

6 Public Utilities

The Public Utilities Element addresses the planning, provision, and maintenance of water, wastewater, solid waste systems, and other facilities operated by the City. Additionally, it addresses water reuse, conservation and waste recycling measures as required under State Law.

The City of Lemoore Public Works Department (PWD) is responsible for providing water, wastewater, stormwater, and refuse services to residents. The Kings Waste and Recycling Authority (KWRA) is responsible for solid waste and hazardous waste disposal and carries out its duties with assistance from the City's PWD collection.

6.1 WATER SUPPLY

Lemoore is located in the Tulare Lake Hydrologic Region and extracts ground water from the Tulare Lake Sub-basin to meet all of the City's water supply. The shallowest groundwater aquifers range from three to seven feet below the land surface. Water is taken from underground aquifers via ten active groundwater wells, six of which are located within the Planning Area (**Figure 6-1**). The other four are located in an 80 acre well field five miles north of the City. Currently, these wells have a combined capacity of approximately 19.2 million gallons per day (mgd) and a firm capacity of 15.9 mgd¹.

Water is conveyed from the wells to four above-ground storage reservoirs/tanks with a total capacity of 4.4 million gallons and delivered to consumers via a distribution pipe system. The City's main water storage and distribution plant is located on G Street west of Lemoore Avenue. In addition to the main domestic water supply system, the City operates a separate water system to supply industrial water to the SK Foods tomato processing plant. The two

¹ Firm Capacity is defined as the total capacity less one of the largest wells out of service.

water systems are separated, but can be connected in an emergency, such as a major fire or natural disaster.

Water quality has been a continuing concern due to the existence of water discoloration and hydrogen sulfide produced in various in-town wells. Wells located in the north well field have higher arsenic concentrations than wells in town. The PWD is able to address these concerns through blending water from different wells and by treating with hypochlorite systems.

Water Source and Water Production

The amount of groundwater pumped from city wells has been increased steadily over the years to meet population growth demands. As shown in Table 6.1, the City produced approximately 1,917 million gallons or 5,885 acre-feet of water in 2002. Four years later, water production was increased to 2,301 million gallons or 7,064 acre-feet. Anticipating future demand is part of the City’s water management program.

According to the Department of Water Resources, the Tulare Lake Subbasin total storage capacity is estimated to be 17,100,000 acre feet to a depth of 300 feet, and 82,500,000 acre feet to the base of fresh groundwater. The Department’s Water Plan Update Bulletin 118 states that the overall water level in the subbasin declined nearly 17 feet from 1970 through 2000, with frequent periods of steep declines and rises.² Fluctuations are more pronounced nearer the Tulare Lake area, down-gradient from Lemoore.

Table 6.1 Water Production, 1996–2006

<i>Year</i>	<i>Water Pumped (million gallons)</i>	<i>Acre feet</i>
1996	1,528	4,690.9
1997	1,535	4,712.4
1998	1,389	4,264.2
1999	1,571	4,822.9
2000	1,612	4,948.8
2001	1,668	5,120.7
2002	1,917	5,885.1
2003	2,294	7,042.5
2004	2,185	6,707.9
2005	2,249	6,904.4
2006	2,301	7,064.0

1 million gallons is equivalent to 3.07 acre feet

Source: City of Lemoore Public Works Department, 2007.

The two major industrial operations in the City, SK Foods and Leprino Foods, are estimated to be responsible for between 15 and 20 percent of the total water demand. Over time, however, it is expected that the percentage share of the total water supply consumed by SK Foods and Leprino Foods will fall as the percentage share consumed by the rest of the community increases with growth in population.

² Department of Water Resources Bulletin 118 , Jan 2006

Figure 6-1 Water and Wastewater Facilities and Resources

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Canal Companies

Although not a district or public agency, the Lemoore Canal and Irrigation Company and the John Heinlen Water Company own, maintain, and operate surface water canals near and within the City of Lemoore. The activities of these companies indirectly affect groundwater levels and usage in the Lemoore area. The City maintains a minor share of the Lemoore Canal and Irrigation Company which allows it to discharge stormwater into its canals for transport to NRCS wetlands and other agriculture areas. Additionally, this ownership gives the City water rights for irrigation of the municipal golf course.

