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Water Conservation Using the Framework of Efficient Irrigation

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The Intelligent Use of Water.™

Topics of Presentation

- The World's Water Crisis
- An Analysis of the Irrigation Life Cycle
- Common Challenges at Each Stage of the Irrigation Life Cycle
- Effective Water Management Practices at Each Stage of the Irrigation Life Cycle
- Overview of Resources and Tools to Support Effective Management Practices



The World's Water Crisis

Chart 1A – The World's Water

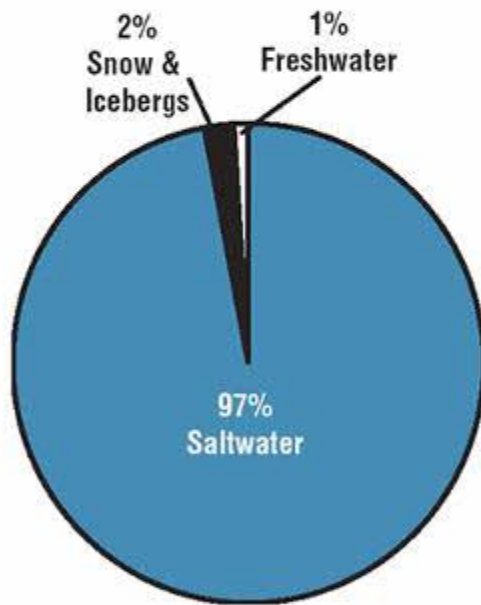
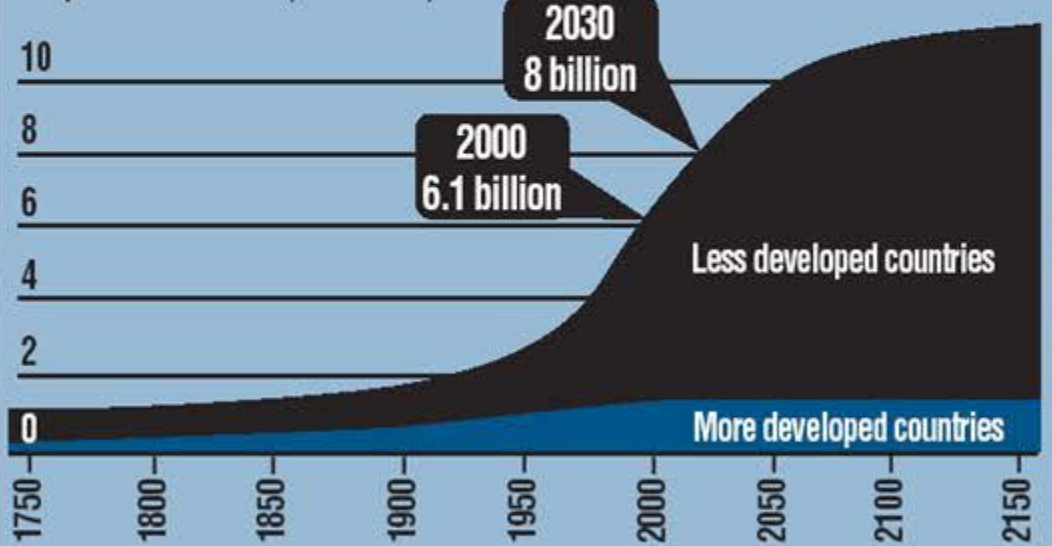


Chart 1B – The World's Population ⁶

Population Growth (in billions)

