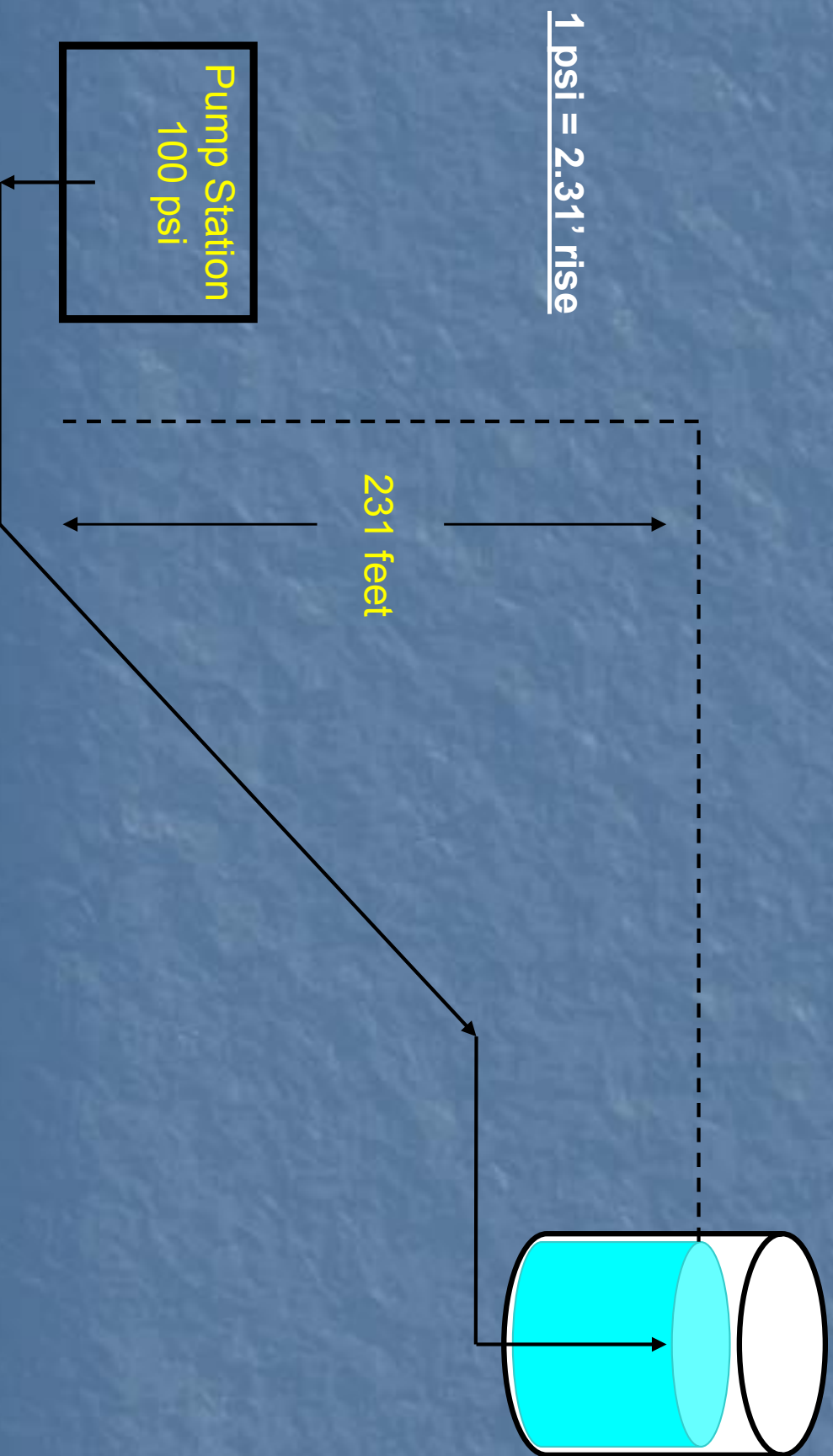


# Introduction to Backflow Prevention

Gary Espenschied

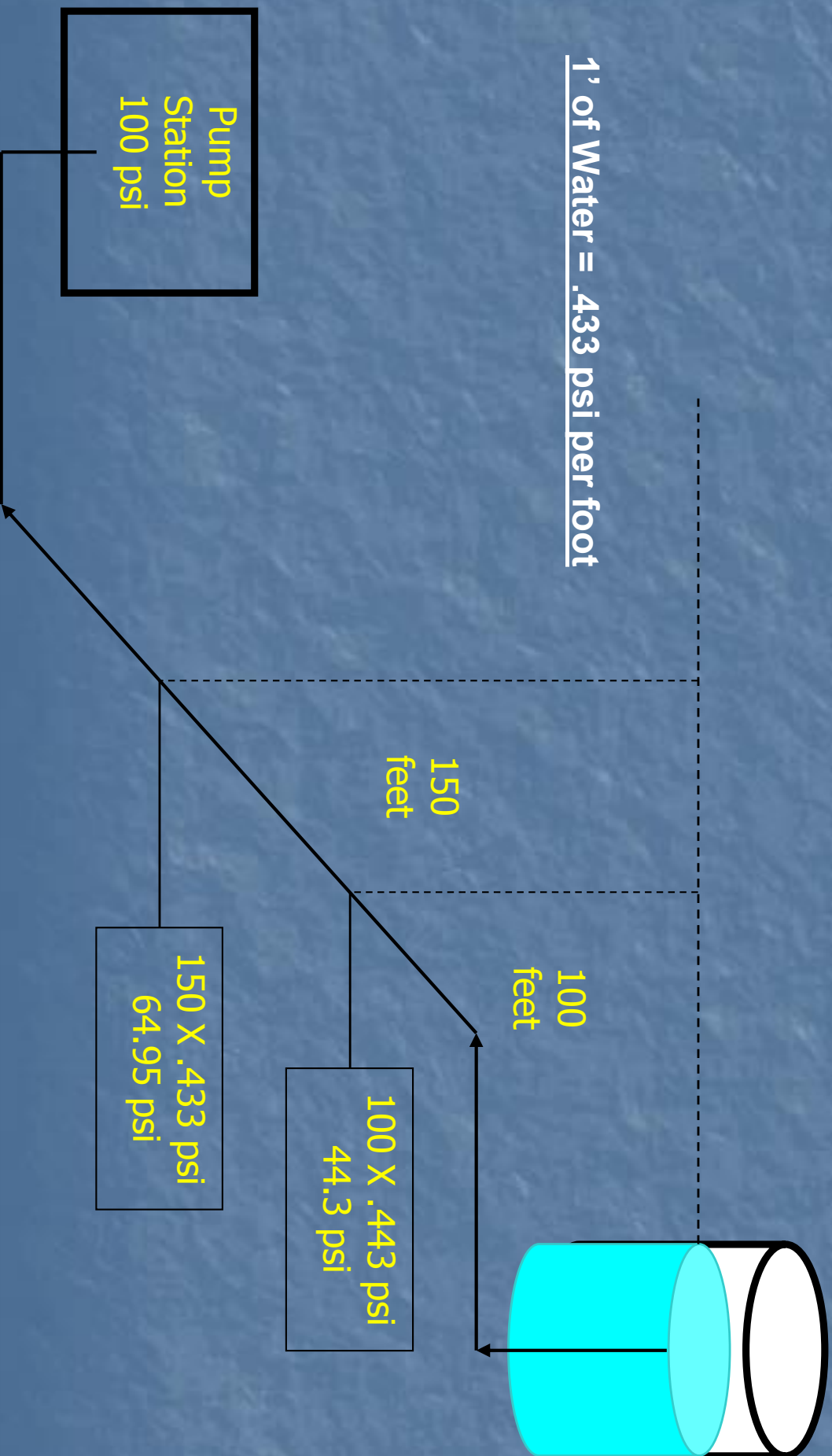
Operator Training Committee Inc.

