

Draft Inspection and Certification Guidance for WaterSense® Labeled New Homes

WaterSense New Homes is a national, voluntary labeling program that promotes the design and construction of water-efficient single-family new homes. Homes built to the U.S. Environmental Protection Agency's (EPA's) specification will be designed to be about 20 percent more water-efficient than similar new homes being built today. With WaterSense, home builders can differentiate their structures as meeting the only national water-efficient home standard and homebuyers can readily identify high-quality, water-efficient homes.

The *Water-Efficient Single-Family New Home Specification* has three topic areas:

1. Indoor water use, including plumbing, plumbing fixtures and fittings, appliances, and other water-using equipment;
2. Outdoor water use, including landscape design and irrigation systems, if installed; and
3. Homeowner education.

New homes must be built by a WaterSense builder partner, be inspected and certified by a third party, and meet all of the applicable criteria in the specification to become a WaterSense labeled home.

The third-party certification of WaterSense labeled new homes is intended to confirm that the builder has met the criteria of EPA's specification for water-efficient new homes. This document is designed to provide guidance to inspectors on what to look for and how to verify that the criteria have been met.

Figure 1 on the following page illustrates the process for conducting the third-party certification of WaterSense labeled new homes.

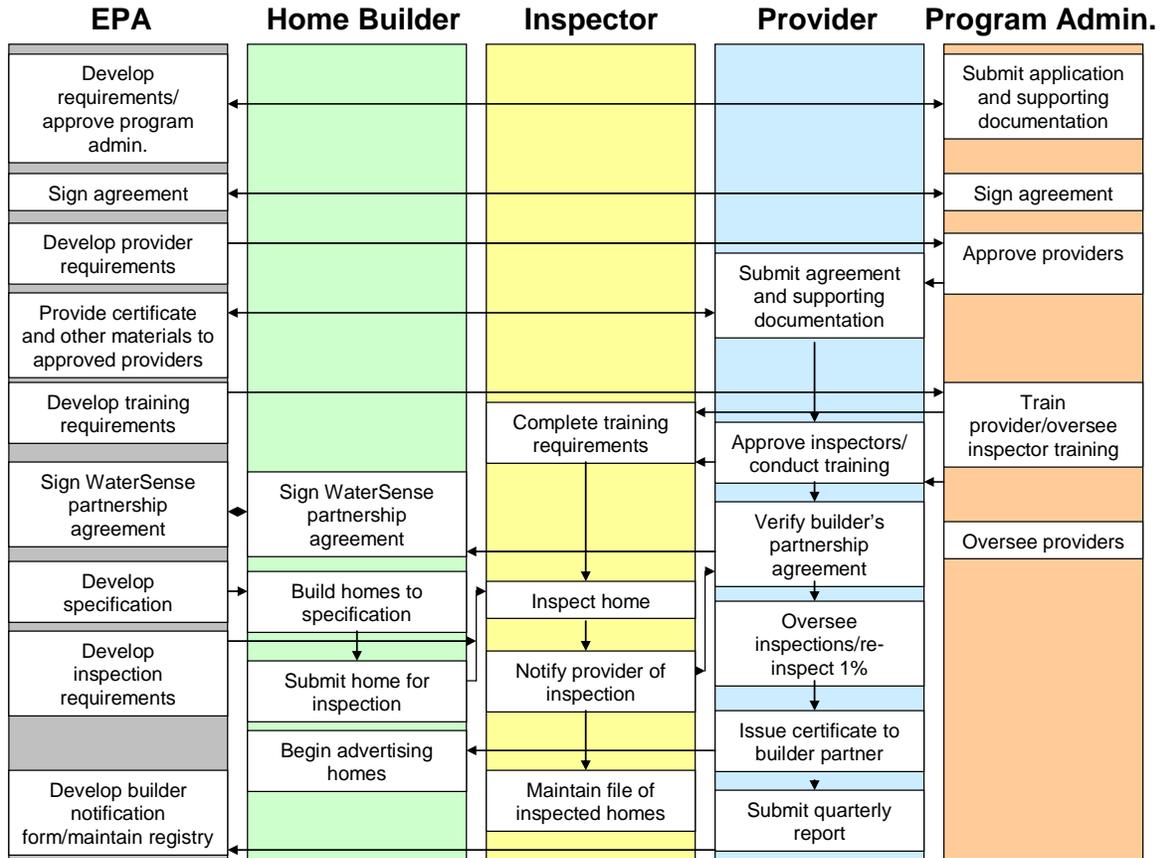
SITE AND INSPECTION INFORMATION

Begin each inspection by confirming the address of the house on the *WaterSense Labeled New Home Inspection Checklist* (inspection checklist) with the address of the house to be inspected. Also take a digital photo of the front of the home being inspected that includes the landscape. Fill in the inspection date and start time on the inspection checklist. At the end of the inspection the inspector should fill in the time completed and sign off on the inspection. The inspector should provide the builder with a copy of the inspection checklist. After the inspection is completed, the inspector should submit the completed signed inspection checklist, required documentation, and digital photograph to their provider.

The builder is expected to make certain documentation (listed in this guidance) available to the inspector. This is typically done onsite during the inspection, but it can also be arranged for any mutually agreeable time. The builder is required to keep all the documentation that will be needed as part of the inspection process. The inspector is required to keep a copy of the inspection checklist, the digital photo, and any other supporting information that was obtained during the inspection.

If there are issues associated with compliance with the specification, notify the builder and allow for the issue(s) to be corrected. Then the home can be reinspected at the builder's expense.

Figure 1. WaterSense New Home Certification Process



REQUIRED EQUIPMENT

To conduct the inspection you will need the following pieces of equipment:

- Digital thermometer
