



Water Conservation and Emergency Water Management Plan

I. Introduction

This document outlines the Water Conservation and Emergency Water Management Plan for the City of Lewisville, Texas, as approved by the Lewisville City Council on August 30, 1999 and as revised in 2002, 2005, and 2009. This plan is divided into two sections: Water Conservation and Emergency Water Management. The objective of the conservation program is to identify strategies for controlling the consumption of water, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water and for preventing the pollution of water. The emergency water management section addresses procedures for voluntary and mandatory actions to be put into effect to temporarily reduce the demand placed upon the City's water supply system during a water shortage due to drought or other water supply emergency. Water emergency procedures include conservation measures, but may also include the prohibition of certain water uses.

This plan has been developed to meet the requirements of Texas Administrative Code §288.2 Water Conservation Plans for Municipal uses by Public Water Suppliers. The Texas Commission on Environment Quality (TCEQ) requires plans to include the following elements at minimum:

(A) a utility profile in accordance with the Texas Water Use Methodology, information regarding population and customer data, water use data (including total gallons per capita per day (GPCD) and residential GPCD), water supply system data, and wastewater system data;

(B) a record management system which allows for the classification of water sales and uses into the most detailed level of water use data currently available to it, including, if possible, the sectors for residential, single family, multi-family, commercial, institutional, industrial, agricultural, and wholesale;

(C) specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use in total GPCD and residential GPCD;

(D) metering devices within an accuracy of plus or minus 5%;

(E) a program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement;

(F) measures to determine and control water loss such as periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections, or abandoned services;

(G) a program of continuing public education and information regarding water conservation;

(H) a water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water;

(I) a reservoir systems operations plan, if applicable;

(J) a means of implementation and enforcement which shall be evidenced by a copy of the Ordinance, a description of the authority by which the water supplier will implement and enforce the conservation plan; and

(K) documentation of coordination with the regional water planning groups for the service area of the public water supplier in order to ensure consistency with the appropriate approved regional water plans.

Additional Water Conservation Plan content include (A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system; (B) a requirement in every wholesale water supply contract that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements. A combination of conservation strategies may be selected by water suppliers or the Commission may require that specific strategies be implemented, if the commission determines that the strategy is necessary to achieve the goals of the water conservation plan. These strategies include:

(a) conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

(b) the adoption of ordinances, plumbing codes, and/or rules requiring water-conserving plumbing fixtures to be installed in new structures and existing structures undergoing substantial modification or addition;

(c) a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures;

(d) the reuse and/or recycling of wastewater and/or gray water;

(e) a program for pressure control and/or reduction in the distribution system and/or for customer connections;

- (f) a program and/or ordinance(s) for landscape water management;
- (g) a method for monitoring the effectiveness and efficiency of the water conservation plan; and
- (h) any other water conservation practice, method, or technique which the water supplier shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

The water conservation plan must be prepared in accordance with 31 TAC §363.15 (relating to Required Water Conservation Plan) of the Texas Water Development Board and must substantially meet the requirements of this section and other applicable commission rules in accordance with a memorandum of understanding between the Commission and the Texas Water Development Board. The public water supplier for municipal use must review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal must review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.

The City of Lewisville's 2011 Water Distribution System Master Plan found that additional water supplies would be needed to satisfy projected growth. Recent water conservation efforts have focused on public awareness initiatives in addition to internal investigations of infrastructure failures and water losses. The Five Year Strategic Plan on Water Conservation defines water conservation goals for Fiscal Years 2014 – 2019 and presents recommended measures and budgetary efforts to achieve these goals.

II. Planning Area and Project Description

The planning area is the total area within the current city limits of Lewisville, which is approximately 42.3 square miles. In 2008, water supply was approved to a portion of Castle Hills, an unincorporated area located in Denton County, in Lewisville’s ETJ. These efforts includes the total water system owned and operated by the City of Lewisville, which distributes potable water to all water customers within the planning area and a small portion of Castle Hills that contains a low density residential area. Currently, the residential population of Lewisville is approximately 97,140 and the portion of Castle Hills served by the City of Lewisville’s water supply is 2,591.

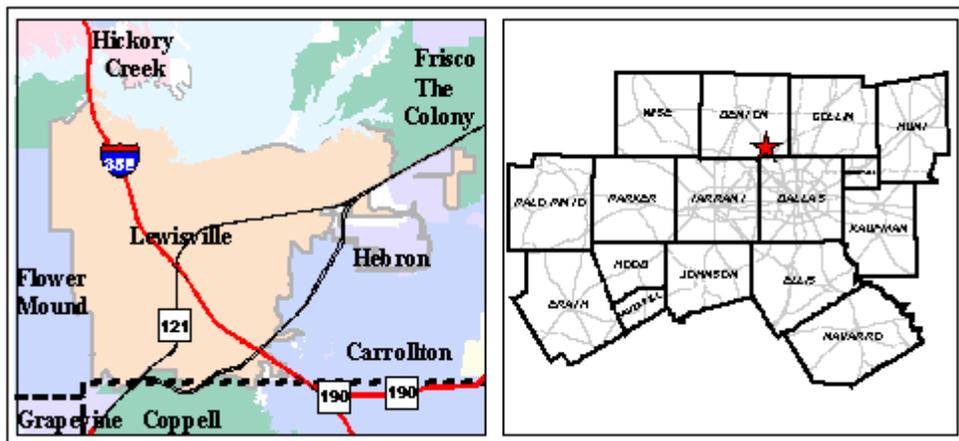


Figure 1: City of Lewisville Location Map
NTCOG

III. Program Goals

Many communities throughout the United States use conservation measures to successfully manage water emergencies or shortages. These efforts manage water supplies and capital intense needs for infrastructure by seeking methods to conserve the municipal water supply. This Plan defines the methods the City of Lewisville intends to use to fulfill this

obligation. The Water Conservation Plan is a combination of strategies for reducing the consumption of water, reducing water loss or waste of water improving or maintaining the efficiency in the use of water or increasing recycling and reuse of water.

The Water Conservation Plan includes:

- **Water Conservation Utility Profile 10218:** The regulation requires specific information regarding population and customer data, water use data, water supply system data, and wastewater system data.
- **Inclusion of 5-year and 10-year Targets and Goals:** Beginning May 1, 2014, the updated Water Conservation Plan contains specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use, in Gallons per Capita Day (GPCD) and residential GPCD.
- **Conservation Plan Schedule:** The Water Conservation Plan includes a schedule for implementing the plan to achieve the identified targets and goals.
- **Methodology for Tracking the Implementation and Effectiveness of the Conservation Plan:** Annual water use will be tracked to provide sufficient information for evaluation of the implementation of the conservation measures. The progress will be evaluated annually towards meeting the targets and goals of the plan.
- **Accurate Metering Devices:** The Texas Commission on Environmental Quality (TCEQ) requires master metering devices with an accuracy of plus or minus 5 percent for measuring water diverted from source supply.
- **Universal Metering, Testing, Repair, and Replacement:** The TCEQ requires that there be a program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement.
- **Leak Detection, Repair, and Control of Unaccounted for Water:** Measures to determine and control unaccounted for water are required. These measures may include periodic visual inspections along distribution lines and monthly and/or annual audits of the water system for illegal connections or abandoned services.
- **Continuing Public Education Program:** TCEQ requires a continuing public education and information program for water conservation.

- **Non-Promotional Rate Structure:** Chapter 288 requires a water rate structure that is not “promotional,” such as increasing block rates, that do not provide volume discounts and do not encourage excessive uses of water,.
- **A Means to Implementation and Enforcement:** A means to implement and enforce the water conservation plan, evidenced by an ordinance, resolution, or tariff and a description of the authority by which the conservation plan is enforced is required in the regulations.
- **Coordination with Regional Water Planning Groups:** The water conservation plan should document the coordination with the Regional Water Planning Group for the service area of the public water supplier to demonstrate consistency with the appropriate approved regional water plan.
- **Additional Conservation Strategies:** Strategies not previously referred to include adoption of ordinances, plumbing codes or rules requiring water-conserving fixtures in existing structures; reuse and/or recycling of wastewater and/or gray water; a program for pressure control and/or reduction in distribution system and/or customer connections; a program and/or ordinance(s) for landscape water management; a method for monitoring the effectiveness and efficiency of the water conservation plan.
- **Update of the Plan:** The public water supplier must review and update its water conservation plan, as necessary, based on an assessment of previous five-year and ten-year targets and any other new or updated information.

IV. Conservation Plan Process

The Water Conservation Plan was developed through a comprehensive approach that included review of numerous water conservation programs, data, literature, state regulations, and the Dallas Water Utilities (DWU) Conservation Plan. As a customer city of Dallas Water Utilities, it is appropriate that many of the goals and measures supported by the City of Dallas be incorporated into the City of Lewisville’s plan. Development of the Water Conservation Plan was also coordinated with other water conservation planning efforts, including the Region C Water Planning Group. Water usage data was reviewed to identify areas to apply conservation efforts. Numerous water conservation strategies were

reviewed and evaluated based on their effectiveness and feasibility to implement during the next five-year period.