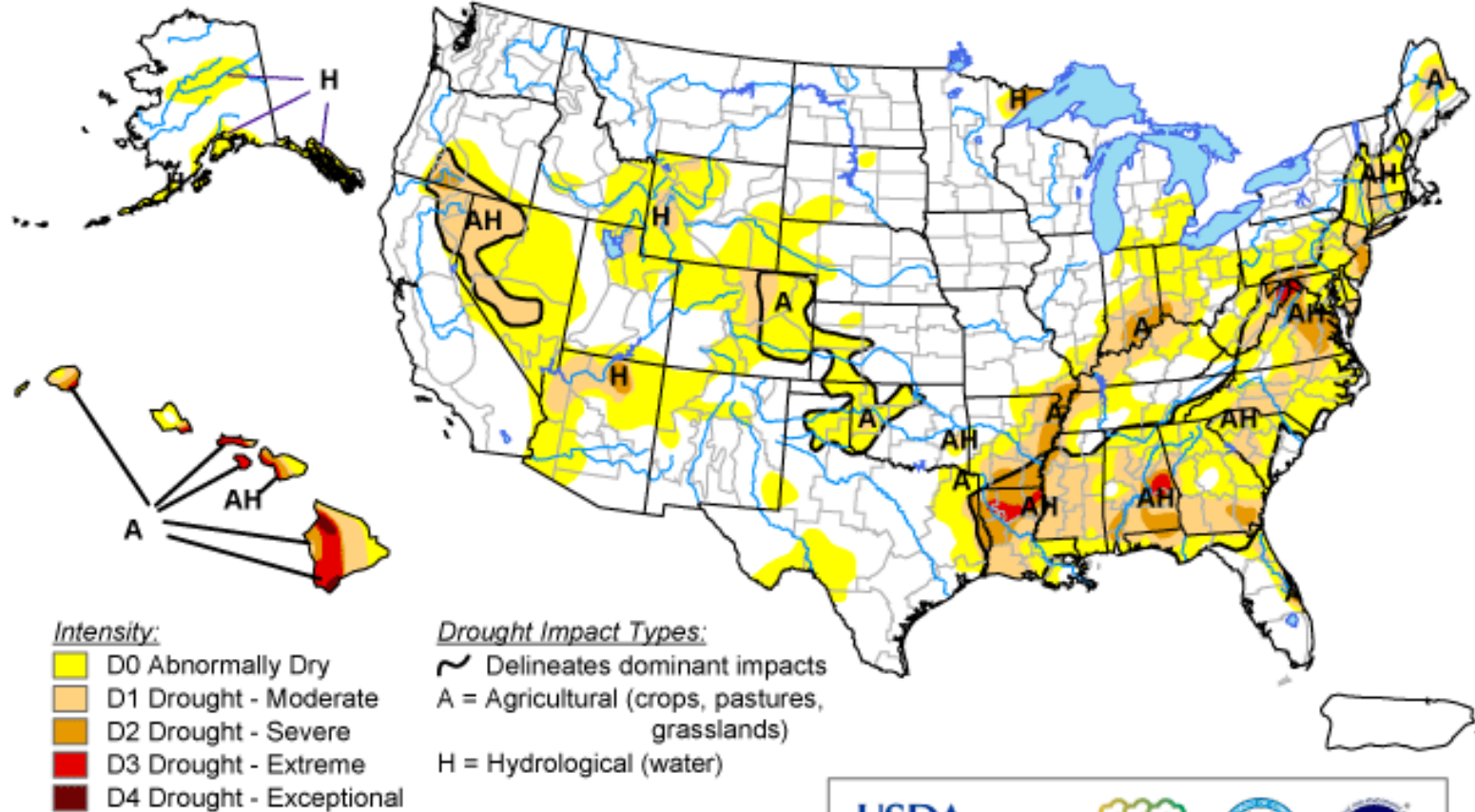


There is no new water.