- Bucket, flow bag, or other means of capturing and measuring water
- Flashlight
- Digital camera
- Tape measure
- Clinometer or topographic map of site

General recommendation: As you conduct the inspection of the indoor water-efficiency criteria, check for leaks at all visible water supply connections and valves. Notify the builder if leaks are detected.

INDOOR CRITERIA¹

Service Pressure (Section 3.1)

Requirements

The static service pressure shall be 60 pounds per square inch (psi) (4.2 kilograms per square centimeter (kg/cm²)) or less. Compliance shall be achieved by use of a pressure-regulating valve (PRV) downstream of the water meter. All fixture connections shall be downstream of the PRV.

Inspector Instructions

- Verify installation of the PRV(s). Separate valves may have been installed for indoor and outdoor water usage.

Toilets (Section 3.2)

Requirements

All toilets shall be WaterSense labeled toilets.

Inspector Instructions

- Obtain the make and model name and number of all toilets installed in the house from the builder.
- Verify that the toilets installed match the builder's list and are on EPA's list of WaterSense labeled toilets available at www.epa.gov/watersense/pp/find_het.htm. If the builder provides separate model numbers for the bowl and tank, verify that the bowl and tank combination is included on EPA's list of WaterSense labeled toilets.

Bathroom Faucets (Section 3.3.1)

Requirements

All bathroom (lavatory) faucets or faucet accessories shall be WaterSense labeled.

Inspector Instructions

- Obtain from the builder the make and model number of all bathroom faucets or faucet accessories (e.g., aerators) installed in the house.
- Verify that the bathroom faucets or accessories are on EPA's list of WaterSense labeled lavatory faucets available at www.epa.gov/watersense/pp/lists/find_faucet.htm. On EPA's list, the "Type" indicates whether the product is a faucet or an attachable accessory (i.e., aerator, laminar flow device, or spray device).
- Check the maximum flow rate from the faucet:
 - Place bucket under faucet or attach flow-measuring bag to faucet spout.
 - Turn water on completely while depressing stopwatch. If the faucet has two handles, turn both handles on completely.

¹ Note that the specific water-efficiency and performance criteria contained in this guidance are based on the first draft of the *Water-Efficient Single-Family New Home Specification*. Criteria are subject to change based on the final version of the *Water-Efficient Single-Family New Home Specification*.

- After five seconds on stopwatch, turn off water.
- The volume of water collected should be less than 0.13 gallons or 0.5 liters.

Kitchen Faucets (Section 3.3.2)

Requirements

Kitchen faucets shall comply with federal standards for maximum flow rate of 2.2 gallons per minute (gpm) @ 60 psi (8.3 liters per minute [lpm] @ 4.2 kg/cm²).²

Inspector Instructions

- Check the maximum flow rate from the faucet:
 - Place bucket under faucet or attach flow-measuring bag to faucet spout.
 - Turn water on completely while depressing stopwatch. If the faucet has two handles, turn both handles on completely.
 - After five seconds on stopwatch, turn off water.
 - The volume of water collected should be less than 0.2 gallons or 0.7 liters.

