City of Norman

Water Conservation Plan 2021

(As Amended)

Lake Thunderbird, Norman, OK
Photo credit: Bryce Holland

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1.0 HISTORY OF THE CITY OF NORMAN WATER SYSTEM

Settlement of public lands near the Little River and the South Canadian River in central Oklahoma progressed rapidly once the area was opened to entry in the late 1800's. In this area, the once known settlement called Camp Norman was incorporated into the City of Norman on May 13, 1891. Since its incorporation, the City of Norman has continually expanded. About this same time, the State of Oklahoma established the University of Oklahoma in Norman. Since then, our histories have traveled together.

For the first 65 years of our history, Norman's water supply was from wells drilled into the Garber Wellington Aquifer located beneath central Oklahoma. The aquifer is sometimes referred to as the Central Oklahoma Aquifer. The aquifer ranges South to North from Norman to Guthrie. The aquifer ranges west to east from I-35 to Shawnee. In the 1940's, city officials began to realize the need for additional water resources which led to discussions with the Bureau of Reclamation and ultimately the reconnaissance study for a reservoir in 1949.

A Feasibility Study followed in 1954, a Reappraisal Report in 1959, and a Definite Plan Report in 1961. These all led the Federal Government to the conclusion that a surface reservoir was needed to serve area communities. The reservoir was named The Norman Project, eventually to become Lake Thunderbird and was authorized by Congress on June 27, 1960. The Norman Project considered serving Oklahoma City, Tinker Air Force Base, Norman, Midwest City and Del City. Oklahoma City realized the quantity was too small for their efforts. Tinker decided to stay with their wells which left the supply for Norman, Midwest City, and Del City. Three members from Norman, three members from Midwest City, and one member from Del City were appointed to form the Central Oklahoma Master Conservancy District (COMCD) in 1961. Their purpose was to manage the needs of all project participants. The lake was designed to yield a reliable water supply of 21,600 acre feet per year or approximately 7 billion gallons per year. The contract stated that Norman would receive 43.8%, MWC 40.4%, and Del City 15.8%. The population for Norman was 33,412 in 1960.

Throughout this time the lake and the water wells have continued to be used to supply its citizens as needed. In the 1970's increased peak day water demand was stressing the system. In 1982, the water treatment plant (WTP) was expanded from 7 million gallons per day (MGD) to 14 MGD. Though this did not expand the annual allocation of water from Lake Thunderbird, the WTO was now capable of replenishing water used after peak day demands experienced in the summertime. The population for Norman had grown to 68,020 in 1980. As the population and associated water demands expanded over time, this led to water shortages and rationing in the 1990's for Norman. Additional water wells began to be constructed and, in 1999, 31 wells along with a 14 MGD water treatment plant were being utilized to meet Norman's demand. The population for Norman was 95,694 in 2000.

In 2000, Norman completed a connection to the treated water supply system of Oklahoma City. This connection served as an emergency reserve supply and was only operated during times of extreme demand or system emergency. While producing water from the lake and wells is a much lower cost than purchasing water from Oklahoma City, and it was more economical at this time for Norman to purchase additional water at Oklahoma City's Peak Rate. In January of 2006, the arsenic rule came into effect which lowered the arsenic limits from 50 micrograms per

liter to 10 micrograms per liter. This lower limit forced the City to turn off several wells and Norman's water supply was reduced to 15 active wells along with the water from Lake Thunderbird. This same year, the citizens of Norman voted to significantly raise their water rates in order to address the impacts of the more stringent arsenic limits. With the rate increase, new wells were drilled in northeast Norman. Also, large irrigation users were reviewed in an effort to replace their potable water needs with irrigation quality water. Norman began encouraging citizens to practice conservation every day.

Prior to our current tiered water rate structure, over 60% of households used more than 20,000 gallons per month. In July 1999, following voter approval, the City moved to a tiered water rate structure in which the cost of water increases as customers use more water. This has reduced the number of households using more than 20,000 gallons per month to below 50%. More information on our utility rates can be found at the link below:

https://www.normanok.gov/your-government/departments/finance/utility-rates-and-information

In 2016, the City of Norman was operating with the same amount of water that it had in 2006 (21,600 acre feet annually from Lake Thunderbird and 31 water wells). The cost of purchasing water on an emergency basis from Oklahoma City had increased substantially, so in 2015, the City of Norman began purchasing 1 MGD from Oklahoma City on a regular basis since it was now cheaper than paying for an occasional emergency supply. The annual purchase from Oklahoma City has helped with the water quantity situation and the City continues to purchase water today. The cost of purchasing water directly from Oklahoma City increases after each new contract agreement, so it's becoming even more important for Norman to find alternative sources of supply. Today, the City of Norman operates with 21,600 acre feet annually from Lake Thunderbird and 32 active water wells, with an additional 9 water wells in the latter phases of construction, for a total of 41 water wells, in addition to the 1 MGD purchased from Oklahoma City. The population for Norman as of July 2020 is 128,026.

2.0 WATER SYSTEM INVENTORY

2.1 Water Wells

Today, Norman utilizes Lake Thunderbird, 32 water wells drilled into the Garber Wellington Aquifer, and purchases 1 MGD from OKC to meet everyday water needs. Ground water is pumped from the Garber Wellington Aquifer directly into Norman's water distribution system with the exception of a few wells. Some wells are blended with other water sources to meet the arsenic rule. One well has an arsenic removal system set up with chloramination. The remaining wells meet current water quality standards without additional treatment. City staff continues to monitor updates to the ground water rule and unregulated contaminants that might be added in the future.

Currently, nine new water wells are under construction and will be online within the next few months. This is in accordance with our 2060 Strategic Water Supply Plan which is available for review on the City of Norman website and at the link below. The addition of these wells will create new blending sites with multiple wells in order to continue to meet the arsenic rule in

addition to moving to future plans of creating one blending site/treatment center for all City water wells before entering the distribution system.

https://www.normanok.gov/your-government/departments/utilities/water-treatment/strategic-water-supply-plan

Figure 1 graphically shows the general distribution of active water wells, including those closed due to high arsenic, as well as the nine new wells under construction, and their physical relation to Lake Thunderbird.

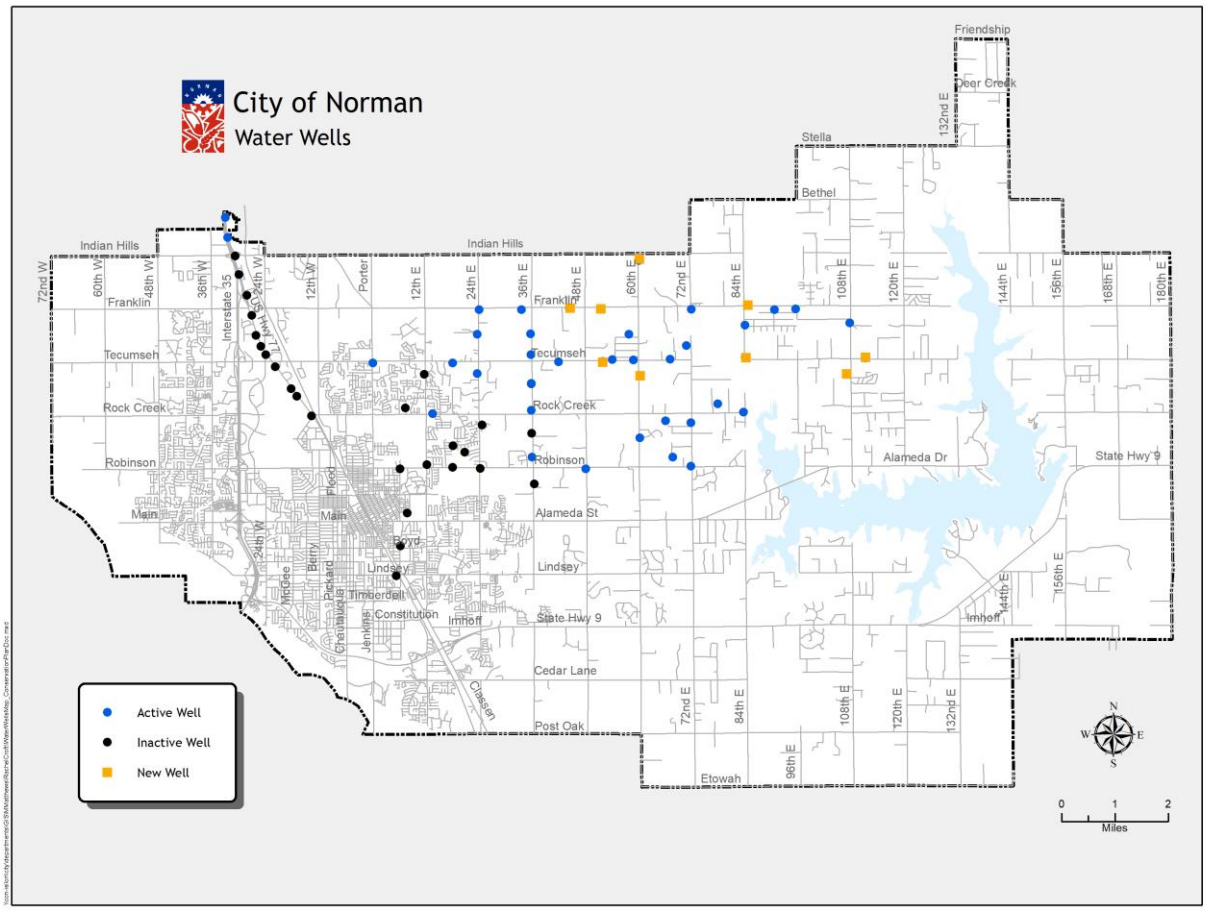


Figure 1. Active, inactive, and new wells for the City of Norman

2.2 Water Treatment Plant

Untreated "raw" lake water is delivered by the COMCD to Norman's water treatment plant. The plant design is conventional softening and it was constructed in the mid 1960's. The plant was expanded in 1982 and again in 2010 (Phase I). The water plant recently underwent additional water treatment improvements (Phase II) that will address taste and odor, algal toxins, pharmaceuticals and personal care products that might be found in the raw water supply by incorporating ozonation and ultra-violet light as part of these improvements. Figure 2 is the current treatment process for Norman's water treatment plant.