V. Plan Elements

Water conservation methods are typically divided into two categories: demand management methods and supply management methods. Demand management methods deal with water use on the downstream side of the customer meter and provide education and incentives to manage water use by the customer. This method of conservation may result in a decrease in water revenues due to decreases in purchased water. Supply management methods deal with the water system upstream of the customer meter and seek to improve efficiency and reduce waste within the production, treatment, and distribution system. Supply management results in decreased costs to the City as water losses in the system are reduced. The City of Lewisville uses a combination of these methods in its Water Conservation Plan.

Element 1: City of Lewisville Water Profile:

The following information has been incorporated from the Texas Water Development Board's Utility Profile and Water Conservation Plan Requirements for Municipal Water Use by Public Water Suppliers (TCEQ Report 10218).

I. POPULATION AND CUSTOMER DATA

A. Population and Service Area Data

1. A copy of the City of Lewisville’s service area is provided as **Attachment 1**.

2. Service area size (square miles)

The City of Lewisville encompasses 42.68 square miles, with a service area of 32.7 square miles. The service area includes the area within the current city limits of Lewisville, as well as the Bright Ranch Property, the Castle Hills Subdivisions and the Lord and Clem Properties. The land owned by the Army Corps of Engineers, which lays in the corporate city limits, where no development will take place, is not included in the service area.

3. Current population of service area: 97,140 City of Lewisville; 2,591 Castle Hills

4. Current population served:

a. Water	97,140 City of Lewisville; 2,591 Castle Hills
b. Wastewater	<u>97,140 City of Lewisville;</u> <u>10,200 Castle Hills</u>

5. Population served by water utility for the previous five years

6. Projected population for service area in the following decades:

Year	Population	Year	Population
2009	95,250	2020	110,002
2010	95,290	2030	122,002
2011	96,450	2040	136,002
2012	97,140	2050	155,002
2013	97,140	2060	176,515

7. Source/method for the calculation of current and projected population:

2009, 2011, 2012 and 2013 population data provided by NCTCOG; the 2010 population estimate is based on the 2010 Census data. Projected populations for the Lewisville service area are based on the 2012 Regional Water Plan Data for Region C.

B. Customer Data

1. Current number of active connections. Multi-family service is counted as Residential _____ or Commercial.

Treated water users:	Metered	Not-metered	Total
Residential	38,686	0	38,686
Single Family	18,930	0	18,930
Multi Family	19,756	0	19,756
Commercial	2317	0	2317
Industrial/Mining	14	0	14
Institutional	338	0	338
Agriculture	0	0	0
Other /Wholesale	1	0	1

2. List the net number of new connections per year for most recent three years:

Year	2011	2012	2013
Residential	240	402	527
Single Family	37	136	473
Multi Family	203	266	54
Commercial	44	*	-40
Industrial/Mining	0	2	-1
Institutional	*	*	35
Agriculture	0	0	0
Other /Wholesale	0	0	0

*Prior to 2012, Commercial and Institutional Water Users were combined as one category; therefore, net change in connections for these years cannot be determined.

3. List of annual water use for the five highest volume customers

Customer	Use (1,000 gal/yr)	Treated/Raw Water
(1) Lewisville ISD	83,608	Treated
(2) Chapel Hill Apts	58,626	Treated
(3) Digital Lewisville, LLC	44,925	Treated
(4) G & I VI Forest LP Apts	43,423	Treated
(5) Yes Companies Exp	34,686	Treated

II. WATER USE DATA FOR SERVICE AREA

A. Water Accounting Data

1. Amount of water use for previous five years (in 1,000 gallons).

Indicate whether this is diverted or treated water.

Year	2009	2010	2011	2012	2013
January	340,596	326,793	344,579	346,700	374,979
February	327,208	282,854	326,322	337,486	341,476
March	369,910	325,723	426,910	385,091	438,751
April	393,013	385,966	466,209	397,403	454,902
May	420,664	484,966	477,006	559,538	516,269
June	538,105	636,485	669,587	567,800	532,535
July	665,436	582,647	835,240	737,650	556,662
August	654,865	735,885	867,729	719,870	638,724
September	500,783	542,870	746,490	636,202	585,129
October	436,687	518,325	579,913	516,373	447,280
November	375,143	388,006	427,748	452,284	337,082
December	335,505	370,486	369,010	423,699	331,510
Total	5,357,915	5,581,006	6,536,743	6,080,096	5,555,299

Water use data is derived from master meters located at the points of entry into the Lewisville Water System from Dallas Water Utilities for treated water. Diverted water

from Lake Lewisville (untreated water) is metered at the entry point to the C.R. Feaster Water Treatment Plant. This meter reading is also compared with the DWU raw water meter readings both daily and monthly. Master meters are also located on the treated water supply lines from DWU. These meters belong to the City of Lewisville and are supported by redundant readings from DWU meters at the point of sale.

2. Amount of Water Use (in 1,000 gal.) delivered/sold:

Year	2009	2010	2011	2012	2013
<i>Account Types</i>					
Residential	2,670,490	2,867,841	3,186,813	3,025,571	2,914,244
Single Family	1,759,972	1,869,734	2,128,658	1,978,089	1,854,522
Multi Family	910,518	998,107	1,058,155	1,047,482	1,059,722
Commercial	1,557,527	1,527,510	1,982,847	1,469,119	1,332,500
Industrial/Mining	44,623	38,130	35,303	54,680	35,354
Institutional	*	*	*	198,206	483,555
Agriculture	0	0	0	0	0
Other /Wholesale	13,083	46,349	8,3847	108,000	264,151

3. Previous five years records for water loss (the difference between water diverted (or treated) and water delivered (or sold)).

Year	Amount (gal.)	%
2009	1,073,192,000	20
2010	1,101,176,000	20
2011	1,247,663,000	19
2012	1,224,520,000	20
2013	525,495,000	9

This does not include accounted for water usage such as distribution system flushing.

B. Projected Water Demands

Year	Population	Households	Total Water Diverted or Pumped for Treatment (acft.)
2014	98,970	39,415	17,658
2015	100,800	40,144	18,268
2016	102,630	40,872	18,878
2017	104,460	41,601	19,488
2018	106,290	42,330	20,097
2019	108,120	43,059	20,707
2020	110,002	43,808	21,317
2021	111,202	44, 286	21,536
2022	112,402	44,764	21,755
2023	113,602	45,242	21,974
2024	114,802	45,720	22,193

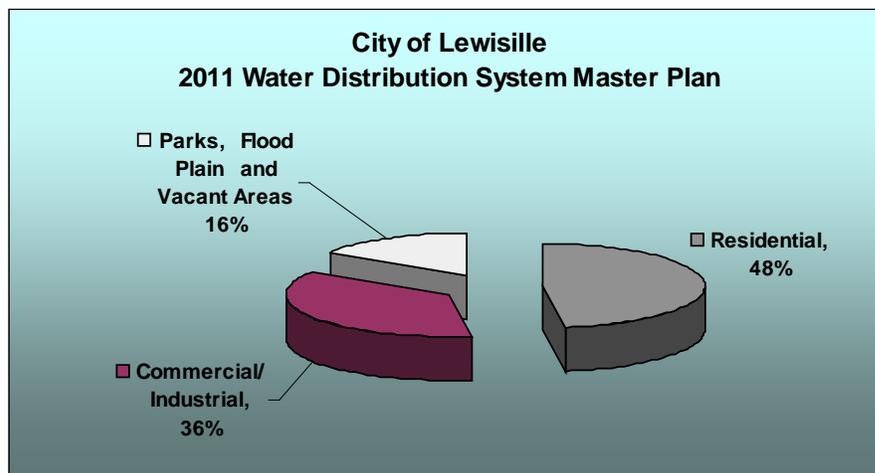
**2012 State Water Plan
Region C / Lewisville**

(Values in Ac-Ft/Yr)	Projected Population and Demand					
	2010	2020	2030	2040	2050	2060
Projected Population	97,709	110,002	122,002	136,002	155,002	176,515
Projected Water Demand						
Municipal Demand	19,263	21,317	23,506	26,051	29,517	33,613
Customer Demand (DCFWD)	99	522	704	892	1,084	1,285
Total Projected Demand	19,362	21,839	24,210	26,943	30,601	34,898
Currently Available Water Supplies						
Dallas Water Utilities	17,804	16,402	17,366	18,143	19,011	19,064
Total Current Supplies	17,804	16,402	17,366	18,143	19,011	19,064
Need (Demand - Current Supply)	1,558	5,437	6,844	8,800	11,590	15,834
Water Management Strategies						
Water Conservation	918	1,742	2,277	2,808	3,458	4,245
Additional Water from DWU with New WTP and Expansions	640	3,695	4,567	5,992	8,132	11,589
Total Water Management Strategies	1,558	5,437	6,844	8,800	11,590	15,834
Reserve (Shortage)	0	0	0	0	0	0

Appendix C Table C-206

Population and Household projections are based data presented in the 2012 State Water Plan's Region C Water projections as listed in the above table; the projections for interim years are interpolations. These projections present a reasonable forecast of future population and water use.