Kings County Water District

The Kings County Water District (KCWD) manages surface water supply east of the City and groundwater directly upgradient of the Planning Area. It is a legal entity formed to provide water management in the northeast portion of Kings County. Since 1954, the KCWD has monitored groundwater levels, implemented programs to recharge basins, conserve water, increase water supply, and prevent water waste in the County.

Laguna Irrigation District

The Laguna Irrigation District (LID) is located up-gradient of the Planning Area. The City has an agreement with LID to preserve ground water. Among the major elements of the agreement are:

- An agreement to limit the City's pumping from the well field to an average of 3,380 acre-feet per year (the 1994 base year amount). Pumping may increase in any one year to 3,700 acre-feet;
- Constraints on increasing pipeline capacity between the City and the well field by building a second transmission line;
- A prohibition of additional wells in or near the well field; and
- Setup of a jointly held fund, to be used to purchase recharge water.



The Lemoore Canal Company conducts yearly dredging to maintain the Lemoore Canal.



A water storage tank near West Hills College.

PROJECTED WATER DEMAND

According to the 2005 Urban Water Management Plan, the City’s 2005 maximum day demand is approximately 12.8 mgd. This is well within the current supply capacity of 19.2 mgd. Assuming that the current demands of SK Foods and Leprino Foods remain constant, the well supply is sufficient to meet city needs. As the City grows in accord with General Plan projections, however, demand will exceed the supply available from existing wells. Since Lemoore is not located within an adjudicated water basin, there is no restriction on the number of wells Lemoore may drill inside the City. The challenges facing City water management today are not so much related to water quantity as water quality maintenance.

Table 6.2 Current and Projected Water Demand

	2006	2015	2030
Population ¹	23,390	30,050	48,250
Average Day Demand (mgd) ²	6.3	7.3	10.5
Maximum Day Demand (mgd) ³	12.8	15.5	23.5

mgd = million gallons per day

¹ Population at year 2030 is based on full buildout of the General Plan.

² Using per capita consumption of 175 gallons per day Average Day Demand with an addition of 2,033,000 gallons per day consumption for SK Foods and Leprino Foods.

³ Using per capita consumption of 440 gallons per day Maximum Day Demand with an additional 2,278,000 gallons per day consumption for SK Foods and Leprino Foods.

Source: City of Lemoore Urban Water Management Plan 2005. City of Lemoore, 2007.

WATER QUALITY

The EPA and the State Department of Health Services have recently tightened the requirement for arsenic content in drinking water from 50 micrograms per liter (µg/L) to 10 µg/L. The City has until February, 2009 to meet the new limit.

The City is modifying its water supply and distribution system to meet the new water quality standard. Water drawn from north wellfield wells has historically exceeded this lower limit. The City is obligated by a stipulated agreement with an irrigation district to keep the total production from the north wellfield to an average of 3,380 acre feet per year.

As the City grew, it became necessary to supplement water supply from the north wellfield with water drawn from wells within the city. Water from city wells has an arsenic content less than 10 µg/L but is of somewhat lower quality in color and taste. To accommodate continued growth while meeting arsenic standards, the City has undertaken several steps after determining that treatment of the north wellfield supply was not economically feasible:

- Drilling a “substitute” well in the north wellfield designed to draw from lower-arsenic strata, albeit with lower production capacity;
- Planning for modification of an existing north wellfield well to reduce arsenic concentrations in its produced water;
- Planning for the construction of additional deep wells in the southwest area of the City, an area in which low-arsenic water production has resulted in new wells; and

- Authorizing funding and design for a cross-town transmission main to enable the entire community to be served by southwest area wells.

