	MRCOG REGION
2004	68,257	2,613	110	1,144	12	72,136
2010	71,255	3,378	146	1,525	14	76,318
2015	74,713	4,001	163	1,827	31	80,735
2020	79,126	4,544	176	2,049	52	85,947
2025	84,135	5,130	189	2,292	77	91,823
2030	89,740	5,765	203	2,558	107	98,373

Employment by Sector

Unlike population which is projected by county, employment control totals are developed for the region as a whole and LAM is programmed to allocate the jobs across county boundaries. LAM output was reviewed using several reasonability checks and, following limited post-processing, the county shares were determined to be reasonable given current trends, future plans, and information from local planners and developers. The following is a summary of the methodology used to develop the regional 2030 employment forecast for 2030.

MRCOG utilized a variety of data and forecasting tools to develop a complete employment forecast, by sector, to 2030. At the base of the forecast is BBER's nonagricultural wage and salary employment forecast by sector for the Albuquerque MSA. Albuquerque MSA is defined as the four counties of Bernalillo, Sandoval, Torrance and Valencia.

Table 11: BBER Forecast for Nonagricultural Employment by Sector, Albuquerque MSA

NAICS Sector/Year	2004	2005	2006	2007	2008	2009	2010	2011
Natural Resources, Mining & Construction	25,942	28,375	29,742	30,760	31,878	32,951	34,124	35,260
Manufacturing	22,633	22,833	24,611	25,941	26,704	27,367	27,680	27,780
Wholesale Trade	12,825	12,917	13,049	13,224	13,391	13,546	13,706	13,849
Retail Trade	42,858	43,967	44,951	45,870	46,767	47,434	48,112	48,751
Transp., Warehousing & Utilities	10,517	10,358	10,521	10,640	10,808	10,988	11,176	11,365
Information	9,567	8,650	8,874	9,196	9,496	9,808	10,137	10,494
Financial Activities	19,050	19,283	19,763	19,854	20,025	20,233	20,560	20,706
Professional, Scientific, Technical	28,833	29,617	30,515	31,497	32,338	33,181	34,071	34,948
Management of Companies	4,406	4,476	4,648	4,690	4,736	4,761	4,794	4,818
Admin, Support, Waste mgt, Remediation	25,952	26,582	27,830	28,315	28,823	29,227	29,671	30,069
Educational & Health Services	44,983	46,400	47,935	49,249	50,512	51,746	53,029	54,286
Leisure & Hospitality	36,100	36,475	37,352	37,905	38,691	39,174	39,559	39,928
Other Services	11,783	11,917	12,008	12,256	12,416	12,554	12,708	12,866
Government	74,725	75,900	77,130	78,561	79,924	81,426	83,136	84,538
Military Employment	6,745	6,756	6,743	6,730	6,721	6,712	6,709	6,709
Total MSA Non-Ag Employment	376,920	384,506	395,673	404,672	413,202	421,083	429,140	436,334

MRCOG began by supplementing BBER's short range forecast with a forecast for self-employment. A 2004 estimate of self-employment was determined by holding its 2000 ratio to non-agricultural employment constant. This was checked by verifying that the ratio of nonemployer statistics, released by the Census Bureau and used as a proxy for self-employment, remained constant to NMDWS employment, which it did, from 1997 – 2002. The sector specific percentage of growth in the BBER forecast was applied to the 2004 estimate of self-employment by sector so that each sector increased at the same rate as the same sector in the BBER forecast out to 2010.

Next, MRCOG created a short range forecast for agricultural employment. A 2004 estimate for agriculture was generated from 2000 Census data and data from the Bureau of Economic Analysis (BEA). This was projected forward by applying the rate of annual change projected for agricultural employment within the REMI model, which resulted in a steady decline to 2011. At that point the BBER forecast was combined with the agricultural and self-employment projections to produce a short range MSA employment projection.

Then MRCOG developed an employment forecast for Southern Santa Fe County. The forecast for Southern Santa Fe County is driven by 1) population growth and 2) the structural changes occurring with the MSA economy as forecast by BBER. Ratios of employment to population were computed for both 2000 and 2004. These ratios are calculated for total employment and by each employment sector. Ratios for 2000 and 2004 were also computed for southern Santa Fe employment to the MSA employment, thereby establishing how the southern Santa Fe economy relates to the MSA economy. The ratio for agriculture was computed as the southern Santa Fe estimate divided by the four-county estimate from the REMI model since BBER data is

non-agricultural data. The mean ratio was computed for the 2000 and 2004 data for both population and employment.

Employment by sector was projected out six years to match the extent of the BBER projection. Population ratios were applied to annual projections of population for southern Santa Fe County. Employment ratios were applied to the BBER projections for both total employment and employment sector. An initial employment projection for each year was calculated. The sectors of retail trade, financial activities, and government were projected entirely based on the population projection; in southern Santa Fe County, these sectors are almost entirely population supporting and would respond to population growth rather than regional economic changes. Agriculture and manufacturing are considered base industries and change in southern Santa Fe County is most likely to be a reflection of regional trends, therefore these sectors were projected based on the anticipated change in the regional economy. The other sectors including the total were projected as an average of the population based projection and the employment based projection. The projection by sector was balanced to the calculated total employment. The BBER projection, the projection of self-employment and agriculture, and the southern Santa Fe County projection combine to result in a short term employment projection for the MRCOG Region.

Table 12: Short Range Employment Forecast by Sector, MRCOG Region

NAICS Sector/Year	2004	2005	2006	2007	2008	2009	2010	2011
Agriculture	2,412	2,395	2,377	2,359	2,341	2,322	2,302	2,283
Natural Resources, Mining & Construction	28,888	31,723	33,208	34,344	35,590	36,787	38,093	39,360
Manufacturing	23,679	23,895	25,752	27,144	27,942	28,635	28,963	29,068
Wholesale Trade	13,526	13,686	13,807	13,993	14,170	14,334	14,503	14,655
Retail Trade	45,404	46,601	47,652	48,627	49,580	50,290	51,010	51,689
Transp., Warehousing & Utilities	11,087	11,018	11,164	11,290	11,469	11,661	11,860	12,061
Information	9,911	8,963	9,196	9,529	9,840	10,163	10,504	10,874
Financial Activities	21,131	21,394	21,927	22,029	22,219	22,450	22,813	22,975
Professional, Scientific, Technical	31,993	32,848	33,849	34,938	35,871	36,806	37,793	38,765
Management of Companies	4,406	4,476	4,648	4,690	4,736	4,761	4,794	4,818
Admin, Support, Waste mgt, Remediation	27,434	28,073	29,401	29,914	30,451	30,877	31,347	31,767
Educational & Health Services	47,187	48,592	50,246	51,624	52,948	54,242	55,586	56,902
Leisure & Hospitality	37,621	37,980	38,908	39,485	40,303	40,807	41,208	41,593
Other Services	13,814	13,970	14,078	14,369	14,556	14,718	14,899	15,084
Government	74,878	76,091	77,331	78,767	80,135	81,642	83,357	84,763
Military	6,745	6,756	6,743	6,730	6,721	6,712	6,709	6,709
Total Employment	400,116	408,461	420,287	429,832	438,872	447,207	455,741	463,366

At this point in the process MRCOG turned to the issue of extending the forecast beyond the BBER horizon year to 2030. In the late 1990's, MRCOG obtained the REMI model in part to generate the long-term employment forecast. The REMI economic forecasts contain a demographic component which MRCOG was able to calibrate to match BBER's population forecast. Since the employment forecast produced by REMI is tied to the region's population forecast, the link between the region's population and job forecasts is maintained.

The BBER forecast is based on New Mexico Department of Workforce Solutions (DWS) data while the REMI forecast is based on Bureau of Economic Analysis (BEA) data, so these data differences needed to be resolved. To combine these forecasts, three methods were calculated and then combined to produce a final projection.

The first employment projection method was based on the annual rate of change for both employment and labor force, which was calculated from REMI's long range forecast for total employment and labor force. The appropriate annual rate of change in total employment from the REMI model was applied to the last year of the BBER-based forecast. Each subsequent projection year is forecast by applying the appropriate annual rate of change in total employment that was calculated using REMI.

The second employment projection method is based on the REMI projection of labor force and assumes a relationship between the size of the labor force and the amount of employment. This method is particularly appealing because it ties directly to the demographic forecast and thereby links the employment forecast to BBER's population forecast. This method combines the MSA projection of labor force with the projected labor force for southern Santa Fe County to generate a MRCOG Region labor force. The projected unemployment rate, derived from historical averages from the DWS, is added. Through subtraction, a projection of employed persons for the region was computed. Finally, an estimate of multiple jobholders, derived from a historical mean of Bureau of Labor Statistics (BLS) data, was applied. A regional projection of total employment was generated by combining the projected employed persons with the estimate of multiple jobholders.

The third forecast method was based on the sector specific growth from the REMI forecast. First, the annual proportion change by sector was calculated from the REMI forecast. Then the appropriate annual sector specific proportion change based on REMI was applied to the final year of the BBER forecast. Each subsequent year was calculated by applying the appropriate sector-specific proportion to the result for the prior year.

Table 13: Summary of the Three Employment Forecast Methods

Year	Employment Forecast Method 1	Employment Forecast Method 2	Employment Forecast Method 3	Projected MRCOG Region Total Employment	Projected MRCOG Region Employed Residents	Annual Rate of Employment Change	Ratio Employed Residents to Employment
2004	-	-	-	400,116	379,700	-	0.9489738
2010	455,741	467,809	455,741	455,741	432,486	1.9082886	0.9489728
2015	487,359	500,661	487,576	487,722	462,835	1.0971642	0.9489735
2020	509,823	520,670	510,353	509,289	483,302	0.8407074	0.9489734
2025	536,516	542,261	537,333	534,166	506,909	0.9794218	0.9489729
2030	564,178	564,458	565,210	559,860	531,293	0.8756258	0.9489741

The three projection methods were summarized, combining the BBER and REMI projections into a MRCOG projection. A simple mean of the three projections was calculated as the regional control total for employment. A sector-specific forecast was then computed based on the REMI forecast. Retail was forecast independently, however, as REMI projected a large drop in retail employment after 2015. REMI based this drop on the assumption that the internet and other forces will cause a significant reduction in demand for retail jobs. However, the magnitude of the drop was in dramatic conflict with the rising population and the historical relationship between retail growth and population h. BBER economists were consulted and agreed with MRCOG's decision to tie retail employment back in with population growth. The projections by sector were balanced to the regional employment control total resulting in a final forecast by sector.

Table 14: Long Range Employment Forecast by Sector, MRCOG Region

NAICS Sector/Year	2004	2010	2015	2020	2025	2030
Agriculture	2,412	2,302	2,158	1,962	1,776	1,614
Natural Resources, Mining & Construction	28,888	38,093	42,130	44,445	46,944	48,796
Manufacturing	23,679	28,963	28,976	28,866	29,191	29,863
Wholesale Trade	13,526	14,503	14,562	14,193	13,900	13,677
Retail Trade	45,404	51,010	54,071	55,945	58,161	60,460
Transp., Warehousing & Utilities	11,087	11,860	12,679	13,271	13,892	14,596
Information	9,911	10,504	10,748	10,372	10,179	10,148
Financial Activities	21,131	22,813	23,643	24,002	24,416	24,759
Professional, Scientific, Technical	31,993	37,793	40,982	43,407	46,196	49,530
Management of Companies	4,406	4,794	4,935	5,032	5,153	5,295
Admin, Support, Waste mgt, Remediation	27,434	31,347	34,488	37,263	40,264	43,501
Educational & Health Services	47,187	55,586	63,976	72,734	83,017	93,827
Leisure & Hospitality	37,621	41,208	43,232	44,150	45,258	46,379
Other Services	13,814	14,899	15,360	15,194	15,067	14,878
Government	74,878	83,357	88,821	91,381	93,616	95,349
Military	6,745	6,709	6,961	7,070	7,137	7,188
Total Employment	400,116	455,741	487,722	509,287	534,167	559,860

Another element related to the employment forecast is the myriad classification systems that needed to be reconciled. First, the North American Industry Classification System (NAICS) has replaced the U.S. Standard Industrial Classification (SIC) system, the system on which LAM processes were previously based. The LAM model required reprogramming to recognize and handle NAICS categories. The next issue was the many class conversions that need to occur throughout the forecasting process. The initial forecast data from BBER come in 16 NAICS categories, which needed to be translated into the 21 NAICS categories provided to MRCOG by the DWS. Then, those 21 NAICS sector categories (mining, utilities, construction, manufacturing, etc.) need to be converted to land use categories (commercial, office, industrial, etc.) which serve as the basis of the LAM allocation. When LAM completes the allocation the land use categories are translated back to NAICS sectors. Lastly, the NAICS sectors are collapsed into 3 broad categories (basic, retail, and services) for the final DASZ dataset as required by the travel demand model.

Public School Enrollment

The projection for public school enrollment for the region is subdivided into three categories: elementary, middle, and high. This is projected for the travel model which has a component that generates trips for public schools. Intermediate schools were classified appropriately according to the transportation characteristics of their students. Currently, alternative schools and private school enrollment is not handled by the travel model.

Enrollment projections are based on the 2000 proportion of the population age 5 to 18 enrolled in public schools. Population by age data come from the US Census Bureau and public school enrollment is available from the New Mexico Department of Education. The proportions were applied to the age-specific population projections developed by BBER as part of their population projections by county. Total public school

enrollment is subdivided by elementary, middle, and high school. The factors for the three types of schools were calculated by MRCOG from historical data from the New Mexico Department of Education.

Table 15: Projection Factors for Public School Enrollment

Proportion of Population Age 5-18 enrolled in Public Schools:	0.78999
Proportion of School Enrollment in Elementary Schools:	0.48982
Proportion of School Enrollment in Middle Schools:	0.23745
Proportion of School Enrollment in High Schools:	0.27273

The projection for the MRCOG region is as follows:

Table 16: Forecast Public School Enrollment, MRCOG Region

Year	Population Age 5 - 18	Total School Enrollment	Elementary School Enrollment	Middle School Enrollment	High School Enrollment
2004	155,333	122,712	60,107	29,138	33,467
2010	160,312	126,645	62,033	30,072	34,540
2015	165,700	130,902	64,119	31,083	35,701
2020	174,886	138,159	67,673	32,806	37,680
2025	182,944	144,524	70,791	34,317	39,416
2030	189,142	149,421	73,190	35,480	40,751

University of New Mexico (UNM) Enrollment

The projection for enrollment at the central UNM campus is based on the proven assumption that that the market is comprised of the entire State and that the majority of university students fall into the 18 – 29 age group. An 18 - 29 age cohort was calculated from BBER's State population projections. From 1987 to 2004, UNM central campus enrollment was an almost constant ratio of .08 to the statewide population age 18 – 29. Therefore, the computed ratio was applied as a constant to the forecast population age 18 – 29 for each projection year.

The projection for the UNM-Valencia Branch is based on the proven assumption that the Valencia Branch serves primarily Valencia County. An 18 - 29 age cohort was calculated from BBER's population projection for Valencia County. Over the 15-year enrollment history, the ratio of UNM-Valencia enrollment to the Valencia County population age 18 – 29 has remained reasonably stable at .17. Future enrollment for the Valencia campus was projected with this ratio.

UNM is planning to develop a new branch campus in Rio Rancho. Based on statements by UNM, there is sufficient land to develop a campus that could have up to 12,000 students. At the time of the forecast it was not certain how quickly the Rio Rancho branch will develop, or what programs will be housed there, however it is expected to primarily serve Sandoval County residents. Without specific enrollment forecasts for this new facility MRCOG made the assumption that the Sandoval County branch will function similar to the Valencia County branch of UNM and therefore applied the same ratio to the Sandoval County projections of persons age 18 – 29. The first projection year that includes the Rio Rancho campus is 2015.

Table 17: Forecast UNM Enrollment

Year	UNM Main	UNM Valencia	UNM Rio Rancho	Total UNM
2004	26,339	1,745	0	28,084
2010	30,865	1,745	0	32,610
2015	31,040	1,745	3,729	36,514
2020	30,312	1,745	3,820	35,877
2025	30,364	1,745	3,864	35,973
2030	31,842	1,745	4,158	37,745

Community College of Central New Mexico (CNM) Enrollment

As with UNM, the assumption is that the core age range that CNM serves is the 18 -29 age cohort. Currently all of its campuses are within Bernalillo County, however, the school draws students from adjacent counties because of its low tuition costs and numerous programs that are directed at specific vocations. Therefore, the MRCOG Region was used as the market area for CNM.

Historical enrollment data for CNM indicates considerable growth since 1989 in the ratio of enrollment to the population of the age 18 – 29 cohort. The belief is that most of this change has been due to the expanding focus since the 1980's. CNM courses began as entirely technical or vocational. In the 1980's, it moved toward becoming a community college and added academic courses unrelated to the technical and vocational programs. Over time, CNM has become a viable option for students to take the first two years of college course work before transferring to a 4-year college. CNM also opened a west side campus in 2004 which further increased enrollment.

It was decided that for the purposes of forecasting future enrollment a constant ratio to population aged 18-29 would be used rather than a trend method. The assumption is that CNM's historically high growth rate is related to its metamorphosis in terms of curriculum, and that those changes are largely completed. The 2004 ratio of enrollment to the region's 18 – 29 population was 0.20 and that ratio was used to forecast future enrollment. Enrollment was divided into the four campuses by factors based on historical trends and an assumption regarding growth at the new west side campus. Enrollment was based on day division students.

Table 18: Forecast CNM Enrollment

Year	CNM, Day Division
2004	26,776
2010	29,180
2015	30,016
2020	30,205
2025	30,837
2030	32,434

Kirtland Air Force Base (KAFB)

LAM was not designed to forecast military base operations, so KAFB jobs and housing were forecast separately by DASZ and directly inserted into the DASZ output. Projected population, housing and jobs are subtracted from the regional controls that are available during LAM allocation processes so as not to over-allocate.

Historical information regarding jobs and homes on the base was collected, and interviews were held with KAFB's public information officer and Kirtland Family Housing, LLC, to gather insight into future activity on the base. The historical data are provided below.

Table 19: Historical Population, Housing and Employment on KAFB

Year	Population	Population in Households	Population in Dormitories	Housing Units	Households (Occupied Housing Units)	Total Employment
1980	7,763	7,099	664	2,131	1,896	17,144
1990	8,589	7,721	868	2,394	2,268	20,907
2000	5,624	5,193	431	1,877	1,734	21,052
2004	5,517	4,948	569	1,877	1,650	26,000

The housing unit forecast was performed following the privatization of housing on the Base, which is now owned and operated by Kirtland Family Housing, LLC. This group has undertaken an improvement effort which includes demolishing a large portion of the old housing on the Base and replacing approximately two-thirds of it with new homes. Although the overall number of residences on the Base will decline this does not imply a reduction in Air Force personnel or other employers located on KAFB.

From the housing projection, population variables were calculated with assumptions regarding occupancy and household size. Historical occupancy rates hover around 90% therefore an average was taken and used for the future projection of occupied housing. The average household size has declined since 1980, which is consistent with regional and national trends. The historical rate of decline was carried forward using a trend method in order to project future household sizes, which decrease from 3.00 in 2004 to 2.81 in 2030. Population in dormitories is forecast as a constant to the number of persons living in dormitories in 2000, as there is no information regarding the anticipated number of military personnel living in dormitories in the future.

Historical employment since 1990 has held fairly stable and KAFB is projected to maintain its current levels of employment. There was no available information from Air Force officials regarding the potential future employment levels. During this forecast military bases nationwide were considered for closure due to federal cutbacks but with enormous public support KAFB survived. Also during this forecast it was announced that the Department of Defense was opening the Operationally Responsive Space Office (ORS) at KAFB. With lack of any certain data regarding the future of the Base, MRCOG assumes that KAFB will continue to operate in Albuquerque at current levels plus the addition of ORS.

Table 20: Forecast Population, Housing and Employment on KAFB

Year	Population	Population in Households	Population in Dormitories	Housing Units	Households (Occupied Housing Units)	Total Employment
2010	4,715	4,284	431	1,634	1,503	26,300
2015	4,609	4,178	431	1,582	1,471	26,300
2020	4,458	4,027	431	1,530	1,423	26,300
2025	4,300	3,869	431	1,461	1,373	26,300
2030	4,160	3,712	431	1,391	1,321	26,300

All employment on KAFB with the exception of retail is classified as basic employment.

Tribal Lands

Tribal lands in the MRCOG region include lands within the eight Pueblos of Cochiti, Isleta, Jemez, Sandia, San Felipe, Santa Ana, Santo Domingo, and Zia. The region also includes a portion of Laguna Pueblo, and the portions of the Jicarilla Acache and Navajo Reservations. Tribal trust lands include Laguna, Navajo and Zia. Although the Sandia grant line goes through the Town of Bernalillo, this forecast excludes the Town of Bernalillo and the unincorporated subdivision of Bosque del Bernalillo from the Pueblo of Sandia forecast.

Similar to KAFB, the forecast for Tribal Lands is performed prior to LAM allocation and fed directly into the final output by DASZ. The main reason for this is that current and future land use information on tribal lands are generally not publicly available and are not subject to the same planning and zoning processes as development in the rest of the region. Therefore, rather than allocating growth by land use within reservation boundaries, it is forecast by DASZ. To the extent possible, this is done with guidance from Tribal Governors and planners. The Pueblos of Sandia, Laguna, Isleta and Santa Ana participated in the process.

Population for Tribal lands as a whole was projected to 2030 with a least squares regression technique based on historical population from 1970 to 2000. The R-square value was .995. The average annual rate of growth on Tribal lands over the past 30 years has been 2.31 percent; however that rate has declined from 3.28 percent during the 1970's to 1.70 percent during the 1990's. In the forecast, the rate of growth is slowed; this slowing is consistent both with the last 30 years and what is projected for the growth rate of the region. Historically, the population on Tribal lands accounted for just over 2.6 percent of the region's population, although this percentage has been declining slightly. In the forecast, the slight decline in the percentage of population on Tribal lands is expected to continue.

Housing was calculated from the population forecast. Historical Census data from 1980 through 2000 for housing units for the population living on Tribal lands was collected. A ratio of persons per dwelling unit was calculated for each area for each decade by dividing population by housing units. A housing forecast for the Tribal population was the result of regression equations computed for the ratios of persons per dwelling unit applied to forecast years.

Table 21: Forecast Population, Households, and Housing Units on Tribal Land

Year	Population	Households	Housing Units
2004	20,275	5,252	6,170
2010	22,023	5,771	6,799
2015	23,528	6,307	7,421
2020	24,997	6,856	8,070
2025	26,449	7,427	8,742
2030	27,859	8,011	9,420

Next population was forecast for each Pueblo or Reservation. For Tribal lands on which there were no existing forecasts or input, population was forecast with a linear regression equation based on 1970 to 2000 data. When alternative information was available, it was used in the forecast. The results were balanced to the total forecast population on Tribal lands. Housing forecasts for each Tribal area was calculated using a regression technique and balanced to the overall housing forecast for Pueblo and Reservation areas. The forecast by Tribal area is shown below.

Table 22: Forecast Population and Housing by Pueblo or Reservation Area

TRIBAL AREAS	POPULATION			HOUSING		
	2004	2015	2030	2004	2015	2030
COCHITI**	1,553	1,899	2,350	640	846	1,117
ISLETA	3,315	3,862	4,677	1,275	1,542	1,993
JEMEZ	2,110	2,403	2,784	542	657	812
JICARILLA APACHE*	12	14	16	7	6	7
LAGUNA*	23	29	37	15	22	30
NAVAJO, TO'HAJIILEE*	1,648	1,981	2,416	505	590	768
NAVAJO, TRUST LANDS*	2,796	3,195	3,713	987	1,155	1,433
SANDIA***	711	887	1,118	284	344	464
SAN FELIPE	3,462	3,993	4,681	836	988	1,236
SANTA ANA	550	614	696	216	262	318
SANTO DOMINGO*	3,416	3,898	4,521	673	787	975
ZIA	679	753	850	198	224	271
TOTAL	20,275	23,528	27,859	6,178	7,423	9,424

** Population within MRCOG region.*

*** The Census reports for Cochiti Pueblo all of the population within the Pueblo which includes the unincorporated town of Cochiti Lake which is on land leased from the Tribe. Since the Tribe retains control of this area, the population reported for Cochiti include Cochiti Lake City.*

****The Census reports for Sandia Pueblo all of the population within the Sandia Grant which includes a large portion of the Town of Bernalillo. The population in the Town of Bernalillo and the unincorporated area of Bosque del Bernalillo have been excluded from the Sandia population estimate.*

Employment for Tribal lands was forecast by computing ratios for various types of employment. Estimated 2004 employment was divided into three employment types: Basic (which consisted of agricultural, mining, construction, manufacturing, transportation, communications, utilities, wholesale, and military employment); Population-serving (which consisted of retail, finance, insurance, real estate, service except for casino, and government employment); and casino. A ratio of Basic employment to population in 2000 was computed for the sum of all Tribal lands. There was an assumption that this ratio would remain constant, therefore, total Basic employment on all Tribal lands for future years was computed by applying the ratio to the forecast population on Tribal lands. A second ratio was computed; population-serving employment to population was calculated for Tribal lands and also for the non-metropolitan (excluding Tribal lands) portion of the MRCOG Region. In 2004, the population-serving ratio on all Tribal lands was slightly lower than the ratio in the non-metropolitan portion of the region. An assumption was made that the population-serving ratio on Tribal lands would increase to be equal to the current ratio in the non-metropolitan portion of the region by 2030. Casino employment was forecast by calculating the current ratio of casino employment to total regional population and applying that ratio to the regional population forecast. In instances where there was information regarding planned casino expansion the forecast was altered accordingly. Since 2000 expansions have occurred at Santa Ana, Isleta, and Sandia, and more is projected.

Employment on Tribal Lands was forecast by NAICS sector using the REMI Model. Employment by sector for the region was obtained from the REMI Model. Employment by sector on Tribal lands was obtained from the 2004 Socioeconomic Dataset. An assumption was made that the increase in employment by NAICS sector on Tribal lands would be proportionately the same as the NAICS sector-specific increases for the region. An exception was the service sector which was adjusted for the large increases in casino employment. The preliminary results for the NAICS projections were adjusted to the overall forecast employment totals for Tribal lands.

Table 23: Forecast Employment by Sector on Tribal Land

NAICS Sector/Year	2004	2015	2030
Agriculture, Forestry, Fishing	12	17	16
Mining	87	100	113
Utilities	44	55	67
Construction	233	267	303
Manufacturing	4	5	5
Wholesale Trade	100	114	133
Retail Trade	241	325	423
Transportation and Warehousing	318	391	475
Information	2	2	3
Finance & Insurance	48	54	64
Real Estate, Rental & Leasing	23	26	30
Professional, Scientific, Technical	11	12	14
Management of Companies	0	0	0
Admin, Support, Waste mgt, Remediation	227	368	437
Educational Services	8	13	13
Health Care & Social Assistance	67	121	147
Arts, Entertainment & Recreation	31	34	40
Accommodation & Food Services *(except eating and drinking)*	243	264	309
Eating and Drinking	69	75	88
Other Services	12	13	15
Government	6,347	7,313	8,684
Total Employment	8,127	9,569	11,379

Employment by sector was forecast for the various Tribes by allocating the increase in employment in each NAICS sector to the Tribes depending on the proportion of that NAICS sector in their 2004 economy. Adjustments were made for the known increase in casino employment at Santa Ana, Isleta, and Sandia. The Tribal allocations were balanced to the NAICS sector and total employment control totals. When information specific to a certain area was known outside of these calculations the forecast was adjusted.

Table 24: Forecast Employment by Pueblo or Reservation Area

TRIBAL AREA	2004	2015	2030
COCHITI	294	362	444
ISLETA	1,888	2,084	2,442
JEMEZ	374	428	493
JICARILLA APACHE	33	139	165
LAGUNA	707	786	970
NAVAJO, TO'HAJILEE	74	410	493
NAVAJO, TRUST LANDS	76	88	103
SANDIA	2,112	3,507	4,406
SAN FELIPE	765	853	1004
SANTA ANA	1,219	1,334	1,567
SANTO DOMINGO	464	532	609
ZIA	121	135	152
TOTAL	8,127	10,658	12,848

2. Build Land Use Layers

MRCOG staff collected a variety of information, developed maps, and held many meetings in order to identify existing land uses, known or near term development, and planned or longer term development out to the horizon year of 2030. In addition to document collection, policy review and data analysis, this step required extensive outreach including site visits and face-to-face meetings, as well as follow up meetings. This time intensive process was essential in ensuring that the MRCOG forecasting processes was based on real activity occurring out in the field rather than perceived activity as observed from behind a desk.

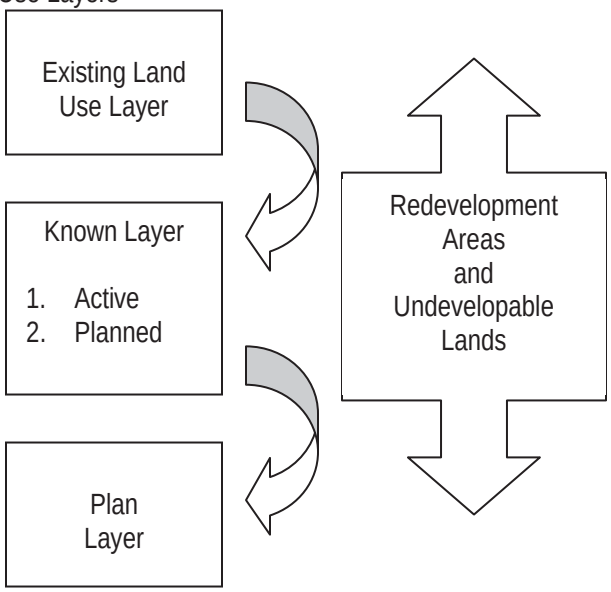
The information that MRCOG collected in this step is used to create three land use layers required by LAM that are differentiated by project status; the existing land use layer, the known layer, and the plan layer. These layers are coded into LAM using a land use classification system with 18 categories which are as follows:

1. Single family Residential
2. Multi-family Residential
3. Mixed and Minor Commercial
4. Major Retail Commercial
5. Regional Office
6. Industrial/Wholesale
7. Institutions
8. Schools/Universities
9. Airports
10. Transportation and Utility corridors
11. Irrigated Agriculture
12. Dry Agricultural/Rangeland
13. Major Public Open Space, Parks, Recreation Land
14. Natural Drainage
15. Urban Vacant
16. Landfills/Sewage Treatment
17. Other Urban Non-Residential
18. Kirtland Air Force Base

LAM also has a 'Mixed Use Development' designation that is used in circumstances where mixed uses are anticipated, but specific locations for each use within the development are not known. The modeler can specify the percentage of the land expected to be dedicated to each use along with the densities. In the LAM allocation processes, it will determine the specific location of the allocated land uses to that development.

In addition to the three land use layers that guide development, LAM also is programmed to identify potential redevelopment areas as well as lands that are not likely to develop at all. The following figure shows a simplified representation of how these inputs relate to one another in LAM.

Figure 10: LAM Land Use Layers



Existing Land Use *(2004)*

A 2004 Existing Land Use (EXLU) layer was built as an update to the 2000 EXLU which served as the base for the 2025 MTP. The 2000 EXLU was built using individual land use inventories maintained by governing jurisdictions combined with data from the U.S. Census Bureau and the New Mexico Department of Workforce Solutions (DWS). The 2004 update primarily relied on 2004 digital orthophotography, which was instrumental in locating new development. In areas where orthophotography was not available or not current, building permit data combined with rural address data were used to identify new structures.

When a new development was added to the EXLU it was given a housing or employment density. Housing densities were determined by a combination of sources; housing units and area as determined from the orthophotography, densities defined in planning and zoning cases, and as estimated from the building permit file. Employment densities were created from an estimate based on planning and zoning cases, and by employment densities in the surrounding area. If the identity of an individual business was known, the employment was obtained from the 2004 employment file provided by DWS.