The Lewisville water system will service approximately 20,933 acres or 32.7 square miles. Approximately 15.6 square miles is projected to serve residential; 11.9 square miles will serve retail, commercial and industrial, and the remaining 5.2 square miles will remain parks, open space and flood plain.



Actual future water demands will depend upon the type of economic development within these undeveloped sectors. Proposed conservation efforts may extend the life of our existing resources and delay the need for future water resources and manage future water demands.

III. WATER SUPPLY SYSTEM DATA

The City of Lewisville's water system consists of a water supply reservoir, water treatment facilities, distribution and collection systems, and wastewater treatment plant. The City of Lewisville also participates in reuse of treated reclaimed wastewater from the City of Lewisville's Wastewater Treatment Plant, which is sold to Upper Trinity Regional Water District, which in turn provides the reclaimed water to the Denton County Fresh Water Supply District No. 1 for irrigation at the Castle Hills Golf Club. The City is permitted to provide reclaimed water for maintenance of wetlands at the Lewisville Lake Environmental Learning Area, and other multiple uses within the city.

A. Water Supply Sources

The City of Lewisville supplies water from the City's Water Treatment Plant and from treated water purchased from Dallas Water Utilities (DWU). Three delivery points supply treated water from DWU to Lewisville pump station sites. Southside PS is currently set at 4.0 MGD, with a maximum setting to be 6.0 MGD. The Eastside PS is currently set at 2.0 MGD, with a maximum setting of 12.4 MGD. The Midway PS is currently set at 3.0 MGD, with a maximum setting of 15.0 MGD. The total supply by DWU at buildout will be 33.4 MGD.

Raw water from Lake Lewisville is supplied to the City's C. R. Feaster Water Treatment Plant. The City of Lewisville has a contract with DWU to purchase water

from Lake Lewisville, a surface water reservoir, for treatment at the Feaster Water Treatment Plant. DWU maintains water rights for Lake Lewisville. Two pump stations at the Feaster Water Plant supply treated water to the distribution system.

Current water supply sources and the amounts authorized with each:

	Source	Amount Authorized
Surface Water:	Lewisville Lake	Unlimited acre-feet
Groundwater:	NA	acre-feet
Contracts:	Dallas Water Utilities	102.5 acre-feet
Other:	NA	acre-feet

B. Treatment and Distribution System

The City of Lewisville’s treated water distribution system contains approximately 381 miles of pipe. The treated water system continues to expand into the eastern areas of the City’s jurisdiction as shown in Attachment 1. The existing distribution system is evaluated and upgraded at consistent intervals.

1. Design daily capacity of system: 53.8 MGD
2. Storage Capacity: Elevated: 8 MGD Ground: 13 MGD
3. If surface water, do you recycle filter backwash to the head of the plant?
 Yes No If yes, approximately 0.2-0.25 MGD

The water storage system includes seven ground storage reservoirs. Three reservoirs are located at the Feaster Water Treatment Plant with an additional reservoir in construction; one has a capacity of 1 MG, two have a capacity of 2 MG and the fourth once complete will have a capacity of 2 MG. Four additional ground storage reservoirs are available in the distribution system. Two ground storage tanks at Eastside Pump station have capacity of 1 and 2 MG. A third ground storage tank is located at the Southside Pump station and has a capacity of 2 MG. The fourth ground storage tank located at the Midway Pump Station

has a capacity of 3 MG. Elevated storage tanks are positioned strategically throughout the distribution system to provide adequate pressure and storage. One elevated storage tank is located within the 740 pressure zone and has a capacity of 2 MG. Another elevated storage tank is located in the 735.5 pressure zone and also has a capacity of 2 MG. The remaining elevated storage tanks throughout the 692.5 pressure zone have the following capacities: 0.5, 1, and 2.5 MG.

Water Treatment Plant

The Feaster Water Treatment Plant, System Number 0610004, has a TCEQ approved firm design treatment capacity of 18 MGD with a filter design capacity of 20.4 MGD. The plant is located in the northeast section of Lewisville approximately one mile from Lake Lewisville. The Water Treatment Plant is served by two intake structures located on Lake Lewisville. The original intake structure has a capacity of 35.8 MGD. The new intake structure, constructed in 2000, is a joint project with Upper Trinity Regional Water District (UTRWD). Lewisville's portion of the structure has a firm capacity of 38.5 MGD. The Water Treatment Plant has a firm pumping capacity over 50 MGD into two pressure zones. The Northside Pump Station, capable of 19 MGD, services the northwestern area of Lewisville located within the 740-pressure zone. The High Service Pump Station has a pump capacity of 32 MGD and services the remainder of Lewisville through the 692.5-pressure zone.

D. Treated Water Storage and Distribution System

The City's existing water distribution system currently operates in three service areas, the 692.5 Service Area, the 735 Service Area, and the 740 Service Area. These three service areas are in three separate pressure zones, based off the water level of the elevated storage tanks in that particular service area. The 692.5 Service Area is generally located to the City's north, south, and west boundary limits, between the 740 and 735 Service Areas. The Bellaire Elevated Tank, the Valley Parkway Elevated Tank, the Feaster Pump Station, the Southside Pump Station, and the Eastside Pump Station supply water to the 692.5 Service Area. At buildout, the Feaster, Southside and the proposed Midway Pump Station will serve this service area. The 735 Service Area is generally located from east of the State Highway (SH) 121 Bypass (Sam Rayburn Tollway) to the City's north, south, and east boundary limits. Currently, the Austin Ranch Elevated Tank and the Eastside Booster Pump Station supply water to it. At buildout, the existing Castle Hills Elevated Tank (Castle Hills MUD) will also serve this service area, along with the Eastside, Eastside Booster, and the proposed Midway Pump Station. The 740 Service Area is generally located from the City's west boundary limits to west of Interstate Highway (IH) 35, and north of Fox Avenue. Currently and at buildout, the F.M. 407 Elevated Tank and the Northside Pump Station will serve this service area.

IV. WASTEWATER SYSTEM DATA

The City of Lewisville owns and operates the Prairie Creek Wastewater Treatment Plant under TPDES Permit Number 10662-001. Attachment 2 contains a map of the Prairie Creek Wastewater Treatment Plant and collection system.

1. Design capacity of wastewater treatment plant(s): 15 MGD

2. Is treated effluent used for irrigation on-site offsite
plant wash down , or chlorination/dechlorination
If yes, approximately 18,000,000 gallons per month.

The wastewater treatment plant services the City of Lewisville and the ETJ area of Castle Hills with a design capacity of 15 MGD. The Prairie Creek Wastewater Treatment Plant contains five Fine Screen Units, which remove primary solids, followed by two Grit Units, which remove sand, silt and sediment from the incoming flow. Flow from the Grit Units divide into separate smaller plants made up of six conventional Activated Sludge trains and two Trickling Filter/Solids Contact trains and eight Final Clarifiers. Flows recombine after secondary treatment and proceed through five sand filters, followed by disinfection and dechlorination. Final discharge from the treatment plant enters Prairie Creek, which then flows to the Elm Fork Trinity River, below Lewisville Lake in Segment Number 0822 of the Trinity River Basin. Daily flows from the WWTP average 8 MGD, including reuse, which averages less than 1 MGD monthly.

Sludge from the WWTP is processed through Aerobic Digestion, solids dewatering and final disposal; approximately 3000 dry tons of sludge are disposed of annually in DFW Landfill, a local Type 1 landfill.

1. Percent of water service area served by wastewater system: 98%

2. Monthly volume treated for previous five years (in 1,000 gallons).

Year	2009	2010	2011	2012	2013
January	212,638	262,493	248,614	269,260	239,120
February	196,113	303,637	226,791	239,083	202,229
March	231,478	315,280	216,164	291,069	220,598
April	234,884	255,105	242,880	259,573	213,514
May	292,274	244,734	290,150	223,028	222,545
June	252,754	229,557	240,964	218,803	215,197
July	233,030	272,474	229,800	219,803	218,592
August	242,378	232,075	240,353	228,255	215,787
September	269,132	265,981	218,416	217,864	213,052
October	342,631	240,089	244,092	223,925	229,208
November	260,944	231,588	222,649	210,190	221,934
December	270,096	230,889	266,692	225,501	248,124
Total	3,038,352	3,083,902	2,889,565	2,826,354	2,659,900

Element 2: Conservation Goals:

Information on future population and water demand forecasts, as well as the present and anticipated capacity of the City of Lewisville’s water supply, treatment and distribution systems were reviewed as part of this planning process. The most recent long-term population forecasts by the Region C Water Plan projected sustained growth and water demand. Approximately 26 percent of Texas’ population resided in Region C in the year 2010. By 2060, the population of the region is projected to grow 96 percent to 13,045,592. Municipal demands are projected to increase by 91 percent by 2060 and will account for

88 percent of the total projected Region C demands and with the exception of livestock demands, all categories of water demands are projected to increase over the planning horizon. To meet the future water demands in Region C by 2060, it is estimated that 23% of the Total Supply for future needs will come from Conservation and Reuse.