U.S. Drought Monitor

September 28, 2010

Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, September 30, 2010

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

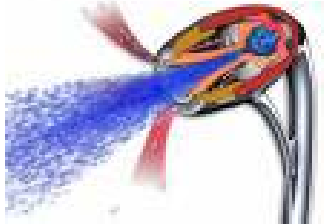
Consumers and Industries Respond



Low Flow/ No Flow Toilets



Flow Limiting Faucet Aerators



Low Flow Shower Heads

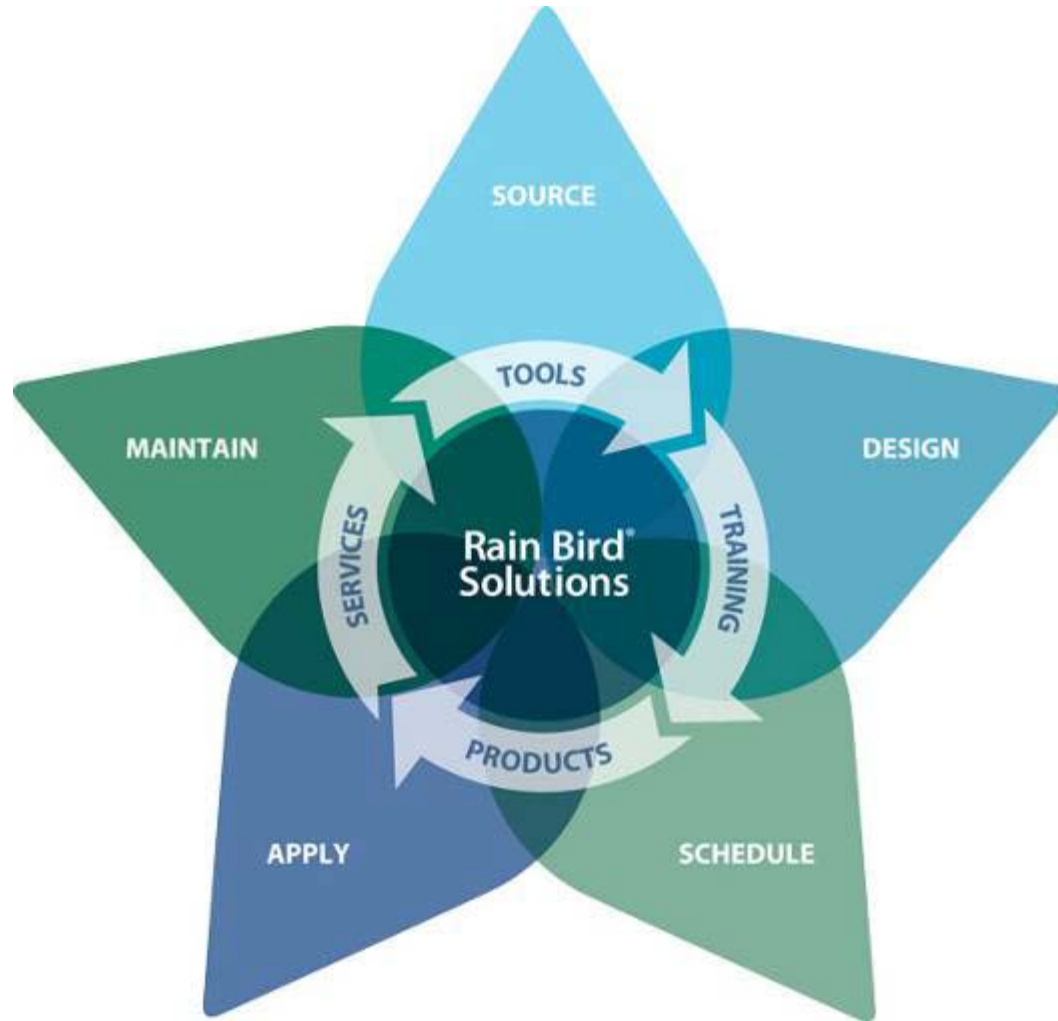
Irrigation Industry Challenge & Opportunity

