

Industry Needs & Wants Profession Survey

Steve Hohl

Background

- Group survey taken last year
- Produced fresh / new ideas
- Establishes metrics of importance
- We all will learn something that is "important" to others
- Provide guidance and elevate the industry



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Survey - Part 1

- Sent in January 2023 to 800 people
- Simply asked for 5 "Needs or Wants" to help do your job better
 - Product
 - Information
 - Service
 - Education
- Role does not matter

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024





Survey - Part 1

- 60 responses
- 300 "Needs or Wants"
- Many repeats
- Trending to 5 categories
 - Product
 - Personnel / People
 - Education
 - Information
 - ASIC efforts



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

- PAPER CATALOGS AND SPECIFICATIONS IN PRINT FORMAT
- IMPROVED WATERPROOF WIRE CONNECTOR
- HONEST PRODUCT EXPECTATIONS
- MORE RELIABLE WIRELESS VALVE AND FLOW SENSOR
- LARGE RADIUS ROTORS WITH MPR NOZZLES
- IMPROVED CABLE / WIRE STRIPPER
- NOTICE WHEN MY PRODUCT IS SPECIFIED
- MORE UPDATES TO SPACE PRO SOFTWARE
- RODENT RESISTENT DRIP TUBING
- MORE INFORMATION ON EXPECTED USEFUL PRODUCT LIFE



Products

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

- MORE INFORMATION ON EXPECTED USEFUL PRODUCT LIFE
- DRONE SOFTWARE FOR ASSESSING HEALTH OF TURFGRASS, TREES, LANDSCAPES
- MORE SPRINKLER OPTIONS IN THE 14-30' RANGE
- QUICK REFERENCE TO PRODUCT THAT CONFORMS TO MADE IN AMERICA ACT
- CONTROLLERS THAT CAN "ACTUALLY" BE PROGRAMMED BY A CONTRACTOR
- MICROSPRAY NOZZLES WITH 2.5 5' RANGE AND VARIABLE ARC
- PRESSURE COMPENSATING NOZZLE SCREENS
- BETTER TIME KEEPING / ACCOUNTING SOFTWARE
- BETTER FLOW AND MOISTURE SENSOR TECHNOLOGY
- VALVE BOX WITH WIRE CONNECTOR / DECODER ATTACHMENT
- BETTER TREE IRRIGATION PRODUCTS
- VANDAL PROOF PRODUCTS
- DESIGN SOFTWARE THAT UPDATES WITH CURRENT PRODUCT DATA

MORE GPS / STAKING / INVENTORY TECHNOLOGY

Products



- MORE ACCESS TO ASIC MEMBERS TO TAKE MY CALL AND LOOK AT MY PRODUCT
- BETTER EDUCATED DESIGNERS AND WATER MANAGERS
- TO KNOW WHAT A SPECIFIERS EXPECTS OF A MANUFACTURER
- TO HAVE MORE HIGHER QUALIFIED CONTRACTORS AVAILABLE
- TO HAVE MORE NETWORK OPPORTUNITIES BOTH LOCAL AND NATIONAL
- TO HAVE BETTER MANUFACTURER ENGAGEMENT AND CUSTOMER SERVICE
- MORE COLLEGE GRADUATES AND / OR EMPLOYEES IN EDUCATED IN IRRIGATION
- TO HAVE UNDERSTANDING OF WHY SPECIFIERS SELECT A SPECIFIC PRODUCT
- MORE MANUFACTURER AND DISTRIBUTOR SUPPORT OF ASIC CONSULTANTS
- MORE PEOPLE THAT ARE REVIT SAVVY
- MORE COLLABORATION BETWEEN DESIGNERS AND INSTALLERS
- ACCESS TO ASIC MEMBERS TO TAKE MY CALL AND LOOK AT MY PRODUCT



Personnel / People

- BEST MANAGEMENT PRACTICES
- CAD
- CLIMATE CHANGE
- CREATING TIMING SCHEDULES
- DRIP IRRIGATION SYSTEM MAINTENANCE
- HYDRAULICS
- LISP ROUTINES
- PLUMBING AND ELECTRICAL CODES
- PRODUCT WITH LIVE FIELD DEMOS
- PUMPS
- RAIN GARDENS AND BIOSWALES
- REAL WORLD DESIGN EXAMPLES SUCCESSES AND FAILURES

Education / Training About...