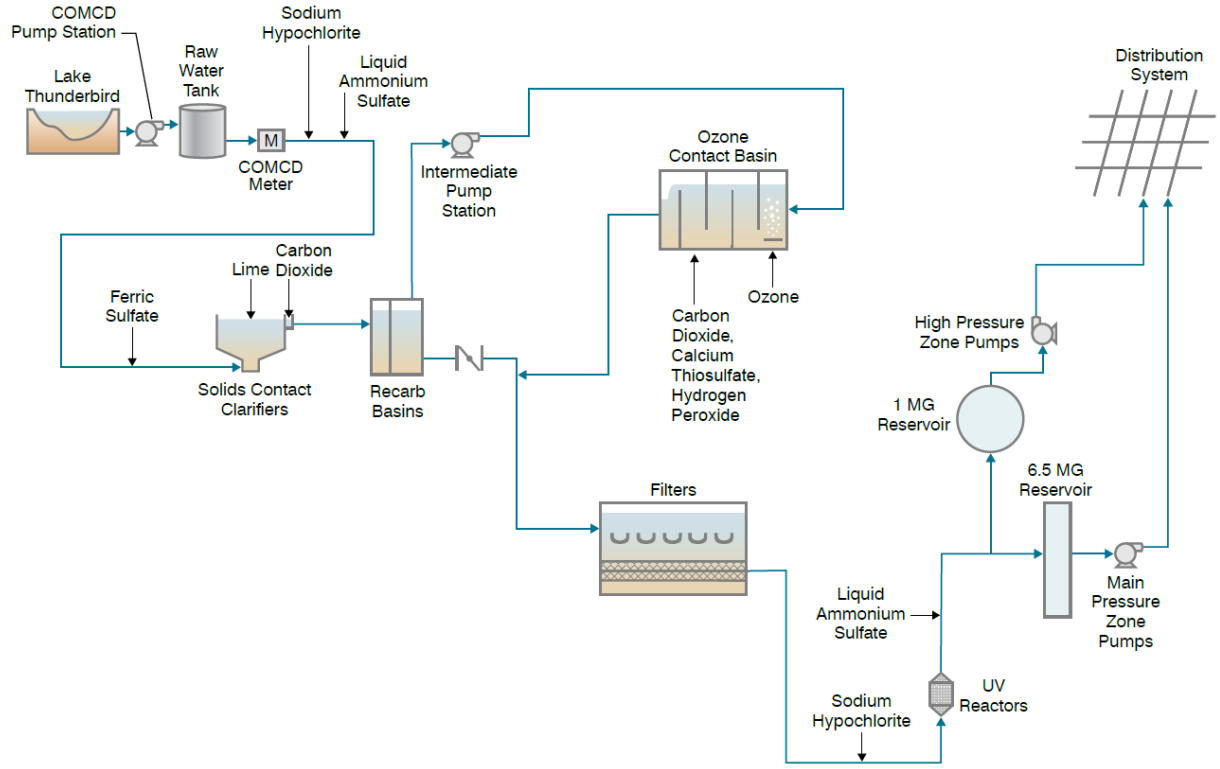


Figure 2. Water treatment process for the City of Norman

2.3 OKC Connection

Oklahoma City discontinued the peak purchase contract and Norman signed a new contract to purchase 1 MGD for the next fixe plus years. This contract quantity can be increased moving forward and staff will continue to monitor. The vault location is located at the northwest boundary of Norman's city limits.

In addition to the current 1 MGD flow, the supply line connecting Norman to Oklahoma City provides an emergency supply source. Maximum delivery rate can vary from 6.5 to 9 MGD depending on season and ultimately the pressure differential between Oklahoma City and Norman. However, City staff stays at or below 7 MGD to minimize pressure disturbances.

3.0 WATER RIGHTS vs PRODUCTION

3.1 Water Supply Permitted Rights – Wells

A majority of Norman's ground water right permits are temporary permits which allow withdrawal of 2 acre-feet of water per acre per year. Norman is permitted for approximately 38,055 acre-feet of ground water which equates to roughly 12.4 billion gallons per year. The Garber-Wellington aquifer is currently being studied by the Oklahoma Water Resources Board and the Association of Central Oklahoma Governments (ACOG). Preliminary data suggests that

the sustainable yield is much less than the current water rights issued under temporary permits. ACOG indicates the recharge rate is approximately 2 inches per year which suggests that the sustainable yield will probably be between 0.25 and 0.5 acre-ft of water per year. If the decision is made to reduce the yield to 0.5 acre-ft of water per year, the NUA's water rights will be 3.08 billion gallons per year or an average of 8.4 Million Gallons per Day (MGD). This reduced yield would only allow for 30 wells operating 70% of the time throughout the year. Therefore, if the temporary permits are reduced before becoming final permits, additional ground water rights will be necessary. Staff hired a consultant to review Norman's water rights and possibly add to them and it was concluded that Norman is only using 20% of their current water rights. This ensured that the City would still be under their allocation after drilling 9 more water wells to increase production 2 million gallons per day.

3.2 Water Supply Permitted Rights – Surface Water

Norman's surface water comes from Lake Thunderbird which is controlled by the Central Oklahoma Master Conservancy District. Norman is permitted to use an allotment of 3.083 billion gallons per year. This equates to an average of 8.4 MGD. The Norman water treatment plant and raw water supply line had a maximum daily capacity of 14 MGD until 2011 when it was expanded to 17 MGD. However, since the annual average must remain at 8.4 MGD or less, Norman must use less surface water in the winter months to allow for the additional demand in the summer months. Norman has executed a contract with Del City and Midwest City to utilize their unused portion of water rights each year at a specified cost and as stipulated by contract. These agreements will potentially aid during years if and when Norman is over its annual lake allocation.

3.3 Water Production

Daily records are kept on the operations of each source of supply. Figure 3 represents the annual water usage from the three sources available to Norman. The Oklahoma City supply connection became available in summer 2000 and was an important part of our summer peak supply through 2016. Norman and OKC signed a new contract in 2016 in which Norman will purchase 1 MGD and no longer have the ability to peak from OKC.

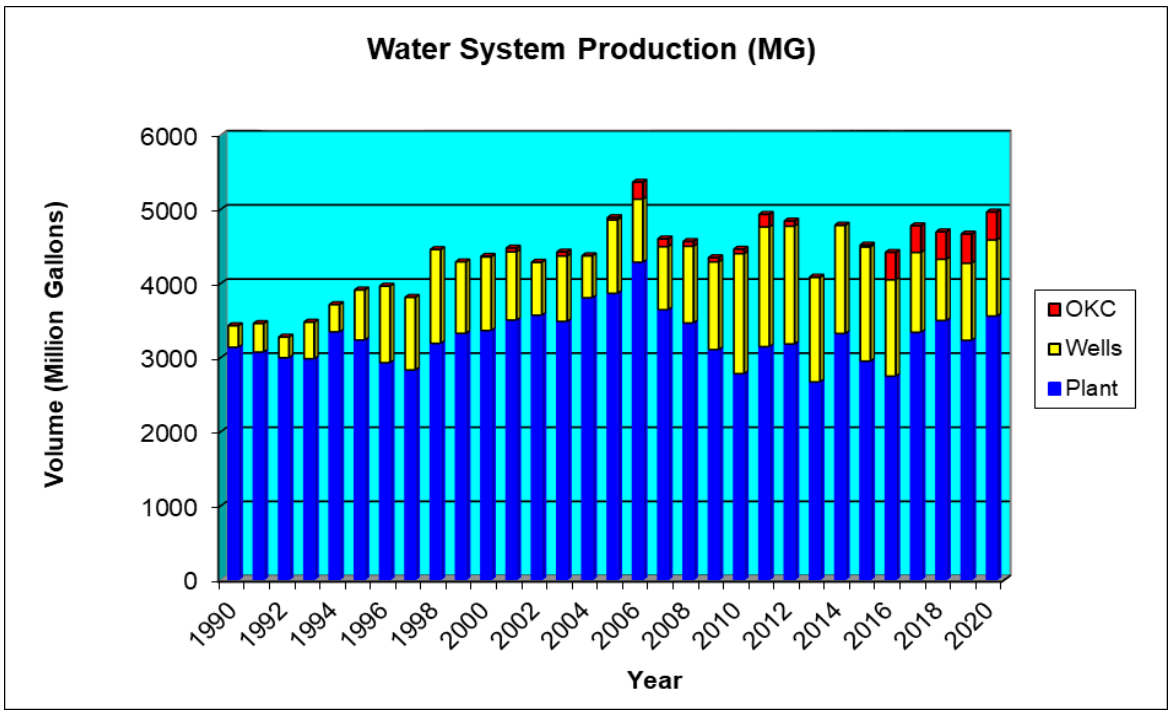


Figure 3. Production from City wells, water treatment plant, and purchased water from OKC

4.0 WATER CUSTOMER PROFILE

Norman is not a heavily industrialized community. Residential customers consume the majority of the water produced. Within Norman, the University of Oklahoma is the only purchase water system, which operates individually. Griffin Memorial and two mobile home parks used to also be considered purchase water systems before the Oklahoma Department of Environmental Quality edited the definition of a purchase water supply system in 2019.

Water demand is influenced by the population served, per capita water use, weather conditions and conservation measures, while the water supply capability is largely a matter of the resources available. To assess Norman's ability to meet future needs, the 2040 Strategic Water Supply Plan was developed to address water system improvements and expansion needs based on projected trends in usage. These efforts were based on historical data collected from Norman's operational and growth records. The 2040 Water Supply Plan projected continued gallon per capita day (gpcd) increases. The more recent 2060 Strategic Water Supply Plan has refined earlier projections and tapered forecasts down from original projections. These tapered forecasts are warranted since older household fixtures are continually replaced with newer water conserving devices and education continues regarding water conservation within the community.

4.1 Population

Norman's continual growth since 1890 is reflected in Table 1. The data provided in Table 1 originated from the United States Census Bureau.

Table 1 – City of Norman, Historic Total Population

Year	Total Population
1890	787
1900	2,225
1910	3,724
1920	5,004
1930	9,603
1940	11,429
1950	27,006
1960	33,412
1970	52,117
1980	68,020
1990	80,071
2000	96,065
2005	101,930
2010	110,925
2015	118,294
2020	128,026

4.2 Customer Distribution

The City of Norman delivers water to retail customers inside the City Limits. Table 2 provides a customer summary for the City of Norman in February 2021. It is worth noting the City of Norman, unlike most cities, does not have a reserve water supply to meet future industrial ventures should a company want to relocate their business to Norman.

Table 2 – City of Norman, Water Use Customer Summary in 2021

Category	# of Accounts
Residential	38,090
Commercial	2,252
Industrial	36
Institutional	54
City of Norman	171
Schools/Government	32
OU	31
Total Customers	***40,666***

5.0 WATER USE PROFILE / RATES

5.1 Per Capita Consumption Data

Table 3 provides the calculated per capita information available from 1960 to 2020 . Data from 1960-1980 are based on previous data projection methods. Data from 1990-2020 are based on projections obtained from the 2060 Strategic Water Supply Plan which was last evaluated in

2014. The data uses populations from available censuses and interpolations from these censesus, and also assumes increases in service connections from 85% in 2000 to 88% in 2020.