Showerheads (Section 3.4)

Requirements

Showerheads shall comply with the Energy Policy Act of 1992 (EPAct 1992) standard and shall have a maximum flow rate of 2.5 gpm @ 80 psi (9.5 lpm @ 5.62 kg/cm²).³ Showers shall be equipped with an automatic compensating valve that complies with ASSE 1016 or ASME A112.118 1/CSA B125.1 and be specifically designed to provide thermal shock and scald protection for the flow rate of the showerhead.

The total allowable flow rate from all showerheads flowing at any given time, including rain systems, waterfalls, bodysprays, and jets, shall be limited to 2.5 gpm per shower compartment, where the floor area of the shower compartment is less than 2,500 square inches (in²) (1.61 square meters [m²]). For each increment of 2,500 in² (1.61 m²) of floor area thereafter or part thereof, additional showerheads with total allowable flow rate from all flowing devices equal to or less than the allowable flow rate specified above are allowed.

Exception: Recirculating showers.

Inspector Instructions

For a single showerhead in a shower compartment:

- Check the maximum flow rate from the showerhead.
 - Place bucket under showerhead.
 - Turn water on completely while depressing stopwatch. If the shower has two handles, turn both handles on completely.
 - After five seconds on stopwatch, turn off water.

² Note: Faucets with maximum flow rates of less than 2.2 gpm at 60 psi are acceptable.

³ Note: Showerheads with maximum flow rates of less than 2.5 gpm at 80 psi are acceptable.

- The volume of water in the bucket should be no more than 0.2 gallons or 0.7 liters.

For multiple showerheads in a single shower compartment:

- Check the maximum flow rate from each showerhead.
 - Place bucket under showerhead.
 - Turn water on completely while depressing stopwatch. If the shower has two handles, turn both handles on completely.
 - After five seconds on stopwatch, turn off water.
- Add maximum flow rates from each showerhead to determine total flow rate.
- Determine whether the shower system recycles water.
 - If recycled water is used, then the total allowable volume of water collected from all showerheads during the flow test can be more than 0.2 gallons or 0.7 liters.
 - If recycled water is not used, measure the area of the shower compartment.
 - If smaller than 2,500 in² (1.61 m²), then the total allowable volume of water collected from all showerheads during the flow test should be no more than 0.2 gallons or 0.7 liters.
 - If between 2,501 in² (1.61 m²) and 5,000 in² (3.22 m²) then the total allowable volume of water collected from all showerheads during the flow test should be no more than 0.4 gallons or 1.4 liters.

For all showerheads and shower compartments:

- Verify that all showers are equipped with an automatic compensating valve. Obtain documentation (e.g., valve specification sheet) from the builder and verify that each valve complies with ASSE 1016 or ASME A112.118 1/CSA B125 for the flow rate of the showerhead installed in the shower.

Hot Water Delivery System (Section 3.5)

Requirements

All hot water pipes, both above and below ground, shall be insulated to a minimum of R4. In addition, each home shall be equipped with at least one of the following features to minimize water loss in delivering hot water: demand-initiated hot water recirculating system, whole house manifold system, or core plumbing system.

Inspector Instructions

- Obtain from the builder pictures and purchase orders identifying the type of insulation that is installed on all hot water pipes and verify that it is a minimum of R4.
- Verify through visual inspection that visible hot water pipes are insulated.
- Verify through visual inspection that the hot water distribution system is either a demand-initiated hot water recirculating system or whole house manifold system or through builder documentation that it is a core plumbing system.

Demand-Initiated Hot Water Recirculating System (Section 3.5.1)

Requirements

System should optimize both water and energy efficiency and shall be designed such that less than 0.13 gallons (0.49 liters) of water are in the piping between the recirculating loop and any hot water fixture.

Inspector Instructions

- Verify that there is a control button or switch near each hot water faucet and showerhead.
- Obtain documentation (e.g., pictures, schematics, measurements) from the builder that the system is designed so that no more than 10 feet of piping exist between the recirculating loop and any hot water fixture. If builder documentation is not available or not adequate, conduct a temperature test.
 - Attach flow measuring bag or bucket (pre-marked for 0.15 gallons or 0.50 liters) to hot water fixture.
 - Turn the hot water completely on and place a digital thermometer in the stream of water. Record the starting temperature.
 - Once the water meets the pre-marked line (approximately six seconds for a lavatory faucet), turn off the water and record the ending temperature.
 - The temperature must increase by 10 degrees Fahrenheit.