Implementation of the above mentioned steps will assure that the long-term supply of groundwater will meet EPA and State water quality standards. The City continues to evaluate surface water as an alternative or to supplement ground water in cooperation with other local water agencies and the NAS Lemoore.

WATER CONSERVATION



City ordinances currently limit the watering of lawns to certain days of the week to conserve water.

The City of Lemoore has a Water Conservation Ordinance implemented by the Public Works Department to conserve water use in residential areas. The ordinance limits the watering of lawns to specific days of the week, depending on street address, and requires water meters on all new services, residential, commercial, and industrial. In addition, the City regularly participates in educating the public on water conservation, such as providing tips on the efficient use of water, or assistance in replacing ultra low-flush toilets in older homes. [The City is a member of the Kings County Water Education

Committee.] Recently, the PWD has hired a part-time water enforcement officer that notifies persons regarding excessive water usage (e.g., water in the streets).

WATER RECYCLING AND REUSE

The overall health of the local groundwater subbasin, from which the City pumps its water, has shown some consistent trends since the late 1950's. Data from City wells show that there has been a consistent decline of 0.5 feet per year in groundwater levels in the semi-confined aquifer (below the "A" Clay) and no decline in levels in the confined aquifer below the ("E" Clay). The City utilizes water comprising approximately 0.14 percent of total basin storage capacity each year, and this percentage is anticipated to increase to 0.19 percent by the year 2010 if current trends continue. There was no change in the historic levels of the deep aquifers of the subbasin attributable to the construction and operation of the City's wells; the City's continued use of their wells is not projected to cause a decline in water levels in the portion of the groundwater basin below the "E" Clay.

Groundwater recharge of the deep, confined, aquifers tapped by City wells is primarily from up-basin stream recharge, from deep percolation of applied irrigation waters and from up-basin snow runoff and rainfall.

Effluent from the combined domestic and SK Foods waste discharges to the City's wastewater plant is conveyed via a 6-mile pipeline to the Westlake Canal. The recycled water is then used to supplement irrigation of about 50,000 acres of animal feed grains and cotton on Westlake Farms. Discharge to Westlake Canal in 2004 was approximately 25 percent of the water utilized by domestic consumers and SK Foods.

SK Foods, a tomato products processing facility, discharges approximately 75 percent of its total annual water usage directly to agricultural land previously supplied by groundwater and surface water entitlements for crop irrigation. The balance of the industry's effluent is discharged to the City's wastewater treatment and recycling facility. Thus essentially 100 percent of the industry's water usage is recycled.

Leprino treats its process wastes before discharging them to the downstream end of the City's wastewater treatment facilities. That treated waste, approximately 2 million gallons per day, is transported through the City's 30-inch outfall line to the Westlake Farms' irrigated agriculture. In excess of 50 percent of the industry's water usage is recycled, the balance being evaporated in the cheese production process.

It is anticipated that the effluent recycled by SK Foods and Leprino Foods will remain constant or increase slightly during the planning horizon. The City's recycled domestic effluent will increase proportionate to anticipated population growth, essentially doubling during the planning period (through 2025).

The effectiveness of the existing and projected agricultural irrigation recycling program precludes the necessity of evaluating other recycling programs such as dual distribution systems. The two major industries, as cost-saving measures, fully recycle and multi-use water within their plants prior to discharge and will continue to do so.

GUIDING POLICIES

- PU-G-1 Maintain and enhance water resources to ensure that Lemoore has an adequate, affordable, water supply to sustain the City's quality of life and support existing and future development—without jeopardizing water supply for future generations.*
- PU-G-2 Conserve water through supply-side efficiencies and water conservation programs.*

IMPLEMENTING ACTIONS

Water Supply Management

- PU-I-1** Update the City's Urban Water Management Plan every five years and ensure its contents are consistent with the California Water Code and General Plan policies, including prioritization and identification of funding sources.
- PU-I-2** Provide and maintain a system of water supply distribution facilities capable of meeting existing and future daily and peak demands, including fire flow requirements, in a timely and cost effective manner.
- PU-I-3** Monitor the demands on the water system and, as necessary, manage development to mitigate impacts and/or facilitate improvements to the water supply and distribution systems.
- PU-I-4** Continue to support the Laguna Irrigation District's ground water recharging (water banking) efforts, in consultation with the State Department of Water Resources and county water management authorities.

