Draft

Water Conservation Plan
City of Raton, New Mexico

Prepared for

City of Raton, New Mexico

Prepared by

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DB24.1231

July 17, 2024

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1. Introduction

The City of Raton (the City) is located in Colfax County in northeastern New Mexico (Figure 1). The City receives all of its water supply from surface water, and consequently has experienced periodic and sometimes severe shortages due to drought conditions. As a result, the City has conducted numerous planning and development efforts over the last 50 years to ensure an adequate water supply. Conservation is part of the City's strategy to ensure adequate water supply. This conservation plan has been prepared in accordance with New Mexico Office of the State Engineer (OSE) guidance.

Daniel B. Stephens & Associates, Inc. (DBS&A) prepared the 40-year water plan in 2020 and updated the City's OSE GPCD Calculator and American Water Works Association (AWWA) water audit for 2022.

This conservation plan fulfills a statutory requirement (NMSA 1978 Section 72-14-3.2) that calls for conservation planning as a prerequisite for applying for funding from key state funding agencies. Specifically, any public supply system with diversions of at least 500 acre-feet per year (ac-ft/yr) for domestic, commercial, industrial, or government customers for other than agricultural purposes may develop, adopt, and submit to OSE a comprehensive water conservation plan, including a drought management plan. After December 31, 2005, neither the Water Trust Board nor the New Mexico Finance Authority shall accept an application from a covered entity for financial assistance in the construction of any water diversion, storage, conveyance, water treatment, or wastewater treatment facility unless the covered entity includes a copy of its water conservation plan.

2. Community Description

The City of Raton is located near the Colorado border in northeastern New Mexico (Figure 1). The community is located at the base of Raton Pass and the Rocky Mountain foothills at an elevation of 6,666 feet above mean sea level (feet msl). The City has moderate summer weather, with highs in the mid-80s and lows in the high 40s (°F). Winter days are mostly sunny, with highs in the low 50s and lows in the teens, with only occasional below-zero temperatures. Water is a critical issue because the area's average annual precipitation is only about 16 inches.

Raton lies within the physiographic province known as the Raton Section of the Great Plains Province. This area is characterized by pediments, plains, and high plateaus dissected by the Canadian, Vermejo, and Cimarron River systems. This topography is punctuated by volcanic cinder cones and is mantled by basalt flows east and south of Raton.

The population of the City in the 2020 census was 6,041, a decrease of approximately 12.3 percent compared to the 2010 population of 6,885 (U.S. Census, 2020). The largest employment categories in Colfax County include education/healthcare, retail trade, tourism-related services (arts, entertainment, recreation, hospitality, food services), and public administration (NMISC and NMOSE, 2016; U.S. Census, 2022).

3. Current Water Demand by Sector

3.1 Water Demand by Sector

DBS&A used production and billing records to populate the GPCD Calculator for the City. The GPCD Calculator calculates use by sector for the years 2020 through 2022 (Appendix A). The City has divided their data into the following four demand sectors:

- *Single-Family Residential (SFR):* Includes single housing
- *Multi-Family Residential (MFR):* Includes multi-family housing and apartments
- *Industrial, Commercial, Institutional, and Other (ICI):* Includes local businesses, industrial commercial or institutional establishments and water sales to entities outside the City water system
- *Non-Revenue Water (authorized):* Water used by City buildings and irrigation for parks

The amount of water billed by month in 2020-2022 for each of these sectors is provided in Table 1. As shown in Table 1, the SFR sector used the majority of water in 2020-2022.

Table 1. 2020-2022 Monthly Billed Water Consumption
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Month	Billed Water Consumption (gallons)				
	Single Family	Multi-Family	ICI	Reuse	Total
2020					
January	10,995,000	1,359,000	5,512,000	0	17,866,000
February	21,213,000	1,372,000	5,454,000	0	28,039,000
March	10,535,000	1,201,000	4,667,000	0	16,403,000
April	12,483,000	1,208,000	5,495,000	1,000	19,187,000
May	18,726,000	1,412,000	4,921,000	7,000	25,066,000
June	38,773,000	1,975,000	6,369,000	3,000	47,120,000
July	31,599,000	1,888,000	7,549,000	0	41,036,000
August	29,325,000	1,909,000	7,304,000	1,000	38,539,000
September	44,084,000	1,504,000	6,372,000	13,000	51,973,000
October	19,673,000	1,390,000	6,179,000	0	27,242,000
November	16,451,000	1,229,000	5,825,000	0	23,505,000
December	10,776,000	1,015,000	4,682,000	0	16,473,000
				2020 Total	352,449,000
2021					
January	12,195,000	1,387,000	4,896,000	0	18,478,000
February	9,988,000	1,126,000	4,296,000	0	15,410,000
March	20,589,000	1,539,000	3,911,000	0	26,039,000
April	12,243,000	1,468,000	4,590,000	0	18,301,000
May	29,999,000	1,387,000	5,217,000	102,000	36,705,000
June	17,743,000	1,343,000	5,402,000	169,000	24,657,000
July	45,657,000	1,754,000	7,013,000	245,000	54,669,000
August	25,962,000	1,760,000	7,956,000	27,000	35,705,000
September	23,914,000	1,948,000	7,553,000	7,000	33,422,000
October	32,748,000	1,867,000	7,359,000	44,000	42,018,000
November	14,157,000	1,639,000	6,382,000	21,000	22,199,000
December	11,998,000	1,297,000	4,741,000	0	18,036,000
				2021 Total	345,639,000

Table 1. 2020-2022 Monthly Billed Water Consumption
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Month	Billed Water Consumption (gallons)				
	Single Family	Multi-Family	ICI	Reuse	Total
2022					
January	12,374,000	1,186,000	4,867,000	0	18,427,000
February	12,251,000	1,163,000	4,383,000	0	17,797,000
March	10,696,000	1,483,000	3,849,000	0	16,028,000
April	11,825,000	1,468,000	4,690,000	0	17,983,000
May	17,524,000	1,324,000	5,210,000	21,000	24,079,000
June	26,233,000	1,637,000	6,548,000	30,000	34,448,000
July	24,901,000	1,437,000	7,091,000	10,000	33,439,000
August	29,991,000	1,351,000	6,467,000	26,000	37,835,000
September	19,984,000	1,357,000	6,518,000	8,000	27,867,000
October	22,872,000	1,451,000	6,684,000	0	31,007,000
November	21,942,000	1,109,000	4,855,000	2,000	27,908,000
December	21,023,000	1,204,000	4,296,000	3,000	26,526,000
				2022 Total	313,344,000

Source: OSE GPCD Calculator, 2023 (Appendix A)

3.2 Water Audit

The AWWA water audit is provided in Appendix B. It summarizes the comprehensive water audit balance for the City in 2022. When conducting an audit of water use data, the accuracy of the data is paramount. The data for the City of Raton are collected though production and customer water meters. Meter error is most accurately estimated by performing system-specific field surveys. Annual meter accuracy and calibration surveys are conducted for the City's production meters. Less than 1 percent error was reported in the 2021 calibration report. The 2022 calibration report notes an analog out that was verified with actual flow and there were no issues, but does not quantify meter error.

3.3 Water Use Trends

From 1980 to 2000, OSE reported historical annual water use every five years for the Raton municipal supply system, including withdrawals and depletions. After 2000, only withdrawals have been reported (Table 2). The OSE data indicate an increase in withdrawals by the City between 1980 and 1990. Depletions increased as well. Since 1990, withdrawals have fluctuated, declining between 1990 and 1995, recovering by approximately half between 1995 and 2000, and declining again since 2000.

Table 2. City of Raton Population and Historical Water Use

Year	Population	Surface Water Use (acre-feet)	
		Withdrawals	Depletions
1980	8,225	1,350	608
1985	—	1,484	—
1990	7,556	2,271 [a]	1,590
1995	—	1,624	925
2000	7,282	1,928	1,292
2005	—	1,581	—
2010	6,885	1,460	—
2015	8,027	1,116	—

Sources: BBER, 2016; Sorensen, 1982; Wilson, 1986 and 1992; Wilson and Lucero, 1997; Wilson et al., 2003; Longworth et al., 2008; Longworth et al., 2013; Magnuson et al., 2019

[a] There was a metering problem in 1990, and this value is in error.

— = Not reported

From 2011 through 2023, water demand varied month by month, with significant increases during June through September and the lowest demand during January through March (Figure 2 and Table 3). Total water demand increased in 2012, from 422 million gallons in 2011 to 430 million gallons in 2012, and then consistently decreased from through 2015. 2016 saw an increase in water demand relative to 2015, from 305 million gallons to 328 million gallons, though still below 2011 demand. In 2017, the City experienced the lowest demand during this period, at 302 million gallons. Demand increased in 2018 (306 million gallons), 2019 (382 million gallons), and 2020 (400 million gallons), before starting to decline again in 2021 (396 million gallons), 2022 (382 million gallons), and 2023 (363 million gallons).

Table 3. Raw Water Inflow, 2019–2024

Month	Raw Water Inflow (gallons)					
	2019	2020	2021	2022	2023	2024
January	23,442,000	24,167,000	22,604,000	25,300,000	25,556,000	25,349,000
February	19,925,000	21,620,000	22,846,000	21,867,000	21,559,000	22,960,000
March	20,863,000	24,718,000	23,732,000	24,596,000	24,550,000	23,930,000
April	21,957,000	29,668,000	30,449,000	30,110,000	29,193,000	30,825,000
May	30,132,000	48,004,000	35,401,000	46,925,000	34,948,000	37,352,000
June	38,960,000	49,766,000	43,293,000	43,357,000	35,042,000	—
July	45,324,000	47,532,000	46,340,000	37,567,000	39,574,000	—
August	44,443,000	43,339,000	44,819,000	36,455,000	43,885,000	—
September	47,122,000	35,113,000	43,695,000	40,080,000	36,005,000	—
October	34,333,000	30,370,000	31,927,000	27,526,000	28,099,000	—
November	30,065,000	23,308,000	26,338,000	23,220,000	22,131,000	—
December	26,144,000	23,274,000	24,845,000	25,737,000	23,435,000	—
Total	382,710,000	400,879,000	396,289,000	382,740,000	363,977,000	140,416,000

The fluctuations in water use correspond to Raton's fluctuating but declining population since 1990, but may also correlate to climatic variations and corresponding changes in domestic outdoor irrigation use. OSE reports an increase in population for the City between 2010 and 2015, but 2015 surface water withdrawals of approximately 24 percent less than 2010 (Magnuson et al., 2019).

3.4 Analysis of Top Users

While SFR water users generate the most overall demand collectively, the top water users include the City and the Miner's Colfax Medical Center, a state hospital. The hospital is the largest single employer in Raton, supporting more than 250 full-time equivalent positions. The facility is the state miners' hospital and, as such, is supported by New Mexico State Trust Land revenue. The facility is also open to non-miners.

The medical center includes the original hospital located on 6th Street, which is dedicated to miner services, and an acute care hospital built approximately 12 years ago that operates a hospital, rural health clinic, and emergency room. Hospital patients cannot be kept for more than three days, and patients that need to stay for longer periods are routinely transferred to Pueblo and Denver, Colorado and Santa Fe and Albuquerque, New Mexico. The Miners' Colfax Medical Center facility includes a free nursing home for miners, and they operate a mobile clinic that travels to see miners for pulmonary and other ailments.

4. Existing Water Conservation Practices

4.1 City Ordinances and Codes

The City adopted ordinance number 644 on January 19, 1978, which established the authority for the City Manager and City Commission to declare a water shortage emergency. The ordinance empowers the City Manager and City Commission to make decisions regarding which types of water are considered essential to public welfare and reasonable business use, and provides a formula to determine water rates during times of shortage, including drought, system breakdowns, or other supply limitations. When voluntary water conservation is not appropriate, the City Manager and City Commission are enabled to employ economic incentives to conserve water use. Most recently, the City adopted ordinance number 1017 on May 10, 2022, updating the water rates during water shortage emergencies.

4.2 Water Reuse

The New Mexico Environment Department (NMED) policy for the use of treated wastewater effluent for non-potable uses was issued in 1985 and updated in 2003 and 2007 (NMED, 2007). The guidelines are intended to be used in conjunction with a groundwater discharge permit for any applications of the reuse water that can result in percolation to an underlying aquifer.

Discharge permit applications, which describe the reuse application (use, flows, etc.) and specify a water quality monitoring program, must be filed with NMED for each reuse site. The City's wastewater reuse program complies with all applicable NMED standards. The wastewater receives secondary treatment, filtration, and disinfection to meet standards.

The City has reused its treated wastewater effluent for municipal irrigation since 1975, when the City began irrigating the Raton municipal golf course with this water. Additional football, soccer, and baseball fields were added in the 1990s, and a reclaimed water booster pump station was added in 1994 to allow for irrigation of additional municipal parks and other facilities.

Since the last 40-year water plan was completed in 2007, the City has rebuilt the irrigation systems for three fields and has added one small park to the reuse system. The City has one reuse pump station, and reuse water is also supplied to the golf course and ball fields. The reuse system is now being operated at or near capacity, which is 500,000 gallons per day (gpd) during the summer months. Wastewater flows are at an all-time low, and until additional winter storage is added, no new reuse system customers can be added. Very little treated effluent is discharged to Doggett Creek (a tributary of Raton Creek that drains to Chicorica Creek).

From 2019 through 2023 and early 2024, monthly averages followed a seasonal cycle beginning in March, averaging 1.6 million gallons, peaking in August (9.1 million gallons average), and tapering off in November (1.2 million gallons average). Reclaimed water saw minimal or no reuse in December through February (Table 4). This trend follows the fluctuation in consumption—as consumption increases, reclaimed water reuse increases.

Table 4. Reclaimed Water Reuse

Month	Reclaimed Water Reuse (gallons)					
	2019	2020	2021	2022	2023	2024
January	—	—	—	—	—	—
February	—	—	—	—	—	—
March	695,452	3,998,883	1,699,136	1,604,901	—	1,744,767
April	2,632,335	5,175,238	5,618,866	4,714,021	5,928,369	8,417,904
May	5,430,999	6,643,050	6,486,757	7,086,974	5,990,075	8,785,851
June	8,510,669	10,402,350	8,118,426	8,029,583	6,297,948	8,469,495
July	8,221,387	10,285,935	8,276,982	6,590,308	10,511,876	—
August	9,460,235	9,468,130	8,360,640	7,982,575	10,315,004	—
September	8,448,630	7,569,070	8,877,293	8,773,386	7,688,228	—
October	4,985,330	5,685,899	5,633,988	4,578,378	7,214,862	—
November	—	—	3,407,378	2,855,803	—	—
December	—	—	511,715	—	—	—
Total	48,385,037	59,228,555	56,991,181	52,215,929	53,946,362	27,418,017

4.3 Drought Triggers

The City updated their water conservation ordinance in 2022. The City plans to revise their drought triggers, as they do not address the Eagle Nest Reservoir storage. The current management strategy calls for transitioning to using water from Eagle Nest Reservoir when the Lake Maloya level is 4 feet below the spillway. Due to the Permit 71 settlement agreement, the City is limited on the volume of new inflows they can hold in the reservoir when the Lake Maloya water level is down. The water rights are carefully monitored due to the limits on the volume of water that the City can divert from Lake Maloya.