Table 3 – City of Norman, Historical Capita Consumption of Water

Year	Per Capita Consumption (gpcd)
1960	74
1970	81
1980	100
1990	138
2000	147
2001	148
2002	140
2003	142
2004	138
2005	152
2006	165
2007	139
2008	136
2009	128
2010	129
2015	119
2020	120

Values presented in Table 3 represent experienced demands. Though data from 1960 forward shows an increasing trend, data since 1990 indicates somewhat of a downward trend. Figure 4 below illustrates these trends.

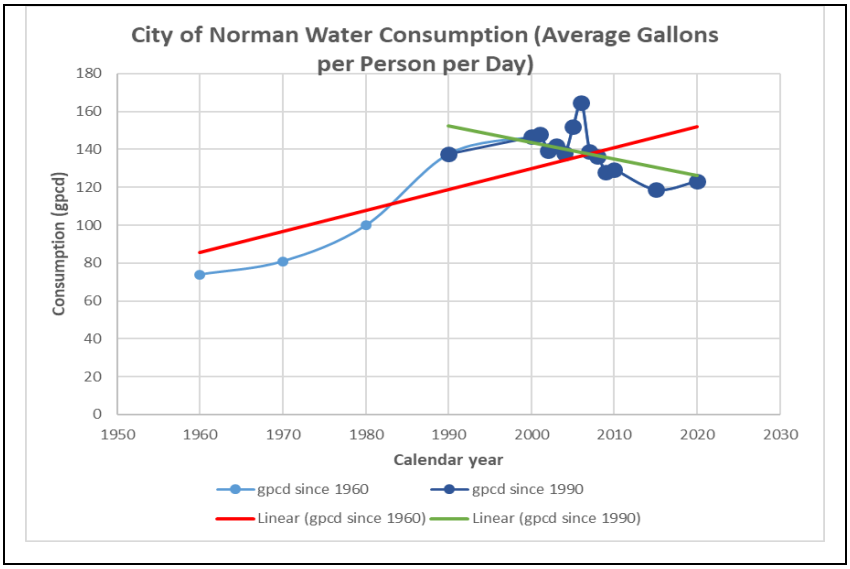


Figure 4. Water demand and consumption trends since 1960

It is expected that per capita consumption will increase with climate / weather. Data from the Oklahoma Climatological Survey is presented in Figure 5 below. It shows that Oklahoma has been in a period of above average rainfall since about 1983, which may account for the flattening of the water use trend. The state average water use is near 180 gpcd, indicating that Norman has already achieved significant water conservation. Further water conservation will probably be more difficult, and if Oklahoma enters a dry weather trend the increase may outweigh the savings that may be achieved.

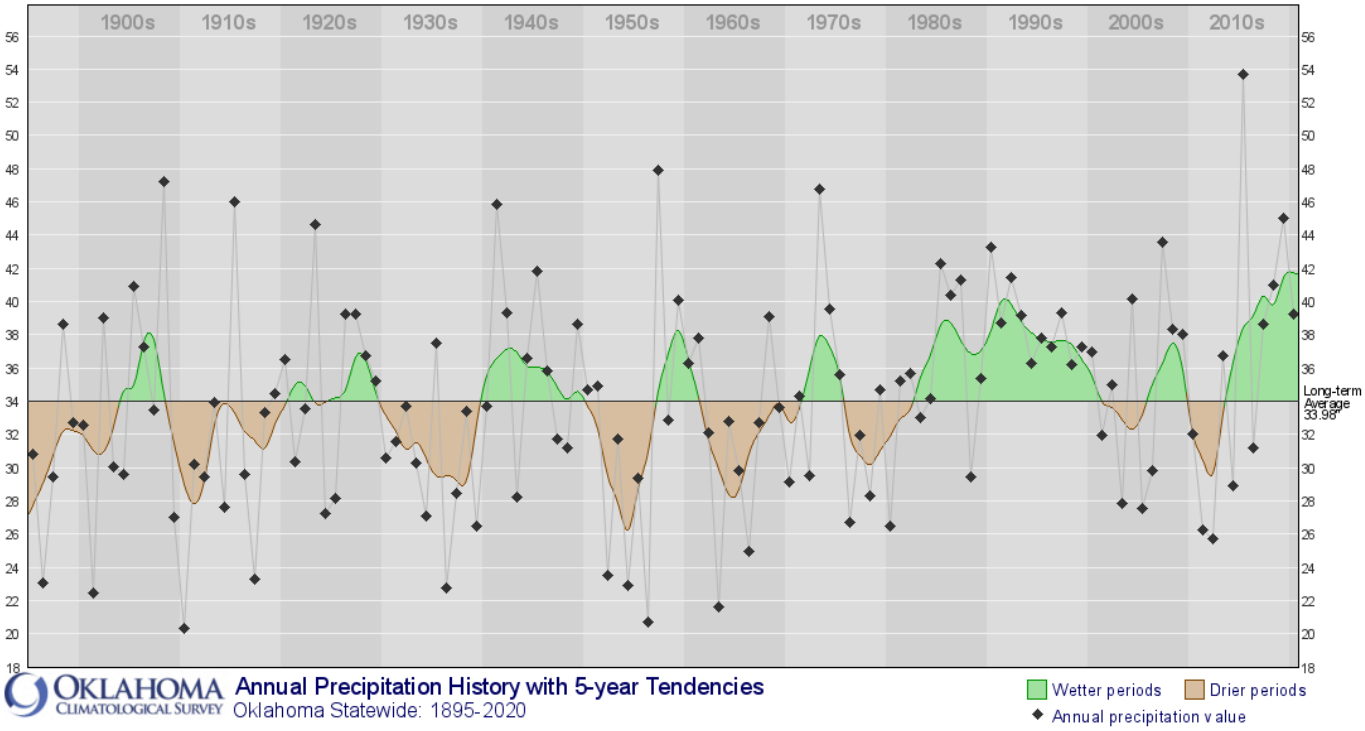


Figure 5. Oklahoma Climatological Survey Annual Precipitation History

5.2 Water Pricing Structure

The water rate structure in Norman is established by a majority vote of the public. The city charter prohibits increasing water rates by administrative action. The voters passed a water rate increase January 2015 by a 67% to 33% vote. The rate increase allowed the NUA to pay for $50 million worth of improvements involving both water quality and quantity. Norman's current water rates can be found on the City's website:

https://www.normanok.gov/your-government/departments/finance/utility-rates-and-information

6.0 SYSTEM LOSS PROFILE

Utilities staff continually monitors percent loss within the water distribution system. Utilizing a 12 month running average, Norman's unaccounted water ranges from 9 – 15%.

In addition, City staff uses a free water audit software from the American Water Works Association (AWWA) that accounts for all water supplied, authorized consumption, real and apparent losses, non-revenue water, and system data in order to determine a more accurate water loss value for the entire year. In addition, priority areas are given for which the system can improve their score such as customer metering inaccuracies.

6.1 Water Treatment System Loss

Raw water is delivered to Norman's water treatment plant by the Central Oklahoma Master Conservancy District. Line losses in their delivery system are unknown. Losses within the boundaries of the treatment plant are thought to be minimal. Recent flow meters have been installed with the plant rehabilitation that will better track water inventories. Losses are usually attributed to the evaporation of filter backwash process water as it is held for extended periods in the residual ponds.

6.2 Distribution System Loss

As mentioned earlier, system losses are believed to be in the order of 9 – 15%. To minimize this value, line maintenance personnel are available 24 hours a day to address system failures as they occur. Upon being notified of a failure, crews respond with quick corrective action.

Another known source of water loss within the distribution system is from old and or fatigued water meters. The older meters have mechanisms that spin and account for the water used. These mechanisms deteriorate over time and are not able to register all of the water delivered to the customers. Line maintenance crews routinely test, remove and replace meters in an effort to improve water accountability. Approximately 700 meters are replaced annually of the 40,666 total meters. This equates to a replacement cycle of once every 58 years. American Water Works Association recommends a replacement cycle of small meters once per 10 years and suggest annually checking large meter accuracy since these usually register larger amounts of water used in the water system. In order to address these customer metering inaccuracies and lower the amount of water loss experienced each year, the City has plans to upgrade every water meter with Advanced Metering Infrastructure (AMI). These new meters will be able to continually communicate via radio frequency rather than manual reading for a more accurate monthly usage number.

7.0 WATER MANAGEMENT

Water Management for the City of Norman is very important, considering the historic increases in customer usage along with a growing population. The combination of growth, a slight increase of customer usage and most importantly a limited local water supply lead to significant water supply problems in the very near future. Recent conservation efforts have resulted in a

decrease in per meter usage while the population has increased. However, additional supply is necessary in addition to continue conservation efforts.

7.1 Water Use Issues

Norman utilizes Lake Thunderbird as its source for surface water supply. In addition to this, water wells into the Garber Wellington aquifer provide the other component of water supply. Each source is currently experiencing problems with either quantity capability or quality.

Since the 1960's, Lake Thunderbird has historically served the majority of Norman's water demand needs. The annual allotment from Lake Thunderbird is 9,460 acre-feet (3.082 billion gallons). In 1988 Norman exceeded the allotment for the first time. Since then, the water treatment plant use has exceeded the allowed allocation fifteen times. The demands on Lake Thunderbird have increased to the point that it cannot provide the City's supply requirements on a continual basis. Figure 6 depicts Norman continually increasing demand placed on Lake Thunderbird. Recent efforts were made to operate the well field at a maximum yield to reduce the annual demand from Lake Thunderbird and bring Norman's usage within the permitted allocation.

