

Asset Management
Case Study
in
Bosque Farms, New Mexico

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Prepared by



NEW MEXICO
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FINANCE CENTER

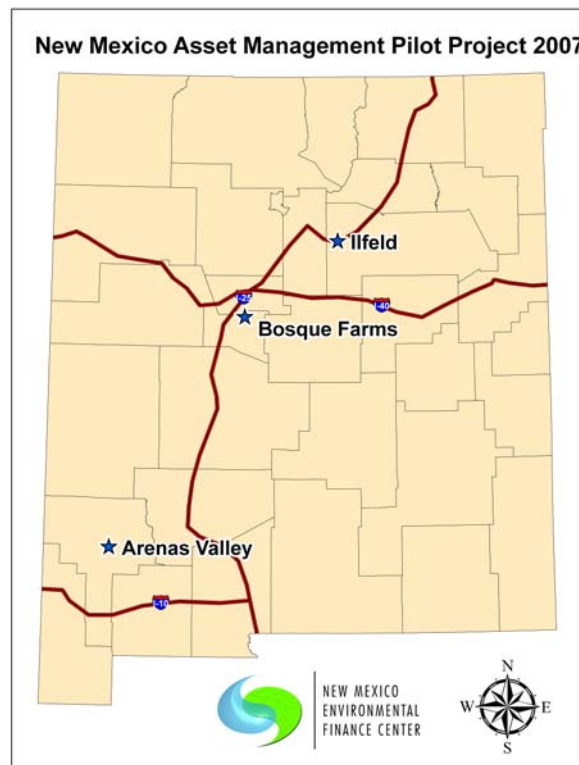
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INTRODUCTION

In 2006, the New Mexico Water Infrastructure Investment Team (WIIT) tasked the New Mexico Environmental Finance Center (NMEFC), the New Mexico Rural Water Association (NMRWA) and the Rural Community Assistance Corporation (RCAC), with conducting a pilot study for three New Mexico communities. The purpose of the pilot study was to develop a process that could be used to assist New Mexico's drinking water and wastewater systems in implementing new administrative and management procedures to adapt to the regulatory, water quality and quantity challenges of the future. The three activities selected for the pilot study were asset management, water audits, and financial planning. The goal was to move these systems to long-term sustainability.

The NMEFC was tasked with developing an asset management manual for water and wastewater systems, with a focus on the needs of smaller systems. In addition the NMEFC was tasked with piloting the approach for three communities. The three systems that were selected were Arenas Valley Water Development Association, Bosque Farms Water Supply System, and Ilfeld Mutual Domestic Water Consumers Association. The three water systems were selected based on their relative size, number of connections, and location throughout the state. Map 1 is a vicinity map showing the location of the three systems that were the focus of the case studies.

Map 1 – Vicinity Map



CASE STUDY: BOSQUE FARMS

The Village of Bosque Farms is located in Valencia County approximately 18 miles south of Albuquerque along Highway 47. This system is a municipal type system.

Background Regarding The Water System

The Village of Bosque Farms has a population of approximately 3,000 with 1,200 service connections. The system is served by two ground water wells and is disinfected by gas chlorination. There are two ground storage tanks that hold approximately 1.5 million gallons. The distribution system is relatively new, built in the 1990's; it contains approximately 34 miles of PVC pipe, 300 fire hydrants, and 250 valves.

Initial Starting Point

One of the first steps in the process is to determine the starting point in terms of data, information, and existing knowledge. The NMEFC met with staff and board members of Bosque Farms to make this assessment. During the initial meetings, the NMEFC determined Bosque Farms had the following resources:

- As-built maps by construction phases.
- Fire hydrant numbering system.
- Electronic billing records, and.
- Operator and billing clerk's extensive knowledge.

Bosque Farms water system is considered a small municipal system, but is the largest of the three systems selected for the pilot study. The water system has experienced a large amount of growth in recent years due to the conversion of farmland into residential subdivisions. At the beginning of the project, Bosque Farms was concerned with how to continue to improve the operations and management of the system as the community continues to grow.

