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Landscape Irrigation Program: Implementation

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Compliance Support Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Prepared by
Compliance Support Division

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Contents

Background

In 2007, the legislature passed several bills that affect landscape irrigation in Texas. House Bill (HB) 1656 requires municipalities with a population of 20,000 or more to adopt landscape irrigation ordinances that:

- are at least as stringent as the TCEQ rules;
- require the installer of an irrigation system to be licensed;
- require a permit prior to installing an irrigation system within the territorial limits or extraterritorial jurisdiction of the municipality; and
- include minimum standards and specifications for the design, installation, and operation of irrigation systems.

Water districts may adopt and enforce landscape irrigation rules. Municipalities and water districts that adopt landscape irrigation programs may collect a fee that will cover the costs.

These requirements do not apply to:

- an on-site sewage disposal system;
- an irrigation system used on or by an agricultural operation; or
- an irrigation system connected to a groundwater well operated by the property owner for domestic use.

Senate Bill (SB) 3 and HB 4 required the TCEQ to adopt standards that address:

- the connection of irrigation systems to any water supply;
- the design, installation, and operation of irrigation systems;
- water conservation; and
- the duties and responsibilities of licensed irrigators.

On June 4, 2008, the TCEQ adopted rules to implement the requirements of HB 1656, HB 4, and SB 3. The new rules took effect on January 1, 2009. (For a copy of the adopted rules, see Appendix A).

Many of the requirements apply to the installation of irrigation systems by plumbers, landscape architects, professional engineers, or others who are not required to be licensed by the TCEQ.

Effective Date

Three important dates	
Current rules are effective for work completed by:	**December 31, 2008**
New rules are effective:	**January 1, 2009**
Irrigator or irrigation technician must be on-site during installation of an irrigation system:	**January 1, 2010**

Irrigation Plan

An irrigation plan is required for all new landscape irrigation systems designed or installed on or after January 1, 2009. An irrigation plan is not required for the maintenance, alteration, repair, or service of an irrigation system. The addition of new zones does not trigger the requirement for an irrigation plan; however, the irrigation system owner may request an irrigation plan.

There is no minimum or maximum scale requirement, but the irrigation plan must be legible. Some irrigators have found that using the following scale will result in a legible plan:

Type of Installation	Scale
Residential	1" equal to a maximum of 30'
Commercial/athletic	1" equal to a maximum of 40'
Golf course or comparable	1" equal to a maximum of 100' or 1" equal to a maximum of 50' (depending on complexity)

Some general information must be included on the irrigation plan. The **irrigator's seal, signature** (below the seal), **date sealed, north arrow, legend,** and **scale** used must appear on the plan. If an installation requires multiple pages and if the pages are bound together, the information may appear on the first page.

Some site-specific information must also be included on the irrigation plan:

- Physical features such as trees, slopes, and impervious surfaces like sidewalks, driveways, fences or buildings.
- Boundaries of the area to be irrigated. If areas will not be covered by the irrigation system, the areas should be clearly identified on the irrigation plan.
- Zone flow measurements for each zone.
- The location and type of any controllers used in the irrigation system.
- The location and type of sensors used (such as a rain or freeze sensor).

- The location, type, and size of water source such as ⅝" municipal water meter or a reclaimed water source.
- The location, type, and size of the backflow prevention device such as a 1" double check valve.
- The location, type, and size of water emission devices such as a 10' half-circle rotary head or a 15' quarter-circle rotary head.
- The location, type, and size of all valves such as the isolation valve, master valve, or zone valve.
- The location, type, and size of any pressure regulation components such as a pressure regulation valve or pressure regulating emitters.
- The location, type, and size of the main line and lateral pipe such as a ½" PVC Schedule 200 pipe or a 1" copper pipe.
- The design pressure that was calculated by adding the operating pressure necessary at an emission device to the total of all pressure losses accumulated from an emission device to the water source. The irrigator must check to make sure the pressure is greater than the manufacturer's published minimum operating pressure and that the system is effectively maximizing water conservation.

The plan must be kept on-site during the installation of the irrigation system. The irrigator may keep a paper or electronic copy of the plan. Changes to the paper copy should be marked in a contrasting color. Ultimately, the updated irrigation plan that shows the actual installation of the irrigation system should be given to the irrigation system owner or the owner's representative during the final walk-through. The irrigator must keep a file copy of the plan showing the actual installation of the irrigation system for three years; electronic files are acceptable.

In an electronic plan, an electronic signature and seal are acceptable. The signature and seal must be legible on any copies that are produced. An electronic plan can be modified, marked *Installed Irrigation System*, and given to the irrigation system owner in lieu of a copy with changes marked manually. It is important that the irrigation system owner receive a legible plan for future use.

Installation

Several rules relating to installation have changed.

- Do not exceed the manufacturer's published radius or spacing between emission devices. For example, if a rotary spray is designed to throw water 10 feet, spacing the spray heads 15 feet apart will leave some areas unwatered.
- New irrigation systems may not use aboveground spray devices in landscapes that are less than 48 inches long or wide (the measurement does not include

any impervious areas) and that have sidewalks, driveways, or streets on two or more sides.

- Do not use any component (including the water meter) in a way that exceeds the manufacturer's published performance limitations for that component.
- Pop-up sprays or rotary sprinkler heads used in new irrigation systems must:
  - direct flow away from adjacent hard surfaces
  - be installed no closer than four inches to a hardscape.

  Narrow paved walkways, jogging paths, golf-cart paths, or other small areas located in cemeteries, parks, golf courses, or other public areas may be exempted from this requirement if the runoff drains into a landscaped area.
- Emission devices must be installed to operate between the minimum and the maximum sprinkler head pressure as published by the manufacturer for the nozzle and head spacing used.
- The velocity of water through polyvinyl chloride (PVC) pipe cannot exceed five feet per second.
- Separate irrigation zones based on:
  - the kind of plants—for example, trees, cacti, and camellias all have different watering needs.
  - microclimate factors—for example, one side of a structure may be completely sunny and the other side shady.
  - topographic features such as slope or elevation.
  - the type of soil such as clay, sand, loam or a combination.
  - hydrological requirements (the watering needs of different types of plants).
- All emission devices in a zone should irrigate at the same *precipitation rate* (the amount of water that falls in a given area in a given time period). Based on the head selection and spacing, an irrigator determines the appropriate length of time to run the irrigation system. The irrigator should also consider the soil's infiltration rate to make sure the system is operating efficiently to conserve water.
- Water should not be sprayed over impervious materials such as concrete or asphalt—this wastes water.
- If a master valve is provided, it must be installed on the discharge side of the backflow prevention device.
- PVC pipe must be primed with colored primer prior to applying PVC cement and be installed in accordance with the Uniform Plumbing Code (Section 316) or the International Plumbing Code (Section 605).
- An isolation valve is required between the water meter and the backflow prevention device. This will allow the irrigation system to be turned off while water to any structure would not be interrupted.

- Piping must be installed according to the manufacturer's published specifications for depth of pipe coverage. If the manufacturer has not published specifications, the pipe must be buried at least six inches deep and it must be covered with six inches of select backfill between its top and the natural grade of the topsoil. Mounding with select backfill may be employed if the area being irrigated is rock but, if mounding is used, that fact must be noted on the irrigation plan and any safety issues addressed with the owner.
- Localities may impose more stringent requirements.
- Generally, burying the irrigation system at or below the depth of the frost line will prevent lines from freezing.
- All trenches and holes created during the installation of the irrigation system must be backfilled and compacted to the original grade.
- The wiring used to connect an automatic controller to any electrical components must be listed by Underwriters Laboratories as acceptable for burial. The wiring connected to the irrigation system must be sized according to the manufacturer's recommendations. Electrical splices that may be exposed to moisture must be waterproofed as certified by the wire-splice manufacturer. Underground electrical wire used in the irrigation system must be buried with at least six inches of select backfill.
- Connections to an irrigation system for drinking or domestic use (such as filling a swimming pool or decorative fountain) are prohibited.
- If a hose bib is connected to an irrigation system, the hose bib must be installed using a quick coupler key installed in a covered purple valve box. The hose bib and hoses connected to it must be labeled *non-potable, not safe for drinking*. An isolation valve must be installed upstream of a quick coupler.
- A rain or moisture sensor device or other technology that will shut off the irrigation system when rain or moisture is detected is required on all new irrigation systems that have an automatic controller. This requirement does not apply in the following counties: El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, Brewster, Terrell, Loving, Winkler, Ward, Reeves, Ector, Crane or Pecos.
- All irrigation systems must be designed, installed, and operated in a manner that promotes water conservation.

Completion of Installation

Once the irrigator determines that the irrigation system is complete (the system has been installed, minimum standards met, and tests performed) and is satisfied that it operates correctly, the irrigator (or irrigation technician) who served as supervisor on-site must conduct a final walk-through to show the

owner or owner's representative how to operate the system correctly to maintain a healthy landscape and conserve water.

The owner or owner's representative should receive several documents during the walk-through:

- the manufacturer's manual for any automatic controllers
- a seasonal watering schedule
- a list of components that require maintenance and the recommended frequency of service
- the irrigation plan showing the actual installation of the irrigation system
- a maintenance checklist, containing:
  - the signature of the irrigation system owner or the owner's representative
  - the irrigator's seal, signature, and date
  - this statement—

    This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the Irrigation Plan and is properly adjusted for the most efficient application of water at this time.

The irrigator must place a permanent sticker that bears the irrigator's name, license number, company name, and telephone number and the dates the warranty is valid on the automatic controller. If there is no automatic controller, the sticker must be placed on the original maintenance checklist.