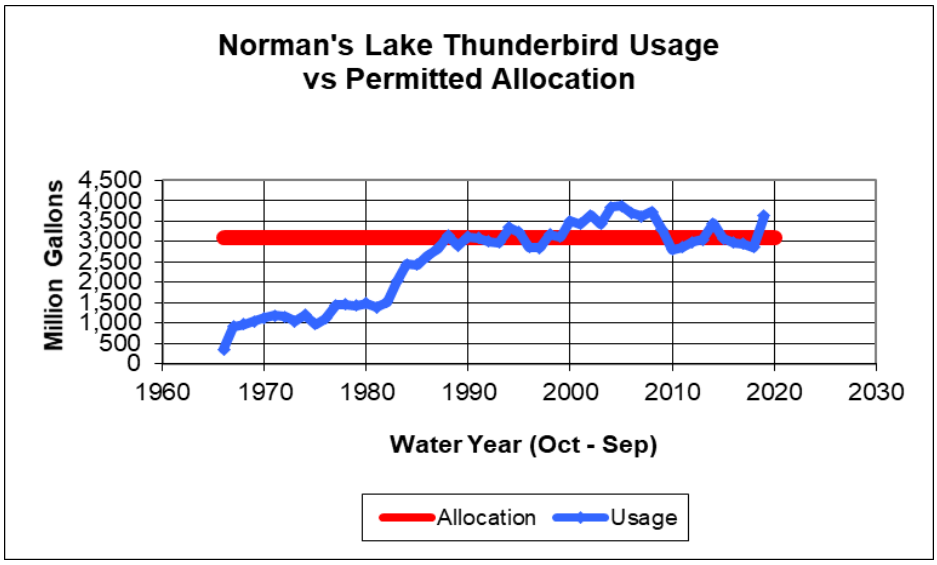


Figure 6. City of Norman Lake Thunderbird usage versus allocated volume

To reduce the demands on Lake Thunderbird, Norman began to rely heavily on water production from ground water wells to meet demands. This practice allows Norman to limit the extent of exceeding the Lake Thunderbird allotment annually. It is uncertain at this time if the well field can withstand this increased pumping strategy over time. Additionally, Norman must continue to address increased regulations regarding groundwater. The most impacting rule change was the one establishing new limits in the amount of naturally occurring arsenic. This rule change resulted in the loss of fourteen wells from service. In addition, another well failed fluoride

testing and one structurally failed. By January of 2006, the loss of these wells reduced Norman's total ability to supply water to a peak rate of 18.4 million gallons per day.

Currently, EPA is reviewing the existing regulatory limits for Chromium. If the current 100 parts per billion (ppb) regulation is reduced to a limit of 10 ppb or less, it will require most of the well field to be shut down and/or costly treatment added to continue use. EPA has also recently released candidates for future contaminants of concern which include vanadium. Similar to the other metals, the Garber Wellington well field has levels of vanadium prevalent as well.

7.2 Water Use Goal

Conserving and reusing water will ultimately save Norman citizens money and decrease the demands placed upon the environment in the form of additional supplies. Norman's conservation efforts have accomplished a reduction in the growth of the per capita usage. To further reduce per capita water usage, a combined effort of public education and water pricing will be necessary to achieve further reductions. In all cases, Norman will still need additional supplies of water for the future.

Indirect Potable Reuse (IPR) was recommended in the 2060 Strategic Water Supply Plan. The idea is based on treating water from the water reclamation facility to such a high quality; it could be placed back into Lake Thunderbird to augment the lake water supply. DEQ is currently drafting rules to allow for the possibility of such a reuse scenario. If the IPR rules become too stringent, the City of Norman will look at Direct Potable Reuse as a potential water source. This would entail piping the highly treated water (treated to drinking water quality) from the water reclamation facility directly back to the water treatment plant. Several "fail safes" would be installed to assure all water quality parameters are met or the treatment process would automatically shut down when not sufficient. More research into the feasibility of this concept will be undertaken before it becomes a reality.

7.3 Indoor Use and Ideas for Reduction

Indoor use patters as of 2016 are shown in Figure 7.

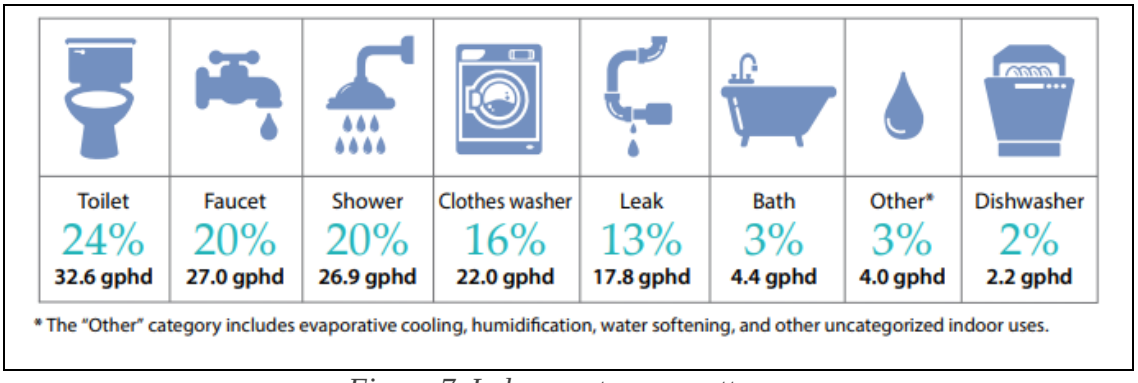


Figure 7. Indoor water use patterns

Source: Water Research Foundation Residential End Uses of Water, Version 2: Executive Report, April 2016. Available at: https://www.awwa.org/Portals/0/AWWA/ETS/Resources/WaterConservationResidential_End_Uses_of_Water.pdf?ver=2016-04-14-14-135024-200

Customers can do their part by conserving water and using water wisely. The City has material available on water conservation tips available at City Hall and on the City website. Some are included here:

- Take brief showers and/or open faucets only half or three-quarters open to minimize the total water use per shower. Installing a simple restrictor in the shower head or installing a low water use shower head can reduce water use by 25 to 35 percent. However, only opening the faucets part way will accomplish the same thing with no cost or installation required.
- Place plastic bottles or bags filled with water and a few stones in the toilet tank to reduce the volume of water used with each flush. There are also alternatives of toilet dams or low water use toilets available. These may reduce the total water used by 5 to 20 gallons per day. However, be aware a newer model is probably already a low water use model, and reducing the volume of water per flush may cause improper flushing.
- Encourage the use of faucet aerators on all kitchen and bathroom faucets, as these reduce the water flow while enhancing the rinsing action of the faucet stream.
- Use automatic dishwashers sparingly and only for full loads. Most dishwashers use 20 to 30 gallons per wash, and most or all of it is hot water. By washing only full loads or hand washing small amounts, saves in both water and energy. When cleaning dishes for the dishwasher, wipe them off with a paper towel or napkin rather than rinsing; this will save from 3 to 5 gallons.
- Wash only full loads of clothes, or match the water setting of the washer to the size of the load.
- Keep a bottle of water in the refrigerator for a cool drink. Do not run the faucet to chill the water.
- Inspect for leaks regularly and repair as soon as possible.

7.4 Outdoor Use and Ideas for Reduction

There are several ways to reduce outdoor water usage. In the summer months, Norman citizens more than double their indoor water usage recorded in the winter months. Outdoor ideas include:

- Use a nozzle with a cutoff feature on your garden hose when washing the car or other outdoor items. This will cut off the water flow when not needed.
- Sweep driveways or patios rather than hosing them off, unless they border a flower bed or garden. If so, wash so the water will run to the garden or flower bed. Get double duty from the water used.
- Plant trees, shrubs and ornamentals that are adapted to dry conditions. Use mulch around plants and shrubs to help limit evaporation and retain water. Use sprinklers sparingly and

water after the sun goes down to limit evaporation. Where possible, use soaker hoses instead of sprinklers, as they are more efficient. Don't over fertilize your lawn, since this will make it require more water than normal.

- If you have a swimming pool, cover it when not in use to control evaporation.

a. Plumbing and Landscaping Ordinances

In 2005 the City of Norman began to require that all new automatic irrigation systems have a rain sensor and freeze gauges installed to promote water conservation. This measure will help to reduce the overall water usage of Norman.

Additionally, the City of Norman Code of Ordinances requires the 2009 International Plumbing Code for non-residential construction and 2009 International Residential Code be observed. Each requires low flow fixtures in new construction.

In order to protect Norman's major drinking water source, Lake Thunderbird, from phosphorus runoff, the City of Norman adopted an ordinance regulating the use of phosphorus containing manufactured fertilizers. **Soil tests are required to be conducted before an applicator may apply phosphorus containing manufactured fertilizer and applicators must register annually before application of such fertilizer.**

b. Landscape Programs

The City of Norman carefully monitors its own use of water utilized in public landscape improvements. Irrigation activities only occur when soil conditions require it. Attention is given to weather conditions and forcasts in deciding upon irrigation times for public spaces. Many areas have been switched from spray watering to ground level drip irrigation.

As for private landscape programs, Norman encourages watering early in the morning before 9:00 AM. Current practice is to periodically provide public reminders through the local press and as billing inserts about wasteful activities commonly occurring during irrigation. Through public media contact, self guided direction for landscape practices occur.

c. How much should I water my lawn?

This question is received from citizens often and the answer is dependent on several variables.

The OSU extension has a fact sheet on how to conduct a simple irrigation audit for home lawns, which can tell you how much water your lawn needs given the temperature and precipitation in summer months. Table 4a and 4b were taken from this document and gives average evapotranspiration (how much water is lost from plants due to temperature), precipitation, and irrigation needed for bermudagrass and tall fescue laws throughout the months of April – September.

The OSU extension also has a fact sheet on how to check home sprinkler systems to ensure they're working efficiently. Both fact sheets can be found on the City's website under the Pollution Prevention tab at the link below.

https://www.normanok.gov/residents-visitors/environment-conservation

Table 4a: Average monthly bermudagrass evapotranspiration (ET_{turf}), precipitation, and requirement for supplemental lawn irrigation

Month	Average Bermudagrass ET_{turf}	Average Precipitation	Average Irrigation Need[3]
		inches	
April	4.8	3.0	1.8
May	4.8	5.4	0.0
June	5.4	4.6	0.8
July	6.6	2.9	3.7
August	5.9	2.5	3.4
September	4.3	4.0	0.3

Table 4b: Average monthly tall fescue evapotranspiration (ET_{turf}), precipitation, and requirement for supplemental lawn irrigation

Month	Average Tall Fescue ET_{turf}	Average Precipitation	Average Irrigation Need[3]
		inches	
April	6.8	3.0	3.8
May	6.9	5.4	1.5
June	7.7	4.6	3.1
July	9.4	2.9	6.5
August	8.5	2.5	6.0
September	6.1	4.0	2.1

Source: OSU Extension Simple irrigation Audit for Home Lawns. Available at: https://extension.okstate.edu/fact-sheets/simple-irrigation-audit-for-home-lawns-in-oklahoma.html

Customers are encouraged to visit the OSU extension for other resources and information: https://extension.okstate.edu/

7.5 City of Norman Water Conservation Measures

Treated wastewater as irrigation reuse occurs in Norman. The University of Oklahoma uses an average of 500,000 gallons of effluent per day in the summer to irrigate the golf course. The University installed pumps and piping to connect the golf course to the discharge line leaving the treatment facility. Norman desires to utilize this resource further in the future. Figure 9 shows a typical effluent application at the University of Oklahoma Golf Course. At this time, local state regulations limit the irrigation application of effluent to controlled access areas only.

Figure 8 – City of Norman Treated Effluent Application

Since 2004, Norman has implemented a few notable water conservation measures worth mentioning.