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024



- ACCESS TO MORE LOCAL WEATHER DATA
- BETTER / QUICKER ACCESS TO "HARD TO FIND" PRODUCTS
- BETTER CAD DETAILS
- CASE STUDIES ON WATER SAVINGS
- CURRENT AND / OR NEWEST TECHNOLOGIES
- INCORPORATING AERIAL IMAGERY INTO DESIGNS
- ARCHIVED MANUFACTURER PRODUCT CATALOGS
- INDEPENDENT THIRD-PARTY TESTING
- DESIGNS FROM CONTRACTORS TO DESIGNERS
- UNIT PRICING
- KNOWLEDGE OF TIMELINES FOR CONSTRUCTION ON PROJECTS
- ONLINE MARKETING



Information about...

- ADVOCATION OF RESPONSIBLE WATER LEGISLATION TO STABILIZE ITS AVAILABILITY FOR LANDSCAPE
- AN ASIC NEWSLETTER
- AN INDUSTRY WIDE CALENDAR OF EVENTS
- ASIC DISCOUNTED INSURANCES
- ASIC MERCHANDISE FOR SALE (SHIRTS, HATS, JACKETS, ETC.)
- EXPANDED ASIC WEBSITE RESOURCE HUB FOR ALL MFG DATA AND ARTICLES / PAPERS
- AN ASIC BLOG WITH NEW TRENDS AND TECHNOLOGY
- MARKETING OF THE CERTIFIED PROFESSIONAL IRRIGATION CONSULTANT (CPIC) PROGRAM
- MORE KNOWLEDGE OF MY PRODUCTS TO ASIC MEMBERS
- MORE MARKETING OF ASIC
- MORE ONLINE EDUCATION / CEU'S
- RE-ACTIVATION OF THE LOCAL CHAPTER FUNCTIONS



ASIC Related

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Survey – Part 2

What is your role in the Green Industry	Region of the Country?
Irrigation Consultant	Northeast
Water Manager	Southeast
Irrigation Designer	Midwest
Landscape Architect	Mountain West / South
Contractor	Southwest
Manufacturer	Northwest
Sales Associate	Years in the industry?
Academia	1-5
Student	6-10
Public Agency	11-15
Retired	16-20
Other (please fill in)	25+



Survey – Part 2

Pat needs the following on the car, but only has \$100	Pat chooses to spend the money - relative to importance :
Tires	Tires - \$50
Seat covers	Seat covers - \$0
Headlight	Headlight - \$10
Bike rack	Bike rack - \$0
Fuel	Fuel - \$20
Tune-up	Tune-up - \$20
Stereo	Stereo - \$0
Total	Total - \$100



Results

- Results will be analyzed by
 - Role in the Industry
 - Region
 - Years in the Industry
- Results will be published on the website
- Presentation will be given via ASIC webinar



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024





Prioritize <u>irrigation</u> <u>related</u> "Needs and Wants" on a scale of 0-100 points - only using 100 total points



American Society of Irrigation Consultants 2024 NATIONAL CONFERENCE VICTORIA, BC | MAY 5–7, 2024



Tree Irrigation Getting to the root for long-term water management

Donn Mann -- Regional Sales Manager, Rain Bird Whitney Braun – Marketing Manager, Landscape Division, Rain Bird Matt Nielson – Consulting Arborist, Green Groves

Tree Survival and Mortality

In a typical transplant project, as many as <u>20% of trees do not</u> <u>survive</u> beyond two years.

Over <u>50% of newly planted tree</u> <u>mortality</u> is due to water and nutrient stress.

In urban areas, <u>the average</u> <u>lifespans</u> of trees fall short of what is needed to provide their full economic and environmental benefits.





