Jean Water System

WATER CONSERVATION PLAN

June 2011

OVERVIEW

The Las Vegas Valley Water District (LVVWD) acquired the Jean Water System in 1985. As owner, LVVWD is responsible for the maintenance and operation of the water system.

While there are no residents in Jean, 2010 Clark County population estimates indicate a population of 127 in the "special places and groups" category, which refers to residences such as nursing homes, hospitals or correctional facilities. It is assumed that the population of 127 refers to the estimated average population of the Jean Conservation Camp, a nearby low security correctional facility.

Physical Setting

Jean is an unincorporated town administered by Clark County and is located approximately 30 miles south of Las Vegas and 12 miles north of the Nevada-California state line along Interstate 15.

Climate

Jean experiences a desert climate with hot summers and cool winters. Summer temperatures generally stay in the 90s, while winter temperatures remain around the 40s. The area averages more than 290 days of sunshine and approximately 9 inches of precipitation per year.

Water Sources

The Jean Water System service area is supplied by groundwater from the Ivanpah Valley aquifer, which is recharged from the southern end of the Spring Mountains and the New York Mountains.

Water System

The Jean Water System is divided into a potable water system and a non-potable water system and is supplied by four groundwater wells (Table 1). The water from these wells is blended together before distribution.

The system serves 31 accounts in the community. The majority of accounts are commercial and include the Gold Strike Hotel; the Jean Conservation Camp; the Letica Corporation, a manufacturer of paper and plastic packaging materials; the Las Vegas Rock quarry; and the Jean Sport Aviation Center.

Table 1. Jean Well System

Well Name	Depth (feet)	Year Constructed	Capacity (gpm)	Purpose
State Well (J-2)	857	1982	125	Potable system
Gold Strike Well (J-3)	1,282	1988	125	Potable system
Midway Well (J-4)	1,881	1990	500	Potable system
J-7	670	2008	200	Non-potable system

Conservation

Groundwater is the sole natural resource used to meet water demands in Jean. Methods critical to managing and extending this resource include water conservation, prudent land use practices and a sustainable development approach. Conservation provides an additional resource by freeing up water that was previously consumed inefficiently or wasted.

To this end, LVVWD Service Rules, which apply to Jean, allow LVVWD to reject, rescind, reduce or terminate current or proposed uses of water where such uses:

a) Are contrary to the LVVWD's obligation to ensure reasonable use including, but not limited to, compliance with rules for water efficiency, drought, conservation and the use of non-potable water for irrigation.
b) May encumber or impair the LVVWD's ability to maintain an adequate level of service to other customers.
c) Compromise public health, welfare or safety due to circumstances that limit the available water supply to the Jean Water System.

Also, Jean is located within the unincorporated areas of Clark County and is subject to the following ordinances:

Chapter 24.30 - Waste of water from public water system
Chapter 24.34 – Water use restrictions
Title 30 – Comprehensive development code
Title 30 – Turf limitations.

All Jean Water System customers have a water meter. All meters are functioning with minimal maintenance. Water meters help identify customer water use, volumes and patterns. This information provides a valuable tool in helping to plan future infrastructure needs for the area as well in identifying system leaks and losses.

The LVVWD has recently installed a FIREFLY Automatic Meter Reading System to all existing water meters. This system can assist in identifying water leaks or water loss at the water user's location, and can quantify overall water loss in the water system by comparing production quantities with end user quantities.

Water rates in Jean are based on a tiered system to encourage conservation. The first tier, which charges $1.16 per thousand gallons for the first 5,000 gallons of water used, represents indoor usage for most customers. The rate for the remaining 3 tiers increases by at least a dollar per thousand gallons.

Conservation Effectiveness Measures

The "gallons per capita per day" (GPCD) metric is used by some communities to measure water consumption and as a general means of establishing conservation goals and water-use benchmarks for tracking purposes. A variety of factors influence per capita use, including climate, demographics, building density, and local business or industrial water use. Jean's total system GPCD is calculated by first dividing total annual potable and non-potable usage by the estimated population (127), then dividing by the days in a year (365).

For baseline purposes, Table 2 provides the current estimated GPCD for the Jean Water System.

Table 2. Jean Water System – Total System GPCD

Year	Usage	Population	Days	GPCD
2010	90,530,000	127	365	1,952

Two main challenges exist in calculating a usable GPCD for conservation purposes in Jean. First, population estimates for Jean vary depending on the methodology used. By some accounts, town population is based on the average population of the Jean Conservation Camp, which changes frequently. By another method, population is measured by the number of people with post office box addresses in Jean, which includes people in the neighboring communities of Sandy Valley and Goodsprings that receive water from other sources. The population estimate used for this plan is taken from the 2010 Clark County estimate of 127 residents, but the actual number could vary, thus affecting the resulting GPCD. It should also be noted that, considering the amount of water consumed by the commercial customers and the small population considered, Jean's GPCD water use will always seem relatively high.

Also, because of aging infrastructure, a certain degree of system loss occurs. This has a significant influence on estimated GPCD, which, in conjunction with the variances in population data, creates greater uncertainty when using the GPCD in Table 2 as a benchmark for tracking overall performance of established conservation goals. Upgraded infrastructure and recent installation of more efficient meter reading technology has decreased the amount of unaccounted for water that the system currently experiences and is providing a more accurate GPCD for the system going forward.