1. Westwood Golf Course utilized potable water for irrigation since it was built in 1967. During summer time peak demands, the golf course would use the equivalent of 1 municipal water well or 300,000 gallons per day. During the 2004 remodel project, new large ponds were constructed to capture and hold storm water. In addition, the water utility fund aided in drilling a new non-potable irrigation well for use on the golf course. The irrigation well was purchased for approximately $300,000 less than the cost of a fully designed, DEQ approved drinking water well.

2. Previously, a water well not suitable for drinking water was re-purposed for irrigation only to serve the Griffin park complex. However, in 2020, with the expansion of the 7-Eleven at 12th Avenue NE and Robinson Street, the Corporation Commission paid for a new well to be drilled inside the complex away from possible gas contamination and unforeseen damage due to the close proximity to the gas station. This complex was previously dependent on Norman's treated drinking water for irrigation purposes and existing usage was not fully metered, so it is estimated that peak summer irrigation days were over 300,000 gallons per day, or the equivalent of one well during peak summer demands. Now the Griffin park complex has a new irrigation pond and a non-potable well that can be used to help supply irrigation water.

3. Wastewater Treatment Plant constructed a non-potable water system to discontinue using potable water for all of the maintenance activities, such as washing clarifier weirs, foam suppression, pump seals, etc. This is estimated at a savings of 480,000 gallons per day or the equivalent of 1 and 1/2 wells.

4. The City has plans to use non-potable effluent from the Water Reclamation Facility for irrigation at Reeves Park. About 2,000 feet of re-use line (otherwise known as "purple pipe") has been laid from Kellogg Drive to Constitution Street. Another 5,000 feet will

be installed in the future in order to connect to the wastewater facility. In addition, plans include re-purposing the Lindsey Street tower for irrigation purposes as well.

8.0 SELECTED MEASURES AND PROJECTED RESULTS

Conservation efforts undertaken in the last several years have provided a noted reduction in the growth of the per capita usage of water in Norman. Through knowledge and understanding, the citizens of Norman can continue to reduce their annual per person water demands. In addition to continuing existing programs, new efforts will be introduced to further conservation by the citizens of Norman.

8.1 Continuance of Current Fundamental Water Conservation Measures

Efforts underway in Norman to conserve water will continue into the future. All existing programs will be continued as long as funding allows. Efforts to gain citizen's support of water conserving practices will be pursued through all existing measures.

8.2 Projected Results of Conservation Efforts

Figure 4 shows the actual per capita increases in potable water consumption since 1960 yet data since 1990 indicates somewhat of a downward trend. Staff is uncertain as to how much can be attributed to conservation efforts and or the effects of recent climate patterns but will continue to monitor the data. If a growth in demand through adding industry and or extended drought patterns develops along with the expanding population, sustainability cannot be achieved with current water resources.

With additional rate increases of the conservation based water rates along with the water conservation and reuse programs listed within this document, it is projected that water consumption can be curtailed. Achieving this goal will affect the timeline of implementing water resource projects. It will not eliminate the future need for additional supplies, but will allow time for detailed consideration to be given to options available.

9.0 EDUCATIONAL INFORMATION

Norman promotes water conservation along with pesticide and fertilizer reduction activities as part of their efforts to promote a cleaner environment.

a. Lawn chemicals

Pesticides, herbicides, and fertilizers should not be used before a rain event. Using them only when the chance of rain has passed will help prevent contamination of nearby waterbodies and wildlife, and save you money. The OSU extension provides a fact sheet of how to use pesticides safely, and mitigate environmental contamination due to misuse of pesticides. This document

and other information regarding fertilizer and pesticide use can be found at (under the Pollution Prevention tab):

https://www.normanok.gov/your-government/departments/utilities/environmental-services/pollution-prevention

b. Consumer Confidence Report

Annually, the City of Norman provides the Consumer Confidence Report (CCR) to all customers and dwelling units served by Norman water. Within each CCR, the past year water quality data is made available at the following URL:

www.normanwater.com

c. Water Conservation

Norman lists information on rain barrels, gray water, and low water use plants on the City's website (under the Energy and Water Conservation tab) at:

https://www.normanok.gov/residents-visitors/environment-conservation

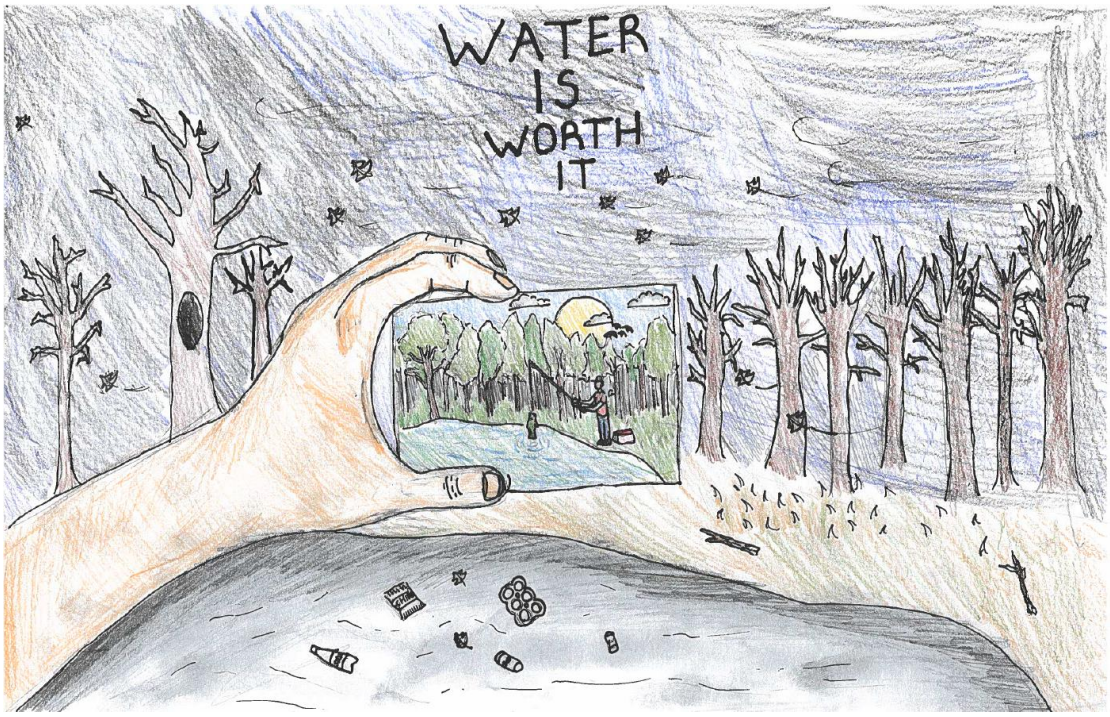
In addition, extensive conservation tips are given for water use in and around households at: https://www.normanok.gov/your-government/departments/utilities/water-treatment/water-quality

d. Environmental Control Advisory Board

The Environmental Control Advisory Board (ECAB) is a group dedicated to promoting water conservation and sustainable practices in Norman by planning for and recommending programs regarding the preservation and enhancement of environmental quality. The group meets the second Wednesday in March and the third Wednesday in all remaining months. These meetings are open to the public for anyone to participate in. For more information on ECAB, go to:

https://www.normanok.gov/environmental-control-advisory-board-ecab

In addition, each year, ECAB brings forth a proclamation to the City Council for the month of July to be considered Water's Worth It month in order to increase community awareness of water conservation. Water's Worth It month also includes a poster contest for elementary aged students with one lucky winner's design being featured on t-shirts for the next year's Earth Day Festival.



2019 Water's Worth Poster Contest Winner – Molly Neary, Terra Verde Discovery School

9.1 Media Campaign

Recently, the Water Treatment Division started a twitter account (@Vernon_WTP) and a facebook account (@CampbellWTP). These accounts are periodically updated with the total daily water usage, along with a conservation tip in order to promote awareness of the water demands customers place on the system and to encourage wise water use during periods of high water demand.

9.2 School Programs

The water treatment plant is toured approximately 15-20 times per year. The tours are usually from various schools and range from elementary to college students. Our staff on occasion attends elementary school, Boy Scout, or rotary club functions to talk about water treatment. For more information on tours and how to schedule, go to: https://www.normanok.gov/your-government/departments/utilities/water-treatment/water-treatment-plant-tours

9.3 Information and Education Program

Funds for educational actions are provided by the water utility system revenues. Future efforts will continue to expand the public's knowledge of voluntary water conservation practices. Part of the information and education program is using the 'drought monitor' web site sponsored by several state and federal organizations (Figure 10). The web site can be found at: http://droughtmonitor.unl.edu/

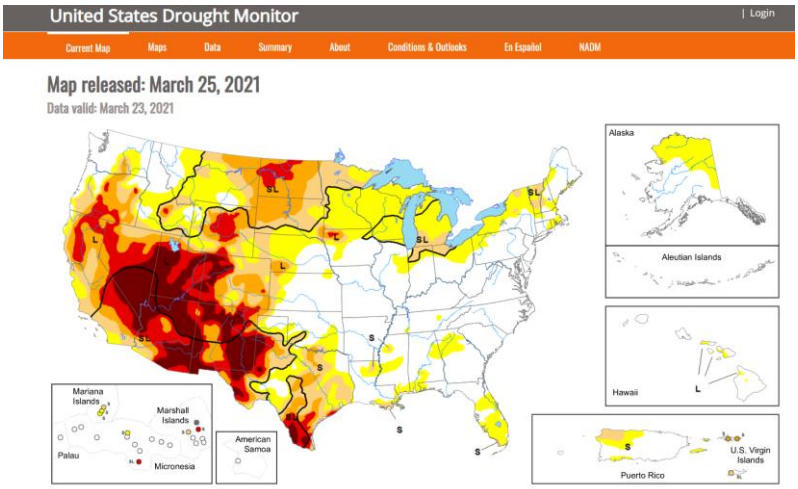


Figure 9: Screen sample of page from the United States Drought Monitor website

9.4 Water Conservation Coordinator

The City of Norman has assigned water conservation information distribution and the direction of public programs to the Environmental Services Coordinator. The responsibilities include coordinating compliance monitoring of industrial customers, coordinating water pollution educational programs, and water conservation education. The mailing address to the City of Environmental Services Coordinator follows:

City of Norman
Environmental Services Coordinator
P.O. Box 370
Norman, OK 73070

10.0 MANDATORY WATER CONSERVATION MEASURES

The Strategic Water Supply Plan anticipates reductions of water use per capita by our community as we map out our water needs through the year 2060. Outdoor irrigation is a component of water use that looks promising when looking at ways to reduce water usage. Summer peak days are approximately double the daily average of our community. Our community used an average of 12.5 million gallons per day for FYE15 and experienced a peak day usage of 24.8 million gallons per day on July 23, 2012.