Components of Soil





Urban Soils Ideal Forest Soils Void Space Solid Void Space Solid **50**% 50% 20% - 30% 70% - 80% Water **Mineral Particles Mineral Particles** Water **Organic Matter** less than 1% **Organic Matter** 2% - 5%

Source: Up By Roots by James Urban

Note: Air/Water Relationship varies with the weather

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024



ASIC

Health of Trees as it Relates to Roots

The **Root Collar** is usually at or near the groundline and is identifiable as a marked swelling of the tree trunk.

Because **Roots Need Oxygen** in order to grow, they don't normally grow in the compacted, oxygen poor soils under paved streets.

Note: A few species have a **Taproot** that grows straight down three to seven feet or more until it encounters impenetrable soil or rock layers or reaches layers with insufficient supplies of oxygen.



The complex network of smaller non-woody **Feeder Roots** grows outward and upward from the framework roots. These smaller roots branch four or more times to form fans or mats of thousands of fine, short, nonwoody roots. These slender roots, with their tiny root hairs, provide the major portion of the absorption surface of a tree's root system. They compete directly with the roots of grass and other groundcovers.

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

The Framework of Major

and often grows outward to a

height of the tree.

diameter of one to two times the

Roots usually lies less than eight

to twelve inches below the surface

Source: https://www.idl.idaho.gov/the-root-of-the-problem-rootsand-turfgrass/

Root Development – By Situation





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Root Health – Post Turf



Shallow roots spread widely across the surface, where surface water was more readily available.

- When that water is constrained or gone, the tree doesn't have deep roots for a reserve.
- How do we help the tree survive?





Source: The planning and principles of tree protection in the investment process; by Ziemiańska/Suchocka

Effects of Turf Removal





Suggested Remedies

Use separate zones -- Automatic irrigation systems are calibrated for turf resulting in overwatering and low oxygen levels in soils and promotes root disease.

Focus on the fine -- In times of restrictions or water shortages, watering can focus on areas with abundant fine roots instead of the entire area.

- Mature a radius of 3x the trunk diameter
- Newly Planted within the root ball of new transplants)

Water deeper / soak - to depths of 12" (30 cm) or more if the soils are prone to drying out.

Root Development in Urban Environments



- Roots will seek any available water.
- Insufficient soil volume to support growth.
- Limited access to air due to soil compaction.
- How do we design to improve the tree's chances?



Jim Urban "tree size to soil volume relationships" (Urban 1992)

Tree Health – Related to Roots







Ole Miss Basketball Pavilion

Environment: Spray irrigation + Structural Soil

Issue: Shallow root growth

What went wrong?

- Structural soil cemented together beginning at about 6" subsurface as a result of poor installation.
- With improper soil construction, the roots didn't go where the water went.



Root Development on Slopes





- Risk of soil erosion.
- Downhill root expansion toward the runoff.
- Deeper roots will help anchor the tree.
- What solutions are you using today?

#TreeStories – Emmy-Nominated Docuseries





Season 1 Season 2



Solutions

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Essential Tools for Tree Health

https://www.rainbird.com/treestories

Root Watering Systems

Subsurface root irrigation minimizes run-off and evaporation while ensuring deep and broad root growth. Great for protecting the tree investment.

SQ Series Nozzle with ³/₄ Pattern

Provides optimal watering at the surface. Adjustable from 2.5 to 4 ft with a unique pattern that waters the entire surface of the root ball while intentionally missing the trunk.

Dripline Rings

Using XFS-CV dripline to form circles under the tree canopy provides even watering and protection from root intrusion.

Root Booster Net

Root Booster provides access to water and air throughout the root zone resulting in stronger, healthier plants and trees.





Root Watering System

The Root Watering System (RWS) enables vital water, oxygen, and nutrients to bypass compacted soil and directly reach tree and shrub root systems.





Healthier Trees

 According to a study from the University of Arizona, trees that received root watering from the Rain Bird® RWS measured <u>deeper-root growth, greater root mass and better above-</u> <u>ground growth</u> than surface-watered trees.

Water Efficiency

 Highest efficiency solution for tree irrigation with up to <u>95%</u> <u>emission uniformity with minimal wind, evaporation, or</u> <u>edge control losses.</u>

Landscape Aesthetics

• Aesthetically designed subsurface bubbler contributes to a landscape's natural appearance.