The triggers included in the settlement agreement have been in effect several times since the agreement was signed in June 2006, and they have worked well. The City received a 50 percent allotment in the first year of the agreement and their allotment has been restricted in four of the nine years since the agreement was signed. The City was on 80 percent allotment in May 2016, for the third year in a row.

4.4 Water System Upgrade

Since 2018, the City has replaced approximately 59,000 feet of water lines to protect against leaks. The City plans to replace additional water line in the future by implementing new projects every year, targeting the oldest sections of town with the oldest water lines. The City has also conducted leak detection sounding in some problem areas.

4.5 Conservation at Public Facilities

The City irrigates public facilities with treated wastewater effluent. Treated effluent is used to the maximum extent possible during the irrigation seasons.

4.6 Metering

In 2011 and 2012, the City replaced all customer meters with Neptune meters that have automatic meter read (AMR) capability. Since the full meter conversion, customer meters are now being replaced in compliance with the manufacturer's recommendations for the lifetime volume of measured flow.

4.7 Rates

Ordinance 1005 was adopted by the Raton Water Board on May 28, 2019, and includes water and sewer rate increases that went into effect on July 1, 2019, July 1, 2020, and July 1, 2021. The ordinance notes that the cost of providing quality, reliable water and wastewater service has increased substantially each year. The previous rate increases were approved by ordinance on June 28, 2016, and included water and sewer rate increases in 2016, 2017, and 2018.

In March 2018, voters approved a $0.0075 gross receipts tax, which will help pay for water projects in the future and will also help keep customer water rates down. Although the City increased water rates annually from 2016 through 2021, the City wants residents to take care of their properties and does not want to penalize people for watering outdoors, especially considering the state of the economy.

Based on the NMED Drinking Water Bureau municipal water and wastewater user charge survey of December 2020 rates (NMED DWB, 2021), residential water rates for the public water systems in New Mexico ranged from a minimum of $10.00 per month (Ribera MDWCA) to a high of $121.00 (Lumberton MDWCA). New Mexico communities of similar size to Raton (Table 5) had an average residential water rate of $26.81 for 6,000 gallons in 2020. Compared to rates for six

communities of similar size, Raton's residential water rate is above the average; however, the rates for Raton shown on Table 5 are from 2020, while the City increased rates in 2021 and 2024 (Appendix C).

Table 5. 2020 Water Rates for New Mexico Water Systems of Similar Size

Water System	County	Residential		Commercial	
		Number of Connections	Monthly Charge for 6,000 Gallons	Number of Connections	Monthly Charge for 6,000 Gallons
Artesia [a]	Eddy	4,417	$10.02	630	$21.52
Aztec	San Juan	2,757	$35.70	330	$39.90
Bloomfield [a]	San Juan	3,063	$40.27	275	$40.27
Deming [a]	Luna	4,989	$22.40	840	$36.17
Lovington	Lea	3,607	$27.82	492	$39.07
Portales	Roosevelt	5,220	$25.76	562	$25.76
Raton	Colfax	3,200	$27.70	480	$37.94
Socorro	Socorro	3,327	$24.83	370	$37.08
Average			$26.81		$34.71

Source: NMED DWB, 2021 (December 2020 water rates), unless otherwise noted.
[a] NMED DWB, 2023 (December 2022 water rates)

Commercial water rates for public water systems in New Mexico varied from a minimum of $13.54 per month (Hobbs Municipal Water Supply) to a high of $391.47 (City of Las Vegas) in 2020. Compared to rates for eight communities of similar size, Raton's commercial water rate was more than the average (Table 5); however, the City's data are from 2020 and the City increased rates in 2021 and 2024 (Appendix C).

4.8 Operational Maintenance

Efficiency in City operations is an important goal for the water department. Through an annual review of its own practices, the City has identified opportunities for improvements.

4.9 Education

The City includes water conservation tips on their annual consumer confidence reports (CCRs), and the OSE water conservation handouts are available at City Hall for people to pick up when

they come in to pay their bills. During the summer months, the radio station (KRTN-FM, Enchanted Air Radio) runs water conservation spots using AWWA language (Appendix C). The local newspaper (*Raton Range*) used to publish this information, but it ceased publication in July 2013.

5. Drought Management

The City has selected a three-tiered drought management and water conservation plan, with variable water conservation measures set to correspond with normal conditions (Stage 1), mild to moderate drought conditions (Stage 2), and severe drought conditions (Stage 3). Stage 1 addresses ongoing water conservation measures that will help the City to reduce water waste. Stage 2 identifies stricter water conservation measures that can be implemented when it appears that drought conditions are likely. Stage 3 includes emergency conservation measures for use during times of severe drought. Implementation of these measures will allow the City to reduce demand on short notice.

The State of New Mexico posts drought conditions regularly on the OSE website (http://www.nmdrought.state.nm.us/). The website posts information regarding whether various regions in the state are experiencing wet or normal conditions, or mild, moderate, or severe drought conditions. Information on precipitation, snowpack, soil moisture, and water in storage is used to assess drought conditions. Use of this resource as an indicator of drought conditions will allow the City to monitor drought conditions without having to conduct its own climatologic or soil moisture monitoring.

Because Lake Maloya and the Sugarite/Chicorica system provide the majority of surface water supply for the City, the triggers that will initiate the second and third tier, or stricter, water conservation measures are based on water levels in Lake Maloya, in conjunction with climatic conditions.

Drought triggers, including climatic conditions and Lake Maloya levels, will include the following:

- *Stage 1:* Conservation measures in effect at all times; ongoing programs.
- *Stage 2:* State of New Mexico northeast region in mild to moderate drought (as declared by the OSE drought task force) and Lake Maloya at less than 75 percent of storage capacity.

- *Stage 3:* State of New Mexico northeast region in severe drought (as declared by the OSE drought task force) and Lake Maloya at less than 50 percent of storage capacity.

6. Conservation Goals and Measures

6.1 Conservation Goals

The overall goal of this conservation plan is to efficiently use water resources at all times and to be prepared to quickly reduce demands during drought conditions. The City does intend to implement the conservation program and to continue to meter and audit water usage. The initial goals that will direct the City's conservation efforts are as follows:

- Improve customer and public awareness of the need to conserve water.
- Develop enforceable water use restrictions during emergency drought conditions.
- Continue to meter and audit water use, and use these data to evaluate and optimize the City's water conservation efforts.
- Continue to replace old and leaking water mains.
- Continue reuse of treated wastewater effluent on ballfields, parks and golf course to reduce demand on the potable system.
- Perform an annual water audit and improve overall score data validity score to at least 80 over the next 5 years (total score for most recent audit was 66 out of 100).
- Perform annual reviews of City practices to improve operational efficiency.
- Reduce per capita daily consumption from current average of last three years of 113 gallons per capita per day (gpcd) (SFR) to a three-year average of 105 gpcd in the next five years.
- Public outreach on water efficient appliances to customers.
- Promoting xeriscaping through billing inserts and informational mailers.
- The City has a goal of fixing leaks within 24 hours to reduce water waste associated with customer leaks. Homeowners are given credit on their next bill.
- High-volume water users pay more per 1,000 gallons (over 25,000 gallons pay additional approximately $0.45 per 1,000 gallons).

6.2 Proposed Water Conservation Measures

The water conservation measures to be undertaken during each step of drought are summarized in the following subsections.

6.2.1 Public Education

Public education and community outreach are an important part of any water conservation effort. Individuals must know why water conservation is essential and what they can do to save water. The City will implement the recommendations provided in *New Mexico's Water Conservation Planning Guide for Public Water Suppliers* (NMOSE, 2013), including the following:

- Outreach program activities: Including water conservation tips in the annual CCRs and on the City website, making OSE handouts available at City Hall, and running radio spots during summer months.
- In-school educational programs: Partnering with the Raton Public Schools to implement in-school programs to educate students about the importance of conserving water, including providing educators with the location of OSE water conservation educational materials.

The Raton Water Works staff is extremely busy dealing with the complex water system that it operates, and water demand and water system revenue are at an all-time low. To facilitate public education and other aspects of a water conservation program, the City will need to seek funding for a part-time or contract employee who can focus directly on education and conservation program implementation. Until additional funding is received, conservation education will be the responsibility of the Manager.

The public education program will be very important for informing the public about additional water use restrictions that will be implemented during Stage 2 or Stage 3 drought conditions. Radio media, as well as customer mailings, will be used to educate the public about drought conditions and additional water use restrictions.

6.2.2 Water Reuse

Wastewater reuse is a successful conservation initiative in Raton; however, because the treated wastewater effluent reuse system uses all of the treated wastewater already, there are no current plans to expand the reuse system.

The City plans to reuse reclaimed pool water for irrigation on City property. When the aquatic center was built in 2008-2009, a 10-foot-diameter manhole was installed, along with a throttling valve, to allow for this reuse. The City has had budget shortfalls since then and has therefore not yet installed the landscaping that would be watered by this system.

6.2.3 Graywater Recycling

A bill passed by the 2003 New Mexico Legislature (House Bill 114, codified at 74-6-2 and 74-6-4 NMSA 1978) allows reuse of up to 250 gpd of residential graywater for household gardening, composting, or landscape irrigation without a permit (NMED, 2003b). NMED issued a graywater irrigation guide outlining the conditions that apply to graywater reuse in New Mexico (NMED, 2003a). One of the conditions calls for graywater storage tanks to be covered to restrict access and eliminate habitat for mosquitoes. In addition, graywater may not be applied within 100 feet of a domestic well or within 200 feet of a public water supply well (NMED, 2003b). In areas where soils are not adequately permeable, discharge of graywater may present a ponding problem. Therefore, site-specific evaluations should be completed before graywater systems are installed.

The City of Raton will support graywater use by its residential customers by providing educational materials. General information on graywater systems that will be included in the City's education program follows.

Graywater reuse refers to either residential or commercial reuse of water that does not contain blackwater (from toilets) or kitchen wastes. Water from sinks (excluding kitchens), laundries, bathtubs, or showers is considered to be graywater. New Mexico allows individual residences to apply up to 250 gpds of graywater to household gardening and landscape irrigation without a discharge permit (Sections 74-6-2 and 74-6-4, NMSA 1978). Advantages of reusing graywater include the following:

- Replaces potable water use and therefore lowers water bills (and possibly sewer bills) for municipal customers
- When used for outdoor irrigation, may support plant growth due to the nutrients in graywater
- Reduces energy and chemical use
- Possibly decreases the need to expand wastewater treatment facilities

6.2.4 Leak Detection and Repair

Another important water conservation action is the detection and repair of water system leaks. The savings potential of a leak detection program is somewhat dependent on the age of the infrastructure and can be extremely variable depending on the magnitude and timing of leaks, which cannot be predicted. Nonetheless, leak detection is an effective way of avoiding water waste and is recommended.

The City has implemented leak detection efforts and will continue these efforts to reduce non-revenue water. City staff responds promptly to any reported leaks and, over the next 10 years, the City plans to increase its leak detection and repair efforts. To help prevent leaks from occurring, the City will also continue efforts to replace the oldest sections of the distribution system and to conduct pipe inspection and maintenance activities to prevent leaks and ruptures.

6.2.5 Meter Replacement and Repair

Metering is an essential element in water conservation. Metering of both production and individual user consumption is the only way to track water use and to ensure that conservation goals are being achieved. With the use of water meters, a water utility can (1) accurately track water diversions and deliveries and locate any leakage in the system, (2) create a more equitable billing system that directly benefits water-conserving customers, and (3) give the utility a greater ability to manage water demand through pricing.

The City replaced and calibrated all of the meters at the wastewater treatment plant as part of the wastewater treatment plant upgrade project that is underway. The City has an annual calibration schedule with Yukon and Associates. As discussed in Section 4, the City replaced all customer meters with Neptune meters that have AMR capability in 2011 and 2012, and now replaces customer meters in compliance with the manufacturer's recommendations for the lifetime volume of measured flow.

Meter maintenance and repair are an important component of the City's existing conservation program, and the City will continue to replace and upgrade meters. The ongoing nature of the program will allow the City to continue to identify and repair faulty meters that result in errors in billing and reported water usage.

6.2.6 Pressure Reduction

Water systems that are overpressurized result in inefficient and higher water use because the rate of flow increases with pressure increases. Reducing pressure can decrease water leakage and volume of water released at faucets. In addition, the reduced pressure also reduces the pipe and joint stresses that could result in new leaks. Lower-pressure systems can also extend the life of the water distribution system and decrease maintenance and repairs to the system.

The City monitors pressure and regulates pressure between zones using pressure reduction valves. Pressures maintained in these zones conform to industry standards and no modifications are necessary. Therefore, no excess in the loss rate of the system is occurring and the system is providing sufficient pressure for water customers. The City will continue to monitor system pressures and will ensure that any system expansions adhere to industry standards.

6.2.7 Standards for Water Line Construction

The City has implemented standards for water line construction to reduce maintenance cost and the occurrence of leaks. All new development and system upgrades will adhere to these standards.

6.2.8 Water Conservation Ordinance

Water demand and water system revenue are at all-time lows in the City, and the economy is depressed. The City wants to encourage residents to maintain their properties—not penalize people for watering outdoors—and further reducing water demands is not a primary objective of the City. As discussed in Section 3, water use in the City is regulated through its Code of Ordinances, and Chapter 54 of the City Code includes the existing water shortage ordinance, which gives the Water Commission the authority to declare a water shortage and impose water use restrictions. Passing a water conservation ordinance is nonetheless recommended to make the City's water conservation measures enforceable at any time, while also providing an opportunity for updating the City's drought triggers (allowing the City to take Eagle Nest Reservoir storage into account in addition to Lake Maloya). While many of the City's conservation measures are voluntary and will be implemented through education programs, the City would benefit from making both water waste and Stage 2 and Stage 3 drought restrictions enforceable through a water conservation ordinance.

A prototype for a water waste ordinance is included in the OSE's guidance for municipal water systems (NMOSE, 2001). This ordinance template provides measures applying to both normal operations and water emergencies and includes the following main elements:

- Description of the types of prohibited water waste:
  - Water running off an irrigated landscape to paved surfaces or other non-irrigated areas
  - Washing of impervious surfaces with a hose (except when needed to protect public health and safety)
  - Water leaks not fixed within eight hours
  - Landscape watering outside of prescribed hours (e.g., before 10:00 a.m. and after 6:00 p.m.)
- Fines and penalties for violations that increase with the number of citations assessed to a property:
  - Imposition of a water waste surcharge to any customer in violation
  - Temporary or permanent restriction or discontinuance of flow to a property with recurring violations
- Exceptions, the opportunity to cure violations, and refunds of surcharge
- Administrative appeal process for customers (e.g., appeal to administrative hearing officer, water utility's general manager, or the board of directors)

The OSE prototype ordinance assumes implementation and enforcement by the utility general manager and board of directors.