Be recognized as principle leaders who are

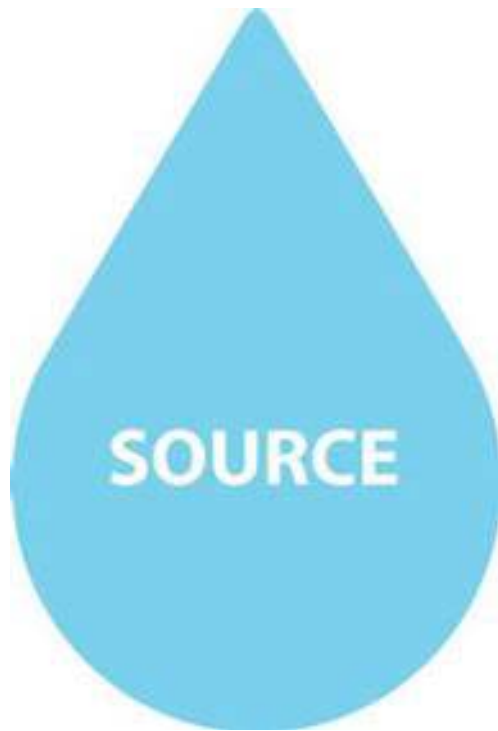
part of the solution



Rain Bird's Approach: The Irrigation Life Cycle



Irrigation Life Cycle - Challenges

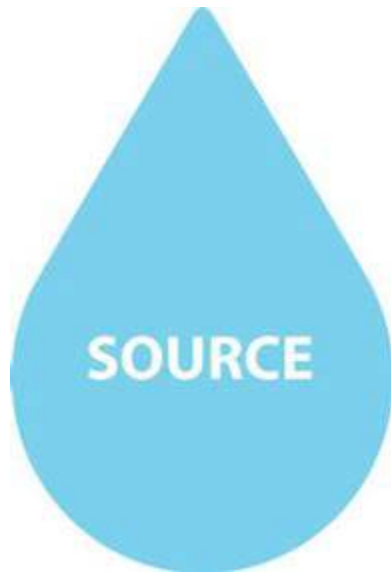


Supply: As the population grows, limited water sources strain to keep up with demand.

Cost: The cost of water and the power to move it is rising annually.

Delivery Infrastructure: In many cities, old water delivery systems designed decades ago to service much smaller populations are inflexible and difficult to maintain.

Irrigation Life Cycle - Solutions



Tap into alternatives to municipal water supplies such as rainwater, stormwater, greywater and HVAC condensate.

Today's Solutions

- Non-potable-water-ready:
 - Valves
 - Drip Products
 - Rotors
 - Sprays
- Pumps:
 - Integrated Plug-N-Pump
 - Custom-engineered

Irrigation Life Cycle - Challenges



Improper/ Stretched Spacing



High Pressure



Irrigation Life Cycle - Solutions



Create landscapes and irrigation systems as sustainable as they are beautiful.

Today's Solutions

- Industry Training & Certification
 - Irrigation Association Certified Irrigation Designer (CID) Program
 - WaterSense™ Partners
 - LEED® Certification
- CAD Irrigation Design Software
- Professional Design Support
- Optimized Irrigation Design
 - Matched precipitation rate nozzles
 - Pressure regulation

Irrigation Life Cycle - Challenges



- The controller on the typical residential irrigation system is only adjusted an average of 1 to 2 times per year.
- Controllers are typically set for an extended period of time to apply the irrigation requirement for the hottest month of the year.
- Many automatic irrigation systems apply 2 to 3 times the amount of water required to sustain the landscape.

Irrigation Life Cycle - Challenges

Applying water past the saturation point causing runoff.



Irrigation operating in the rain.



Irrigation Life Cycle - Solutions



Optimize the timing, quantity and frequency of water applied to the landscape with leading-edge water management controls.

Today's Solutions

- Automatic stand-alone controllers with water-efficient features
- Automatic shut-off devices
- Central control systems
- Smart control technologies
 - Weather or soil moisture-based scheduling
 - Flow management, monitoring & leak detection
 - “Cycle+Soak” to prevent run-off

Irrigation Life Cycle - Challenges



Wind Intrusion



Poor Water Distribution



Irrigation Life Cycle - Solutions



Distribute water to the landscape as efficiently as possible.