Conservation strategies for Region C will account for approximately 12 percent (290,709 acre-feet) of the total volume of water associated with all recommended strategies. A basic conservation package, including education, pricing structure, water waste prohibitions, water system audits, and plumbing code changes, was recommended for all municipal water user groups in Region C; expanded conservation packages, include additional strategies such as landscape irrigation restrictions and residential water audits.

I. Table 1: City of Lewisville Population and Household Projections
(North Central Texas Council of Government/ U.S. Census/2012 Regional Water Plan Data)

Population				
2015	2020	2025	2030	2035
100,800	110,002	116,002	122,002	111,168
Households				
40,144	43,808	46,198	48,587	51,375

The

2012 Regional Water Plan completed the updating of their population projections for Region C using U.S. Census data to project the Lewisville population. Additionally, TWDB provides water demand projections for regional planning efforts based on historical per capita consumption projection. These projections can be found in Table 2 below.

**Table 2: 2012 State Water Plan
Region C / Lewisville**

(Values in Ac-Ft/Yr)	Projected Population and Demand					
	2010	2020	2030	2040	2050	2060
Projected Population	97,709	110,002	122,002	136,002	155,002	176,515
Projected Water Demand						
Municipal Demand	19,263	21,317	23,506	26,051	29,517	33,613
Customer Demand (DCFWD)	99	522	704	892	1,084	1,285
Total Projected Demand	19,362	21,839	24,210	26,943	30,601	34,898
Currently Available Water Supplies						
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Need (Demand - Current Supply)	1,558	5,437	6,844	8,800	11,590	15,834
Water Management Strategies						
Water Conservation	918	1,742	2,277	2,808	3,458	4,245
Additional Water from DWU with New WTP and Expansions	640	3,695	4,567	5,992	8,132	11,589
Total Water Management Strategies	1,558	5,437	6,844	8,800	11,590	15,834
Reserve (Shortage)	0	0	0	0	0	0

Appendix C Table C-206

In 2013, the City of Lewisville provided over 5.5 billion gallons of water to approximately 41,355 City of Lewisville accounts. Of these accounts, over forty-five percent were classified as Residential; forty-eight percent were Multi-Family, over five percent were Commercial, and both Institutional and Industrial were less than one percent.

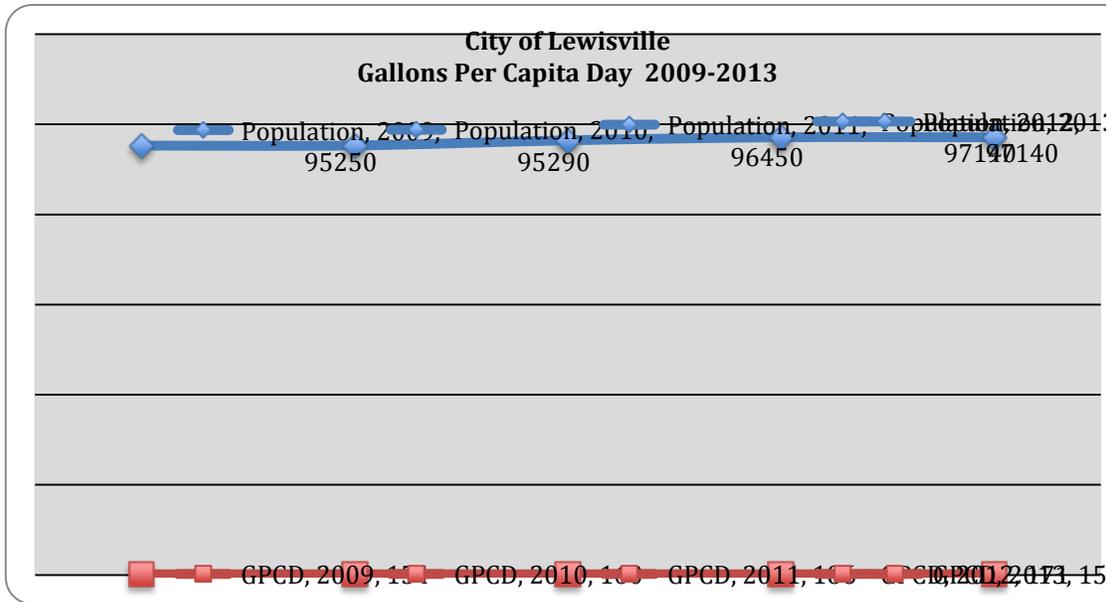
The Texas Legislature’s Water Conservation Implementation Task Force recommended standard methodologies for calculating Total Gallons per Capita per Day (GPCD). The Total Gallons per Capita per Day (GPCD) has been used to measure water demands

specific to the population. The Total GPCD is the total amount of water diverted and/or pumped for potable use divided by the total population.

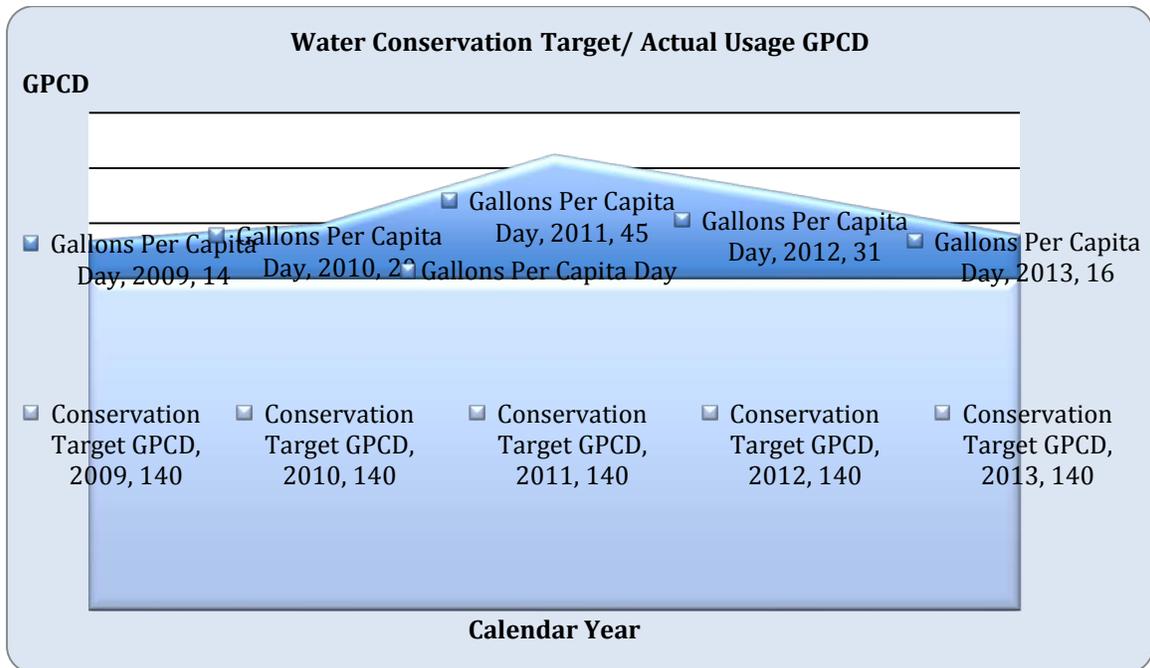
$$\text{Total GPCD} = \frac{\text{Annual total treated water pumped} - \text{Annual unbilled water}}{365 \times \text{Population}}$$

Table 3: City of Lewisville Total Gallons per Capita Day

Fiscal Year	Population	Total GPCD
2009	95250	154
2010	95290	169
2011	96450	186
2012	97140	171
2013	97140	156



The 2009 Conservation Conservation Target GPCD 140 Plan set the goal for the City of Lewisville Gallons Per Capita Day (GPCD) at 140. As can be seen the table and graph above, water consumption continues to fluctuate above this set goal. The Gallons Per Capita Day goal set for this new 5 year period will remain 140 GPCD, concomitant with