6.2.9 Record Keeping/System Water Audits

Water system audits are used to estimate revenue versus non-revenue water and to distinguish real and apparent losses, and they provide information that can be used to reduce losses. A water system audit using City of Raton data for 2022 that follows the AWWA methodology is provided in Appendix A. The City will perform water system audits on an annual basis going forward and will continue its efforts to reduce non-revenue water.

6.2.10 Indoor Audits

The City conducts individual account audits when they receive customer complaints. These audits involve sending a trained person from the City to meet with the homeowner to identify any problems. These efforts will be continued.

6.2.11 Promotion of Xeriscaping

Municipalities can promote water conservation for landscape projects, including public parks, building grounds, and golf courses, as well as other non-residential and residential landscaping. Xeriscaping provides a water-conscious landscape that can dramatically reduce outdoor water use, especially during the summer months. Xeriscaping involves much more than simply removing grass and replacing it with gravel or other types of turf. A number of different principles or approaches are considered xeriscaping:

- *Low-water use plants:* Select plant varieties that are most appropriate for the landscape design and that require low amounts of water.
- *Soil improvement:* Improve soil composition to increase water retention and promote root development and proper drainage.
- *Small turf areas:* Create small areas of turf for a specific function or aesthetics, and use low-water-use grass varieties.
- *Efficient irrigation:* Design a landscape by zoning plants according to water needs, and use efficient watering techniques such as drip irrigation, which delivers water directly to the roots of the plant.
- *Soil covering:* Use mulch to cover the soil, thereby reducing evaporation and erosion.
- *Proper maintenance:* Xeriscapes are generally low maintenance, but some maintenance is always required; keeping irrigation systems in good working condition is necessary to continue to keep water use low.

The City will encourage use of xeriscaping through its public education program and by providing technical resources on xeriscaping to people who are interested in lowering outdoor water use.

7. Summary

The City employs a variety of water conservation measures, including reusing reclaimed water for irrigation, repairing and upgrading the water system, providing public education, regularly increasing water rates, and imposing higher rates for heavier users. By continuing these practices, improving public education and operational efficiency, and developing enforceable water restrictions, the City will be well-positioned to achieve the overall goal of significantly reducing per capita consumption within the next five years.

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DRAFT

Figures

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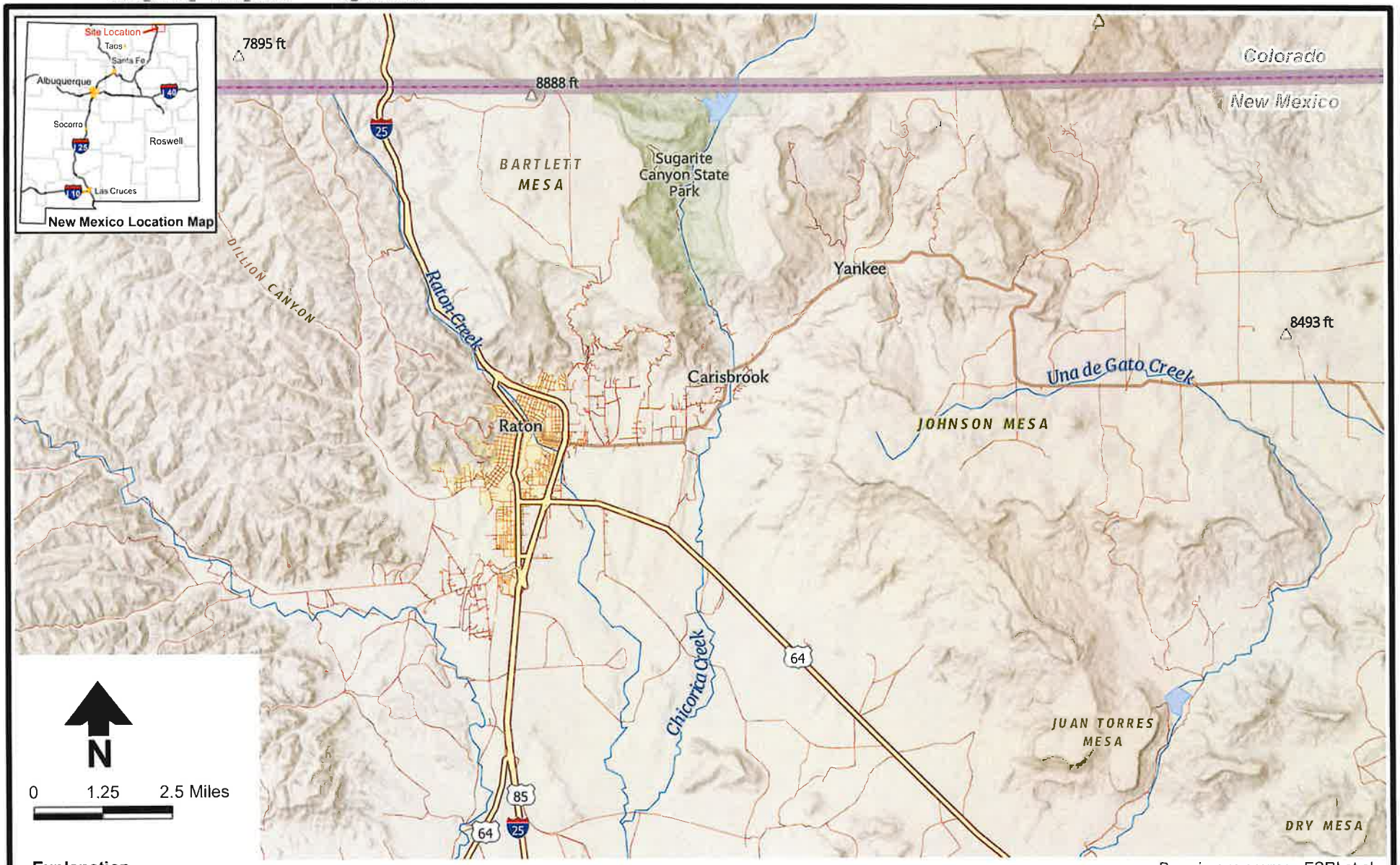

Base image source: ESRI et al.

Figure 1

RATON CONSERVATION PLAN

Location Map

DBS&A
a Geo-Logic Company

7/16/2024

DB.24.1231

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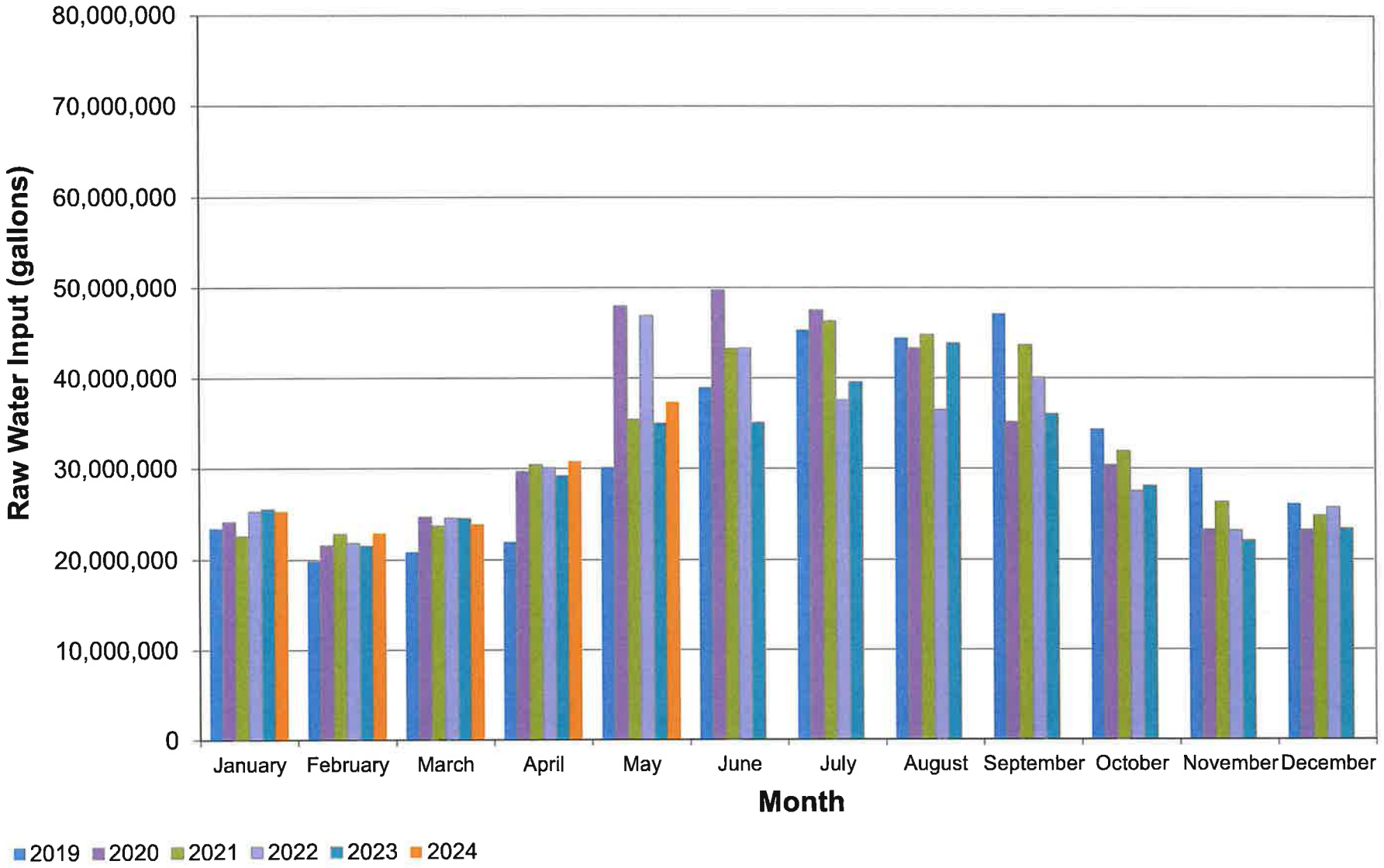


Figure 2

DBS&A
a Geo-Logic Company

RATON CONSERVATION PLAN

Raw Water Monthly Inflows, 2011 to 2024

7/17/2024 DB24.1231

Appendix A

2022 GPCD Calculator

DBS&A
a Geo-Logic Company

NMOSE GPCD CALCULATOR

Gallons per Capita - v2.07

Release Date: April 2021

This spreadsheet-based GPCD calculator is designed to help quantify and track water uses associated with water distribution systems. The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons on the left below. Descriptions of each sheet are also given below.

It should be noted that all the recorded data should be from actual metered results and should not include any estimates.

THE FOLLOWING KEY APPLIES THROUGHOUT:

- Value to be entered by user
- Dropdown box, pick from list
- Value calculated based on input data
- No longer available for input

Look for the following boxes that provide addition Instructions Info

Please begin by providing the following information, then proceed through each sheet:

NAME OF CITY OR UTILITY: City of Raton/Raton Water Works — New Mexico

REPORTING YEARS: Enter the most recent reporting year: 2022 — Data can be entered back to: 2016

NAME OF CONTACT PERSON: Jaden Welch — E-MAIL: jwelch@cityofraton.com — TELEPHONE: 575-445-3551 Ext.

SELECT THE REPORTING UNITS FOR VOLUME DATA: Gallons (US) — For unit converter click here: Converter

Instructions & Utility	This sheet
Census Data	Census data and the portal to get the data from the Census website
Single-Family	Single-Family residential gallons and population
Multi-Family	Multi-Family residential gallons and population
ICI & Other Metered	Other data including Commercial, Industrial and Institutional [1.3] and Other metered [1.4] categories
Reuse	Data related to water reuse projects
Total Diverted	Total Production and Diverted Water
Reported Data	The calculated data graphical review of most common performance indicators
Annual Performance	The calculated data graphical review of **annual** performance indicators
Monthly Performance	The calculated data graphical review of **monthly** performance indicators
Definitions	Use this sheet to understand terms used in the audit process

All parties reserve the right to validate the data recorded in this document. This does not bind the OSE or the Utility to the results. It is a tool used for planning purposes.

estions or comments regarding the software please contact us at: watermm@state.nm.us

Census Information Data Table 2.1

Info

Click here to access the Census Web site

OR

Click here for instructions on how to find the data on the Census website

2022 TO 2016

Use the most recent census data

Return to Instructions

DATA

US Census Table	Description		INPUT
DP-1	**Profile of General Population and Housing Characteristics**	**Census Year**	**2021**
Subject			
Relationship	In group quarters	Total	**262**
Housing Occupancy	Total housing units	Total	**3,368**
	Occupied housing units		**2,835**
	Vacant housing units		**533**
Households by Type	Average household size	Total	**2.09**

Formula: Household Size = Total Population / Total Number of Housing Units

Vacancy Rate %	15.8%

COMMENTS:

The City of Raton used U.S. Census Bureau 2017-2021 American Community Survey 5-year data estimates for housing unit, occupancy, and household size (Table DP04). Average household size was calculated by taking the weighted average of the estimates for average household size of owner-occupied units (2.11) and average household size of renter-occupied units (2.06). Table P5 was used for the group quarters population (this table is for 2020). The City serves 323 meters that are located outside of the CIty limits (including the Carisbrook and Trail Canyon subdivision connections = exported water). This is not taken into account in the per capita calculations.

DATA INPUT SHEET

City of Raton/Raton Water Works

Instructions

3. SINGLE-FAMILY RESIDENTIAL (SFR)

Return to Instructions

MONTHLY DATA

TABLE 3.1 Info

SFR BILLED WATER CONSUMPTION (Gallons (US))

2022 TO 2016

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	12,374,000	12,251,000	10,696,000	11,825,000	17,524,000	26,233,000	24,901,000	29,991,000	19,984,000	22,672,000	21,942,000	21,023,000
2021	12,195,000	9,988,000	20,589,000	12,243,000	29,999,000	17,743,000	45,657,000	25,962,000	23,914,000	32,746,000	14,157,000	11,998,000
2020	10,995,000	21,213,000	10,535,000	12,483,000	18,726,000	38,773,000	31,599,000	29,325,000	44,084,000	19,673,000	16,451,000	10,776,000
2019												
2018												
2017												
2016												

TABLE 3.2 Info

NUMBER OF SFR CONNECTIONS (Monthly)

Active Connections Only

You have chosen to enter Active Connections Only, enter the monthly values below, or enter annual values in table 3.8 Check message above Table 3.3 to see if additional data is required.