The housing densities in the 2004 EXLU were adjusted within each DASZ so that the sum of the housing units would approximately match the total housing estimated in a partnering dataset created by MRCOG, *2004 Socioeconomic Estimates by DASZ*. This dataset contains population, housing and employment estimates for 2004 by DASZ and was developed in conjunction with the EXLU. The population and housing estimates were based on building permits and estimates for occupancy rates and household size. The population in the *DASZ* dataset was balanced to the 2004 county-level population estimates developed by BBER.

The employment densities in the 2004 EXLU were also balanced to meet the total number of jobs reported in the *2004 Socioeconomic Estimates by DASZ*. The data contained within the DASZ dataset were provided directly by the DWS Enhanced Quarterly Unemployment Insurance (EQUI) report which provides jobs by employer address. MRCOG spent several months cleaning the data, address-matching jobs, and creating an estimate for employment not included in the EQUI (agriculture, self-employment and unpaid family workers). The result was a 2004 estimate of total employment, by sector, by DASZ. The DASZ dataset was balanced to meet the total number of jobs in the region as reported by DWS.

Known Development *(approximately 2005 to 2015)*
The purpose of the known development layer is to tell the model about projects that are likely to build in the near term. It works together with the EXLU, which tells the model if the land under a known project is indeed available for development. Land in the EXLU is available for development if it is coded vacant, rangeland, unpreserved agricultural or built but available for redevelopment. Development allocated by LAM will halt as soon as density thresholds as outlined in by the known layer are met, thereby ensuring that projects are not "over-built". The known layer has two distinct designations for development status, Active or Planned. Active projects take precedence over Planned projects in the LAM allocation.

The following are the criteria for inclusion in the known layer:

- Projects that had been approved by the appropriate development review board were entered into LAM's known layer as Active.

- Meetings with planners, government officials, and developers resulted in identifying projects that had begun construction after the existing land use layer was finalized. These projects were entered as Active.

- Phase one of major planned communities that had broken ground were entered as Active in the known layer. Subsequent phases were included in the plan layer.

- Phase one of major planned communities that are not currently building but reasonably expected to in the near future were entered in the known layer as 'Planned'. These communities either had submitted plans for zoning and development review, or were widely accepted by the planning and development community. Future phases were included in the plan layer.

- Newspaper articles regarding land use and new developments that were considered to be at build status were clipped and entered as Active.

- Meetings with planners, government officials, and developers resulted in identifying areas that are not currently building but were believed to be on the horizon for development. These projects were entered as 'Planned' in the known layer if they fit one of the following criteria:
    - the land had been platted and/or subdivided;
    - the project is a subsequent phase to a current development;
    - the plans are currently being drafted and fit in with surrounding land uses;
    - the land had been purchased for the specific development;
    - a high level of certainty exists among multiple sources that development will begin in the near future.

- Areas that have exhibited a fairly continuous pace of growth were coded to grow at their current pace in the known layer.

Planned Development *(2016 to 2030)*
Along with later phases of master plans, the plan layer also includes the "visioning" that came out of our meetings. One example of this is the expectation that that the land surrounding rail stations will increase in desirability and redevelop with higher densities and mixed uses. Potential new communities that were speculative at the time of the data collection were placed in the plan layer. This was also true of proposed areas for developments that were perceived to have specific challenges, such as lack of utilities or obstacles to land consolidation. Entries in the plan layer were coded to conform to current planning policy documents and zoning designations.

The following are the criteria for inclusion in the plan layer:

- Large master planned communities still in conceptual stages were entered into the plan layer. If no build out exists, the community was given a density that complies with an adopted plan or the surrounding areas.

- Adopted general plans, area plans and sector plans were reviewed and the areas that they cover were coded into the plan layer with the land uses and densities stated in the document.

- Areas that are not covered by adopted plans were entered if planners, government officials, or developers identified land that they felt reasonably certain of their future plans. Much of this involved the use of judgment based on professional experience and understanding of land use, development patterns, the real estate market, and economics.

- Land that was not zoned or zoned for agricultural use, and was not mentioned in meetings with planners or developers, was sometimes entered into the plan layer for potential development if it was in close proximity to existing development, accessible by roadways, or located near areas with significant future plans for growth.

- Lastly, there were areas in the region that were not assigned a use and density within the plan layer. This was often because there had been no evidence of any interest in developing them, and in most cases these parcels were far from existing roads and other infrastructure and there were no known plans to provide access to them in the future. In other instances, areas were not entered into the plan layer because they were identified as targets for conservation or preservation for open space or agricultural uses.

In all cases, surrounding land uses, densities, and existing zoning were used to consider the appropriateness and likelihood of developments entered into the plan layer.

Redevelopment

LAM recognizes developable land by its coded use, and will allow building to occur on vacant, rangeland, or unpreserved agricultural land. In addition, LAM will allow building to occur on top of an existing use *if* it has been identified as a potential parcel for redevelopment. This is done by turning on a "redevelopment flag" in the known or plan layer that tells LAM it is ok to build a project even though it is located on land that is already being used.

The identification of such areas was determined through meetings with planners, government officials and developers. Discussions revealed many areas within the region, particularly within the urban core, where there was a high likelihood for continued and potentially greater redevelopment efforts. This was particularly true in built areas that have increasing land values and strong site desirability.

Areas that were selected to be available for redevelopment fit one of the following criteria:

- The area or corridor is designated as a "Redevelopment Zone" by a municipality through policy or plan.

- The area or corridor has been targeted for redevelopment or higher densities in an adopted plan such as in the City of Albuquerque's Centers and Corridors Plan.

- The area or corridor was identified by planners or developers as having a high potential for new uses or increased densities due to surrounding uses and site desirability.

- In some cases, parcels were identified for redevelopment by MRCOG staff, such as certain parcels surrounding Commuter Rail stations.

- Developed areas surrounding vacant parcels that are targeted as highly desirable for high density infill development were selected for higher densities.

When LAM redevelops a piece of land, the homes and jobs in the existing land use layer vacate the parcel and are reallocated during a future step in the modeling process.

Undevelopable Lands

MRCOG created an undevelopable layer as a safeguard imbedded within LAM to ensure that specific areas that are unavailable for development are not accidentally developed. Undevelopable areas include land owned by the Bureau of Land Management, the State and National Park Services, the Forest Service, the Department of Energy, the Department of Defense, and natural drainage areas. Professional judgment was used in parcels that may be owned by one of the above entities but is likely to be developed. The State Land Office provided active input to this process.

Pueblo and reservation boundaries were also included in the undevelopable layer. This is because specific development on Indian Land was not allocated to specific sites through the LAM model. Rather, growth was projected off-model based on meetings with Tribal planners and leaders, or based on past trends when input was not received, and incorporated directly into the final DASZ forecast.

3. Run the Land Use Allocation Module

LAM was created specifically for use by MRCOG to forecast population, housing and employment. It was designed by a local consulting firm, Planning Technologies, LLC with input by MRCOG staff. It was calibrated based on local data specific to this region. Lastly, it was enhanced during the 2030 MTP development to increase its power, accuracy, and efficiency.

The main components of the actual LAM model are described on page 12. In short, they are the sub-models (which tell LAM the control totals), the land use layers (which tell LAM about existing, known and potential development), the allocation module (where LAM performs the actual distribution of housing and employment throughout the region), and the DASZ module (where LAM calculates socioeconomic variables by DASZ as required by the travel demand model).

The preliminary steps that are necessary prior to running the LAM allocation module have been described in detail in the previous two sections. Establishing control totals and building the land use layers set the stage for the allocation of new growth. At this point the modeler "runs" the LAM Allocation Module.

Site Suitability Evaluation

The allocation process is not as simple as just building projects that are in the pipeline, and distributing the remainder of growth into some pre-defined long term developments. If it were there would be no need for a model. In addition to the prioritization assigned to the 3 land use layers, LAM also has an internal component that evaluates the site suitability of lands eligible for development. That is, LAM is designed to recognize the inherent characteristics of competing sites and rank them due to various measures of attractiveness. This is the component that ultimately determines which projects are built, and at what pace and magnitude. The site suitability evaluation component of LAM is meant to simulate the real characteristics of growth.

"Site suitability scores" were developed at MRCOG as the result of a series of discussions with planners and developers about what factors influence where people choose to develop. These preferences were tested through regression analyses and those which were proven to be statistically significant were imbedded into the scoring component of LAM. The site evaluation measures used in the 2030 MTP are specific to each sector of development (residential, commercial, industrial, etc) but in general they include:

- *Freeway Interchanges and Major Intersections:* Present day and planned transportation networks for the future are used to evaluate land access. They also serve a surrogate for proximity to infrastructure.

- *Proximity to Urban Development*: Distance to other "built" uses is an indicator of the availability of local infrastructure and utilities to support development. Developers vocalized and research confirms that there are distinct advantages to building near existing developments.

- *Recent Growth Areas*: Areas that have experienced considerable development within the past 5 years are expected to continue growing. Recent development is a key indicator of what areas are attractive to homebuyers and businesses.

- *Development Probability:* Projects that have already initiated the development review process have a higher likelihood of progressing than those still in the conceptual planning phases.

- *Utility Service Areas:* LAM recognizes areas served by a water utility and these areas receive priority in the allocation. This layer updates itself throughout the allocation years with the

assumption that water service areas expand to meet the needs of areas experiencing significant growth.

- *Proximity to Activity Centers:* Existing employment concentrations act as attractions for new jobs. Future activity centers were defined in later LAM years in order to account for proposed centers in areas anticipated to see significant growth.

- *Proximity to Points of Interest:* Proximity to amenities, scenic areas, recreation and other attractions was found to be of increasing importance to residential developers. The exceptions are those that create noise or congestion such as airports or stadiums. Anticipated future points of interest were coded into future LAM years.

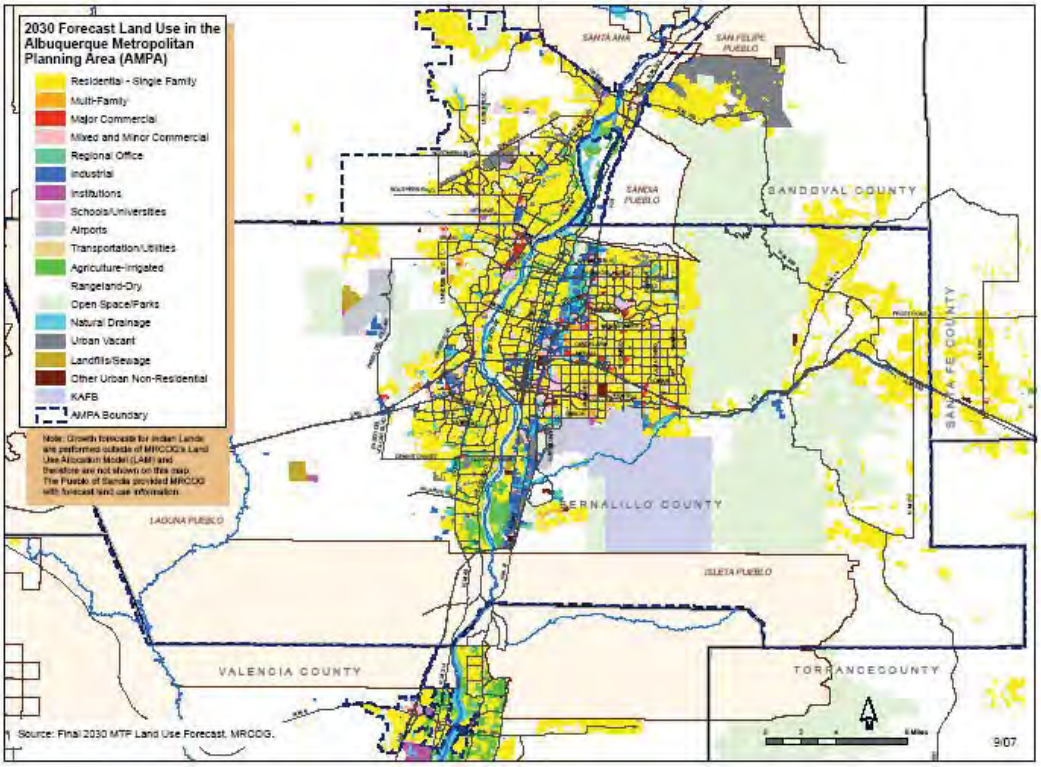
- *Lot Size:* Developers agreed that oftentimes residential construction is influenced by the economies of scale. That is, consolidated parcels of bulk land are often more attractive to larger residential developers because they provide an opportunity for higher returns on investments.

Since the developments coded into the land use layers far exceed the control totals for allowable growth, site scores serve as an "intelligent" way to evaluate which projects are most likely to build within the forecast period.

LAM Output

The result of the LAM allocation exists in two forms. One output consists of a shapefile, or spatial representation, of a regional land use forecast by land use category. This output is used as a powerful visual tool in presenting the forecast. The data attached to this output include housing and job density, therefore this file is also useful to calculate the number of housing and jobs forecast to an area, or to view density variations in the region. An example of this output is shown in Figure 10, 2030 Land Use Forecast.

Figure 11: 2030 Land Use Forecast for the Metropolitan Area



While land use is allocated by LAM to areas as small as ½ acre, this output is not designed to be used as a parcel level forecast. LAM was not designed to be a forecasting tool for geographies at that fine of a grain.

The second output is a DASZ dataset that contains the actual data used in the forecast. This dataset exists as a spreadsheet and a shapefile. It aggregates the land use categories in each of the region's 891 DASZs, applies average densities, and comes out with a total number of housing and jobs by zone. From housing and jobs several other variables are derived such as population, households, employment, income quintile and school enrollment. The process for deriving these variables from the housing and job allocation produced by LAM is outlined in section 4.

The DASZ dataset is the subject of post-processing by MRCOG staff and, once finalized, is delivered to MRCOG member governments and the public as the "official" forecast. It is also this dataset that is read into MRCOG's travel demand model for the purpose of performing traffic forecasts for the region.

4. Develop DASZ Forecast

The primary output from the LAM Allocation is a spatial distribution of forecast land use in the region. Each development in the forecast is associated with a land use sector, a land area, and a housing or employment density. From these densities, a total number of housing and jobs is calculated and aggregated to DASZ geography. From them, other socioeconomic variables are also generated by DASZ through automated computations that follow LAM allocation. They include;

- Total Population
- Population in Households
- Households
- Basic Employment
- Retail Employment
- Service Employment
- Income category
- Public School Enrollment
- UNM and CNM Enrollment

Population Variables

The variables derived from the housing allocation are Total Population, Population in Households, and Households.

The number of households was derived from housing by applying an occupancy rate to the total units allocated. The population in households was derived from applying a household size to the total households. Therefore, to get to households and population in households, occupancy rates and average household size projections were necessary.

In many of the older parts of the region with established neighborhoods, the occupancy rate and average household size was used from the base dataset (2004). The challenge, however, comes with quickly growing or entirely new communities. These newer areas either do not have any data for 2004 or the existing data are volatile due to the changing nature of the area. LAM was programmed to recognize such areas and project occupancy rates and household sizes.

In the DASZ module, LAM draws from a master DASZ file which was created based on land availability and density of housing. Zones that are considered to have an established zonal character were given a flag of '1'. Zones that were vacant or had a high percent of undeveloped land in the base year of 2004 were given a flag code of '0'. If a DASZ is coded as '0' and the number of newly allocated housing units does not exceed the existing housing units in the same zone then the factors for occupancy and household size remain unchanged from the base year. If a zone was coded '0', the occupancy rate and household size from the base data could be overrode if the number of newly allocated housing units exceeds the existing housing units.

In the instance that allocated housing exceeded the existing housing, the calculation of households and population in households was accomplished using the following steps.

Step 1: Calculate new occupancy rates in zones that have a flag code of '0' and newly allocated housing units exceeded the existing housing units.

a) Occupancy rates in Bernalillo County ($OccRt_{BC}$) = (base year households + (new single family units * .938) + (new multifamily units * .870)) / (base year housing units + new single family units + new multifamily units)

b) Occupancy rates outside Bernalillo County ($OccRt_{OC}$) = (base year households + (new single family units * .907) + (new multifamily units * .736)) / (base year housing units + new single family units + new multifamily units)

Bernalillo County has unique characteristics because of its nature as an urban core, and therefore is calculated with different factors than the rest of the region.

Step 2: Calculate an initial number of Households by combining the occupancy rates carried forward from the base year for established zones with the recalculated occupancy rates for the changing zones.

a) For Bernalillo County zones: $Hhlds_{BC}=OccRt_{BC}$ * total housing units
b) For other counties: $Hhlds_{OC}=OccRt_{OC}$ * total housing units

Step 3: Revise the number of Households for all zones by balancing the initial calculation of households to the county control total for households. A check was performed to ensure that the number of households was less than or equal to the total number of housing units in each DASZ.

Step 4: Calculate new average household sizes for all zones by combining base year data with data for new housing units. Factors are applied to the new housing units that reflect the projected decrease in household size throughout the forecast period.

a) Household sizes for zones in Bernalillo County ($HHSZ_{BC}$) = (base year population in households + ($HHSZ_{BSF}$factor * (new single family units * .938)) + ($HHSZ_{BMF}$factor * (multifamily units * .870))) / (base year housing units + new single family units + new multifamily units)
b) Household sizes for zones outside Bernalillo County ($HHSZ_{OC}$) = (base year population in households + ($HHSZ_{OSF}$factor * (new single family units * .907)) + ($HHSZ_{OMF}$factor * (multifamily units * .736))) / (base year housing units + new single family units + new multifamily units)

The household size factors for single and multi-family housing in and outside of Bernalillo County are provided below.

Table 25: Factors for Household Size

	Bernalillo County		Other Counties	
Forecast Year	Single Family	Multifamily	Single Family	Multifamily
2004	2.913	1.991	3.084	2.077
2010	2.857	1.953	3.025	2.037
2015	2.836	1.939	3.003	2.022
2020	2.816	1.924	2.981	2.007
2025	2.795	1.910	2.959	1.993
2030	2.774	1.896	2.937	1.978

Step 5: Calculate the initial Population in Households for all zones by multiplying the total number of households by household size. If the computed household size was less than 1 it was increased to 1.

Step 6: Revise the Population in Households for all zones by balancing the initial population in households to the county control totals for Population in Households. An edit check was performed to ensure that the population in households was greater than or equal to the total number of households.

Following each LAM iteration a new input file for the next iteration was generated. The new input file contained recomputed values for occupancy rate and household size that were generated from the updated totals for housing units, households, and population in households. This file served as input to the next

iteration, and so forth, until the 2030 forecast year. For any zone that previously had a flag code of '0' but had gained at least 100 housing units, the flag code was changed to '1'.

Total population was generated by adding the population in households to the number of persons living in group quarters. Population in group quarters was computed by MRCOG staff separately from the modeling process. The base year data for the group quarters population was grown throughout the forecast period and balanced to the forecast for group quarters in the sub-models.

Employment Conversions

The LAM allocation distributes employment throughout the region by land use code. The sub-models contain factors that are applied after allocation and convert employment by land use code to NAICS code. These conversion factors were developed by overlaying the 2004 EXLU, which contains employment by land use, with the 2004 EQUI data, which contains employment by NAICS. In creating the dataset that serves as input to the travel model, LAM's automated processes then collapse the NAICS employment into three employment sectors; basic, retail, and service. Basic consists of all agricultural, mining, utilities, construction, manufacturing, wholesale trade, transportation and warehousing information and military jobs. Retail includes retail trade and eating and drinking employment. Services includes government, education, health, arts, recreation, financial, insurance, real estate, administration, management, professional/technical employment and other services. The final result is a DASZ forecast for basic, retail and service employment.

Income Quintiles

Each DASZ in the modeling area with one or more households is categorized with an income quintile from 1 (low income) to 5 (high income). Each category contains approximately 20 percent of the coded DASZs. Coding for the 2000 socioeconomic dataset was based on median household income from the 2000 Census. This coding was updated using the value data attached to residential building permits and tax assessor data in creating the base year dataset for 2004.

Income quintile forecasts are based on a shapefile that is read by LAM following housing allocation. The shapefile codes an income quintile to every zone, even those without housing units. These codes are derived from historical income data, current permit data and housing values, as well as planner and developer input regarding expectations about income in a given community or area. For example, at the time of MTP development, developers were planning for entry-level housing in the southwest mesa. These zones were therefore coded with lower income quintiles. Mesa del Sol developers were planning for a mix of housing choices, therefore the DASZ shapefile reflected a variety of incomes.

With each LAM iteration DASZs were identified if they received households where there previously were none, or if more than half of the total housing was due to growth. When this was the case, income quintiles were pulled from the income forecast shapefile and the quintiles were recomputed. Zones were moved up or down in the income quintile distribution based on where they fell in terms of median income compared to other zones within the same quintile. Those that had the lowest median incomes in the 2nd quintile may be knocked down into the 1st in the redistribution of quintiles, and those with the highest might climb into the 3rd quintile. The income shapefile was updated for each forecast year and served as input to the next iteration.

Public School Enrollment

A school forecast is required by the travel model to generate school-based trips. This forecast occurs in a separate LAM extension referred to as the LAM School Module. In the school module new schools are created, attendance areas are refined, and the number of students in each DASZ is calculated. Students per attendance area are summarized to total enrollment by school, and total enrollment is summarized and balanced to the county controls.

A forecast for schools began with the input of existing schools, which were automatically built. Next, new schools that are planned or reasonably expected to build were entered into the known layer and carried through into the School Module. These schools were revealed through meetings with school planners and developers in the region when questioned about plans for future schools and likely sites. Schools entered in the known layer have data attached regarding school type and the year in which the school can be built. Finally, a forecast for new schools that are not yet known was developed in the school module based on anticipated future demand, which is determined by the projection of households.

A forecast for attendance areas began with base year boundaries for current school districts and school attendance areas. The school module projects future attendance areas to have a maximum of 7,000 persons in households for elementary schools; about 26,000 for middle schools; and about 45,000 for high schools. These population thresholds are based on current averages. In many cases, attendance areas fall well below these thresholds due to the proximity of schools in older areas or School Districts that have small populations.

A forecast for enrollment by school began with a projection of students living in each DASZ, which was calculated from total households. An initial calculation of students in each DASZ was computed with the following equations that were calibrated from 2000 Census data. The R-square values for each of these equations exceeded .9.

> Elementary Students = (population in households * 0.13805) – (estimated adult population * 0.08892) where estimated adult population equals the number of households times 1.89 (the median number of adults in households from the 2000 Census);
>
> Middle School Students = (population in households * 0.06066) – (estimated adult population * 0.03413); and
>
> High School Students = population in households * 0.04474.

Students by DASZ were summarized by attendance area for each school to get a preliminary forecast for enrollment by school. These enrollments were analyzed and if they exceeded the specific thresholds for households per school a new school was added or the attendance area was revised. Enrollment was summarized by elementary, middle and high school and then balanced to the control totals.

While the final DASZ forecast contains data regarding public school enrollment only, the School Module also generates a separate school file required by the travel model which specifies school location, attendance area and enrollment.

UNM and CNM Enrollment

UNM and CNM enrollment are forecast in the sub-models by branch location as described in the control totals section. In the development of the forecast dataset by zone, the forecast enrollments were simply inserted directly into each DASZ forecast to have a UNM or CNM branch.

5. Refine and Finalize DASZ Forecast

In the post-processing step, MRCOG staff were careful to trust the modeling process and not to make revisions hastily based on expectations regarding development in the region. LAM is designed to look at attractiveness of development on several different layers and make informed predictions. If a development sprouted up in the forecast that wasn't currently being planned, or if a development that was currently being planned did not build at the scale it was expected to, the modeler recognized that this may be entirely reasonable, and there have been many local examples of departures from development plans in the past.

However, a model does not replace human reasonability checks and informed manual processes. Therefore the LAM output underwent several post-processing checks in order to finalize the 2030 forecast.

First there is the concern regarding the potential for modeling error. The MTP forecasting process occurred simultaneously with a LAM Enhancement Project, where Planning Technologies, LLC was contracted to update and enhance the model to run more efficiently. Prior to forecast development, the model was run several times and the output was subject to intense scrutiny in order to correct any problems within the model coding and processes. Some modifications were made to model assumptions. By the time the final series of forecasts were run, staff felt confident that LAM was working properly.

Reasonability checks were performed on the model output itself, which included the following steps;

- LAM forecasts were summarized to the Region and Counties and checked against the control totals fed into LAM through the sub-models.
- Employment shares by County in the 2030 forecast were checked against 2004 shares.
- LAM allocated growth was checked against LAM inputs including the known, planned, and redevelopment projects.
- LAM forecasts were summarized to municipal boundaries and checked against any existing and independent municipal forecasts performed by MRCOG or other entities.
- Housing and employment shares in subareas of the region were analyzed over time.
- The difference between the 2030 forecast and the 2004 DASZ dataset was compared by DASZ.
- The difference between the 2030 forecast and the 2025 forecast performed in 2002 for the 2025 MTP was compared by DASZ.
- Residential growth was analyzed in terms of the subsequent allocation of supporting services such as population serving jobs, emergency services, and educational facilities.
- Employment in special sectors such as airports, schools, and Kirtland Air Force Base was reviewed.
- Final occupancy rates and household sizes by County and by DASZ were reviewed.
- Zones were checked to ensure that the number of households was less than or equal to the total number of housing units.
- Housing to employment ratios were analyzed over time.
- School enrollment was recalculated based on adjustments made to housing during post-processing routines.
- Work at home employment was adjusted based on revisions to the number of households that occurred during post-processing.

Revisions during these post-processing checks were made cautiously. In most cases, revisions to LAM output were due to technical and computational issues. In some cases, revisions were made based on professional judgment about growth allocation or new information made available after the model was run.

Prost-processing for the 2030 dataset was over a month long process subject to review by MRCOG transportation staff. In July of 2007, the final 2030 socioeconomic forecast was publicly released.

APPENDIX A: Participants in the Forecasting Process

Meetings were held with the following entities and individuals at various points throughout the forecasting process to discuss current and proposed development in the MRCOG region.

Planning Departments and Government Officials

Bernalillo County Planning
City of Albuquerque Planning
City of Albuquerque Redevelopment
Village of Los Ranchos de Albuquerque Planning
Village of Tijeras Municipal Office
Sandoval County Planning
City of Rio Rancho Development Services
Village of Corrales Planning
Town of Bernalillo Planning
Valencia County Planning
City of Belen Planning and Zoning
Bosque Farms Planning and Zoning
Village of Los Lunas Community Development
Torrance County Manager's Office
City of Moriarty Mayor's Office
Town of Edgewood Planning and Zoning

Schools

Albuquerque Public Schools
Belen Schools
Los Lunas Schools
Bernalillo Schools
Moriarty Schools
Rio Rancho Schools
UNM
TVI

Development Community

Ron Brown, Ron Brown & Associates
Roger Cox, Roger Cox and Associates
Leroy Chavez, Westland Corporation
Tom Wade, Artistic Homes
Herb Denish, Denish & Kline Associates
Jacqueline Guilbault, Valley Improvement Association
Jim Folkman, Homebuilders Association
Greg Foltz, Coldwell Banker Commercial
Bob Murphy, Sandia Properties
Kurt Browning, Sandia Properties
Dale Dekker, Dekker, Parich, Sabitini and Associates
Doug Collister, High Desert Corporation
Harry Relkin, Forest City Covington
John Black, West Wood Realty
Ben Spencer, Argus Development Company
Chuck Gara, Gara Commercial
John Murtaugh, Longford Homes
Bob Pruitt, Centex Housing

Bill Campbell Jr, Bill Campbell Realty
Stan Strickman & Chuck Haigland, Curb Inc.
Rick Bressan, D. R. Horton
Jody Paza, Fuller Homes
Bob Coleman, KB Homes
Chris Calott, Infill Solutions
Robert Lupton, Raylee - Vantage Homes
Jim Folkman, Home Builders Association of Central New Mexico
Rob Dickson, Paradigm and Company

Tribal Governments

Sandia
San Felipe
Laguna
Isleta
Navajo To'hajjillee
Santa Ana

Land Grant Community

Chilili
San Antonia de las Huertas
Tome
Carnuel
North Central New Mexico Economic Development District, Director of Planning

Others

Greater Albuquerque Housing Partnership
Architectural Research Consultants, Incorporated
Consensus Planning
Kirtland Air Force Base
State Land Office
State Engineer's Office

Public

Meetings were held to gather public input periodically throughout the forecasting process at various different venues.