Asset Management Checklist

As part of the asset management manual, the NMEFC developed a checklist that could be used to determine which portions of the asset management plan were completed and what method was used to complete that portion. The resulting checklist for the Bosque Farms system is presented in Table 1. Additional information regarding the methodology used to complete the asset management plan is also presented in the table.

Table 1: Asset Management Checklist for Bosque Farms

Component of Asset Management	Specific Item	Completed Y or N	Method of Completion	Comments
Asset Inventory	List of Assets	Y	Access Database	
	Map of Assets	Y	GIS Map	

Component of Asset Management	Specific Item	Completed Y or N	Method of Completion	Comments
	Asset Condition Assessment	Y	Access Database	Ranked 0-5
	Remaining Useful Life of the Assets	Y	Access Database	Estimates
	Asset Value (Optional)	N		
Level of Service	Level of Service Agreement	Y	Microsoft Word Document	
Critical Assets	Criticality Analysis	Y	Access Database	
Life Cycle Costing	Operation and Maintenance Program	Y	Water System P.M. Schedule – completed 3 times per week. Written schedule in pump house for lubrication	
	Repair Replacement Schedule	Y	Inspect fire hydrants annually, replace gaskets	
	Capital Improvement Plan (CIP)	Y	5 year ICIP	
Long-Term Funding Strategy	5 Year Financial Plan		To be completed by RCAC	
	Funding Strategy for Repair and Replacement Schedule		To be completed by RCAC Budget reserves, line item	
	Funding Strategy for CIP		To be completed by RCAC Budget reserves, line item	

Asset Inventory:

The asset inventory was created from the information gathered from As-Built engineering drawings, the operator and billing clerk’s input, viewing the system, and published information on asset life expectancy.

The inventory was documented in two types of files, an access database and a set of maps. The Access database lists assets by type and includes: a list of assets, the asset condition assessment, the estimated remaining useful life of the assets, and the criticality analysis.

The maps of the assets were created using Geographical Information System (GIS) software called ArcGIS™ to show all the assets documented in the inventory. The GIS software can easily show different assets on one map. The data used in the maps were compiled from the as-built drawings, the operator input, and by viewing the system.

Level of Service Agreement:

The Level of Service Agreement was completed by the system and defined what the customers can expect from Bosque Farms utility. This document was created in Microsoft Word and includes the following components:

- Financial Performance
- Water Pressure
- Drought/Water Conservation
- Peak Day
- Planned Interruptions
- Unplanned Interruptions
- Responsiveness
- Water for Fire Fighting
- Water Quality
- Water Use

An example of the map, excerpt from the database and a page from the level of service agreement are presented in the Appendix at the end of this document.

Immediate Benefits of Asset Management

Bosque Farms saw value in having a map and inventory of the assets in the system. Bosque Farms rethought criticality from a customer service perspective as opposed to an operator perspective. This change in thinking shifted priorities regarding what assets need to be replaced or rehabilitated. Bosque Farms also found use in mapping its fire hydrants in the system, not only for maintenance purposes, but also to assist the Fire Department in locating the nearest hydrant.