SQ Series Nozzle with 3/4 Pattern





Unique Pattern for Trees

- One of the only pressure-compensated, low-volume SPRAYS available – provides the <u>coverage of a spray</u> <u>with the flow of an emitter</u>.
- Designed to precisely irrigate around the perimeter of trees and shrubs without wetting the trunk

Versatile Installation

- Simplify design and installation with the flexibility of applications
- One nozzle throws 2.5' or 4' (0.8 m or 1.2 m)
- · Can be installed on a variety of spray heads and risers.

Savings on Material and Labor Costs

• Unique SQUARE edge-to-edge pattern <u>eliminates need</u> for overlap, saving material and labor costs.



Dripline Spirals or Rings

Flexibility

• Dripline is a versatile and flexible tree irrigation solution that <u>can be extended as</u> <u>the tree grows</u>.

Prevents Root Intrusion

 XFS-CV is ideal for subsurface installation around trees with a pure copper chip inside every emitter that provides the <u>industry's</u> <u>most effective root intrusion protection</u>.

Great on Slopes

• XFS-CV also offers better distribution uniformity, <u>avoiding puddling, over-</u> <u>watering and excess runoff</u>.





Root Booster

Root Booster Series of products provides access to water and air at the root zone resulting in **stronger, healthier plants and trees**.

Water Stewardship

 Reduces water consumption considerably by <u>transporting water directly to the roots without</u> <u>evaporation</u>.

Access to Water and Air

 Helps plants and trees through the establishment period by <u>providing access to water and air at</u> <u>the root zone</u>.

Versatility

- Easy to install in difficult spaces.
- Compatible with natural and automated irrigation.

Hydraulics Pt. 2 A deep dive on controls and their effects

Lici Resch– Senior Technical Associate, Spears Manufacturing

Fittings are the Most Affected by Hydraulic Shock

The following information is derived from studies by Keller-Bliesner Engineering, Logan Utah, and is provided as a guide only. Actual allowable working pressures may vary widely according to field conditions. Additionally, pressure de-rating at elevated temperatures must be taken into account. Certain fitting configurations may have other assigned pressure limitations (i.e., Wyes, Unions, Flanges, etc). Contact Spears[®] Technical Services for additional information and details of the Keller-Bliesner report.

Suggested Maximum Working Pressure @ 73°F (23°C)								
	Schedule 40 (psi)		Schedule 80 (psi)					
Nominal Size (in.)	Pipe¹ (psi)	Solvent Cemented Joint & Spears® SR Threaded Joint ² (psi)	Standard Threaded Joint ^a (psi)	Pipe¹ (psi)	Solvent Cemented Joint & Spears® SR Threaded Joint ² (psi)	Standard Threaded Joint ^a (psi)		
1/4	780	468	390	1130	678	565		
3/8	620	372	310	920	552	460		
1/2	600	360	300	850	510	425		
3/4	480	288	240	690	414	345		
1	450	270	225	630	378	315		
1-1/4	370	222	185	520	312	260		
1-1/2	330	198	165	470	282	235		
2	280	168	140	400	240	200		
2-1/2	300	180	150	420	252	210		
3	260	156	130	370	222	185		
3-1/2	240	144	120	350	210	175		
4	220	132	110	320	192	160		
5	190	114	95	290	174	145		
6	180	108	90	280	168	140		
8	160	96	80	250	150	125		
10	140	84	70	230	138	115		
12	130	78	65	230	138	115		
14	130	78	65	220	132			

Changes of Direction Restrict Flow

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024
Air Entrapment Magnifies the Problem







2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

It's Not Just an Irrigation Problem





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024



"Cyclic Fatigue" = Repeated Hammer





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Cyclic Fatigue vs Hydraulic Shock

Cyclic Fatigue:

Hydraulic Shock:

Typically in Tees & 90's

Tiny Cracks located in the interior bends

Leaks often cause a high-pressure spray

Typically in Tees & 90's Large Clean Shear Jagged, Sharp "Explosive"

Proper Burial & Thrust Blocking Play a Role



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

ASIC

Proper Installation is Critical









This is Not from Hydraulic Shock



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

This is Not from Hydraulic Shock



.