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	2,901	2,902	2,902	2,903	2,915	2,925	2,927	2,937	2,941	2,942	2,939	2,928
2021	2,903	2,897	2,901	2,910	2,917	2,926	2,925	2,925	2,923	2,923	2,912	2,908
2020	2,866	2,859	2,861	2,870	2,890	2,903	2,909	2,924	2,928	2,919	2,910	2,906
2019												
2018												
2017												
2016												

TABLE 3.3 Info

INACTIVE (ZERO USE) SFR CONNECTIONS (Monthly)

You have entered Active Connections Only in Table 3.2; leave the cells below blank

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022												
2021												
2020												
2019												
2018												
2017												
2016												

TABLE 3.4

SFR POPULATION (Monthly)

Formula = (No. of Connections - No. of Zero Use Accounts) * Ave. Household Size

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	6,063	6,065	6,065	6,067	6,092	6,113	6,117	6,138	6,147	6,149	6,143	6,120
2021	6,067	6,055	6,063	6,082	6,097	6,115	6,113	6,113	6,109	6,109	6,086	6,078
2020	5,990	5,975	5,979	5,998	6,040	6,067	6,080	6,111	6,120	6,101	6,082	6,074
2019	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2018	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2017	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2016	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

TABLE 3.5

SFR GPCD CALCULATION (Monthly)

Formula = Billed Water Consumption (SFR only) / Calculated Population (SFR only)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	65.83	72.14	56.89	64.97	92.79	143.04	131.31	157.61	108.37	119.99	119.07	110.82
2021	64.84	58.91	109.54	67.10	158.73	96.71	240.92	136.99	130.48	172.92	77.54	63.68
2020	59.21	126.79	56.83	69.37	100.01	213.02	167.66	154.79	240.13	104.02	90.16	57.23
2019	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2018	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2017	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2016	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

COMMENTS:

Single-family residential = Raton's sectors A + B
Multi-family residential = Raton's sectors E + RE

ANNUAL DATA

TABLE 3.6

ANNUAL CONSUMPTION

TABLE 3.7

ANNUAL CALCULATION
231,616,000
257,193,000
264,633,000
N/A
N/A
N/A
N/A

TABLE 3.8

AVG. ANNUAL CONNECTIONS

TABLE 3.9

AVG CONN. CALCULATION
2,922
2,914
2,895
N/A
N/A
N/A
N/A

TABLE 3.10 Info

CALCULATED GROWTH RATE
0.26%
0.65%
N/A
N/A
N/A
N/A

TABLE 3.11

No. VACANT SFR CONNECTIONS

TABLE 3.12 Info

SIZE OF HOUSEHOLD
2.09
2.09
2.09
2.09
2.09
2.09
2.09

TABLE 3.13 Info

SFR POPULATION
6,107
6,091
6,051
N/A
N/A
N/A
N/A

TABLE 3.14 Info

ANNUAL SFR GPCD
103.91
115.69
119.81
N/A
N/A
N/A
N/A

DATA INPUT SHEET

City of Raton/Raton Water Works

Instructions

4. MULTI-FAMILY RESIDENTIAL (MFR)

Return to Instructions

MONTHLY DATA

2022 TO 2016

TABLE 4.1 Info

MFR BILLED WATER CONSUMPTION (Monthly) (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	1,186,000	1,163,000	1,483,000	1,468,000	1,324,000	1,637,000	1,437,000	1,351,000	1,357,000	1,451,000	1,109,000	1,204,000
2021	1,387,000	1,126,000	1,539,000	1,468,000	1,387,000	1,343,000	1,754,000	1,760,000	1,948,000	1,867,000	1,639,000	1,297,000
2020	1,359,000	1,372,000	1,201,000	1,208,000	1,412,000	1,975,000	1,888,000	1,909,000	1,504,000	1,390,000	1,229,000	1,015,000
2019												
2018												
2017												
2016												

TABLE 4.2

If only Current Number of Units is Known, put this number in Table 4.7

NUMBER OF MFR UNITS (Monthly)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022												
2021												
2020												
2019												
2018												
2017												
2016												

TABLE 4.3

Formula = (Number of Units - Vacant MFR Connections) * Ave. Household Size

MFR POPULATION (Monthly)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2021	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2020	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2019	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2018	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2017	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2016	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

TABLE 4.4

Formula = MFR Billed Water Consumption (Monthly) / MFR Population (Monthly)

MFR GPCD CALCULATION (Monthly)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2021	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2020	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2019	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2018	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2017	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2016	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

ANNUAL DATA

TABLE 4.5

ANNUAL CONSUMPTION

TABLE 4.6

ANNUAL CALCULATION
16,170,000
18,515,000
17,462,000
N/A
N/A
N/A
N/A

TABLE 4.7

No. CURRENT UNITS
542
542
542

TABLE 4.8

ANNUAL UNIT CALCULATION
542
542
542
N/A
N/A
N/A
N/A

TABLE 4.9 Info

MFR POPULATION
954
954
954
N/A
N/A
N/A
N/A

TABLE 4.10

VACANT MFR CONNECTIONS
86
86
86
N/A
N/A
N/A
N/A

TABLE 4.11 Info

ANNUAL MFR GPCD
46.46
53.20
50.17
N/A
N/A
N/A
N/A

DATA INPUT SHEET

5. INDUSTRIAL, COMMERCIAL & INSTITUTIONAL (ICI) AND OTHER METERED

Return to Instructions

Info ity of Raton/Raton Water Works

Instructions

MONTHLY DATA

2022 TO 2016

TABLE 5.1

ICI WATER CONSUMPTION (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	4,867,000	4,383,000	3,849,000	4,690,000	5,210,000	6,548,000	7,091,000	6,467,000	6,518,000	6,684,000	4,855,000	4,296,000
2021	4,896,000	4,296,000	3,911,000	4,590,000	5,217,000	5,402,000	7,013,000	7,956,000	7,553,000	7,359,000	6,382,000	4,741,000
2020	5,512,000	5,454,000	4,667,000	5,495,000	4,921,000	6,369,000	7,549,000	7,304,000	6,372,000	6,179,000	5,825,000	4,682,000
2019												
2018												
2017												
2016												

TABLE 5.2

OTHER METERED (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0
2019												
2018												
2017												
2016												

COMMENTS:

Industrial, Commercial, and Institutional = Raton's sectors C + COM + R + X

ANNUAL DATA

TABLE 5.3 ICI ANNUAL CONSUMPTION	TABLE 5.4 ICI GPCD	TABLE 5.5 ICI ANNUAL CALCULATED
	24.49	65,458,000
	25.99	69,316,000
	26.51	70,329,000
	N/A	N/A
	N/A	N/A
	N/A	N/A
	N/A	N/A

TABLE 5.6 OTHER ANNUAL CONSUMPTION	TABLE 5.7 OTHER METERED GPCD	TABLE 5.8 OTHER ANNUAL CALCULATED
	N/A	N/A
	N/A	N/A
	N/A	N/A
	N/A	N/A
	N/A	N/A
	N/A	N/A
	N/A	N/A

DATA INPUT SHEET | Info

City of Raton/Raton Water Works

6. REUSE

Return to Instructions

MONTHLY DATA

Instructions

2022 TO 2016

TABLE 6.1

REUSE DIVERSIONS (Monthly) (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	0	0	0	0	21,000	30,000	10,000	26,000	8,000	0	2,000	3,000
2021	0	0	0	0	102,000	169,000	245,000	27,000	7,000	44,000	21,000	0
2020	0	0	0	1,000	7,000	3,000	0	1,000	13,000	0	0	0
2019												
2018												
2017												
2016												

COMMENTS:

Total reuse = Raton's sector W

ANNUAL DATA

TABLE 6.2

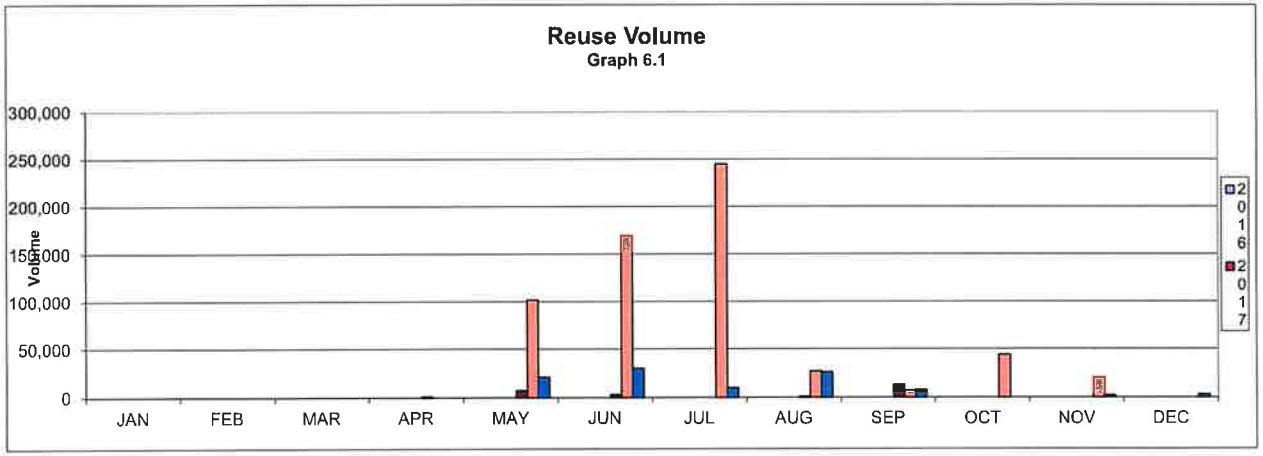
REUSE ANNUAL DIVERSIONS
100,000
615,000
25,000

TABLE 6.3

REUSE GPCD
0.04
0.23
0.01
N/A
N/A
N/A
N/A

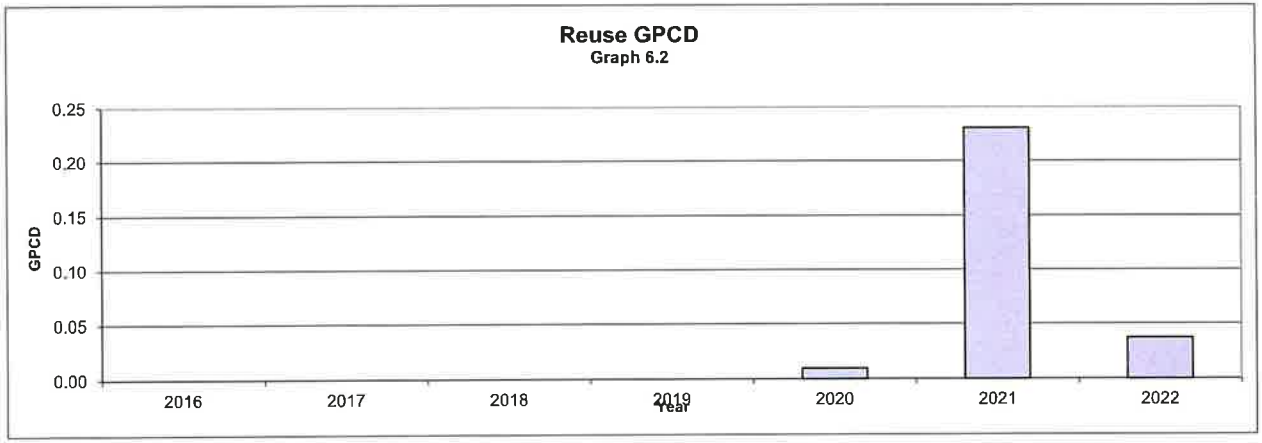
Reuse Volume

Graph 6.1



Reuse GPCD

Graph 6.2



DATA INPUT SHEET

7. TOTAL WATER DIVERTED AND SUPPLIED

Return to Instructions

City of Raton/Raton Water Works

MONTHLY DATA

TABLE 7.1 — 2022 TO 2016

TOTAL WATER DIVERTED (Monthly) (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	24,674,000	21,325,000	24,060,000	29,409,000	45,798,000	42,413,000	36,960,000	35,593,000	39,304,000	26,832,000	22,636,000	25,124,000
2021	21,882,000	22,217,000	23,005,000	29,813,000	34,585,000	42,206,000	45,083,000	43,736,000	42,701,000	31,210,000	25,709,000	24,307,000
2020	23,471,099	21,010,402	24,121,885	29,144,000	46,735,000	48,589,000	46,350,000	42,523,000	34,303,000	29,744,000	22,583,000	22,550,000
2019												
2018												
2017												
2016												

TABLE 7.2

IMPORTED WATER (Monthly)(Gallons (US)) Info

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0
2019												
2018												
2017												
2016												

TABLE 7.3

EXPORTED WATER (Monthly) (Gallons (US)) Info

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	108,000	112,000	118,000	167,000	198,000	212,000	459,000	364,000	327,000	357,000	181,000	145,000
2021	84,000	95,000	110,000	109,000	212,000	219,000	357,000	296,000	339,000	297,000	134,000	138,000
2020	72,000	45,000	28,000	150,000	115,000	325,000	443,000	376,000	350,000	246,000	157,000	97,000
2019												
2018												
2017												
2016												

TABLE 7.4

Formula = Total Water Diverted + Imported water - Exported Water

TOTAL WATER SUPPLY (Monthly) (Gallons (US))

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	24,566,000	21,213,000	23,942,000	29,242,000	45,600,000	42,201,000	36,501,000	35,229,000	38,977,000	26,475,000	22,455,000	24,979,000
2021	21,798,000	22,122,000	22,895,000	29,704,000	34,373,000	41,987,000	44,726,000	43,440,000	42,362,000	30,913,000	25,575,000	24,169,000
2020	23,399,099	20,965,402	24,093,885	28,994,000	46,620,000	48,264,000	45,907,000	42,147,000	33,953,000	29,498,000	22,426,000	22,453,000
2019	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0

ANNUAL DATA

TABLE 7.6 — ANNUAL TOTAL DIVERTED

TABLE 7.7 — ANNUAL TOTAL DIVERTED CALC

ANNUAL TOTAL DIVERTED	ANNUAL TOTAL DIVERTED CALC
	374,128,000
	386,454,000
	391,124,386
	N/A
	N/A
	N/A
	N/A

TABLE 7.8 — ANNUAL TOTAL IMPORTED

TABLE 7.9 — ANNUAL TOTAL IMPORT CALC

ANNUAL TOTAL IMPORTED	ANNUAL TOTAL IMPORT CALC
	N/A
	N/A
	N/A
	N/A
	N/A
	N/A
	N/A

TABLE 7.10 — ANNUAL TOTAL EXPORTED

TABLE 7.11 — ANNUAL TOTAL EXPORT CALC

ANNUAL TOTAL EXPORTED	ANNUAL TOTAL EXPORT CALC
	2,748,000
	2,390,000
	2,404,000
	N/A
	N/A
	N/A
	N/A

TABLE 7.12 — ANNUAL TOTAL WATER SUPPLY

TABLE 7.13 — TOTAL POP. EST.