The irrigator is to give the original maintenance checklist to the owner or owner's representative and maintain a copy of the maintenance checklist for his or her files.

If the owner or owner's representative is not available to attend the final walk-through or refuses to sign the maintenance checklist, the irrigator is to send the irrigation system owner or owner's representative the required documents—

- the automatic controller manual
- a seasonal watering schedule
- a list of components requiring maintenance and the recommended frequency of service
- the irrigation plan
- a maintenance checklist

—and the sticker, if not previously supplied. The irrigator is to record in the file that the owner or owner's representative would not participate in the final walk-through and make note of the date and method of delivery (*mail*, *left at site*, etc.) of the documents to owner or representative.

See Appendix B for a sample maintenance checklist and sticker.

Maintenance, Alteration, Repair, or Service

Several rule changes apply to the maintenance, alteration, repair, or service of an irrigation system:

- Any trenches or holes created during the maintenance of an irrigation system must be returned to the original grade with compacted select backfill.
- Colored PVC pipe primer must be used on pipes and fittings, the use of which must be in accordance with either the Uniform Plumbing Code (Section 316) or the International Plumbing Code (Section 605).
- If maintenance work involves excavation at the water meter or backflow prevention device, an isolation valve must be installed if one is not already present.
- If an irrigation system is connected to a potable water supply and the main line of the system must be opened to the atmosphere at any point prior to the discharge side of the irrigation zone control valve, then the system must be connected via an approved, properly installed backflow prevention method.
- If an existing controller is replaced, a rain or moisture sensor or other technology designed to interrupt system operation during periods of rain or moisture must be installed. This requirement does not apply in the following counties: El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, Brewster, Terrell, Loving, Winkler, Ward, Reeves, Ector, Crane or Pecos.
- Written estimates, proposals, bids, and invoices must contain the "TCEQ statement" (see box), which now includes the TCEQ's website address.
- The irrigator must identify in writing to the irrigation system's owner or owner's representative the materials furnished in the maintenance of the irrigation system.
- Any warranty for the maintenance of the irrigation system should clearly state the warranty period for the work or parts and must be honored by the irrigator. The warranty document must include the irrigator's name and contact information.
- Be aware of irrigation system design and installation requirements that might apply to the work being performed.

New "TCEQ Statement"

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us.

- Be aware of requirements to maintain archival copies (hard or electronic) of documents given to the irrigation system owner or owner's representative. Records must be maintained for three years and made available to TCEQ or to a local regulatory agency within 10 business days of a request.
- Local areas may adopt more stringent standards.
- All maintenance, alteration, repairs, or service must promote water conservation.

Homeowner-Installed Systems

A homeowner may install an irrigation system at a building or on premises owned or occupied by the owner as the owner's home. A homeowner or property owner who installs an irrigation system must meet the standards for:

- spacing,
- water pressure,
- not spraying water over impervious materials,
- a rain or moisture shutoff valve or other technology, and
- an isolation valve.

In addition, **the Public Drinking Water rules require a backflow-prevention device on all irrigation systems.** Local areas may have more stringent requirements for homeowner-installed systems.

If the system does not meet the minimum requirements, the irrigator is to document the existing system prior to making any changes to it.

An irrigator is not required to prepare an irrigation plan for the maintenance, alteration, repair or service to a homeowner-installed system.

Reclaimed Water

Reclaimed water is domestic or municipal wastewater that has been treated to a quality suitable for beneficial use, such as landscape irrigation. Check with your local water supplier to determine if there are any local requirements or restrictions on the use of reclaimed water in landscape irrigation systems and for information on the required backflow prevention device and the frequency of any required testing to make sure the device is working properly.

If reclaimed water is used in a landscape irrigation system, the system must not have any direct contact with edible crops, unless the crop is pasteurized before consumption. The irrigation system may not spray water across property lines

onto property that does not belong to the system owner. Purple irrigation system components must be used. The domestic potable water line must be connected using an air gap or a reduced pressure principle backflow prevention device. A sign (at least 8" × 8") must be prominently posted in the area that reads: "RECLAIMED WATER—DO NOT DRINK, AGUA DE RECUPERACIÓN—NO BEBER."

Backflow Prevention and Cross-Connection

Irrigation systems may only be connected to a potable water supply using a backflow prevention device approved by one of the following:

- the American Society of Sanitary Engineers
- the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California
- the Uniform Plumbing Code
- any other laboratory that has equivalent capabilities for laboratory and field evaluation

The installation must be in accordance with the laboratory approval standards or, if there is no specific information on installation, in accordance with the manufacturer's published recommendations. **Although it is not required by TCEQ rules, irrigators should consider including a y-type strainer on the inlet side of the backflow prevention device. The y-type strainer will prevent debris from clogging the backflow prevention device and will better protect the water supply. (*Note:* TCEQ rules *do* require a y-type strainer on double check valves installed belowground.)**

All backflow devices must be tested upon installation, or at the latest before the irrigation system is placed into service. Irrigators must ensure that the test results are given to the water purveyor and the irrigation system's owner or owner's representative within 10 days of the testing of the backflow prevention device. Irrigators should schedule and coordinate the test with the backflow assembly tester to protect the water supply. Backflow prevention devices used in health hazard applications must be tested annually, in addition to the initial test.

If there is a health hazard, an air gap, reduced pressure principle backflow prevention device, or a pressure or atmospheric vacuum breaker must be used. Local water purveyors may have more stringent standards. Annual inspections are required for backflow prevention devices used in a health-hazard situation.

Use an *air gap* if:

- there is unobstructed physical separation;

- the distance from the lowest point of the water supply outlet to the flood rim of the assembly into which the outlet discharges is one inch or larger, or is at least twice the diameter of the water supply outlet;
- a chemical is added to the irrigation system; or
- more than one water source is used.

Use a *reduced pressure principle backflow prevention device* if:

- the device is installed at least 12 inches above ground;
- the device will not be submerged;
- drainage is included for any discharge from the relief valve;
- a chemical is added to the irrigation system by aspiration or injection or is embedded in an emission system component; or
- the irrigation system is installed on a property served by an on-site sewage facility (such as a septic tank) and is connected to a supply of potable water.

Use a *pressure vacuum breaker* if:

- there is no back pressure and
- the installation is at least 12 inches above any downstream piping and the highest downstream opening—measuring from the top of the sprinkler, with pop-up sprinklers retracted.

Use an *atmospheric vacuum breaker* if:

- there is no back pressure,
- there are no isolation valves downstream from the device,
- the installation is six inches or more above both the downstream piping and the highest downstream opening,
- there is no continuous pressure on the supply side of the device for more than 12 hours in any 24-hour period, and
- a separate atmospheric vacuum breaker is installed on the discharge side of each control valve.

A *double check valve backflow prevention device* can be used if:

- the local water purveyor does not prohibit it,
- back pressure could reverse the normal flow of water or cause back siphonage from reduced pressure in the system, and
- test cocks are used for testing only.

A double check valve backflow prevention device can be installed *belowground* when:

- test cocks are plugged (except during testing), threaded, watertight, and made of non-ferrous materials;

- a y-type strainer is installed on the inlet side of the double check valve, and
- clearance is adequate between fill material and the bottom and sides of the valve to allow space for testing and repair.

A double check valve backflow prevention device can only be used if no health hazard is present and the device is tested upon installation. Local governments do not allow this exemption.

Irrigation Systems Exempted from State Requirements

House Bill 1656 exempted some irrigation systems from the requirements to comply with the TCEQ requirements. The exempt irrigation systems are:

- on-site sewage facilities (such as septic tanks)
- those used in agriculture
- those connected to a groundwater well for domestic use by the property owner

Advertising for Irrigation Services

An irrigator's license number should appear on:

- vehicles used in the installation, maintenance, alteration, repair, or service of irrigation systems
- trailers that advertise irrigation services
- written and electronic advertisements for irrigation services, including business cards and estimates (they must also include the irrigator's name)
- contracts, proposals, bids, and invoices

A magnetic sign is acceptable. Local governments may have more stringent requirements.

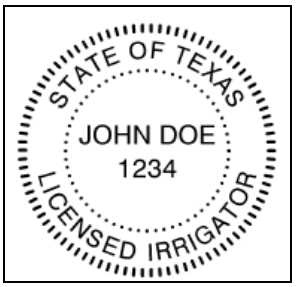
The license number on vehicles should be in the form "LI_____" in a contrasting color, in block letters at least two inches high. The number must be displayed on both sides of the vehicle. (*Note:* leading zeros do not need to be included, so *LI0098765* would be displayed as *LI98765*.)

A company that employs several irrigators may use the license number of any or all of them.

Seal

Irrigators cannot engage in any landscape irrigation services without physical possession of a seal and a license. The irrigator is responsible for the security of the seal.

The seal must be circular and not less than 1½ inches in diameter. The seal must display the words *State of Texas* at the top between two knurled circles, the words *Licensed Irrigator* at the bottom, and the irrigator's name and license number, excluding any leading zeros, horizontally in the circular field (see image).



Electronic seals and signatures may be used. All documents that require a seal must be legible so that the seal can be read on any copies as well as the original document. Irrigators are responsible for the security of an electronic seal or signature.

Irrigators must sign their legal name below the seal and include the date of signing on each document.

The irrigator's sealing constitutes the acceptance of all professional responsibility for it and the irrigation services performed in accordance with it.

Once a document containing a seal is issued, the document cannot be altered. Irrigators may not use their seal on a plan or specification created by another irrigator unless the irrigator reviews the plan or specification and adapts it to the specific site conditions and addresses state and local requirements, and accepts full responsibility for alterations. If an irrigator prepares a portion of a plan or specification, that portion must be clearly identified—for example, a multi-page plan or specification with different seals on pages that different irrigators prepared or supervised. An irrigator who prepares or supervises an entire bound plan or specification could seal one page of the document.