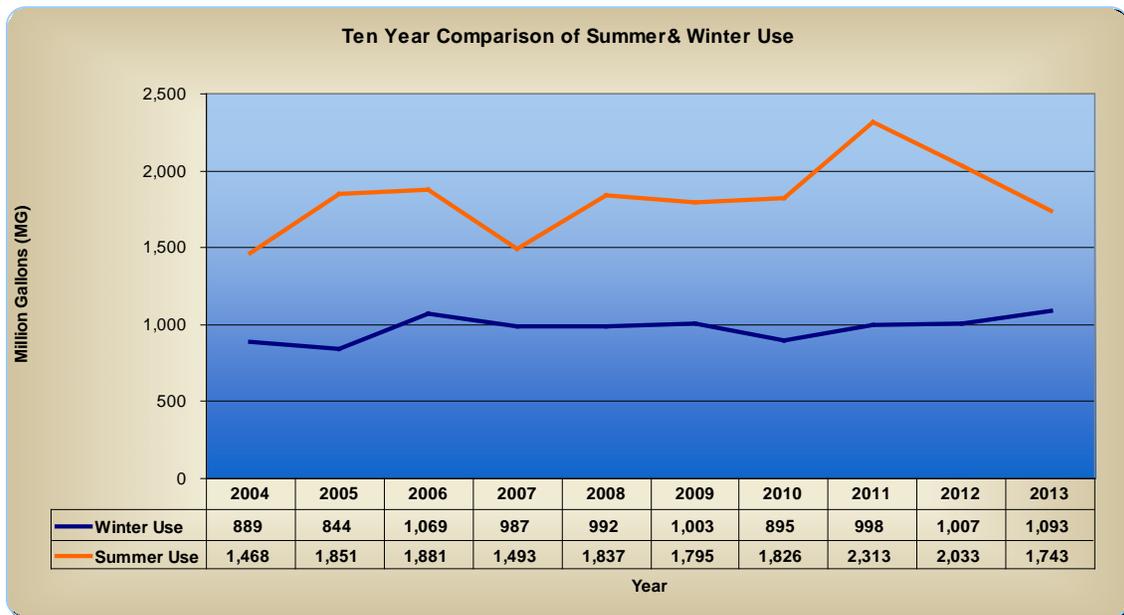
the regional and state goals.

The Total GPCD averaged 159 for the period 2004-2008, which is 13.5% higher than the Region C goal of 140 GPCD. The 2009-2013 Period averaged 166 GPCD, which is 18.5% higher than the Region C goal of 140 GPCD base water use. During this period, Lewisville, as well as much of Texas experienced drought conditions. The effect of the drought can be seen in the peak in customer usage in the 2011 calendar year. The City of Lewisville implemented voluntary water restrictions throughout this period and implemented mandatory restriction for three summer months in 2013.

Seasonal Water Use Patterns

Seasonal water use patterns provide important information for planning for water treatment and treated water distribution capacity. Comparison of Winter/Summer demands identifies potential water use savings from landscape irrigation and outdoor use.

Seasonal water use patterns were examined for residential and large industrial and commercial customers to determine peak seasonal use patterns. For this five year period, the summer to winter water use ratio was used as an indicator of seasonal peak demands. Comparison of summer to winter water use also provides an estimate of outdoor use. For residential water users, the summer to winter ratio averaged 1.95, an increase from the 1.7 ratio from last five year period (2004-2008).



The City of Lewisville proposes to implement new and continued conservation strategies that are outlined in Element 10 of this plan. The goal will be to meet an Annual Gallons

per Capita Day Average of 140. These projections can be found in Table 4 below. Water Savings were determined using the difference in projected water usage determined from the Texas Water Development Board figures from the targeted 140 Gallons per Capita Day.

Table 4: City of Lewisville Projected Water Savings in Acre Feet with 140

Year	Population	Gallons Diverted or Pumped Based on State Plan Projections	Total Gallons Diverted or Pumped at Projected 140 GPCD	Total Acre Feet Water Diverted or Pumped Based on State Plan Projections	Total Acre Feet Water Diverted or Pumped at 140 GPCD Goal	Total Acre Feet Anticipated Water Savings at 140 GPCD Goal
2014	98,970	5,753,884,520	5,057,367,000	17,658	15,520	2,138
2015	100,800	5,952,653,892	5,150,880,000	18,268	15,807	2,461
2016	102,630	6,151,423,263	5,244,393,000	18,878	16,094	2,784
2017	104,460	6,350,192,634	5,337,906,000	19,488	16,381	3,107
2018	106,290	6,548,636,154	5,431,419,000	20,097	16,668	3,429
2019	108,120	6,747,405,525	5,524,932,000	20,707	16,955	3,752
2020	110,002	6,946,174,897	5,621,102,200	21,317	17,251	4,066
2021	111,202	7,017,536,359	5,682,422,200	21,536	17,439	4,097
2022	112,402	7,088,897,822	5,743,742,200	21,755	17,627	4,128
2023	113,602	7,160,259,285	5,805,062,200	21,974	17,815	4,159
2024	114,802	7,231,620,748	5,866,382,200	22,193	18,003	4,190

Long Range Water Planning Efforts

The City of Lewisville regularly conducts water master planning efforts to evaluate and plan for future water service needs. The 2011 Master Plan concluded that additional sources of water must be procured to meet future water needs. Capital Improvement Plans developed based on the City’s master plan include the procurement of additional treated water supply and future expansion of the City of Lewisville’s current Feaster Water Treatment Plant.

Future Water Supply Sources

The total population of Lewisville projected at build-out in the City of Lewisville's 2011 Master Plan is 186,403, an increase from the 2006 Master Plan population projection of 166,335 due to the reevaluation of the 735 Service Area. This includes the Castle Hills, Lord & Clem and Bright Ranch properties. The City's Master Plan shows a demand capacity of 73.1 MGD; at build-out the City's water treatment plant will need to have a capacity of 39.7 MGD, unless other treated water sources are secured. Effective conservation measures may reduce the necessity or postpone the capital improvements needed to provide this capacity. Educational efforts will be specifically targeted to low density residential areas within the 735 service area to reduce the gallons per capita day usage in order to meet Conservation goals.

Element 3: Accurate Metering Devices:

As per Texas Commission on Environmental Quality (TCEQ) requirements metering devices are tested and calibrated for accuracy. Raw water meters, and treated water meters from the point of delivery from DWU are calibrated semi-annually to within +/-5% accuracy. In addition, Dallas Water Utilities maintains meters in close proximity to the City of Lewisville meters, providing redundant flow recordings that allow comparison of flow readings, early detection of errant recordings, leaks, and/or meter inaccuracies.

Element 4: Universal Metering, Testing, Repair, and Replacement:

The City of Lewisville's current meter program provides universal metering of both customer and public uses of water and a regularly scheduled maintenance program of meter testing, repair, and replacement. Temporary meters are required on all construction projects

including City projects. Nearly all of the 1 1/2-inch meters are now high efficiency single jet meters. There remain a few high volume irrigation lines that are still multi-jet meters.

Element 5: Leak Detection, Repair, and Control of Unaccounted for Water:

The City of Lewisville's leak detection, location, and repair programs have been employed for several years to identify distribution system losses and control unaccounted for water. The City employs periodic visual inspections along distribution lines, including routine aerial inspections. The City has purchased leak detection equipment used routinely with periodic audits of the water system for detection of water loss within the distribution system, as well as for illegal connections or abandoned services. Water losses from hydrant flushing, construction and system maintenance and main breaks are estimated and recorded to reconcile disparities in unaccounted for water. The City currently has practices in place to control system pressure. Pressure checks are made on fire hydrants during flushing and routine exercising. Additionally, booster pump station and elevated tank pressures are continuously monitored via telemetry throughout the city.

Element 6: Continuing Public Education Program:

The City recognizes that water conservation significantly benefits individuals and communities in terms of long-term availability and costs. The most readily available and lowest cost method of promoting water conservation is to inform retail water users about ways to save water in homes and businesses, in landscaping and lawn uses, and in recreational uses. The City currently provides water conservation information to retail customers in the following manner:

- Water conservation pamphlets, containing information on the *Water Conservation and Emergency Water Management Plan* are mailed out to all water customers. Additionally, this information is available at kiosks throughout City facilities, including the atrium of City Hall Annex, City Hall and in the Public Library.
- Conservation information is distributed at City events and environmental program functions that involve the general public.
- Public media campaigns that broadcast conservation tips on the City cable channel and radio station.
- Conservation tips and information on the *Water Conservation and Emergency Water Management Plan* are available on the City web page and in newsletters.
- Educational events throughout the year provide a forum to promote attention and awareness of conservation measures through these events
- The City promotes conservation awareness as part of its participation in annual National Drinking Water Awareness Week programs by hosting poster contests and creating informational display boards.

Element 7: Non-Promotional Rate Structure:

The City of Lewisville currently has a rate structure comprised of a monthly minimum based on the meter size and then a flat rate for each 1,000 gallons, above the first 2,000 gallons. The rates are shown in the table below. The City annually reviews water rate structures to ensure that the prevailing rates encourage water conservation while covering the total cost of service and minimizing adverse impacts.