# Head Pressure

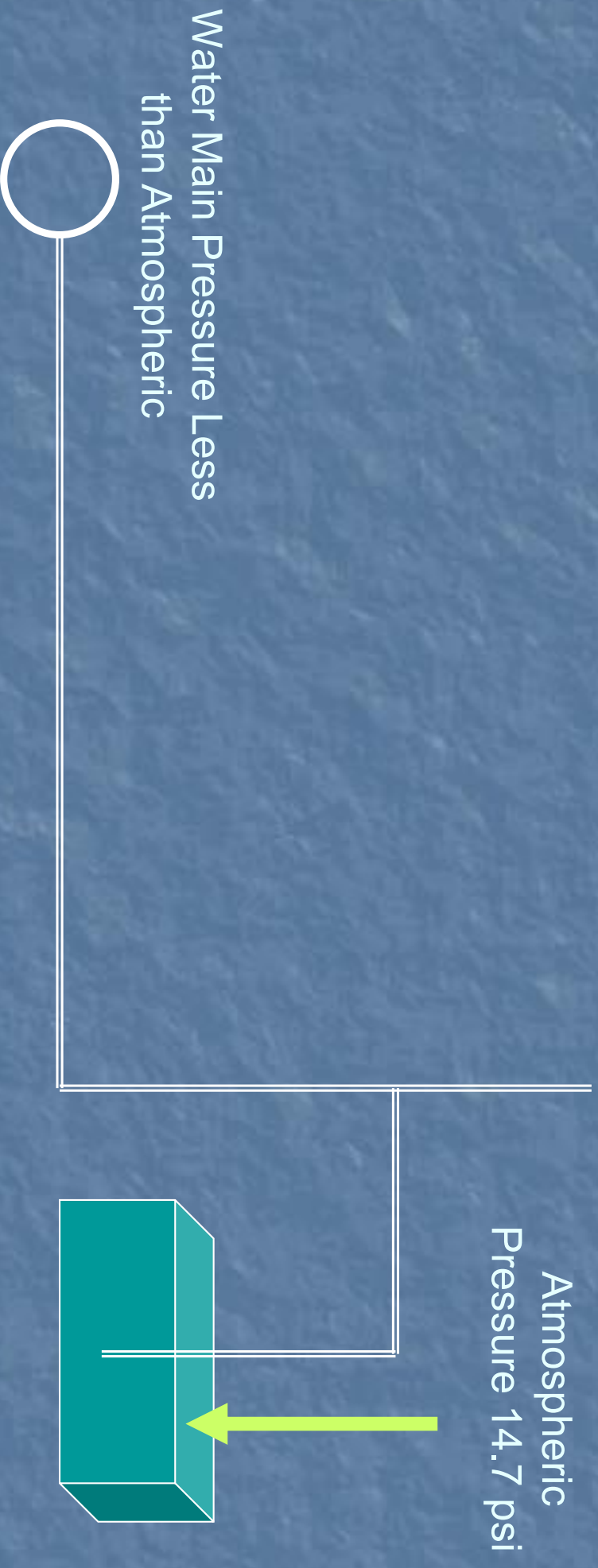


# Elevation Head

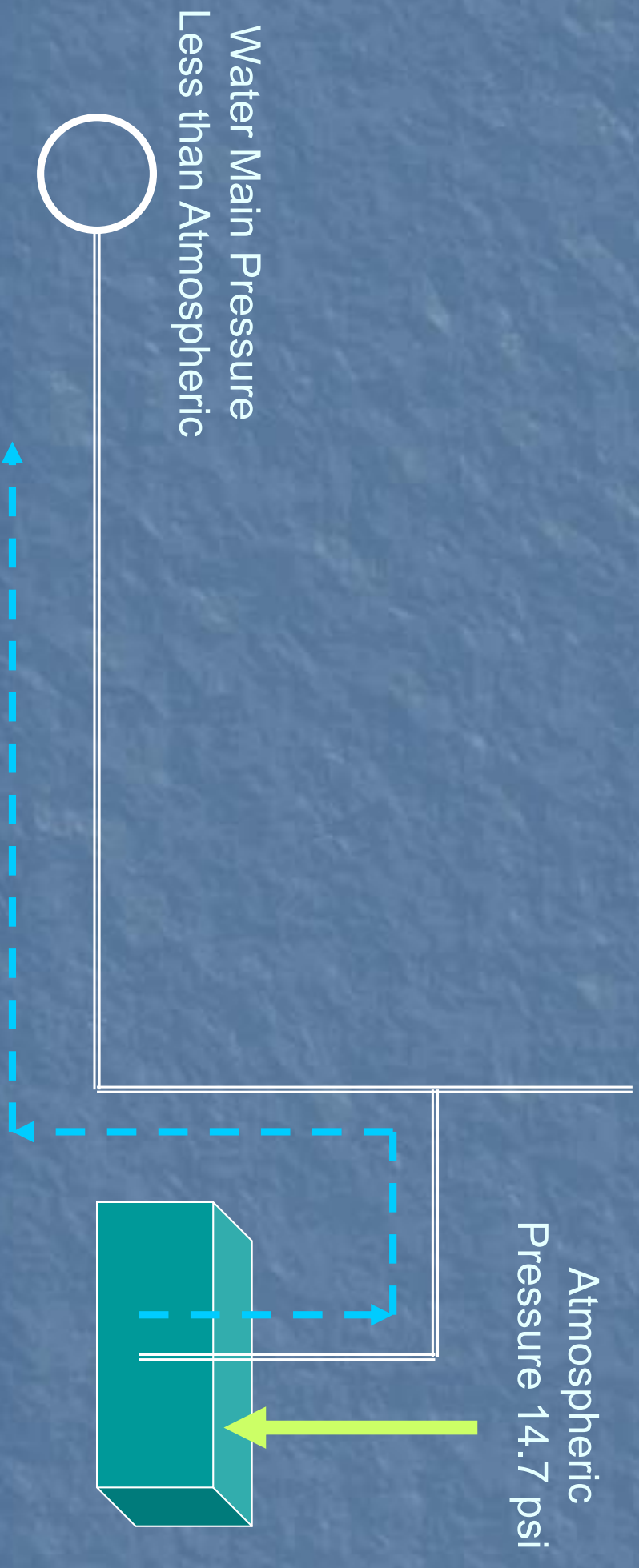
1' of Water = .433 psi per foot



# Vacuum

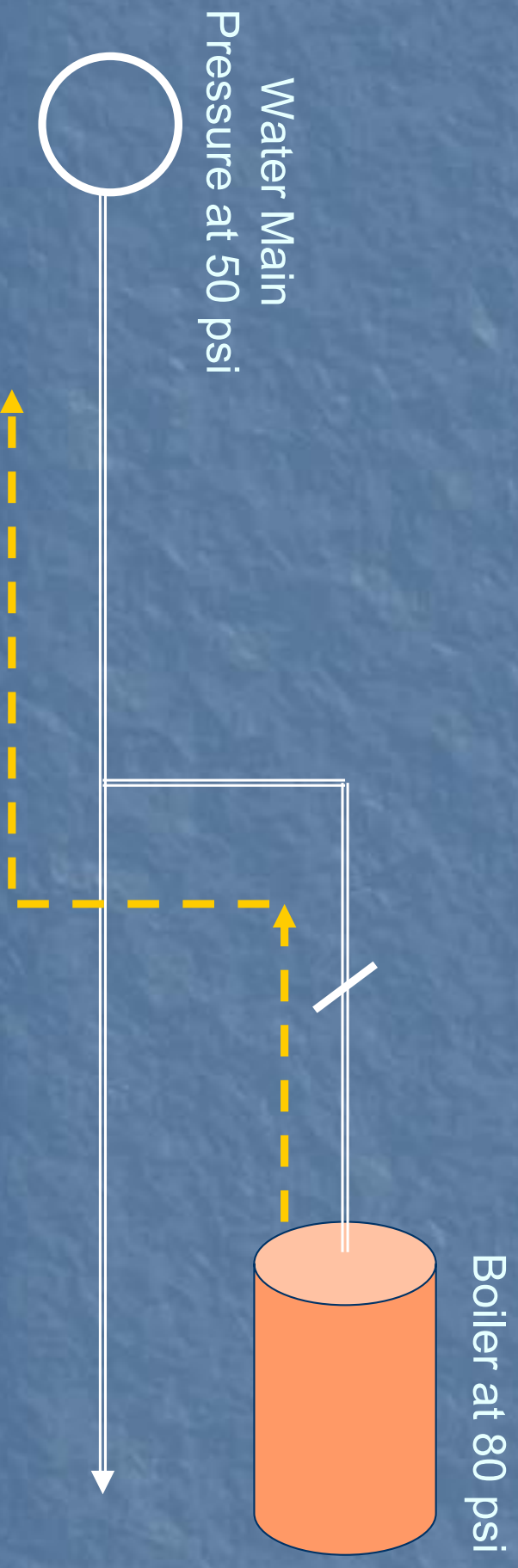


# Backsiphonage

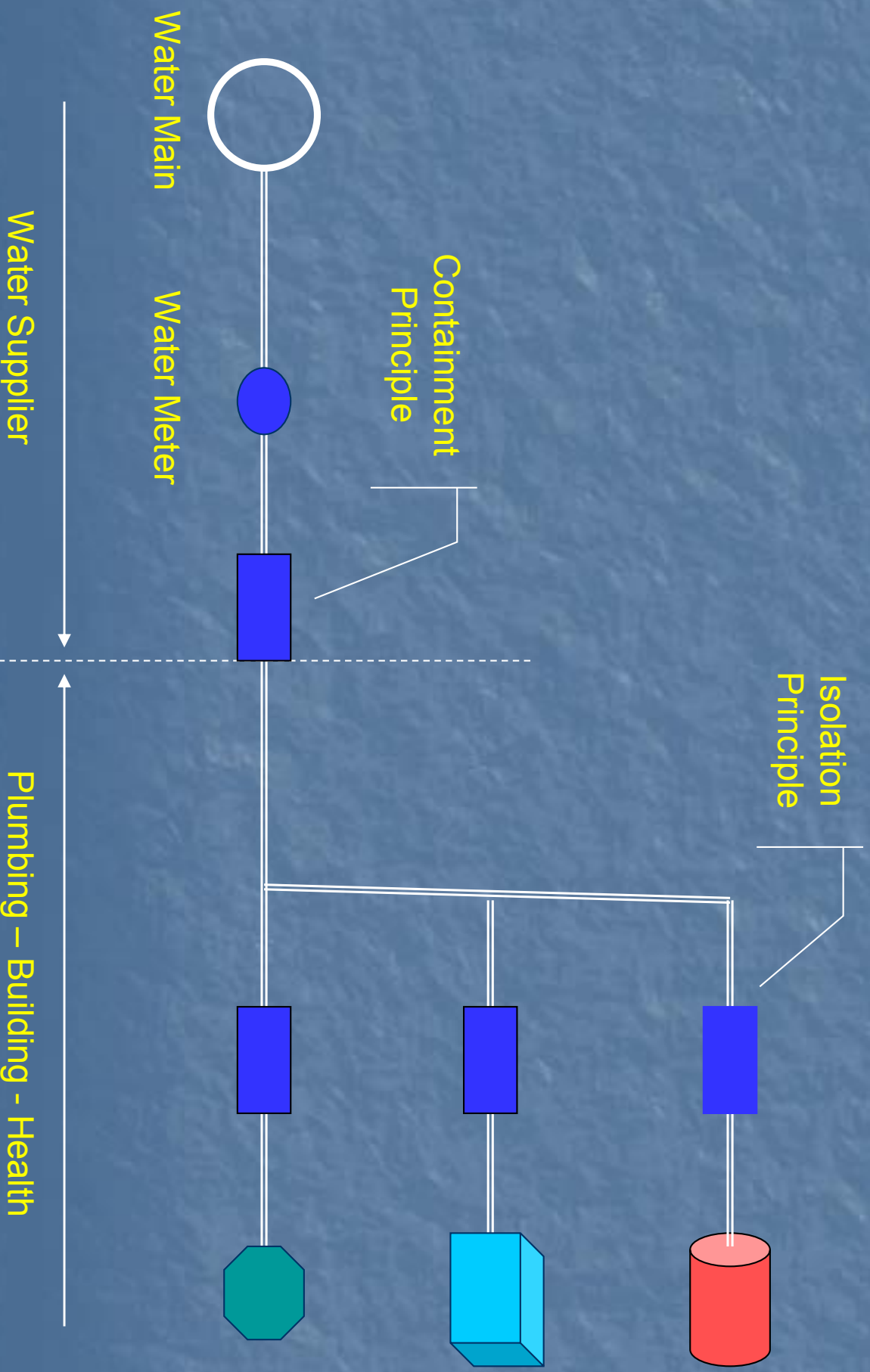




# Backpressure



# Responsibility



# Degree of Hazard

## Severe Health Hazard

- causes death or significant morbidity