APPENDIX B: 2004 Socioeconomic Estimate by DASZ

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
1011	111	111	34	40	40	0	0	0	0	0
1012	17	17	3	3	3	0	0	0	0	0
1021	0	0	0	0	0	0	0	0	0	0
1022	0	0	0	8	8	0	275	0	12	287
1031	56	56	24	33	33	0	0	0	0	0
1032	9	9	4	5	5	0	0	0	0	0
1033	2908	2908	1087	1153	1135	18	5	1	25	31
1041	10	10	3	3	3	0	0	0	0	0
1042	0	0	0	0	0	0	0	0	61	61
1051	3891	3891	1393	1487	1437	50	19	2	40	61
1052	1265	1265	458	483	483	0	1087	139	833	2059
1061	390	206	84	101	101	0	0	115	106	221
1071	0	0	0	0	0	0	0	0	0	0
1072	493	493	182	191	191	0	25	0	10	35
1081	5	5	2	2	2	0	0	0	0	0
1082	0	0	0	0	0	0	0	0	97	97
1091	3	3	1	1	1	0	0	0	0	0
1092	0	0	0	0	0	0	0	0	0	0
1093	0	0	0	0	0	0	0	0	0	0
1101	547	547	161	183	183	0	0	0	4	4
1151	3836	3836	1495	1582	1582	0	8	3	130	141
1152	0	0	0	0	0	0	0	0	0	0
1153	22	22	9	10	10	0	39	0	1	40
1154	130	130	44	47	47	0	0	0	0	0
1161	0	0	0	3	3	0	9	0	0	9
1162	0	0	0	0	0	0	0	0	0	0
1163	3	3	1	1	1	0	0	0	0	0
1164	25	25	9	10	10	0	0	0	0	0
1171	254	254	97	100	100	0	0	0	1	1
1181	8	8	3	3	3	0	0	0	0	0
1182	104	104	39	41	41	0	0	0	34	34
1183	293	293	111	113	113	0	0	0	2	2
1184	59	59	23	23	23	0	0	0	4	4
1191	543	543	200	204	204	0	19	0	14	33
1192	371	371	134	138	138	0	8	0	14	22
1193	503	503	167	180	180	0	32	0	73	105
1194	248	248	87	88	84	4	2	0	160	162
1195	5	5	3	3	3	0	25	0	288	313
1201	1799	1799	618	630	630	0	16	1	20	37
1202	1556	1556	549	560	560	0	3	11	27	41
1203	1858	1858	667	681	681	0	147	477	453	1077
1221	1574	1574	527	537	537	0	38	4	23	65
1222	472	472	195	198	198	0	834	106	595	1535
1223	2943	2943	986	1016	1016	0	137	50	145	332
1231	14	14	7	7	7	0	0	0	58	58
1232	3	3	1	1	1	0	40	6	232	278
1233	0	0	0	0	0	0	0	0	0	0
1241	31	31	14	15	15	0	0	0	0	0
1251	446	446	156	165	165	0	6	0	2	8
1252	108	108	36	39	39	0	0	0	0	0
1261	63	63	15	18	18	0	0	0	0	0
1262	167	167	50	58	58	0	0	0	1	1
1263	1285	1285	456	478	478	0	13	2	17	32
1301	2088	2088	739	781	708	73	30	2	24	56

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
1302	946	946	337	350	345	5	10	2	14	26
1303	837	837	302	307	307	0	4	1	10	15
1351	820	820	283	295	277	18	19	1	29	49
1352	1431	1431	506	553	498	55	167	20	45	232
1353	2354	2354	792	820	760	60	25	60	35	120
1354	659	659	213	219	219	0	5	1	34	40
1371	224	224	82	83	83	0	1	0	1	2
1372	1873	1873	629	641	641	0	9	2	26	37
1373	1460	1460	517	526	434	92	3	1	35	39
1374	3424	3424	1163	1190	1190	0	46	173	276	495
1375	1230	1230	549	594	396	198	1	12	19	32
1401	331	331	96	101	101	0	0	0	22	22
1402	1135	1135	381	405	218	187	2	411	253	666
1403	2824	2824	1209	1287	985	302	20	63	206	289
1404	1219	1219	615	685	404	281	7	689	415	1111
1451	7	7	4	4	4	0	685	31	196	912
1452	3224	3072	1179	1206	1202	4	37	3	146	186
1453	2253	1996	1125	1201	548	653	41	3	138	182
1501	173	130	100	241	0	241	191	275	889	1355
1502	0	0	0	0	0	0	5520	4	296	5820
1511	926	926	419	440	396	44	95	547	612	1254
1512	2037	2033	695	711	711	0	38	112	267	417
1513	995	982	353	365	358	7	21	84	32	137
1521	0	0	0	0	0	0	19	68	94	181
1522	46	46	13	13	13	0	71	65	326	462
1523	9	9	3	3	3	0	0	0	41	41
1531	338	338	106	115	115	0	18	0	3	21
1532	220	220	72	73	73	0	86	10	38	134
1533	0	0	0	0	0	0	0	0	0	0
1541	5	5	2	2	2	0	0	0	81	81
1542	57	57	20	22	22	0	0	0	8	8
1543	0	0	0	0	0	0	0	0	0	0
1551	118	118	36	44	44	0	0	0	0	0
1552	175	175	60	64	64	0	4	0	1	5
1701	386	386	138	140	138	2	11	9	6	26
1711	2158	2158	807	847	847	0	40	5	69	114
1721	554	554	213	229	217	12	28	22	37	87
1731	787	787	292	313	296	17	91	2	37	130
1741	993	993	390	409	389	20	86	28	286	400
1751	1240	1240	455	474	462	12	108	141	179	428
1761	1079	1079	425	448	443	5	34	2	29	65
1771	571	571	257	271	267	4	9	5	21	35
1772	153	153	57	60	60	0	4	0	4	8
2011	3148	3148	827	1118	1095	23	3	3	70	76
2012	116	116	45	118	118	0	0	0	1	1
2021	25	25	12	15	13	2	0	2	1058	1060
2022	9	9	4	65	65	0	1	0	1	2
2031	2110	2110	505	542	542	0	27	4	343	374
2032	937	937	258	303	303	0	24	11	151	186
2041	0	0	0	0	0	0	0	0	0	0
2042	0	0	0	0	0	0	0	0	10	10
2051	2072	1979	823	1318	1309	9	60	49	181	290
2061	1512	1512	574	898	839	59	143	146	482	771
2071	12	12	4	7	7	0	7	10	16	33
2072	464	464	204	338	338	0	9	2	8	19
2111	17	17	6	7	7	0	0	0	0	0
2411	432	432	145	159	159	0	46	0	221	267

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
2421	992	992	411	426	305	121	14	155	422	591
2422	886	886	314	331	331	0	116	160	253	529
2423	1406	1406	482	497	497	0	52	42	217	311
2424	1475	1475	497	538	532	6	29	71	96	196
2425	2450	2450	806	869	866	3	162	60	339	561
2431	632	632	219	241	241	0	9	0	2	11
2432	516	516	125	136	136	0	19	1	137	157
2441	458	458	156	181	181	0	12	0	136	148
2442	3620	3597	681	739	739	0	108	64	251	423
2443	1796	1796	345	385	385	0	57	4	168	229
2451	215	215	79	108	108	0	2	0	1	3
2452	1095	1095	399	459	459	0	30	1	115	146
2453	97	97	31	38	38	0	39	0	2	41
2454	1014	1014	174	198	198	0	13	0	5	18
2511	0	0	0	0	0	0	0	0	0	0
2521	2666	2666	1166	1225	1206	19	127	66	138	331
2522	1355	1355	562	629	625	4	21	3	105	129
2523	212	212	91	95	92	3	0	1	4	5
2524	304	304	130	138	138	0	7	1	7	15
2531	184	184	78	93	93	0	0	1	4	5
2532	341	341	134	138	138	0	2	1	7	10
2541	63	63	23	24	24	0	5	0	502	507
2542	44	44	17	29	29	0	0	0	0	0
3001	866	852	373	402	365	37	132	2	24	158
3011	756	756	309	326	326	0	80	37	37	154
3021	247	247	98	106	106	0	44	39	75	158
3031	635	635	245	259	259	0	3	1	130	134
3041	3	3	1	1	1	0	0	0	0	0
3051	1959	1959	785	839	839	0	71	6	74	151
3061	135	135	52	56	56	0	0	0	2	2
3071	961	961	339	363	363	0	14	1	13	28
3081	987	987	362	389	389	0	13	1	34	48
3091	538	538	191	208	199	9	18	1	12	31
3101	462	459	183	199	194	5	16	41	38	95
3111	849	849	404	437	431	6	31	50	58	139
3121	1574	1557	611	649	643	6	36	44	120	200
3131	331	331	124	130	123	7	9	1	17	27
3141	313	313	134	146	139	7	0	1	4	5
3201	80	80	31	34	34	0	0	4	26	30
3211	61	61	24	27	27	0	121	29	179	329
3221	730	730	277	311	304	7	179	17	200	396
3231	918	918	360	399	399	0	17	3	75	95
3241	1060	1060	397	424	424	0	24	2	43	69
3251	316	316	109	121	121	0	6	2	60	68
3261	148	148	54	59	59	0	2	0	29	31
3271	50	50	18	20	20	0	0	0	1	1
3281	0	0	0	0	0	0	0	0	0	0
3291	339	339	156	198	198	0	15	1	30	46
3301	233	233	90	98	98	0	1	1	6	8
3311	421	421	152	175	175	0	10	1	8	19
3321	212	212	91	120	120	0	1	1	4	6
3331	493	493	195	221	221	0	10	7	67	84
3341	1454	1454	545	621	621	0	43	12	35	90
3351	378	378	137	175	175	0	5	1	13	19
3361	716	716	277	324	324	0	7	1	17	25
3371	95	95	31	40	40	0	0	5	0	5
3401	0	0	0	0	0	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
4101	0	0	0	0	0	0	0	0	0	0
4111	18	18	7	7	7	0	6	5	0	11
4112	622	622	211	226	222	4	32	0	2	34
4113	161	161	54	62	58	4	13	0	1	14
4121	667	667	187	191	191	0	0	0	104	104
4122	806	806	310	412	408	4	2	4	249	255
4131	0	0	0	0	0	0	0	0	0	0
4132	48	48	22	24	24	0	14	0	0	14
4141	1056	1045	389	415	411	4	20	120	1174	1314
4142	106	106	41	44	44	0	17	0	0	17
4143	323	323	120	121	121	0	4	11	2	17
4144	851	851	275	287	274	13	15	20	213	248
4145	925	925	352	377	340	37	6	95	193	294
4146	381	381	155	166	100	66	17	2	112	131
4151	110	110	35	42	42	0	7	0	0	7
4152	8	8	3	6	6	0	0	0	0	0
4153	3	3	1	1	1	0	927	434	66	1427
4154	366	366	134	141	141	0	83	178	263	524
4155	3	3	1	1	1	0	0	0	0	0
4156	180	180	68	78	78	0	17	0	1	18
4161	2997	2997	1160	1225	1037	188	27	147	144	318
4162	1589	1360	489	543	446	97	90	87	184	361
4163	281	157	56	61	45	16	0	84	635	719
4164	1993	1993	660	710	680	30	22	147	100	269
4165	1046	1046	361	389	354	35	30	11	226	267
4166	2768	1902	677	735	733	2	67	5	526	598
4167	219	219	90	96	96	0	7	0	5	12
4171	2467	2467	830	890	883	7	149	531	142	822
4172	609	609	236	249	249	0	127	18	20	165
4173	1315	1315	503	550	532	18	30	13	110	153
4174	613	613	249	265	243	22	51	85	57	193
4175	929	900	302	326	319	7	77	77	117	271
4176	333	329	110	122	122	0	8	0	6	14
4181	1055	930	366	382	302	80	26	1	306	333
4182	740	739	292	326	301	25	4	19	123	146
4183	639	639	255	301	241	60	13	53	196	262
4184	545	537	218	320	255	65	190	237	652	1079
4185	888	834	326	351	295	56	57	39	170	266
4186	1113	980	342	376	295	81	78	81	45	204
4187	767	767	287	344	300	44	39	42	85	166
4191	2459	2459	888	952	952	0	161	4	111	276
4192	1307	1303	505	558	552	6	232	87	132	451
4201	13	13	5	5	5	0	0	0	0	0
4202	573	573	207	233	233	0	45	1	14	60
4203	269	269	103	114	114	0	61	1	33	95
4211	44	44	16	18	18	0	2	0	1307	1309
4311	949	949	305	335	335	0	127	10	10	147
4411	2398	2398	729	849	849	0	12	1	20	33
4412	2325	2325	686	790	790	0	37	4	29	70
4413	0	0	0	0	0	0	0	0	0	0
4414	5381	5381	1438	1586	1586	0	42	13	43	98
4415	1135	1135	392	426	426	0	3	1	126	130
4421	485	485	181	194	194	0	0	0	381	381
4422	20	20	7	7	7	0	0	0	0	0
4423	204	204	68	74	74	0	0	0	60	60
4431	1399	1399	476	514	514	0	6	1	153	160
4432	29	29	12	12	12	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
4441	3	3	1	1	1	0	0	0	0	0
4442	8	8	3	3	3	0	0	0	0	0
4443	5	5	2	2	2	0	0	0	5	5
4444	165	165	66	74	74	0	6	0	7	13
4451	41	41	14	16	16	0	0	0	0	0
4452	31	31	11	12	12	0	1	0	0	1
4511	3829	3829	1382	1439	1439	0	188	209	303	700
4512	635	635	246	257	257	0	89	85	109	283
4513	2064	2064	718	768	742	26	123	32	172	327
4514	1473	1473	525	582	568	14	35	398	377	810
4521	2253	2253	800	865	856	9	164	115	202	481
4522	276	276	109	119	109	10	13	228	224	465
4523	2879	2867	993	1034	1034	0	129	43	48	220
4524	1024	971	350	377	373	4	130	31	261	422
4531	1332	1332	480	515	506	9	132	1	18	151
4532	1307	1307	474	500	491	9	88	1	37	126
4611	2528	2518	929	1024	1007	17	17	8	60	85
4621	1807	1807	895	962	875	87	185	41	135	361
4631	204	204	73	77	77	0	36	0	15	51
4632	871	871	277	315	315	0	324	0	15	339
4701	807	807	252	308	308	0	5	1	15	21
4702	0	0	0	5	5	0	0	0	0	0
5001	0	0	0	0	0	0	8	112	1974	2094
5002	0	0	0	0	0	0	0	0	136	136
5003	13	10	4	5	1	4	869	940	2002	3811
5004	133	97	51	65	42	23	3	32	340	375
5005	543	416	296	321	3	318	70	84	219	373
5006	24	4	4	8	1	7	3	93	1874	1970
5007	4	4	2	2	2	0	12	111	571	694
5008	16	0	0	0	0	0	140	137	173	450
5009	55	55	47	57	6	51	17	8	1254	1279
5011	110	0	0	0	0	0	44	21	188	253
5012	22	22	15	17	0	17	0	9	416	425
5101	1878	1878	637	737	537	200	82	39	204	325
5102	534	534	176	198	165	33	29	11	25	65
5103	794	617	338	404	169	235	22	43	463	528
5111	1326	1313	367	383	361	22	31	5	357	393
5112	1812	1812	547	606	542	64	30	25	136	191
5121	2804	2641	987	1108	795	313	73	159	319	551
5131	170	145	51	56	53	3	0	59	208	267
5132	1779	1685	903	1033	276	757	338	8	278	624
5141	182	171	106	118	19	99	21	8	141	170
5142	296	280	156	186	119	67	43	105	158	306
5143	937	937	483	518	355	163	7	1	54	62
5151	621	618	228	253	250	3	10	12	152	174
5152	1032	1032	417	447	350	97	179	173	176	528
5161	668	668	261	290	264	26	10	163	87	260
5162	536	536	290	322	263	59	13	107	246	366
5163	45	44	32	42	26	16	39	396	81	516
5171	253	245	183	205	3	202	0	20	203	223
5172	958	942	580	644	331	313	23	25	405	453
5173	991	979	525	571	399	172	24	39	249	312
5201	478	478	204	217	195	22	474	78	263	815
5202	0	0	0	0	0	0	63	381	434	878
5211	790	790	348	380	367	13	38	5	70	113
5212	611	611	263	313	248	65	5	18	20	43
5213	279	279	109	122	103	19	589	6	94	689

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
5221	4	4	3	5	5	0	491	85	188	764
5231	1	1	1	1	1	0	0	18	788	806
5232	33	33	12	13	7	6	616	17	40	673
5241	502	462	195	220	212	8	23	21	77	121
5242	1274	1274	656	841	229	612	220	1	458	679
5251	265	130	58	72	46	26	270	142	359	771
5261	132	132	81	92	72	20	264	61	3928	4253
5262	99	99	46	60	27	33	227	40	808	1075
5271	410	346	193	252	64	188	2	19	331	352
5272	0	0	0	0	0	0	31	5	855	891
5273	418	360	189	203	114	89	17	92	3314	3423
5301	26	26	9	9	9	0	702	44	188	934
5311	1442	1442	437	477	455	22	212	3	14	229
5312	225	225	71	83	79	4	284	32	278	594
5321	2	2	1	1	1	0	845	12	238	1095
5322	5	5	2	2	2	0	88	0	54	142
5331	345	345	124	136	136	0	128	63	20	211
5401	745	736	266	281	274	7	78	1	23	102
5402	897	897	295	309	289	20	15	1	111	127
5411	1858	1791	495	568	522	46	513	47	134	694
5412	26	26	6	7	7	0	314	36	20	370
5421	72	72	28	32	32	0	1532	55	57	1644
5422	33	33	14	15	15	0	141	39	57	237
5431	500	500	178	190	190	0	91	6	30	127
5502	775	775	206	216	216	0	125	11	58	194
5503	756	756	226	246	238	8	13	0	3	16
5505	1503	1503	432	459	459	0	30	1	30	61
5506	1018	1018	321	353	353	0	79	1	15	95
5511	2325	2318	792	834	823	11	87	153	314	554
5512	776	769	247	268	262	6	3	69	126	198
5513	369	369	119	124	122	2	22	12	11	45
5521	545	545	178	186	186	0	11	4	94	109
5522	2172	2172	659	686	680	6	21	20	24	65
5523	510	510	182	199	199	0	2	1	5	8
5524	990	973	329	354	350	4	38	4	192	234
5525	314	291	97	106	103	3	23	37	78	138
5526	486	486	170	179	177	2	37	0	5	42
5531	482	482	176	182	178	4	7	1	10	18
5532	1047	1014	370	389	389	0	59	1	121	181
5533	798	798	273	286	284	2	31	1	21	53
5534	386	373	129	139	133	6	1	1	6	8
5535	524	524	175	184	184	0	39	1	121	161
5536	754	754	257	276	275	1	95	18	10	123
5537	186	186	66	72	72	0	1	12	9	22
5601	1335	1335	457	497	462	35	5	3	51	59
5602	2253	2252	767	831	730	101	3	207	49	259
5603	810	810	255	269	266	3	52	1	12	65
5611	739	739	245	264	245	19	9	2	4	15
5612	1024	1024	357	375	359	16	18	2	99	119
5613	1125	1125	391	438	388	50	30	36	50	116
5614	683	673	225	253	212	41	36	7	46	89
5621	907	907	310	333	298	35	1	43	39	83
5622	2876	2872	1027	1134	940	194	59	39	210	308
5623	1397	1397	507	543	353	190	89	9	361	459
5631	2224	2224	752	805	780	25	163	19	375	557
5632	846	846	275	290	274	16	21	0	4	25
5633	2571	2571	872	953	793	160	62	129	565	756

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
5634	2454	2454	752	828	719	109	3	5	36	44
5635	1007	997	323	345	324	21	13	15	91	119
5636	288	288	97	107	94	13	1	236	91	328
5637	873	866	287	299	281	18	3	0	202	205
5638	807	807	269	283	257	26	59	111	48	218
5641	1554	1554	512	543	517	26	72	10	111	193
5642	1736	1736	574	601	597	4	118	27	156	301
5643	133	133	48	59	59	0	0	0	96	96
5701	1345	1345	441	559	559	0	93	16	29	138
5702	49	49	15	15	15	0	1	0	164	165
5703	1890	1890	671	692	692	0	42	2	71	115
5711	1703	1703	473	520	520	0	5	2	136	143
5712	1881	1881	568	606	606	0	40	20	67	127
5713	409	409	151	162	162	0	0	0	2	2
5714	3963	3963	1344	1406	1406	0	8	28	158	194
5715	2515	2462	881	975	975	0	75	4	142	221
5716	1795	1795	655	731	550	181	45	3	12	60
5717	3	3	1	1	1	0	0	10	0	10
5722	4878	4878	1435	1462	1458	4	24	1	134	159
5723	3993	3993	1324	1366	1366	0	12	26	58	96
5731	1010	1010	387	389	389	0	11	26	8	45
5732	127	127	34	37	37	0	36	7	1	44
5733	110	110	39	46	46	0	455	40	46	541
5734	384	384	134	144	144	0	0	14	47	61
5735	1608	1608	561	595	595	0	2	1	14	17
5741	0	0	0	0	0	0	0	0	0	0
5742	0	0	0	0	0	0	0	0	0	0
5743	54	54	17	17	17	0	0	0	0	0
5751	3362	3362	1150	1203	1203	0	31	8	32	71
5752	1313	1313	390	400	391	9	23	87	293	403
5753	1310	1258	373	422	422	0	11	38	98	147
5754	608	608	173	182	152	30	45	0	5	50
5761	34	34	9	10	10	0	0	0	0	0
5762	116	116	33	36	36	0	3	11	0	14
5763	120	120	33	36	36	0	0	0	57	57
5764	132	132	38	42	42	0	0	0	0	0
5801	542	542	224	234	230	4	8	11	13	32
5802	467	467	177	184	184	0	12	0	133	145
5803	0	0	0	0	0	0	229	0	11	240
5804	1983	1983	802	844	281	563	601	217	457	1275
5805	79	79	73	88	0	88	606	0	231	837
5806	609	609	234	263	55	208	403	797	838	2038
5807	737	737	244	253	253	0	131	1	39	171
5811	3959	3959	1401	1556	1177	379	36	91	451	578
5812	2322	2309	777	805	782	23	38	209	269	516
5821	1901	1866	661	711	631	80	5	237	120	362
5822	998	990	372	384	331	53	26	0	78	104
5831	609	609	193	201	197	4	44	17	52	113
5832	1214	1203	352	363	363	0	20	96	30	146
5833	3608	3608	1153	1235	1164	71	35	62	235	332
5841	479	479	169	188	188	0	157	240	50	447
5901	0	0	0	0	0	0	0	0	58	58
5911	1863	63	25	25	25	0	0	6	480	486
6001	576	576	206	225	183	42	52	57	108	217
6002	1395	1395	566	613	567	46	94	38	137	269
6003	710	701	266	295	270	25	654	64	435	1153
6004	113	53	24	26	6	20	91	46	45	182

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6011	553	553	222	243	205	38	5	144	145	294
6012	916	916	360	402	344	58	20	35	115	170
6021	2191	2164	872	944	837	107	21	11	267	299
6022	1078	1078	419	466	389	77	546	224	91	861
6031	384	252	92	101	77	24	222	10	403	635
6032	661	661	241	255	169	86	438	12	86	536
6033	561	557	222	245	164	81	15	122	198	335
6034	460	460	201	278	168	110	23	232	93	348
6041	1150	1150	505	549	518	31	40	104	124	268
6042	387	387	155	165	141	24	241	80	273	594
6043	1057	1057	401	432	132	300	13	67	62	142
6044	214	214	75	78	76	2	0	0	51	51
6045	692	692	262	282	264	18	232	21	103	356
6046	652	652	246	258	252	6	328	172	112	612
6051	0	0	0	0	0	0	230	228	158	616
6052	0	0	0	0	0	0	96	0	1304	1400
6053	0	0	0	0	0	0	917	0	134	1051
6054	2	2	1	1	1	0	17	37	623	677
6055	0	0	0	0	0	0	931	103	528	1562
6056	0	0	0	0	0	0	781	279	1472	2532
6057	6	6	4	5	5	0	643	230	695	1568
6058	56	3	2	2	2	0	294	7	269	570
6061	405	405	144	153	146	7	373	1	199	573
6062	1338	1333	599	652	524	128	403	593	482	1478
6063	0	0	0	0	0	0	529	15	16	560
6064	0	0	0	0	0	0	875	536	336	1747
6071	398	398	157	170	152	18	134	24	101	259
6072	231	231	94	102	102	0	1708	101	880	2689
6073	47	47	19	24	24	0	1054	579	246	1879
6074	52	52	24	24	24	0	134	6	97	237
6075	100	100	38	40	40	0	1570	47	400	2017
6076	3	3	1	1	1	0	703	882	390	1975
6077	382	32	15	16	16	0	994	127	1281	2402
6081	343	343	129	140	140	0	735	0	588	1323
6082	113	113	44	48	48	0	246	18	51	315
6083	2263	2263	862	894	894	0	22	1	28	51
6084	2469	2469	914	989	630	359	59	39	370	468
6091	0	0	0	0	0	0	2525	101	1422	4048
6092	0	0	0	0	0	0	141	147	519	807
6093	0	0	0	0	0	0	0	685	219	904
6094	0	0	0	0	0	0	904	135	911	1950
6095	0	0	0	0	0	0	1050	469	824	2343
6101	1929	1929	705	765	711	54	61	6	237	304
6102	1354	1354	588	633	583	50	28	15	70	113
6111	1083	1083	493	517	437	80	8	25	68	101
6112	963	963	391	412	394	18	30	4	104	138
6113	614	614	247	258	233	25	1	0	392	393
6114	777	777	301	309	282	27	0	13	7	20
6115	1105	1105	498	524	411	113	26	5	51	82
6116	699	681	312	339	318	21	4	3	39	46
6121	676	676	247	263	263	0	8	2	60	70
6122	850	850	305	317	313	4	25	11	95	131
6123	705	705	282	297	297	0	17	86	43	146
6124	781	781	315	330	313	17	58	145	177	380
6125	132	132	46	46	46	0	10	0	1	11
6131	522	522	215	225	223	2	13	2	57	72
6132	717	717	301	317	294	23	75	322	259	656

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6141	2004	1988	822	862	810	52	21	166	139	326
6142	559	559	238	252	247	5	24	14	197	235
6151	1485	1275	478	514	213	301	17	73	265	355
6152	767	767	347	362	360	2	21	101	22	144
6153	1555	1555	577	605	553	52	5	41	141	187
6201	1158	1158	428	438	438	0	4	1	28	33
6202	910	910	361	399	136	263	11	1	25	37
6203	870	852	333	352	352	0	13	1	9	23
6204	1209	1209	406	426	426	0	3	12	38	53
6205	1331	1331	495	505	505	0	9	1	107	117
6206	0	0	0	0	0	0	0	0	0	0
6207	1998	1998	747	756	756	0	7	2	22	31
6211	1625	1625	575	602	602	0	21	36	99	156
6212	1889	1889	767	809	809	0	77	2	167	246
6213	61	61	23	24	24	0	27	0	1	28
6214	3411	3411	1269	1359	1359	0	21	3	144	168
6215	1769	1632	645	730	501	229	12	189	608	809
6216	333	333	172	185	185	0	4	124	225	353
6217	2742	2729	1043	1083	1079	4	51	17	111	179
6218	1758	1732	866	926	307	619	56	2	191	249
6221	2669	2669	843	866	866	0	33	6	100	139
6222	3315	3312	1145	1184	1184	0	30	4	53	87
6223	929	929	303	318	318	0	28	193	113	334
6224	2373	2373	1044	1151	546	605	61	4	257	322
6225	2005	2005	758	781	781	0	28	38	258	324
6226	1695	1693	554	577	567	10	47	97	175	319
6227	1518	1518	516	548	520	28	17	2	44	63
6228	1704	1700	548	562	562	0	25	1	124	150
6231	278	258	92	99	99	0	134	360	383	877
6232	621	621	241	258	258	0	9	10	104	123
6233	941	516	260	322	20	302	11	19	199	229
6241	2643	2643	982	1014	997	17	21	3	121	145
6242	2041	1976	684	710	702	8	30	114	48	192
6243	2098	2082	833	871	669	202	28	112	49	189
6251	1893	1812	739	797	759	38	56	1315	467	1838
6252	1017	1017	373	405	381	24	9	128	277	414
6253	143	143	91	100	61	39	0	0	96	96
6261	143	143	57	57	57	0	0	0	47	47
6262	90	90	38	40	40	0	1	0	0	1
6301	0	0	0	0	0	0	0	0	0	0
6302	0	0	0	0	0	0	0	0	0	0
6303	0	0	0	0	0	0	0	0	0	0
6304	0	0	0	0	0	0	0	0	0	0
6305	0	0	0	0	0	0	0	0	0	0
6306	0	0	0	0	0	0	0	0	1	1
6307	0	0	0	0	0	0	0	0	0	0
6311	2	2	1	1	1	0	3	1	0	4
6312	1	1	1	1	1	0	0	0	0	0
6313	0	0	0	0	0	0	0	0	0	0
6314	2	2	1	1	1	0	0	0	34	34
6331	0	0	0	0	0	0	0	0	0	0
6332	2506	2506	1005	1041	1041	0	6	6	35	47
6333	2827	2827	1017	1047	1047	0	8	2	99	109
6334	0	0	0	0	0	0	0	0	0	0
6335	0	0	0	0	0	0	0	0	0	0
6341	0	0	0	0	0	0	0	0	0	0
6342	0	0	0	0	0	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6343	1184	1184	445	466	466	0	2	1	9	12
6344	2098	2098	804	845	845	0	19	1	22	42
6345	968	968	364	381	381	0	3	1	9	13
6346	0	0	0	0	0	0	0	0	296	296
6351	2475	2434	873	913	913	0	15	4	837	856
6352	2310	2199	851	881	746	135	16	1	296	313
6361	1355	1355	480	518	518	0	5	0	10	15
6362	1984	1984	878	933	398	535	7	1	41	49
6363	767	767	219	226	226	0	17	0	8	25
6364	1446	1446	598	637	432	205	1	9	108	118
6365	1350	1350	575	724	275	449	21	316	271	608
6371	406	406	160	164	164	0	72	342	295	709
6372	351	351	136	143	143	0	7	1	5	13
6373	332	332	136	138	138	0	7	82	115	204
6374	1085	1085	696	746	0	746	56	351	154	561
6375	0	0	0	0	0	0	25	1033	32	1090
6376	2	2	2	2	2	0	0	1183	214	1397
6377	0	0	0	0	0	0	76	3092	463	3631
6378	244	244	90	91	91	0	23	520	169	712
6381	5299	5299	1996	2078	1460	618	69	64	274	407
6382	757	757	249	254	254	0	12	119	237	368
6383	636	636	346	434	1	433	31	842	254	1127
6384	97	97	33	37	37	0	3	166	34	203
6391	3639	3639	1316	1361	1353	8	49	18	294	361
6392	3664	3661	1424	1492	1097	395	212	5	121	338
6393	998	998	406	434	378	56	3	1	23	27
6394	391	391	148	154	154	0	6	58	28	92
6395	0	0	0	0	0	0	0	0	0	0
6396	0	0	0	0	0	0	0	0	0	0
6397	201	200	76	76	76	0	0	0	134	134
6451	0	0	0	0	0	0	0	0	0	0
6452	0	0	0	0	0	0	0	0	0	0
6453	0	0	0	0	0	0	0	0	0	0
6454	0	0	0	0	0	0	0	0	0	0
6461	0	0	0	0	0	0	0	0	0	0
6462	0	0	0	0	0	0	0	0	0	0
6463	0	0	0	0	0	0	0	0	0	0
6471	0	0	0	0	0	0	0	0	0	0
6472	0	0	0	0	0	0	0	0	41	41
6473	0	0	0	0	0	0	50	7	10	67
6481	77	77	27	30	30	0	0	0	4	4
6482	0	0	0	0	0	0	0	0	4	4
6491	0	0	0	0	0	0	0	0	0	0
6492	7	7	3	3	3	0	0	14	0	14
6501	707	700	257	260	260	0	21	66	75	162
6502	115	115	48	55	55	0	0	19	67	86
6503	870	870	315	364	348	16	244	1	45	290
6504	321	321	132	143	139	4	22	149	10	181
6505	1045	1007	363	378	375	3	58	1	103	162
6506	343	343	126	140	136	4	2	43	51	96
6507	72	72	28	29	26	3	75	27	25	127
6511	35	35	13	13	13	0	0	19	1	20
6512	3	3	1	1	1	0	1382	51	1423	2856
6513	170	170	61	66	66	0	14	0	2	16
6514	105	105	37	43	39	4	0	3	0	3
6515	0	0	0	0	0	0	0	80	2	82
6516	129	129	54	57	57	0	5	0	1	6

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6521	187	187	69	73	73	0	23	0	3	26
6522	3	3	1	1	1	0	525	16	114	655
6523	703	494	273	295	0	295	706	24	1568	2298
6524	262	262	83	87	87	0	4	0	2	6
6525	379	379	139	143	118	25	9	80	136	225
6526	1308	1308	530	554	554	0	801	354	227	1382
6527	8	8	3	3	3	0	3296	332	580	4208
6531	103	103	46	51	51	0	2	0	4	6
6532	379	374	137	145	138	7	0	1	45	46
6533	1212	1212	469	505	482	23	186	37	43	266
6534	343	343	153	163	144	19	264	73	86	423
6535	452	452	206	222	222	0	12	9	72	93
6541	134	134	62	65	65	0	1	0	4	5
6542	549	549	226	244	240	4	108	14	255	377
6543	424	424	178	195	179	16	38	1	108	147
6751	1648	1648	421	520	520	0	34	1	746	781
7001	0	0	0	0	0	0	144	159	830	1133
7002	5	5	3	3	3	0	1476	408	700	2584
7003	87	87	74	77	77	0	447	1408	361	2216
7004	2	2	1	1	1	0	72	149	465	686
7011	13	13	9	9	9	0	2504	167	685	3356
7012	454	454	289	356	0	356	1022	6	278	1306
7013	1084	1084	472	495	146	349	236	13	196	445
7014	1946	1946	885	1020	250	770	265	88	549	902
7021	1282	1282	491	503	503	0	23	4	135	162
7022	1690	1687	721	748	503	245	74	141	457	672
7031	1956	1954	1000	1128	437	691	17	141	289	447
7032	1648	1645	674	685	464	221	49	330	479	858
7041	182	182	92	106	96	10	249	238	607	1094
7042	1110	1110	464	492	482	10	66	314	154	534
7043	1467	1467	614	650	623	27	47	186	312	545
7044	13	13	5	6	6	0	555	667	470	1692
7051	2889	2887	1204	1461	0	1461	269	65	696	1030
7052	6	6	3	3	3	0	1416	1243	1022	3681
7053	7	7	3	3	3	0	341	718	1879	2938
7101	2109	2109	1186	1322	298	1024	90	172	212	474
7102	484	484	317	356	0	356	129	357	321	807
7103	1166	1166	498	556	269	287	109	25	822	956
7104	1252	1252	473	483	483	0	16	124	72	212
7105	1896	1896	954	1019	561	458	46	33	185	264
7106	1869	1869	933	984	696	288	25	100	74	199
7107	2225	2225	1246	1532	221	1311	71	310	711	1092
7111	1159	1159	603	665	665	0	174	47	234	455
7112	5	5	2	3	3	0	197	156	783	1136
7113	884	884	416	436	365	71	32	0	475	507
7114	1460	1446	673	711	711	0	6	13	494	513
7115	1513	1499	602	632	462	170	24	113	123	260
7116	1413	1413	570	659	585	74	92	41	135	268
7121	947	947	331	340	340	0	3	92	34	129
7122	1285	1271	467	477	477	0	20	55	1390	1465
7123	1258	1127	441	454	454	0	6	1	52	59
7124	1532	1529	556	573	573	0	8	2	100	110
7125	1362	1362	559	575	575	0	12	3	46	61
7126	0	0	0	0	0	0	0	0	483	483
7133	1993	1993	967	1046	739	307	33	4	190	227
7134	2005	2005	761	794	730	64	74	2	66	142
7135	2396	2372	1317	1497	280	1217	179	598	555	1332