Table 5: City of Lewisville Water Rates

City of Lewisville 2005 Water Rates	
Meter size	Base cost for first 2,000 gallons
5/8 inch	\$13.54
3/4 inch	\$13.54
1 inch	\$19.73
1-1/2 inch	\$37.34
2 inch	\$62.03
3 inch	\$132.63
4 inch	\$231.40
6 inch	\$513.74
8 inch	\$909.00
10 inch	\$1,417.17
All consumption over 2,000 gallons is \$2.80/1,000 gallons	

Element 8: Implementation and Enforcement

The Mayor, Mayor Pro Tem, City Manager, or City Manager’s duly appointed representative will act as the Administrator of the Water Conservation and Emergency Water Management Plan. The Administrator will oversee the execution and implementation of all elements of the Plan and will be responsible for seeing that adequate records are kept for program verification. A copy of the City of Lewisville’s Ordinance is included in **Appendix A.**

Element 9: Coordination with Regional Water Planning Groups:

The City of Lewisville is located in both Dallas and Denton Counties and is part of the Region C Water Planning Group. Lewisville receives all of its water from Dallas Water Utilities, which is one of the five major water providers identified in the Region C Plan. A copy of the City of Lewisville’s Water Conservation and Emergency Water Management Plan will be submitted to Dallas Water Utilities and the Region C Water Planning Group.

Element 10: Water Conservation Strategies

Various water conservation strategies were examined and considered during this process. These strategies were the result of numerous resources, including state agency directives, regional water planning groups, water conservation literature, water conservation programs used by other municipalities, and the city's existing water conservation plan.

The City of Lewisville has had a water conservation program since 1999. Prior to that time a drought contingency plan was in place. The City's current conservation program consists of public awareness and education programs; leak detection and repair; evaluation of unaccounted for water; meter testing, repair and replacement program, Water Conservation and Drought Contingency Management Ordinance, and enforcement capabilities.

Water conservation measures currently employed include the following:

- Utility water conservation workforce
- Universal meter testing, repair and replacement
- Leak detection, repair, and control of unaccounted for water
- Public awareness and education campaign
- Means of implementation and enforcement of water conservation ordinances
- Coordination with regional water planning groups
- Record Management system
- Reuse Water Planning
- Adoption of updated plumbing code
- Distribution system pressure control program

As part of an ongoing effort, the Texas Water Development Board and the Texas Commission on Environmental Quality continue to work closely with the Water Conservation Advisory Council and interested stakeholders to review and update water conservation best management practices. The best management practices identified in the

guides are offered to the state's regional water planning groups, water providers, and water users as a tool for planning and designing effective water conservation programs. During the regional water planning process these practices can be evaluated for potential water savings and cost effectiveness. The objectives of these best management practices is to identify information about the elements of successful conservation programs, good cost estimates, and reliable water savings estimates for use in water resource planning. These best management practices (BMP's) are divided into various user groups: Municipal, Agricultural, Commercial & Institutional, Industrial, and Wholesale Water Providers.

Municipal BMP's include

- Conservation Analysis and Planning
 - ❖ Conservation Coordinator
 - ❖ Cost Effective Analysis
 - ❖ Water Survey for Single-Family and Multi-Family Customers

- Financial
 - ❖ Water Conservation Pricing
 - ❖ Wholesale Agency Assistance Programs

- System Operations
 - ❖ Metering of All New Connections and Retrofit of Existing Connections
 - ❖ System Water Audit and Water Loss Control

- Landscaping
 - ❖ Athletic Field Conservation
 - ❖ Golf Course Conservation
 - ❖ Landscape Irrigation Conservation and Incentives
 - ❖ Park Conservation
 - ❖ Residential Landscape Irrigation Evaluation

- Education & Public Awareness
 - ❖ Public Information
 - ❖ School Education
 - ❖ Small Utility Outreach and Education
 - ❖ Partnerships with Nonprofit Organizations

- Rebate, Retrofit, and Incentive Programs
 - ❖ Conservation Programs for ICI Accounts
 - ❖ Residential Clothes Washer Incentive Program
 - ❖ Residential Toilet Replacement Programs
 - ❖ Showerhead, Aerator, and Toilet Flapper Retrofit
 - ❖ Water Wise Landscape Design and Conversion Programs

- Conservation Technology
 - ❖ New Construction Gray water
 - ❖ Rainwater Harvesting and Condensate Reuse
 - ❖ Water Reuse

- Regulatory & Enforcement
 - ❖ Prohibition on Wasting Water
 - ❖ Conservation Ordinance Planning and Development

Municipal water consumption is driven by a wide variety of domestic, commercial, industrial and institutional needs. These Best Management Practices were developed to both improve water use efficiency of the Utility operation and to improve the efficiency of the water customers. A utility can reduce water loss through careful and regular monitoring of its water delivery systems through the System Water Audit and Water Loss BMP. In addition, the Water Conservation Pricing BMP can provide an effective method of encouraging water efficiency by the customer through feedback from the cost of the water to the user. The Prohibition on Water Wasting BMP can help send a message to users about the value of water as well as educate the general public about simple steps to save water. The City of Lewisville evaluated these conservation strategies for implementation during the next five-year period.

The following were considered for implementation during the 2014-2018 Period.

- × Water conservation pricing
- × Expanded school and public education programs
- × Water surveys for single-family and multi-family customers
- × Landscape irrigation conservation and incentives
- × Park and athletic field conservation
- × Golf course conservation
- × Expanded reuse programs
- × Industrial water audits
- × Industrial water waste reductions
- × Industrial water conservation/pollution prevention programs (P2)
- × Industrial alternative sources and reuse of process water

Benefits of implementing identified strategies exist, beyond meeting mandated water conservation requirements. Conservation strategies will extend the life of the distribution system; delay capital improvements for future water needs and postpone the need to procure additional treated water source, and lower the operating cost of the distribution system and peak demands. Water conservation strategies were collected from various sources that included DWU, literature, planning groups and other municipalities. Strategies were reviewed based on the ability to implement the strategies and the benefit in reduced water consumption produced.

Recommended Water Conservation Strategies

The Water Conservation Plan, currently in effect, recommends continued conservation efforts. Conservation strategies presently used by Lewisville and those that are recommended for implementation over the five-year planning period are shown in the table below, Table 6: Water Conservation Strategies. Other strategies that may be implemented after 2019 are also included within this table.

Table 6: City of Lewisville Water Conservation Strategies

Water Conservation Strategies		
Strategy	Recommended 2014-2019	Recommended after 2020
Water conservation staff	✓	✓
Universal meter testing, repair and replacement	✓	✓
Leak detection, repair, and control of unaccounted for water	✓	✓
Public awareness and education campaign	✓	✓
Means of implementation and enforcement of water conservation ordinances	✓	✓
Coordination with regional water planning groups	✓	✓
Record Management system	✓	✓
Reuse Water Planning	✓	✓
Adoption of updated plumbing code	✓	✓
Distribution system pressure control program	✓	✓
Water surveys for single and multi family customers	✓	✓
Landscape irrigation conservation and incentives	✓	✓
Water wise landscape design program	✓	✓
Park conservation	✓	✓
Water audit	✓	✓
Reuse options	✓	✓
Single family irrigation audits	✓	✓
Multi-family irrigation audits	✓	✓
Commercial irrigation audits	✓	✓
Seasonal water rates	✓	✓
Audit of metering/billing practices	✓	✓
Enhanced water loss auditing	✓	✓
Increase Water Treatment Plant Reclaim	✓	✓

✓ Currently employed strategy ✓ Implementation in 2014-2019
--

Recommended Actions

Recommendation 1: Funding of Conservation Programs and Resources

Continued support of Water Conservation Programs and efforts will allow the coordination of conservation efforts and targeted programs to enhance existing educational efforts, special partnerships and audits. New public awareness and education efforts will be implemented over the next five-year period.

Public Awareness and School Education Programs

The City of Lewisville currently sponsors a poster contest, provides conservation materials through water bill inserts, and provides conservation information through the City's website. Expanding the awareness and educational programs could produce between 1 to 5 percent savings. It is estimated that water savings from expanding this program will increase water savings by 2% of total water use. The City of Lewisville presently spends \$0.20 per capita on public awareness, and is projected to continue to spend up to \$0.25 per capita during the next five years.

Recommendation 2: Evaluation of Current Water Loss

Further evaluation of the current water losses will include the review and enhancement of the following programs:

- metering programs to measure and account for the amount of water diverted and customer sales;
- meter testing, repair, and replacement programs;
- leak detection programs, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water, and
- measures to determine and control unaccounted-for uses of water.

Additional information and records will be reviewed to evaluate current water use practices for residential, commercial and industrial users.

Customer Water Use Audits

A customer water use audit could be combined with the current resident survey to provide information on customer seasonal water usage and (normal) practices. In addition, targeting of high water use customers would provide further information on their irrigation practices. This provides the opportunity to introduce landscape irrigation conservation and water conservation awareness programs to multi-family complexes, which constitute the largest water users within the City of Lewisville.