ANNUAL TOTAL WATER SUPPLY	TOTAL POP. EST.
371,380,000	7,322
384,064,000	7,306
388,720,386	7,267
0	N/A
0	N/A
0	N/A
0	N/A

Table 7.5

SYSTEM TOTAL GPCD (Monthly)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022	108	103	105	133	201	192	161	155	177	117	102	110
2021	96	108	101	136	152	192	197	192	193	136	117	107
2020	104	103	107	133	207	221	204	187	156	131	103	100
2019	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2018	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2017	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2016	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

COMMENTS:

Total water diverted = the City's influent minus backwash flow (this is the actual flow into town).
Exported water = volumes sold to Carisbrook and Trail Canyon (private subdivisions that the City provides water to via master meter).

TABLE 7.14

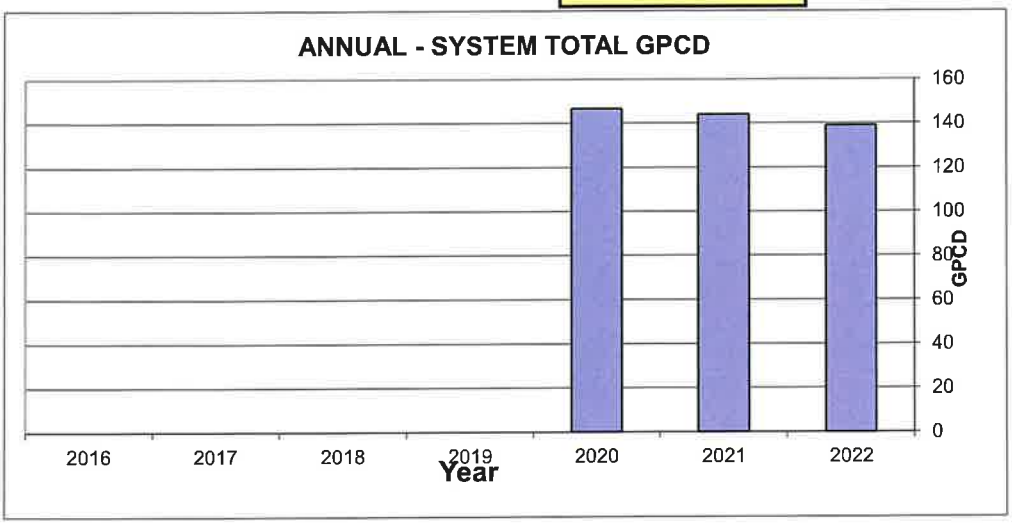
Year	SYSTEM TOTAL GPCD
2022	138.96
2021	144.02
2020	146.55
2019	NA
2018	NA
2017	NA
2016	NA

8. SUMMARY GPCD REPORTED DATA

ity of Raton/Raton Water Work		
2022	To:	2016

ANNUAL

Year	SYSTEM GPCD
2022	138.96
2021	144.02
2020	146.55
2019	NA
2018	NA
2017	NA
2016	NA

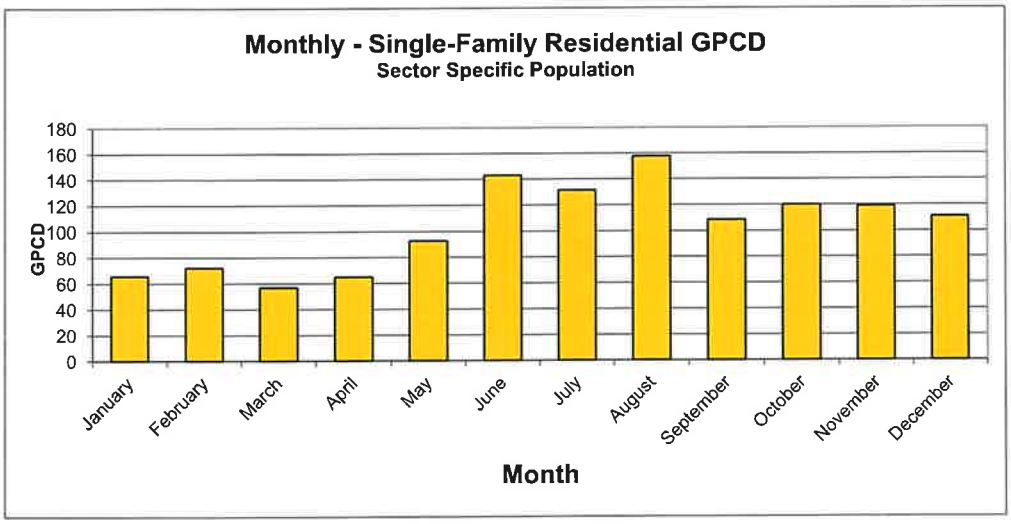


MONTHLY

Month	SFR GPCD
January	65.83
February	72.14
March	56.89
April	64.97
May	92.79
June	143.04
July	131.31
August	157.61
September	108.37
October	119.99
November	119.07
December	110.82

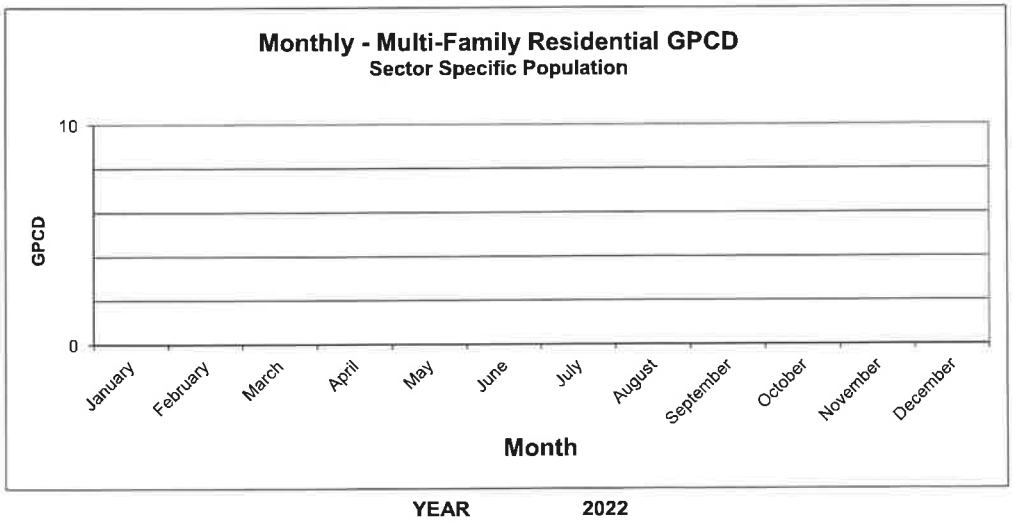
Year	2022

Peak/Ave	1.52



Month	MFR GPCD
January	No Data
February	No Data
March	No Data
April	No Data
May	No Data
June	No Data
July	No Data
August	No Data
September	No Data
October	No Data
November	No Data
December	No Data

Peak/Ave	#DIV/0!

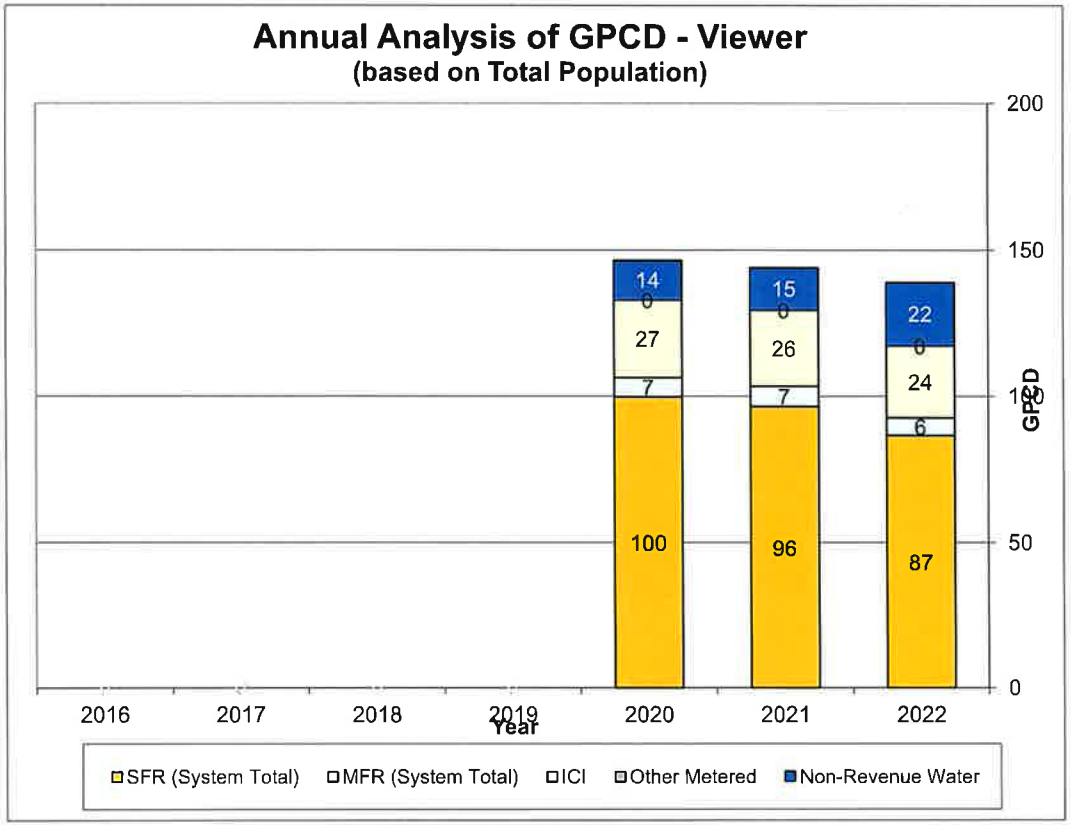


9. System Total Annual Reporting Performance

Overall Annual GPCD (based on Total Population)

	SFR (System Total)	MFR (System Total)	ICI	Other Metered	Non-Revenue Water (Info)	Total Supplied	Non-Revenue Volume Million Gallons (US)
Year							
On Graph?	Yes	Yes	Yes	Yes	Yes		
2022	86.66	6.05	24.49	N/A	21.75	138.96	58.14
2021	96.44	6.94	25.99	N/A	14.64	144.02	39.04
2020	99.77	6.58	26.51	N/A	13.68	146.55	36.30
2019	N/A	N/A	N/A	N/A	######	#VALUE!	-
2018	N/A	N/A	N/A	N/A	######	#VALUE!	-
2017	N/A	N/A	N/A	N/A	######	#VALUE!	-
2016	N/A	N/A	N/A	N/A	######	#VALUE!	-

City of Raton/Raton Water Works		
2022	to	2016



10. Monthly Reporting Performance

Choose Year for Monthly Analysis **2022**

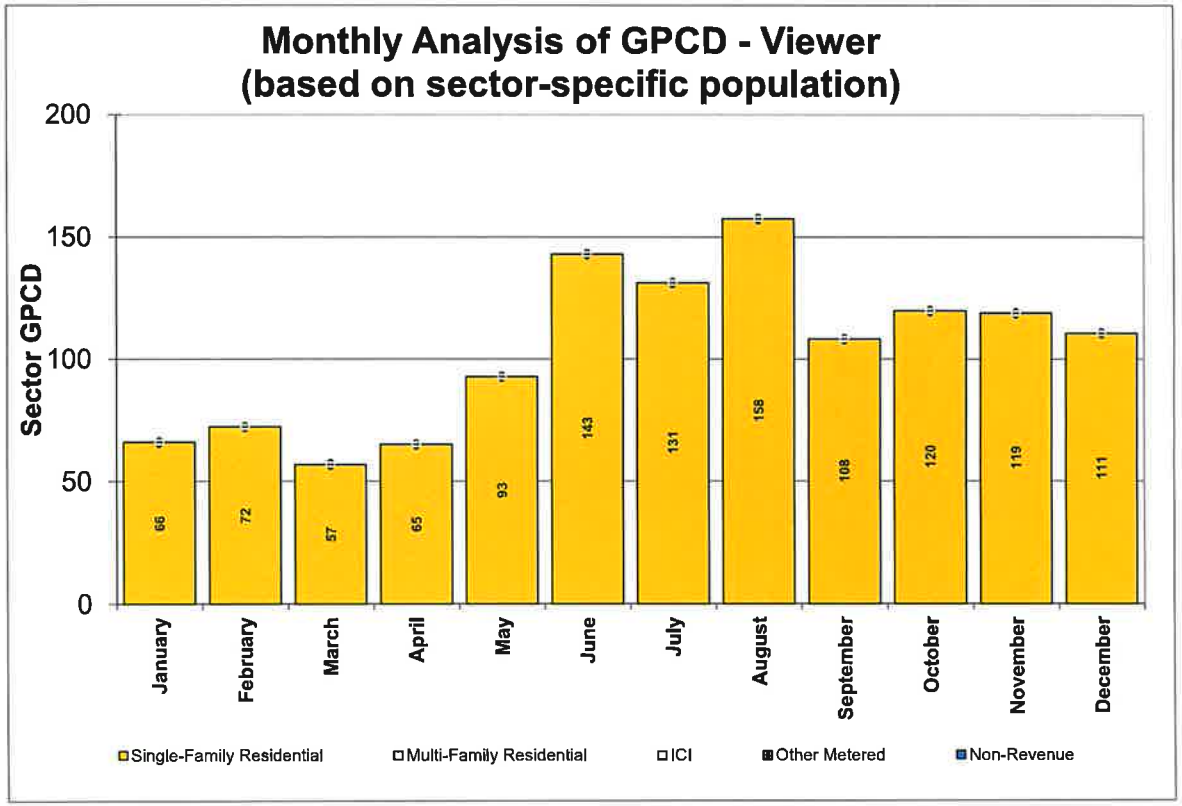
Choose Sector **Single-Family Residential**

Monthly GPCD

Month	Single-Family Residential GPCD	Multi-Family Residential GPCD	ICI GPCD	Other Metered GPCD	Non-Revenue GPCD
JAN	65.83	No Data	21.44	0.00	27.05
FEB	72.14	No Data	21.38	0.00	16.66
MAR	56.89	No Data	16.96	0.00	34.87
APR	64.97	No Data	21.35	0.00	51.26
MAY	92.79	No Data	22.95	0.00	94.90
JUN	143.04	No Data	29.81	0.00	35.43
JUL	131.31	No Data	31.24	0.00	13.53
AUG	157.61	No Data	28.49	0.00	-11.37
SEP	108.37	No Data	29.67	0.00	50.61
OCT	119.99	No Data	29.45	0.00	-19.97
NOV	119.07	No Data	22.10	0.00	-24.82
DEC	110.82	No Data	18.93	0.00	-6.80

City of Raton/Raton Water Works

2022 to 2016



Appendix B

2022 Water Audit

DBS&A
a Geo-Logic Company

AWWA Free Water Audit Software v6.0

FWAS v6.0

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format and is not meant to take the place of a full-scale, comprehensive water audit format. Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targeting loss reduction levels. This tool contains several separate worksheets. Sheets can be accessed using the tabs at the bottom of the screen, or by clicking the TOC links below.