Water banking is a technique where water that is not immediately needed is stored – typically in underground aquifers – for future use. The Laguna Water District currently stores excess water from the Kings River.

Land Use/New Development

PU-I-5 Require that necessary water supply infrastructure and storage facilities are in place concurrently with new development, and approve development plans only when a dependable and adequate water supply for the development is assured.

PU-I-6 Require water meters in all new development.

PU-I-7 Require all major new development projects with more than 200,000 square feet of floor area overall to have a water management plan, in accordance with State law:

- Large projects will be required to submit planting plans, irrigation plans, schedules, and water use estimates for City approval prior to issuance of building permits;
- Industrial projects will be required to submit water recycling plans and irrigation plans for proposed landscaping.

Pursuant to policies under Water Conservation in Chapter 7: Conservation and Open Space, the City will establish water conservation standards and guidelines so that conservation efforts are addressed early in the design process. This requirement will apply to development where the total floor area would exceed 200,000 square feet.

PU-I-8 Require water bubblers for street trees, separate from surface irrigation used for turf.

PU-I-9 Promote the use of evapotranspiration (ET) water systems in irrigating large parks and large landscaped areas.

ET water systems are “smart water systems” that can be programmed with data such as the type of soil, slope of landscape, type of vegetation, and daily weather conditions, so that they can automatically adjust irrigation schedules based on those conditions. The result is lower water bills and a healthier environment.

PU-I-10 Require that developers of agricultural land to be annexed to the City offer the water rights associated with this land to the City.

New Water Sources

PU-I-11 Revise regulations to allow the safe use of reclaimed water (“gray water”) by homes and businesses where feasible. Examples of areas where “gray water” might be safely used include:

- Irrigation of parks and residential yards, and irrigation for farming;
- Cooling towers and HVAC systems in commercial or industrial buildings; and
- Water cisterns in flush toilets.

Generally, a gray water system consists of an underground surge tank, with a filtration system, a pump, and associated pipework. The type of gray water system appropriate for individual sites will be determined on the basis of location, soil type, ground water level, and building use. Title 24, part 5 of the California Administration Code has established standards, specifications, and procedure for estimating discharge to and from different gray water systems.

- PU-I-12 Establish and implement a program of cooperative surface water use with local water purveyors and irrigation districts to retain surface water rights and supply following annexation and urban development so as to protect against aquifer overdrafts and water quality degradation.
- PU-I-13 Promote the continued use of surface water for agriculture to reduce groundwater table reductions.
- PU-I-14 Drill additional wells within the City when other water supply alternatives are not feasible and demand warrants their development.

This policy is consistent with the 2005 Urban Water Management Plan.

See *Chapter 7: Conservation and Open Space* for policies related to water conservation and groundwater quality.

6.2 WASTEWATER TREATMENT SYSTEMS

The City Public Works Department is responsible for planning and managing sanitary sewer service in Lemoore. The waste water treatment plant (WWTP) consists of four lagoons with floating surface aerators. The existing facility has a maximum capacity of 4.5 mgd. Domestic waste is collected from all development within the city via a network of sanitary sewer collection pipelines, treated at the WWTP, and discharged via a 6-mile pipeline to the Westlake Canal. The treated effluent is then used to supplement irrigation of about 50,000 acres of animal feed grains and cotton on Westlake Farms.

Average influent flow was 4.0 mgd in 2006, with higher flows occurring during winter rainstorms. Of this 4.0 mgd, Leprino Foods accounts for approximately 2.0 mgd. Leprino Foods is currently upgrading their treatment facility. When this upgrade is completed, in 2008, influent flow to Lemoore's WWTP will be reduced by nearly half.