The following documents must be sealed, signed, and dated: the irrigation plan and specifications, the contract, addenda or change orders, any warranty, and the maintenance checklist.

Contracts, Invoices, and Warranties

A written contract is required for all irrigation system installations. The contract must specify:

- the irrigator's name, license number, business address, and current business telephone number(s)
- the date each party signed the agreement
- the total agreed price
- the dates the warranty is valid

The contract must include the "TCEQ statement" (box, page 8), the date, and the irrigator's seal and signature.

If maintenance is performed on an existing irrigation system or it is altered, repaired, or serviced, the owner is to receive from the irrigator a document that identifies the materials furnished. The invoice must include the irrigator's name, license number, business address, and current business telephone number(s).

Any warranty document must specify the irrigator's name, business address, business telephone number(s) and the "TCEQ statement" (box, page 8). The warranty must include the signature of the system owner or owner's representative to confirm receipt and the signed copy should be given to the homeowner. A warranty is required for newly installed irrigation systems; irrigators may also choose to give a warranty on the maintenance, alteration, repair, or service of a system.

Irrigators must honor any warranty to a customer.

An estimate, proposal, or bid relating to the installation of an irrigation system must include the irrigator's name, license number, business address, and business telephone number(s) and the "TCEQ statement" (box, page 8).

Exempt Businesses and Irrigators-in-Charge

Businesses may provide irrigation services if they employ a licensed irrigator to consult, design, install, maintain, alter, repair, or service irrigation systems. A business may employ many irrigators to perform irrigation services but must designate one person as the irrigator-in-charge. An irrigator may work for numerous companies providing irrigation services but may only serve as the irrigator-in-charge at two businesses—his or her own company and one other exempt business.

An irrigator-in-charge is responsible for (and must have knowledge of) all permits, contracts, agreements, advertisements, and other irrigation services secured and performed using the irrigator's license.

A business that provides irrigation services must ensure that all irrigation services are supervised by a licensed irrigator. The business owner must verify the validity of the licenses that belong to an irrigator, installer or irrigation technician providing irrigation services for the business. The business owner must designate an irrigator-in-charge.

Other Requirements

Municipalities with a population of 20,000 or more must adopt landscape-irrigation rules at least as stringent as the TCEQ's rules (they may be more stringent). Water districts may also choose to adopt the TCEQ's rules.

Irrigators must display their license certificate where they conduct business. Signs are not required at job sites where irrigation systems are installed.

An irrigator must present his or her license when requested by a regulatory authority having jurisdiction over landscape irrigation, or by an irrigation system owner or prospective owner.

Irrigators must maintain archival copies (electronic copies are acceptable) of all records given to the owner for three years after the system is complete. Irrigators may keep a master file or library that contains copies of manufacturer's publications and note in files that copies of such documents are maintained in the master file or library. Irrigators must make copies of records available within 10 business days of a request by a regulatory authority.

The "TCEQ Statement" has been updated to include the agency's Web address (see box, page 8).

Irrigators must accurately and truthfully represent to prospective clients their qualifications to perform the services requested and should not perform services for which they are not qualified by experience, knowledge, or license.

Irrigators' Responsibilities (Summary)

All irrigators are expected to know and comply with requirements related to landscape-irrigation systems in the locality where business is being performed. This includes obtaining the appropriate permits and inspections the locality requires. Irrigators must determine the appropriate backflow prevention method for each installation.

Irrigators are responsible for the **appropriate** use of their stamp or rubber seal.

Irrigators must maintain landscape irrigation records and make those records available to regulatory authorities when requested.

Irrigators are responsible for conserving water by designing and installing systems that comply with the rules on landscape irrigation.

Irrigators must develop and follow an irrigation plan for each new irrigation system.

Irrigators are responsible for supervision of the installation of an irrigation system.

Beginning January 1, 2010, either an irrigator or an irrigation technician must be on-site during the installation of the irrigation system. Irrigators will supervise an irrigation technician when connecting an irrigation system to a water supply or installing, maintaining, altering, repairing, or servicing an irrigation system, and/or supervise an installer connecting an irrigation system to a water supply (through December 31, 2009).

An irrigator is responsible for completing the irrigation system, conducting a final walk-through, completing the maintenance checklist, placing a permanent sticker on the automatic controller (or maintenance checklist if there is no automatic controller), and supplying a copy of the design plan to the owner or owner's representative.

Frequently Used Terms

Air gap. A complete physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel.

Atmospheric vacuum breaker. An assembly containing an air inlet valve, a check seat, and an air inlet port. The flow of water into the body causes the air inlet valve to close the air inlet port. When the flow of water stops, the air inlet port allows air to enter and satisfy the vacuum. Also known as an *atmospheric vacuum breaker back-siphonage prevention assembly*.

Compaction. Returning any holes or trenches created during the installation, maintenance, alteration, repair or service of an irrigation system to the original grade.

Double check valve. An assembly composed of two independently acting, approved check valves—including tightly closed, resilient seated shutoff valves attached at each end of the assembly—and fitted with properly located, resilient seated test cocks. Also known as a *double check valve backflow prevention assembly*.

Exempt business owner. A business owner who employs a licensed irrigator as an irrigator-in-charge to provide consulting services or to supervise or conduct operations relating to the design, installation, maintenance, alteration, repair, or service of irrigation systems, and thus is exempt from the licensing requirements for landscape irrigators.

Hardscape. Impervious surface (q.v.).

Health hazard. A cross-connection or potential cross-connection with an irrigation system that involves any substance that may, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

Impervious surface. Building foundations, fences, concrete, asphalt, pavers, stones, brick, wood, stones set with mortar, sidewalks, streets, walls, etc. Also called *hardscape.*

Irrigator-in-charge. The irrigator responsible for all irrigation work performed by an exempt business owner, including, but not limited to, obtaining permits, developing design plans, supervising the work of other irrigators or irrigation technicians, and installing, selling, maintaining, altering, repairing, or servicing a landscape irrigation system.

Pressure vacuum breaker. An assembly containing an independently operating, internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. Also known as a *pressure vacuum breaker back-siphonage prevention assembly*.

Reduced pressure principle. An assembly containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the two check valves and below the first check valve.

Select backfill. Backfill that is free of building debris and rocks larger than 2 inches.

Appendix A
Rules on Landscape Irrigation

Title 30, Texas Administrative Code
Chapter 344. Landscape Irrigation

Subchapter A. Definitions

§344.1. Definitions.
The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise.

(1) Air gap—A complete physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel.

(2) Atmospheric Vacuum Breaker—An assembly containing an air inlet valve, a check seat, and an air inlet port. The flow of water into the body causes the air inlet valve to close the air inlet port. When the flow of water stops the air inlet valve falls and forms a check against back-siphonage. At the same time it opens the air inlet port allowing air to enter and satisfy the vacuum. Also known as an Atmospheric Vacuum Breaker Back-siphonage Prevention Assembly.

(3) Backflow prevention—The mechanical prevention of reverse flow, or back siphonage, of nonpotable water from an irrigation system into the potable water source.

(4) Backflow prevention assembly—Any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

(5) Completion of irrigation system installation—When the landscape irrigation system has been installed, all minimum standards met, all tests performed, and the irrigator is satisfied that the system is operating correctly.

(6) Consulting—The act of providing advice, guidance, review or recommendations related to landscape irrigation systems.

(7) Cross-connection—An actual or potential connection between a potable water source and an irrigation system that may contain contaminates or pollutants or any source of water that has been treated to a lesser degree in the treatment process.

(8) Design—The act of determining the various elements of a landscape irrigation system that will include, but not limited to, elements such as collecting site specific information, defining the scope of the project, defining plant watering needs, selecting and laying out emission devices, locating system components, conducting hydraulics

calculations, identifying any local regulatory requirements, or scheduling irrigation work at a site. Completion of the various components will result in an irrigation plan.

(9) Design pressure—The pressure that is required for an emission device to operate properly. Design pressure is calculated by adding the operating pressure necessary at an emission device to the total of all pressure losses accumulated from an emission device to the water source.

(10) Double Check Valve—An assembly that is composed of two independently acting, approved check valves, including tightly closed resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. Also known as a Double Check Valve Backflow Prevention Assembly.

(11) Emission device—Any device that is contained within an irrigation system and that is used to apply water. Common emission devices in an irrigation system include, but are not limited to, spray and rotary sprinkler heads, and drip irrigation emitters.

(12) Employed—Engaged or hired to provide consulting services or perform any activity relating to the sale, design, installation, maintenance, alteration, repair, or service to irrigation systems. A person is employed if that person is in an employer-employee relationship as defined by Internal Revenue Code, 26 United States Code Service, §3212(d) based on the behavioral control, financial control, and the type of relationship involved in performing employment related tasks.

(13) Head-to-head spacing—The spacing of spray or rotary heads equal to the manufacturer's published radius of the head.

(14) Health hazard—A cross-connection or potential cross-connection with an irrigation system that involves any substance that may, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

(15) Hydraulics—The science of dynamic and static water; the mathematical computation of determining pressure losses and pressure requirements of an irrigation system.

(16) Inspector—A licensed plumbing inspector, water district operator, other governmental entity, or irrigation inspector who inspects irrigation systems and performs other enforcement duties for a municipality or water district as an employee or as a contractor.

(17) Installer—A person who actually connects an irrigation system to a private or public raw or potable water supply system or any water supply, who is licensed according to Chapter 30 of this title (relating to Occupational Licenses and Registrations).