Whole House Manifold System (Section 3.5.2)

Requirements

System shall be designed such that less than 0.38 gallons (1.44 liters) of water are in the piping between the hot water source and any hot water fixture.

Inspector Instructions

- Obtain documentation from the builder that the system is designed so that no more than 30 feet of piping exist between the manifold and any hot water fixture. If builder documentation is not available or not adequate, conduct a temperature test.
 - Attach flow measuring bag or bucket (pre-marked for 0.4 gallons or 1.5 liters) to hot water fixture.
 - Turn the hot water completely on and place a digital thermometer in the stream of water. Record the starting temperature.
 - Once the water meets the pre-marked line (approximately 16 seconds for a lavatory faucet), turn off the water and record the ending temperature.
 - The temperature must increase by 10 degrees Fahrenheit.

Core Plumbing System (Section 3.5.3)

Requirements

System shall minimize pipe volume between the hot water source and any hot water fixture to 0.38 gallons (1.44 liters) or less.

Inspector Instructions

- Conduct a temperature test.
 - Attach flow measuring bag or bucket (pre-marked for 0.4 gallons or 1.5 liters) to hot water fixture that is the furthest from the hot water heater.
 - Turn the hot water completely on and place a thermometer in the stream of water. Record the starting temperature.
 - Once the water meets the pre-marked line (approximately 16 seconds for a lavatory faucet), turn off the water and record the ending temperature.
 - The temperature must increase by 10 degrees Fahrenheit.

The following indoor water-efficiency criteria only apply if the builder has installed the appliance or other equipment listed below.

Dishwasher (Section 3.6.1)

Requirements

If a dishwasher is installed, it shall be ENERGY STAR® qualified.

Inspector Instructions

- Verify that the installed dishwasher has an ENERGY STAR label. If no label is present, check the brand and model number against ENERGY STAR's list of qualified dishwashers available at www.energystar.gov/index.cfm?fuseaction=dishwash.display_products_html.

Clothes Washer (Section 3.6.2)

Requirements

If a clothes washer is installed, it shall be ENERGY STAR qualified with a water factor (WF) of less than or equal to 6.0 gallons of water per cycle per cubic foot capacity.

Inspector Instructions

- Verify that the installed clothes washer has an ENERGY STAR label and WF of 6 or less by checking on ENERGY STAR's Web site at www.energystar.gov/index.cfm?fuseaction=clotheswash.display_products_html.

Evaporative Air Conditioners (Section 3.7.1)

Requirements

Evaporative air conditioners shall use a maximum of 5 gallons (18.93 liters) of water per ton-hour of cooling when adjusted to maximum water use. Blow-down shall be based on time of operation, not to exceed three times in a 24-hour period of operating (every eight hours). Reservoir discharge outlet should be easily visible so the user can see if the refill valve is leaking.

Inspector Instructions

- Verify that the evaporative air conditioner meets the maximum of 5 gallons of water per ton-hour and that the blow-down does not exceed three times in a 24-hour period by reviewing the manufacturer's product literature or visiting the manufacturer's Web site. Obtain a copy of the documentation as part of the inspection records.
- Verify that the reservoir discharge outlet is visible.

Water Softeners (Section 3.7.2)

Requirements

All devices shall be certified to meet NSF/ANSI Standard 44. All water softeners shall be demand-initiated regeneration. If the device uses an ion exchange technology, it shall be capable of using potassium rather than sodium salt.

Note: Devices that use auto-initiated regeneration (fixed schedule) do not meet the specification.

Inspector Instructions:

- Verify through the manufacturer's product specification sheet or product manual that the softener has been certified to meet NSF/ANSI Standard 44. Obtain a copy of the documentation as part of the inspection records.
- Verify through manufacturer product literature that the water softener uses demand-initiated regeneration. Obtain a copy of the documentation as part of the inspection records.
- If the softener uses ion exchange technology, verify through manufacturer product literature that the water softener is capable of using potassium salts. Obtain a copy of the documentation as part of the inspection records.