Control Your Velocity

- Reduce Friction Loss and Maintain Velocities (5ft/sec)
- Pumps
 - Slow starting pumps help maintain uniform pump flow rates
- Valve Choices
 - Throttling, Slow moving vs Fast-Acting On-Off
 - Check Valves to control column motion

- Air Control & Relief
 - Proper bleeding of the system; preventing air entry
- Thrust Blocking/Proper Burial
- Proper Joining







Improve Flow & Reduce Pipe Stress



Choose Slow-Acting Valves



Gear-Operated Butterfly



Y-Pattern Valves

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024







There are Many Check Valve Options



Thrust Blocking

Types Of Thrust Blocking:

If thrusts, due to high pressure, are expected, anchor valves as below. At vertical bends anchor to resist outward thrusts.

- 1. Thru line connection, tee
- 2. Thru line connection, cross used as tee
- 3. Direction change, elbow
- 4. Change line size, reducer
- 5. Direction change, tee used as elbow
- 6. Direction change, cross used as elbow
- 7. Direction change
- 8. Thru line connection, wye
- 9. Valve anchor
- 10. Direction change vertical, bend anchor
- 11. End Caps (above or below ground)







Succession Planning with a Multiple Twist

Adam Skolnik

Vistage Florida Executive Peer Group Chair

Agenda



- 1. Succession Planning Personally
- 2. Succession Planning Professionally
- 3. Business Activity Monetize Time and Talent
- 4. Twists & Turns
- 5. Q&A







Better Leaders • Decisions • Results

1. Succession Planning - Personally

Net Worth –

- Business
- Primary Home
- Investments
- Other & Income Producing Assets
- Brokerage Accounts
- Retirement Savings





Cash and Equivalents
Other Assets
IRA's
Real Estate
Businesses

Estate Planning – Building a Legacy

- Wills & Trusts
- Retirement Accounts
- Life & Long Term Disability Insurance

2. Succession Planning - Professionally

Operating Agreement

- Company Structure
- Buy/Sell

Strategic Plan

- 1, 3, 5+ year goals
- Defined Exit "Keep the End in Mind"

Leadership Team

- Well Defined Roles & Responsibilities
- Entrepreneurial Minded



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

3. Business Activity – Monetize Time & Talent

Owner's Activity – Industry & Business Peer Groups

• ASIC, IA, Vistage



Company Culture – Defined in Strategic Plan

• Mission, Value, Purpose

Process & Procedures – Well Defined

• KPI's, Flow Charts, By Function, EOS



ASIC

Better Leaders • Decisions • Results



3. Business Activity – Continued

Markets & Clients Mix – Concentration vs Diversification

• Ag, Commercial, Residential, Golf

Financials – Historical & Budgets/Projections

• YTD, Budget to Actual, TTM

Business Valuations – Methods & Targets

• Brokers, Cash Flow, EBITDA & Adjusted EBITDA





EBITDA = Pre-Tax Free Cash Flow Earnings Before Interest Taxes Depreciation Amortization



Being Aware of Industry/Market/Financial Trends

• Keep up to date

Black Swan Events

• Be prepared

Economists Projections

• ITR and other sources



BLACK SWAN EVENT

A BLACK SWAN EVENT in the finance world refers to an extremely negative rare event, which is impossible to predict. Such events are random & have wide-spread ramifications. It can either be **positive or negative**. The term is inspired by the possibility of seeing a black swan among a group of white swans.