Today's Solutions

- Water-smart rotor and spray features:
 - Pressure regulating (PRS) technology
 - In-stem check valves (SAM)
- Landscape drip
 - Direct-to-plant-root watering devices
- High-efficiency nozzles:
 - U-Series
 - Rotary nozzles
 - Matched precipitation rate rotor and spray nozzles

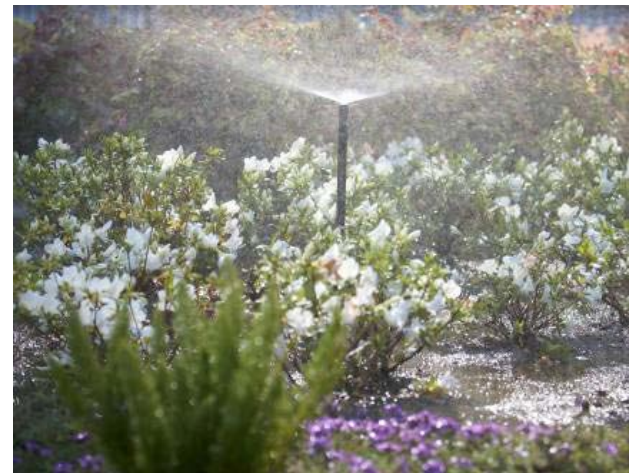
Irrigation Life Cycle - Challenges



Over-spray



Low Head Drainage



Irrigation Life Cycle - Solutions



Maintain every aspect of the irrigation system to ensure efficient and affordable water use for the long haul.

Today's Solutions

- Industry training and certification
- Irrigation audits
- System maintenance and analysis
- End-user awareness