Thus, average influent flow to serve development in accord with the General Plan is projected to drop to 3.1 mgd in 2015, and then rise to 6.3 mgd in 2030 (see **Table 6.3**). The existing headworks will need to be upgraded between year 2015 and 2030 and treatment facilities must be expanded or replaced with discharge requirement-compliant facilities which can handle increased influent volumes. New trunk lines and sewer subsystems must be planned in areas of the city where growth is expected to occur. Such improvements will be funded through wastewater impact fees as well as increased sewer rates.

The City faces the dual challenge of needing to treat increased wastewater flows to Regional Water Quality Control Board standards and the possibility of not being able to continue Westlake Canal discharge on a long-term basis. The City has received Economic Development Administration funding to study possible land disposal options.

Table 6.3 Current and Projected Wastewater Treatment Needs

	2006	2015	2030
Population ¹	23,390	30,050	48,250
Average Influent (mgd) ²	4.0	3.1	6.3

mgd = million gallons per day

¹ Population at year 2030 is based on full buildout of the General Plan.

² Assuming per capita use remains constant as 2006 rate and taking into account the reduction of influent flow by 2.0mgd when Leprino Foods begin to fully treat their own sewerage.

Source: City of Lemoore Sanitary Sewer Collection System Master Plan, 2001; Dyett & Bhatia, 2007.

GUIDING POLICY

PU-G-3 Ensure that adequate wastewater collection, treatment, and disposal facilities are provided in a timely fashion to serve existing and future needs of the City.

IMPLEMENTING ACTIONS

- PU-I-15 Maintain existing levels of wastewater service by expanding treatment plant and disposal facilities as required by growth and by the Regional Water Quality Control Board.
- PU-I-16 Update the Wastewater Master Plan by 2010 and construct planned facilities to serve development under this General Plan.
- PU-I-17 Establish impact fees and sewer rates adequate to finance required wastewater treatment and disposal facilities upgrades or replacements.

6.3 SOLID WASTE MANAGEMENT AND RECYCLING

Solid waste disposal for Lemoore is managed by Kings Waste and Recycling Authority (KWRA). The City's PWD Refuse Division is responsible for solid waste collection services. The majority of the City's solid waste is taken to Kettleman Hills Landfill Facility, a Class II/III facility owned by Chemical Waste Management (CWMI). The facility is located south of Lemoore, has a capacity of 4.2 million cubic yards, and is 55 percent full as of June 2005. KWRA is currently studying the future needs of solid waste services including building a new landfill to be operated by CWMI near the existing site. The County has a 25-year contract with CWMI to handle its solid waste until 2023.

Lemoore has had a "green" waste service since 1999, for grass clippings, weeds, leaves, wood (without nails, glue, or paint), plant material and saw dust; in 2006 the City added a "blue" waste service for recyclables such as empty plastic containers, glass, aluminum, newspaper, and cardboard. In addition, e-waste and used-oil are collected at the City Corporation Yard. Table 6.4 illustrates solid waste diversion rates from 1997-2005 for Kings County.

Table 6.4 Kings County Solid Waste Diversion Rates (1998 - 2005)

Year	Recycling or Waste Reuse Rate (percentage of total waste)
1998	37
1999	45
2000	49
2001	48
2002	47
2003	46
2004	50
2005 ¹	44

¹ Rates calculated with preliminary data. Preliminary data is subject to change during the Board review process or when a jurisdiction submits updated information.

Source: Consolidated Waste Management Authority, *Waste Stream Information Profiles*
<http://www.ciwmb.ca.gov/Profiles/>, 2006.

GUIDING POLICIES

PU-G-4 *Manage solid waste such that City needs are met, opportunities for waste reduction and recycling are maximized, and the best possible service is provided to the citizens and businesses of Lemoore.*

IMPLEMENTING ACTIONS

PU-I-18 Adopt standards and screening criteria for refuse collection and recycling areas in commercial, industrial and multi-family residential buildings.
These requirements will apply to new development and to major alterations and additions.

