

Enforcement of Texas Irrigation License Standards BMP

Applicability

Irrigation systems are becoming a standard feature on upscale Texas homes. Because homes in automatic irrigation use 50% more water over the course of the year and up to 70% more during summer months, having them well-designed and installed to allow for more efficient operation is critical to managing municipal water use. This BMP is focused on ensuring that irrigation systems installed by builders meet the rigorous design standards set by the Texas Commission on Environmental Quality (TCEQ).

Utilities that serve fast-growing areas of the state where new homes and businesses are being built should work with city officials to enforce the Texas Irrigation License regulations of the TCEQ to ensure efficiency in newly installed landscape irrigation systems. This can be achieved through required permits and inspections of new irrigation systems.

A poorly designed system makes it difficult for the home owner to use their system efficiently because water may be wasted due to excessive pressure or because the system is not zoned to allow selective irrigation of grass separate from bedding areas. Key efficiency requirements such as the rain sensor and master valve may be eliminated by the installer to reduce costs.

Fortunately Texas has one of the strongest irrigation licensing programs in the United States. Design and installation of all landscape irrigation must be completed only by licensed individuals following the efficiency rules outlined as part of the licensing program. The rules are most effectively enforced at the local level through a combination of local ordinance, education and required permits and inspections.

Background on Irrigation Enforcement Requirement

In 2007 H.B. 1656 revised the Texas Occupational Code (Section 1903.251) to direct all municipalities with populations over 20,000 to adopt ordinances relating to irrigation. Key provisions regarding the ordinance include that installers must:

- hold a license issued under TCEQ Occupations Code for irrigation
- obtain a permit before installing a system within the territorial limits or extraterritorial jurisdiction of the municipality
- In 2010 requirements in Texas Administrative code were updated to include that a licensed irrigator or irrigation technician must be present on site during the installation of the irrigation system

Other requirements pertaining to the irrigation license enforcement include the following:

- defined duties and responsibilities of irrigators
- minimum standards and specifications for designing, installing, and operating irrigation systems in accordance TCEQ licensing program and any rules adopted under the related occupational code.
- the requirement that a municipality must employ or contract with a licensed plumbing inspector or licensed irrigation inspector to enforce the ordinance

Municipalities may require proof of current license and charge installers of irrigation a fee for obtaining or renewing a permit. The fee should be set to recover the cost of administering the rule. Water districts may also adopt and enforce irrigation rules, and both municipalities and districts may collect fees to cover costs of the licensing program. These requirements do not apply to on-site sewage disposal, irrigation for agriculture operations, or irrigation connected to groundwater wells operated for domestic use. TCEQ RG-466, at 2.

In 2011, House Bill 2507 made an important advancement in strengthening irrigation licensing in Texas, making it a Class C misdemeanor to install irrigation without an irrigation license. Tex. H.B. 2507, 82nd Leg. R.S. (2011). Although exceptions still apply for homeowners and plumbers, this law makes it possible to enforce regulations across the state against unlicensed individuals who are installing irrigation. This bill took effect in August of 2011 and allows peace officers to file cases in any Texas court or citizens to file cases in Justice of the Peace courts against individuals who conduct irrigation installations without irrigation licenses.

Scope & Schedule

There are several key steps to putting effective enforcement of the irrigation license regulations into place. Allowing several months for city staff, stakeholders and other interested parties to review the ordinance and plan will lead to successful and decrease any associated controversy.

1. Review of Existing Ordinance

Determine if the existing municipal ordinance provisions cover all of the requirements outlined in the Occupations Code. Having a local ordinance that references TCEQ standards is recommended. This will make it easier to enforce in local courts.

2. Drafting Ordinance Revisions

Produce a draft document that amends portions of the code necessary. This is also a good time to review whether additional costs will be incurred in the process of the additional enforcement. Estimates of cost are key developing a fee structure associated with permits to recover the costs.

3. Stakeholder Discussions

Stakeholders who will have an interest in irrigation regulations include local developers, local builders, local irrigators, local landscape companies, and area plumbers. It is important to note that plumbers are a key exemption in the Occupations Code for irrigation licensing. A licensed plumber may repair and install irrigation. If there is a local irrigation association, that group is likely to be supportive of any efforts to reinforce the rules of their license. The Texas Irrigation Association spends significant time and energies working to improve enforcement of licensing rules in Texas.

4. Revision of Inspection Processes

A critical step in making the enforcement program effective is ensuring that a meaningful inspection takes place. A plumbing inspector already completes inspections on new homes, but there may currently be no inspection of the irrigation system installed in the yard. If inspecting irrigation systems will be a newly added task to a plumbing inspector, it is recommended to set up a series of meetings and possible field visits to discuss inspected requirements, thresholds, and what is working and isn't working once the inspections begin. It is ideal to hire an experienced irrigator who obtains the Irrigation Inspector License from TCEQ for irrigation inspections. If this is not possible, having plumbing inspectors trained through a TCEQ approved Irrigation License is a key step.

