

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





Smart Practices.
Sustainable Solutions.



“Green” Irrigation Systems

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- Designing, building and managing an irrigation system in a more sustainable way.
- Consider the three pillars of sustainability
 - Environmental
 - Social
 - Economic
- *If an irrigation system is installed.....*



- The soil has been properly prepared for the landscape plantings
 - Tillage depth
 - Soil amendments or conditioners
 - i.e. compost
- Plant selection and turf areas are appropriate
 - Climate
 - Purpose of the landscape
 - Water availability



- Potable
- Fresh water—wells, surface water
- Municipally reclaimed water
- Harvested water
 - Rain water (collected from roofs/structures)
 - Stormwater (collected from ground surface)
- Alternate water sources (recycled)
 - Gray water
 - Air conditioning condensate/cooling tower water
 - Process water
 - Foundation water



Water Sources



What is the best source of water?





- Quantity needed vs. quantity available
- Water quality plant usability, public safety
- Reliability of the water source
- Embedded energy
 - Pumping costs
 - Treatment
- Storage of harvested water
 - Size, materials, installation and maintenance



Sources of water	Quantity	Quality	Reliability	Embedded Energy	Storage	Carbon Footprint (initially)	Carbon Footprint (long term)
Potable							
Well							
Surface							
Municipally reclaimed							
On-site reclaimed							
Rainwater							
Stormwater							
Gray water							
A/C, Cooling Tower							
Process water							
Foundation water							





- Choose the most sustainable source(s)
 - Environmental aspect
 - Functional benefits of the managed landscape
 - Energy requirements embedded in the water
 - Carbon footprint to develop the water source
 - Downstream impacts
 - Social aspect
 - Purpose and benefits of using water resources
 - Economic aspect
 - Initial cost vs. cost of long-term ownership
 - Alternate water sources provide more jobs



- Product selection
 - How is the product made?
 - ISO 9001 Quality Management System
 - ISO 14000 Environmental Management
- Fewest sprinklers
 - Uniform application (especially for turfgrass)
 - keep water on target (reduce/eliminate runoff)
 - maximize equipment performance



- Best Practice for piping
 - Product choices
 - PVC
 - PE
 - HDPE
 - Pipe routing
 - Pipe sizing
 - Control flow (velocity) smaller pipe for smaller flow
 - Control pressure





HDPE Pipe

Chlorine-free
No dioxin produced in manufacture
High abrasion and chemical resistance
Less susceptible to surge shocks
Seamless joint connections
Flexible

Easily recycled
Fusion welding (electrical energy)
Relatively new to irrigation industry
Higher skill, expensive equipment

PVC Pipe

Contains chlorine
Dioxin produced in manufacture
Moderate abrasion and chemical resistance
More susceptible to surge shocks
Joint seams can leak
Rigid

Limited recyclability
Solvent welding (chemical bonding)
Common in irrigation
Lower skill set, minimal equipment



- Environmental aspect
 - How is the product made
 - Installation procedures
- Social aspect
 - Worker safety
 - Worker skill set
- Economic aspect
 - Cost of the project
 - Wages paid