PU-I-19 Continue to require property owners to provide recycling containers in refuse collection areas that are within buildings or screened so as not to be visible from public streets and residential neighborhoods.

PU-I-20 Reduce waste production by using post-consumer recycled paper and other recycled materials in all City operations.

PU-I-21 Implement programs to reduce waste at home and in businesses through public education efforts that use many different forms of communication.
Avenues of communication of waste reduction and conservation messages may include advertisements in local newspapers, radio advertisements, large flashy stickers on public refuse bins, articles on the City website or in the City newsletter, or posters in retail establishments that sell recyclable products.

PU-I-22 Amend local ordinances to further support KWRA requirements for proper handling and storage of solid waste and recyclables and diversion of solid waste from landfills.
The Kings Waste Recycling Authority has lead responsibility for this program.

- PU-I-23 Explore ways to provide financial incentives for recycling by reducing the cost for recycling and increasing the cost for garbage disposal.
- PU-I-24 Actively promote reuse by supporting existing and future swap meets, flea markets and consignment/second-hand shops and providing information on donation pick-up or drop off locations, as well as other waste reduction programs, on the City website.
- Although recycling is generally the focus of most local waste management programs, reusing discarded materials is actually the best method of waste reduction because it conserves more of the article's inherent structure and value, as well as the energy that produced it. Examples of reusable goods include furniture, clothing, business supplies and equipment, sinks, lighting fixtures, and building materials. The City already holds a monthly community swap meet in the summertime to encourage these reuse practices.*
- PU-I-25 Help the College and local schools to recycle by including them in curbside recycling programs and by encouraging them to teach about recycling and waste reduction.
- Recycling can benefit student activity funds and help the school district cut disposal costs. A number of lesson plans have been developed throughout the country and are available for use by school districts. A comprehensive reference list of solid waste education materials for youth, as well as a video list, is available from the Cornell Waste Management Institute.*

6.4 ELECTRICITY AND GAS

The City of Lemoore belongs to the San Joaquin Valley Power Authority, which was formed in November 2006 to develop and conduct electricity-related programs for the region. The San Joaquin Valley Power Authority is governed by a 12-member board of directors, representing each of the 12 participating local public agencies. The executive board holds positions for a chair, vice chair, secretary and treasurer/auditor. The board meets every fourth Thursday at the office of the Kings River Conservation District.

San Joaquin Valley Power Authority Member Agency List: Kings County, and the cities of Clovis, Corcoran, Dinuba, Kerman, Kingsburg, Lemoore, Hanford, Parlier, Reedley, Selma, and Sanger. The San Joaquin Valley Power Authority is the governing body authorized by *Community Choice*, created by the California legislature in 2002, to provide an opportunity for local government (cities, counties or combinations of cities and counties) to purchase electricity on behalf of their residents and businesses. *Community Choice* is only for the purchase of electricity. The delivery, metering, billing, operation and maintenance of wires and poles remains the responsibility of PG&E within Lemoore.

Under the Authority's *Community Choice* program, the Board will set electrical generation rates for customers within its service area and will purchase power from the Kings River Conservation District. Conservative estimates on rates show a 5 percent savings on generation costs. Residents and businesses within the jurisdictions of these participating municipalities will have the opportunity to participate in this regional energy program. The Authority prepared a *Community Choice Implementation Plan* and received certification by the California Public Utilities Commission on April 30, 2007. It is anticipated that the Power

Authority will begin purchasing electricity in February 2008 to serve City and County jurisdiction loads. In May and August 2008 large and medium commercial properties will be added and in November 2008, residential, small business and agriculture accounts are anticipated to be added. City gas service is provided by the Gas Company.

Policies pertaining to the conservation of energy are included in *Chapter 3: Community Design* and *Chapter 7: Conservation and Open Space*.