Drinking Water Treatment Systems (Section 3.7.3)

Requirements

Drinking water treatment systems must be certified to meet applicable NSF/ANSI Standards. Such systems shall have an efficiency rate of not less than 85 percent.

Inspector Instructions:

Verify through manufacturer product literature that the drinking water treatment system meets the applicable NSF/ANSI Standard and has a minimum efficiency rating of 85 percent.⁴

⁴ Systems using carbon filters can exceed efficiency ratings of 85 percent.

OUTDOOR CRITERIA⁵

Landscape Design (Section 4.1.1)

Requirements

Builders shall choose and implement either option 1 or option 2.

Option 1 (Section 4.1.1.1)

Requirements

Turf shall not exceed 40 percent of the landscapable area. Turf shall not be installed on slopes greater than 4:1.

Inspector Instructions

- Verify that turf does not exceed 40 percent of the landscapable area. Landscapable area is defined as the area of a site less the building area, driveways, paved walkways, and hardscapes such as decks and patios.
 1. Measure the turf area and surface area of pool/spa if installed.
 2. Measure the total landscapable area.
 3. Divide the turf area measured in step 1 by the total landscapable area measured in step 2.
 4. The quotient determined in step 3 should not exceed 0.40.
- Verify that turf is not installed in areas with slopes of 25 percent or greater (i.e., 4:1 slope) using a clinometer or topographical map with contour lines.

Option 2 (Section 4.1.1.2)

Requirements

Develop the landscape design using a water budget approach. The evapotranspiration (ET) limit on the landscapable area shall be no more than 60 percent of the ET calculation; the available precipitation shall be no more than 25 percent of the average annual rainfall amount. Turf shall not be installed on slopes greater than 4:1.

Inspector Instructions

- Obtain documentation from the builder that provides the calculations of the water budget and identifies the percentage of turf to be installed.
 1. Measure the turf area and surface area of pool/spa if installed.
 2. Measure the total landscapable area.
 3. Divide the turf area measured in step 1 by the total landscapable area measured in step 2.
 4. Multiply the quotient determined in step 3 by 100.

⁵ Note that the specific water-efficiency and performance criteria contained in this guidance are based on the first draft of the *Water-Efficient Single-Family New Home Specification*. Criteria are subject to change based on the final version of the *Water-Efficient Single-Family New Home Specification*.

5. The product determined in step 4 should not exceed the percentage of turf identified in the landscape design.
 - Verify that turf is not installed in areas with slopes of 25 percent or greater (i.e., 4:1 slope) using a clinometer or topographical map with contour lines.

Mulching (Section 4.1.2)

Requirements

Non-turf, non-hardscape areas shall include a 2- to 3-inch layer of mulching material.

Inspector Instructions

- Verify that the non-turf area has between 2 and 3 inches in depth of mulching material.

Pools/Spas (Section 4.1.3)

Requirements

If installed prior to owner occupancy, the water surface area shall be deducted from the turf allowance under landscape design option 1 and included as landscapable area under landscape design option 2.

Inspector Instructions

- Verify that the surface area of the pool is included as landscapable area in the landscape design calculations and water budget calculations, if applicable. Also, verify that the pool's surface area is included as turf in the turf area calculations.

Ornamental Water Features (Section 4.1.4)

Requirements

Builders shall not install or facilitate the installation of ornamental water features.

Ornamental water features are defined as fountains, ponds, waterfalls, man-made streams, and other decorative water-related constructions provided solely for aesthetic or beautification purposes.

Inspector Instructions

- Verify that no ornamental water features have been installed on the property.

Irrigation System Design and Installation (Section 4.2)

Requirements

All irrigation systems shall be designed, installed, and audited by a WaterSense irrigation partner. Irrigation systems shall be designed to sustain the landscape without creating flow or spray off of the property during minimum continuous operating duration. Sprinkler heads shall not be used to water plantings other than maintained turf grass. Microirrigation shall be used for

planting beds and turf installed in strips of less than 8 feet wide. Two seasonal water schedules shall be posted at the controller. One schedule shall be designed to address the initial grow-in phase of the landscape and the second schedule shall be designed to address an established landscape.

Inspector Instructions

- Verify that the irrigation system was designed, installed, and audited by a WaterSense irrigation partner by visiting the EPA Web site www.epa.gov/watersense/pp/irrprof.htm.
- Obtain a copy of the *WaterSense Labeled New Home Irrigation Audit Checklist* completed by the WaterSense irrigation partner from the builder. Verify that the WaterSense irrigation partner completed the *WaterSense Labeled New Home Irrigation Audit Checklist* and that all of the components used in the irrigation system meet the minimum criteria contained in the specification.