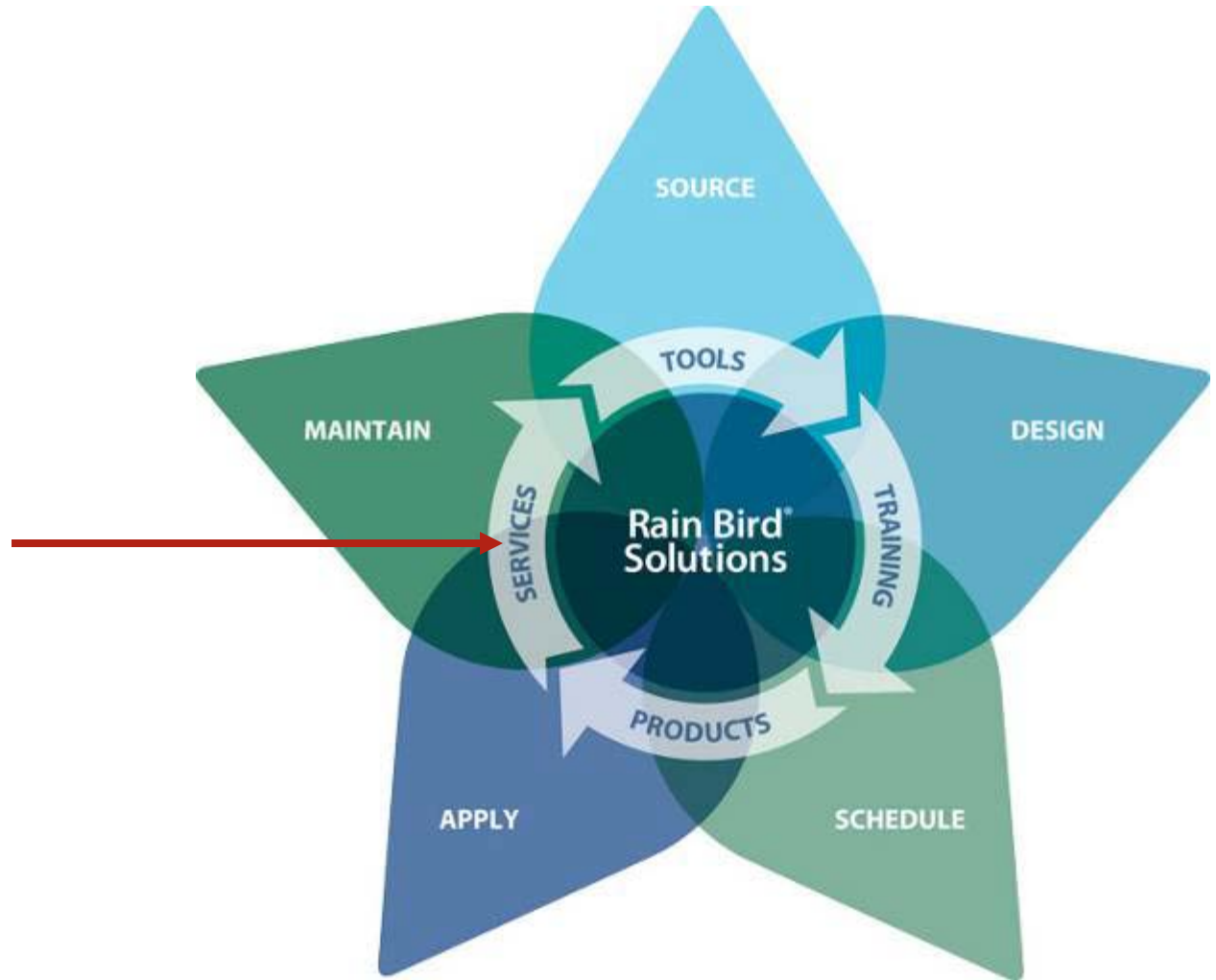
The Intelligent Use of Water™

Services

Tools

Training

Products



Conservation Through Efficient Irrigation

- Services
 - Professional design services
 - Field technical support
- Tools
 - Water rebates
 - Water savings calculators
 - Contractor marketing materials and resources



Water Savings Calculator

Total System Water Savings Calculator			
Instructions		System Information	
Enter System Information in YELLOW cells Enter Zone Information in YELLOW cells Change any information in YELLOW cells Information in GRAY cells is auto-calculated Hit 'Calculate' Button at the bottom of the page		Dynamic Pressure <input type="text" value="0"/> Watering Weeks per Year <input type="text" value="0"/> Water Cost per 1000 Gallons <input type="text" value="\$0.00"/> Lifetime of System (years) <input type="text" value="0"/>	
PRS Spray Zone Information		PRS Rotor Zone Information	
Spray Nozzle Required	GPM @ 30 PSI	Qty	Total
8F	1.05	0	0.00
8H	0.52	0	0.00
8Q	0.26	0	0.00
10F	1.58	0	0.00
10H	0.79	0	0.00
10Q	0.39	0	0.00
12F	2.6	0	0.00
12H	1.3	0	0.00
12Q	0.65	0	0.00
15F	3.7	0	0.00
15H	1.85	0	0.00
15Q	0.92	0	0.00
Total Spray Flow Rate @ 30 psi <small>(Enter Total GPM of all Sprays)</small>	<input type="text" value="0"/>		<input type="text" value="0"/>
Watering Time per Day (Minutes)	<input type="text" value="0"/>		<input type="text" value="0"/>
Days per Week	<input type="text" value="0"/>		<input type="text" value="0"/>
GPM Excess at Higher Pressure	<input type="text" value="0.00 GPM"/>		<input type="text" value="0.00 GPM"/>
Yearly Water Savings (Gallons)	<input type="text" value="0 Gallons"/>		<input type="text" value="0 Gallons"/>
USeries Nozzle Zone Information		Rotary Nozzle Zone Information	
Yearly Water Savings (Gallons) <input type="text" value="0 Gallons"/>		Typical Spray Zone that can be replaced with Rotary Nozzles	
		Spray Flow Rate at 30 psi (GPM) <input type="text" value="0"/>	
		Watering Time per Day <input type="text" value="0"/>	
		Days Per Week <input type="text" value="0"/>	
Dripline Zone Information		Rotary Nozzle	
Typical Spray Zone that can be replaced with Dripline		Replaces Spray Zone Entered Above	
Spray Flow Rate at 30 PSI <input type="text" value="0"/>		Total Rotary Nozzle Flow Rate @ 45 psi <input type="text" value="0"/>	
Watering Time per Day <input type="text" value="0"/>		<small>(Enter Total GPM of all Rotary Nozzles)</small>	
Days Per Week <input type="text" value="0"/>		Watering Time per Day (Minutes) <input type="text" value="0"/>	
		Days per Week <input type="text" value="0"/>	
		Yearly Water Savings using Rotary Nozzle <input type="text" value="0 Gallons"/>	
Dripline			
Replaces Spray Zone Entered Above			
XF Dripline Total (Feet) <input type="text" value="0"/>			
Emitter Spacing (12", 18", 24") <input type="text" value="0"/>			
GPH (.5 or .9) <input type="text" value="0"/>			
Watering Time per Day (Minutes) <input type="text" value="0"/>			
Days Per Week <input type="text" value="0"/>			
Yearly Water Savings using Dripline <input type="text" value="0 Gallons"/>			
<input type="button" value="Calculate"/>			