Table of Contents (TOC)

AWWA Web Resources for Water Loss Control

https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control

Items referenced in the Free Water Audit Software v6.0 on the web:

- Data Grading Matrix v6.0
- Example Water Audit v6.0
- Water Audit Compiler v6.0
- AWWA Reports on Performance Indicators
- M36 Manual

Enter Basic Information

Name of Utility:	City of Raton/Raton Water Works
Name of Contact Person:	Jaden Welch
Email:	jwelch@cityofraton.com
Telephone | Ext.:	575-445-9551
City/Town/Municipality:	Raton
State / Province:	New Mexico (NM)
Country:	United States
Audit Preparation Date:	Sep 18 2023
Audit Year:	2022
Audit Year Label:	Calendar (Fiscal, Calendar, etc)
Audit Period Start Date:	Jan 01 2022
Audit Period End Date:	Dec 31 2022
Volume Reporting Units:	Million gallons (US)
Water System Structure:	Retail
Water Type:	Potable Water
System ID Number:	NM3526704
Validator Name/ID:	n/a
Validator Email:	n/a
Estimated Total Population Served by Water Utility:	7,300

Key of Input Acronyms

In order of appearance in the Worksheet

VOS	Volume from Own Sources
VOSEA	VOS Error Adjustment
WI	Water Imported
WIEA	WI Error Adjustment
WE	Water Exported
WEEA	WE Error Adjustment
BMAC	Billed Metered Authorized Consumption
BUAC	Billed Unmetered Authorized Consumption
UMAC	Unbilled Metered Authorized Consumption
UUAC	Unbilled Unmetered Authorized Consumption
SDHE	Systematic Data Handling Errors
CMI	Customer Metering Inaccuracies
UC	Unauthorized Consumption
Lm	Length of mains
Nc	Number of service connections
Lp	Average length of (private) customer service line
AOP	Average Operating Pressure
CRUC	Customer Retail Unit Charge
VPC	Variable Production Cost

Color Key User input | Calculated | Optional default

Guidance for the Worksheet

Choosing to enter unit of **percent** or **volume** (applies to VOSEA, WIEA, WEEA, CMI) choose entry option:

1.00%	percent	*or*	
	volume		25.000

Choosing to enter **default** or **custom input** (applies to UUAC, SDHE, UC) choose entry option:

0.25%	default	*or*	
	custom		75.000

Guidance for the Interactive Data Grading

Use acronym buttons in IDG header to navigate among inputs. Acronym Key above. White = needs answers, orange = complete, clear = not required. Example below.

After clicking an acronym button, answer all visible questions in the order they're presented, choosing best-fit answer

Grade will populate when all visible questions are complete for an input: **7**

The limiting criteria will be labeled along the right. If only 1 limiting criterion is shown, improving on that criterion will achieve a higher data grade. If multiple limiting criteria are shown, improving on *each* limiting criterion is necessary to achieve a higher data grade. A complete inventory of data grading criteria is available in the Data Grading Matrix v6.0 (see web resources)

Limiting

If you have questions or comments regarding this software please contact us at: wlc@awwa.org

AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association.

Water Audit Report for: City of Raton/Raton Water Works
Audit Year: 2022 | Jan 01 2022 - Dec 31 2022 | Calendar

Click 'n' to add notes
Click 'g' to determine data validity grade

To edit water system info: go to start page

To access definitions, click the input name

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

Water Supplied Error Adjustments

WATER SUPPLIED

choose entry option:

VOS	Volume from Own Sources:	n g 9	374.128	MG/Yr	n g 10	1.00%	percent	under-registration	VOSEA
WI	Water Imported:	n g n/a	0.000	MG/Yr					WIEA
WE	Water Exported:	n g 3	2.748	MG/Yr	n g 4	1.00%	percent	under-registration	WEEA
	WATER SUPPLIED:		375.131	MG/Yr					

AUTHORIZED CONSUMPTION

choose entry option:

BMAC	Billed Metered:	n g 5	313.244	MG/Yr			
BUAC	Billed Unmetered:	n g n/a	0.000	MG/Yr			
UMAC	Unbilled Metered:	n g 10	9.056	MG/Yr			
UUAC	Unbilled Unmetered:	n g 3	0.783	MG/Yr	0.25%	default	

Default option selected for Unbilled Unmetered, with automatic data grading of 3

AUTHORIZED CONSUMPTION: 323.083 MG/Yr

WATER LOSSES

52.048 MG/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3

choose entry option:

SDHE	Systematic Data Handling Errors:	n g 3	0.783	MG/Yr	0.25%	default	
CMI	Customer Metering Inaccuracies:	n g 3	6.578	MG/Yr	2.00%	percent	under-registration
UC	Unauthorized Consumption:	n g 3	0.783	MG/Yr	0.25%	default	

Default option selected for Unauthorized Consumption, with automatic data grading of 3

Apparent Losses: 8.144 MG/Yr

Real Losses

Real Losses: 43.904 MG/Yr

WATER LOSSES: 52.048 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 61.887 MG/Yr

SYSTEM DATA

Lm	Length of mains:	n g 8	107.0	miles	(including fire hydrant lead lengths)
Nc	Number of service connections:	n g 8	3,450		(active *and* inactive)
	Service connection density:		32	conn./mile main	

Are customer meters typically located at the curbstop/property line? Yes

Lp: n g 10

Average length of customer service line has been set to zero and a data grading of 10 has been applied

AOP: Average Operating Pressure: n g 7 — 85.0 psi

COST DATA

CRUC	Customer Retail Unit Charge:	n g 7	$8.17	$/1000 gallons (US)	Total Annual Operating Cost	
VPC	Variable Production Cost:	n g 4	$293.22	$/Million gallons	$2,561,773	$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

***** The Water Audit Data Validity Score is in Tier III (51-70). See Dashboard tab for additional outputs. *****

go to dashboard

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

1: Billed Metered (BMAC)
2: Customer Metering Inaccuracies (CMI)
3: Variable Production Cost (VPC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:		gal/conn/day
Unit Apparent Losses:		gal/conn/day
Unit Real Losses[A]:		gal/conn/day
Unit Real Losses[B]:		gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)

2022

White = incomplete
Orange = complete
Use acronyms for navigation

VOS | VOSEA | WI | WIEA | WE | WEEA | BMAC | BUAC | UMAC | UUAC
SDHE | CMI | UC | Lm | Nc | Lp | AOP | CRUC | VPC

Limiting criteria (see Start Page for details)

go to input

Volume from Own Sources (VOS) - Data Grading Criteria

go to notes

vos	Criteria Question	Select Best-Fit Answers to All Visible Questions	
vos.0	Did the water utility supply any water from its own sources during the audit year?	Yes	
vos.1	What percent of own supply volume is metered?	>99%	
	For questions 2-10 below: Choose the answer that applies for those meters that measure >90% of the finished water volume. **In-situ flow accuracy testing** = a test process that confirms the flow measuring accuracy of the primary device (the flowmeter), in its installed location, using an independent reference volume. **Electronic calibration** = a process that checks for error in the metering secondary device(s) and/or the tertiary device(s). **Secondary device** can include conversion to mA, meter transmitter or similar instrumentation. **Tertiary device** can include SCADA, historian or other computerized archival system.		
vos.2	What is the frequency of electronic calibration?	Annually	Limiting
vos.3	What level of data transfer errors are checked as part of the electronic calibration process?	Data transfer errors are checked at secondary device(s), but no tertiary device(s) exist	
vos.4	Is the most recent electronic calibration documentation available for review?	Yes	
vos.5	What is the frequency of in-situ flow accuracy testing?	Annually	Limiting
vos.6	Is the most recent in-situ flow accuracy testing documentation available for review?	Yes	
vos.7	What are the total volume-weighted average results of in-situ flow accuracy testing (during or closest to audit year)?	At or within ±3%	
vos.8	Have testing and calibration procedures been closely scrutinized for compliance with procedures described in the AWWA M36 and/or M33 Manual(s)?	Yes	
vos.9	Which best describes the frequency of finished water meter readings?	Continuous	
vos.10	Which best describes the frequency of data review for anomalies/errors? These can include numbers that are outside of typical patterns, and zero or 'null' values that may reflect a gap in data recording.	Daily	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**9**	

go to input

Volume from Own Sources Error Adjustment (VOSEA) - Data Grading Criteria

go to notes

vosea	Criteria Question	Select Best-Fit Answers to All Visible Questions
vosea.1	Are tank levels monitored automatically & recorded daily?	Yes
vosea.2	Are daily changes of stored water volumes in distribution system tanks included in the tabulation of the daily "Volume from Own Sources" quantity?	Yes
vosea.3	Is the annual net distribution storage change included in either the VOS input or the VOSEA input?	Yes
vosea.4	Are the flow accuracy test and/or electronic calibration results included in the VOSEA input in the water audit?	Yes, results are analyzed and incorporated
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**10**

go to input

Water Imported (WI) - Data Grading Criteria

go to notes

wi	Criteria Question	Select Best-Fit Answers to All Visible Questions
wi.0	Did the water utility import any water during the audit year?	No
wi.1		

For questions 2-10 below: Choose the answer that applies for those meters that measure >90% of the water imported volume.
In-situ flow accuracy testing = a test process that confirms the flow measuring accuracy of the primary device (the flowmeter), in its installed location, using an independent reference volume.
Electronic calibration = a process that checks for error in the metering secondary device(s) and/or the tertiary device(s).
Secondary device can include conversion to mA, meter transmitter or similar instrumentation.
Tertiary device can include SCADA, historian or other computerized archival system.

wi.2		
wi.3		
wi.4		
wi.5		
wi.6		
wi.7		
wi.8		
wi.9		
wi.10		
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	n/a

go to input

Water Imported Error Adjustment (WIEA) - Data Grading Criteria

go to notes

wiea	Criteria Question	Select Best-Fit Answers to All Visible Questions
wiea.1		
wiea.2		
wiea.3		
wiea.4		
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	n/a

go to input

Water Exported (WE) - Data Grading Criteria

go to notes

we	Criteria Question	Select Best-Fit Answers to All Visible Questions	
we.0	Did the water utility export any water during the audit year?	Yes	
we.1	What percent of water exported is metered?	>99%	
	For questions 2-10 below: Choose the answer that applies for those meters that measure >90% of the water exported volume. **In-situ flow accuracy testing** = a test process that confirms the flow measuring accuracy of the primary device (the flowmeter), in its installed location, using an independent reference volume. **Electronic calibration** = a process that checks for error in the metering secondary device(s) and/or the tertiary device(s). **Secondary device** can include conversion to mA, meter transmitter or similar instrumentation. **Tertiary device** can include SCADA, historian or other computerized archival system.		
we.2	What is the frequency of electronic calibration?	None, or Not within last 5 years	Limiting
we.3			
we.4			
we.5	What is the frequency of in-situ flow accuracy testing?	None, or Not within last 5 years	Limiting
we.6			
we.7			
we.8			
we.9	Which best describes the frequency of meter readings (data collection frequency as opposed to billing frequency)?	Once per month	
we.10	What is the frequency of data review & correction by Exporting or Importing Utility for data gaps and/or anomalies? These can include numbers that are outside of typical patterns, and zero or 'null' values that may reflect a gap in data recording.	Once per month	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**3**	

go to input

Water Exported Error Adjustment (WEEA) - Data Grading Criteria

go to notes

weea	Criteria Question	Select Best-Fit Answers to All Visible Questions	
weea.1	Is an agreement in place between Exporting and Importing Utility?	Yes, written	
weea.2	Are meter accuracy testing or electronic calibration requirements stipulated in the water purchase agreement?	No, but meter accuracy testing and/or electronic calibration is conducted upon request of the importing utility	
weea.3	Are flow accuracy test and/or electronic calibration results used to inform the error adjustment input in the water audit?	No	Limiting
weea.4	Who has access to the import meter readings including current and archived data?	Exporting and Importing Utility	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	4	

go to input

Billed Metered Authorized Consumption (BMAC) - Data Grading Criteria

go to notes

bmac	Criteria Question	Select Best-Fit Answers to All Visible Questions	
bmac.0	Were any customers metered in the audit year?	Yes	
bmac.1	For billed metered accounts, what % of bills are estimated in a typical billing cycle?	5% or less	
bmac.2	How often does the utility read its customer meters? For systems with multiple read frequencies, select the reading frequency that describes the majority of your customers.	Monthly	
bmac.3	Is the BMAC volume pro-rated to represent consumption occuring exactly during the audit period?	Yes	
bmac.4	How frequently does internal review by utility staff of the BMAC volumes occur?	Every billing cycle	
bmac.5	What level of detail is examined in the internal review of BMAC volumes?	Totals grouped by use type or customer class and specific accounts flagged for anomalous consumption	
bmac.6	When was the most recent billing data review by someone who is independent of the utility billing process?	Between 3 and 5 years ago	
bmac.7	What level of detail was examined in the review by someone who is independent of the utility billing process?	Not sure	Limiting
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**5**	

go to input

Billed Unmetered Authorized Consumption (BUAC) - Data Grading Criteria

go to notes

buac	Criteria Question	Select Best-Fit Answers to All Visible Questions
buac.0	Was there any billed consumption on unmetered accounts in the audit year?	No
buac.1		
buac.2		
buac.3		
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	n/a

go to input

Unbilled Metered Authorized Consumption (UMAC) - Data Grading Criteria

go to notes

umac	Criteria Question	Select Best-Fit Answers to All Visible Questions
umac.0	Did the water utility have any unbilled-metered consumption in the audit year?	Yes
umac.1	Does the water utility policy articulate which accounts are exempt from billing?	Policy includes specific exemptions
umac.2	How many unbilled metered accounts exist?	Monitored, count available
umac.3	How often is each unbilled customer meter read? For systems with multiple read frequencies, select the reading frequency that describes the majority of your customers.	Monthly or more frequently
umac.4	How often are unbilled metered volumes reviewed for error?	Each billing cycle
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**10**

go to input

Unbilled Unmetered Authorized Consumption (UUAC) - Data Grading Criteria

go to notes

This Data Grading Criteria is hidden when the 'default' input is used on the Worksheet

FINAL DATA GRADE FOR THIS AUDIT INPUT: 3

go to input

Systematic Data Handling Error (SDHE) - Data Grading Criteria

go to notes

This Data Grading Criteria is hidden when the 'default' input is used on the Worksheet