## Health Hazard

- is a threat to health

## System Hazard

- is a threat to piping

## Pollution Hazard

- degrades water quality no threat to health or piping



# Where Protection is Required

- Uncorrectable Cross-Connections
- Intricate Piping
- Security Restrictions Prevent a Survey of Use
- Repeated History of Violation
- Others Specified by the Public System

# Type of Protection

- Severe Health Hazard
  - approved air-gap separation
- Health Hazard or System Hazard
  - approved air-gap separation
  - reduced pressure assembly
- Pollution Hazard
  - approved air-gap separation
  - reduced pressure assembly
  - double check valve assembly

# Booster Pumps

- Must Include a Low-Suction Pressure Cut-Off Controller
- Shuts Off Pump if Suction Pressure Falls Below 10 psi



# Backflow Prevention Assemblies

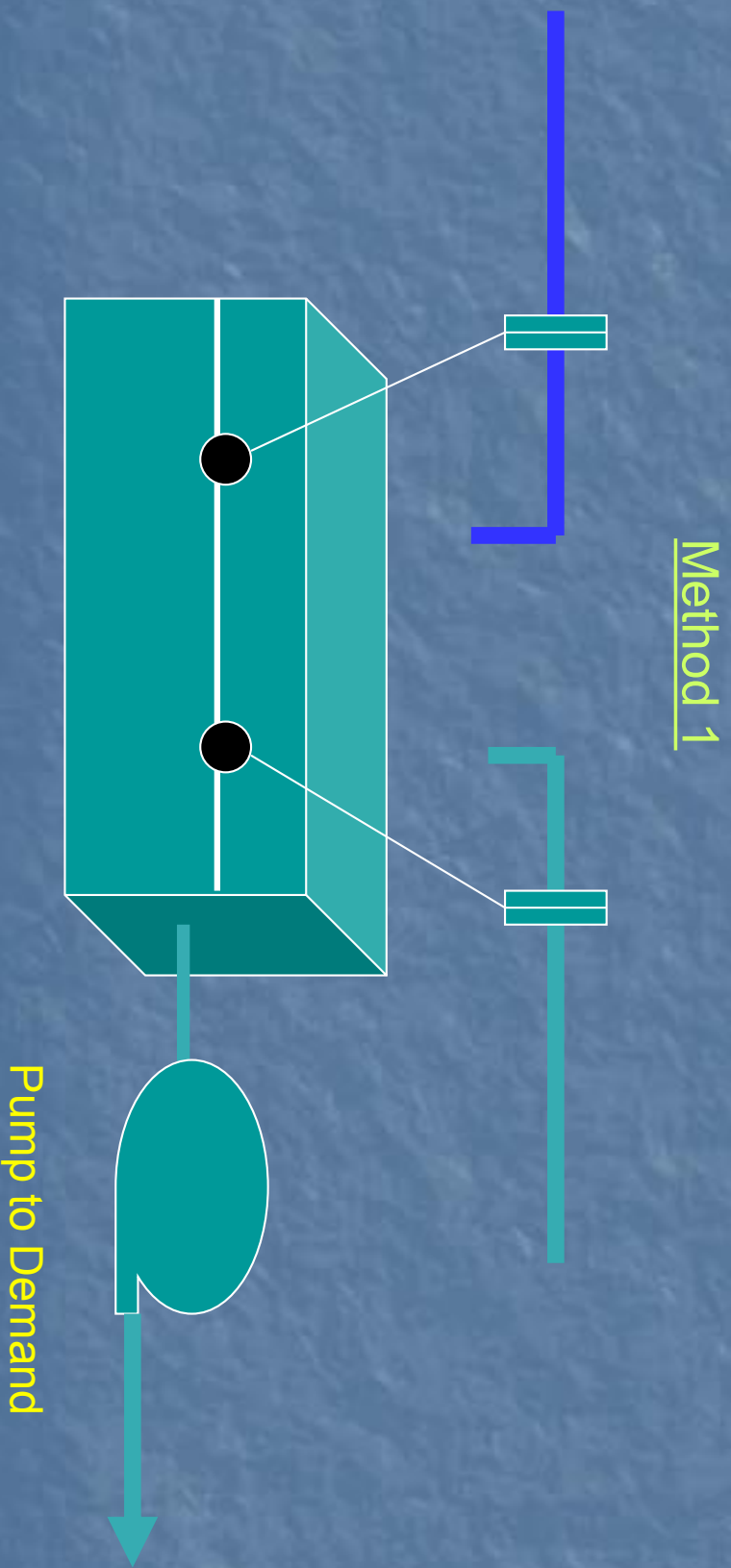
- Water System Determines Where & How Assembly is Installed
- Customer Pays all Costs
- Assembly Must be Tested Every 12 Months
- Assembly Must be Tested by person that is approved by the supplier