Water Savings Potential

Water Savings Potential

BACK

SPRAYS & NOZZLES
1800 PRS Series Spray Heads

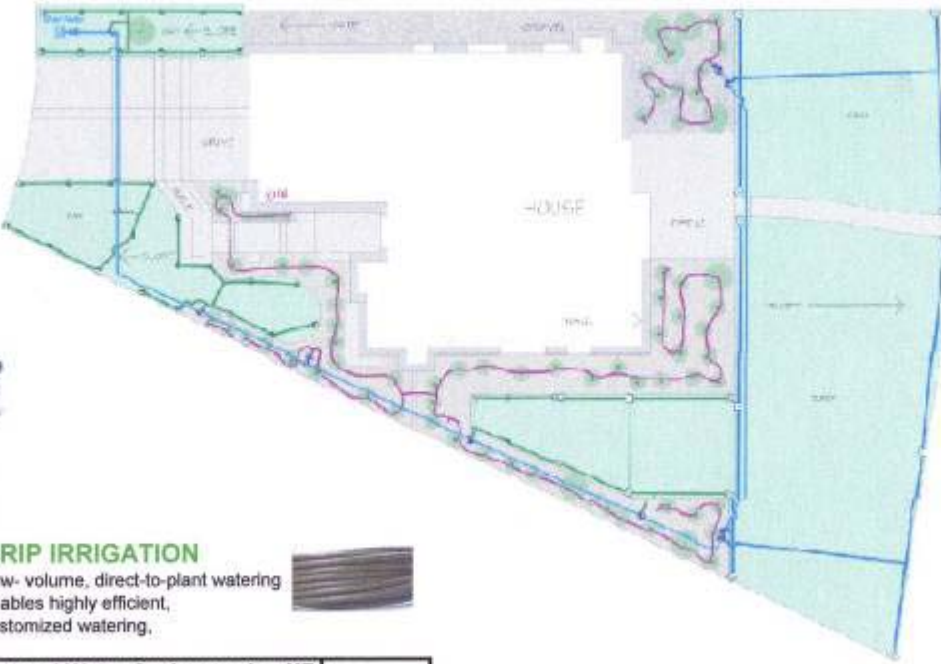
For smaller grassy areas, Pressure Regulating System (PRS) regulates incoming water pressure, eliminating misting or fogging, helps save water

Annual Water Savings using Spray PRS	-	Gallons
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Total Annual Water Savings - Gallons

Annual Cost Savings \$ -

Lifetime Savings of the System \$ -



ROTORS
5000 Plus PRS Series Rotors

For medium to large lawns, Pressure Regulating Systems (PRS) regulates incoming water pressure, eliminating misting or fogging, which helps save water.

-	Annual Water Savings using Rotor PRS
Gallons	

U-SERIES NOZZLE

Unique design promotes even coverage throughout the spray pattern, reducing watering time.

Annual Water Savings using U-Series Nozzles	-	Gallons
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DRIP IRRIGATION

Low- volume, direct-to-plant watering enables highly efficient, customized watering.