(18) Irrigation inspector—A person who inspects irrigation systems and performs other enforcement duties for a municipality or water district as an employee or as a contractor and is required to be licensed under Chapter 30 of this title (relating to Occupational Licenses and Registrations).

(19) Irrigation plan—A scaled drawing of a landscape irrigation system which lists required information, the scope of the project, and represents the changes made in the installation of the irrigation system.

(20) Irrigation services—Selling, designing, installing, maintaining, altering, repairing, servicing, permitting, providing consulting services regarding, or connecting an irrigation system to a water supply.

(21) Irrigation system—An assembly of component parts that is permanently installed for the controlled distribution and conservation of water to irrigate any type of landscape vegetation in any location, and/or to reduce dust or control erosion. This term does not include a system that is used on or by an agricultural operation as defined by Texas Agricultural Code, §251.002.

(22) Irrigation technician—A person who works under the supervision of a licensed irrigator to install, maintain, alter, repair, service or supervise installation of an irrigation system, including the connection of such system in or to a private or public, raw or potable water supply system or any water supply, and who is required to be licensed under Chapter 30 of this title (relating to Occupational Licenses and Registrations).

(23) Irrigation zone—A subdivision of an irrigation system with a matched precipitation rate based on plant material type (such as turf, shrubs, or trees), microclimate factors (such as sun/shade ratio), topographic features (such as slope) and soil conditions (such as sand, loam, clay, or combination) or for hydrological control.

(24) Irrigator—A person who sells, designs, offers consultations regarding, installs, maintains, alters, repairs, services or supervises the installation of an irrigation system, including the connection of such system to a private or public, raw or potable water supply system or any water supply, and who is required to be licensed under Chapter 30 of this title (relating to Occupational Licenses and Registrations).

(25) Irrigator-in-Charge—The irrigator responsible for all irrigation work performed by an exempt business owner, including, but not limited to obtaining permits, developing design plans, supervising the work of other irrigators or irrigation technicians, and installing, selling, maintaining, altering, repairing, or servicing a landscape irrigation system.

(26) Landscape irrigation—The science of applying the necessary amount of water to promote or sustain healthy growth of plant material or turf.

(27) License—An occupational license that is issued by the commission under Chapter 30 of this title to an individual that authorizes the individual to engage in an activity that is covered by this chapter.

(28) Mainline—A pipe within an irrigation system that delivers water from the water source to the individual zone valves.

(29) Maintenance checklist—A document made available to the irrigation system's owner or owner's representative that contains information regarding the operation and

maintenance of the irrigation system, including, but not limited to: checking and repairing the irrigation system, setting the automatic controller, checking the rain or moisture sensor, cleaning filters, pruning grass and plants away from irrigation emitters, using and operating the irrigation system, the precipitation rates of each irrigation zone within the system, any water conservation measures currently in effect from the water purveyor, the name of the water purveyor, a suggested seasonal or monthly watering schedule based on current evapotranspiration data for the geographic region, and the minimum water requirements for the plant material in each zone based on the soil type and plant material where the system is installed.

(30) Major maintenance, alteration, repair, or service—Any activity that involves opening to the atmosphere the irrigation main line at any point prior to the discharge side of any irrigation zone control valve. This includes, but is not limited to, repairing or connecting into a main supply pipe, replacing a zone control valve, or repairing a zone control valve in a manner that opens the system to the atmosphere.

(31) Master valve—A remote control valve located after the backflow prevention device that controls the flow of water to the irrigation system mainline.

(32) Matched precipitation rate—The condition in which all sprinkler heads within an irrigation zone apply water at the same rate

(33) New installation—An irrigation system installed at a location where one did not previously exist.

(34) Non-health hazard—A cross-connection or potential cross connection from a landscape irrigation system that involves any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.

(35) Non-potable water—Water that is not suitable for human consumption. Non-potable water sources include, but are not limited to, irrigation systems, lakes, ponds, streams, gray water that is discharged from washing machines, dishwashers or other appliances, water vapor condensate from cooling towers, reclaimed water, and harvested rainwater.

(36) Pass-through contract—A written contract between a contractor or builder and a licensed irrigator or exempt business owner to perform part or all of the irrigation services relating to an irrigation system.

(37) Potable water—Water that is suitable for human consumption.

(38) Pressure Vacuum Breaker—An assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. Also known as a Pressure Vacuum Breaker Back-siphonage Prevention Assembly.

(39) Reclaimed water—Domestic or municipal wastewater which has been treated to a quality suitable for beneficial use, such as landscape irrigation.

(40) Records of landscape irrigation activities—The irrigation plans, contracts, warranty information, invoices, copies of permits, and other documents that relate

to the installation, maintenance, alteration, repair, or service of a landscape irrigation system.

(41) Reduced Pressure Principle Backflow Prevention Assembly—An assembly containing two independently acting approved check valves together with a hydraulically operating mechanically independent pressure differential relief valve located between the two check valves and below the first check valve.

(42) Static water pressure—The pressure of water when it is not moving.

(43) Supervision—The on-the-job oversight and direction by a licensed irrigator who is fulfilling his or her professional responsibility to the client and/or employer in compliance with local or state requirements. Also a licensed installer working under the direction of a licensed irrigator or beginning January 1, 2009, an irrigation technician who is working under the direction of a licensed irrigator to install, maintain, alter, repair or service an irrigation system.

(44) Water conservation—The design, installation, service, and operation of an irrigation system in a manner that prevents the waste of water, promotes the most efficient use of water, and applies the least amount of water that is required to maintain healthy individual plant material or turf, reduce dust, and control erosion.

(45) Zone flow—A measurement, in gallons per minute or gallons per hour, of the actual flow of water through a zone valve, calculated by individually opening each zone valve and obtaining a valid reading after the pressure has stabilized. For design purposes, the zone flow is the total flow of all nozzles in the zone at a specific pressure.

(46) Zone valve—An automatic valve that controls a single zone of a landscape irrigation system.

Subchapter B. Standards of Conduct for Irrigators, Installers, Irrigation Technicians, and Irrigation Inspectors, and Local Requirements

344.20. Purpose of Standards.

(a) The correct practice of irrigation as a science and profession is essential for the protection and conservation of the water resources of the state and should be conducted by individuals who are held to the highest ethical standards. The legislature has vested the commission with the authority and duty to establish and enforce standards of professional conduct and ethics for practitioners in the irrigation industry.

(b) Every applicant for an irrigator, installer, irrigation technician, or irrigation inspector license must become fully informed of the obligations and responsibilities inherent in the practice of irrigation as outlined by these standards of conduct. Each licensed irrigator, installer, irrigation technician, or irrigation inspector is deemed to have notice of these standards of conduct and is required to abide by the standards.

§344.21. Intent.
(a) These standards of conduct are established to prescribe responsibility on the part of an irrigator, an installer, an irrigation technician, an irrigation inspector, and a qualifying exempt business owner to aid in governing the irrigation industry.

(b) The commission will determine what actions constitute violations of the standards in accordance with Chapter 70 of this title (relating to Enforcement) and Texas Water Code, Chapter 7 and institute appropriate disciplinary action, which may lead to monetary penalties or the suspension or revocation of a license in accordance with the applicable state statutes.

§344.22. Proficiency in the Field of Irrigation; Representation of Qualifications.
(a) All irrigators, installers, irrigation technicians, and inspectors shall be knowledgeable of the current industry standards regarding selling, designing, providing consulting services, installing, maintaining, altering, repairing, or servicing irrigation systems, including the connection of such a system to any source of water and water conservation. All irrigators, installers, irrigation technicians, and inspectors shall conform to the current adopted version of these rules and any local rules that do not conflict with these rules, or that are more stringent than these rules, when performing these activities.

(b) All irrigators, installers, irrigation technicians, irrigation inspectors, and exempt business owners shall accurately and truthfully represent to prospective clients their qualifications to perform the services requested and shall not perform services for which they are not qualified by experience, knowledge, or license in the technical field involved.

(c) All irrigators, installers, irrigation technicians, and inspectors shall be knowledgeable of local requirements related to landscape irrigation systems.

§344.23. Irrigation Practice.
False, misleading, or deceptive practices by an irrigator, installer, irrigation technician, or irrigation inspector relating to bidding, advertising, selling, installation, maintenance, alteration, repair, servicing, or inspection of irrigation systems are prohibited.

§344.24. Local Regulation and Inspection.
(a) Where any city, town, county, special purpose district, other political subdivision of the state, or public water supplier requires licensed irrigators, installers, irrigation technicians, or irrigation inspectors to comply with reasonable inspection requirements, ordinances, or regulations designed to protect the public water supply, any of which relates to work performed or to be performed within such political subdivision's territory the licensed irrigator, installer, irrigation technician, or irrigation inspector must comply with such requirements, ordinances, and regulations.

(b) Any city, town, county, other political subdivision of the state, or public water supplier that is not required to adopt rules or ordinances regulating landscape irrigation may adopt a landscape irrigation program by ordinance or rule and may be responsible for inspection of connections to its public water supply system up to and including the backflow prevention device.

(c) Municipalities with a population of 20,000 or more and a water district that chooses to implement a landscape irrigation program must verify that the irrigator that designs and installs an irrigation system holds a valid irrigator's license and has obtained a permit before

installing a system within its territorial limits or if a municipality, its extraterritorial jurisdiction. Inspectors must verify that the design and installation meet the requirements of this chapter and local ordinances or rules that do not conflict with this chapter, or that are more stringent than this chapter.