# Auxiliary Water Systems

- Auxiliary is an Unknown Water Quality
- Needs Ohio EPA approval
- Should be Justified to Interconnect



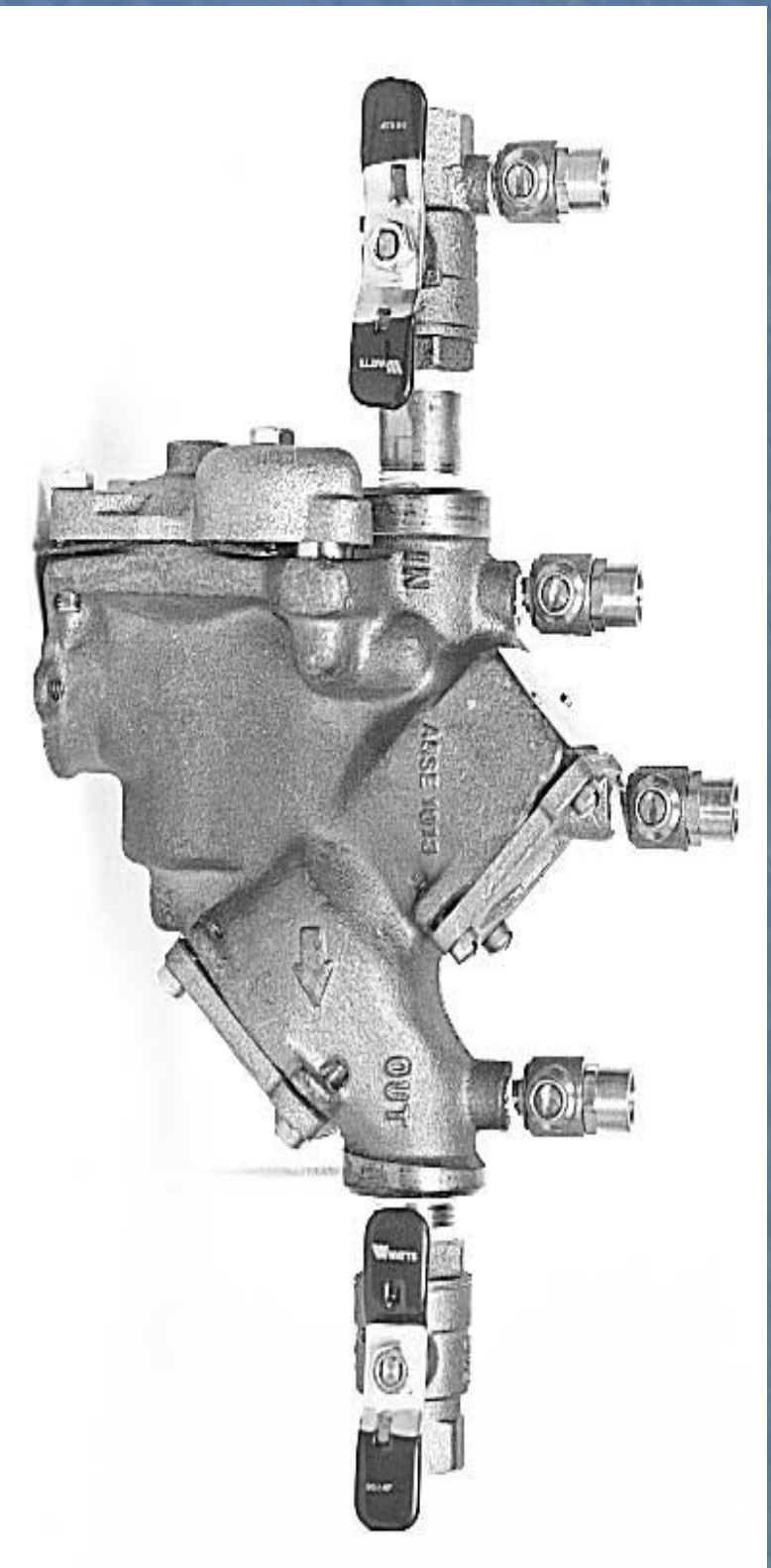
# If Interconnection Is Not Justified



# If Interconnection Is Justified

- Use Method 2 to Interconnect
  - Swing Connector
  - Four-Way Valve
- Provides Alternate but not Simultaneous Supply