The LVVWD maintains water pumping and consumption records for the Jean Water System, which are retrieved through the LVVWD's Supervisory Control and Data Acquisition (SCADA) system. SCADA provides reliable, real-time, high speed communications over wide areas. The system monitors data from various sensors throughout the system and transmits real-time data back to the LVVWD for analysis and review. Using baseline and post-implementation data, the LVVWD will calculate water conservation estimates, which will be used to measure effectiveness. Historic water use data can be found in Table 3.

Table 3. Jean Annual Consumption

Year	Total (million gallons)	Population	GPCD
2005	149.17	276	1,480
2006	144.48	282	1,404
2007	137.98	855	442
2008	98.11	216	1,244
2009	87.78	180	1,336
2010	90.53	127	1,952

Public Notice

Due to the general absence of full-time residents and/or a Town Advisory Board, all customers were notified by mail that a draft Jean Conservation Plan was available for review online at the LVVWD website, as well as at the LVVWD offices and the Goodsprings Justice

Court. They were also provided with contact information if they wished to provide public comment.

Once finalized, the Jean Water Conservation Plan will be available for inspection during office hours at the Goodsprings Justice Court and the Las Vegas Valley Water District's main offices at 1001 South Valley View Blvd., Las Vegas, NV 89107. The Plan also will be posted on LVVWD's website at http://www.lvvwd.com to be viewed at any time.

CONSERVATION PLAN

At a minimum, the LVVWD will use the following measures to aid in water conservation for Jean.

Perform Indoor Water Audit Surveys on high water users [25 GPCD].
Indoor and outdoor water use audits have been conducted with three commercial customers in Jean whose water consumption equals 92 percent of the area's overall water use. Audit results will be provided to these customers as tools for identifying leaks and high water use areas.

Table 4 below details the properties that were audited, the recommendations made and the potential water savings that could come from implementing recommended measures.

Table 4. Water Audit Recommendations

Property	Recommendation	Estimated Savings (GPY)	GPCD
Letica Corporation	Toilet upgrade	7,508	.16
	Lavatory faucet upgrade	6,286	.14
Correctional Center	Update restroom faucet aerator	48,620	1
Gold Strike Hotel	Toilet upgrade	562,405	12
	Replace faucet aerators	534,561	11.53
	Estimated total savings	**1,159,380**	**25**

Encourage replacement of ornamental turf with drought tolerant landscaping [6 GPCD]
Drought tolerant landscaping (xeriscape), is a practical low-water use alternative to traditional turfgrass in the Mojave Desert when such grass is generally used for ornamental purposes. For each square-foot of maintained turfgrass converted to drought tolerant landscaping, an estimated 55.8 gallons of water could be conserved each year. Such landscaping would also be more resistant to short-term cessation of irrigation in the event of a water shortage.

Develop *Water Watch* Newsletter for Jean [1 GPCD]
LVVWD currently publishes quarterly newsletters for all outlying water systems to educate customers on system-specific conservation issues and techniques. A similar newsletter will be developed and provided to Jean customers.

Encourage the use of Smart Controllers and rain sensors [1 GPCD]
Watering during rainy periods can give a landscape more water than it needs, causing soil over-saturation and wasteful runoff. By turning off the sprinklers on days surrounding a heavy

rain, customers can save approximately 500 gallons of water in one day. Water "smart" irrigation controllers automatically adjust watering schedules based upon water conditions. These controllers use sensors and weather information to manage watering times and frequency. As environmental conditions change, the controller increases or decreases watering frequency. Smart controllers reduce outdoor water use by an average of 15 to 30 percent.

WATER SHORTAGE CONTINGENCY

In the event of a continued and sustained drought where water levels within the Jean wells reach depths that are critically low, the LVVWD will focus on reducing non-essential uses and waste, including limiting highly visible uses of water even if they produce nominal efficiency gains. The following specific measures are potential options for Jean's use in the event of a drought emergency.

Mandatory Watering Restrictions
Implementing additional appropriate watering restrictions that would limit or prohibit landscape watering to preserve system supplies and reduce operational demands on the system's wells. The nature and duration of the restrictions would be dictated by the situation.

Drought Surcharge
Drought surcharges are temporary pricing measures intended to encourage reductions in water consumption during drought conditions. Drought surcharges are a pricing strategy based on the economic law of demand that states as the price of a resource increases, the demand for the resource decreases, thereby balancing resources with customer demands. The LVVWD could implement a drought surcharge, which could be modified as needed based upon the community's performance in meeting water demand reduction goals.

IMPLEMENTATION STEPS

As the owner and operator of the Jean Water System, the LVVWD is committed to conservation and sustainability as part of its strategic planning process. Due to limited outdoor water use in the Jean area, indoor water conservation is the principal focus of the Jean Water Conservation Plan.

It is expected that water savings will be achieved by continuing to identify and minimize unaccounted water loss in the system. Efforts to identify and replace older infrastructure and technologies in the water system are ongoing. However, given the small customer base from which costs must be recovered, any schedule for replacing older infrastructure in the Jean Water System will remain entirely dependent on securing grant funding for the necessary improvements. Until then, general customer education and outreach will be ongoing.

IMPLEMENTATION TIMELINE

Conservation Measure	Anticipated Completion
Water audits on high water users	3 months
Encourage turf replacement	Ongoing
Distribution of *Water Watch* newsletter	Ongoing
Water Smart Controllers	Ongoing