Additional information on industrial and commercial water usage could be obtained through separate surveys or other instruments. This information could be combined with current Pollution Prevention (P2) efforts and existing programs that obtain information from industrial and commercial users. This could provide the opportunity to introduce landscape irrigation conservation and water conservation awareness programs to more than one third of the current water users.

Recommendation 3: Promote “WaterWise” Landscapes

City-hosted environmental and conservation events often provide literature and resources on the use of “WaterWise” landscapes that promote the use of native and heat tolerant plantings. The introduction of Xeriscape principles using native vegetation or replacing grass turf with native turf can be expanded to additional city owned locations such as libraries, fire stations, parks, and other city facilities. These areas may be used as demonstration sites in addition to parks and other city properties with high public visibility.

Recommendation 4: Review and revise current Water Rates, City Ordinances,

Enforcement, Codes and Standards to ensure water conservation is promoted.

The review and revision of current city ordinances, rates and standards will be conducted to uphold conservation efforts. The addition of ordinances and possibly seasonal water rates that discourage wasteful water use will be proposed.

Water Conservation Pricing

Introduction of water conservation pricing could decrease residential water usage by as much as 2% or 110 acre-feet with a 10% increase in seasonal water rates. This measure will require consideration and rate analysis during the five-year planning period. The goal of water conservation pricing is to send the appropriate signal to customers to reduce discretionary water use. Evaluation and consideration will be given to seasonal rate structures, rates based on individual water budgets and tiered residential rate structures. The revenue reduced would be in direct proportion to the amount of water saved. Consideration will also be given to installing separate meters for industrial and commercial customers and high water use single and multi-family residential accounts to separate indoor and outdoor uses.

Prohibition of Wasting Water / Lawn and Landscape Irrigation Ordinance

Implementation of this water conservation strategy would be combined with public information efforts to discourage inefficient water use and reduce water waste. Estimated water savings from this strategy could be as much as 5% of summer outdoor usage. This measure would require some administrative and enforcement costs initially pending consumer awareness of the new program.

Recommendation 5: Expand Conservation/Reuse Programs

The City currently supports reuse efforts through the Upper Trinity Regional Water District to Castle Hill's golf course. Additional reuse opportunities and programs are currently under consideration. The City has opportunities to provide reuse water to additional golf courses, parks and athletic fields, which would offset current potable water demands.

Park and Athletic Field and Golf Course Conservation

This water conservation strategy could reduce peak demand and water usage. This conservation strategy would promote rational water use comparable to those practices required of residential customers. Consideration will be given to reusing treated wastewater for some applications where feasible. These conservation efforts could produce between 15 and 75 acre-feet per year.

Recommended Five-Year Implementation Schedule

An implementation schedule for the water goals, described in this plan are proposed to be initiated over the five-year period for FY's 2014 through 2019. These proposed or revised programs are listed below.

FY 2014

Action 1: Funding of Conservation Programs and Resources

Existing Efforts:

- Maintain conservation programs and resources

New Efforts

- Evaluate current programs

Action 2: Evaluation of Current Water Loss

Existing Efforts:

- Collect and evaluate water data

New Efforts

- Evaluate water data to assess the accuracy of current water records and water conservation programs.

Action 3: Promote “WaterWise” Landscapes

Existing Efforts:

- Promote “WaterWise” Landscapes at Environmental and City events.

New Efforts

- On-going educational efforts

Action 4: Review/revise current Water Rates, City Ordinances, Enforcement, Codes and Standards, to ensure water conservation is promoted.

Existing Efforts:

- Review current Conservation Plan and Ordinance for necessary revisions.

New Efforts

- Adoption of updated Water Emergency Management Ordinance

Action 5: Expand Conservation/Reuse Programs

Existing Efforts:

- Identify projects

New Efforts

- Evaluate ability to use reclaimed water for additional utility related functions, such as flushing.

FY 2015

Action 1: Funding of Conservation Programs and Resources

Existing Efforts:

- Maintain conservation programs and resources
- Evaluation of current program effectiveness

New Efforts

- Develop new conservation educational programs and resources
- Enhance partnerships to promote Conservation Awareness

Action 2: Evaluation of Current Water Loss

Existing Efforts:

- Collect and evaluate water data
- Assess the effectiveness of water conservation programs.

New Efforts

- Evaluate leak detection, metering and replacement programs to assess the program effectiveness and accuracy.

Action 3: Promote “WaterWise” Landscapes

Existing Efforts:

- Promote “WaterWise” Landscapes at Environmental and City events.

New Efforts

- Coordinate with Parks Department and Community Development to identify existing and proposed landscapes for conversion to “WaterWise” landscapes.

Action 4: Review/revise current Water Rates, City Ordinances, Enforcement, Codes and Standards, to ensure water conservation is promoted.

Existing Efforts:

- Continue to review current Conservation Plan and Ordinance for necessary revisions.
- Continue to evaluate ordinances, codes and standards

New Efforts

- Modify City Ordinances, Rates, Codes and Standards to promote conservation efforts and adequate enforcement.

Action 5: Expand Conservation/Reuse Programs

Existing Efforts:

- Identify reuse projects.

New Efforts:

- Identify and evaluate implementation and funding of new reuse projects

FY 2016

Action 1: Funding of Conservation Programs and Resources

Existing Efforts:

- Maintain conservation programs and resources
- Continue conservation educational programs
- Continue to enhance partnerships to promote Conservation Awareness

New Efforts

- Develop Water Conservation Awards programs

Action 2: Evaluation of Current Water Loss

Existing Efforts:

- Collect and evaluate water data
- Assess the effectiveness of water conservation programs.
- Continue to evaluate leak detection, metering and replacement programs to assess the program effectiveness and accuracy.

New Efforts

- Conduct Customer Water Use Audits
- Evaluate metering and billing methodologies.

Action 3: Promote “WaterWise” Landscapes

Existing Efforts:

- Promote “WaterWise” Landscapes at Environmental and City

events.

- Continue to identify existing and proposed landscapes for conversion to “*WaterWise*” landscapes.

New Efforts

- Enhance partnerships to promote “*WaterWise*” landscapes

Action 4: Review/revise current Water Rates, City Ordinances, Enforcement, Codes and Standards, to ensure water conservation is promoted.

Existing Efforts:

- Continue to review current Conservation Plan and Ordinance for necessary revisions.
- Continue to evaluate ordinances, codes and standards

New Efforts

- Increase enforcement efforts.

Action 5: Expand Conservation/Reuse Programs

Existing Efforts:

- Continue to identify potential reuse opportunities

New Efforts

- Continue implementation of identified potential reuse opportunities

FY 2017

Action 1: Funding of Conservation Programs and Resources

Existing Efforts:

- Maintain conservation programs and resources
- Continue conservation educational programs
- Enhance partnerships to promote Conservation Awareness
- Continue water conservation awards programs

New Efforts

- Develop Industrial/Commercial Conservation Awareness Program
- Evaluate on-going programs for effectiveness

Action 2: Evaluation of Current Water Loss

Existing Efforts:

- Collect and evaluate water data
- Assess the effectiveness of water conservation programs.
- Continue to assess leak detection, metering and replacement programs.

New Efforts

- Conduct Water System Analysis

Action 3: Promote “WaterWise” Landscapes

Existing Efforts:

- Promote “WaterWise” Landscapes at Environmental and City events.
- Continue to identify proposed landscapes for conversion to “WaterWise” landscapes.
- Continue to enhance partnerships to promote “WaterWise” landscapes

New Efforts

- Develop General Development Ordinance that promotes “WaterWise” landscapes.

Action 4: Review/revise current Water Rates, City Ordinances, Enforcement, Codes and Standards, to ensure water conservation is promoted.

Existing Efforts:

- Continue to review current Conservation Plan and Ordinance for necessary revisions.
- Continue to evaluate ordinances, codes and standards
- Continue enforcement efforts

New Efforts

- Consider additional ordinances, codes that promote water conservation.

Action 5: Expand Conservation/Reuse Programs

- Continue implementation of identified potential reuse opportunities

FY 2018

Action 1: Funding of Conservation Programs and Resources

Existing Efforts:

- Maintain conservation programs and resources
- Continue conservation educational programs
- Continue partnerships to promote Conservation Awareness
- Continue water conservation awards programs
- Continue Industrial/Commercial Conservation Awareness Program

New Efforts

- Evaluate on-going programs for effectiveness
- Develop water conservation awards programs

Action 2: Evaluation of Current Water Loss

Existing Efforts:

- Collect and evaluate water data
- Assess the effectiveness of water conservation programs.
- Continue to assess leak detection, metering and replacement programs.

New Efforts

- Implement actions identified in Water System Analysis

Action 3: Promote “WaterWise” Landscapes

Existing Efforts:

- Promote “WaterWise” Landscapes at Environmental and City events.
- Continue to identify proposed landscapes for conversion to “WaterWise” landscapes.
- Continue to enhance partnerships to promote “WaterWise”

landscapes.