Annual Water Savings using XF Dripline Tubing	-	Gallons
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ROTARY NOZZLE

Lower, more water-efficient precipitation rate eliminates soil erosion & runoff

-	Annual Water Savings using Rotary Nozzle
Gallons	

Problem



RAIN BIRD

IRIGATION PROBLEMS AND SOLUTIONS

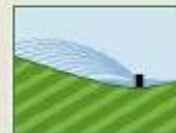
Misting / High pressure systems

PRS prevents misting by regulating water pressure to achieve optimal nozzle performance.

For problems with high pressure, **PRS** helps regulate water pressure for even watering coverage.

Landscape Problems. Rain Bird Solutions.

We know landscapes are alike. That's why Rain Bird has the most diverse, durable and precise irrigation systems in the industry. Whatever landscape problems you might have, Rain Bird has the solution for an efficient, hassle-free solution.



PROBLEM: Smaller Yard

Smaller areas can be difficult to water, often sprinklers end up watering sidewalks, driveways or spraying against the house or garage.

RAIN BIRD SOLUTIONS:

- Low-volume RPIC Nozzles precisely water in a square pattern, which results in superior distribution control and uniformity to eliminate over-watering and wasteful run-off.
- Sprays installed with Variable Arc Nozzles (VANS) efficiently deliver precise, even coverage in smaller yards, any corner or odd-shaped areas or smaller steps off lawn.

PROBLEM: Variations in Exposure to the Sun

Over- or under-watering when multiple lawns are not every part of your yard and garden requires the same amount of moisture due to exposure to the sun.

RAIN BIRD SOLUTIONS:

- Easy-to-use controllers with multiple, independent programs, like the RSP Nozzle, allow additional watering times to be programmed for areas with more sun-exposure.
- Low-volume drip allows the customization of flow or water delivery to individual plants or groups of plants based on specific watering needs and exposure to the sun.

PROBLEM: Sprinklers Turn On During Rainy Weather

Your system's watering schedule starts when it's already raining.

RAIN BIRD SOLUTIONS:

- A Rain Sensor automatically monitors weather conditions and efficiently signals the controller to skip the program when it rains, saving water and saving you money.

PROBLEM: Compacted Soil

Certain areas of your lawn might have compacted soil, this condition can cause water to run off onto sidewalks or driveways without giving it enough time to seep into the soil.

RAIN BIRD SOLUTIONS:

- Choose an easy-to-use controller with multiple programs and run times, or choose a controller with the Circle + Scan option that allows the programming of multiple run times for shorter, precise periods of watering to eliminate runoff.
- Adjust nozzles to deliver water at a lower rate for a longer, sufficient soak-in time to prevent run-off.
- Low-volume drip systems can also be used during the summer to penetrate into the soil to prevent runoff.

PROBLEM: Water Pressure

High or fluctuating pressure can cause problems to occur if, in the case water is not delivered to your lawn and garden at the optimal rate. A low water pressure situation can inhibit the sprinkler performance, leading to areas that do not get the proper water coverage.

RAIN BIRD SOLUTIONS:

- High pressure can be efficiently controlled at the valve using a PIG Dial.
- Make sure of distribution the problem can be controlled using 1000' Sprays or 1000' Plus Rotors with a Pressure Regulating Valve (PRV).
- For low-volume drip systems, install DR or ADV Nozzles with a pressure regulator.
- In cases of the best to go where the pressure has dropped, install Rain Bird's

Conservation Through Efficient Irrigation

- Products and technologies



- Education and training



Rain Bird's Approach: Outreach and Awareness

- **White Papers:** Give context to the global water crisis while presenting water-efficient irrigation as part of a multi-pronged solution.
- **The Intelligent Use of Water Summit series:** Convene water experts from around the world to discuss strategies and initiatives on outdoor water conservation.
- **The Intelligent Use of Water Film Competition and The Intelligent Use of Water Award:** Grassroots programs engaging members of the general public and landscape industry professionals alike on the topic of intelligently managing the earth's most precious resource.
- **Educational curricula:** Lessons and activities for elementary students and their teachers on water conservation.

www.rainbird.com

Thank You

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