(d) Each inspector shall maintain a log of all irrigation systems inspected that includes, but is not limited to, the system location, property owner, irrigator responsible for installation, permit status, problems noted during the inspection, and date of the inspection. The log must be kept for three years. The log shall be available for review within two business days of the request by authorized representatives of the commission or any regulatory authority with jurisdiction over landscape irrigation issues in the area the inspector is employed to inspect.

(e) An inspector may not inspect a landscape irrigation system that is an on-site sewage disposal system, as defined by Texas Health and Safety Code, §366.002.

(f) An inspector may not inspect an irrigation system that is used on or by an agricultural operation as defined by Texas Agricultural Code, §251.002; or is connected to a groundwater well that is used by the property owner for domestic use.

Subchapter C. Requirements for Licensed Irrigators, Installers, Irrigation Technicians, and Irrigation Inspectors

§344.30. License Required.

(a) An irrigator is an individual who:

(1) sells, designs, provides consultation services, installs, maintains, alters, repairs, or services an irrigation system, including the connection of such system to any water supply;

(2) advertises or represents to anyone that the individual can perform any or all of these functions; and

(3) is required to hold a valid irrigator license issued under Chapter 30 of this title (relating to Occupational Licenses and Registrations).

(b) Through December 31, 2009, an installer is an individual who connects an irrigation system to any water supply.

(c) Beginning January 1, 2009, an irrigation technician is an individual who:

(1) connects an irrigation system to a water supply;

(2) under the supervision of a licensed irrigator, installs, maintains, alters, repairs, or services a landscape irrigation system;

(3) represents to anyone that the individual can perform any or all of these functions; and

(4) is required to hold a valid irrigation technician license issued under Chapter 30 of this title.

(d) All irrigators, installers, and irrigation technicians shall comply with the rules contained in this chapter when performing any or all of the functions listed in this section.

(e) An individual who inspects irrigation systems and enforces a municipality's landscape irrigation ordinance must:

(1) hold a valid irrigation inspector license issued according to Chapter 30 of this title; or

(2) hold a valid plumbing inspector license.

(f) An individual who inspects irrigation systems and enforces a water district's rules related to landscape irrigation systems must:

(1) hold a valid irrigation inspector license issued according to Chapter 30 of this title;

(2) hold a valid plumbing inspector license;

(3) be the district's operator; or

(4) be another regulatory authority with jurisdiction over landscape irrigation.

(g) An inspector shall comply with the rules contained in this chapter when performing any or all of the functions listed in this section.

(h) A property owner is not required to be licensed in accordance with Texas Occupations Code, Title 12, §1903.002(c)(1) if he or she is performing irrigation work in a building or on a premises owned or occupied by the person as the person's home. A home or property owner who installs an irrigation system must meet the standards contained in §344.62(b) Spacing, §344.62(c) Water pressure, §344.62(g) related to spraying water over impervious materials, §344.62(j) Rain or moisture shut-off devices or other technology, and §344.62(k) Isolation valve. Municipalities or water districts may adopt more stringent requirements for a home or property owner who installs an irrigation system.

§344.31. Exemption for Business Owner Who Provides Irrigation Services.
Under Chapter 30 of this title (relating to Occupational Licenses and Registrations), a business owner who employs a licensed irrigator as an irrigator-in-charge to provide consulting services or to supervise or conduct the exempt business's operations relating to the design, installation, maintenance, alteration, repairing, and servicing of irrigation systems is exempt from the licensing requirements of Texas Occupations Code, Chapter 1903.

§344.32. Responsibilities of a Business Owner Who Provides Irrigation Services.
An exempt owner who provides landscape irrigation services shall ensure that all irrigation services are supervised by a licensed irrigator, according to the requirements of this subchapter. An exempt business owner who engages in landscape irrigation is responsible for verifying the validity of the license belonging to all irrigators, installers, and irrigation technicians performing irrigation services for the business. An exempt business owner who engages in landscape irrigation is responsible for designating an irrigator-in-charge.

§344.33. Display of License.
(a) Irrigators, installers, and irrigation technicians shall prominently display their license certificate at the place of irrigation business or employment and shall present their license upon request by any regulatory authority, irrigation system's owner, or prospective owner.

(b) Irrigation inspectors shall present their license, when requested by any entity that is regulated under this chapter, and when that request is made while an irrigation inspector is conducting business.

§344.34. Use of License.
(a) No one other than the irrigator, installer, irrigation technician, or irrigation inspector to whom a license is issued shall use or attempt to use the license, which includes the license number.

(b) An individual who uses or attempts to use the license or license number of someone else who is a licensed irrigator, licensed installer, licensed irrigation technician, or licensed irrigation inspector is in violation of Texas Occupations Code, Chapter 1903, and this chapter.

(c) An irrigator's license or license number may be used at only one entity as the irrigator-in-charge. An irrigator may work for other entities, but not as the irrigator-in-charge.

(d) It is a violation of this chapter for an irrigator, installer, irrigation technician or irrigation inspector to authorize or allow another person or entity to use the irrigator's, installer's, irrigation technician's, or irrigation inspector's license or license number in a manner inconsistent with this chapter.

§344.35. Duties and Responsibilities of Irrigators.
(a) An irrigator shall comply with the rules contained in this chapter when performing any or all of the functions described in this section.

(b) An irrigator who performs work for an entity or for an exempt business owner who performs or offers to perform irrigation services shall be knowledgeable of and responsible for all permits, contracts, agreements, advertising, and other irrigation services secured and performed using the irrigator's license.

(c) A licensed irrigator who is employed by an exempt business owner as defined by §344.31 of this title (relating to Exemption for Business Owner Who Provides Irrigation Services) shall supervise all irrigation services of the business, in accordance with this chapter.

(d) A licensed irrigator is responsible for:

(1) using the stamp or rubber seal in accordance with this chapter;

(2) obtaining all permits and inspections required to install an irrigation system;

(3) complying with local regulations;

(4) determining the appropriate backflow prevention method for each irrigation system installation and installing the backflow prevention device correctly;

(5) maintaining landscape irrigation systems records;

(6) conserving water;

(7) developing and following irrigation plan for each new irrigation system;

(8) designing an irrigation system that complies with the requirements of this chapter;

(9) providing on-site supervision of the installation of an irrigation system beginning January 1, 2010;

(10) providing supervision to an irrigation technician while connecting an irrigation system to a water supply; installing, maintaining, altering, repairing, or servicing an irrigation system;

(11) providing supervision to an installer connecting an irrigation system through December 31, 2009;

(12) completing the irrigation system including the final "walk through," completing the maintenance checklist, placing a permanent sticker on the controller or on the maintenance checklist if the irrigation system does not have an automatic controller, and providing a copy of the design plan;

(13) selling, consulting, performing maintenance, alteration, repair, and service of irrigation systems that complies with the requirements of this chapter;

(14) providing advertisements, contracts, and warranties that comply with the requirements of this chapter; and

(15) installing an irrigation system that complies with the requirements of this chapter.

§344.36. Duties and Responsibilities of Installers and Irrigation Technicians.
(a) A licensed installer may connect an irrigation system to a water supply through December 31, 2009. This includes installing an approved backflow prevention method pursuant to §344.50 of this title (relating to Backflow Prevention Methods) when connecting an irrigation system to a potable water supply. Beginning January 1, 2009, a licensed irrigation technician may connect an irrigation system to a water supply, including installing an approved backflow prevention method pursuant to §344.50 of this title and may maintain, alter, repair, service, or direct the installation of irrigation systems under the supervision of an irrigator.

(b) If an installer or irrigation technician connects an irrigation system to a potable water supply, the connection and installation of the backflow prevention method must be as indicated on the site irrigation plan or as directed by the licensed irrigator and documented on the site irrigation plan.

(c) Through December 31, 2009, an installer is responsible for the connection of an irrigation system to a water supply under the supervision of a licensed irrigator.

(d) Beginning January 1, 2009, an irrigation technician, under the supervision of a licensed irrigator, is responsible for:

(1) connecting an irrigation system to a water supply; and

(2) providing on-site supervision of the installation, maintenance, alteration, repair, service of an irrigation system including the final walk through with the irrigation system owner or owner's representative to explain the maintenance and operation of the irrigation system.

§344.37. Duties and Responsibilities of Irrigation Inspectors.
(a) A licensed irrigation inspector shall enforce the applicable irrigation rules or ordinance of the employing governmental entity.

(b) A licensed irrigation inspector, licensed plumbing inspector, a water district's operator or other governmental entity shall be responsible for:

(1) verifying that the appropriate permits have been obtained for an irrigation system and that the irrigator and installer or irrigation technician, if applicable, are licensed;

(2) inspecting the irrigation system;

(3) determining that the irrigation system complies with the requirements of this chapter;

(4) determining that the appropriate backflow prevention device was installed, tested, and test results provided to the water purveyor;

(5) investigating complaints related to irrigation system installation, maintenance, alteration, repairs, or service of an irrigation system and advertisement of irrigation services; and

(6) maintaining records according to this chapter.

§344.38. Irrigator, Installer, and Irrigation Technician Records.
Upon the licensed irrigator obtaining the seal or rubber stamp, in accordance with this chapter, an impression of the seal or rubber stamp will be made on letterhead, or other business stationary, and maintained on file for review by the commission. Archival copies of all records given to the irrigation system's owner or owner's representative shall be maintained by the irrigator. Records will be maintained by the irrigator for a period of three years from the date installation, maintenance, alteration, repair or service was completed. Irrigators, installers, and irrigation technicians shall make all records of landscape irrigation services available within ten business days of any request made by authorized representatives of the commission or the local regulatory authority with jurisdiction over landscape irrigation issues.