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7136	889	889	331	337	337	0	3	1	92	96
7141	1459	1459	642	680	680	0	20	3	57	80
7142	1418	1418	533	549	549	0	28	3	45	76
7143	2067	2067	666	683	683	0	54	8	42	104
7144	97	97	31	35	35	0	5	1	0	6
7145	1249	1181	519	549	396	153	13	2	76	91
7151	1009	1009	538	575	118	457	61	477	247	785
7152	1394	1391	619	653	409	244	8	2	94	104
7153	1395	1384	602	639	495	144	46	9	138	193
7154	1238	1238	524	535	535	0	53	10	720	783
7155	885	885	455	485	402	83	12	340	225	577
7156	1518	1518	615	638	638	0	27	2	49	78
7157	735	608	234	243	243	0	13	122	726	861
7161	1667	1667	624	654	654	0	23	3	219	245
7162	377	377	117	124	124	0	5	1	12	18
7163	171	171	54	58	58	0	15	0	4	19
7164	722	722	291	314	314	0	13	31	40	84
7165	289	289	133	137	137	0	12	1	12	25
7166	747	747	356	388	138	250	10	120	62	192
7171	836	836	488	542	95	447	7	35	278	320
7172	2522	2515	1203	1283	721	562	35	205	337	577
7173	2788	2788	1555	1720	441	1279	12	5	588	605
7174	1605	1605	654	697	482	215	25	1	44	70
7175	1354	1354	492	506	506	0	42	1	48	91
7176	1429	977	551	573	490	83	3	1	185	189
7177	1902	1902	873	940	629	311	20	8	100	128
7201	2058	2058	737	785	785	0	817	162	515	1494
7202	104	104	40	43	43	0	65	149	44	258
7203	1423	1423	546	583	583	0	7	2	6	15
7204	1066	1066	419	424	424	0	24	36	160	220
7221	269	269	86	88	88	0	0	1	49	50
7222	276	276	87	88	88	0	5	1	10	16
7223	265	265	89	93	93	0	9	1	82	92
7224	379	379	153	161	161	0	13	1	83	97
7225	892	892	338	355	355	0	14	2	74	90
7226	360	360	113	115	115	0	2	2	10	14
7231	0	0	0	0	0	0	175	87	1471	1733
7241	0	0	0	0	0	0	161	0	46	207
7242	102	102	38	38	38	0	0	0	0	0
7251	204	204	69	69	69	0	24	0	6	30
7252	421	421	139	140	140	0	6	1	4	11
7253	1096	1096	353	359	359	0	9	12	20	41
7254	1730	1730	640	685	362	323	76	438	528	1042
7255	1657	1657	515	531	315	216	12	2	126	140
7261	427	427	132	141	141	0	22	1	10	33
7262	255	255	82	84	84	0	3	1	11	15
7263	225	225	63	68	68	0	17	0	7	24
7264	662	662	206	214	214	0	47	1	45	93
7311	2294	2294	1032	1087	1039	48	36	104	212	352
7312	1113	1113	472	488	488	0	21	35	86	142
7321	3250	3250	1495	1633	1187	446	41	48	99	188
7331	1585	1585	599	623	605	18	22	180	125	327
7401	724	724	316	330	237	93	51	65	42	158
7402	891	840	609	773	0	773	28	422	879	1329
7403	1109	1097	505	524	467	57	25	88	277	390
7411	1504	1489	555	577	571	6	14	7	15	36
7412	1439	1439	644	695	444	251	59	254	245	558

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7421	1411	1411	627	687	330	357	12	51	362	425
7423	2425	2425	1040	1115	878	237	31	288	649	968
7424	1303	1287	512	528	520	8	17	81	186	284
7425	1069	1065	454	493	426	67	25	533	337	895
7426	1199	1199	489	508	508	0	287	250	298	835
7431	1554	1554	661	692	558	134	79	7	261	347
7432	1351	1351	524	565	414	151	33	247	386	666
7433	1556	1483	819	957	274	683	59	72	385	516
7434	1202	1175	452	460	454	6	44	157	211	412
7435	1911	1903	999	1124	358	766	6	136	362	504
7436	636	551	440	554	0	554	10	319	1319	1648
7441	2636	2582	1153	1216	773	443	71	176	588	835
7442	2990	2924	1141	1209	1019	190	65	154	437	656
7443	1681	1681	729	796	499	297	15	7	298	320
7444	1053	1053	456	477	458	19	18	2	39	59
7445	2827	2827	1086	1113	1085	28	29	225	409	663
7451	1576	1576	629	661	562	99	34	193	239	466
7452	1402	1402	571	592	492	100	33	78	302	413
7453	1689	1689	742	798	425	373	17	32	55	104
7454	1489	1486	599	622	511	111	9	6	183	198
7455	1242	1238	601	651	444	207	7	2	31	40
7456	875	875	335	345	345	0	6	3	16	25
7461	1690	1678	772	966	456	510	13	287	385	685
7462	1646	1637	666	689	634	55	23	64	158	245
7463	1614	1609	610	645	524	121	66	228	305	599
7464	1312	1291	576	610	420	190	6	115	494	615
7501	1271	1271	532	578	386	192	29	14	174	217
7502	0	0	0	0	0	0	0	46	56	102
7503	1092	1092	433	444	444	0	27	103	160	290
7511	1253	1253	495	509	509	0	63	104	232	399
7512	1319	1310	556	583	559	24	35	53	283	371
7521	1215	1215	520	539	539	0	31	132	222	385
7522	1645	1629	634	650	645	5	10	147	269	426
7531	1680	1669	850	971	381	590	5	144	186	335
7532	1527	1527	632	663	452	211	18	110	85	213
7533	1377	1377	655	708	347	361	56	1	420	477
7534	2740	2733	1290	1450	299	1151	4	105	105	214
7551	740	740	282	294	248	46	16	53	99	168
7552	936	934	433	462	267	195	8	181	312	501
7553	2300	2300	907	969	525	444	20	17	109	146
7554	2070	2070	831	906	680	226	29	22	114	165
7561	140	140	64	66	66	0	14	665	505	1184
7562	1846	1833	699	721	707	14	19	198	96	313
7571	1215	1215	467	488	455	33	0	149	243	392
7572	2024	2024	795	832	775	57	2	388	63	453
7601	924	921	369	382	380	2	83	332	864	1279
7602	1062	1057	470	502	466	36	68	430	371	869
7603	1221	1221	513	547	466	81	166	221	453	840
7611	1854	1854	712	745	740	5	22	88	244	354
7612	926	917	451	485	164	321	19	128	819	966
7621	1297	1284	549	563	563	0	9	30	291	330
7622	1012	1012	516	574	277	297	43	84	512	639
7631	1101	1098	483	502	457	45	36	2	72	110
7632	859	859	371	400	268	132	7	344	669	1020
7633	1717	1709	756	843	354	489	26	349	162	537
7634	682	682	272	297	243	54	12	16	273	301
7641	1259	1259	608	631	464	167	26	152	589	767

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7642	904	891	357	368	349	19	417	205	586	1208
7652	1024	1024	430	449	449	0	25	149	407	581
7661	194	108	99	101	0	101	0	14	1348	1362
7662	1692	1685	735	774	609	165	3	112	208	323
7681	0	0	0	0	0	0	94	2239	704	3037
7682	0	0	0	0	0	0	147	0	728	875
7683	126	126	89	99	0	99	34	232	1590	1856
7684	662	662	585	722	0	722	11	115	750	876
7685	0	0	0	0	0	0	0	176	541	717
7691	147	147	95	146	24	122	198	54	911	1163
7692	659	503	220	231	231	0	45	191	251	487
7693	0	0	0	0	0	0	0	0	0	0
7694	0	0	0	0	0	0	0	0	0	0
7695	0	0	0	0	0	0	58	1369	319	1746
7696	877	877	581	643	0	643	4	1	19	24
7701	372	372	156	161	161	0	4	99	25	128
7702	0	0	0	0	0	0	0	0	0	0
7711	1171	1171	463	477	438	39	17	92	148	257
7712	1493	1493	572	576	576	0	13	2	37	52
7713	1783	1776	707	726	726	0	26	47	64	137
7721	2405	2394	1048	1099	774	325	16	3	104	123
7722	1240	1240	477	487	487	0	34	1	24	59
7723	1078	1065	398	420	351	69	18	6	36	60
8001	19	9	4	4	4	0	96	326	438	860
8002	422	305	185	220	3	217	52	49	1130	1231
8011	2027	127	52	52	43	9	19	112	5498	5629
8012	466	380	333	381	0	381	69	15	7725	7809
8021	724	609	414	497	60	437	19	65	240	324
8022	1083	877	505	551	303	248	3	116	839	958
8031	1753	1633	1018	1163	274	889	108	168	4912	5188
8032	24	23	6	6	6	0	0	0	610	610
8041	2730	2715	1631	1842	538	1304	48	600	391	1039
8051	13	13	2	2	0	2	193	104	1823	2120
8052	477	477	174	200	0	200	0	0	607	607
8061	1167	1099	505	585	307	278	49	62	663	774
8062	2732	2732	1268	1405	523	882	58	230	505	793
8071	5	5	2	2	1	1	0	4	189	193
8072	765	752	293	315	275	40	0	0	290	290
8081	40	40	20	22	22	0	275	198	1382	1855
8082	1081	1081	349	367	330	37	312	20	2416	2748
8101	2346	2346	1109	1188	965	223	56	74	483	613
8102	1462	1462	755	825	474	351	14	38	84	136
8111	1772	1772	809	836	822	14	15	34	233	282
8121	1229	1229	568	585	506	79	22	14	152	188
8122	1241	1241	570	604	463	141	24	98	129	251
8123	471	471	276	319	141	178	2	112	281	395
8131	1262	1262	620	653	501	152	253	190	414	857
8132	1162	1162	497	520	520	0	45	30	184	259
8133	1	1	1	2	2	0	31	1	889	921
8141	1021	1010	471	513	445	68	189	237	336	762
8142	1483	1483	647	695	510	185	17	14	209	240
8151	1752	1698	873	968	664	304	113	181	1450	1744
8161	2081	1838	1048	1165	363	802	162	303	1203	1668
8171	1020	1020	490	524	499	25	28	399	387	814
8172	1605	1542	807	861	694	167	58	164	180	402
8201	1126	1126	510	538	418	120	46	168	598	812
8202	806	797	354	366	366	0	34	18	48	100

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
8211	1580	1562	760	825	416	409	114	313	917	1344
8212	335	335	193	200	48	152	77	374	772	1223
8221	3	3	2	2	2	0	48	15	309	372
8231	1462	1460	565	739	218	521	7	137	224	368
8232	1199	1199	481	511	469	42	17	235	687	939
8233	2587	2587	880	1074	403	671	45	231	176	452
8234	1866	1838	636	798	281	517	84	187	232	503
8241	1000	928	596	630	0	630	2	1	237	240
8242	4255	3875	1248	1574	338	1236	6	7	92	105
8243	1114	1085	552	619	75	544	55	127	310	492
8244	2473	2473	956	1150	700	450	144	4	150	298
8251	366	349	220	234	24	210	794	112	119	1025
8252	0	0	0	0	0	0	1	267	9	277
8261	1666	1663	795	846	846	0	1555	139	339	2033
8262	1948	1948	705	801	547	254	11	48	72	131
8263	1700	1700	622	681	539	142	47	161	140	348
8271	955	955	413	472	472	0	216	549	76	841
8272	1530	1530	557	603	414	189	129	90	247	466
8273	818	818	480	506	506	0	7	1253	143	1403
8281	5360	5352	2413	2658	1321	1337	316	571	418	1305
8282	1785	1590	852	975	231	744	163	279	342	784
8301	4903	4903	1902	2002	1493	509	280	2	554	836
8311	3279	3279	1449	1514	1498	16	89	14	227	330
8312	473	473	219	245	245	0	39	1	246	286
8313	245	245	108	114	114	0	0	2	14	16
8401	0	0	0	0	0	0	23	0	55	78
8402	0	0	0	0	0	0	712	23	135	870
8411	566	522	153	187	97	90	7837	67	0	7904
8412	0	0	0	0	0	0	1007	298	790	2095
8413	0	0	0	0	0	0	850	2	362	1214
8421	12	0	0	0	0	0	0	0	2383	2383
8422	497	484	282	317	0	317	11	195	2355	2561
8423	354	354	163	173	153	20	0	27	103	130
8432	1796	1271	521	581	422	159	17632	134	0	17766
8441	1086	1086	373	443	443	0	111	1	0	112
8442	750	750	205	210	152	58	25	0	0	25
8443	608	608	184	229	229	0	168	0	0	168
8501	1794	1794	769	924	174	750	3	5	39	47
8502	1209	1209	552	570	560	10	23	1	121	145
8511	1058	1043	541	572	511	61	85	477	317	879
8512	357	357	182	197	179	18	8	41	35	84
8521	961	954	568	630	142	488	103	732	1310	2145
8531	1864	1856	873	964	582	382	17	58	124	199
8532	1054	814	577	590	9	581	89	273	621	983
8533	709	709	266	345	288	57	124	206	188	518
8534	1893	1889	774	878	427	451	23	20	178	221
8541	2956	2956	1693	2044	25	2019	79	284	360	723
8542	1624	1609	752	826	533	293	28	82	68	178
8553	2284	2284	1037	1233	869	364	24	77	141	242
8561	2668	2668	1350	1418	1258	160	37	16	305	358
8601	0	0	0	0	0	0	2	0	0	2
8621	1	1	1	1	1	0	0	0	27	27
8631	5	5	2	2	2	0	2	0	18	20
8641	0	0	0	0	0	0	0	0	0	0
8651	0	0	0	0	0	0	0	0	0	0
8652	0	0	0	0	0	0	0	0	0	0
8661	0	0	0	0	0	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
8662	0	0	0	0	0	0	0	0	0	0
8671	0	0	0	0	0	0	0	0	0	0
9101	1352	1352	510	561	561	0	5	0	51	56
9111	2589	2589	865	912	912	0	33	51	140	224
9121	1107	1107	387	421	421	0	245	0	23	268
9131	410	410	147	174	174	0	99	0	5	104
9141	234	234	74	79	79	0	164	0	8	172
9151	1980	1980	652	711	711	0	25	47	31	103
9161	2114	2114	761	825	813	12	84	277	163	524
9201	3455	3455	1258	1391	1391	0	19	3	45	67
9211	438	438	134	147	147	0	51	0	95	146
9212	251	251	84	93	93	0	14	107	29	150
9221	310	310	114	124	124	0	14	0	2	16
9231	265	265	98	105	86	19	49	0	1	50
9232	548	548	207	249	249	0	16	12	14	42
9241	399	399	161	183	171	12	76	279	229	584
9242	680	680	253	281	260	21	7	6	6	19
9251	1154	1154	433	485	451	34	169	78	672	919
9261	277	277	109	118	118	0	0	57	8	65
9271	1499	1499	515	568	568	0	162	1	36	199
9281	1412	1412	509	605	605	0	161	1	17	179
9291	397	397	132	149	149	0	144	0	3	147
9301	705	705	249	304	304	0	53	1	29	83
9311	1907	1335	489	585	580	5	119	37	922	1078
9321	185	185	74	88	88	0	100	0	1	101
9331	40	40	13	13	13	0	24	0	0	24
9341	111	111	40	47	47	0	52	0	0	52
9351	259	259	108	130	130	0	39	7	14	60
9361	77	77	28	28	28	0	0	0	0	0
9401	1141	1141	434	596	596	0	6	3	22	31
9411	117	117	53	59	59	0	1	0	1	2
9421	226	226	92	108	108	0	0	0	7	7
9431	1273	1273	516	597	578	19	80	41	159	280
9441	158	158	63	83	83	0	123	0	25	148
9451	54	54	26	30	30	0	0	0	0	0
9501	105	105	45	58	58	0	0	12	13	25
9511	53	53	17	35	35	0	6	0	0	6
9521	96	96	44	70	70	0	0	3	28	31
9531	103	103	48	82	82	0	31	0	3	34
Total	802,110	787,234	310,832	337,823	265,687	72,136	117,372	76,076	208,191	401,639

APPENDIX C: 2030 Socioeconomic Forecast by DASZ

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
1011	348	348	114	137	137	0	2	0	2	4
1012	98	98	37	43	43	0	0	0	0	0
1021	0	0	0	0	0	0	0	0	0	0
1022	7576	7576	2682	3046	3046	0	430	179	938	1547
1031	198	198	95	132	132	0	3	0	3	6
1032	8484	8484	3110	3513	3192	321	179	86	497	762
1033	8579	8579	3403	3615	3597	18	137	152	426	715
1041	1657	1657	576	641	641	0	49	60	136	245
1042	4466	4466	1586	1743	1663	80	85	49	464	598
1051	5715	5715	2175	2325	2245	80	110	90	241	441
1052	3353	3353	1291	1366	811	555	787	910	2053	3750
1061	3699	2801	1216	1462	1448	14	161	214	761	1136
1071	517	517	183	202	202	0	9	1	8	18
1072	4130	4130	1622	1706	1512	194	103	46	248	397
1081	934	934	320	356	356	0	8	1	8	17
1082	98	98	47	53	53	0	105	0	2	107
1091	847	847	356	443	215	228	423	284	3229	3936
1092	6208	6208	2145	2384	1887	497	123	147	385	655
1093	6819	6819	2369	2632	2411	221	417	393	1148	1958
1101	714	714	224	256	256	0	3	0	3	6
1151	4744	4744	1965	2080	2021	59	54	43	229	326
1152	1971	1971	702	772	772	0	20	2	19	41
1153	687	687	250	276	276	0	33	41	96	170
1154	531	531	191	205	205	0	8	1	7	16
1161	827	827	285	327	327	0	6	0	83	89
1162	2504	2504	871	969	969	0	30	3	28	61
1163	1243	1243	439	486	486	0	109	189	372	670
1164	2397	2397	870	969	969	0	61	66	206	333
1171	430	430	177	181	181	0	3	0	2	5
1181	178	178	85	94	94	0	3	0	2	5
1182	1186	1186	474	501	501	0	71	496	208	775
1183	1242	1242	501	517	517	0	19	2	29	50
1184	81	81	35	36	36	0	2	1	16	19
1191	700	700	276	284	284	0	19	2	17	38
1192	458	458	177	183	183	0	11	1	12	24
1193	564	564	199	215	215	0	14	1	97	112
1194	417	417	157	161	157	4	9	3	226	238
1195	17	17	7	9	9	0	408	465	419	1292
1201	1677	1677	613	631	631	0	18	2	17	37
1202	1449	1449	545	560	560	0	25	2	16	43
1203	1752	1752	669	688	688	0	239	58	915	1212
1221	1467	1467	523	538	538	0	32	3	28	63
1222	437	437	192	198	198	0	532	84	1330	1946
1223	2823	2823	1006	1039	1039	0	89	147	559	795
1231	24	24	12	13	13	0	0	0	58	58
1232	8	8	3	3	3	0	46	157	715	918
1233	2288	2288	810	894	894	0	40	4	38	82
1241	631	631	234	259	259	0	15	6	21	42
1251	651	651	242	255	254	1	8	1	8	17
1252	403	403	200	219	219	0	12	7	91	110
1261	134	134	60	71	71	0	2	0	2	4
1262	471	471	153	179	179	0	5	0	4	9
1263	1620	1620	612	644	644	0	20	2	19	41
1301	1998	1998	753	797	720	77	18	8	31	57

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
1302	910	910	346	361	346	15	13	1	13	27
1303	775	775	299	307	307	0	7	1	7	15
1351	1174	1174	431	451	345	106	26	3	32	61
1352	1469	1469	553	604	518	86	68	138	453	659
1353	2214	2214	792	820	760	60	101	388	271	760
1354	617	617	212	219	219	0	6	1	31	38
1371	785	785	306	315	315	0	12	1	10	23
1372	1799	1799	643	661	661	0	6	1	28	35
1373	1411	1411	532	546	454	92	11	1	25	37
1374	3198	3198	1156	1190	1190	0	70	98	325	493
1375	1195	1195	567	614	416	198	12	12	45	69
1401	324	324	101	106	106	0	9	2	8	19
1402	1098	1065	381	406	219	187	76	361	287	724
1403	2868	2868	1305	1395	1093	302	30	22	228	280
1404	1166	1143	614	685	404	281	134	340	684	1158
1451	8	8	5	6	6	0	365	149	377	891
1452	3652	3383	1381	1420	1416	4	73	190	175	438
1453	2821	1950	1169	1248	567	681	7	7	173	187
1501	447	322	264	635	94	541	151	602	763	1516
1502	448	448	244	333	4	329	5525	20	324	5869
1511	910	865	418	440	396	44	175	425	647	1247
1512	1969	1916	696	716	716	0	124	344	421	889
1513	985	917	351	365	358	7	49	50	183	282
1521	3465	3465	1227	1356	1356	0	133	150	354	637
1522	2384	2384	864	950	950	0	94	139	602	835
1523	1072	1072	399	442	442	0	166	213	970	1349
1531	713	713	238	258	258	0	8	1	18	27
1532	406	406	144	148	148	0	94	154	589	837
1533	324	324	114	128	128	0	4	0	2	6
1541	233	233	83	93	93	0	2	0	84	86
1542	200	200	87	98	98	0	4	2	52	58
1543	206	206	71	80	80	0	2	0	2	4
1551	197	197	65	82	82	0	2	0	0	2
1552	215	215	79	85	85	0	6	0	0	6
1701	517	517	197	204	202	2	17	7	24	48
1711	2935	2935	1167	1227	1227	0	109	97	248	454
1721	685	685	280	301	289	12	13	10	68	91
1731	1029	1029	407	437	420	17	44	22	68	134
1741	1131	1131	474	498	478	20	76	69	256	401
1751	1551	1551	605	633	621	12	97	102	264	463
1761	1107	1107	464	490	485	5	32	3	30	65
1771	536	536	258	273	269	4	17	1	14	32
1772	211	211	85	91	91	0	4	0	4	8
2011	3536	3536	995	1360	1321	39	3	3	89	95
2012	112	112	47	122	122	0	2	0	1	3
2021	14	14	12	15	15	0	0	29	1343	1372
2022	9	9	4	65	65	0	1	0	1	2
2031	2787	2787	737	812	812	0	34	5	462	501
2032	1124	1124	321	390	390	0	29	14	195	238
2041	0	0	0	0	0	0	0	0	0	0
2042	0	0	0	0	0	0	0	0	22	22
2051	2477	2342	1036	1662	1653	9	72	56	217	345
2061	1574	1574	636	995	936	59	108	100	611	819
2071	27	27	10	12	12	0	10	13	144	167
2072	462	462	216	361	361	0	8	5	15	28
2111	204	204	84	120	120	0	0	0	0	0
2411	696	696	246	275	275	0	74	293	963	1330

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
2421	1462	1449	640	663	501	162	97	142	582	821
2422	1210	1202	454	479	479	0	204	169	503	876
2423	2042	2042	744	770	725	45	101	69	229	399
2424	1823	1823	655	709	659	50	62	39	102	203
2425	2383	2370	830	896	893	3	291	63	277	631
2431	1053	1053	366	405	405	0	6	0	2	8
2432	674	674	182	238	236	2	22	11	175	208
2441	676	676	258	310	308	2	17	0	198	215
2442	4729	4664	939	1035	1029	6	133	84	335	552
2443	2712	2712	614	686	684	2	70	5	222	297
2451	417	417	164	224	224	0	6	1	5	12
2452	1677	1677	671	807	801	6	42	15	165	222
2453	123	123	36	39	39	0	59	0	3	62
2454	1314	1314	261	292	292	0	19	0	6	25
2511	0	0	0	0	0	0	0	0	0	0
2521	4562	4562	2123	2231	2212	19	218	54	198	470
2522	1474	1474	650	728	724	4	28	10	146	184
2523	271	271	126	131	128	3	11	0	3	14
2524	283	283	130	138	138	0	4	0	11	15
2531	621	621	282	335	335	0	9	1	8	18
2532	722	722	303	311	311	0	47	62	139	248
2541	78	78	27	30	30	0	6	0	669	675
2542	44	44	20	35	35	0	0	0	0	0
3001	914	898	426	458	421	37	78	14	66	158
3011	816	816	360	380	380	0	43	31	147	221
3021	1524	1524	654	705	705	0	95	126	324	545
3031	2822	2822	1176	1240	1240	0	69	7	108	184
3041	2103	2103	788	843	843	0	51	50	125	226
3051	2266	2266	981	1047	1047	0	67	9	89	165
3061	183	183	78	84	84	0	1	0	1	2
3071	1326	1326	505	541	541	0	19	2	17	38
3081	1951	1951	773	828	828	0	33	3	31	67
3091	531	531	204	222	213	9	15	1	14	30
3101	495	491	212	231	226	5	25	24	65	114
3111	968	968	500	539	533	6	50	61	249	360
3121	1793	1773	752	798	792	6	86	78	376	540
3131	411	411	167	175	168	7	17	11	31	59
3141	391	391	182	198	191	7	22	42	88	152
3201	79	79	34	37	37	0	6	10	37	53
3211	63	63	28	33	33	0	115	97	327	539
3221	940	940	385	433	426	7	98	103	346	547
3231	1428	1428	605	669	669	0	35	18	54	107
3241	1305	1305	528	562	556	6	66	101	215	382
3251	474	474	177	197	197	0	19	31	89	139
3261	188	188	76	83	83	0	17	2	24	43
3271	86	86	36	42	42	0	1	0	1	2
3281	0	0	0	0	0	0	0	0	0	0
3291	394	394	196	248	248	0	22	3	22	47
3301	381	381	160	173	173	0	5	1	4	10
3311	558	558	219	252	252	0	7	0	20	27
3321	309	309	144	190	190	0	5	1	5	11
3331	638	638	274	311	311	0	31	26	64	121
3341	1598	1598	647	734	734	0	48	10	57	115
3351	417	417	165	210	210	0	9	1	8	18
3361	845	845	353	412	412	0	10	3	14	27
3371	181	181	64	82	82	0	3	1	4	8
3401	0	0	0	0	0	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
4101	0	0	0	0	0	0	0	0	0	0
4111	18	18	7	7	7	0	11	11	0	22
4112	892	892	335	362	360	2	39	0	2	41
4113	143	143	47	55	55	0	4	0	0	4
4121	1492	1492	566	582	579	3	0	0	143	143
4122	703	703	267	356	354	2	2	4	304	310
4131	0	0	0	0	0	0	0	0	0	0
4132	71	71	31	33	33	0	18	0	0	18
4141	4778	4764	1864	1984	1920	64	262	468	1291	2021
4142	193	193	80	87	87	0	6	3	9	18
4143	378	378	148	152	152	0	10	1	7	18
4144	1062	1062	361	375	362	13	32	22	279	333
4145	1357	1357	542	579	535	44	37	40	475	552
4146	425	425	183	196	130	66	19	22	104	145
4151	281	281	95	114	114	0	7	3	7	17
4152	39	39	14	15	15	0	29	62	124	215
4153	0	0	0	0	0	0	1337	737	1716	3790
4154	16262	16229	6242	6544	5950	594	342	283	1335	1960
4155	1564	1564	582	660	594	66	36	19	76	131
4156	582	582	232	269	269	0	15	1	13	29
4161	4132	4132	1680	1771	1582	189	165	166	672	1003
4162	3107	2825	1070	1185	1068	117	57	46	427	530
4163	641	331	125	135	45	90	79	75	578	732
4164	2164	2164	753	806	741	65	57	87	137	281
4165	1205	1205	437	469	424	45	35	17	309	361
4166	3219	2182	817	885	873	12	35	34	800	869
4167	340	340	148	158	158	0	7	2	6	15
4171	2984	2984	1056	1131	1105	26	325	367	396	1088
4172	699	699	286	301	301	0	133	29	86	248
4173	1625	1625	655	712	666	46	33	43	143	219
4174	653	653	279	295	273	22	46	41	168	255
4175	1197	1157	410	440	433	7	89	79	235	403
4176	447	439	155	171	171	0	64	88	180	332
4181	1395	1126	466	484	389	95	45	80	462	587
4182	875	873	364	404	379	25	20	32	106	158
4183	609	609	255	301	241	60	61	60	168	289
4184	618	541	232	338	262	76	233	165	705	1103
4185	973	965	398	427	295	132	38	66	204	308
4186	1496	1210	444	488	354	134	45	58	323	426
4187	1654	1654	650	777	733	44	91	20	360	471
4191	2996	2996	1138	1217	1217	0	83	23	185	291
4192	2668	2660	1084	1194	1188	6	229	67	281	577
4201	3277	3277	1131	1258	1101	157	740	214	750	1704
4202	1358	1358	516	579	579	0	66	74	164	304
4203	593	593	240	265	265	0	243	108	250	601
4211	59	59	23	25	25	0	2	0	1722	1724
4311	1285	1285	445	573	571	2	168	17	12	197
4411	3385	3385	1081	1257	1257	0	27	13	42	82
4412	3008	3008	933	1069	1069	0	19	22	50	91
4413	0	0	0	0	0	0	0	0	0	0
4414	10062	10062	2825	3104	3104	0	188	239	575	1002
4415	6032	6032	2189	2371	2251	120	98	25	309	432
4421	995	995	391	419	419	0	18	7	446	471
4422	22	22	9	9	9	0	0	0	0	0
4423	1692	1692	593	646	646	0	29	15	180	224
4431	2298	2298	822	885	849	36	28	31	808	867
4432	162	162	85	93	93	0	3	0	0	3

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
4441	27	27	10	11	11	0	0	0	0	0
4442	71	71	28	28	28	0	1	0	0	1
4443	22	22	11	15	15	0	0	0	0	0
4444	313	313	133	151	151	0	8	0	6	14
4451	55	55	21	24	24	0	0	0	0	0
4452	75	75	36	41	41	0	1	0	0	1
4511	4081	4081	1548	1605	1605	0	129	163	553	845
4512	754	754	308	321	321	0	68	116	275	459
4513	2528	2528	924	985	959	26	79	73	247	399
4514	1718	1718	644	712	698	14	205	338	435	978
4521	2559	2559	956	1032	1023	9	110	109	478	697
4522	257	257	108	117	107	10	61	327	198	586
4523	3508	3494	1273	1324	1324	0	109	82	210	401
4524	2542	2468	936	1005	1001	4	117	110	466	693
4531	1837	1837	697	744	735	9	88	25	106	219
4532	1807	1807	690	724	715	9	52	43	111	206
4611	4165	4154	1611	1774	1757	17	54	14	66	134
4621	2899	2899	1510	1620	1513	107	258	37	239	534
4631	303	303	116	122	122	0	31	4	18	53
4632	1083	1083	363	411	411	0	302	42	165	509
4701	1421	1421	466	570	570	0	11	10	20	41
4702	39	39	14	21	21	0	0	0	0	0
5001	0	0	0	0	0	0	381	82	1626	2089
5002	0	0	0	0	0	0	23	47	101	171
5003	128	124	71	82	1	81	626	422	2573	3621
5004	188	146	86	109	42	67	71	54	301	426
5005	575	429	332	360	2	358	55	53	548	656
5006	98	75	43	53	1	52	312	117	1392	1821
5007	93	93	52	59	2	57	130	38	538	706
5008	152	133	75	86	0	86	91	80	366	537
5009	216	216	199	240	7	233	216	101	870	1187
5011	654	530	290	335	0	335	58	13	266	337
5012	187	187	113	130	0	130	88	67	357	512
5101	1867	1867	684	789	589	200	71	38	213	322
5102	519	519	185	209	176	33	31	8	26	65
5103	1144	873	517	618	164	454	33	89	411	533
5111	1244	1228	371	387	365	22	127	65	238	430
5112	1876	1876	611	675	572	103	34	46	114	194
5121	2712	2555	1031	1157	839	318	120	93	348	561
5131	160	132	51	56	53	3	8	9	251	268
5132	1765	1765	1021	1167	280	887	71	110	320	501
5141	171	158	107	119	20	99	16	25	128	169
5142	415	396	239	285	119	166	34	65	142	241
5143	976	976	543	581	355	226	15	2	48	65
5151	577	573	229	253	250	3	9	3	159	171
5152	1327	1327	580	621	524	97	93	113	257	463
5161	625	625	265	294	268	26	41	70	143	254
5162	494	494	289	320	261	59	38	55	249	342
5163	44	41	32	42	26	16	51	238	223	512
5171	269	261	213	239	3	236	12	22	194	228
5172	933	914	609	674	346	328	73	115	302	490
5173	919	904	524	570	398	172	52	46	223	321
5201	1248	1248	578	610	331	279	575	169	482	1226
5202	81	81	50	56	14	42	224	226	476	926
5211	794	794	380	414	365	49	33	14	64	111
5212	638	638	298	353	248	105	13	18	47	78
5213	279	279	118	133	114	19	303	108	260	671