5. Questions & Answers



Adam Skolnik Group Chair CE2065 352-267-6387 <u>askolnik@vistageflorida.com</u> https://florida.vistage.com



Better Leaders • Decisions • Results





American Society of Irrigation Consultants 2024 NATIONAL CONFERENCE VICTORIA, BC | MAY 5–7, 2024



Catchment Systems The ins and outs of rain and gray water systems

Boyd Rose

Jennifer Brusso





Source Water Definitions

System Considerations

System Requirements

Monitoring, Sensing, & Reporting

Regulation and Compliance

Definitions



Rainwater

Water from natural precipitation from the atmosphere

Stormwater

Precipitation that has flowed over a surface but not into groundwater





Greywater

Untreated water from washing machines, showers, handwashing sinks, and bathtubs

System Design



Diversion of Graywater from sewer system



Separate treatment and storage



Gravity-fed to complex with pumps & filters



Filtration and Disinfection

Regulation and Certification



Monitoring and Controls



Future growth or demand on system





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

System Design



System Design







System Considerations





- Application
- Source Water & Secondary Source
- Environment and location
- Existing infrastructure or new construction
- Climate disruptions

- Serviceability & Maintenance
- Future use or demand requirements
- Budget

System Requirements

- Diversion and Conveyance
- Volume Calculations
- Collection
- Prefiltration
- Storage
- Pump Station
- Treatment and Sanitation
- Monitoring





Catchment

Rainwater Collection Points Rooftops, Parking lots, Hardscapes, Condensation, Snow Melt, Water features

Greywater Collection Points Bathroom Sinks, Showers, Washing Machines



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Conveyance and Diverters

Dedicated separate plumbing lines

Backflow prevention

Corrosion resistant materials

Slope

Proper ventilation



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Pre-Filtration & Pre-Treatment

- Screening and removal of larger debris (sticks, leaves
- Prevents clogging and protects components in
- the system
- Oil/Water separation
- Additional treatment for Greywater can include Biological – microorganisms Physical – sedimentation, floatation









Storage

Types – Tanks, Ponds

Sizing - Planned collection, draw down, Site or code requirements

Climate – Above, below ground, part of infrastructure

Usage – Potable, non-potable, reuse applications

Materials – HDPE, Corrugated, Drinking level/food grade

Maintenance and Cleaning – Debris, sediment removal, cleaning cycle













Pump System

- The heart of the water harvesting system
- Submersible or above grade, vertical, horizontal
- Controls all peripheral components (level, flow, pressure, & filter sens etc.)
- Make a water manager out of the end user
- Quantify ROI and contain data about system







2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Controls

- U.L. & FCC Compliance control panel
- Ventilation / Cooling
- NEMA Rating for Environment
- High and Low Voltage components





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024
Treatment & Disinfection

•Biological Treatment

Constructed wetlands, aerobic digestion, or other biological processes.

•Chemical Treatment Chlorine or neutralizing agents

•Advanced Treatment

Ultrafiltration, reverse osmosis, or UV



2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Monitoring & Reporting

- Flow
- Volume, water level
- System (motor, pumps)
- Pressure
- Concentration
- Water quality
- Biologics
- Degradation





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Monitoring & Reporting

Water Quality Parameters

Monitoring Plan

SCADA or AI Analysis

Redundancy and Backup Systems





2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Regulation & Compliance





- International, Federal, Provincial, State, City
- NSF/ANSI/CAN 61 Drinking Water System Components
- NSF/ANSI 350 Water Reuse Systems Certification
- UL & CE (standardization elsewhere (CE), decentralized in US)
- Material restrictions

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

Regulation & Compliance

States with Water Reuse Regulations or Guidelines for Agriculture



Riparian Prior Appropriat

Statutor

Hybrid



Per- and Polyfluoroalkyl Substances (PFAS)

Final PFAS National Primary Drinking Water Regulation





States with Water Reuse Regulations or Guidelines





Codes and Regulations



States that allow graywater reuse

 States that lack a graywater regulation or do not allow graywater reuse

 Image from "Treatment, Public Health, and Regulatory Issues Associated with GW Reuse

 By Sybil Sharvelle et. al. for WERF

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024

What's Next?



PVC

Water Age

Lead Service Line Replacement LSLR

Discharging of Treated Water

2024 NATIONAL CONFERENCE | VICTORIA, BC | MAY 5-7, 2024



Thank you for your time!



American Society of Irrigation Consultants 2024 NATIONAL CONFERENCE VICTORIA, BC | MAY 5–7, 2024