# Reduced Pressure Assembly 1013



Health Hazard Additives (backpressure/back-siphonage)

Boiler/Chiller

Lawn Irrigation

Fire Protection Additives

# Backflow Preventer -- Atmospheric Vent 1012



Non-Health Hazard (backpressure/back-siphonage)

Chemical Dispensers

Portable Cleaning Equipment

Dental Equipment

Soup Kettles

Food Cookers



# Atmospheric Vacuum Breaker 1001



Health or Non-Health Hazard (backsiphonage only)

Commercial Dishwashers or Garbage Disposals

Lab Faucets

Commercial Laundry Equipment

Janitor Sinks

Photo or X-ray Developing Tanks



# Pressure Vacuum Breaker 1020

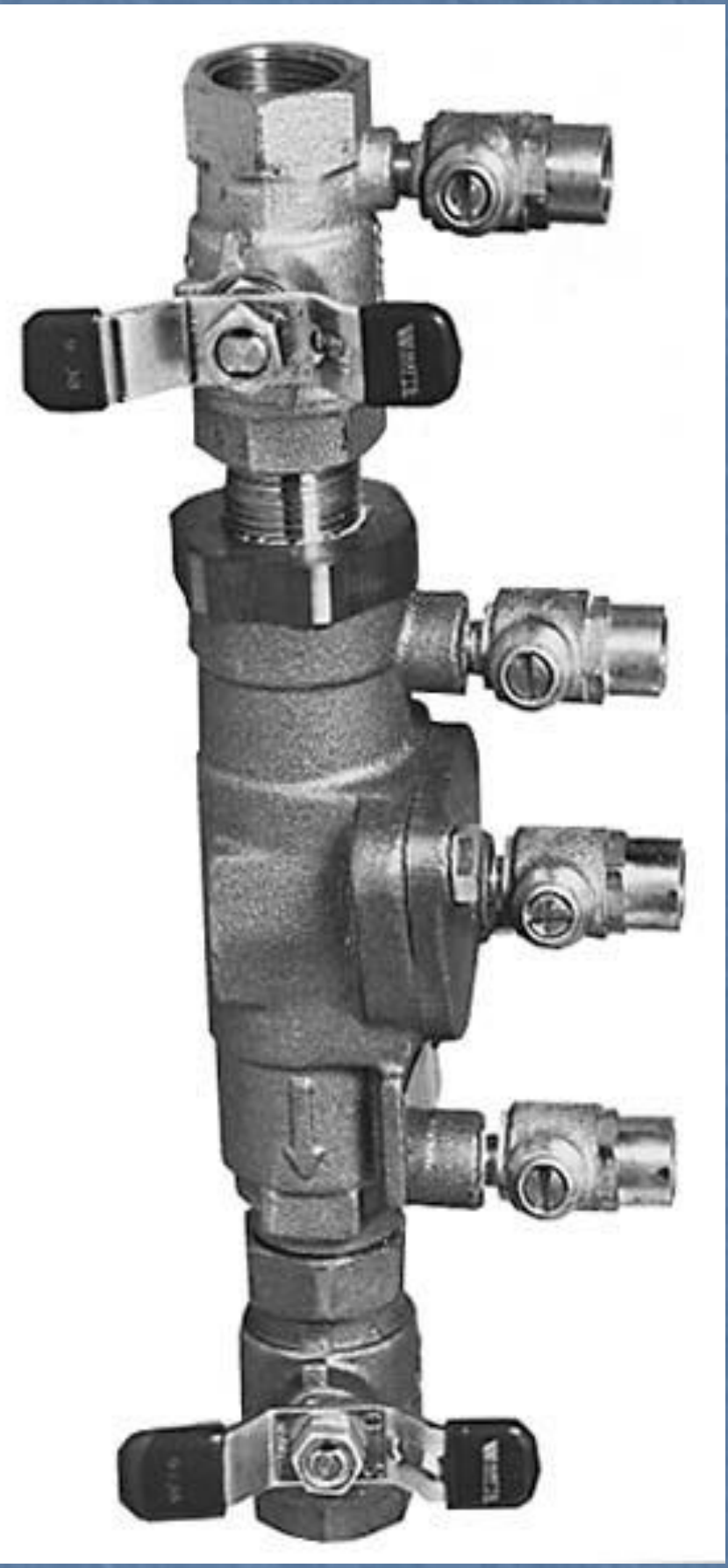


Health or Non-Health Hazard (backsiphonage only)