Subchapter D. Licensed Irrigator Seal

§344.40. Seal Required.
Each irrigator, upon being licensed with the commission, shall obtain a seal, as described in §344.41 of this title (relating to Seal Design). Licensed irrigators shall not engage in any landscape irrigation services without physical possession of the seal and the license. The irrigator is responsible for the security of the seal.

§344.41. Seal Design.
(a) The required seal must be:

(1) circular; and

(2) not less than 1½ inches in diameter.

(b) The required seal must display:

(1) the words "State of Texas" at the top between the knurled circles;

(2) the words "Licensed Irrigator" at the bottom; and

(3) the irrigator's name and license number, excluding leading zeros, horizontally in the circular field.

§344.42. Seal Display.

(a) On every document requiring an irrigator's seal, the seal shall be clearly visible and legible on the original document and all copies or reproductions of the original document.

(b) An irrigator may use an electronic or other format seal and signature if the seal, signature, and date are clearly visible and legible on the original document and all copies or reproductions of the original document.

§344.43. Seal Use.

(a) Irrigators shall:

(1) sign their legal name;

(2) affix the seal above the irrigator's signature; and

(3) include the date of signing (month, day, and year) of each document to which the seal is affixed.

(b) The presence of the irrigator's seal displayed above the irrigator's signature and date on any document constitutes the acceptance of all professional responsibility for the document and the irrigation services performed in accordance with that document.

(c) The irrigator will maintain, for three years, a copy of each document bearing the irrigator's seal.

(d) Once a document containing a seal is issued, the seal may not be altered.

(e) Irrigators shall not use or authorize the use of a seal on any plan or specification created by another irrigator unless the irrigator:

(1) Reviews and makes changes to adapt the plan or specification to the specific site conditions and to address state and local requirements; and

(2) Accepts full responsibility for any alterations to the plan or specification and any downstream consequences.

(f) If an irrigator prepares a portion of a plan or specification, that portion of the design or specification prepared by the irrigator, or under the irrigator's supervision and seal, should be clearly identified.

(g) Irrigators shall sign, seal and date the irrigation plan and specifications, contract, addenda or change orders, warranty, and the maintenance checklist.

Subchapter E. Backflow Prevention and Cross-Connections

§344.50. Backflow Prevention Methods.

(a) Any irrigation system that is connected to a public or private potable water supply must be connected through a commission-approved backflow prevention method. The backflow prevention device must be approved by the American Society of Sanitary Engineers; or the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; or the Uniform Plumbing Code; or any other laboratory that has equivalent capabilities for both the laboratory and field evaluation of backflow prevention assemblies. The backflow prevention device must be installed in accordance with the laboratory approval standards or if the approval does not include specific installation information, the manufacturer's current published recommendations.

(b) If conditions that present a health hazard exist, one of the following methods must be used to prevent backflow;

(1) An air gap may be used if:

(A) there is an unobstructed physical separation; and

(B) the distance from the lowest point of the water supply outlet to the flood rim of the fixture or assembly into which the outlet discharges is at least one inch or twice the diameter of the water supply outlet, whichever is greater.

(2) Reduced pressure principle backflow prevention assemblies may be used if:

(A) the device is installed at a minimum of 12 inches above ground in a location that will ensure that the assembly will not be submerged; and

(B) drainage is provided for any water that may be discharged through the assembly relief valve.

(3) Pressure vacuum breakers may be used if:

(A) no back-pressure condition will occur; and

(B) the device is installed at a minimum of 12 inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler.

(4) Atmospheric vacuum breakers may be used if:

(A) no back-pressure will be present;

(B) there are no shutoff valves downstream from the atmospheric vacuum breaker;

(C) the device is installed at a minimum of six inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler;

(D) there is no continuous pressure on the supply side of the atmospheric vacuum breaker for more than 12 hours in any 24-hour period; and

(E) a separate atmospheric vacuum breaker is installed on the discharge side of each irrigation control valve, between the valve and all the emission devices that the valve controls.

(c) Backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.

(d) If there are no conditions that present a health hazard double check valve backflow prevention assemblies may be used to prevent backflow if the device is tested upon installation and:

(1) a local regulatory authority does not prohibit the use of a double check valve;

(2) backpressure caused by an elevation of pressure in the discharge piping by pump or elevation of piping above the supply pressure which could cause a reversal of the normal flow of water or back-siphonage conditions caused by a reduced or negative pressure in the irrigation system exist; and

(3) test cocks are used for testing only.

(e) If a double check valve is installed below ground:

(1) test cocks must be plugged, except when the double check valve is being tested;

(2) test cock plugs must be threaded, water-tight, and made of non-ferrous material;

(3) a y-type strainer is installed on the inlet side of the double check valve;

(4) there must be a clearance between any fill material and the bottom of the double check valve to allow space for testing and repair; and

(5) there must be space on the side of the double check valve to test and repair the double check valve.

§344.51. Specific Conditions and Cross-Connection Control.

(a) Before any chemical is added to an irrigation system connected to any potable water supply, the irrigation system must be connected through a reduced pressure principle backflow prevention assembly or air gap.

(b) Connection of more than one water source to an irrigation system presents the potential for contamination of the potable water supply if backflow occurs. Therefore, connection of any additional water source to an irrigation system that is connected to the potable water supply can only be done if the irrigation system is connected to the potable water supply through a reduced-pressure principle backflow prevention assembly or an air gap.

(c) Irrigation system components with chemical additives induced by aspiration, injection, or emission system connected to any potable water supply must be connected through a reduced pressure principle backflow device.

(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:

(1) all irrigation piping and valves must meet the separation distances from the On-Site Sewage Facilities system as required for a private water line in §285.91(10) of this title (relating to Minimum Required Separation Distances for On-Site Sewage Facilities);

(2) any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and

(3) any water from the irrigation system that is applied to the surface of the area utilized by the On-Site Sewage Facility system must be controlled on a separate irrigation zone or zones so as to allow complete control of any irrigation to that area so that there will not be excess water that would prevent the On-Site Sewage Facilities system from operating effectively.

§344.52. Installation of Backflow Prevention Device.
(a) If an irrigation system is connected to a potable water supply and requires major maintenance, alteration, repair, or service, the system must be connected to the potable water supply through an approved, properly installed backflow prevention method as defined in this title before any major maintenance, alteration, repair, or service is performed.

(b) If an irrigation system is connected to a potable water supply through a double check valve, pressure vacuum breaker, or reduced pressure principle backflow assembly and includes an automatic master valve on the system, the automatic master valve must be installed on the discharge side of the backflow prevention assembly.

(c) The irrigator shall ensure the backflow prevention device is tested prior to being placed in service and the test results provided to the local water purveyor and the irrigation system's owner or owner's representative within 10 business days of testing of the backflow prevention device.

Subchapter F. Standards for Designing, Installing, and Maintaining Landscape Irrigation Systems

§344.60. Water Conservation.
All irrigation systems shall be designed, installed, maintained, altered, repaired, serviced, and operated in a manner that will promote water conservation as defined in §344.1(44) of this title (relating to Definitions).

§344.61. Minimum Standards for the Design of the Irrigation Plan.
(a) An irrigator shall prepare an irrigation plan for each site where a new irrigation system will be installed. A paper or electronic copy of the irrigation plan must be on the job site at all times during the installation of the irrigation system. A drawing showing the actual installation of the system is due to each irrigation system owner after all new irrigation system installations. During the installation of the irrigation system, variances from the original plan may be authorized by the licensed irrigator if the variance from the plan does not:

(1) diminish the operational integrity of the irrigation system;

(2) violate any requirements of this chapter; and

(3) go unnoted in red on the irrigation plan.

(b) The irrigation plan must include complete coverage of the area to be irrigated. If a system does not provide complete coverage of the area to be irrigated, it must be noted on the irrigation plan.

(c) All irrigation plans used for construction must be drawn to scale. The plan must include, at a minimum, the following information:

(1) the irrigator's seal, signature, and date of signing;

(2) all major physical features and the boundaries of the areas to be watered;

(3) a North arrow;

(4) a legend;

(5) the zone flow measurement for each zone;

(6) location and type of each:

(A) controller;

(B) sensor (for example, but not limited to, rain, moisture, wind, flow, or freeze);

(7) location, type, and size of each:

(A) water source, such as, but not limited to a water meter and point(s) of connection;

(B) backflow prevention device;

(C) water emission device, including, but not limited to, spray heads, rotary sprinkler heads, quick-couplers, bubblers, drip, or micro-sprays;

(D) valve, including, but not limited to, zone valves, master valves, and isolation valves;

(E) pressure regulation component; and

(F) main line and lateral piping.

(8) the scale used; and

(9) the design pressure.

§344.62. Minimum Design and Installation Requirements.

(a) No irrigation design or installation shall require the use of any component, including the water meter, in a way which exceeds the manufacturer's published performance limitations for the component.

(b) Spacing.

(1) The maximum spacing between emission devices must not exceed the manufacturer's published radius or spacing of the device(s). The radius or spacing is determined by referring to the manufacturer's published specifications for a specific emission device at a specific operating pressure.

(2) New irrigation systems shall not utilize above-ground spray emission devices in landscapes that are less than 48 inches not including the impervious surfaces in either length or width and which contain impervious pedestrian or vehicular traffic surfaces along two or more perimeters. If pop-up sprays or rotary sprinkler heads are used in a new irrigation system, the sprinkler heads must direct flow away from any adjacent surface and shall not be installed closer than four inches from a hardscape, such as, but not limited to, a building foundation, fence, concrete, asphalt, pavers, or stones set with mortar.

(3) Narrow paved walkways, jogging paths, golf cart paths or other small areas located in cemeteries, parks, golf courses or other public areas may be exempted from this requirement if the runoff drains into a landscaped area.