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
5221	3	3	3	5	5	0	215	172	366	753
5231	0	0	0	0	0	0	176	73	719	968
5232	32	32	13	15	7	8	378	73	199	650
5241	507	454	207	236	223	13	201	97	786	1084
5242	1192	1192	665	850	229	621	91	69	530	690
5251	271	119	58	72	46	26	252	159	356	767
5261	454	132	88	100	72	28	711	428	3715	4854
5262	93	93	48	63	28	35	232	169	729	1130
5271	830	696	421	550	62	488	70	119	463	652
5272	83	83	47	54	0	54	218	46	710	974
5273	434	361	206	221	114	107	151	88	4078	4317
5301	22	22	9	9	9	0	462	110	356	928
5311	1369	1369	449	489	467	22	131	32	97	260
5312	228	228	79	92	88	4	533	139	382	1054
5321	481	481	178	191	191	0	938	263	807	2008
5322	5	5	2	2	2	0	689	65	232	986
5331	932	932	363	397	397	0	156	79	181	416
5401	702	689	270	284	277	7	48	5	33	86
5402	1218	1218	433	454	283	171	119	34	112	265
5411	1847	1770	528	606	522	84	255	127	323	705
5412	33	33	8	9	9	0	496	70	212	778
5421	68	68	30	34	34	0	995	176	492	1663
5422	30	30	14	15	15	0	489	189	567	1245
5431	510	510	197	210	210	0	70	6	53	129
5502	2232	2232	641	672	672	0	114	40	105	259
5503	702	702	228	247	239	8	1	0	17	18
5505	1569	1569	487	517	517	0	27	5	42	74
5506	956	956	325	357	357	0	129	12	46	187
5511	2594	2586	954	1002	991	11	92	96	377	565
5512	770	762	265	286	280	6	27	37	162	226
5513	614	614	216	224	222	2	106	647	299	1052
5521	596	596	210	219	219	0	4	4	102	110
5522	2190	2190	717	745	739	6	32	30	103	165
5523	496	496	192	210	210	0	4	0	2	6
5524	914	894	327	353	349	4	11	3	226	240
5525	318	288	104	114	111	3	31	28	82	141
5526	452	452	171	180	178	2	19	2	18	39
5531	565	565	224	232	228	4	3	6	12	21
5532	979	953	376	395	395	0	45	12	122	179
5533	738	738	274	287	284	3	21	10	41	72
5534	382	366	138	149	143	6	2	1	5	8
5535	630	630	229	240	240	0	13	11	257	281
5536	856	856	315	338	330	8	44	20	59	123
5537	170	170	66	72	72	0	14	21	43	78
5601	1608	1608	594	645	610	35	18	22	58	98
5602	2201	2198	809	878	777	101	49	77	164	290
5603	822	822	281	295	292	3	21	8	26	55
5611	689	689	247	266	246	20	14	6	14	34
5612	1140	1140	430	450	434	16	32	5	83	120
5613	1073	1073	404	452	396	56	17	29	94	140
5614	642	630	228	255	214	41	19	31	66	116
5621	865	865	319	343	308	35	12	52	41	105
5622	2668	2663	1028	1134	940	194	65	79	188	332
5623	1295	1295	508	543	353	190	91	110	280	481
5631	2115	2115	773	826	801	25	99	69	392	560
5632	775	775	273	288	272	16	12	8	22	42
5633	2640	2640	967	1057	897	160	99	122	537	758

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
5634	2341	2341	774	852	743	109	24	31	85	140
5635	1187	1174	412	440	341	99	38	53	123	214
5636	286	286	105	116	103	13	49	92	186	327
5637	809	802	288	300	282	18	12	1	192	205
5638	846	846	305	319	293	26	54	50	129	233
5641	1592	1592	567	599	573	26	45	36	180	261
5642	1694	1694	605	632	628	4	57	69	174	300
5643	123	123	49	60	60	0	13	27	52	92
5701	2017	2017	714	904	904	0	153	114	253	520
5702	58	58	21	22	22	0	53	100	352	505
5703	1762	1762	676	695	695	0	53	39	139	231
5711	1658	1658	498	546	546	0	29	110	221	360
5712	1992	1992	650	692	692	0	62	57	105	224
5713	733	733	293	313	313	0	22	29	64	115
5714	4264	4264	1561	1629	1614	15	81	55	300	436
5715	2774	2715	1049	1158	1158	0	106	75	347	528
5716	2263	2263	892	993	668	325	20	3	41	64
5717	350	350	191	221	2	219	92	180	372	644
5722	9670	9670	3072	3152	2663	489	153	371	421	945
5723	4116	4116	1474	1517	1517	0	45	12	222	279
5731	1063	1063	441	452	391	61	14	4	330	348
5732	758	758	318	339	339	0	51	143	226	420
5733	220	220	84	100	100	0	215	134	297	646
5734	918	918	347	372	252	120	16	11	50	77
5735	1491	1491	562	595	595	0	7	3	58	68
5741	1897	1897	709	760	760	0	42	32	88	162
5742	3765	3765	1433	1530	1530	0	52	15	135	202
5743	4901	4901	1869	1997	1997	0	63	19	119	201
5751	3151	3151	1164	1218	1218	0	36	3	36	75
5752	2482	2482	796	816	807	9	155	100	238	493
5753	1224	1171	375	424	424	0	29	42	98	169
5754	1397	1397	430	453	423	30	26	7	39	72
5761	36	36	10	12	12	0	11	13	29	53
5762	2813	2813	1086	1164	1164	0	45	20	307	372
5763	136	136	42	46	46	0	58	1	3	62
5764	130	130	42	46	46	0	1	0	0	1
5801	926	926	414	431	427	4	149	391	529	1069
5802	432	432	178	185	185	0	491	380	519	1390
5803	0	0	0	0	0	0	162	14	52	228
5804	2412	2412	1054	1110	547	563	371	214	805	1390
5805	97	97	91	108	0	108	243	178	797	1218
5806	635	635	264	297	55	242	946	346	831	2123
5807	1424	1424	509	528	450	78	109	167	222	498
5811	3816	3816	1458	1616	1213	403	98	102	485	685
5812	2177	2161	786	813	790	23	72	132	402	606
5821	1916	1875	717	769	675	94	53	64	314	431
5822	1006	998	405	417	364	53	43	6	59	108
5831	635	635	218	227	197	30	51	96	292	439
5832	1283	1270	402	414	414	0	337	175	1395	1907
5833	3385	3385	1168	1251	1180	71	63	95	309	467
5841	438	438	170	188	188	0	320	415	855	1590
5901	0	0	0	0	0	0	68	1	7	76
5911	3251	100	44	45	45	0	596	74	492	1162
6001	545	545	211	230	188	42	167	125	647	939
6002	1295	1295	568	614	568	46	81	55	205	341
6003	746	733	302	333	273	60	254	182	786	1222
6004	155	86	40	40	6	34	58	47	117	222

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6011	564	564	245	267	205	62	66	47	286	399
6012	902	902	383	426	350	76	31	47	112	190
6021	2065	2034	886	957	837	120	58	64	214	336
6022	1105	1105	465	515	418	97	294	152	402	848
6031	586	418	166	181	77	104	132	120	394	646
6032	671	671	265	280	169	111	318	47	153	518
6033	531	526	229	251	166	85	47	67	260	374
6034	484	484	230	318	172	146	85	81	338	504
6041	1081	1081	512	555	521	34	111	73	282	466
6042	459	459	199	211	172	39	213	87	212	512
6043	1029	1029	422	455	141	314	104	29	102	235
6044	195	195	75	77	75	2	28	37	80	145
6045	721	721	297	318	300	18	137	57	141	335
6046	610	610	250	261	255	6	230	95	270	595
6051	0	0	0	0	0	0	576	52	202	830
6052	0	0	0	0	0	0	401	215	1919	2535
6053	0	0	0	0	0	0	244	72	1176	1492
6054	0	0	0	0	0	0	125	27	521	673
6055	0	0	0	0	0	0	821	265	2622	3708
6056	0	0	0	0	0	0	444	324	1908	2676
6057	0	0	0	0	0	0	412	224	907	1543
6058	68	0	0	0	0	0	162	54	416	632
6061	359	359	138	147	140	7	356	64	260	680
6062	1244	1238	602	653	525	128	312	499	834	1645
6063	0	0	0	0	0	0	519	70	721	1310
6064	0	0	0	0	0	0	683	603	1107	2393
6071	369	369	157	171	153	18	112	31	125	268
6072	660	660	291	315	102	213	825	696	1568	3089
6073	45	45	21	27	24	3	1290	210	615	2115
6074	40	40	22	22	22	0	140	29	159	328
6075	93	93	39	41	41	0	868	453	937	2258
6076	0	0	0	0	0	0	915	656	1012	2583
6077	378	30	15	16	16	0	580	645	1706	2931
6081	443	443	181	197	183	14	678	127	478	1283
6082	104	104	44	48	48	0	507	77	391	975
6083	2283	2283	939	973	973	0	27	3	27	57
6084	2547	2547	1019	1103	698	405	114	89	295	498
6091	0	0	0	0	0	0	911	304	3067	4282
6092	0	0	0	0	0	0	224	96	734	1054
6093	0	0	0	0	0	0	234	169	948	1351
6094	0	0	0	1	1	0	1206	153	512	1871
6095	0	0	0	0	0	0	451	432	1543	2426
6101	2162	2162	854	924	870	54	61	38	227	326
6102	1354	1354	636	683	624	59	49	20	99	168
6111	1161	1161	571	597	509	88	43	9	55	107
6112	1024	1024	450	472	454	18	46	16	75	137
6113	605	605	264	275	250	25	5	1	384	390
6114	720	720	303	310	283	27	11	0	6	17
6115	1246	1246	606	639	504	135	32	15	73	120
6116	717	696	344	374	330	44	15	2	21	38
6121	679	679	269	285	285	0	34	4	31	69
6122	820	820	319	332	313	19	45	24	140	209
6123	778	778	336	354	354	0	31	32	231	294
6124	755	755	329	345	328	17	53	77	241	371
6125	126	126	48	49	49	0	6	1	5	12
6131	489	489	219	228	226	2	28	10	34	72
6132	736	736	333	351	294	57	91	219	328	638

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6141	1951	1928	862	901	810	91	74	58	302	434
6142	525	525	242	255	250	5	56	53	123	232
6151	1540	1303	528	568	266	302	96	232	280	608
6152	857	857	420	437	401	36	44	20	100	164
6153	1497	1497	600	628	576	52	33	13	139	185
6201	1691	1691	675	693	693	0	29	3	26	58
6202	1520	1520	652	719	456	263	31	12	197	240
6203	835	814	344	364	364	0	10	2	11	23
6204	1357	1357	492	516	516	0	17	5	30	52
6205	1312	1312	527	541	541	0	14	1	108	123
6206	854	854	326	346	346	0	17	1	17	35
6207	4709	4709	1901	1948	1948	0	79	9	233	321
6211	2375	2375	908	948	948	0	45	38	125	208
6212	2225	2225	975	1028	949	79	46	23	279	348
6213	398	398	187	204	125	79	119	113	495	727
6214	3331	3331	1338	1429	1429	0	37	9	152	198
6215	1673	1517	649	732	502	230	78	183	674	935
6216	400	400	224	241	241	0	65	121	246	432
6217	2653	2637	1089	1130	1126	4	53	44	218	315
6218	1989	1960	1059	1130	307	823	70	56	130	256
6221	2549	2549	870	892	892	0	29	32	77	138
6222	3076	3072	1146	1184	1184	0	41	4	36	81
6223	932	932	329	345	345	0	48	94	191	333
6224	2480	2480	1178	1298	693	605	90	117	337	544
6225	1861	1861	760	782	782	0	37	56	286	379
6226	1576	1573	556	578	568	10	45	62	212	319
6227	1605	1605	590	625	597	28	20	2	32	54
6228	1623	1618	564	579	579	0	19	2	130	151
6231	372	349	135	145	145	0	156	462	604	1222
6232	686	686	289	309	309	0	48	71	192	311
6233	972	596	324	402	28	374	18	31	279	328
6241	2448	2448	982	1014	997	17	46	6	89	141
6242	2011	1937	724	751	743	8	70	18	347	435
6243	1952	1933	835	871	669	202	41	34	113	188
6251	1788	1695	746	803	765	38	291	960	847	2098
6252	1418	1418	561	608	574	34	53	68	341	462
6253	1032	1032	710	779	449	330	146	197	591	934
6261	333	333	144	148	148	0	53	49	121	223
6262	91	91	43	45	45	0	24	37	84	145
6301	0	0	0	0	0	0	0	0	0	0
6302	0	0	0	0	0	0	0	0	0	0
6303	2684	2684	1044	1118	1118	0	40	8	46	94
6304	4261	4261	1605	1720	1122	598	290	307	1105	1702
6305	2401	2401	882	943	943	0	32	2	24	58
6306	2093	2093	783	837	837	0	200	1143	621	1964
6307	1460	1460	552	591	54	537	278	771	1522	2571
6311	6219	6219	2372	2520	2085	435	98	42	637	777
6312	4268	4268	1628	1731	1390	341	87	69	1411	1567
6313	2196	2196	835	897	247	650	38	55	558	651
6314	0	0	0	0	0	0	1	0	32	33
6331	2967	2967	1122	1192	1135	57	57	35	106	198
6332	3887	3887	1683	1742	1742	0	45	5	52	102
6333	3725	3725	1447	1488	1488	0	40	62	165	267
6334	2207	2207	842	894	788	106	259	135	3951	4345
6335	752	752	289	307	307	0	15	2	40	57
6341	218	218	85	92	82	10	2	0	13	15
6342	1194	1194	451	483	296	187	22	121	58	201

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6343	2122	2122	861	900	881	19	36	34	85	155
6344	2065	2065	855	896	896	0	23	25	348	396
6345	1745	1745	708	740	709	31	16	2	16	34
6346	1272	1272	532	587	163	424	62	373	1134	1569
6351	3009	2950	1142	1193	1081	112	137	197	1262	1596
6352	2326	2202	920	951	816	135	81	156	441	678
6361	1255	1255	481	518	518	0	50	169	157	376
6362	3354	3354	1602	1702	400	1302	79	81	369	529
6363	760	760	235	244	244	0	13	1	11	25
6364	1389	1389	620	659	432	227	6	1	113	120
6365	1253	1253	576	724	275	449	50	438	411	899
6371	386	386	165	170	170	0	145	115	444	704
6372	475	475	200	209	209	0	4	2	7	13
6373	347	347	155	159	159	0	41	116	77	234
6374	1020	1020	707	755	0	755	65	349	140	554
6375	0	0	0	0	0	0	122	831	373	1326
6376	432	432	269	311	2	309	216	942	814	1972
6377	0	0	0	0	0	0	290	2600	806	3696
6378	257	257	103	106	106	0	184	447	508	1139
6381	6017	6017	2446	2539	1705	834	154	150	605	909
6382	910	910	324	333	285	48	145	228	699	1072
6383	647	647	382	477	44	433	257	762	426	1445
6384	190	190	96	103	103	0	60	124	295	479
6391	5783	5783	2259	2330	2072	258	124	150	430	704
6392	3717	3713	1559	1631	1106	525	85	14	252	351
6393	1394	1394	613	655	599	56	44	139	116	299
6394	447	447	183	190	190	0	22	70	107	199
6395	0	0	0	0	0	0	0	0	0	0
6396	3510	3510	1335	1426	572	854	87	194	378	659
6397	2374	2371	975	1000	602	398	129	288	543	960
6451	2574	2574	973	1045	853	192	37	4	127	168
6452	3214	3214	1207	1295	1295	0	60	7	55	122
6453	3850	3850	1438	1540	1270	270	128	139	342	609
6454	7833	7833	2908	3114	3114	0	101	25	226	352
6461	353	353	128	139	139	0	3	0	72	75
6462	3504	3504	1293	1385	1385	0	63	7	59	129
6463	17	17	7	7	7	0	0	0	0	0
6471	0	0	0	0	0	0	0	0	0	0
6472	0	0	0	0	0	0	44	0	22	66
6473	0	0	0	0	0	0	1817	714	1664	4195
6481	84	84	32	35	35	0	2	3	8	13
6482	0	0	0	0	0	0	800	201	513	1514
6491	0	0	0	0	0	0	0	0	0	0
6492	8	8	5	5	5	0	8	15	29	52
6501	751	743	296	304	304	0	45	44	109	198
6502	161	161	66	73	73	0	0	28	107	135
6503	853	853	334	386	370	16	162	37	102	301
6504	323	323	144	156	152	4	71	25	68	164
6505	1017	973	380	395	389	6	31	18	134	183
6506	377	377	150	167	163	4	14	28	67	109
6507	63	63	28	29	26	3	47	25	54	126
6511	45	45	17	19	19	0	111	160	468	739
6512	2	2	1	1	1	0	2150	385	2394	4929
6513	168	168	66	71	71	0	7	1	7	15
6514	149	149	59	68	64	4	111	10	36	157
6515	0	0	0	0	0	0	11	23	47	81
6516	213	213	88	97	97	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
6521	175	175	70	74	74	0	16	9	20	45
6522	0	0	0	0	0	0	648	58	215	921
6523	834	464	276	297	1	296	495	123	1767	2385
6524	249	249	86	89	89	0	2	0	2	4
6525	350	350	139	143	118	25	58	36	254	348
6526	1249	1249	548	571	571	0	617	336	806	1759
6527	0	0	0	0	0	0	1773	546	2188	4507
6531	96	96	47	52	52	0	3	0	3	6
6532	342	342	136	144	137	7	24	2	48	74
6533	1414	1414	592	637	614	23	88	55	227	370
6534	364	364	176	188	169	19	58	85	257	400
6535	449	449	222	240	240	0	29	19	48	96
6541	130	130	66	69	69	0	2	0	2	4
6542	518	518	231	248	244	4	111	38	339	488
6543	473	473	216	236	181	55	19	19	136	174
6751	2427	2427	690	798	798	0	48	28	1422	1498
7001	0	0	0	0	0	0	163	319	641	1123
7002	0	0	0	0	0	0	856	542	1184	2582
7003	79	79	74	77	77	0	403	1218	650	2271
7004	2	2	1	1	1	0	105	261	405	771
7011	12	12	10	10	10	0	1056	708	1533	3297
7012	420	420	292	358	1	357	795	110	744	1649
7013	1031	1031	486	508	146	362	71	122	273	466
7014	1807	1807	888	1021	250	771	217	200	497	914
7021	1185	1185	491	503	503	0	59	54	140	253
7022	1570	1566	722	748	503	245	87	145	464	696
7031	1815	1812	1002	1129	438	691	39	61	349	449
7032	1541	1537	681	699	478	221	124	355	381	860
7041	166	166	93	106	96	10	177	384	655	1216
7042	1028	1028	465	492	482	10	58	307	163	528
7043	1360	1360	615	650	623	27	88	224	227	539
7044	15	15	6	7	7	0	359	588	740	1687
7051	2687	2684	1209	1464	0	1464	305	250	494	1049
7052	6	6	3	3	3	0	843	1228	1726	3797
7053	0	0	0	0	0	0	305	966	1808	3079
7101	1953	1953	1186	1322	298	1024	99	117	253	469
7102	447	447	316	356	0	356	85	401	318	804
7103	1081	1081	500	556	269	287	128	188	638	954
7104	1154	1154	472	483	483	0	42	47	175	264
7105	1763	1763	958	1022	564	458	45	66	151	262
7106	1731	1731	934	984	696	288	55	33	107	195
7107	2064	2064	1248	1533	222	1311	118	310	685	1113
7111	1073	1073	604	665	665	0	103	111	235	449
7112	6	6	3	4	4	0	268	347	512	1127
7113	826	826	420	440	369	71	55	66	651	772
7114	1373	1356	682	718	718	0	98	41	519	658
7115	1408	1391	604	633	463	170	46	65	149	260
7116	1496	1496	652	751	677	74	58	60	180	298
7121	881	881	333	343	343	0	20	34	72	126
7122	1186	1169	465	477	477	0	233	396	821	1450
7123	1675	1397	591	608	455	153	93	47	493	633
7124	1568	1564	614	633	633	0	32	35	166	233
7125	1258	1258	559	575	575	0	22	7	30	59
7126	866	866	477	550	111	439	11	7	779	797
7133	1848	1848	968	1046	739	307	25	4	200	229
7134	1858	1858	762	795	731	64	55	5	73	133
7135	2254	2201	1319	1498	281	1217	102	832	388	1322

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7136	814	814	327	337	337	0	28	5	88	121
7141	1354	1354	644	680	680	0	35	4	33	72
7142	1314	1314	534	549	549	0	35	4	33	72
7143	1919	1919	668	685	685	0	49	5	46	100
7144	174	174	61	69	69	0	19	4	76	99
7145	1188	1110	527	556	403	153	25	3	62	90
7151	938	938	540	576	119	457	114	389	321	824
7152	1292	1288	620	653	409	244	7	1	96	104
7153	1308	1295	609	646	502	144	52	47	204	303
7154	1141	1141	521	535	535	0	160	31	592	783
7155	817	817	455	485	402	83	95	118	363	576
7156	1502	1502	658	681	681	0	36	4	35	75
7157	831	565	236	244	244	0	150	87	1709	1946
7161	1577	1577	638	669	669	0	68	45	129	242
7162	416	416	140	149	149	0	5	1	14	20
7163	195	195	67	72	72	0	6	2	125	133
7164	685	685	300	323	323	0	20	16	46	82
7165	307	307	154	158	158	0	10	1	14	25
7166	704	704	363	394	144	250	24	48	119	191
7171	773	773	489	542	95	447	41	81	200	322
7172	2333	2333	1205	1284	722	562	75	317	251	643
7173	2581	2581	1555	1720	441	1279	31	38	538	607
7174	1489	1489	656	697	482	215	24	3	40	67
7175	1290	1290	506	520	520	0	20	21	50	91
7176	1738	949	578	600	490	110	10	13	182	205
7177	1764	1764	875	940	629	311	16	2	113	131
7201	1982	1982	767	816	816	0	608	632	1515	2755
7202	434	434	182	195	195	0	106	119	264	489
7203	1612	1612	669	711	711	0	43	7	124	174
7204	1513	1513	643	659	485	174	107	118	581	806
7221	263	263	92	94	94	0	5	2	43	50
7222	275	275	95	97	97	0	15	0	0	15
7223	258	258	95	98	98	0	2	0	92	94
7224	493	493	215	227	227	0	19	26	58	103
7225	893	893	366	385	385	0	42	6	43	91
7226	343	343	117	120	120	0	7	1	5	13
7231	0	0	0	0	0	0	243	203	1768	2214
7241	373	373	213	247	0	247	634	205	1316	2155
7242	991	832	383	403	158	245	22	23	176	221
7251	471	471	172	177	177	0	19	1	18	38
7252	1053	1053	377	389	389	0	17	2	129	148
7253	1477	1477	514	529	529	0	27	3	26	56
7254	1604	1604	641	685	362	323	126	516	609	1251
7255	2602	2602	874	899	562	337	47	98	306	451
7261	516	516	173	185	185	0	18	1	14	33
7262	255	255	90	92	92	0	6	1	7	14
7263	502	502	152	164	164	0	18	2	14	34
7264	1003	1003	337	351	351	0	98	72	180	350
7311	2170	2170	1055	1111	1063	48	86	74	191	351
7312	1071	1071	491	506	506	0	51	21	74	146
7321	3313	3313	1646	1797	1325	472	62	11	127	200
7331	1691	1691	690	717	699	18	71	78	181	330
7401	668	668	316	330	237	93	27	39	91	157
7402	852	794	623	790	0	790	218	650	841	1709
7403	1034	1019	507	525	468	57	58	104	263	425
7411	1399	1381	556	577	571	6	17	2	17	36
7412	1333	1333	645	695	444	251	76	135	345	556

DASZ	Population	Household Population	Households	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7421	1305	1305	628	687	330	357	36	46	344	426
7423	2248	2248	1041	1116	879	237	190	176	591	957
7424	1216	1197	514	529	521	8	36	44	200	280
7425	993	988	455	493	426	67	99	527	344	970
7426	1106	1106	489	508	508	0	94	446	325	865
7431	1443	1443	663	692	558	134	60	89	197	346
7432	1250	1250	525	566	414	152	119	150	415	684
7433	1529	1379	822	958	274	684	47	87	380	514
7434	1111	1080	450	461	455	6	67	100	319	486
7435	1778	1766	1001	1124	358	766	70	116	315	501
7436	712	538	467	587	0	587	142	279	1233	1654
7441	2605	2497	1205	1269	815	454	107	147	607	861
7442	2872	2795	1178	1247	1020	227	76	180	374	630
7443	1711	1711	801	873	526	347	55	44	254	353
7444	1053	1053	493	514	465	49	26	3	31	60
7445	2719	2719	1127	1157	1087	70	86	127	490	703
7451	1514	1514	653	685	562	123	73	124	325	522
7452	1303	1303	573	593	493	100	63	108	261	432
7453	1626	1626	773	829	446	383	19	25	60	104
7454	1413	1409	614	636	512	124	25	17	154	196
7455	1164	1159	608	658	451	207	5	2	25	32
7456	810	810	335	345	345	0	11	1	12	24
7461	1574	1559	774	968	456	512	124	167	388	679
7462	1533	1520	669	690	635	55	43	64	146	253
7463	1496	1490	611	645	524	121	82	139	377	598
7464	1219	1195	576	610	420	190	81	141	392	614
7501	1288	1288	583	631	430	201	24	33	161	218
7502	0	0	0	0	0	0	6	11	85	102
7503	1010	1010	433	444	444	0	49	77	175	301
7511	1215	1211	517	531	510	21	61	76	261	398
7512	1229	1216	557	583	559	24	67	94	206	367
7521	1161	1161	537	556	539	17	45	77	263	385
7522	1532	1507	634	650	645	5	67	93	264	424
7531	1592	1578	869	991	381	610	52	90	192	334
7532	1448	1448	648	679	453	226	39	50	132	221
7533	1403	1403	721	778	385	393	138	68	288	494
7534	2543	2535	1293	1451	299	1152	34	58	141	233
7551	791	791	326	340	246	94	28	43	120	191
7552	869	866	434	462	267	195	41	73	388	502
7553	2159	2159	919	981	536	445	17	12	109	138
7554	2161	1939	841	915	689	226	31	27	117	175
7561	132	132	67	69	69	0	131	471	602	1204
7562	1717	1701	701	721	707	14	58	80	172	310
7571	1128	1128	469	489	456	33	69	45	288	402
7572	1880	1880	797	832	775	57	66	199	185	450
7601	858	854	370	382	380	2	199	185	877	1261
7602	987	981	472	503	467	36	117	305	443	865
7603	1132	1132	514	547	466	81	93	216	533	842
7611	1720	1720	713	745	740	5	68	87	195	350
7612	863	851	453	486	165	321	160	162	714	1036
7621	1205	1189	550	564	564	0	23	25	285	333
7622	942	942	518	576	279	297	85	146	410	641
7631	1018	1014	483	503	458	45	36	10	64	110
7632	802	802	375	403	271	132	137	257	668	1062
7633	1604	1588	758	844	355	489	55	318	158	531
7634	630	630	273	297	243	54	16	15	266	297
7641	1165	1165	609	631	464	167	124	198	442	764

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
7642	841	825	358	368	349	19	179	301	728	1208
7652	951	951	432	450	450	0	91	156	331	578
7661	215	105	98	101	0	101	110	63	1521	1694
7662	1572	1564	737	774	609	165	43	54	226	323
7681	0	0	0	0	0	0	269	1954	784	3007
7682	0	0	0	0	0	0	179	37	739	955
7683	117	117	91	100	1	99	347	74	1431	1852
7684	632	632	585	722	0	722	169	172	690	1031
7685	0	0	0	0	0	0	118	121	476	715
7691	150	150	107	164	24	140	190	111	904	1205
7692	868	546	259	271	231	40	78	102	371	551
7693	796	796	444	510	0	510	112	222	469	803
7694	85	85	32	35	35	0	14	21	57	92
7695	139	139	80	92	0	92	159	946	517	1622
7696	837	837	599	661	0	661	1	0	24	25
7701	376	376	171	176	176	0	19	34	74	127
7702	0	0	0	0	0	0	0	0	0	0
7711	1100	1100	471	484	445	39	51	56	148	255
7712	1367	1367	566	581	581	0	25	2	24	51
7713	1661	1653	710	729	729	0	34	24	77	135
7721	2246	2223	1052	1101	776	325	40	18	65	123
7722	1142	1142	475	487	487	0	33	3	19	55
7723	1203	1174	475	500	417	83	20	7	38	65
8001	273	260	139	162	4	158	133	79	1528	1740
8002	524	282	186	221	4	217	179	212	1126	1517
8011	1998	264	118	121	54	67	32	45	6029	6106
8012	471	361	334	382	1	381	20	14	8554	8588
8021	829	592	435	519	61	458	47	85	231	363
8022	1423	1147	713	778	303	475	123	211	622	956
8031	1721	1566	1055	1203	272	931	162	223	5566	5951
8032	15	12	5	6	6	0	2	1	614	617
8041	2659	2641	1714	1937	533	1404	137	346	541	1024
8051	5	5	2	2	0	2	268	89	3121	3478
8052	440	440	174	200	0	200	6	4	593	603
8061	1219	1141	568	659	339	320	227	207	738	1172
8062	2539	2539	1272	1405	523	882	67	103	669	839
8071	28	28	17	19	1	18	53	112	324	489
8072	1268	1252	527	566	286	280	23	24	329	376
8081	35	35	21	23	23	0	395	174	1275	1844
8082	1034	1034	361	381	344	37	501	348	1907	2756
8101	2176	2176	1111	1188	965	223	107	123	413	643
8102	1378	1378	768	839	488	351	21	34	80	135
8111	1643	1643	811	836	822	14	35	30	217	282
8121	1136	1136	568	585	506	79	50	33	98	181
8122	1168	1168	579	614	473	141	51	63	147	261
8123	435	435	277	319	141	178	51	147	194	392
8131	1170	1170	621	653	501	152	137	219	496	852
8132	1076	1076	498	520	520	0	52	62	143	257
8133	0	0	0	0	0	0	167	65	712	944
8141	951	934	472	513	445	68	98	341	316	755
8142	1376	1376	650	696	511	185	44	35	153	232
8151	1674	1605	892	987	664	323	260	462	1007	1729
8161	2358	1909	1176	1309	364	945	227	418	1017	1662
8171	974	974	506	540	497	43	134	265	421	820
8172	1514	1442	816	870	695	175	73	100	246	419
8201	1045	1045	512	539	419	120	248	184	1051	1483
8202	757	745	358	370	370	0	22	18	57	97