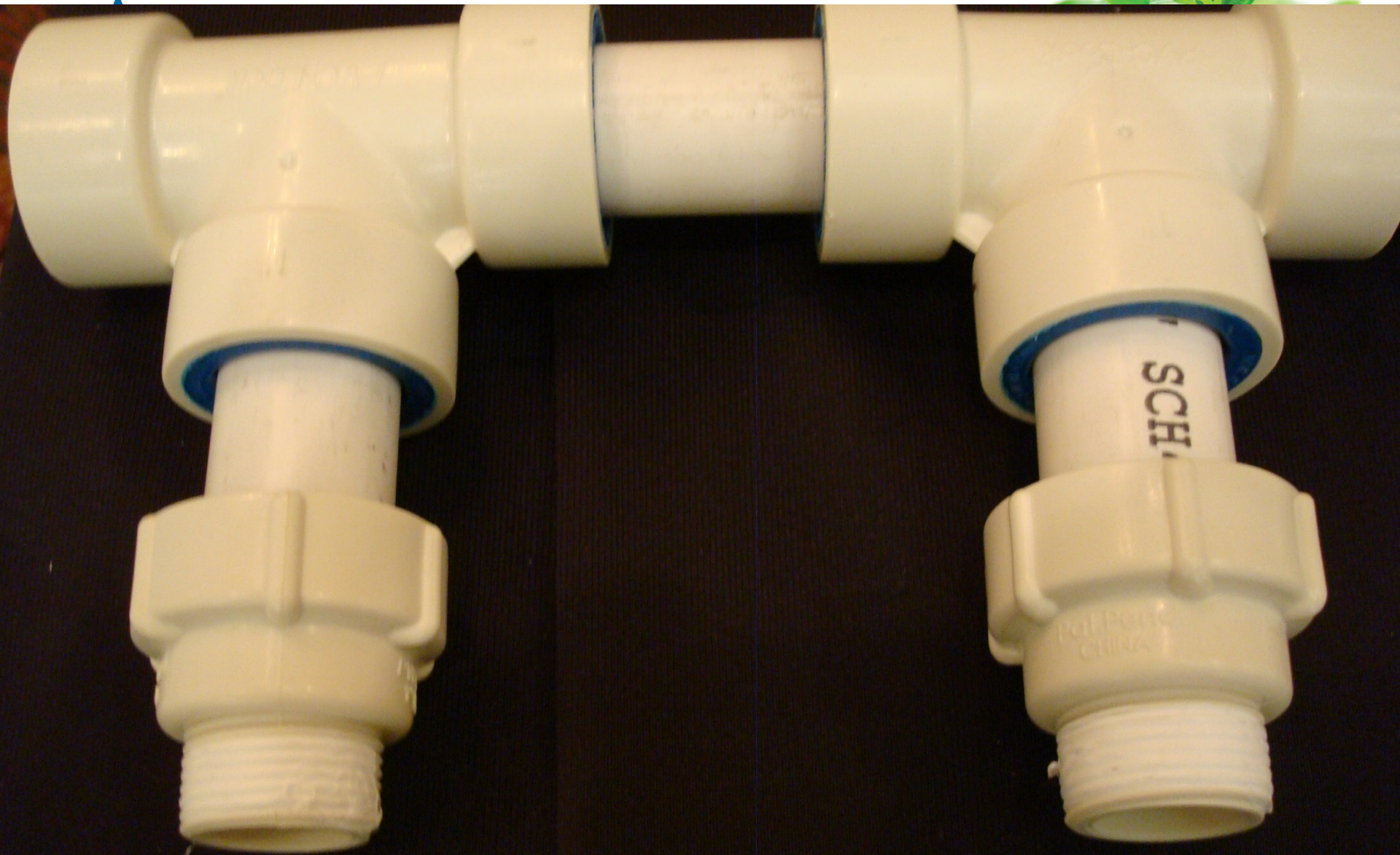


PVC-1120 SCH-40 PR 480

applica

lease Date: 9/12
Revision: 3/13





LOSE THE GLUE

PVC-Lock™ by Hydro-Rain® is a remarkable push-on fitting for repairing or installing PVC piped sprinkler systems without toxic glues or primers.



PVC-LOCK™ FITTINGS
REDUCE
TRADITIONAL
INSTALLATION
TIMES BY OVER

Eco Friendly System
STRONGER ▶ Pipe Burst
Exceeds 35



**HOW DOES
BLU-LOCK® WORK?**

Stainless steel
retainer ring

Blu-Lock



- Logistics
 - Get all of the right parts ordered
 - Minimize delivery trips
 - Follow the plan for installation
 - Eliminate trips to distributor
 - Use local sources when possible
 - Minimize waste
 - Recycle if possible





- Equipment
 - Right equipment to do the job
 - Power equipment is running optimally
 - Avoid excessive idling
- Reduce the carbon footprint of installation
 - Number of trips to install project
 - Reduce call backs





- Skilled workers
 - Trained in proper techniques
 - Understand their role in managing water resources
 - Workers use PPE
 - Workers are paid fair wage
- Proper installation increases useful life of system and conserves water



- Type of control system
 - Traditional
 - Use of sensor technology
 - Weather Sensors
 - Soil Moisture Sensors
 - Flow Sensors
 - Communication technology
- The new generation of “smart” controllers facilitates active water management

What is the carbon footprint of management?





- Irrigation is supplemental water application
 - Water when needed, not when scheduled
- Maximize the benefit of rainfall
- Understand plant water requirements
 - Function and purpose of the landscape
 - Required appearance
- Measure water usage
 - Essential for water management



- Owner: National Park Service
- Designer: Irrigation Consulting
- Installer: Valley Crest Landscapes





- Designing, building and managing an irrigation system in a more sustainable way.
- Consider the three pillars of sustainability
 - Environmental
 - *What are the impacts and benefits?*
 - Social
 - *What are the social implications?*
 - Economic
 - *What are the economic considerations?*



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Questions, Comments, Observations