(c) Water pressure. Emission devices must be installed to operate at the minimum and not above the maximum sprinkler head pressure as published by the manufacturer for the nozzle and head spacing that is used. Methods to achieve the water pressure requirements include, but are not limited to, flow control valves, a pressure regulator, or pressure compensating spray heads.

(d) Piping. Piping in irrigation systems must be designed and installed so that the flow of water in the pipe will not exceed a velocity of five feet per second for polyvinyl chloride (PVC) pipe.

(e) Irrigation Zones. Irrigation systems shall have separate zones based on plant material type, microclimate factors, topographic features, soil conditions, and hydrological requirements.

(f) Matched precipitation rate. Zones must be designed and installed so that all of the emission devices in that zone irrigate at the same precipitation rate.

(g) Irrigation systems shall not spray water over surfaces made of concrete, asphalt, brick, wood, stones set with mortar, or any other impervious material, such as, but not limited to, walls, fences, sidewalks, streets, etc.

(h) Master valve. When provided, a master valve shall be installed on the discharge side of the backflow prevention device on all new installations.

(i) PVC pipe primer solvent. All new irrigation systems that are installed using PVC pipe and fittings shall be primed with a colored primer prior to applying the PVC cement in accordance with the Uniform Plumbing Code (Section 316) or the International Plumbing Code (Section 605).

(j) Rain or moisture shut-off devices or other technology. All new automatically controlled irrigation systems must include sensors or other technology designed to inhibit or interrupt operation of the irrigation system during periods of moisture or rainfall. Rain or moisture shut-off technology must be installed according to the manufacturer's published

recommendations. Repairs to existing automatic irrigation systems that require replacement of an existing controller must include a sensor or other technology designed to inhibit or interrupt operation of the irrigation system during periods of moisture or rainfall. El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, Brewster, Terrell, Loving, Winkler, Ward, Reeves, Ector, Crane and Pecos are excluded from this requirement.

(k) Isolation valve. All new irrigation systems must include an isolation valve between the water meter and the backflow prevention device.

(l) Depth coverage of piping. Piping in all irrigation systems must be installed according to the manufacturer's published specifications for depth coverage of piping.

(1) If the manufacturer has not published specifications for depth coverage of piping, the piping must be installed to provide minimum depth coverage of six inches of select backfill, between the top of the pipe and the natural grade of the topsoil. All portions of the irrigation system that fail to meet this standard must be noted on the irrigation plan. If the area being irrigated has rock at a depth of six inches or less, select backfill may be mounded over the pipe. Mounding must be noted on the irrigation plan and discussed with the irrigation system owner or owner's representative to address any safety issues.

(2) If a utility, man-made structure, or roots create an unavoidable obstacle, which makes the six-inch depth coverage requirement impractical, the piping shall be installed to provide a minimum of two inches of select backfill between the top of the pipe and the natural grade of the topsoil.

(3) All trenches and holes created during installation of an irrigation system must be backfilled and compacted to the original grade.

(m) Wiring irrigation systems.

(1) Underground electrical wiring used to connect an automatic controller to any electrical component of the irrigation system must be listed by Underwriters Laboratories as acceptable for burial underground.

(2) Electrical wiring that connects any electrical components of an irrigation system must be sized according to the manufacturer's recommendation.

(3) Electrical wire splices which may be exposed to moisture must be waterproof as certified by the wire splice manufacturer.

(4) Underground electrical wiring that connects an automatic controller to any electrical component of the irrigation system must be buried with a minimum of six inches of select backfill.

(n) Water contained within the piping of an irrigation system is deemed to be non-potable. No drinking or domestic water usage, such as, but not limited to, filling swimming pools or decorative fountains, shall be connected to an irrigation system. If a hose bib (an outdoor water faucet that has hose threads on the spout) is connected to an irrigation system for the purpose of providing supplemental water to an area, the hose bib must be installed using a quick coupler key on a quick coupler installed in a covered purple valve box and the hose bib and any hoses connected to the bib must be labeled "non-potable, not safe for drinking." An

isolation valve must be installed upstream of a quick coupler connecting a hose bib to an irrigation system.

(o) Beginning January 1, 2010, either a licensed irrigator or a licensed irrigation technician shall be on-site at all times while the landscape irrigation system is being installed. When an irrigator is not on-site, the irrigator shall be responsible for ensuring that a licensed irrigation technician is on-site to supervise the installation of the irrigation system.

§344.63. Completion of Irrigation System Installation.
Upon completion of the irrigation system, the irrigator or irrigation technician who provided supervision for the on-site installation shall be required to complete four items:

(1) a final "walk through" with the irrigation system's owner or the owner's representative to explain the operation of the system;

(2) The maintenance checklist on which the irrigator or irrigation technician shall obtain the signature of the irrigation system's owner or owner's representative and shall sign, date, and seal the checklist. If the irrigation system's owner or owner's representative is unwilling or unable to sign the maintenance checklist, the irrigator shall note the time and date of the refusal on the irrigation system's owner or owner's representative's signature line. The irrigation system owner or owner's representative will be given the original maintenance checklist and a duplicate copy of the maintenance checklist shall be maintained by the irrigator. The items on the maintenance checklist shall include but are not limited to:

(A) the manufacturer's manual for the automatic controller, if the system is automatic;

(B) a seasonal (spring, summer, fall, winter) watering schedule based on either current/real time evapotranspiration or monthly historical reference evapotranspiration (historical ET) data, monthly effective rainfall estimates, plant landscape coefficient factors, and site factors;

(C) a list of components, such as the nozzle, or pump filters, and other such components; that require maintenance and the recommended frequency for the service; and

(D) the statement, “This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the Irrigation Plan and is properly adjusted for the most efficient application of water at this time.”

(3) A permanent sticker which contains the irrigator's name, license number, company name, telephone number and the dates of the warranty period shall be affixed to each automatic controller installed by the irrigator or irrigation technician. If the irrigation system is manual, the sticker shall be affixed to the original maintenance checklist. The information contained on the sticker must be printed with waterproof ink and include:

(4) The irrigation plan indicating the actual installation of the system must be provided to the irrigation system's owner or owner representative.

§344.64. Maintenance, Alteration, Repair, or Service of Irrigation Systems.
(a) The irrigator is responsible for all work that the irrigator performed during the maintenance, alteration, repair, or service of an irrigation system during the warranty period. The irrigator or business owner is not responsible for the professional negligence of any other irrigator who subsequently conducts any irrigation service on the same irrigation system.

(b) All trenches and holes created during the maintenance, alteration, repair, or service of an irrigation system must be returned to the original grade with compacted select backfill.

(c) Colored PVC pipe primer solvent must be used on all pipes and fittings used in the maintenance, alteration, repair, or service of an irrigation system in accordance with the Uniform Plumbing Code (Section 316) or the International Plumbing Code (Section 605).

(d) When maintenance, alteration, repair or service of an irrigation system involves excavation work at the water meter or backflow prevention device, an isolation valve shall be installed, if an isolation valve is not present.

§344.65. Reclaimed Water.
Reclaimed water may be utilized in landscape irrigation systems if:

(1) there is no direct contact with edible crops, unless the crop is pasteurized before consumption;

(2) the irrigation system does not spray water across property lines that do not belong to the irrigation system's owner;

(3) the irrigation system is installed using purple components;

(4) the domestic potable water line is connected using an air gap or a reduced pressure principle backflow prevention device, in accordance with §290.47(i) of this title (relating to Appendices);

(5) a minimum of an eight inch by eight inch sign, in English and Spanish, is prominently posted on/in the area that is being irrigated, that reads, "RECLAIMED WATER—DO NOT DRINK" and "AGUA DE RECUPERACIÓN—NO BEBER"; and

(6) backflow prevention on the reclaimed water supply line shall be in accordance with the regulations of the water purveyor.

Subchapter G. Advertising, Contract, and Warranty

§344.70. Advertisement.
(a) All vehicles used in the performance of irrigation installation, maintenance, alteration, repair, or service must display the irrigator's license number in the form of "LI_____" in a contrasting color of block letters at least two inches high, on both sides of the vehicle.

(b) All forms of written and electronic advertisements for irrigation services must display the irrigator's license number in the form of "LI_____." Any form of advertisement, including business cards, and estimates which displays an entity's or individual's name other

than that of the licensed irrigator must also display the name of the licensed irrigator and the licensed irrigator's license number. Trailers that advertise irrigation services must display the irrigator's license number.

(c) The name, mailing address, and telephone number of the commission must be prominently displayed on a legible sign and displayed in plain view for the purpose of addressing complaints at the permanent structure where irrigation business is primarily conducted and irrigation records are kept.

§344.71. Contracts.

(a) All contracts to install an irrigation system must be in writing and signed by each party and must specify the irrigator's name, license number, business address, current business telephone numbers, the date that each party signed the agreement, the total agreed price, and must contain the statement, "Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), MC-178, P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's website is: www. tceq.state.tx.us." All contracts must include the irrigator's seal, signature, and date.

(b) All written estimates, proposals, bids, and invoices relating to the installation or repair of an irrigation system(s) must include the irrigator's name, license number, business address, current business telephone number(s), and the statement: "Irrigation in Texas is regulated by the Texas Commission On Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us."