An ideal inspection process should look for several key indicators of quality work:

- **Plan:** A detailed as-built plan for the irrigation system must exist and be provided for the new owner. Residential systems are not exempt from this regulation, but it is often skipped in large developments. A lack of plan is a signal that the system may have pressure that is too low or too high, may not be using manufacturer equipment to specifications, and may not be zoned to separate grass from bedding areas.
- **Master Valve:** The system should have a master valve that stops flow to the main line when there is no scheduled operation. The master valve prevents many large underground leaks from escalating to hundreds of thousands of gallons.
- **Information at Controller:** The controller for the system should include the irrigator's name, license number, name of the company that completed installation, their phone number and the warranty period.
- **Zoned Design:** The system should have separate operational zones for grass and others for beds each with matched precipitation rates. The water need of the grass and bedding plants are too different to be watered by the same zone.
- **Pressure Regulation:** Water should not mist coming from irrigation heads. If it does this is a sign that the pressure is too high and must be regulated. Water will be wasted from evaporation and the distribution pattern on the landscape will be compromised if misting occurs.
- **Rain Sensor:** A rain or moisture sensor must be installed properly to minimize operation of the system during and after rain events.

5. Owner Education

Another key step in enforcement of irrigation regulations is education of the owners. Municipalities and utilities will improve irrigation standards by helping new and existing owners know irrigation regulations that give them a right to quality. Irrigators who install new systems must provide an owner's manual for the controller, a design of the system showing all underground components and a suggested watering schedule, a maintenance checklist and information on the system warranty. Another key component of education for the owner is that irrigators must perform a final "walk through" with the owner to explain the operation of the system.

If owners believe that irrigation standards are not being met, they can look to local ordinances and they can file a complaint with the Texas Commission on Environmental Quality department that oversees irrigation licensing. This group will check into the complaint which can impact the license holder. While a complaint against their license may be motivating to an irrigator, the TCEQ enforcement process may take over a year to be completed. For this reason it is recommended that local ordinance have consequences such as citations or increased future permit fees associated with failure to follow regulations.

Implementation

When a draft ordinance has been drafted and properly vetted among stakeholders, it must be passed by a legal body to be enforceable. In municipalities this would mean the city council or for a water district their board of directors.

A key next step is education on the ordinance and a clear plan for penalties for those who do not follow the ordinance. Education should be rigorous and to many stakeholder groups and individuals to minimize the need for penalties.

Some suggested steps for education include speaking at local irrigator and green industry meetings about the ordinance and enforcement timeline. Meetings with local builders and

developers are also key to long-term success. They may need to revise contracts with irrigators completing installations in order to ensure that all aspects of the irrigation license regulations are followed. Signs located at supply stores where builders and irrigators buy their irrigation materials is also a good practice for getting information to anyone working in the irrigation field.

Local ordinance penalties for completing irrigation work without a license are likely to be similar to those incurred for a speeding ticket. The penalties can escalate for repeat offenses. For irrigators who fail inspections, the logical penalty is that the building project does not pass inspection until the quality is improved to the satisfaction of the inspector. Pausing a building project before completion is likely to be a highly effective measure to improve quality on future projects.

Cost Effectiveness & Water Savings

The cost of enforcement of irrigation requirements can be passed on to builders and owners through permit fees. Permit fees should be designed to recover the cost of collecting, processing and inspecting against the permit. A repeat inspection fee may be higher if it is necessary because more detailed work will be required.

Water savings are difficult to quantify because it is difficult to determine how many poor quality systems would exist without an enforcement program and how much water they would waste. However, there is anecdotal evidence that the savings are likely to be significant. Irrigation systems installed in large quantity are often contracted through a low-bid process and have little oversight during installation or after installation. Systems put in under these conditions are likely to have the following problems:

Lack of Zoning: When grass and beds are watered on the same zones, it is impossible for the owner to water one less than the other. Grass requires more water than established woody plants to maintain a good appearance. As a result, homeowners may apply twice as much water to their bedding areas as necessary if zoning is poor.

High Pressure: All irrigation components are designed to work under a range of water pressure conditions. If pressure exceeds this acceptable range, each irrigation head may spray significantly more water than it should. The pattern of the water spray becomes poor and much of the water may be lost to misting. Improving pressure regulation has been shown to decrease water usage by up to 20%. Therefore excessive pressure may be causing an increase of up to 20% in usage.

Poor Spray Head Layout: Manufacturers specifications exist for all irrigation components. One way to install a system cheaply is to increase the distance between spray heads beyond what is appropriate for the equipment. This results in a poor distribution of water with some areas getting twice as much water as needed and others nearly none. If a customer increases their run-time to compensate for this problem they may dramatically increase consumption.

Lack of Written Plan: A written plan is invaluable if there is a problem in the future. Irrigation systems are subject to water pounding through them and water pressure fluctuations. Shifting soils also cause challenges. The result is the need for repairs. The lack of a plan complicates the repair process leading to more wasted water.

Water Savings Estimates:

Irrigation systems vary greatly in water consumption usually in relationship to the area they cover. Another key variable is how often systems are operated. If a community has regulations limiting how many times per week irrigation may be used, this will impact total consumption and therefore the savings range. For this reason the table below is suggested as a way for a utility to create a logical estimate of long-term savings.

* Note that savings achieved will be on the higher end of the range suggested if a strong education program helps irrigation system owners understand options such as watering zones differently.

Table 1: Lot Size/ Irrigation System Water Usage*

Lot Size Range	Typical One Cycle Usage	Efficiency Savings	Efficiency Savings with Strong Education
Estate Lots: Over One Acre	7,000 gallons	10%	15%
½-1 acre	4,000 gallons	10%	15%
¼-1/2 acre	2,000 gallons	10%	15%
Small Lots (under ¼ acre)	1,400 gallons	10%	15%

*Summary of water use data collected from 1,326 Residential Irrigation Consultations in San Antonio.

Resources

The Texas Commission on Environmental Quality website includes information on the license program, irrigation regulations, and how to file a complaint against an irrigator.

<https://www.tceq.texas.gov/drinkingwater/irrigation>