FINAL DATA GRADE FOR THIS AUDIT INPUT:	3

go to input

Customer Metering Inaccuracies (CMI) - Data Grading Criteria

go to notes

cmi	Criteria Question	Select Best-Fit Answers to All Visible Questions	
cmi.0	Was there any metered customer usage during the audit period?	Yes	
cmi.1	Do you test meters reactively (when triggered by customer complaint or billing/consumption flag)?	Reactive testing conducted	
cmi.2	For small size customer meters, which best describes the frequency of proactive testing (effort beyond when triggered by customer complaint or billing/consumption flags)?	No proactive small meter testing activity to date	Limiting
cmi.3			
cmi.4	For mid and large size customer meters, which best describes the frequency of the proactive testing program?	No proactive large meter testing activity to date	Limiting
cmi.5			
cmi.6	Which best describes how the input was derived?	Calculated based on most recent meter accuracy tests, but not comprehensive of all meter performance	
cmi.7	Has the input derivation been reviewed by someone with expert knowledge in the M36 methodology?	No	
cmi.8	To what extent does meter replacement occur and for which meters?	Replacement upon complete failure or special circumstance (as needed)	
cmi.9	Which best describes the reliability of meter installation records?	Records are kept for meter installations, but data is missing for installation date, type, size, or manufacturer	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**3**	

go to input

Unauthorized Consumption (UC) - Data Grading Criteria

go to notes

This Data Grading Criteria is hidden when the 'default' input is used on the Worksheet

FINAL DATA GRADE FOR THIS AUDIT INPUT: 3

go to input

Length of Mains (Lm) - Data Grading Criteria

go to notes

Lm	Criteria Question	Select Best-Fit Answers to All Visible Questions	
Lm.1	How was the input derived?	Derived directly from Mains Inventory (GIS, ledger, etc)	
Lm.2	Are hydrant laterals included in the input derivation?	No	Limiting
Lm.3	Which best describes how the Mains inventory (GIS, ledger, etc) is kept up to date?	Additions or subtractions are updated in the mains inventory (GIS, ledger, etc), at least annually	
Lm.4	Which best describes how the Mains inventory (GIS, ledger, etc) is field validated to confirm field conditions match the inventory?	Field validation is accomplished (i.e. in daily operations or specific validation projects)	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	8	

go to input

Number of Service Connections (Nc) - Data Grading Criteria

go to notes

Nc	Criteria Question	Select Best-Fit Answers to All Visible Questions	
Nc.1	How was the input derived?	Extracted from Services inventory (GIS, billing system, etc)	
Nc.2	What is the count of services based on?	Non-premise based, i.e. meter count, customer count	Limiting
Nc.3	Are inactive (but still pressurized) service lines included in the input? These may be metered or unmetered.	Yes	
Nc.4	Which best describes how the inventory of service connections (GIS, billing system, etc) is kept up to date?	Additions or subtractions are updated in the service line inventory (GIS, billing system, etc), at least annually	
Nc.5	Which best describes how the inventory of service connections (GIS, billing system, etc) is field validated to confirm field conditions match the inventory?	Field validation is accomplished for the entire system (i.e. in daily operations or specific validation projects)	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**8**	

go to input

Average Length of (Private) Customer Service Line (Lp) - Data Grading Criteria

go to notes

Lp	Criteria Question	Select Best-Fit Answers to All Visible Questions
Lp.0	Are customer meters typically located at the curbstop or property line?	Yes
Lp.1		
Lp.2		
Lp.3		
Lp.4		
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**10**

go to input

Average Operating Pressure (AOP) - Data Grading Criteria

go to notes

aop	Criteria Question	Select Best-Fit Answers to All Visible Questions	
aop.1	Which best describes checks on the boundary integrity for the system's pressure zone(s)?	Normally-closed boundary valves between zones have been confirmed to be fully closed more than 3 years ago	
aop.2	Which best describes how one-time pressure readings (i.e. from hydrants) are collected?	Collected annually during routine system flushing and/or hydrant testing	
aop.3	Which best describes where continuous pressure data (via temporary data loggers or permanent telemetry) is collected?	At zone boundary conditions, plus some locations inside the zone(s) but not representing the full pressure profile	
aop.4	Which best describes how continuous pressure data is collected?	Temporary data logger(s) deployed, but limited and not capturing seasonal variation during the year	Limiting
aop.5	How was the input derived?	Calculated from field data as a simple average	Limiting
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	7	

go to input

Customer Retail Unit Charge (CRUC) - Data Grading Criteria

go to notes

cruc	Criteria Question	Select Best-Fit Answers to All Visible Questions	
cruc.0	Was any metered consumption billed on a volumetric basis in the audit period?	Yes	
cruc.1	Which best describes the use and reliability of the current rate structure?	Customer bill calculations have been checked to confirm the rate structure is correctly implemented	
cruc.2	Choose the option that best describes how the input was derived	A volume-weighted average of all rates was calculated	
cruc.3	Is there any additional volumetric revenue the utility receives that depends on water meter readings, such as sewer?	Yes, but this has not been incorporated into the volume-weighted average calculation	Limiting
cruc.4	Has the input derivation been reviewed by someone with expert knowledge in the M36 methodology?	No	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	7	

go to input

Variable Production Cost (VPC) - Data Grading Criteria

go to notes

vpc	Criteria Question	Select Best-Fit Answers to All Visible Questions	
vpc.1	Choose the option that best describes how the input was derived	A non-weighted average of multiple sources was calculated	Limiting
vpc.2	Choose the option that best describes which short-run marginal costs have been included in the input, using the definitions below for reference. Short-run marginal costs can include the following: - chemicals + power for treatment, typically applicable if the utility is producing/treating water - power for distribution, typically applicable if pumps exist in the distribution network - water acquisition costs, typically applicable if the utility is purchasing water or incurs any extraction costs for withdrawing from a source Some short-run marginal costs may not be applicable. The auditor should analyze the system characteristics to determine which costs are applicable for inclusion in the VPC input derivation. See also the latest AWWA M36 Manual for further guidance.	All applicable short-run marginal costs are included	
vpc.3	Choose the option that best describes which long-run marginal costs have been included in the input, using the definitions below for reference. Long-run marginal costs can include the following: - water treatment residuals management, typically applicable if solids are produced from water treatment process - accelerated wear & tear on dynamic equipment, typically applicable if pumps exist for treatment and/or distribution, or any other equipment exists that wears out as a function of use instead of time (i.e. filter media, chemical dosing pumps, uv disinfection bulbs, etc) - payouts for damage claims from main and service line breaks, typically applicable if damage claims are paid by the utility - accelerated expansion of supply capacity, typically applicable if the utility is at or nearing supply capacity, or scarecity costs in water scarce areas - full cost pricing that includes all lifecycle costs and externalities (internalized or not) Some long-run marginal costs may not be applicable. The auditor should analyze the system characteristics to determine which costs are applicable for inclusion in the VPC input derivation. See also the latest AWWA M36 Manual for further guidance.	Long-run marginal costs have been evaluated for applicability, and all applicable costs are included	
vpc.4	Has the input derivation been reviewed by someone with expert knowledge in the M36 methodology?	No	
	FINAL DATA GRADE FOR THIS AUDIT INPUT:	**4**	

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AWWA Free Water Audit Software: Dashboard

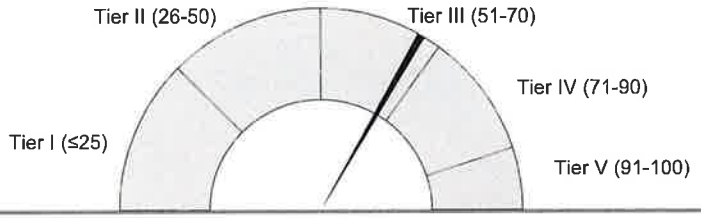
go to worksheet | go to grading | go to references

Water Audit Report for: City of Raton/Raton Water Works **Audit Year: 2022 Calendar** **Jan 01 2022 - Dec 31 2022**

Data Validity

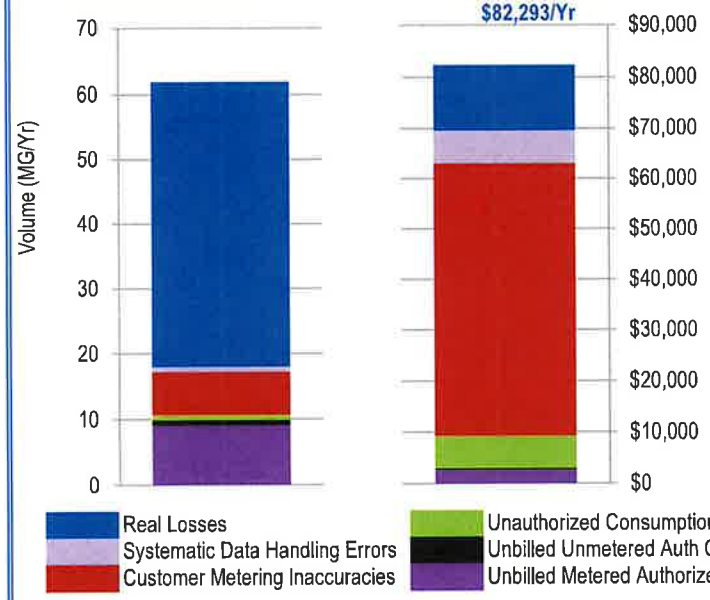
Data Validity Score: 66 **Data Validity Tier:** Tier III (51-70)

See Loss Control Planning for Tier Details



NRW Components Summary

Total Volume of NRW = 62 MG/Yr **Total Cost of NRW = $82,293/Yr**

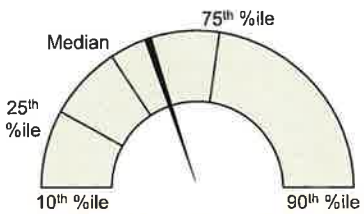


	Volume MG/Yr	Value $/Yr	Basis of Valuation
Apparent Losses	8.1	$65,079	CRUC
Real Losses	43.9	$12,874	VPC
Unbilled Authorized Cons	9.8	$2,885	VPC
Non-Revenue Water	61.9	$80,838	Blended

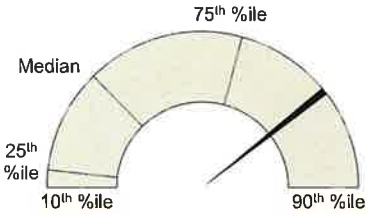
Key Performance Indicators

Actual KPI result — Target (see Worksheet)

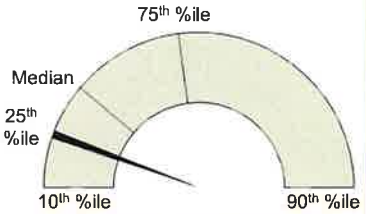
gauge %iles per validated industry ranges[2]



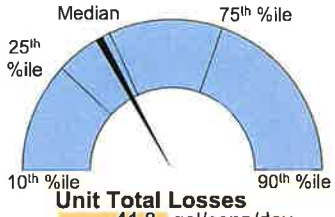
Total Loss Cost Rate
22.59 $/conn/year



Apparent Loss Cost Rate
18.86 $/conn/year



Real Loss Cost Rate
3.73 $/conn/year

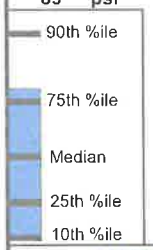


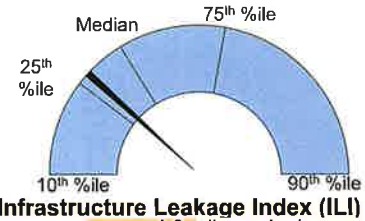
Unit Total Losses
41.3 gal/conn/day

Unit Apparent Losses
6.5 gal/conn/day

Unit Real Losses[A]
34.9 gal/conn/day

Average Operating Pressure
85 psi





Infrastructure Leakage Index (ILI)
1.3 dimensionless

Unit Real Losses[B]
1,124 gal/mile/day

See UARL definition for additional guidance on the ILI

(UARL) Unavoidable Annual Real Losses	34.0 MG/Yr	27.0 gal/conn/day

Guidance Information for Key Performance

- The eight indicators shown are the recommended suite per the AWWA Water Loss Control Committee 2020 Position on KPIs[1].
- A suite of KPIs is necessary, as no single KPI can holistically communicate water loss performance for a given water system.
- See Table 1 below for Uses and Limitations for each KPI, excerpted from the AWWA Water Loss Control Committee Report (2020)[1], with naming conventions updated.
- Percentiles (%iles) shown on KPI gauges come from Level 1 validated data in the AWWA WLCC Reference Water Audit Dataset (2020)[2].
- KPI %iles shown above are not segregated by cohorts. Limited KPI data by cohorts may be found in WRF 4695 Guidance Manual, Appendix B (2019)[5].
- Actual KPI results that fall below 10th %ile or above 90th %ile do not necessarily imply error, but should be viewed with scrutiny.
- Percentiles not intended to imply targets. Targets may be input by user for operational KPIs, if desired, on Worksheet.
- See UARL and ILI in Definitions tab for discussion of size and pressure limitations.
- Systems that fall on the extreme ends of size or connection density should use caution when interpreting Unit Losses KPIs.

Table 1

Source: AWWA Water Loss Control Committee Report (2020)[1], with naming conventions updated

2020 AWWA Water Audit Method – Water Audit Outputs and Key Performance Indicators: Uses and Limitations

Type	Indicator	Description	Suitable Purposes					Uses and Limitations	Principal Users
			Assessment	Bench-Marking	Target-Setting	Planning	Tracking		
Attribute	Apparent Loss Volume	Calculated by Free Water Audit Software	✓				✓	Assess loss level	Utility, Regulators
	Apparent Loss Cost	Calculated by Free Water Audit Software	✓				✓	Assess cost loss level	Utility, Regulators
	Real Loss Volume	Calculated by Free Water Audit Software	✓				✓	Assess loss level	Utility, Regulators
	Real Loss Cost	Calculated by Free Water Audit Software	✓				✓	Assess loss cost level	Utility, Regulators
	Unavoidable Annual Real Loss (UARL)	Calculated by Free Water Audit Software	✓				✓	Reveal theoretical technical low level of leakage	Utility, Regulators
Volume	Unit Apparent Losses (vol/conn/day)	Strong and understandable indicator for multiple users.	✓	✓	✓	✓	✓	Used for performance tracking and target-setting	Utility, Regulators
	Unit Real Losses[A] (vol/conn/day)	Strong and understandable indicator for multiple users.	✓	✓	✓	✓	✓	Used for performance tracking and target-setting	Utility, Regulators, Policy Makers
	Unit Real Losses[B] (vol/pipeline length/ day)	Strong and understandable indicator for use by utilities with low connection density.	✓	✓	✓	✓	✓	Data collection and assessment of systems with "low" connection density	Utility, Regulators, Policy Makers
	Unit Total Losses (vol/conn/day) **New KPI**	Strong and understandable indicator, suitable for high-level performance measurement.	✓				✓	High level indicator for trending analysis. Not appropriate for target-setting or benchmarking	Utilities, Customers
	Infrastructure Leakage Index (ILI)	Robust, specialized ratio KPI; can be influenced by pressure and connection density.	✓	✓			✓	Benchmarking after pressure management is implemented	Utilities
Value	Apparent Loss Cost Rate (value/conn/year) **New KPI**	Indicators with sufficient technical rigor. Provide the unit financial value of each type of loss, which is useful for planning and assessment of cost efficiency of water loss reduction and control interventions and programs.	✓			✓	✓	Data collection and assessment on AWWA indicators or contextual parameters to use in conjunction with Loss Cost Rates	Utilities, Regulators, Customers
	Real Loss Cost Rate (value/conn/year) **New KPI**		✓			✓	✓		Utilities, Regulators, Customers
Validity	Data Validity Tier (DVT)	Strong indicator of water loss audit data quality, if data has been validated. Tier provides guidance on priority areas of activity.	✓	✓		✓	✓	Assess caliber of data inputs of the water audit	Regulators, Utilities

AWWA Free Water Audit Software: User Notes

FWAS v6.0

Water Audit Report for: City of Raton/Raton Water Works
Audit Year: 2022

Calendar
Jan 01 2022 - Dec 31 2022

General Notes:	

Audit Item	Notes on Input Derivation	Notes on Data Validity Grading
Volume from Own Sources (VOS)	Data were obtained from Geneva Trujillo at the City of Raton. The 2022 total water diverted volume was calculated by subtracting the backwash volume from total influent. This is the volume that flows into town.	Jaden Welch, City of Raton Engineering Director, completed the data grading matrix for each of the data inputs. The readings are physically taken from the meter on a daily basis, and are not relying on a SCADA system (for both the influent and effluent flows at the surface water treatment plant).
Volume from Own Sources Error Adjustment (VOSEA)	A meter error adjustment of -1.0% was used (underreporting). The 2021 meter calibration reported meter error of less than 1%. The 2022 meter calibration report says that analog out was verified with actual flow and that there were no issues, but doesn't quantify meter error.	
Water Imported (WI)	The City of Raton does not import water.	
Water Imported Error Adjustment (WIEA)	Not applicable (no water is imported).	
Water Exported (WE)	Data were obtained from Geneva Trujillo at the City of Raton. The 2022 exported volume is the sum of the volumes sold to the Carisbrook and Trail Canyon private subdivisions (via master meter).	