Customers are encouraged to irrigate sprinklers between 4AM and 9AM. On a hot and windy day, the amount of water that never reaches your grass can be substantial. Citizens are asked to

maintain and review irrigation sprinkler operation to repair broken sprinkler heads and prevent watering of sidewalks and streets.

Hand watering landscape and gardens with a hand held hose with a positive shut off nozzle is allowed any time. Also, soaker hoses are allowed any time throughout all stages listed below.

Citizens should also be aware of water use during periods of extreme cold. In February 2021, the City of Norman experienced an unprecedented amount of snow with temperatures as low as -12°F. Running faucets to prevent freezing pipes in homes put more demand on water, which lead to such high operating volumes that are normally seen in the summer. Using pipe tape or installing instulation around your pipes can help, and opening cabinets under sinks can be an easy way to allow warm air flow from your home to keep your pipes from freezing. In addition, by knowing your homes plumbing, you can reduce the amount of water used to drip faucets by only running one faucet, rather than running them all. Pick a faucet that is on the opposite side of your home from where water enters. This allows water to run the entire length of your home. Usually a very low flow is needed, but is dependent on each home's plumbing.

During periods of water conservation, the Water Conservation Plan enables the City Manager to implement conservation stages when certain criteria are met. The City is in Stage 1, Everyday Conservation at all times unless a subsequent conservation stage is implemented. With the implementation of each subsequent conservation stage, the City Manager will sign a proclamation and publish notice of the implentation of such conservation stage in the local newspaper. City ordinances allow for the police enforcement of the limits set by each conservation stage (City of Norman Code of Ordinances; Section 21-501) should efforts to educate the public be ineffective to ensure the City maintains necessary water supplies to its citizens.

10.1 Drought Contingency Plan

- ***Stage 1, Everyday Conservation*:** The City of Norman will be in Stage 1 water conservation year round. This means the citizens of Norman will practice Odd/Even watering all year round. This strategy reduces the peak water usage and will delay the need for larger infrastructure required to deliver everyone's total water need on a per-day basis.

  Odd/Even is better explained:

  - **Last number of the building address – 1, 3, 5, 7, 9 – water odd number calendar days**
  - **Last number of the building address – 0, 2, 4, 6, 8 – water even number calendar days**

  Additional water conservation measures are utilized when drought patterns begin. The City Manager begins with Stage 2 Conservation and elevates the restrictions up to Stage 5 Conservation if drought conditions persist, and or extreme conditions dictate such.

- ***Triggers for Stage 2, Moderate Conservation*:** The City Manager may implement Stage 2 when one or more of the following criteria are met:

  1. The City water demand is within 3 MGD of the NUA's peak supply capacity for two consecutive days and there is no weather related relief in the immediate forecast. The following link is used for forecasting extensiveness of drought: http://droughtmonitor.unl.edu/
  2. There is a reduction in the long term source of water supply (i.e. supply shortage, pumps down, break or extensive damage to raw water line, contamination to water supply), or Central Oklahoma Master Conservancy District requests a 10% reduction in allocation from Lake Thunderbird.
  3. Lake Thunderbird water level drops to a water level of 1031.5 feet or 66% full (Figure 10). The following link is used for instantaneous lake level readings: http://waterdata.usgs.gov/ok/nwis/uv?07229900
  4. A large portion of NUA's water distribution system is out of service due to failure or damage of major water distribution components.

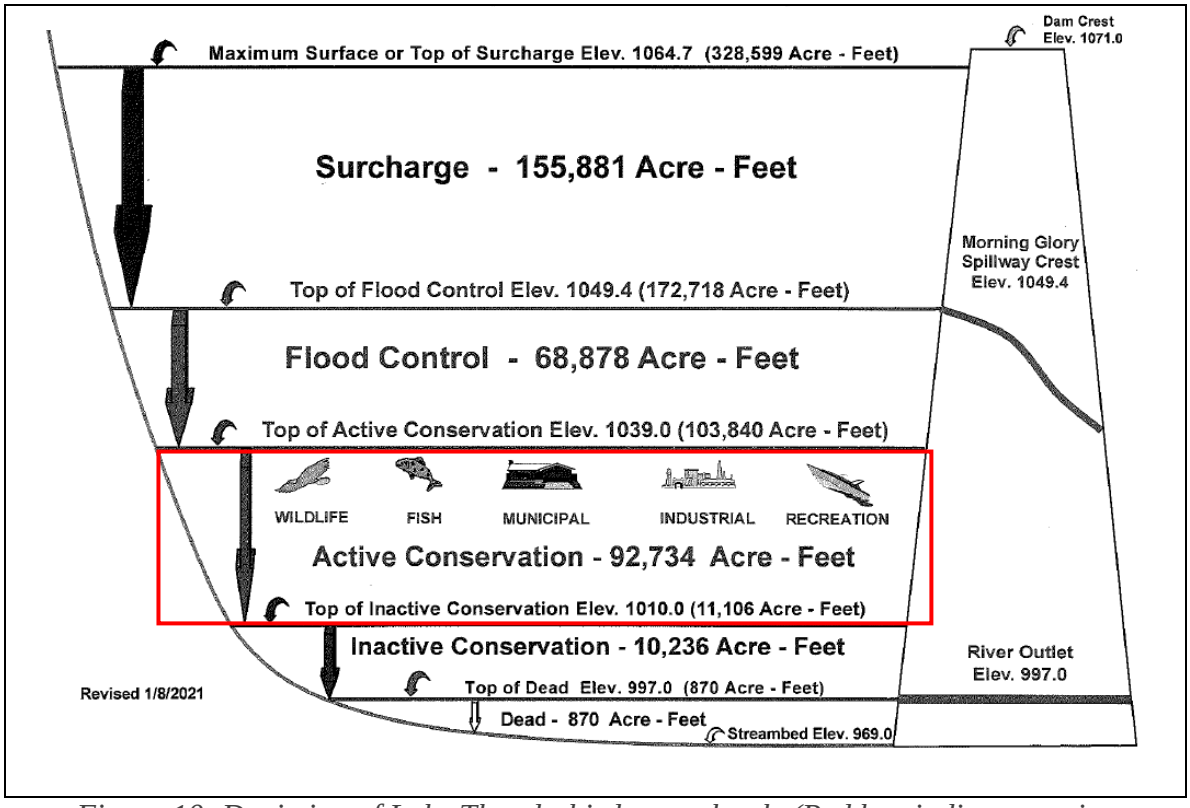


Figure 10: Depiction of Lake Thunderbird water levels (Red box indicates active conservation pool for water conservation)

Goals for Use Reduction and Actions Available Under Stage 2: The goal for water use reduction in Stage 2 is a significant reduction in the water demand to more closely match the supply capability of NUA. Water use restrictions shall apply to all customers connected to the NUA water system.

1. **Continue with water conservation actions and programs provided under Stage 1, unless they are amended or replaced by the restrictions provided in Stage 2.**
2. **All Outdoor irrigation will reduced to 2 days per week.**

- **Single-family resident address ends in odd number – Saturdays & Wednesdays**
- **Single-family resident address ends in even number – Sundays & Thursdays**
- **All others – Tuesdays & Fridays (Duplexes, Triplexes, home owner association properties, commercial, industrial, government)**

3. **All outdoor watering or irrigation is prohibited between the hours of 9AM and 6PM.**
4. Washing of cars, trucks, trailers or other vehicles is allowed on your designated landscape watering day as described above.
5. Recommend the public, developers and commercial enterprises to wait until the current drought or water emergency has passed before establishing new landscaping. New landscaping installed during any drought stage will be subject to all water use restrictions implemented. Financial loss will not constitute justification for a variance.
6. Eliminate non-essential City water use (e.g. street cleaning, vehicle washing, flushing of water lines by developers, fire hydrant testing, etc.).
7. City to reduce splash pad operation hours by 2 hours per day.
8. Washing or hosing down of buildings, sidewalks, driveways, patios, porches, parking areas or any other paved surfaces is prohibited.
9. Excessive water run-off from any landscaped area onto streets, alleys or parking lots or other paved surfaces is prohibited. Water run-off is excessive when it extends for a distance greater than ten feet from the property's boundary lines or ten feet past the targeted irrigation area.

- ***Triggers for Stage 3, Severe Conservation*:** The City Manager may implement Stage 3 when one or more of the following criteria are met:

1. The City water demand is within 1 MGD of the NUA's peak supply capacity for two consecutive days and there is no weather related relief in the immediate forecast.
2. Areas of the water distribution system have reduced water pressures less than 25 psi for 24 hours or more.

3. There is a reduction in the long term source of water supply (i.e. supply shortage, pumps down, break or extensive damage to raw water line, contamination to water supply), or Central Oklahoma Master Conservancy District requests more than a 10% reduction in allocation from Lake Thunderbird.

4. Lake Thunderbird water level drops to a water level of 1028.56 feet or 55% full (Figure 10). The following link is used for instantaneous lake level readings: http://waterdata.usgs.gov/ok/nwis/uv?07229900

5. Stage 2 Moderate Conservation was implemented based on a reduction in allocation from Lake Thunderbird of 10% and demand for water in Norman has not decreased by 10% during Stage 2 and the drought is not forecast to end in the near future. The following link is used to forecast the extensiveness of the drought: http://droughtmonitor.unl.edu/

6. A large portion of NUA's water distribution system is out of service due to failure or damage of major water distribution components.

Goals for Use Reduction and Actions Available Under Stage 3: The goal for water use reduction in Stage 3 is an immediate and drastic reduction in the water demand to more closely match the supply capability of NUA. Water use restrictions shall apply to all customers connected to the NUA water system.