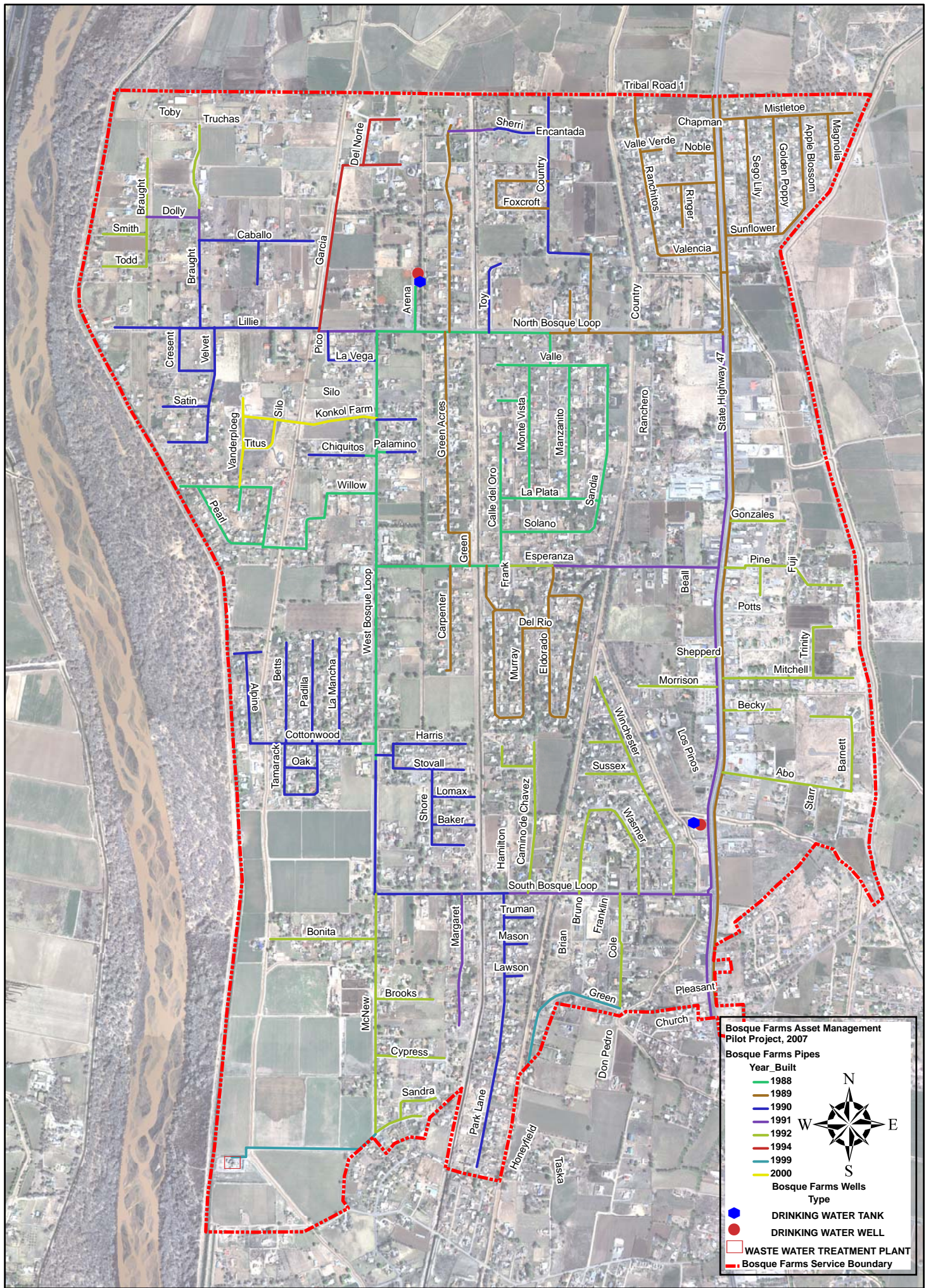
When asked for an opinion on being part of the case study, the operator stated, “It’s been very helpful. It’s opened our eyes to things that are taken for granted or overlooked. The inventory will be very useful to the Village overall. It will help with presenting information to funding agencies. The processes was useful to the Village and most importantly to our customers.”

BOSQUE FARMS WATER UTILITY

- ASSET MANAGEMENT PLAN

Examples

- Base Map
- Database Excerpt
- Level of Service Agreement



Bosque Farms Asset Management Pilot Project, 2007

Bosque Farms Pipes

Year Built	Color
1988	Green
1989	Brown
1990	Blue
1991	Purple
1992	Light Green
1994	Red
1999	Teal
2000	Yellow

Bosque Farms Wells

Type	Symbol
DRINKING WATER TANK	Blue hexagon
DRINKING WATER WELL	Red circle
WASTE WATER TREATMENT PLANT	Red dashed line
Bosque Farms Service Boundary	Red dotted line