WaterSense Labeled New Home Inspection Checklist

Site Information	
Builder Name:	
Lot Number/Street Address:	
City:	
State:	
Zip:	
Inspection Information	
Provider:	
Inspector Name:	
Date:	
Time Started:	
Time Ended:	
Signature	
<p>By affixing my signature below, the undersigned does hereby declare that the WaterSense criteria for new homes, as specified in the <i>Water-Efficient Single-Family New Home Specification</i>, have been met and will provide, if requested, the necessary supporting documents.</p>	
Inspector's Name:	Provider:
Signature:	Date:
Failed Inspection Information	
Deficiencies Identified:	
Corrective Action Taken:	

	Item		Criteria ⁶	Yes	No	NI ⁷	Doc. ⁸
Indoor Water-Efficiency Criteria							
REQUIRED	Service pressure	3.1	Installation of PRV upstream of fixtures				
	Toilets	3.2	WaterSense labeled				Req.
	Bathroom faucets	3.3.1	WaterSense labeled				Req.
	Kitchen faucets	3.3.2	Measured flow rate – max. 2.2 gpm @ 60 psi				
	Showerheads	3.4	Measured flow rate – max. 2.5 gpm per shower compartment ≤ 2,500 in ²				
			All showers equipped with automatic compensating valve certified for the showerhead's flow rate				Req.
			Flow rate exception for recirculating showers				
	Hot water piping	3.5	Min. insulation R4				Req.
	Hot water delivery system	3.5	One of the following:				
	Demand-initiated hot water recirculating system	3.5.1	Less than 0.13 gal. water in piping between recirculating loop and any hot water fixture				Opt. ⁹
Whole house manifold system	3.5.2	Less than 0.38 gal. water in piping between hot water source and any hot water fixture				Opt.	
Core plumbing system	3.5.3	Less than 0.38 gal. water in piping between hot water source and any hot water fixture					
IF INSTALLED	Dishwashers	3.6.1	ENERGY STAR qualified				Req.
	Clothes washers	3.6.2	ENERGY STAR qualified				Req.
			Water factor ≤ 6.0				Req.
	Evaporative air conditioners	3.7.1	Max. 5 gal./water/ton hour cooling, max. 3 blow-downs in 24 hr.				Req.
			Visible discharge outlet				
	Water softeners	3.7.2	Certified to NSF/ANSI Standard 44, demand-initiated regeneration, accepts potassium if ion exchange system				Req.
Drinking water treatment systems	3.7.3	NSF/ANSI certified, min. efficiency rating 85%				Req.	

⁶ Note that the specific water-efficiency and performance criteria contained in this checklist are based on the first draft of the *Water-Efficient Single-Family New Home Specification*. Criteria are subject to change based on the final version of the *Water-Efficient Single-Family New Home Specification*.

⁷ Not installed

⁸ Documentation to be provided by the builder

⁹ Optional – if documentation provided then performance testing may not be necessary

	Item		Criteria	Yes	No	NI ¹⁰	Doc. 11
Outdoor Water-Efficiency Criteria							
REQUIRED	Landscape design	4.1.1	One of the following:				
	Landscape design option 1	4.1.1.1	Turf ≤ 40% landscapable area Turf not installed on slopes greater than 4:1				Req.
	Landscape design option 2	4.1.1.2	Water budget calculations Landscape complies with water budget design Turf not installed on slopes greater than 4:1				Req. Req.
	Mulching	4.1.2	Non-turf, non-hardscape areas have a 2-3 inch layer of mulch				
IF INSTALLED	Pools/spas	4.1.3	Water surface area deducted from turf allowance for landscape design option 1 or included as landscapable area under landscape design option 2				
	Ornamental water feature	4.1.4	Not installed				
	Irrigation system design	4.2.1	System designed, installed, and audited by WaterSense irrigation partner				Req.
Completed Irrigation System Design and Installation Checklist						Req.	
Homeowner Education							
REQUIRED	Operating manual	5.1	Written operating and maintenance manual for all water-using equipment/controls installed in house or yard				

¹⁰ Not installed

¹¹ Documentation to be provided by the builder