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
8211	1479	1449	762	825	416	409	242	241	913	1396
8212	308	308	193	200	48	152	170	280	768	1218
8221	10	10	5	6	2	4	32	49	303	384
8231	1382	1379	577	753	218	535	45	69	272	386
8232	1118	1118	485	514	472	42	93	159	722	974
8233	2500	2500	917	1119	403	716	69	114	272	455
8234	1759	1726	645	807	281	526	86	127	276	489
8241	942	861	598	631	1	630	9	5	228	242
8242	4387	3604	1253	1578	359	1219	9	11	52	72
8243	1099	1064	585	654	60	594	125	135	363	623
8244	2283	2283	953	1144	694	450	106	50	136	292
8251	342	322	222	236	26	210	134	264	618	1016
8252	0	0	0	0	0	0	38	80	157	275
8261	1544	1540	797	846	846	0	843	386	879	2108
8262	1899	1899	742	841	547	294	30	34	83	147
8263	1748	1748	691	755	539	216	57	88	202	347
8271	1340	1340	628	716	522	194	129	619	305	1053
8272	1441	1441	567	613	424	189	131	141	305	577
8273	1236	1236	782	824	757	67	188	824	563	1575
8281	5212	5204	2532	2780	1342	1438	317	492	476	1285
8282	1611	1611	933	1068	231	837	130	271	409	810
8301	5266	5266	2205	2319	1810	509	939	184	2001	3124
8311	6422	6422	3062	3195	3179	16	214	89	430	733
8312	675	675	338	378	378	0	152	172	520	844
8313	315	315	150	158	158	0	60	6	32	98
8401	0	0	0	0	0	0	333	124	291	748
8402	0	0	0	0	0	0	607	151	512	1270
8411	450	430	147	158	68	90	7837	67	0	7904
8412	0	0	0	0	0	0	1549	293	739	2581
8413	0	0	0	0	0	0	395	287	606	1288
8421	15	0	0	0	0	0	0	21	2321	2342
8422	594	576	363	408	0	408	6	18	1295	1319
8423	337	337	169	180	160	20	20	35	75	130
8432	1818	1007	444	476	321	155	17947	137	0	18084
8441	689	689	223	231	231	0	112	1	0	113
8442	383	383	132	141	83	58	29	0	0	29
8443	472	472	152	158	158	0	170	0	0	170
8501	1851	1851	858	1029	191	838	5	6	41	52
8502	1125	1125	556	573	563	10	29	3	115	147
8511	995	977	549	579	507	72	110	404	325	839
8512	365	365	201	217	178	39	14	20	50	84
8521	1281	1273	820	907	140	767	161	641	1392	2194
8531	1794	1782	906	999	582	417	21	27	149	197
8532	1018	745	572	588	9	579	150	215	605	970
8533	699	699	285	369	288	81	144	116	251	511
8534	1795	1790	793	897	427	470	24	34	168	226
8541	2879	2879	1781	2146	25	2121	108	163	561	832
8542	1510	1492	753	827	534	293	30	44	113	187
8553	2250	2250	1036	1234	869	365	25	83	154	262
8561	2524	2524	1379	1446	1258	188	78	56	259	393
8601	0	0	0	0	0	0	3	1	15	19
8621	5284	5284	2015	2140	1686	454	555	142	1694	2391
8631	393	393	151	161	161	0	1261	217	2230	3708
8641	13973	13973	5319	5672	4635	1037	358	42	1181	1581
8651	707	707	266	284	215	69	594	86	1011	1691
8652	11914	11914	4534	4846	2352	2494	84	10	526	620
8661	29	29	10	11	11	0	0	0	0	0

DASZ	Population	Household Population	House holds	Housing Units	Single Family Units	Multi Family Units	Basic Employment	Retail Employment	Service Employment	Total Employment
8662	753	753	286	306	306	0	9	1	8	18
8671	41	41	17	18	18	0	0	0	0	0
9101	1989	1989	799	890	890	0	20	2	68	90
9111	4913	4913	1744	1865	1835	30	99	55	608	762
9121	3805	3805	1414	1559	1529	30	173	65	390	628
9131	450	450	172	207	207	0	62	9	40	111
9141	353	353	120	128	128	0	104	9	72	185
9151	2468	2468	863	954	919	35	92	452	263	807
9161	2911	2911	1114	1226	1214	12	205	445	563	1213
9201	4185	4185	1604	1841	1841	0	47	5	42	94
9211	1091	1091	352	401	401	0	83	8	64	155
9212	1794	1794	632	723	723	0	86	103	263	452
9221	440	440	171	194	194	0	13	1	5	19
9231	519	519	203	225	194	31	25	23	34	82
9232	2777	2777	1105	1380	1348	32	96	11	238	345
9241	885	885	376	443	414	29	91	218	464	773
9242	1012	1012	397	458	431	27	12	3	63	78
9251	2201	2201	870	1011	961	50	395	97	991	1483
9261	288	288	121	135	135	0	13	23	49	85
9271	1908	1908	691	789	789	0	106	21	119	246
9281	1725	1725	656	808	808	0	107	11	83	201
9291	444	444	155	182	182	0	81	19	85	185
9301	810	810	303	382	382	0	35	10	54	99
9311	2542	1816	701	868	859	9	210	149	941	1300
9321	183	183	78	96	96	0	117	11	46	174
9331	47	47	17	18	18	0	14	1	9	24
9341	120	120	47	57	57	0	32	4	25	61
9351	375	375	167	209	209	0	18	15	40	73
9361	69	69	28	31	31	0	0	0	0	0
9401	1212	1212	486	691	691	0	16	6	26	48
9411	117	117	57	65	65	0	0	0	0	0
9421	344	344	149	181	181	0	10	0	0	10
9431	1502	1502	643	770	745	25	72	58	286	416
9441	165	165	70	95	95	0	99	11	39	149
9451	362	362	195	240	240	0	6	5	13	24
9501	104	104	47	63	63	0	4	8	17	29
9511	62	62	23	47	47	0	0	7	13	20
9521	88	88	43	74	74	0	17	1	12	30
9531	108	108	55	98	98	0	21	2	7	30
Total	1,129,472	1,106,952	455,396	495,297	396,924	98,373	138,673	97,373	323,814	559,860

APPENDIX D: DASZ Maps

Please refer to MRCOG's website to view these maps.
Direct link: http://www.mrcog-nm.gov/content/view/110/185/#maps

APPENDIX E: 2004 Socioeconomic Estimate by Subarea

2004 Base Year Socioeconomic Estimate by Subarea
March, 2005

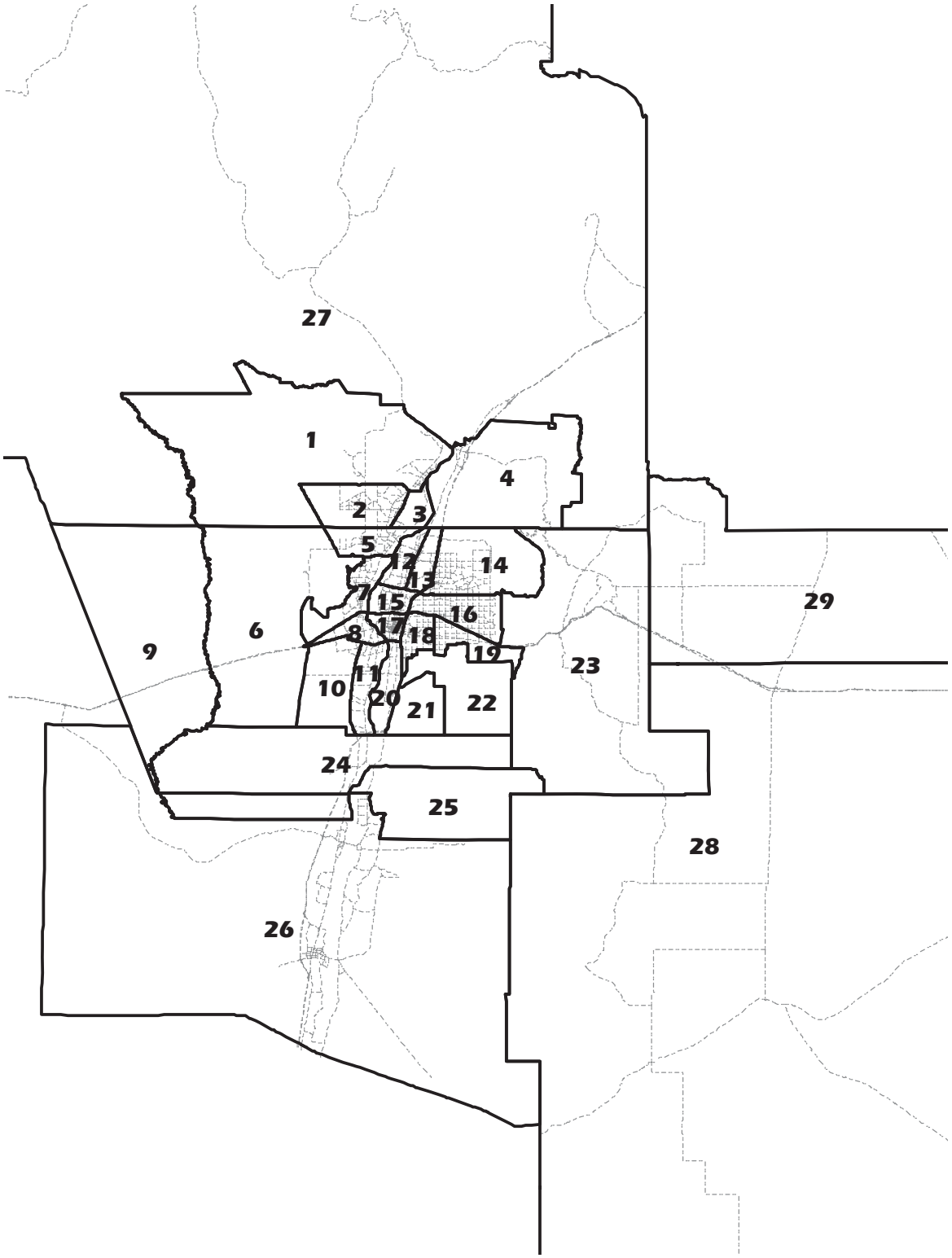
Subarea	Population	Household Population	House-holds	Housing Units	Single Family Units	Multi-Family Units	Basic	Retail	Service	Employ-ment	Elementary School Enrollment	Middle School Enrollment	High School Enrollment	UNM Enrollment	CNM Enrollment
1	21,725	21,541	7,836	8,257	8,183	74	1,730	758	2,415	4,903	2,365	2,872	0	0	0
2	40,544	40,075	15,043	15,873	13,653	2,220	8,243	2,808	5,685	16,736	3,201	1,176	2,569	0	0
3	7,535	7,535	2,896	3,051	2,981	70	400	205	662	1,267	566	0	0	0	0
4	12,178	12,178	4,604	4,907	4,751	156	574	559	1,802	2,935	1,017	582	921	0	0
5	39,372	39,216	15,323	16,216	12,636	3,580	771	8,219	4,887	13,877	3,096	1,249	2,879	0	3,393
6	1,952	152	58	61	61	0	53	28	631	712	0	0	0	0	0
7	49,180	48,370	18,231	19,254	16,866	2,388	884	2,797	4,691	8,372	3,870	1,035	0	0	0
8	27,476	27,398	9,529	10,236	8,498	1,738	2,504	2,236	3,318	8,058	1,796	1,972	2,600	0	0
9	1,648	1,648	421	520	520	0	34	1	746	781	338	0	0	0	0
10	38,897	38,792	12,563	13,387	13,155	232	1,209	357	1,776	3,342	2,705	935	0	0	0
11	32,204	32,083	10,776	11,528	10,644	884	1,141	978	3,436	5,555	4,102	1,726	1,798	0	1,097
12	16,579	16,529	6,499	7,006	6,279	727	2,561	1,625	2,743	6,929	1,212	1,281	0	0	0
13	10,287	10,020	3,963	4,220	3,402	818	18,536	4,583	15,207	38,326	390	0	0	0	0
14	94,969	93,875	40,821	44,009	29,978	14,031	5,734	7,865	22,238	35,837	4,941	2,099	3,850	0	7,248
15	24,730	23,904	9,638	10,334	9,003	1,331	8,256	3,055	6,917	18,228	1,602	422	1,969	0	0
16	108,097	107,456	46,667	50,038	34,655	15,383	10,336	17,951	32,157	60,444	8,447	5,111	6,343	0	0
17	20,694	19,560	9,130	10,398	6,119	4,279	5,409	3,904	24,623	33,936	1,827	537	1,835	0	0
18	41,511	38,532	19,310	21,240	12,332	8,908	3,029	4,898	36,735	44,662	2,691	860	1,952	24,092	14,442
19	60,053	58,935	25,839	28,990	15,620	13,370	5,016	6,882	16,073	27,971	2,460	1,782	0	0	0
20	9,314	9,225	2,840	3,099	2,914	185	5,004	369	1,717	7,090	967	0	0	0	0
21	6	6	3	3	3	0	4	0	45	49	0	0	0	0	0
22	4,806	4,237	1,436	1,650	1,343	307	27,630	502	1,152	29,284	1,369	0	0	0	0
23	18,320	18,286	7,155	7,877	7,793	84	908	312	1,431	2,651	1,214	489	0	0	0
24	2,318	2,318	785	916	904	12	55	9	1,663	1,727	244	0	0	0	0
25	997	997	327	359	359	0	141	10	10	161	0	0	0	0	0
26	68,757	67,094	23,680	25,809	24,665	1,144	4,469	3,843	8,978	17,290	5,725	3,632	3,810	1,422	0
27	20,480	20,364	5,717	7,491	7,398	93	570	299	3,651	4,520	1,640	428	548	0	0
28	17,695	17,123	6,346	7,411	7,301	110	1,516	648	2,381	4,545	1,612	562	1,717	0	0
29	9,786	9,786	3,396	3,683	3,671	12	655	375	421	1,451	710	388	0	0	0
Total	802,110	787,235	310,832	337,823	265,687	72,136	117,372	76,076	208,191	401,639	60,107	29,138	32,791	25,514	26,180

APPENDIX F: 2030 Socioeconomic Forecast by Subarea

2030 MTP Socioeconomic Forecast by Subarea
July, 2007

Subarea	Population	Household Population	House-holds	Housing Units	Single Family Units	Multi-Family Units	Basic	Retail	Service	Employ-ment	Elementary School Enrollment	Middle School Enrollment	High School Enrollment	UNM Enrollment	CNM Enrollment
1	90,216	89,318	33,320	36,523	34,250	2,273	4,313	3,997	13,592	21,902	6,356	3,510	1,939	4,158	0
2	54,613	53,126	20,937	22,672	19,661	3,011	8,384	4,235	11,087	23,706	3,744	1,317	3,287	0	0
3	9,185	9,185	3,740	3,950	3,880	70	392	304	952	1,648	748	0	0	0	0
4	16,206	16,172	6,598	7,020	6,734	286	1,090	839	3,014	4,943	816	541	1,075	0	0
5	60,439	60,249	25,100	26,514	19,042	7,472	3,110	9,323	15,646	28,079	4,606	1,158	2,347	0	5,670
6	40,338	37,187	13,992	14,950	13,005	1,945	4,008	1,391	6,360	11,759	1,985	1,698	2,279	0	0
7	69,026	68,207	27,698	29,336	25,077	4,259	2,825	5,153	11,168	19,146	4,667	1,993	0	0	0
8	28,757	28,664	10,827	11,595	9,654	1,941	3,678	2,953	8,371	15,002	1,483	1,401	2,384	0	0
9	2,427	2,427	690	798	798	0	48	28	1,422	1,498	210	0	0	0	0
10	63,621	63,509	22,529	24,019	22,743	1,276	1,974	1,776	5,152	8,902	3,639	996	2,222	0	0
11	32,377	32,244	11,702	12,495	11,525	970	1,125	1,700	4,439	7,264	3,689	2,645	2,010	0	1,288
12	16,711	16,659	7,093	7,644	6,733	911	2,243	1,317	4,181	7,741	1,130	1,450	0	0	0
13	10,482	10,038	4,273	4,552	3,673	879	15,406	5,606	28,792	49,804	468	0	0	0	0
14	97,801	95,702	44,533	47,961	32,424	15,537	7,374	9,931	27,615	44,920	4,977	1,701	3,173	0	8,513
15	25,691	24,776	10,814	11,568	9,677	1,891	6,458	4,082	11,537	22,077	1,732	642	1,711	0	0
16	103,365	102,142	48,015	51,472	35,018	16,454	10,832	17,200	35,427	63,459	7,016	4,478	5,134	0	0
17	24,147	22,518	11,560	13,180	6,584	6,596	6,662	4,203	26,555	37,420	1,372	678	2,012	0	0
18	41,900	38,471	20,771	22,842	12,432	10,410	4,842	5,324	41,090	51,256	1,867	598	1,923	31,842	16,963
19	62,762	61,326	29,128	32,479	18,147	14,332	5,523	6,603	19,407	31,533	2,148	1,793	0	0	0
20	10,565	10,459	3,542	3,854	3,441	413	5,542	1,406	4,199	11,147	658	0	0	0	0
21	33,094	33,094	12,598	13,438	9,384	4,054	2,864	499	6,665	10,028	2,358	1,125	1,432	0	0
22	3,812	2,981	1,098	1,164	861	303	28,039	785	1,345	30,169	655	0	0	0	0
23	28,378	28,338	11,849	12,957	12,867	90	1,168	867	3,022	5,057	2,150	810	951	0	0
24	3,307	3,307	1,245	1,387	1,380	7	58	15	2,171	2,244	340	0	0	0	0
25	1,356	1,356	476	606	604	2	186	17	12	215	0	0	0	0	0
26	127,566	125,093	46,463	50,376	47,820	2,556	7,245	5,547	19,534	32,326	9,077	4,360	4,655	1,745	0
27	26,962	26,762	8,137	10,541	10,416	125	703	404	5,027	6,134	2,412	971	457	0	0
28	27,479	26,753	10,442	12,575	12,372	203	1,826	831	4,028	6,685	1,860	710	791	0	0
29	16,889	16,889	6,226	6,829	6,722	107	755	1,037	2,004	3,796	1,027	905	969	0	0
Total	1,129,472	1,106,952	455,396	495,297	396,924	98,373	138,673	97,373	323,814	559,860	73,190	35,480	40,751	37,745	32,434

APPENDIX G: Subarea Map



NOTES

APPENDIX D

Town of Bernalillo Documents

APPENDIX D

Town of Bernalillo

Sewer Connection Fees

STATE OF NEW MEXICO TOWN OF BERNALILLO

ORDINANCE NO. 159

AN ORDINANCE AMENDING ORDINANCE Nos. 66 and 69 TO ADJUST SEWER CONNECTION RATES

WHEREAS, Ordinance No. 66 was passed by the Board of Trustees of the Town of Bernalillo, County of Sandoval, State of New Mexico, on January 21, 1981; and,

WHEREAS, Ordinance No. 69 was passed by the Board of Trustees of the Town of Bernalillo, County of Sandoval, State of New Mexico, on January 29, 1981; and,

WHEREAS, the periodic revision of monthly rates, charges and conditions for sewer services furnished by the municipality is essential for the preservation and maintenance of a municipal water and sewer system; and,

WHEREAS, an amendment to portions of said ordinance is necessary in order to provide for the needs of the Town.

NOW THEREFORE, BE IT ORDAINED BY THE GOVERNING BODY OF THE TOWN OF BERNALILLO, COUNTY OF SANDOVAL, STATE OF NEW MEXICO:

SECTION ONE

ORDINANCE Nos. 66 and 69, ARTICLE TWO, SECTION TWO, ENTITLED "CONNECTION FEES", are hereby amended as follows:

SECTION TWO - CONNECTION FEES: There is hereby established, and there shall be maintained, collected and enforced, a connection fee as set forth in the table below. Sewer connection fees shall be based on the size of the customer's water meter.

Meter Size	Connection Fee	Meter Size	Connection Fee
3/4"	$1,200.00	2"	$6,200.00
1"	$2,300.00	3"	$13,000.00
1 1/2"	$3,400.00	4"	$14,600.00

SECTION TWO

REPEALER: All Ordinances or parts of Ordinances in existence are hereby repealed to the extent that they are inconsistent with this Ordinance; and, provided however, that such repeal shall not effect any claims or rights arising under such prior Ordinances, and all claims or rights of The Town of Bernalillo arising under such prior ordinances shall remain in full force and effect; provided further, that all Ordinances or parts of Ordinances inconsistent with this Ordinance are hereby repealed.

SEVERABILITY: That if any section, paragraph, clause or provision of this Ordinance shall, for any reason, be held to be invalid or uninforceable, the invalidity or uninforceability of such section, paragraph, clause or provision shall not affect the validity of the remaining parts of this Ordinance.

PASSED, ADOPTED AND SIGNED THIS 24th DAY OF November, 1997

J. Aguilar
MAYOR

ATTEST: L. Allen
TOWN CLERK

APPENDIX D

Town of Bernalillo

Sewer Rate Schedule

STATE OF NEW MEXICO TOWN OF BERNALILLO

ORDINANCE NO. *210*

AN ORDINANCE AMENDING ORDINANCE NOS. *66, 152, 163, 169 AND 186* TO ADJUST SEWER RATES.

BE IT ORDAINED BY THE GOVERNING BODY OF THE TOWN OF BERNALILLO, COUNTY OF SANDOVAL, STATE OF NEW MEXICO:

SECTION ONE

ORDINANCE NO. **66, ARTICLE TWO, SECTION ONE, ENTITLED "MONTHLY SEWAGE RATES", is hereby amended to read as follows (with changes made, indicated by underlining):**

SECTION ONE - MONTHLY SEWAGE RATES: The following monthly rates, charges and conditions for sewage service are hereby adopted:

USER CATEGORY	MINIMUM FOR 4,000 GALLONS PER MONTH OR LESS OF WATER USAGE
RESIDENTIAL	$21.93
COMMERCIAL	$36.25

For each additional one thousand (1,000) gallons or portion thereof, residential users, will be assessed at $3.38 per one thousand (1,000) gallons during the winter months of December, January and February only. For the remaining months of the year (March, April, May, June, July, August, September, October, and November), the sewage rates will be assessed at the rate of the average sewer use billing for the three (3) winter months mentioned, for each sewer user. For each additional one thousand (1,000) gallons, or portion thereof, commercial users will be assessed at $3.38 per one thousand gallons. Users formerly categorized as special and public housing will now be considered commercial users.

There will be a 25% surcharge on accounts outside of Town limits.

SEVERABILITY:
If any section, paragraph, clause or provision of this ordinance shall, for any reason, be held to be invalid or unenforceable, the invalidity or unenforceability of such section, paragraph, clause or provision shall not affect any of the remaining provisions of this ordinance.

PASSED, ADOPTED AND SIGNED THIS 11 DAY OF July, 2005

MAYOR

ATTEST:
TOWN CLERK

APPENDIX D

Town of Bernalillo

Financial Data

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
FINANCIAL SUMMARY % OF YEAR COMPLETED: 58.33

	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
REVENUE SUMMARY									
ALL REVENUE	0.00	0.00	0.00	3,476,019.00	239,162.21	2,208,920.48	0.00	1,267,098.52	63.55
TOTAL REVENUES	0.00	0.00	0.00	3,476,019.00	239,162.21	2,208,920.48	0.00	1,267,098.52	63.55
EXPENSE SUMMARY									
NON-DEPARTMENTAL	0.00	0.00	0.00	1,276,294.00	0.00	66,242.46	0.00	1,210,051.54	5.19
WATER	19,692.67	6,213.10	13,479.57	1,088,205.22	76,491.96	593,406.22	44,702.85	456,309.25	58.07
WASTEWATER	624.58	624.58	0.00	778,345.70	72,603.29	356,240.25	31,469.19	391,260.84	49.73
ANIMAL CONTROL	164.22	158.22	6.00	573,736.19	48,411.82	300,374.00	5,430.00	268,090.41	53.27
REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	20,481.47	6,995.90	13,485.57	3,716,581.11	197,507.07	1,316,262.93	81,602.04	2,325,712.04	37.42
REVENUES OVER/(UNDER) EXPENDITURES	(20,481.47)	6,995.90	(13,485.57)	(240,562.11)	41,655.14	892,657.55	(81,602.04)	(1,058,613.52)	340.06-

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY

% OF YEAR COMPLETED: 58.33

REVENUES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-4046-1-2 Water Service	0.00	0.00	0.00	1,459,498.00	98,336.51	915,168.77	0.00	544,329.23	62.70
135-000-4050-1-2 Sewer Service	0.00	0.00	0.00	1,080,282.00	73,029.11	650,509.24	0.00	429,772.76	60.22
135-000-4051-1-2 Installation Fees	0.00	0.00	0.00	360,760.00	12,450.00	219,190.00	0.00	141,570.00	60.76
135-000-4052-1-4 Water Rights	0.00	0.00	0.00	0.00	0.00	41,620.00	0.00	(41,620.00)	0.00
135-000-4055-1-2 Penalty Charges	0.00	0.00	0.00	0.00	2,277.81	8,744.89	0.00	(8,744.89)	0.00
135-000-4060-1-2 Sewer Tap Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4065-1-2 Trash Collection Reve	0.00	0.00	0.00	449,812.00	40,925.36	286,666.83	0.00	163,145.17	63.73
135-000-4195-1-2 On & Off Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4235-1-2 Franchise Fee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4820-1-7 Environment Tax .0625	0.00	0.00	0.00	119,667.00	10,518.42	78,581.16	0.00	41,085.84	65.67
135-000-4900-1-2 Misc. Revenue	0.00	0.00	0.00	2,000.00	1,625.00	8,439.59	0.00	(6,439.59)	421.98
135-000-4905-1-1 Interest Earned	0.00	0.00	0.00	4,000.00	0.00	0.00	0.00	4,000.00	0.00
135-000-4915-1-2 Other Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUES	0.00	0.00	0.00	3,476,019.00	239,162.21	2,208,920.48	0.00	1,267,098.52	63.55

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
NON-DEPARTMENTAL % OF YEAR COMPLETED: 58.33

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-5013-2-0 Cash Over/Short	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5016-2-0 FUEL & POWER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5052-2-0 Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5096-2-0 Equipment Rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5097-2-4 Enterprise Fund Debt	0.00	0.00	0.00	1,276,294.00	0.00	215,878.46	0.00	1,060,415.54	16.91
135-000-5310-1-7 GROSS RECEIPTS TAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5315-2-0 WSC LOAN PAYMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6015-1-5 Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6900-1-4 Accumulated Depreciat	0.00	0.00	0.00	0.00	0.00(	149,636.00)	0.00	149,636.00	0.00
TOTAL NON-DEPARTMENTAL	0.00	0.00	0.00	1,276,294.00	0.00	66,242.46	0.00	1,210,051.54	5.19

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
WATER % OF YEAR COMPLETED: 58.33

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-200-5001-2-1 Personnel Services	0.00	0.00	0.00	305,276.00	32,914.19	176,800.78	0.00	128,475.22	57.92
135-200-5005-2-1 Personnel Benefits	0.00	0.00	0.00	124,679.22	11,396.71	86,651.10	0.00	38,028.12	69.50
135-200-5010-2-0 Training	50.00	0.00	50.00	4,350.00	500.00	1,000.00	0.00	3,350.00	22.99
135-200-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	2,400.00	808.80	983.14	802.00	614.86	74.38
135-200-5016-2-0 Gas & Oil	0.00	0.00	0.00	31,200.00	2,059.08	18,181.18	0.00	13,018.82	58.27
135-200-5017-2-0 Auto Maintenance	125.89	98.19	27.70	8,000.00	514.06	4,863.67	2,121.08	1,113.44	86.08
135-200-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	550.00	0.00	0.00	0.00	550.00	0.00
135-200-5021-2-0 Utilities	0.00	0.00	0.00	142,000.00	10,155.52	70,997.07	0.00	71,002.93	50.00
135-200-5022-2-0 Water Conservation Fe	0.00	0.00	0.00	18,000.00	794.16	8,426.01	0.00	9,573.99	46.81
135-200-5023-2-0 Telephone	0.00	0.00	0.00	17,100.00	1,270.30	8,843.92	7,251.53	1,004.55	94.13
135-200-5028-2-0 Audit	11,715.76	0.00	11,715.76	32,000.00	2,806.84	18,712.26	0.00	13,287.74	58.48
135-200-5030-2-0 Membership	6.64	0.00	6.64	1,500.00	0.00	315.00	1,124.00	61.00	95.93
135-200-5032-2-0 Engineering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5035-2-0 Insurance	0.00	0.00	0.00	46,000.00	0.00	24,243.39	0.00	21,756.61	52.70
135-200-5036-2-0 Office Supplies	0.00	0.00	0.00	2,800.00	0.00	1,039.87	1,627.33	132.80	95.26
135-200-5037-2-0 Uniforms	0.00	0.00	0.00	9,750.00	0.00	8,555.53	0.00	1,194.47	87.75
135-200-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5041-2-0 Postage	0.00	0.00	0.00	23,000.00	219.50	10,308.12	0.00	12,691.88	44.82
135-200-5045-2-0 Professional Services	300.00	0.00	300.00	55,000.00	1,749.47	16,951.35	13,783.58	24,265.07	55.88
135-200-5046-2-0 Trash Collections	0.00	0.00	0.00	5,500.00	843.86	3,157.69	0.00	2,342.31	57.41
135-200-5051-2-0 Water Rights Study	3,927.21	3,927.21	0.00	30,000.00	2,817.58	15,976.16	7,951.05	10,000.00	66.67
135-200-5052-2-0 Miscellaneous	0.00	0.00	0.00	2,000.00	182.00	649.48	0.00	1,350.52	32.47
135-200-5054-2-0 Chemicals	0.00	0.00	0.00	15,000.00	126.00	9,559.94	0.00	5,440.06	63.73
135-200-5057-2-0 Water Rights Purchase	0.00	0.00	0.00	0.00	0.00	1,832.00	0.00	(1,832.00)	0.00
135-200-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5066-2-0 Building Maintenance	0.00	0.00	0.00	2,500.00	0.00	1,295.49	12.99	1,191.52	52.34
135-200-5067-2-0 Property Taxes	0.00	0.00	0.00	400.00	0.00	132.72	0.00	267.28	33.18
135-200-5070-2-0 Materials & Supplies	1,379.47	0.00	1,379.47	85,000.00	5,636.45	40,800.74	4,653.19	39,546.07	53.48
135-200-5072-2-0 Equipment Repair & Ma	0.00	0.00	0.00	10,000.00	0.00	4,780.51	1,352.00	3,867.49	61.33
135-200-5073-2-0 Tools	0.00	0.00	0.00	6,000.00	0.00	4,299.48	841.70	858.82	85.69
135-200-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5078-2-0 Analysis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	22,000.00	1,697.44	14,735.23	0.00	7,264.77	66.98
135-200-5082-2-0 Contract Maintenance	0.00	0.00	0.00	12,000.00	0.00	2,418.26	0.00	9,581.74	20.15
135-200-5083-2-0 Plant Replacement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6010-1-4 Computers	0.00	0.00	0.00	1,200.00	0.00	1,094.43	0.00	105.57	91.20
135-200-6014-1-4 New Meters	2,187.70	2,187.70	0.00	45,000.00	0.00	11,799.70	1,961.35	33,426.65	25.72
135-200-6017-1-4 Vehicles	0.00	0.00	0.00	28,000.00	0.00	24,002.00	1,221.05	2,776.95	90.08
135-200-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL WATER	19,692.67	6,213.10	13,479.57	1,088,205.22	76,491.96	593,406.22	44,702.85	456,309.25	58.07

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
WASTEWATER % OF YEAR COMPLETED: 58.33