1. **All of the water use restrictions implemented under Stage 1 and 2 shall continue in force except as amended or replaced by the restrictions set out in Stage 3.**

2. **Landscape watering is limited to one assigned day per week. Outdoor watering or irrigation is prohibited between the hours of 9AM and 6PM.**

    a. Customers with once a week garbage pickup (including all residential) may only water their landscaping on the same day as garbage is collected (Figure 11):

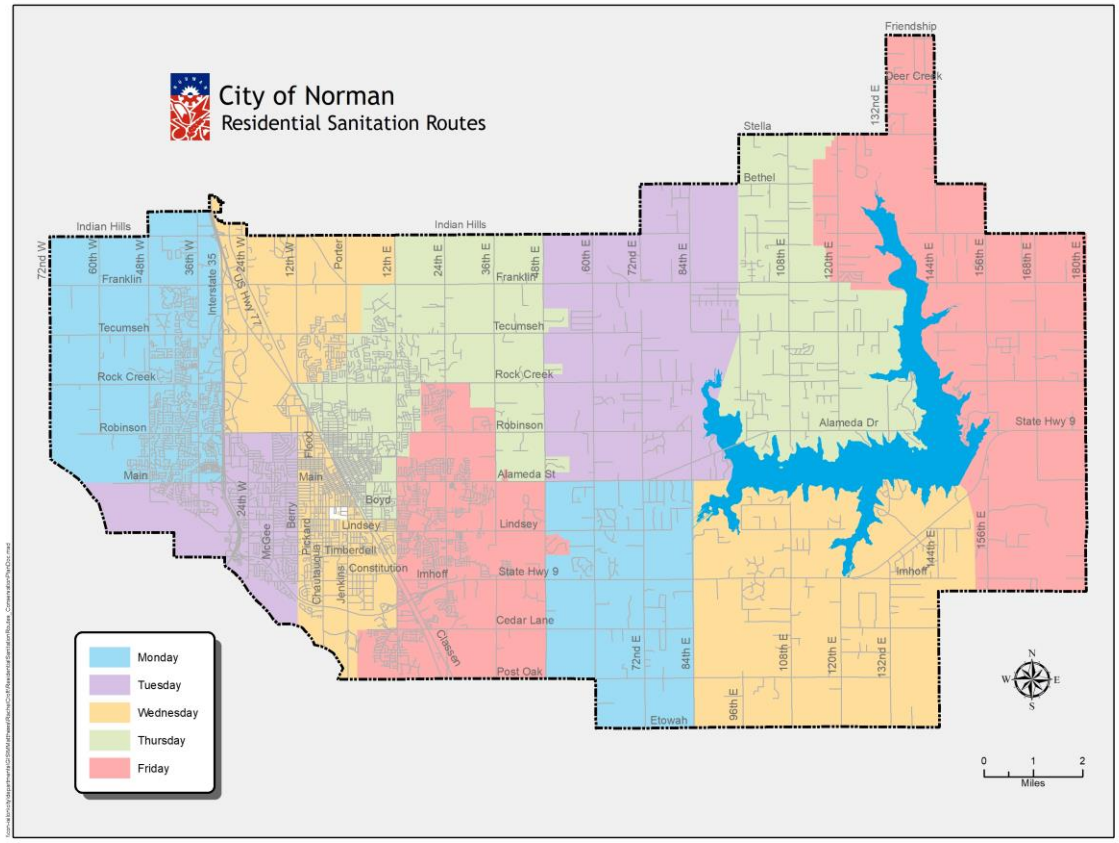


Figure 11. City of Norman sanitation routes by pickup day

b. Customers with more than one day per week garbage pick-up are limited to watering landscape according to the following schedule (Figure 12):

Area	**Allowed Landscape Water Day**
North Norman	**Monday**
South Norman	**Tuesday**
East Norman	**Wednesday**
West Norman	**Thursday**
Central Norman	**Friday**

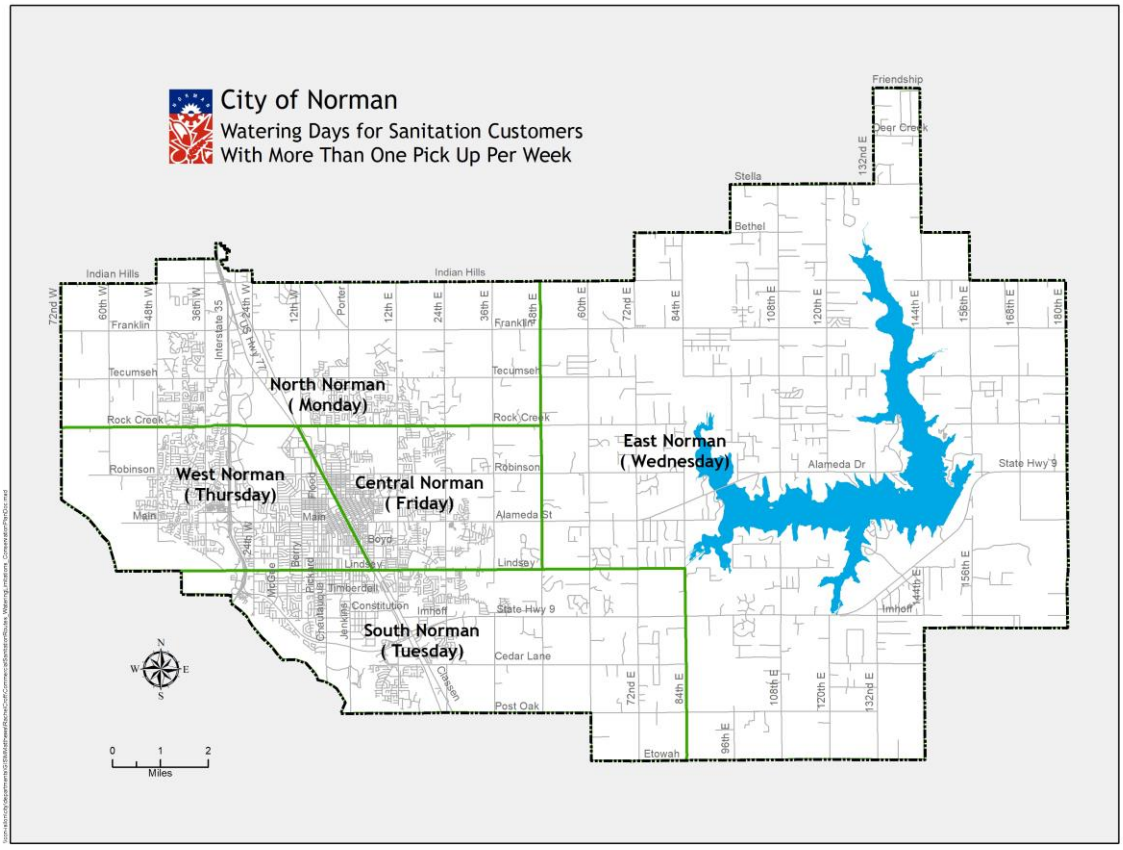


Figure 12: City of Norman watering days for customers with more than one pickup per week

3. **Except as otherwise provided herein, landscape watering is prohibited on weekends.**
4. Landscape beds may be watered on any day by using a hand operated hose equipped with a positive shut off nozzle. Soaker hoses for foundation maintenance are authorized as necessary. In all instances, run-off is prohibited.
5. Watering of City property, medians, parks, and athletic complexes will be allowed one day per week, following the North, South, East, West, Central schedule, and only before 9 am or after 6 pm. Golf course watering and irrigation using potable water shall be limited to greens and tee boxes only.
6. City splash pads will be shut off.
7. Pools may use water to maintain operational levels. Use of potable water to refill ponds and lakes is prohibited.
8. Use of potable water at construction sites for dust control, compaction or wash-downs is prohibited.
9. Bulk water usage under a bulk water permit is prohibited unless an exception is granted by the City Manager on the basis of substantial and unnecessary hardship

caused by the prohibition to the property owner. Any exception granted must be limited in time and only allow the minimum amount of water usage necessary to alleviate the substantial and unnecessary hardship caused to the property owner.

10. Washing of cars, trucks, trailers or other vehicles is prohibited, unless these items are taken to a commercial carwash.

- ***Triggers for Stage 4, Emergency Conservation*:** The City Manager may implement Stage 4 when one or more of the following criteria are met:

  1. Lake Thunderbird water level drops to a water level of 1025.0 feet or 43% full (Figure 10). The following link is used for instantaneous lake level readings:

     http://waterdata.usgs.gov/ok/nwis/uv?07229900

  Goals for Use Reduction and Actions Available Under Stage 4: The goal for water use reduction in Stage 4 is a further immediate and drastic reduction in the water demand to more closely match the supply capability of NUA. Water use restrictions shall apply to all customers connected to the NUA water system.

  1. Hand watering gardens and & flower beds only.
  2. Commercial car washes with water recycling operations only.

  *All of the water use restrictions implemented under Stage 1, 2, and 3 shall continue in force except as amended or replaced by the restrictions set out in Stage 4.

- ***Triggers for Stage 5, Emergency Conservation:*** The City Manager may implement Stage 5 when one or more of the following criteria are met:

  1. Lake Thunderbird water level drops to a water level of 1022.2 feet or 35% full. The following link is used for instantaneous lake level readings:

     http://waterdata.usgs.gov/ok/nwis/uv?07229900

  Goals for Use Reduction and Actions Available Under Stage 5: The goal for water use reduction in Stage 5 is to **Ban all outdoor watering and washing of vehicles, including commercial car washing operations**. Implementation of Stage 5, will require public notification by the City Manager. Water use restrictions shall apply to all customers connected to the NUA water system.

  *All of the water use restrictions implemented under Stage 1, 2, 3, and 4 shall continue in force except as amended or replaced by the restrictions set out in Stage 5.

11.0 ENVIRONMENTAL REVIEW

Currently the State of Oklahoma does not allow the irrigation of common spaces, such as parks and lawns, with effluent. Irrigation of controlled access Golf Courses is allowed, but common

grounds are not. At this time, the State of Oklahoma Department of Environmental Quality is beginning to consider new applications of effluent. If it is approved for use of effluent in common public spaces then the Expanded Wastewater Reclamation Efforts, described in Section 7.2 are expected to occur. If delay in approval of this type of applications occur, then reuse efforts will be limited to current practices.