(c) An individual who agrees by contract to provide irrigation services as defined in §344.30 of this title (relating to License Required) shall hold an irrigator license issued under Chapter 30 of this title (relating to Occupational Licenses and Registrations) unless the contract is a pass-through contract as defined in §344.1(36) of this title (relating to Definitions). If a pass-through contract includes irrigation services, then the irrigation portion of the contract can only be performed by a licensed irrigator. If an irrigator installs a system pursuant to a pass-through contract, the irrigator shall still be responsible for providing the irrigation system's owner or through contract, the irrigator shall still be responsible for providing the irrigation system's owner or owner's representative a copy of the warranty and all other documents required under this chapter. A pass-through contract must identify by name and license number the irrigator that will perform the work and must provide a mechanism for contacting the irrigator for irrigation system warranty work.

(d) The contract must include the dates that the warranty is valid.

§344.72. Warranties.

(a) On all installations of new irrigation systems, an irrigator shall present the irrigation system's owner or owner's representative with a written warranty covering materials and labor furnished in the new installation of the irrigation system. The irrigator shall be responsible for adhering to terms of the warranty. If the irrigator's warranty is less than the manufacturer's warranty for the system components, then the irrigator shall provide the irrigation system's owner or the owner's representative with applicable information regarding the manufacturer's warranty period. The warranty must include the irrigator's seal, signature, and date. If the warranty is part of an irrigator's contract, a separate warranty document is not required.

(b) An irrigator's written warranty on new irrigation systems must specify the irrigator's name, business address, and business telephone number(s), must contain the signature of the irrigation system's owner or owner's representative confirming receipt of the warranty and must include the statement: "Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), MC-178, P.O. Box 130897, Austin, Texas 78711-3087. TCEQ's website is: www.tceq.state.tx.us."

(c) On all maintenance, alterations, repairs, or service to existing irrigation systems, an irrigator shall present the irrigation system's owner or owner's representative a written document that identifies the materials furnished in the maintenance, alteration, repair, or service. If a warranty is provided, the irrigator shall abide by the terms. The warranty document must include the irrigator's name and business contact information.

Subchapter H. Irrigator Advisory Council

§344.80. Irrigator Advisory Council.

(a) The Irrigator Advisory Council is composed of nine members that are appointed by the commission. Appointments to the council will be made without regard to race, creed, sex, religion, or national origin of the appointees. The purpose of the council is to give the commission the benefit of the members' collective business, environmental, and technical expertise and experience with respect to matters relating to landscape irrigation. The council has no executive or administrative powers or duties with respect to the operation of the commission, and all such powers and duties rest solely with the commission.

(b) Six members of the council must be licensed irrigators who are residents of the State of Texas, experienced in the irrigation business, and familiar with irrigation methods and techniques.

(c) Three members must be representatives of the public. A person is not eligible for appointment as a public member if the person or the person's spouse:

(1) is licensed by an occupational regulatory agency in the field of irrigation; or

(2) is employed by, participates in the management of, or has, other than as a consumer, a financial interest in a business entity or other organization related to the field of irrigation.

(d) It is grounds for removal from the council by the commission if a member:

(1) does not meet, at the time of the appointment, the qualifications that are required by subsection (b) or (c) of this section for appointment to the council;

(2) does not maintain, during service on the council, the qualifications that are required by subsection (b) or (c) of this section for appointment to the council; or

(3) misses three consecutive regularly scheduled meetings or more than half of all the regularly scheduled meetings in a one-year period.

(e) The members of the council serve six-year terms, with the terms expiring February 1 of each odd-numbered year.

(f) A member of the council is entitled to per diem as appropriated by the Texas Legislature for each day that the member engages in the business of the council. A member is entitled to reimbursement for travel expenses, including expenses for meals and lodging, as provided for in the General Appropriations Act.

(g) The council shall hold meetings at the call of the commission or chairman.

(h) A majority of the council constitutes a quorum for conducting business.

(i) The council will elect a chairman by a majority vote.

Appendix B
Sample Forms

Sample Irrigation System Maintenance Checklist

Installation Completion Date: _____

Address: _____

The following items have been provided and explained to the irrigation system owner or system owner's representative.

- □ The manufacturer's manual for the controller.
- □ A seasonal watering schedule.
- □ A list of components that require maintenance and the recommended frequency of maintenance is attached.
- □ A permanent sticker has been attached to the controller indicating the warranty period for the irrigation system and contact information.
- □ The corrected or redrawn design plans indicating the actual installation and components of the system.
- □ Location and operation of the isolation valve.

_____ _____

Irrigation system owner or representative Date

This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the irrigation plan and is properly adjusted for the most efficient application of water at this time.

Irrigator's Seal

_____ _____

Irrigator Date

_____ _____

Irrigation Technician Date

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us.

Components Requiring Maintenance—Example for Irrigators

Irrigation System

- □ Winterization
- □ Return to normal service

Sprinkler Heads

- □ Are any heads missing?
- □ Are any heads broken?
- □ Are any heads clogged?
- □ Are any heads tilted, spraying in the wrong direction, or too far in or above the ground?
- □ Is water constantly seeping from a head?
- □ Is water spraying in a fine mist?
- □ Does the sprinkler cover the entire area uniformly?
- □ Is the spray pattern blocked or misdirected?
- □ Is the system spraying onto sidewalks, decks, buildings, driveways, or the street?

Controller

- □ Is the cabinet or space holding the controller clean?
- □ Are any wires loose? (Take care with wires of 110 volt).
- □ Have any wires become worn? (Take care with wires of 110 volt).
- □ Is a new battery needed?
- □ Are the time and date displaying correctly?
- □ Is the rain or moisture sensor (or other technology) connected to the controller or ground wire?
- □ Is the controller programmed for the appropriate season?
- □ Is the controller programmed for any water conservation measures that may be in effect from your water purveyor?

Valves

- □ Inspect valve covers and valve boxes.
- □ Inspect valve electrical connections.

Backflow Prevention Device

- □ Is tested, as needed or required.

Drip or Micro Irrigation

- □ Emitters connected to flex line.
- □ Flex line connected to riser.
- □ Micro adjustment nozzle connected to flex line and nozzle intact.
- □ Service filter strainer periodically.
- □ Ensure proper operation of automatic flush valves.
- □ Confirm operational pressures.

Sample Maintenance Information for Irrigation System Owners

During daylight hours, monthly (while the system is in operation) check each zone of your irrigation system to make sure the system is operating correctly to conserve water and to keep your plants healthy. **You might wish to contact a licensed irrigator to perform these tasks for you.**

Irrigation System

- □ Winterization—plan to perform this around: _____
  (Drain the irrigation system, reprogram automatic controller)
- □ Return to normal service—plan to perform this around: _____ (Check to make sure there has been no damage to the system, reprogram automatic controller.)

Sprinkler Heads

- □ Missing or broken heads? (Replace heads with the same type of head.)
- □ Heads clogged? (Remove the head and clean the filter or replace with the same type of head.)
- □ Heads tilted, spraying in the wrong director, or too far in or above the ground? (Adjust or replace.)
- □ Leaking water? (Replace a leaky valve in the valve box or check for a drainage problem)
- □ Misdirected or blocked spray pattern? (Remove vegetation (trim grass, trees or shrubs) or other obstructions or consider raising the heads.)
- □ Spraying sidewalk, deck, building, driveway or street? (Adjust the heads to stay within the planting area.)

Controller

- □ Is the cabinet or space holding the controller clean? (Clean out cobwebs, dirt, debris, or ants.)
- □ Is a new battery needed? (Consider replacing seasonally.)
- □ Is time/day showing correctly? (Reprogram)
- □ Is the controller programmed for the appropriate season? (Generally, plants need less water in the winter and mature plants need less water than newly installed plants. Refer to the seasonal watering schedule provided by your irrigator.)
- □ Is the controller programmed for any water conservation measures that may be in effect from your water purveyor? (Adjust program if needed.)

The TCEQ recommends contacting a licensed irrigator to perform these tasks:

Sprinkler Heads

- □ Fine mist? (There may be excessive pressure on the spray zones. Possible fixes: install a pressure regulator after the water meter; install pressure regulating sprinkler heads or valves.)
- □ Is the area being irrigated covered uniformly? (Possible causes: low or high water pressure, poor design, scheduling, or poor installation techniques.)

Controller

- □ Wires loose or worn? **(May be 110 volt.)** (Tighten or replace.)
- □ Is rain or moisture sensor (or other technology) connected to the controller or ground wire?

Valves

- □ Replace broken or missing valve covers and valve boxes.
- □ Wire connections are intact and enclosed in appropriate moisture-resistant connectors.

Backflow Prevention Devices

(*Note:* you must be licensed to install, test or repair a backflow prevention device.)

Irrigation system owners should file a copy of any backflow test report with their irrigation system document. If you have a double check valve backflow prevention device, there is a "y" strainer in the water line. The strainer will need be checked periodically. Water discharged from a reduced pressure principle backflow prevention assembly should be directed to sanitary or storm drains. The backflow prevention devices should be protected from freezing. Irrigation system owners should have the backflow prevention device retested if above-normal water velocities (such as a water system main break) occur. The backflow prevention device stops water from the irrigation system from entering into the drinking water system.

Drip or Micro Irrigation

- □ Emitters connected to flex line.
- □ Flex line connected to riser.
- □ Micro adjustment nozzle connected to flex line and nozzle intact.
- □ Service filter strainer periodically.
- □ Ensure proper operation of automatic flush valves.
- □ Confirm operational pressures.

Sample Sticker

Your irrigation system was installed by:
John Q. Irrigator, LI 98765
John Q. Irrigator Company
(123)456-7890
Warranty Valid: 1/4/09–1/4/10

- Information may be handwritten.
- Use waterproof ink.
- Attach to the controller.
- If there is no automatic controller, then attach the sticker to the maintenance checklist.
- The sticker may be attached by the irrigator or irrigation technician.
- May use the number of days the warranty is valid (180 days from January 27, 2009).