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-205-5001-2-1 Personnel Services	0.00	0.00	0.00	193,270.80	20,236.24	113,138.31	0.00	80,132.49	58.54
135-205-5005-2-1 Personnel Benefits	0.00	0.00	0.00	117,194.90	7,129.42	47,964.37	0.00	69,230.53	40.93
135-205-5010-2-0 Training	0.00	0.00	0.00	4,000.00	0.00	762.00	0.00	3,238.00	19.05
135-205-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	1,500.00	0.00	98.59	0.00	1,401.41	6.57
135-205-5016-2-0 Gas & Oil	0.00	0.00	0.00	15,000.00	661.65	6,040.39	0.00	8,959.61	40.27
135-205-5017-2-0 Auto Maintenance	0.00	0.00	0.00	6,600.00	0.00	3,321.64	450.00	2,828.36	57.15
135-205-5018-2-0 Maintenance	0.00	0.00	0.00	4,000.00	0.00	502.47	500.00	2,997.53	25.06
135-205-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	1,300.00	0.00	0.00	0.00	1,300.00	0.00
135-205-5021-2-0 Utilities	0.00	0.00	0.00	128,500.00	11,743.53	72,082.50	0.00	56,417.50	56.10
135-205-5023-2-0 Telephone	0.00	0.00	0.00	17,280.00	908.93	6,211.16	5,323.87	5,744.97	66.75
135-205-5030-2-0 Membership	0.00	0.00	0.00	1,600.00	0.00	0.00	0.00	1,600.00	0.00
135-205-5032-2-0 Engineering	0.00	0.00	0.00	10,000.00	0.00	0.00	0.00	10,000.00	0.00
135-205-5035-2-0 Insurance	0.00	0.00	0.00	50,000.00	0.00	22,263.39	0.00	27,736.61	44.53
135-205-5036-2-0 Office Supplies	0.00	0.00	0.00	1,600.00	98.58	493.02	0.00	1,106.98	30.81
135-205-5037-2-0 Uniforms	0.00	0.00	0.00	6,000.00	0.00	3,164.18	0.00	2,835.82	52.74
135-205-5039-2-0 Printing	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00	0.00
135-205-5041-2-0 Postage	0.00	0.00	0.00	12,000.00	219.50	9,308.09	0.00	2,691.91	77.57
135-205-5045-2-0 Professional Services	0.00	0.00	0.00	2,000.00	0.00	0.00	0.00	2,000.00	0.00
135-205-5046-2-0 Trash Collections	0.00	0.00	0.00	1,600.00	110.13	1,029.46	0.00	570.54	64.34
135-205-5052-2-0 Miscellaneous	0.00	0.00	0.00	2,200.00	0.00	814.67	0.00	1,385.33	37.03
135-205-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5066-2-0 Building Maintenance	0.00	0.00	0.00	2,500.00	0.00	1,314.59	0.00	1,185.41	52.58
135-205-5067-2-0 Property Taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5072-2-0 Equipment Repair & Ma	57.48	57.48	0.00	30,000.00	2,517.59	6,222.49	9,024.77	14,810.22	50.63
135-205-5073-2-0 Tools	0.00	0.00	0.00	3,000.00	89.99	1,063.51	0.00	1,936.49	35.45
135-205-5075-2-0 Lab Supplies	0.00	0.00	0.00	7,000.00	10.70	1,686.67	168.90	5,144.43	26.51
135-205-5076-2-0 Sludge Disposal	0.00	0.00	0.00	34,800.00	2,483.98	14,317.04	1,300.00	19,182.96	44.88
135-205-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	5,000.00	0.00	822.98	0.00	4,177.02	16.46
135-205-5078-2-0 Analysis	567.10	567.10	0.00	16,300.00	888.10	6,849.70	9,208.60	808.80	95.04
135-205-5082-2-0 Contract Maintenance	0.00	0.00	0.00	11,500.00	321.95	6,140.15	3,561.90	1,797.95	84.37
135-205-5083-2-0 Plant Replacement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5105-2-0 Safety	0.00	0.00	0.00	2,000.00	0.00	0.00	150.00	1,850.00	7.50
135-205-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	700.00	0.00	0.00	150.00	550.00	21.43
135-205-6010-1-4 Computers	0.00	0.00	0.00	1,800.00	0.00	1,094.43	0.00	705.57	60.80
135-205-6016-1-4 Plant Repair/Replacem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6017-1-4 Vehicles	0.00	0.00	0.00	28,000.00	25,183.00	25,183.00	1,631.15	1,185.85	95.76
135-205-6021-1-4 Paving (Plant)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6025-1-4 Pumps	0.00	0.00	0.00	60,000.00	0.00	4,351.45	0.00	55,648.55	7.25
TOTAL WASTEWATER	624.58	624.58	0.00	778,345.70	72,603.29	356,240.25	31,469.19	391,260.84	49.73

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
ANIMAL CONTROL % OF YEAR COMPLETED: 58.33

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-210-5001-2-1 Personnel Services	0.00	0.00	0.00	23,293.26	2,673.60	14,322.64	0.00	8,970.62	61.49
135-210-5005-2-1 Personnel Benefits	0.00	0.00	0.00	11,692.93	959.54	6,621.36	0.00	5,071.57	56.63
135-210-5010-2-0 Training	158.22	158.22	0.00	300.00	0.00	158.44	0.00	299.78	0.07
135-210-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00	0.00
135-210-5016-2-0 Gas & Oil	0.00	0.00	0.00	5,000.00	294.32	2,794.52	0.00	2,205.48	55.89
135-210-5017-2-0 Auto Maintenance	6.00	0.00	6.00	2,500.00	0.00	762.23	0.00	1,737.77	30.49
135-210-5021-2-0 Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5023-2-0 Telephone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5030-2-0 Membership	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5035-2-0 Insurance	0.00	0.00	0.00	10,000.00	0.00	2,039.00	0.00	7,961.00	20.39
135-210-5036-2-0 Office Supplies	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00	0.00
135-210-5037-2-0 Uniforms	0.00	0.00	0.00	600.00	0.00	300.00	0.00	300.00	50.00
135-210-5039-2-0 Printing	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00	0.00
135-210-5041-2-0 Postage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5045-2-0 Professional Services	0.00	0.00	0.00	250.00	0.00	0.00	0.00	250.00	0.00
135-210-5046-2-0 Trash Collections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5052-2-0 Miscellaneous	0.00	0.00	0.00	200.00	0.00	83.97	0.00	116.03	41.99
135-210-5056-2-0 Books & Programs	0.00	0.00	0.00	250.00	0.00	0.00	0.00	250.00	0.00
135-210-5061-1-3 Ammunition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5064-2-0 Promotions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	25,000.00	600.00	11,899.58	5,430.00	7,670.42	69.32
135-210-5070-2-0 Materials & Supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5082-2-0 Contract Maintenance	0.00	0.00	0.00	494,350.00	43,884.36	261,392.26	0.00	232,957.74	52.88
135-210-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6009-1-4 Radios	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ANIMAL CONTROL	164.22	158.22	6.00	573,736.19	48,411.82	300,374.00	5,430.00	268,090.41	53.27

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JANUARY 31ST, 2014

135-WATER/SEWER UTILITY
REVENUE BOND % OF YEAR COMPLETED: 58.33

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-920-5045-2-0 Professional Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5065-2-0 Bond Expenditures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5720-2-0 INTEREST DUE THIS FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5725-2-0 UNREDEEMED BONDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5730-2-0 UNREDEEMED COUPONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-6100-2-4 Bonds Due This FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	20,481.47	6,995.90	13,485.57	3,716,581.11	197,507.07	1,316,262.93	81,602.04	2,325,712.04	37.42
REVENUES OVER/(UNDER) EXPENDITURES	(20,481.47)	6,995.90	(13,485.57)	(240,562.11)	41,655.14	892,657.55	(81,602.04)	(1,058,613.52)	340.06-

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
FINANCIAL SUMMARY % OF YEAR COMPLETED: 100.00

	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
REVENUE SUMMARY									
ALL REVENUE	0.00	0.00	0.00	3,418,697.36	424,644.50	3,103,866.62	0.00	314,830.74	90.79
TOTAL REVENUES	0.00	0.00	0.00	3,418,697.36	424,644.50	3,103,866.62	0.00	314,830.74	90.79
EXPENSE SUMMARY									
NON-DEPARTMENTAL	0.00	0.00	0.00	1,274,367.00	0.00	1,116,926.36	0.00	157,440.64	87.65
WATER	58,070.58	46,348.18	11,722.40	1,100,266.00	92,963.78	1,052,606.01	11,152.97	82,855.20	92.47
WASTEWATER	1,368.01	1,368.01	0.00	715,004.00	42,763.26	548,093.37	657.48	167,621.16	76.56
ANIMAL CONTROL	6.00	0.00	6.00	589,457.00	48,228.74	586,668.09	158.22	2,630.69	99.55
REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	59,444.59	47,716.19	11,728.40	3,679,094.00	183,955.78	3,304,293.83	11,968.67	410,547.69	88.84
REVENUES OVER/(UNDER) EXPENDITURES	(59,444.59)	47,716.19	(11,728.40)	(260,396.64)	240,688.72	(200,427.21)	(11,968.67)	(95,716.95)	63.24

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY

% OF YEAR COMPLETED: 100.00

REVENUES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-4046-1-2 Water Service	0.00	0.00	0.00	1,365,299.50	258,474.01	1,087,087.74	0.00	278,211.76	79.62
135-000-4050-1-2 Sewer Service	0.00	0.00	0.00	1,153,204.86	97,832.79	970,387.53	0.00	182,817.33	84.15
135-000-4051-1-2 Installation Fees	0.00	0.00	0.00	248,760.00	13,910.00	462,360.00	0.00	(213,600.00)	185.87
135-000-4052-1-4 Water Rights	0.00	0.00	0.00	0.00	0.00	27,404.00	0.00	(27,404.00)	0.00
135-000-4055-1-2 Penalty Charges	0.00	0.00	0.00	45,964.00	3,408.58	7,315.82	0.00	38,648.18	15.92
135-000-4060-1-2 Sewer Tap Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4065-1-2 Trash Collection Reve	0.00	0.00	0.00	477,360.00	41,316.33	430,580.39	0.00	46,779.61	90.20
135-000-4195-1-2 On & Off Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4235-1-2 Franchise Fee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4820-1-7 Environment Tax .0625	0.00	0.00	0.00	122,109.00	8,227.79	117,256.14	0.00	4,852.86	96.03
135-000-4900-1-2 Misc. Revenue	0.00	0.00	0.00	2,000.00	1,475.00	1,475.00	0.00	525.00	73.75
135-000-4905-1-1 Interest Earned	0.00	0.00	0.00	4,000.00	0.00	0.00	0.00	4,000.00	0.00
135-000-4915-1-2 Other Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUES	0.00	0.00	0.00	3,418,697.36	424,644.50	3,103,866.62	0.00	314,830.74	90.79

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
NON-DEPARTMENTAL % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-5013-2-0 Cash Over/Short	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5016-2-0 FUEL & POWER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5052-2-0 Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5096-2-0 Equipment Rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5097-2-4 Enterprise Fund Debt	0.00	0.00	0.00	1,274,367.00	0.00	1,266,562.36	0.00	7,804.64	99.39
135-000-5310-1-7 GROSS RECEIPTS TAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5315-2-0 WSC LOAN PAYMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6015-1-5 Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6900-1-4 Accumulated Depreciat	0.00	0.00	0.00	0.00	0.00	(149,636.00)	0.00	149,636.00	0.00
TOTAL NON-DEPARTMENTAL	0.00	0.00	0.00	1,274,367.00	0.00	1,116,926.36	0.00	157,440.64	87.65

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
WATER % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-200-5001-2-1 Personnel Services	0.00	0.00	0.00	295,673.00	23,061.29	241,566.31	0.00	54,106.69	81.70
135-200-5005-2-1 Personnel Benefits	0.00	0.00	0.00	112,469.00	11,967.86	118,918.26	0.00	(6,449.26)	105.73
135-200-5010-2-0 Training	0.00	0.00	0.00	3,600.00	0.00	2,047.70	50.00	1,502.30	58.27
135-200-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	1,600.00	0.00	746.12	0.00	853.88	46.63
135-200-5016-2-0 Gas & Oil	0.00	0.00	0.00	31,200.00	2,675.93	27,109.21	0.00	4,090.79	86.89
135-200-5017-2-0 Auto Maintenance	0.00	0.00	0.00	19,000.00	409.79	15,368.20	497.07	3,134.73	83.50
135-200-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	550.00	0.00	241.61	0.00	308.39	43.93
135-200-5021-2-0 Utilities	0.00	0.00	0.00	138,000.00	26,517.18	158,591.02	0.00	(20,591.02)	114.92
135-200-5022-2-0 Water Conservation Fe	0.00	0.00	0.00	18,000.00	1,184.76	11,004.93	0.00	6,995.07	61.14
135-200-5023-2-0 Telephone	0.00	0.00	0.00	18,000.00	1,369.91	14,467.23	0.00	3,532.77	80.37
135-200-5028-2-0 Audit	27,108.87	15,393.11	11,715.76	38,000.00	0.00	53,388.12	0.00	4.99	99.99
135-200-5030-2-0 Membership	6.64	0.00	6.64	1,500.00	0.00	175.00	0.00	1,325.00	11.67
135-200-5032-2-0 Engineering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5035-2-0 Insurance	0.00	0.00	0.00	46,000.00	0.00	43,358.00	0.00	2,642.00	94.26
135-200-5036-2-0 Office Supplies	76.28	76.28	0.00	2,800.00	190.91	2,516.24	0.00	360.04	87.14
135-200-5037-2-0 Uniforms	373.98	373.98	0.00	9,750.00	1,239.09	13,047.64	0.00	(2,923.66)	129.99
135-200-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5041-2-0 Postage	0.00	0.00	0.00	23,000.00	2,545.50	17,575.36	0.00	5,424.64	76.41
135-200-5045-2-0 Professional Services	23,885.22	23,885.22	0.00	85,000.00	6,529.50	98,835.79	1,040.00	9,009.43	89.40
135-200-5046-2-0 Trash Collections	0.00	0.00	0.00	5,500.00	456.99	4,834.39	0.00	665.61	87.90
135-200-5051-2-0 Water Rights Study	858.47	858.47	0.00	33,000.00	708.63	28,649.28	4,227.49	981.70	97.03
135-200-5052-2-0 Miscellaneous	181.92	181.92	0.00	2,000.00	137.76	828.34	0.00	1,353.58	32.32
135-200-5054-2-0 Chemicals	1,278.45	1,278.45	0.00	15,000.00	1,483.46	13,975.92	528.00	1,774.53	88.17
135-200-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5066-2-0 Building Maintenance	0.00	0.00	0.00	3,500.00	2,705.82	3,157.02	0.00	342.98	90.20
135-200-5067-2-0 Property Taxes	0.00	0.00	0.00	400.00	0.00	132.72	0.00	267.28	33.18
135-200-5070-2-0 Materials & Supplies	2,323.65	2,323.65	0.00	85,000.00	6,998.30	82,933.33	1,867.63	2,522.69	97.03
135-200-5072-2-0 Equipment Repair & Ma	0.00	0.00	0.00	10,000.00	77.57	6,464.00	0.00	3,536.00	64.64
135-200-5073-2-0 Tools	673.62	673.62	0.00	20,500.00	2,102.57	20,081.34	755.08	337.20	98.36
135-200-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5078-2-0 Analysis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	22,000.00	0.00	17,701.16	0.00	4,298.84	80.46
135-200-5082-2-0 Contract Maintenance	0.00	0.00	0.00	12,000.00	0.00	9,346.33	0.00	2,653.67	77.89
135-200-5083-2-0 Plant Replacement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6010-1-4 Computers	0.00	0.00	0.00	2,224.00	0.00	2,224.00	0.00	0.00	100.00
135-200-6014-1-4 New Meters	1,303.48	1,303.48	0.00	45,000.00	600.96	43,321.44	2,187.70	794.34	98.23
135-200-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL WATER	58,070.58	46,348.18	11,722.40	1,100,266.00	92,963.78	1,052,606.01	11,152.97	82,855.20	92.47

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
WASTEWATER % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-205-5001-2-1 Personnel Services	0.00	0.00	0.00	212,846.00	14,105.96	158,464.10	0.00	54,381.90	74.45
135-205-5005-2-1 Personnel Benefits	0.00	0.00	0.00	94,558.00	5,503.22	66,242.46	0.00	28,315.54	70.05
135-205-5010-2-0 Training	0.00	0.00	0.00	4,000.00	0.00	1,012.00	0.00	2,988.00	25.30
135-205-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	1,000.00	0.00	30.00	0.00	970.00	3.00
135-205-5016-2-0 Gas & Oil	0.00	0.00	0.00	15,000.00	1,246.12	12,522.23	0.00	2,477.77	83.48
135-205-5017-2-0 Auto Maintenance	0.00	0.00	0.00	6,600.00	1,031.21	5,353.62	0.00	1,246.38	81.12
135-205-5018-2-0 Maintenance	0.00	0.00	0.00	4,000.00	827.02	1,509.47	0.00	2,490.53	37.74
135-205-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	1,300.00	0.00	667.30	0.00	632.70	51.33
135-205-5021-2-0 Utilities	0.00	0.00	0.00	126,000.00	13,554.22	135,908.28	0.00	(9,908.28)	107.86
135-205-5023-2-0 Telephone	0.00	0.00	0.00	12,000.00	1,052.92	10,777.24	0.00	1,222.76	89.81
135-205-5030-2-0 Membership	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5032-2-0 Engineering	0.00	0.00	0.00	10,000.00	0.00	0.00	0.00	10,000.00	0.00
135-205-5035-2-0 Insurance	0.00	0.00	0.00	50,000.00	0.00	32,040.00	0.00	17,960.00	64.08
135-205-5036-2-0 Office Supplies	0.00	0.00	0.00	1,600.00	0.00	1,344.54	0.00	255.46	84.03
135-205-5037-2-0 Uniforms	0.00	0.00	0.00	6,000.00	1,107.61	5,841.42	0.00	158.58	97.36
135-205-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5041-2-0 Postage	0.00	0.00	0.00	12,000.00	0.00	12,315.16	0.00	(315.16)	102.63
135-205-5045-2-0 Professional Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5046-2-0 Trash Collections	0.00	0.00	0.00	1,600.00	109.40	1,311.08	0.00	288.92	81.94
135-205-5052-2-0 Miscellaneous	0.00	0.00	0.00	2,200.00	0.00	2,099.96	0.00	100.04	95.45
135-205-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5066-2-0 Building Maintenance	0.00	0.00	0.00	2,500.00	0.00	347.56	0.00	2,152.44	13.90
135-205-5067-2-0 Property Taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5072-2-0 Equipment Repair & Ma	67.96	67.96	0.00	30,000.00	419.41	22,217.03	57.48	7,793.45	74.02
135-205-5073-2-0 Tools	0.00	0.00	0.00	3,000.00	0.00	1,318.90	0.00	1,681.10	43.96
135-205-5075-2-0 Lab Supplies	0.00	0.00	0.00	7,000.00	38.30	2,395.49	0.00	4,604.51	34.22
135-205-5076-2-0 Sludge Disposal	0.00	0.00	0.00	42,500.00	2,569.93	34,702.07	0.00	7,797.93	81.65
135-205-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	5,000.00	0.00	2,892.78	0.00	2,107.22	57.86
135-205-5078-2-0 Analysis	1,300.05	1,300.05	0.00	13,800.00	1,053.95	12,179.67	600.00	2,320.38	83.19
135-205-5082-2-0 Contract Maintenance	0.00	0.00	0.00	2,500.00	0.00	2,499.58	0.00	0.42	99.98
135-205-5083-2-0 Plant Replacement	0.00	0.00	0.00	36,000.00	0.00	10,475.20	0.00	25,524.80	29.10
135-205-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5105-2-0 Safety	0.00	0.00	0.00	2,000.00	143.99	1,654.78	0.00	345.22	82.74
135-205-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6016-1-4 Plant Repair/Replacem	0.00	0.00	0.00	10,000.00	0.00	9,971.45	0.00	28.55	99.71
135-205-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6021-1-4 Paving (Plant)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6025-1-4 Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL WASTEWATER	1,368.01	1,368.01	0.00	715,004.00	42,763.26	548,093.37	657.48	167,621.16	76.56

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
ANIMAL CONTROL % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-210-5001-2-1 Personnel Services	0.00	0.00	0.00	22,180.00	1,697.61	22,150.21	0.00	29.79	99.87
135-210-5005-2-1 Personnel Benefits	0.00	0.00	0.00	10,527.00	806.66	10,213.01	0.00	313.99	97.02
135-210-5010-2-0 Training	0.00	0.00	0.00	300.00	125.00	125.00	158.22	16.78	94.41
135-210-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	100.00	72.00	72.00	0.00	28.00	72.00
135-210-5016-2-0 Gas & Oil	0.00	0.00	0.00	5,000.00	441.83	5,249.04	0.00	(249.04)	104.98
135-210-5017-2-0 Auto Maintenance	6.00	0.00	6.00	2,500.00	104.71	2,034.65	0.00	465.35	81.39
135-210-5021-2-0 Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5023-2-0 Telephone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5030-2-0 Membership	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5035-2-0 Insurance	0.00	0.00	0.00	10,000.00	0.00	2,526.00	0.00	7,474.00	25.26
135-210-5036-2-0 Office Supplies	0.00	0.00	0.00	100.00	0.00	25.94	0.00	74.06	25.94
135-210-5037-2-0 Uniforms	0.00	0.00	0.00	600.00	0.00	599.87	0.00	0.13	99.98
135-210-5039-2-0 Printing	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00	0.00
135-210-5041-2-0 Postage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5045-2-0 Professional Services	0.00	0.00	0.00	250.00	0.00	250.00	0.00	0.00	100.00
135-210-5046-2-0 Trash Collections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5052-2-0 Miscellaneous	0.00	0.00	0.00	200.00	0.00	188.95	0.00	11.05	94.48
135-210-5056-2-0 Books & Programs	0.00	0.00	0.00	250.00	0.00	0.00	0.00	250.00	0.00
135-210-5061-1-3 Ammunition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5064-2-0 Promotions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	25,000.00	2,330.00	22,135.00	0.00	2,865.00	88.54
135-210-5070-2-0 Materials & Supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5082-2-0 Contract Maintenance	0.00	0.00	0.00	512,350.00	42,650.93	521,098.42	0.00	(8,748.42)	101.71
135-210-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6009-1-4 Radios	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ANIMAL CONTROL	6.00	0.00	6.00	589,457.00	48,228.74	586,668.09	158.22	2,630.69	99.55

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2013

135-WATER/SEWER UTILITY
REVENUE BOND % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-920-5045-2-0 Professional Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5065-2-0 Bond Expenditures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5720-2-0 INTEREST DUE THIS FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5725-2-0 UNREDEEMED BONDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5730-2-0 UNREDEEMED COUPONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-6100-2-4 Bonds Due This FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	59,444.59	47,716.19	11,728.40	3,679,094.00	183,955.78	3,304,293.83	11,968.67	410,547.69	88.84
REVENUES OVER/(UNDER) EXPENDITURES	(59,444.59)	47,716.19	(11,728.40)	(260,396.64)	240,688.72	(200,427.21)	(11,968.67)	(95,716.95)	63.24

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
FINANCIAL SUMMARY % OF YEAR COMPLETED: 100.00

	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
REVENUE SUMMARY									
ALL REVENUE	0.00	0.00	0.00	3,721,162.30	346,086.76	3,721,134.71	0.00	27.59	100.00
TOTAL REVENUES	0.00	0.00	0.00	3,721,162.30	346,086.76	3,721,134.71	0.00	27.59	100.00
EXPENSE SUMMARY									
NON-DEPARTMENTAL	0.00	0.00	0.00	903,413.00	0.00	753,776.62	0.00	149,636.38	83.44
WATER	37.17	30.53	6.64	1,092,939.23	69,897.02	1,017,313.37	58,616.90	17,039.49	98.44
WASTEWATER	0.00	0.00	0.00	654,465.25	46,150.75	653,037.60	1,427.65	0.00	100.00
ANIMAL CONTROL	0.00	0.00	0.00	542,756.20	51,296.99	542,381.50	374.70	0.00	100.00
REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	37.17	30.53	6.64	3,193,573.68	167,344.76	2,966,509.09	60,419.25	166,675.87	94.78
REVENUES OVER/(UNDER) EXPENDITURES	(37.17)	30.53	(6.64)	527,588.62	178,742.00	754,625.62	(60,419.25)	(166,648.28)	131.59

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY

% OF YEAR COMPLETED: 100.00

REVENUES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-4040-2-3 Lease Purchase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4046-1-2 Water Service	0.00	0.00	0.00	1,539,235.68	145,738.44	1,539,208.09	0.00	27.59	100.00
135-000-4050-1-2 Sewer Service	0.00	0.00	0.00	1,274,962.40	103,851.82	1,274,962.40	0.00	0.00	100.00
135-000-4051-1-2 Installation Fees	0.00	0.00	0.00	292,300.00	45,975.00	292,300.00	0.00	0.00	100.00
135-000-4052-1-4 Water Rights	0.00	0.00	0.00	21,159.00	0.00	21,159.00	0.00	0.00	100.00
135-000-4055-1-2 Penalty Charges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4060-1-2 Sewer Tap Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4065-1-2 Trash Collection Reve	0.00	0.00	0.00	467,365.89	40,484.39	467,365.89	0.00	0.00	100.00
135-000-4195-1-2 On & Off Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4235-1-2 Franchise Fee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-4820-1-7 Environment Tax .0625	0.00	0.00	0.00	120,541.47	9,037.11	120,541.47	0.00	0.00	100.00
135-000-4900-1-2 Misc. Revenue	0.00	0.00	0.00	3,532.90	1,000.00	3,532.90	0.00	0.00	100.00
135-000-4905-1-1 Interest Earned	0.00	0.00	0.00	2,064.96	0.00	2,064.96	0.00	0.00	100.00
135-000-4915-1-2 Other Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUES	0.00	0.00	0.00	3,721,162.30	346,086.76	3,721,134.71	0.00	27.59	100.00

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
NON-DEPARTMENTAL % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-000-5013-2-0 Cash Over/Short	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5016-2-0 FUEL & POWER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5052-2-0 Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5096-2-0 Equipment Rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5097-2-4 Enterprise Fund Debt	0.00	0.00	0.00	903,413.00	0.00	903,412.62	0.00	0.38	100.00
135-000-5310-1-7 GROSS RECEIPTS TAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-5315-2-0 WSC LOAN PAYMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6015-1-5 Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-000-6900-1-4 Accumulated Depreciat	0.00	0.00	0.00	0.00	0.00(	149,636.00)	0.00	149,636.00	0.00
TOTAL NON-DEPARTMENTAL	0.00	0.00	0.00	903,413.00	0.00	753,776.62	0.00	149,636.38	83.44

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
WATER % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-200-5001-2-1 Personnel Services	0.00	0.00	0.00	244,592.94	18,019.31	244,592.94	0.00	0.00	100.00
135-200-5005-2-1 Personnel Benefits	0.00	0.00	0.00	80,037.43	5,360.98	80,037.43	0.00	0.00	100.00
135-200-5010-2-0 Training	0.00	0.00	0.00	2,375.63	0.00	775.63	0.00	1,600.00	32.65
135-200-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	237.47	37.64	237.47	0.00	0.00	100.00
135-200-5016-2-0 Gas & Oil	0.00	0.00	0.00	25,724.23	2,232.30	25,724.23	0.00	0.00	100.00
135-200-5017-2-0 Auto Maintenance	30.53	30.53	0.00	8,181.31	149.31	8,211.84	0.00	0.00	100.00
135-200-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5021-2-0 Utilities	0.00	0.00	0.00	136,590.67	21,748.32	136,590.67	0.00	0.00	100.00
135-200-5022-2-0 Water Conservation Fe	0.00	0.00	0.00	14,668.30	2,404.47	14,668.30	0.00	0.00	100.00
135-200-5023-2-0 Telephone	0.00	0.00	0.00	14,882.19	1,861.78	14,882.19	0.00	0.00	100.00
135-200-5028-2-0 Audit	0.00	0.00	0.00	38,484.51	0.00	6,636.78	27,108.87	4,738.86	87.69
135-200-5030-2-0 Membership	6.64	0.00	6.64	1,124.00	0.00	1,124.00	0.00	0.00	100.00
135-200-5032-2-0 Engineering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5035-2-0 Insurance	0.00	0.00	0.00	56,000.00	0.00	56,000.00	0.00	0.00	100.00
135-200-5036-2-0 Office Supplies	0.00	0.00	0.00	1,857.03	300.45	1,670.77	76.28	109.98	94.08
135-200-5037-2-0 Uniforms	0.00	0.00	0.00	12,989.44	2,589.87	12,224.38	414.99	350.07	97.30
135-200-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5041-2-0 Postage	0.00	0.00	0.00	22,129.53	992.06	22,129.53	0.00	0.00	100.00
135-200-5045-2-0 Professional Services	0.00	0.00	0.00	223,276.48	1,065.88	192,578.02	23,885.22	6,813.24	96.95
135-200-5046-2-0 Trash Collections	0.00	0.00	0.00	3,416.35	459.31	3,416.35	0.00	0.00	100.00
135-200-5051-2-0 Water Rights Study	0.00	0.00	0.00	33,015.63	0.00	30,961.49	1,266.30	787.84	97.61
135-200-5052-2-0 Miscellaneous	0.00	0.00	0.00	2,603.37	85.60	2,317.37	286.00	0.00	100.00
135-200-5054-2-0 Chemicals	0.00	0.00	0.00	7,231.26	238.20	5,813.31	1,278.45	139.50	98.07
135-200-5057-2-0 Water Rights Purchase	0.00	0.00	0.00	1,832.00	0.00	1,832.00	0.00	0.00	100.00
135-200-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5066-2-0 Building Maintenance	0.00	0.00	0.00	1,389.24	0.00	1,389.24	0.00	0.00	100.00
135-200-5067-2-0 Property Taxes	0.00	0.00	0.00	132.72	0.00	132.72	0.00	0.00	100.00
135-200-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5070-2-0 Materials & Supplies	0.00	0.00	0.00	84,291.16	3,265.09	79,467.47	2,323.69	2,500.00	97.03
135-200-5072-2-0 Equipment Repair & Ma	0.00	0.00	0.00	5,714.31	0.00	5,714.31	0.00	0.00	100.00
135-200-5073-2-0 Tools	0.00	0.00	0.00	4,531.54	0.00	3,857.92	673.62	0.00	100.00
135-200-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5078-2-0 Analysis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	20,482.98	0.00	20,482.98	0.00	0.00	100.00
135-200-5082-2-0 Contract Maintenance	0.00	0.00	0.00	7,178.03	389.93	7,178.03	0.00	0.00	100.00
135-200-5083-2-0 Plant Replacement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5091-2-0 Construction Project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5096-2-0 Cylinder Rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5315-2-0 WSC Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-5900-2-0 Depreciation Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6005-1-4 Water/Sew.Line Purcha	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6009-1-4 Radios	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6014-1-4 New Meters	0.00	0.00	0.00	37,969.48	8,696.52	36,666.00	1,303.48	0.00	100.00
135-200-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-200-6025-1-5 Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL WATER	37.17	30.53	6.64	1,092,939.23	69,897.02	1,017,313.37	58,616.90	17,039.49	98.44