	Audit Item	Notes on Input Derivation	Notes on Data Validity Grading
go to worksheet / go to grading	**Water Exported Error Adjustment (WEIA)**	A meter error adjustment of -1.0% was used for the exported water (underreporting). This is an estimate. The exported water meters have not been replaced since 2018; however, the spec for that type of meter being used is +/- 1.5%. Typical performance is expected to be closer to +/- 1.0%.	
go to worksheet / go to grading	**Billed Metered Authorized Consumption (BMAC)**	Data were obtained from Geneva Trujillo at the City of Raton. The billed metered consumption volume is the sum of billed metered water use for all City sectors (2022 total consumption), less reuse (sector W). Exported water is not included in this volume.	
go to worksheet / go to grading	**Billed Unmetered Authorized Consumption (BUAC)**	The City of Raton does not have any billed unmetered water use.	
go to worksheet / go to grading	**Unbilled Metered Authorized Consumption (UMAC)**	Data were obtained from Geneva Trujillo at the City of Raton. The City's 2022 unbilled metered water use is their non-revenue water volume (water used by City buildings and for irrigation of parks).	
go to worksheet / go to grading	**Unbilled Unmetered Authorized Consumption (UUAC)**	The City of Raton does not have an estimate for unbilled unmetered water use. The default value (0.25% of the billed metered volume) was used.	
go to worksheet / go to grading	**Systematic Data Handling Errors (SDHE)**	The City of Raton does not have an estimate for systematic data handling errors. The default value (0.25% of the billed metered volume) was used.	
go to worksheet / go to grading	**Customer Metering Inaccuracies (CMI)**	A meter error adjustment of -2.0% was used for customer metering inaccuracies (underreporting). Household meters are replaced after 750,000 gallons if triggered by a read error (about 2% of the meters are replaced each year). The accuracy spec for the household meters is +/- 1.5%.	

	Audit Item	Notes on Input Derivation	Notes on Data Validity Grading
go to worksheet / go to grading	**Unauthorized Consumption (UC)**	The City of Raton does not have an estimate for unauthorized consumption. The default value (0.25% of the billed metered volume) was used.	
go to worksheet / go to grading	**Length of Mains (Lm)**	This value was obtained from Dan Campbell for the City's 2018 AWWA water audit, and the same value was used for 2022. This is the length of mains for the treated water system.	
go to worksheet / go to grading	**Number of Service Connections (Nc)**	Data were obtained from Geneva Trujillo at the City of Raton.	
go to worksheet / go to grading	**Average Length of (private) Customer Service Line (Lp)**	This value was obtained from Dan Campbell for the City's 2018 AWWA water audit, and the same value was used for 2022.	
go to worksheet / go to grading	**Average Operating Pressure (AOP)**	This value was obtained from Dan Campbell for the City's 2018 AWWA water audit, and the same value was used for 2022.	
go to worksheet / go to grading	**Customer Retail Unit Charge (CRUC)**	2022 Customer retail unit cost = $2,581,240.51 (Total CY2022 revenue) / 315,992,000 gal (CY2022 total gallons sold) = $8.17/1,000 gallons. Income from exported water was included in total CY2022 revenue, and exported water volume was included in total volume sold.	Total CY2022 revenue was used in this calculation, not one water rate. This yields a CRUC that is a volume weighted average of all rates.
go to worksheet / go to grading	**Variable Production Cost (VPC)**	CY2022 Production cost (sum of all treatment & power costs) = $110,811.65. Total water supplied = Water suppplied from 2022 AWWA Audit Reporting Worksheet (375.131 MG) + Exported water volume (2.748 MG x 1.01 to account for the meter error estimate of 1% underreporting) = 377.907 MG. Variable production cost = Production cost / Total water supplied (adjusted) = $110,811.65 / 377.907 MG = $293.22/MG.	

AWWA Free Water Audit Software
Water Balance

Water Audit Report for: City of Raton/Raton Water Works
Audit Year: 2022 Jan 01 2022 - Dec 31 2022
Data Validity Tier: Tier III (51-70)

FWAS v6.0

Volume from Own Sources (VOS) (corrected for known errors) 377.907	System Input Volume 377.907	Water Exported (WE) (corrected for known errors) 2.776	Billed Water Exported			Revenue Water (Exported) 2.776
		Water Supplied 375.131	Authorized Consumption 323.083	Billed Authorized Consumption 313.244	Billed Metered Consumption (BMAC) (water exported is removed) 313.244	Revenue Water 313.244
					Billed Unmetered Consumption (BUAC) 0.000	
				Unbilled Authorized Consumption 9.839	Unbilled Metered Consumption (UMAC) 9.056	Non-Revenue Water (NRW) 61.887
					Unbilled Unmetered Consumption (UUAC) 0.783	
			Water Losses 52.048	Apparent Losses 8.144	Systematic Data Handling Errors (SDHE) 0.783	
					Customer Metering Inaccuracies (CMI) 6.578	
					Unauthorized Consumption (UC) 0.783	
Water Imported (WI) (corrected for known errors) 0.000				Real Losses 43.904	Leakage on Transmission and/or Distribution Mains Not broken down	
					Leakage and Overflows at Utility's Storage Tanks Not broken down	
					Leakage on Service Connections Not broken down	

AWWA Free Water Audit Software: Determining Water Loss Standing

FWAS v6.0

Water Audit Report for: City of Raton/Raton Water Works
Audit Year: 2022 Jan 01 2022 - Dec 31 2022
Data Validity Tier: Tier III (51-70)

Water Loss Control Planning Guide

	Water Audit Data Validity Tier (Score Range)				
Functional Focus Area	**Tier I (1-25)**	**Tier II (26-50)**	**Tier III (51-70)**	**Tier IV (71-90)**	**Tier V (91-100)**
Audit Data Collection	Launch auditing and loss control team; address supply metering deficiencies	Analyze business process for customer metering and billing functions and water supply operations; Identify data gaps; improve supply metering	Establish/revise policies and procedures for data collection	Refine data collection practices and establish as routine business process	Annual water audit is a reliable gauge of year-to-year water efficiency standing
Short-term loss control	Research information on leak detection programs; Begin flowcharting analysis of customer billing system	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control and infrastructure monitoring	Refine, enhance or expand ongoing programs based upon economic justification	Stay abreast of improvements in metering, meter reading, billing, leakage management and infrastructure rehabilitation
Long-term loss control		Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement program, new customer billing system or AMR/AMI system	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing or infrastructure management	Continue incremental improvements in short-term and long-term loss control interventions
Target-setting			Establish long-term apparent and real loss reduction goals (+10 year horizon)	Establish mid-range (5 year horizon) apparent and real loss reduction goals	Evaluate and refine loss control goals on a yearly basis
Benchmarking			Preliminary Comparisons - can begin to rely upon with PIs for performance comparisons for real losses	Performance Benchmarking with PIs is meaningful in comparing real loss standing	Identify Best Practices/ Best in class; PIs are very reliable as real loss performance indicators for best in class service

For validity scores of 50 or below, the shaded blocks should not be focus areas until better data validity is achieved.

Appendix C

City of Raton Water Ordinance and Water Rates

DBS&A
a Geo-Logic Company

Lloyd Wakefield

From: KRTN Enchanted Air <krtntraffic@bacavalley.com>
Sent: Thursday, June 20, 2024 2:17 PM
To: Lloyd Wakefield
Subject: Transcription of ad and mp3 attached
Attachments: Raton Water Works.mp3

Hello,
I figured it out yay!

Raton Waterworks, reminding all of us to use our precious resource wisely and to remember that tiny leaks waste thousands of gallons.
A leak of one drop per second equals 192 gallons a month. And a minor toilet leak can waste over 3,000 gallons per month.
And a low-flow toilet can save up to 3 gallons per flush. Taking a five-minute shorter shower saves at least 25 gallons.
And we are in a drought, so use our precious resource wisely. Free water conservation tips are available at the Raton City Hall.
A message from your Raton Waterworks. For Raton Water Works, the 2023 Water Quality Report is now available either at Raton City Hall at 224 Savage Avenue in Raton, or the 2023 Raton Water Works Water Quality Report can be accessed on the City's website at www.ratonenm.gov.

Please let me know if this works for you.
Thank you,

Annetta Martinez
KRTN Traffic/Social Media Specialist

KRTN 93.9 FM/1490 AM
Enchanted Air, Inc.
P.O. Box 638
Raton, NM 87740
575-445-3652
575-445-2911 (fax)

CITY OF RATON WATER BOARD

REGULATION

Pursuant to the Raton Water Board Franchise 1991 – Section 5: Rules and Regulations of the Board, the Raton Water Board has prepared the following **CUSTOMER'S WATER LEAK POLICY – 2000.**

CUSTOMER'S WATER LEAK POLICY – 2000

Water leaks occur on the customer's side of water meters from time to time. These leaks cause a high water bill and can increase the annual sewer average for residential customers. Commercial customers will experience a higher than normal monthly sewer bill, as well as a higher water bill.

These leaks occur in the customer's plumbing, which is not within the responsibility of the Raton Water Works.

However, the Raton Water Board wishes to continue to assist its customers in overage charges.

Now, therefore, the leak policy shall be structured as follows:

DEFINITIONS:

"Normal usage" – that usage deemed to be typical for a given month based on the previous 3 month usage or the same 3 month period for the previous year if more recent history is unavailable. If either period is not representative, records of similar accounts or other information will be used to determine "normal usage".

"Overage" – that usage which exceeds the "normal usage".

"Usage" – the amount of water used – passing through the customer's meter.

POLICY

A credit will be given to those customers for whom a leak is detected and repaired in the amount of one-half the overage, however the customer's bill shall not exceed four times their normal usage water.

In the case of residential customers, the sewer average will be reduced to the average of "normal usage", if the leak occurred during winter sewer averaging.

In no case will credits be given to any customer for leaks which continue beyond the initial billing period when the customer was first aware of the leak. The maximum affected time period will be two consecutive billing cycles. This credit requires immediate repair of the leak.

PASSED, APPROVED AND ADOPTED THIS 18th day of FEBRUARY, 2000

James T Rogers
CHAIRMAN, RATON WATER BOARD

Filed with the City Clerk this 22nd day of February 2000.

CITY CLERK

WATER RATES
EFFECTIVE JULY 1, 2024

MUNICIPAL RESIDENTIAL

FIXED CHARGE PER METER	$14.50	PER MONTH (NO MIN GAL.)
WATER USED 0 TO 25,000	$2.820	PER THOUSAND GALLONS
WATER USED 25,000 & OVER	$3.288	PER THOUSAND GALLONS

RURAL RESIDENTIAL AND AGRICULTURE

FIXED CHARGE PER METER	$15.30	PER MONTH (NO MIN GAL.)
WATER USED 0 TO 25,000	$5.209	PER THOUSAND GALLONS
WATER USED 25,000 & OVER	$5.676	PER THOUSAND GALLONS

URBAN COMMERICAL

FIXED CHARGE PER METER	$16.60	PER MONTH (NO MIN GAL.)
WATER USED	$3.843	PER THOUSAND GALLONS

URBAN COMMERICAL-MULTI DWELLING

FIXED CHARGE PER METER	$16.60	PER MONTH (NO MIN GAL.)
FIXED CHARGE FOR EACH UNIT	$9.50	PER MONTH (NO MIN GAL.)
WATER USED	$3.843	PER THOUSAND GALLONS

RURAL COMMERICAL

FIXED CHARGE PER METER	$16.60	PER MONTH (NO MIN GAL.)
WATER USED	$5.662	PER THOUSAND GALLONS

RURAL COMMERICAL-MULTI DWELLING

FIXED CHARGE PER METER	$16.60	PER MONTH (NO MIN GAL.)
FIXED CHARGE FOR EACH UNIT	$9.50	PER MONTH (NO MIN GAL.)
WATER USED	$5.662	PER THOUSAND GALLONS

SEWER RATES
EFFECTIVE JULY 1, 2024

RESIDENTIAL

FIXED CHARGE PER SERVICE	$12.50	BASED UPON AVERAGE OF
1,000 GALLONS BILLED WATER	$2.728	CUSTOMERS WATER BILL FOR DEC. JAN. AND FEB.

URBAN COMMERCIAL

FIXED CHARGE PER SERVICE	$14.50	PER DWELLING/UNIT SPACE
1,000 GALLONS BILLED WATER	$2.728	BASED ON MONTHLY WATER USAGE

RURAL COMMERCIAL

FIXED CHARGE PER SERVICE	$19.50	PER DWELLING/UNIT SPACE
1,000 GALLONS BILLED WATER	$4.879	BASED ON MONTHLY WATER USAGE

MULTI UNIT COMMERCIAL

FIXED CHARGE PER SERVICE	$14.50	PER DWELLING UNIT
EACH ADDITIONAL UNIT SPACE	$14.50	
1,000 GALLONS BILLED WATER	$2.728	