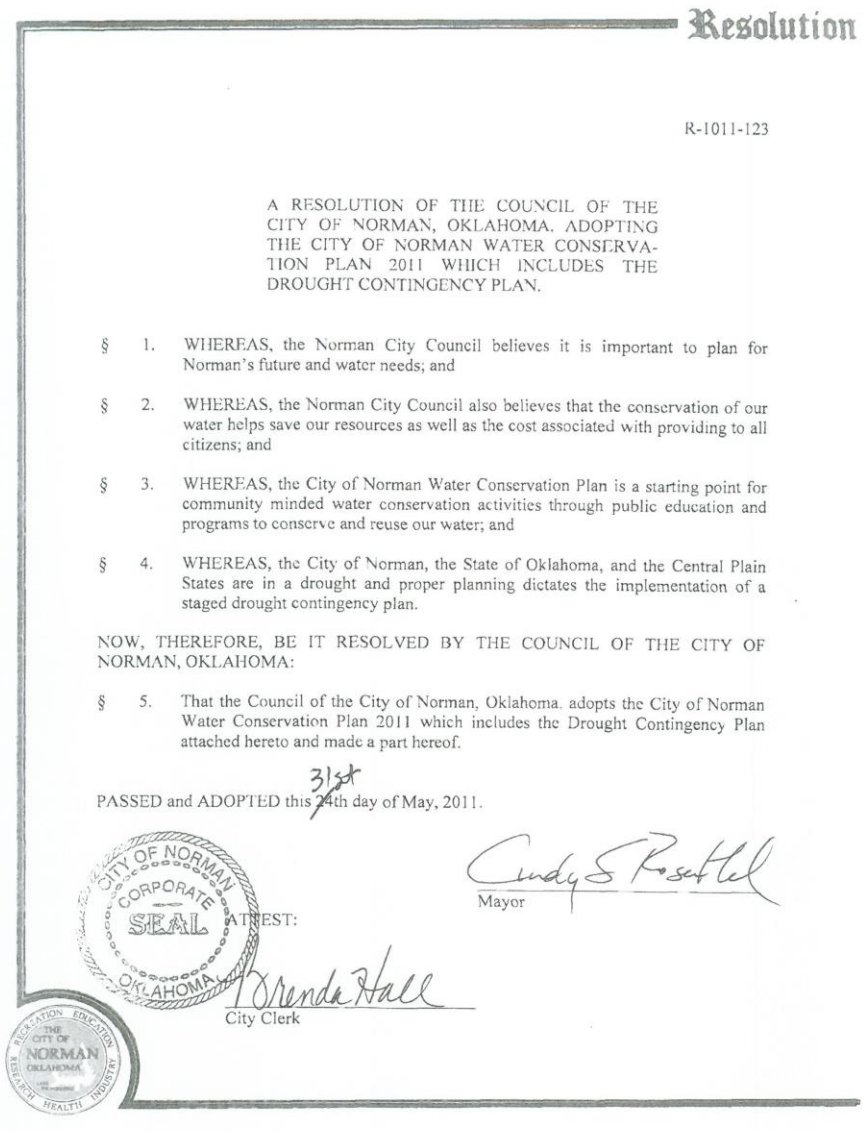
12.0 ADOPTION AND IMPLEMENTATION

See Appendix A, B, C, D, and E

Appendix A

City of Norman Resolution R-1011-123

Adopting the Water Conservation Plan



Resolution

R-1011-123

A RESOLUTION OF THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA, ADOPTING THE CITY OF NORMAN WATER CONSERVATION PLAN 2011 WHICH INCLUDES THE DROUGHT CONTINGENCY PLAN.

§ 1. WHEREAS, the Norman City Council believes it is important to plan for Norman's future and water needs; and

§ 2. WHEREAS, the Norman City Council also believes that the conservation of our water helps save our resources as well as the cost associated with providing to all citizens; and

§ 3. WHEREAS, the City of Norman Water Conservation Plan is a starting point for community minded water conservation activities through public education and programs to conserve and reuse our water; and

§ 4. WHEREAS, the City of Norman, the State of Oklahoma, and the Central Plain States are in a drought and proper planning dictates the implementation of a staged drought contingency plan.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

§ 5. That the Council of the City of Norman, Oklahoma, adopts the City of Norman Water Conservation Plan 2011 which includes the Drought Contingency Plan attached hereto and made a part hereof.

PASSED and ADOPTED this 31st day of May, 2011.

CITY OF NORMAN CORPORATE SEAL OKLAHOMA

Cindy S Rosenthal
Mayor

ATTEST:

Brenda Hall
City Clerk

THE CITY OF NORMAN OKLAHOMA

Appendix B

City of Norman Resolution R-1213-103

Adopting the Water Conservation Plan as amended - 2013

Resolution

R-1213-103

A RESOLUTION OF THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA, ADOPTING THE CITY OF NORMAN WATER CONSERVATION PLAN 2011, AS AMENDED.

§ 1. WHEREAS, the Norman City Council believes it is important to plan for Norman's future water needs; and

§ 2. WHEREAS, the Norman City Council believes that the conservation of our water helps save our resources as well as the cost associated with providing water to our citizens; and

§ 3. WHEREAS, the Norman City Council adopted the City of Norman Water Conservation Plan 2011, including the Drought Contingency Plan on May 31, 2011 (the "Plan"); and

§ 4. WHEREAS, the Plan provided a starting point for community minded water conservation activities through public education and programs to conserve and reuse our water; and

§ 5. WHEREAS, the City of Norman, the State of Oklahoma, and the Central Plain States continue to be in a prolonged drought stage and the continuing drought has necessitated amendments to the Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

§ 6. That the Council of the City of Norman, Oklahoma adopts the City of Norman Water Conservation Plan 2011, including the Drought Contingency Plan, as amended.

PASSED and ADOPTED THIS 26th DAY OF February, 2013.

Cindy Rosenthal
Mayor

ATTEST:
Brenda Hall
City Clerk

CITY OF NORMAN CORPORATE SEAL OKLAHOMA

Appendix C

City of Norman Ordinance O-1314-26

Amending Section 21-405 of Chapter 21

Ordinance No. O-1314-26

AN ORDINANCE OF THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA, AMENDING SECTION 21-405 OF CHAPTER 21 OF THE CODE OF THE CITY OF NORMAN TO REQUIRE YEAR ROUND CONSERVATION RESTRICTIONS AND PROVIDE FOR ADDITIONAL CONSERVATION STAGES IN ACCORDANCE WITH THE CITY OF NORMAN WATER CONSERVATION, AND SET FORTH THE REQUIREMENTS FOR VARIANCES THEREFROM; AND PROVIDING FOR THE SEVERABILITY THEREOF.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

§ 1. That Section 21-405 of Chapter 21 of the Code of the City of Norman shall be amended to read as follows:

Sec. 21-405. Water conservation.

(a) The City Manager has full authority to impose and enforce water conservation stages in accordance with the City of Norman Water Conservation Plan, as may be amended from time to time.

(b) Unless a subsequent conservation stage of the Water Conservation Plan is implemented requiring more limited water use, all users of the City water system shall limit landscape watering year round in accordance with Stage 1, Normal Conservation of the City of Norman Conservation Plan as follows:

(1) Users shall water landscaping on odd or even days depending on address, meaning even numbered addresses shall only water landscape on even numbered dates and odd numbered addresses shall only water landscape on odd numbered dates.
(2) Hand watering landscaping is allowed at all times.

(c) Temporary variances from the requirements of any stage of the Water Conservation Plan may be requested by any accountholder of the water system for consideration by the City Manager or his or her designee who shall decide whether or not to grant the variance in accordance with the following provisions:
(1) Variances will not be considered for inconvenience.
(2) The variance will only apply to the property specifically listed in the variance.
(3) The variance will only apply to the accountholder applying for and granted variance.
(4) The variance may be terminated or suspended at any time and for any reason by the City Manager or his designee.
(5) No person or entity has any property or personal right or interest in the continuance or the continuing operation of the variance.

Ordinance No. O-1314-26

(6) All variances will be automatically suspended should Stage 5 Emergency Conservation be implemented.
(7) Applicants do not have any right to the issuance of a variance.
(8) The City may adopt a fee for the application, review, issuance, and regulation of variances.
(9) Variances will be considered for the following circumstances:
i. Existing in-ground water irrigation system is determined to make compliance physically impossible.
ii. Newly-installed landscapes may be approved for a variance to allow additional watering days following installation of the landscape for a reasonable time period.
iii. Special circumstances as long as the applicant can demonstrate special circumstances and extreme hardship to the satisfaction of the City Manager or his designee and the granting of the variance will not cause an immediate significant reduction in the City's water supply.

(d) Failure to comply with the provisions of this section and any variance granted thereunder shall be punishable in accordance with Section 21-501 of this Code.

§ 2. Severability. If any section, subsection, sentence, clause, phrase, or portion of this ordinance is, for any reason, held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision, and such holding shall not affect the validity of the remaining portions of this ordinance, except that the effective date provision shall not be severable from the operative provisions of the ordinance.

ADOPTED this 14th day of January, 2014.

Cindy Rosenthal
Mayor

ATTEST:

Brenda Hall
City Clerk

CITY OF NORMAN CORPORATE SEAL OKLAHOMA

NOT ADOPTED this _____ day of _____, 2013.

_____
Mayor

2

Appendix D

City of Norman Resolution R-1516-115

Adopting the Water Conservation Plan as amended

Resolution

R-1516-115

A RESOLUTION OF THE CITY OF NORMAN, OKLAHOMA, ADOPTING THE CITY OF NORMAN WATER CONSERVATION PLAN 2016.

§ 1. WHEREAS, the Norman City Council believes it is important to plan for Norman's future water needs; and

§ 2. WHEREAS, the Norman City Council believes that the conservation of our water helps save our resources as well as the cost associated with providing water to our citizens; and

§ 3. WHEREAS, the Norman City Council adopted the City of Norman Water Conservation Plan 2011, including the Drought Contingency Plan on May 31, 2011 (the "2011 Plan"), and adopted minor amendments to the 2011 Plan via Resolution No. R-1213-103 on February 26, 2013; and

§ 4. WHEREAS, the Norman City Council undertook a comprehensive review of the 2011 Plan, resulting in adoption of the City of Norman Water Conservation Plan 2014 on January 28, 2014 (the "2014 Plan"); and

§ 5. WHEREAS, the water rates, population data, and other data used for long term planning purposes are outdated and need to be revised;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

§ 6. That the Council of the City of Norman, Oklahoma adopts the City of Norman Water Conservation Plan 2016.

PASSED AND ADOPTED THIS 10th DAY OF May, 2016.

CITY OF NORMAN CORPORATE SEAL OKLAHOMA

Cindy Rosenfeld
Mayor

ATTEST:

Brenda Hall
City Clerk

THE CITY OF NORMAN OKLAHOMA RECREATION EDUCATION RESEARCH HEALTH INDUSTRY

Appendix E

City of Norman Resolution R-2122-70

Adopting the Water Conservation Plan as amended

R-2122-70

A RESOLUTION OF THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA, ADOPTING THE CITY OF NORMAN WATER CONSERVATION PLAN 2021.

§ 1. WHEREAS, the Norman City Council believes it is important to plan for Norman's future water needs; and

§ 2. WHEREAS, the Norman City Council believes that the conservation of our water helps save our resources as well as the cost associated with providing water to our citizens; and

§ 3. WHEREAS, the Norman City Council adopted the City of Norman Water Conservation Plan 2011, including the Drought Contingency Plan on May 31, 2011 (the "2011 Plan"), and adopted minor amendments to the 2011 Plan via Resolution R-1213-103 on February 26, 2013; and

§ 4. WHEREAS, the Norman City Council undertook a comprehensive review of the 2011 Plan, resulting in adoption of the City of Norman Water Conservation Plan 2014 on January 28, 2014 (the "2014 Plan"); and

§ 5. WHEREAS, the Norman City Council adopted the City of Norman Water Conservation Plan 2016, (the "2016 Plan"), via Resolution R-1516-115 on May 10, 2016; and

§ 6. WHEREAS, the water rates, population data, and other data used for long term planning purposes are outdated and need to be revised;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

§ 7. THAT the Council of the City of Norman, Oklahoma, adopts the City of Norman Water Conservation Plan 2021.

PASSED AND ADOPTED this _____ day of _____, 2021.

_____
Mayor

ATTEST:

_____
City Clerk