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
WASTEWATER % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-205-5001-2-1 Personnel Services	0.00	0.00	0.00	240,734.00	17,821.25	240,734.00	0.00	0.00	100.00
135-205-5005-2-1 Personnel Benefits	0.00	0.00	0.00	84,143.91	5,831.65	84,143.91	0.00	0.00	100.00
135-205-5010-2-0 Training	0.00	0.00	0.00	3,399.87	1,000.00	3,399.87	0.00	0.00	100.00
135-205-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5016-2-0 Gas & Oil	0.00	0.00	0.00	9,712.70	1,124.42	9,712.70	0.00	0.00	100.00
135-205-5017-2-0 Auto Maintenance	0.00	0.00	0.00	3,792.29	0.00	3,792.29	0.00	0.00	100.00
135-205-5018-2-0 Maintenance	0.00	0.00	0.00	1,471.17	377.42	1,471.17	0.00	0.00	100.00
135-205-5020-2-0 Janitorial Supplies	0.00	0.00	0.00	708.84	0.00	708.84	0.00	0.00	100.00
135-205-5021-2-0 Utilities	0.00	0.00	0.00	135,033.80	11,130.11	135,033.80	0.00	0.00	100.00
135-205-5023-2-0 Telephone	0.00	0.00	0.00	11,155.69	1,208.32	11,155.69	0.00	0.00	100.00
135-205-5028-2-0 Audit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5030-2-0 Membership	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5032-2-0 Engineering	0.00	0.00	0.00	3,090.74	386.16	3,090.74	0.00	0.00	100.00
135-205-5035-2-0 Insurance	0.00	0.00	0.00	50,000.00	0.00	50,000.00	0.00	0.00	100.00
135-205-5036-2-0 Office Supplies	0.00	0.00	0.00	1,377.53	26.00	1,377.53	0.00	0.00	100.00
135-205-5037-2-0 Uniforms	0.00	0.00	0.00	5,956.42	0.00	5,956.42	0.00	0.00	100.00
135-205-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5041-2-0 Postage	0.00	0.00	0.00	3,071.93	992.06	3,071.93	0.00	0.00	100.00
135-205-5043-2-0 Computer Support	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5045-2-0 Professional Services	0.00	0.00	0.00	975.56	0.00	975.56	0.00	0.00	100.00
135-205-5046-2-0 Trash Collections	0.00	0.00	0.00	1,267.02	107.68	1,267.02	0.00	0.00	100.00
135-205-5052-2-0 Miscellaneous	0.00	0.00	0.00	8,119.09	0.00	8,119.09	0.00	0.00	100.00
135-205-5054-2-0 Chlorine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5065-2-0 Publications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5066-2-0 Building Maintenance	0.00	0.00	0.00	2,298.87	0.00	2,298.87	0.00	0.00	100.00
135-205-5067-2-0 Property Taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5071-2-0 Sand	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5072-2-0 Equipment Repair & Ma	0.00	0.00	0.00	28,797.22	2,262.70	28,722.22	75.00	0.00	100.00
135-205-5073-2-0 Tools	0.00	0.00	0.00	2,140.20	295.46	2,140.20	0.00	0.00	100.00
135-205-5075-2-0 Lab Supplies	0.00	0.00	0.00	6,498.00	100.09	6,498.00	0.00	0.00	100.00
135-205-5076-2-0 Sludge Disposal	0.00	0.00	0.00	27,756.62	2,266.81	27,756.62	0.00	0.00	100.00
135-205-5077-2-0 Emergency Cleaning &	0.00	0.00	0.00	5,362.97	0.00	5,362.97	0.00	0.00	100.00
135-205-5078-2-0 Analysis	0.00	0.00	0.00	13,239.00	647.35	11,886.35	1,352.65	0.00	100.00
135-205-5080-2-0 Bureau of Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5082-2-0 Contract Maintenance	0.00	0.00	0.00	2,431.01	0.00	2,431.01	0.00	0.00	100.00
135-205-5083-2-0 Plant Replacement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5087-2-0 Advertising	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5096-2-0 Cylinder Rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5097-2-4 Utility Fund Debt Ser	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-5105-2-0 Safety	0.00	0.00	0.00	1,930.80	573.27	1,930.80	0.00	0.00	100.00
135-205-5900-2-0 Depreciation Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6005-1-4 Water/Sew.Line Purcha	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6016-1-4 Plant Repair/Replacem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6021-1-4 Paving (Plant)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-205-6025-1-4 RAS Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
WASTEWATER % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
TOTAL WASTEWATER	0.00	0.00	0.00	654,465.25	46,150.75	653,037.60	1,427.65	0.00	100.00

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
ANIMAL CONTROL % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-210-5001-2-1 Personnel Services	0.00	0.00	0.00	17,436.83	1,679.60	17,436.83	0.00	0.00	100.00
135-210-5005-2-1 Personnel Benefits	0.00	0.00	0.00	8,330.96	738.38	8,330.96	0.00	0.00	100.00
135-210-5010-2-0 Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5015-2-0 Travel & Per Diem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5016-2-0 Gas & Oil	0.00	0.00	0.00	4,019.33	626.99	4,019.33	0.00	0.00	100.00
135-210-5017-2-0 Auto Maintenance	0.00	0.00	0.00	2,058.66	402.47	2,052.66	6.00	0.00	100.00
135-210-5021-2-0 Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5023-2-0 Telephone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5030-2-0 Membership	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5035-2-0 Insurance	0.00	0.00	0.00	10,000.00	0.00	10,000.00	0.00	0.00	100.00
135-210-5036-2-0 Office Supplies	0.00	0.00	0.00	51.48	0.00	51.48	0.00	0.00	100.00
135-210-5037-2-0 Uniforms	0.00	0.00	0.00	589.76	0.00	589.76	0.00	0.00	100.00
135-210-5039-2-0 Printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5041-2-0 Postage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5045-2-0 Professional Services	0.00	0.00	0.00	500.00	0.00	500.00	0.00	0.00	100.00
135-210-5046-2-0 Trash Collections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5052-2-0 Miscellaneous	0.00	0.00	0.00	91.70	0.00	91.70	0.00	0.00	100.00
135-210-5056-2-0 Books & Programs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5061-1-3 Ammunition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5064-2-0 Promotions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5069-2-0 Disposal/Impound Fees	0.00	0.00	0.00	16,291.61	5,704.00	15,922.91	368.70	0.00	100.00
135-210-5070-2-0 Materials & Supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-5082-2-0 Contract Maintenance	0.00	0.00	0.00	482,823.99	42,145.55	482,823.99	0.00	0.00	100.00
135-210-6006-1-4 Furniture & Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6009-1-4 Radios	0.00	0.00	0.00	561.88	0.00	561.88	0.00	0.00	100.00
135-210-6010-1-4 Computers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-210-6017-1-4 Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ANIMAL CONTROL	0.00	0.00	0.00	542,756.20	51,296.99	542,381.50	374.70	0.00	100.00

DEPARTMENT HEAD REPORT (UNAUDITED)
AS OF: JUNE 30TH, 2012

135-WATER/SEWER UTILITY
REVENUE BOND % OF YEAR COMPLETED: 100.00

EXPENSES	PRIOR YEAR ENDING PO BAL.	PRIOR YEAR PO ADJUST.	REMAINING PRIOR YEAR PO BALANCE	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	CURRENT YTD ENCUMBRANCE	BUDGET BALANCE	% OF BUDGET
135-920-5045-2-0 Professional Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5065-2-0 Bond Expenditures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5720-2-0 INTEREST DUE THIS FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5725-2-0 UNREDEEMED BONDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-5730-2-0 UNREDEEMED COUPONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135-920-6100-2-4 Bonds Due This FY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL REVENUE BOND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	37.17	30.53	6.64	3,193,573.68	167,344.76	2,966,509.09	60,419.25	166,675.87	94.78
REVENUES OVER/(UNDER) EXPENDITURES	(37.17)	30.53	(6.64)	527,588.62	178,742.00	754,625.62	(60,419.25)	(166,648.28)	131.59

DEBT SERVICE SCHEDULE*

Fiscal Year	Principal	Interest	Annual Debt Service	Debt Coverage[1]
2007	$155,000.00	$282,660.91	$437,660.91	2.21
2008	120,000.00	358,523.76	478,523.76	2.21
2009	175,000.00	353,723.76	528,723.76	2.16
2010	225,000.00	346,723.76	571,723.76	2.05
2011	315,000.00	337,723.76	652,723.76	2.08
2012	325,000.00	325,123.76	650,123.76	2.08
2013	340,000.00	312,123.76	652,123.76	2.09
2014	355,000.00	298,523.76	653,523.76	2.11
2015	370,000.00	284,233.76	654,323.76	2.13
2016	385,000.00	269,523.76	654,523.76	2.15
2017	400,000.00	253,161.26	653,161.26	2.18
2018	415,000.00	236,161.26	651,161.26	2.21
2019	435,000.00	218,523.76	653,523.76	2.22
2020	455,000.00	200,036.26	655,036.26	2.24
2021	470,000.00	181,836.26	651,836.26	2.27
2022	490,000.00	163,036.26	653,036.26	2.29
2023	510,000.00	143,436.26	653,436.26	2.31
2024	530,000.00	123,036.26	653,036.26	2.34
2025	550,000.00	101,306.26	651,306.26	2.37
2026	575,000.00	78,618.76	653,618.76	2.38
2027	595,000.00	54,900.00	649,900.00	2.42
2028	625,000.00	28,125.00	653,125.00	2.43
Total	$8,815,000.00	$4,951,152.35	$13,766,152.35	

[1]Based on estimated principal and interest payments and on projected Net Revenues of $966,000 for Fiscal Year 2007. See "RATES AND CHARGES" and "THE PLEDGED REVENUES-Projected Revenues, Operating Expenses and Net Revenues Available for Debt Service." There is no assurance that actual Net Revenues received in the future will equal the projected Net Revenues used in the coverage computation.

THE BONDS

Generally

The Town is authorized under Sections 3-31-1 through 3-31-12, NMSA 1978, as amended, to issue joint utility revenue bonds, including the Bonds, and to pledge joint utility revenues pursuant to the Bond Ordinance. The Bonds shall be dated the date of delivery ("Series Date"), will be issued in the aggregate principal amount of $8,815,000*, are issuable in denominations of $5,000 each or any integral multiple thereof, shall bear interest from the Series Date until maturity at the rates shown on the inside of the cover page hereof payable on June 1, 2007 and semiannually thereafter on June 1 and December 1 in each year, and shall mature on

* Preliminary, subject to change.

New Mexico Finance Authority PPRF Loan
Bernalillo, Town of - Arsenic Removal System
Debt Service Schedule

Final

Date	Principal	Interest Rate	Periodic Gross Interest	Semi-Annual Admin. Fee at 0.250%	Less Rounding	Periodic Net Debt Service	**Fiscal Debt Service**
12/1/2007	-		56,526.78	3,940.95	(0.10)	60,467.63	-
6/1/2008	-	3.370%	58,813.99	4,100.41		62,914.40	123,382.03
12/1/2008	-		58,813.99	4,100.41		62,914.40	-
6/1/2009	-	3.370%	58,813.99	4,100.41		62,914.40	125,828.80
12/1/2009	-		58,813.99	4,100.41		62,914.40	-
6/1/2010	130,827.00	3.370%	58,813.99	4,100.41		193,741.40	256,655.80
12/1/2010	-		56,609.56	3,936.88		60,546.44	-
6/1/2011	135,575.00	3.380%	56,609.56	3,936.88		196,121.44	256,667.88
12/1/2011	-		54,318.34	3,767.41		58,085.75	-
6/1/2012	140,509.00	3.400%	54,318.34	3,767.41		198,594.75	256,680.50
12/1/2012	-		51,929.69	3,591.77		55,521.46	-
6/1/2013	145,650.00	3.410%	51,929.69	3,591.77		201,171.46	256,692.92
12/1/2013	-		49,446.36	3,409.71		52,856.07	-
6/1/2014	150,994.00	3.440%	49,446.36	3,409.71		203,850.07	256,706.14
12/1/2014	-		46,849.26	3,220.97		50,070.23	-
6/1/2015	156,580.00	3.470%	46,849.26	3,220.97		206,650.23	256,720.46
12/1/2015	-		44,132.60	3,025.24		47,157.84	-
6/1/2016	162,419.00	3.510%	44,132.60	3,025.24		209,576.84	256,734.68
12/1/2016	-		41,282.15	2,822.22		44,104.37	-
6/1/2017	168,542.00	3.540%	41,282.15	2,822.22		212,646.37	256,750.74
12/1/2017	-		38,298.96	2,611.54		40,910.50	-
6/1/2018	174,945.00	3.570%	38,298.96	2,611.54		215,855.50	256,766.00
12/1/2018	-		35,176.19	2,392.86		37,569.05	-
6/1/2019	181,645.00	3.590%	35,176.19	2,392.86		219,214.05	256,783.10
12/1/2019	-		31,915.66	2,165.80		34,081.46	-
6/1/2020	188,638.00	3.610%	31,915.66	2,165.80		222,719.46	256,800.92
12/1/2020	-		28,510.74	1,930.01		30,440.75	-
6/1/2021	195,937.00	3.630%	28,510.74	1,930.01		226,377.75	256,818.50
12/1/2021	-		24,954.48	1,685.09		26,639.57	-
6/1/2022	203,559.00	3.650%	24,954.48	1,685.09		230,198.57	256,838.14
12/1/2022	-		21,239.53	1,430.64		22,670.17	-
6/1/2023	211,517.00	3.670%	21,239.53	1,430.64		234,187.17	256,857.34
12/1/2023	-		17,358.19	1,166.24		18,524.43	-
6/1/2024	219,830.00	3.690%	17,358.19	1,166.24		238,354.43	256,878.86
12/1/2024	-		13,302.33	891.45		14,193.78	-
6/1/2025	228,513.00	3.710%	13,302.33	891.45		242,706.78	256,900.56
12/1/2025	-		9,063.41	605.81		9,669.22	-
6/1/2026	237,585.00	3.730%	9,063.41	605.81		247,254.22	256,923.44
12/1/2026	-		4,632.45	308.83		4,941.28	-
6/1/2027	247,064.00	3.750%	4,632.45	308.83		252,005.28	256,946.56
	3,280,329.00		1,488,636.53	102,367.94	(0.10)	4,871,333.37	4,871,333.37

1) Series 2006 Joint Water and Wastewater Revenue Bonds Matures (5/2028)

$2,938,111

Town of Bernalillo, New Mexico
Refunding (88,94,98A&B,99A,00A,02A)
Series 2005 10-year Amortization

Net Debt Service Schedule

Date	Principal	Coupon	Interest	Total P+I	DSR	Net New D/S
12/01/2005	-	-	-	-	(178.86)	(178.86)
06/01/2006	212,207.00	4.070%	68,759.15	280,966.15	(1,200.01)	279,766.14
12/01/2006	-	-	55,472.15	55,472.15	(1,200.01)	54,272.14
06/01/2007	256,406.00	4.070%	55,472.15	311,878.15	(1,200.01)	310,678.14
12/01/2007	-	-	50,254.29	50,254.29	(1,200.01)	49,054.28
06/01/2008	266,031.00	4.070%	50,254.29	316,285.29	(1,200.01)	315,085.28
12/01/2008	-	-	44,840.56	44,840.56	(1,200.01)	43,640.55
06/01/2009	281,949.00	4.070%	44,840.56	326,789.56	(1,200.01)	325,589.55
12/01/2009	-	-	39,102.89	39,102.89	(1,200.01)	37,902.88
06/01/2010	293,212.00	4.070%	39,102.89	332,314.89	(1,200.01)	331,114.88
12/01/2010	-	-	33,136.01	33,136.01	(1,200.01)	31,936.00
06/01/2011	304,679.00	4.070%	33,136.01	337,815.01	(1,200.01)	336,615.00
12/01/2011	-	-	26,935.80	26,935.80	(1,200.01)	25,735.79
06/01/2012	315,588.00	4.070%	26,935.80	342,523.80	(1,200.01)	341,323.79
12/01/2012	-	-	20,513.59	20,513.59	(1,200.01)	19,313.58
06/01/2013	327,714.00	4.070%	20,513.59	348,227.59	(1,200.01)	347,027.58
12/01/2013	-	-	13,844.62	13,844.62	(1,200.01)	12,644.61
06/01/2014	340,212.00	4.070%	13,844.62	354,056.62	(1,200.01)	352,856.61
12/01/2014	-	-	6,921.29	6,921.29	(1,200.01)	5,721.28
06/01/2015	340,113.00	4.070%	6,921.29	347,034.29	(81,200.01)	265,834.28
Total	**$2,938,111.00**	**-**	**$650,801.55**	**$3,588,912.55**	**(102,979.05)**	**$3,485,933.50**

APPENDIX E

Cost Estimates

Alternative #2
Grinder Pumps and Pressure Sewer

Item	Description	Unit	QTY	Unit Price	Amount
1	Installation of Grinder Pumps including electrical connection to home, including all appurtenances CIP	EA	126	$ 2,500.00	$ 315,000.00
2	Electrical service for grinder pumps including temporary pole, conduit, panel, electrical drop from PNM, or connection to existing, concrete pad, CIP	LS	126	$ 1,500.00	$ 189,000.00
3	4" service connections with pigging ports, including all materials, trenching, backfill, compaction, CIP	EA	126	$ 1,000.00	$ 126,000.00
4	Connections to existing homes	EA	126	$ 500.00	$ 63,000.00
5	4 inch sewer service line including trenching, backfill, compaction, CIP	LF	17,100	$ 25.00	$ 427,500.00
6	4 inch C900 sewer force main including, trenching, backfill, compaction, CIP	LF	33,100	$ 25.00	$ 827,500.00
7	Jack and Bore/Directional Drill 8 inch Diameter and 1/2 inch thick Under MRGCD canals (including all material, labor, 4 inch C900 carrier pipe, with restraints, end seals, casing spacers, fittings, bore pipe excavation, Tracer wire, backfill, sheeting, shoring, location and temporary support of existing utilities, and other temporary measures as necessary for site protection and restoration including MRGCD provisions), CIP	LF	150	$ 200.00	$ 30,000.00
8	Double Cleanout, complete in place, including fittings, concrete pad, blocking, and dewatering if necessary	EA	83	$ 2,500.00	$ 207,500.00
9	Rehabilitate Existing Manhole at WWTP including all material, labor, and appurtenances. CIP	LS	1	$ 3,000.00	$ 3,000.00
10	Abandon existing septic tank, including salvaging all equipment to owner, filling existing tank with sand, removing any above-ground equipment.	EA	126	$ 750.00	$ 94,500.00
11	Waterline Crossing	EA	150	$ 300.00	$ 45,000.00
12	Asphalt removal and replacement	SY	8,000	$ 35.00	$ 280,000.00
13	Provide, implement, and maintain Storm water Prevention Plan (SWPPP)	LS	1	$ 10,000.00	$ 10,000.00
14	Testing Allowance	LS	1	$ 25,000.00	$ 25,000.00
15	Construction Staking	LS	1	$ 30,000.00	$ 30,000.00
16	Traffic Control	LS	1	$ 75,000.00	$ 75,000.00
17	Potholing/ private line locating	HR	40	$ 250.00	$ 10,000.00
18	Mobilization/Demobilization	LS	1	$ 137,900.00	$ 137,900.00
				Construction Subtotal	$ 2,895,900.00
				NMGRT @ 6.25%	$ 180,993.75
				Construction Total	$ 3,076,893.75
				Construction Contingency @ 20%	$ 615,378.75
				Professional Services @ 15%	$ 461,534.06
				Private Property Access Mitigation @ 5%	$ 153,844.69
				Non-Construction Total	$ 1,230,757.50
				Total Project Cost	$ 4,307,651.25

Alternative #3
Gravity Sewer with Lift Stations

Item	Description	Unit	QTY	Unit Price	Amount
1	Connect new 4 inch service line to owner's home, complete in place, including double cleanout, trenching, backfilling and testing	EA	126	$ 250.00	$ 31,500.00
2	4 inch service line, complete in place, including trenching, backfilling and testing	LF	19,000	$ 25.00	$ 475,000.00
3	Connect new 4 inch service line to sewer main complete in place, including trenching, backfilling and testing	EA	126	$ 250.00	$ 31,500.00
4	6 inch C-900 PVC sewer force main, complete in place, including trenching, backfilling and testing	LF	5,000	$ 25.00	$ 125,000.00
5	8 inch gravity SDR 35 sewer line including, trenching, backfill, compaction, and all appurtenances, CIP	LF	30,000	$ 40.00	$ 1,200,000.00
6	Jack and Bore/Directional Drill 18 inch Diameter and 1/2 inch thick Under MRGCD canals (including all material, labor, 8 inch SDR 35 carrier pipe, with restraints, end seals, casing spacers, fittings, bore pipe excavation, tracer wire, backfill, sheeting, shoring, location and temporary support of existing utilities, and other temporary measures as necessary for site protection and restoration including MRGCD provisions), CIP	LF	250	$ 400.00	$ 100,000.00
7	4' diameter Type E precast concrete manhole, cover, collar, tracer wire port , and connection of new sewer line, (incl. materials, labor, excavation, backfill and site restoration), CIP	EA	91	$ 4,850.00	$ 441,350.00
8	Rehabilitate Existing Manhole at WWTP including all material, labor, and appurtenances. CIP	LS	1	$ 3,000.00	$ 3,000.00
9	Precast Concrete sewer lift station, including manhole, concrete/fencing/bollards, interior piping, valve vault, pumps, electrical & controls, electrical service riser, concrete slab, backfill, compaction, testing, including connections, CIP	LS	2	$ 225,000.00	$ 450,000.00
10	Electrical service for lift station, including power drop/pole, load center, meter box w/ meter, all conduit, wiring, switches, lights, outlets, concrete slab, backfill, compaction, testing, including connections, etc. CIP	LS	2	$ 25,000.00	$ 50,000.00
11	Waterline Crossing	EA	150	$ 300.00	$ 45,000.00
12	Dewatering for sewer line, up to 4’ drawdown, CIP	LF	11,000	$ 50.00	$ 550,000.00
13	Dewatering for sewer line, 4’ to 8' drawdown, CIP	LF	1,500	$ 60.00	$ 90,000.00
14	Dewatering for structure, up to 4’ drawdown, CIP	EA	48	$ 8,000.00	$ 384,000.00
15	Dewatering for structure, 4’ to 8’ drawdown, CIP	EA	12	$ 9,000.00	$ 108,000.00
16	Dewatering for structure, more than 8’ drawdown, CIP	EA	2	$ 10,000.00	$ 20,000.00
17	Abandon existing septic tank, including salvaging all equipment to owner, filling existing tank with sand, removing any above-ground equipment.	EA	126	$ 750.00	$ 94,500.00
18	Asphalt removal and replacement	SY	16,000	$ 35.00	$ 560,000.00
19	Chain Link Fence (8' tall) with 6' gate at each lift station site	LF	300	$ 40.00	$ 12,000.00
20	Purchase Easement for lift station placement	EA	2	$ 20,000.00	$ 40,000.00
21	Post Construction CCTV inspection of all sewer lines	LF	30,000	$ 2.50	$ 75,000.00
22	Provide, implement, and maintain Storm water Prevention Plan (SWPPP)	LS	1	$ 10,000.00	$ 10,000.00
23	Testing Allowance	LS	1	$ 25,000.00	$ 25,000.00
24	Construction Staking	LS	1	$ 30,000.00	$ 30,000.00
25	Traffic Control	LS	1	$ 75,000.00	$ 75,000.00
26	Potholing/ private line locating	HR	40	$ 250.00	$ 10,000.00
27	Mobilization/Demobilization	LS	1	$ 251,792.50	$ 251,792.50
				Construction Subtotal	$ 5,287,642.50
				NMGRT @ 6.25%	$ 330,477.66
				Construction Total	$ 5,618,120.16
				Construction Contingency @ 20%	$ 1,123,624.03
				Professional Services @ 15%	$ 842,718.02
				Private Property Access Mitigation @ 5%	$ 280,906.01
				Non-Construction Total	$ 2,247,248.06
				Total Project Cost	$ 7,865,368.22

Alternative #4
Vacuum Sewer System

Item	Description	Unit	QTY	Unit Price	Amount
1	Furnish and Install Valve Pit – 8-foot model (incl. physical barrier, breather, cover, air intake and all other related appurtenances not included separately on Bid Form), CIP	EA	63	$ 5,500.00	$ 346,500.00
2	Furnish and Install Air-Terminal (incl. PVC pipe, connection to valve pit, fittings, and all other related appurtenances not included separately on Bid Form), CIP	EA	126	$ 350.00	$ 44,100.00
3	Furnish and Install 4-inch diameter sanitary sewer service line to connect to existing line or to home(incl. trenching, backfill, compaction, SCH-40 pipe, cleanouts) CIP	EA	126	$ 500.00	$ 63,000.00
4	Furnish and Install 6-inch vacuum sewer pipe (incl. trenching, backfill, compaction, pipe testing, Schedule 40 PVC pipe, fittings, bends, caps, wyes, reducers, warning tape, tracer wire, and all other related appurtenances not included separately on Bid Form), CIP	LF	35,000	$ 30.00	$ 1,050,000.00
5	Furnish and Install 6-inch Division Valve (incl. valve box, valve collar, key, and all other related appurtenances not included separately on Bid Form) CIP	EA	35	$ 1,750.00	$ 61,250.00
6	Furnish and Install 8-inch vacuum sewer pipe (incl. trenching, backfill, compaction, pipe testing, Schedule 40 PVC pipe, fittings, bends, caps, wyes, reducers, warning tape, tracer wire, and all other related appurtenances not included separately on Bid form), CIP	LF	5,000	$ 35.00	$ 175,000.00
7	Furnish and Install 8-inch Division Valve (incl. valve box, valve collar, key, and all other related appurtenances not included separately on Bid Form), CIP	EA	5	$ 2,000.00	$ 10,000.00
8	Furnish and Install 8-inch force main sewer pipe (incl. trenching, backfill, compaction, pipe testing, fittings, bends, caps, warning tape, tracer wire, and all other related appurtenances not included separately on Bid Form), (CIP)	LF	7,750	$ 35.00	$ 271,250.00
9	Jack and Bore/Directional Drill 18 inch Diameter and 1/2 inch thick Under MRGCD canals (including all material, labor, 8 inch SDR 35 carrier pipe, with restraints, end seals, casing spacers, fittings, bore pipe excavation, tracer wire, backfill, sheeting, shoring, location and temporary support of existing utilities, and other temporary measures as necessary for site protection and restoration including MRGCD provisions), CIP	LF	150	$ 400.00	$ 60,000.00
10	Electric Services for New Vacuum Station Building (incl. extension of 3-phase power and all other related appurtenances not included separately on Bid Form), CIP	EA	2	$ 25,000.00	$ 50,000.00
11	New Vacuum Station Building (incl. excavation, compaction, structural fill, slab, walls, roofing, electrical, plumbing, mechanical, all piping inside and within 10 feet of the building, etc.), As Shown On Plans, CIP	LS	2	$ 350,000.00	$ 700,000.00
12	Furnish and Install Vacuum Pump Station/Equipment (incl. vacuums, collection tank, booster pumps, control panels, piping, Bio-Mass Filter Bed and all related	LS	2	$ 350,000.00	$ 700,000.00
13	Chain Link Fence (8' tall) with 6' gate at each lift station site	LF	1,000	$ 40.00	$ 40,000.00
14	Dewatering for structure, up to 4’ drawdown, CIP	EA	1	$ 8,000.00	$ 8,000.00
15	Dewatering for structure, 4’ to 8’ drawdown, CIP	EA	1	$ 10,000.00	$ 10,000.00
16	Dewatering for structure, more than 8’ drawdown, CIP	EA	1	$ 12,000.00	$ 12,000.00
17	Asphalt remove and replace (incl. base course, compaction, and all other related appurtenances not included separately on Bid Form), CIP	SY	8,000	$ 35.00	$ 280,000.00
18	Abandon existing septic tank, including salvaging all equipment to owner, filling existing tank with sand, removing any above-ground equipment.	EA	126	$ 750.00	$ 94,500.00
19	Purchase Easement for Vacuum Station placement	EA	2	$ 10,000.00	$ 20,000.00
20	Waterline Crossing	EA	150	$ 300.00	$ 45,000.00
21	Provide, implement, and maintain Storm water Prevention Plan (SWPPP)	LS	1	$ 10,000.00	$ 10,000.00
22	Testing Allowance	LS	1	$ 25,000.00	$ 25,000.00
23	Construction Staking	LS	1	$ 30,000.00	$ 30,000.00
24	Traffic Control	LS	1	$ 75,000.00	$ 75,000.00
25	Potholing/ private line locating	HR	40	$ 250.00	$ 10,000.00
26	Post Construction CCTV inspection of all sewer lines	LF	7,750	$ 2.50	$ 19,375.00
27	Mobilization/Demobilization	LS	1	$ 210,498.75	$ 210,498.75
				Construction Subtotal	$ 4,420,473.75
				NMGRT @ 6.25%	$ 276,279.61
				Construction Total	$ 4,696,753.36
				Construction Contingency @ 20%	$ 939,350.67
				Professional Services @ 15%	$ 704,513.00
				Private Property Access Mitigation @ 5%	$ 234,837.67
				Non-Construction Total	$ 1,878,701.34
				Total Project Cost	$ 6,575,454.70

Life Cycle Cost Calculations

	Alternate 2 Grinder Pumps	Alternate 3 Gravity Sewers	Alternate 4 Vacuum Sewers
Total Capital Cost (Construction & Non-construction)	$ 4,307,651.00	$ 7,865,368.00	$ 6,575,454.00
Present Value of Capital Cost (C)	$ 4,307,651.00	$ 7,865,368.00	$ 6,575,454.00
Annual O&M Costs	$ 19,141.23	$ 22,752.33	$ 39,600.80
Present Value of Total Annual O&M Costs (O&M)	$ 352,469.88	$ 418,965.37	$ 729,215.99
Salvage Value	$ 3,049,920.80	$ 6,231,094.40	$ 5,092,763.20
Present Value of Salvage Value (S)	$ 2,600,636.97	$ 5,313,191.88	$ 4,342,548.25
Net Present Value (NPV)	$ 2,059,483.91	$ 2,971,141.48	$ 2,962,121.74

Discount Rate 20-year (%)	0.8
Planning Period (years)	20

Proposed Project
O&M Calculations

Lift Station Maintenance

	Replacement Cost	Useful Life	Quantity	PWF	Annual Replacement Costs
Sewage Pumps	7750	10	6	0.9234	$ 4,294
Control Panel	10000	10	2	0.9234	$ 1,847
Miscelaneous Equipment	5000	10	2	0.9234	$ 923
				Total Annual	**$ 7,064**

Lift Pumping Stations Power Costs

year	flow	estimated annual cost	PWF	PW of Annual Power Costs
1		$ 5,240.00	0.9921	$ 5,198.60
2		$ 5,240.00	0.9842	$ 5,157.21
3		$ 5,240.00	0.9764	$ 5,116.34
4		$ 5,240.00	0.9686	$ 5,075.46
5		$ 5,240.00	0.9609	$ 5,035.12
6		$ 5,240.00	0.9533	$ 4,995.29
7		$ 5,240.00	0.9457	$ 4,955.47
8		$ 5,240.00	0.9382	$ 4,916.17
9		$ 5,240.00	0.9308	$ 4,877.39
10		$ 5,240.00	0.9234	$ 4,838.62
11		$ 5,240.00	0.9161	$ 4,800.36
12		$ 5,240.00	0.9088	$ 4,762.11
13		$ 5,240.00	0.9016	$ 4,724.38
14		$ 5,240.00	0.8944	$ 4,686.66
15		$ 5,240.00	0.8873	$ 4,649.45
16		$ 5,240.00	0.8803	$ 4,612.77
17		$ 5,240.00	0.8733	$ 4,576.09
18		$ 5,240.00	0.8664	$ 4,539.94
19		$ 5,240.00	0.8595	$ 4,503.78
20		$ 5,240.00	0.8527	$ 4,468.15
		$ 104,800.00	**Total**	**$ 96,489.36**

Pipeline Maintenance

Item	Unit Price	Length of Pipe	Annual Pipe O&M	20-year Pipe O&M NPV
Maintenance	$ 0.10	35,000	$ 3,500.00	**$ 64,449**

Treatment Costs

item	Annual Cost	PWF	NPV
Chemicals	$ -	0.9207	$ -
Power	$ 5,240.00	0.9207	$ 96,489.36
Testing	$ 8,400.00	0.9207	$ 154,677.60
Total			**$ 251,166.96**

Total O&M Costs

20 year present worth O&M		$ 419,169.33
20 year capital recovery factor		0.054306
annual cost of O&M		$ 22,763.41