Bosque Farms Asset Inventory

Asset: Pipe

<i>Street Name</i>	<i>Diameter (inch)</i>	<i>Pipe Type</i>	<i>Length (feet)</i>	<i>Date Installed</i>	<i>Rankings Condition</i>	<i>Critical</i>	<i>Estimated Replacement Date</i>
	0				5 - Excellent	1=Low x Low	
<i>Abbey Pl.</i>	6	PVC	420	April 1992	5 - Excellent	1=Low x Low	2042
<i>Abo Ct.</i>	6	PVC	600		5 - Excellent	1=Low x Low	
<i>Abo Rd.</i>	8	PVC	1730	April 1992	5 - Excellent	1=Low x Low	2042
<i>Alpine Ct.</i>	6	PVC	640		5 - Excellent	1=Low x Low	
<i>Alpine Ln.</i>	6	PVC	1100	March 1990	5 - Excellent	1=Low x Low	2040
<i>Alpine Pl.</i>	6	PVC	350	March 1990	5 - Excellent	1=Low x Low	2040
<i>Appaloosa Pl.</i>	6	PVC	530	April 1990	5 - Excellent	1=Low x Low	2040
<i>Apple Blossom St.</i>	6	PVC	1260	November 1989	5 - Excellent	1=Low x Low	2039
<i>Arena Rd.</i>	14	PVC	750	September 1988	5 - Excellent	1=Low x Low	2038

VILLAGE OF BOSQUE FARMS

LEVEL OF SERVICE AGREEMENT FOR WATER SUPPLY

Bosque Farms pumps groundwater from two separate 900 ft. deep wells out of the Rio Grande Basin and disinfects with chlorine gas prior to distribution.

Financial Performance

- The water service rate is \$20.00 plus tax on the minimum usage of 7000 gallons per month. Additional water at \$2.00 per any part of 1000 gallons above the 7000 gallon minimum.
- New water service connection fee is \$1000.00 (for standard ¾" meter) and \$25.00 meter deposit.
- If water service is disconnected for non-payment, a \$50.00 reconnect fee and all arrears in charges must be paid before service will be restored.
- Bills are normally mailed on the 1st day of each month and are due within 20 days after the date of mailing.
- A charge of 10% of the monthly water billing shall be assessed to the unpaid, delinquent amount.

Pressure

Under normal conditions the water pressure in the system will maintain within the range of 30 – 90 psi.

Drought/Water Conservation

Bosque Farms currently has a water conservation plan that would be implemented in stages if necessary.

Peak Day

Bosque Farms current peak day capacity occurs between 5 a.m. – 8 a.m. and 5 p.m. – 8 p.m. everyday.

Planned Interruptions

For repair, installation and other maintenance work it is necessary occasionally to interrupt service. In such case residential and commercial customers may receive 24 hour written notice before the planned interruption. Planned interruptions will be scheduled during non-peak day capacity.

Unplanned Interruptions – for unplanned interruptions of water supply customers can expect the interruption to last no longer than 6 hours for main line repairs and 4 hours for service line repairs. It is the goal of the Bosque Farms Water Supply System that the number of customers affected by the unplanned interruptions will be minimized through the use of isolation valves throughout the system.

Responsiveness – The Bosque Farms Water Supply System will respond to unplanned interruptions to restore service within 2 hours 90% of the time. The Bosque Farms Water Supply System will respond to customer's complaints within 4 hours during normal business operating hours.

Water for Fire Fighting – The Bosque Farms Water Supply System will maintain at least the minimum flow rate in the water system as required for fire fighting purposes and proper use of fire hydrants. The Bosque Farms Water Supply System will also coordinate with the local fire department to ensure that fire hydrants are exercised and working properly on a routine basis.

Water Quality – the Bosque Farms Water Supply System will strive to provide potable water to each customer that meet current federal and state drinking water regulations. The Bosque Farms Water Supply System will work in conjunction with federal and state agencies responsible for overseeing drinking water standards to safeguard the health and safety of its customers.

Water Use – the Bosque Farms Water Supply System recommends that the treated potable water delivered to its customers be used only for indoor domestic uses. In addition, the use of untreated water should be used for outdoor uses such as washing vehicles and irrigation. Customers will be charged extra for water use over a minimum standard set by the Village of Bosque Farms. The Bosque Farms Water Supply System will strive to keep water loss from the system below 8%.