New Efforts

- *None*

Action 4: Review/revise current Water Rates, City Ordinances, Enforcement, Codes and Standards, to ensure water conservation is promoted.

Existing Efforts:

- Continue to review current Conservation Plan and Ordinance for necessary revisions.
- Continue to evaluate ordinances, codes and standards
- Continue enforcement efforts

New Efforts

- Consider additional ordinances, codes that promote water conservation.

Action 5: Expand Conservation/Reuse Programs

- Continue implementation of identified potential reuse opportunities

Element 11: Update of the Plan:

The City of Lewisville will review and update its Water Conservation Plan, as necessary, based on an assessment of previous five-year and ten-year targets and any other new or updated information. New strategies that are identified for potential implementation during the five-year and ten-year target periods may be added to the existing conservation strategies, or modification of existing strategies may be performed based on the evaluation and assessment of the outcome of these strategies.



Emergency Water Management Plan

The amended Title 30 Chapter 288 of the Texas Administrative Code (TAC) became effective on December 6, 2012; Subchapter B requires the submission and implementation of a drought contingency plan that meets the following minimum requirements for retail public water suppliers:

- **Public Participation:** Preparation of the plan should include provisions for continuing public informing the public and providing opportunity for public input.
- **Public Education:** The plan should include provisions for continuing public education and information regarding the drought contingency plan.
- **Coordination with Regional Planning Groups:** Coordination with the Regional Water Planning Group must be documented to ensure consistency with the appropriate regional water plans.
- **Information to Monitor:** A description of the information to be monitored, criteria for initiation and termination of drought response stages, and an explanation of the rationale for triggering such criteria must be included in the plan.
- **Triggers:** The plan must include specific triggers to begin and end each stage of the plan.
- **Drought or Emergency Stages:** The plan must respond to a reduction in available water supply up to the drought of record, water production or distribution system limitations, supply source contamination, or system outage due to the failure or damage of major water system components.
- **Targets:** The plan should include specific, quantified targets for water use reductions to be achieved during periods of water shortage or drought.
- **Water Supply or Water Demand Management Measures:** Measures should include at a minimum, the curtailment of non-essential water uses and utilization of alternative water sources.

- **Procedures:** The plan must include procedures for initiation and termination of drought response stages and notification to the public.
- **Variiances:** The plan must include procedures for granting variances to the plan.
- **Notification:** The plan must include provisions for notification of the public of the various drought response stages.
- **Enforcement:** The plan must include procedures for enforcement of mandatory water use restrictions, including specification of penalties
- **Update of Plan:** The plan shall be reviewed and updated at least every five years.

EMERGENCY WATER MANAGEMENT PLAN

Program Goal

Drought or a number of other uncontrollable circumstances can disrupt normal availability of the City's water supply. Even though the City may have an adequate water supply; the supply could become contaminated; a disaster could destroy the supply; or system treatment, storage, or distribution failures could present the City with an emergency demand management situation. The Emergency Water Management Plan is designed to provide procedures to respond to these emergencies.

Plan Elements

Fundamental differences distinguish emergency water demand management planning from water conservation planning. While water conservation involves implementing permanent water use efficiency or reuse practices, water emergency plans establish temporary methods or techniques to be used only as long as an emergency exists. The drought contingency measures included in the Plan may be implemented as precautionary measures to assist in providing a means to improve water efficiencies, and to avoid or minimize the

impact of drought-related water shortages or other emergencies. The City of Lewisville's emergency plan includes the following elements:

- ◆ Triggering conditions signaling the start of an emergency period
- ◆ Demand management response stages
- ◆ Initiation, implementation, and termination procedures
- ◆ Public information and education procedures
- ◆ Enforcement process
- ◆ Alternative Water Source
- ◆ Coordination with Regional Water Planning Groups

Triggering Conditions

The City of Lewisville purchases water from Dallas Water Utilities (DWU) through raw and treated water contracts. Provisions within these contracts require the City of Lewisville to implement the Emergency Water Management Plan when Dallas implements similar measures. The City of Lewisville will coordinate with DWU to establish appropriate water restrictions when the water supply will be affected. The conditions, which can trigger implementation of demand management measures, include diminished raw water supplies in the Dallas Water Utilities connected reservoirs, depletion of potable water storage, and equipment failures which affect the ability of the system to maintain required water pressure

Demand Management Responses

Contingent upon the severity of the triggering conditions, the Water Management Plan calls for three phases of response to emergency demand situations. The first stage is identified as a "Stage 1: Conservation" and calls for measures intended to reduce loss and waste of water, improve the efficiency in the use of water and to protect water as a valuable resource on a continuous basis. The Target for this first stage is to achieve a 1 percent reduction in total gallons per capita per day (GPCD). Stage 1 of the Water Management Plan restricts outdoor watering by hose-end sprinklers or automatic irrigation systems to twice per week year round, with specific time limitations imposed from May 1st through September 30th of each year. Stage 2: Water Emergency limits outdoor watering by hose-end sprinklers or automatic irrigation systems to once per week year round, with specific time limitations imposed from May 1st through September 30th of each year. Additionally this stage imposes restrictions that prohibit certain water uses and provides for a temporary increase in retail water rates for water use in excess of 6,000 gallons per month. The Target for the second stage of this plan is to achieve a 3 percent reduction in total gallons per capita per day (GPCD). If Stage 3: Water Crisis is declared, additional restrictions are imposed that prohibit all landscape watering, and allow the City Manager to require reduced consumption by commercial water users, and provide for a temporary increase in retail water rates for water use in excess of 6,000 gallons per month. The Target for the third stage of this plan is to achieve a 5 percent reduction in total gallons per capita per day (GPCD).

Initiation, Implementation, and Termination Procedures

The Mayor, Mayor Pro Tem, City Manager, or City Manager's duly appointed representative, serves as Administrator of this plan, and is authorized to declare an emergency exists and require the implementation of measures prescribed in this plan. The Public Services Director shall advise the Administrator that urgent water conditions exist, and the Administrator shall order implementation of the appropriate stage of the plan. The order will be immediately communicated to the public by way of media news release, the city cable channel, web site, or other means available and appropriate for the response required.

Declaration of any stage of the Emergency Water Management Plan can be effective for up to sixty (60) days from the date of announcement. Upon recommendation of the Public Services Director, the Administrator may upgrade or downgrade the stage of emergency when conditions triggering the emergency change. The City Council may extend the duration of the emergency order for an additional length of time not to exceed one hundred twenty (120) days at each stage of emergency. When conditions triggering the emergency no longer exist, the Administrator may terminate the order through public announcement by way of media news release, the city cable channel, web site, or other means available and appropriate by the Administrator.

The Texas Commission on Environmental Quality shall be notified of the current stage of the Drought Contingency Plan, as required for implementation of Stage 2 or Stage 3 mandatory provisions of the Emergency Water Management Plan.

Public Information and Education Procedures

As indicated in the previous section, public notification of implementation of the Emergency Water Management Plan will be made through all media outlets available to the City of Lewisville; these include media news releases, the city cable channel, website, emergency notification system, or other means deemed appropriate by the Administrator. During the emergency response period, the public will receive regular updates through local newspapers and cable channel regarding the status of the water emergency. Additionally, as a component of the Water Conservation Plan, the purpose and stages of the Emergency Water Management Plan will be communicated to the public through the distribution of various printed materials.

Enforcement

All water users are expected to comply with the restrictions imposed by implementation of this Plan. A person commits an offense if he or she knowingly makes, causes, or permits use of water contrary to the demand management measures implemented. Any person who violates or fails to comply with any provision of the emergency measures shall be guilty of a misdemeanor, and upon conviction thereof in the Municipal Court of Lewisville, Texas, shall be subject to a fine of not more than \$500 for each offense. Each day such offense is continued, shall constitute a new and separate offense. During the period that the Plan is operative, the Administrator may grant exemptions in special cases where a water user can demonstrate extreme hardship or need relating to his/her health, safety, welfare or other merited exemption.

All City employees shall assist as needed in notification and enforcement of the Emergency Water Management Plan. The Police Department is authorized to enforce the penalties as described above upon violation of the emergency measures.

Alternative Water Source

The City of Lewisville, by contract with DWU, has access to an unlimited amount of untreated water from Lewisville Lake with the only restriction being availability. In the event of a drought that would deplete Lewisville Lake, the City of Lewisville would make necessary arrangements for transporting water, concomitant with demand management measures.

Coordination with Regional Water Planning Groups

The City of Lewisville is located in both Dallas and Denton Counties and is part of the Region C Water Planning Group. Lewisville receives all of its water from Dallas Water Utilities, which is one of the five major water providers identified in the Region C Plan. A copy of the City of Lewisville's Water Conservation and Emergency Water Management Plan will be submitted to Dallas Water Utilities and the Region C Water Planning Group.