Same Application as Atmospheric

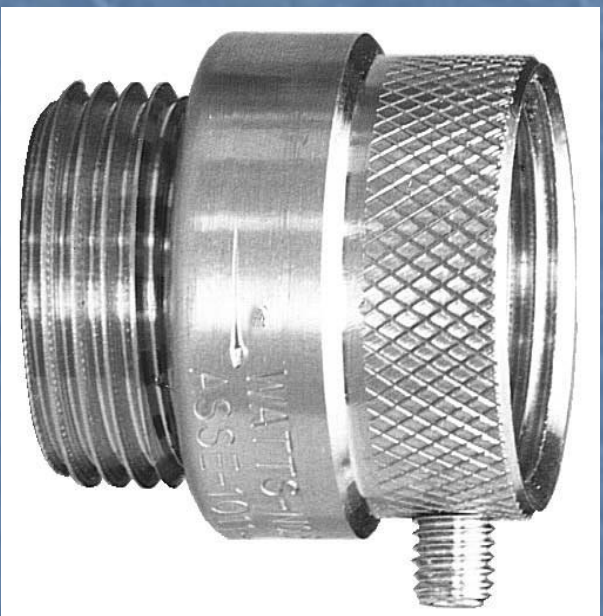
But for Pressurization Beyond 12 Hours

# Double Check Valve Assembly 1015



Non-Health Hazard Additives (backpressure/back-siphonage)

# Hose Connection Vacuum Breaker 1011



All Hose Connections

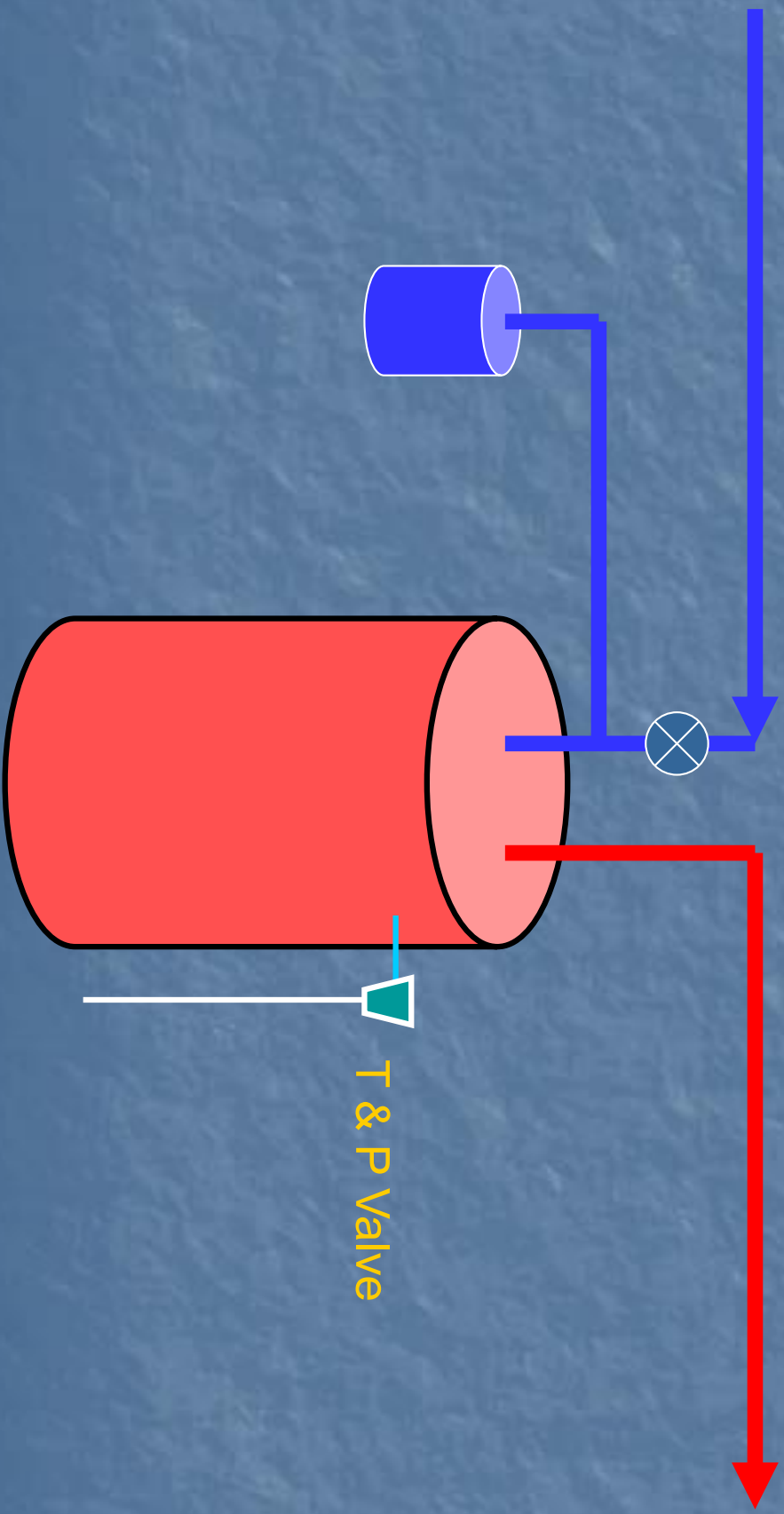


# Backflow Preventer –Atmospheric Vent Carbonated Beverage Dispenser 1022



Carbonated Beverage Dispensers

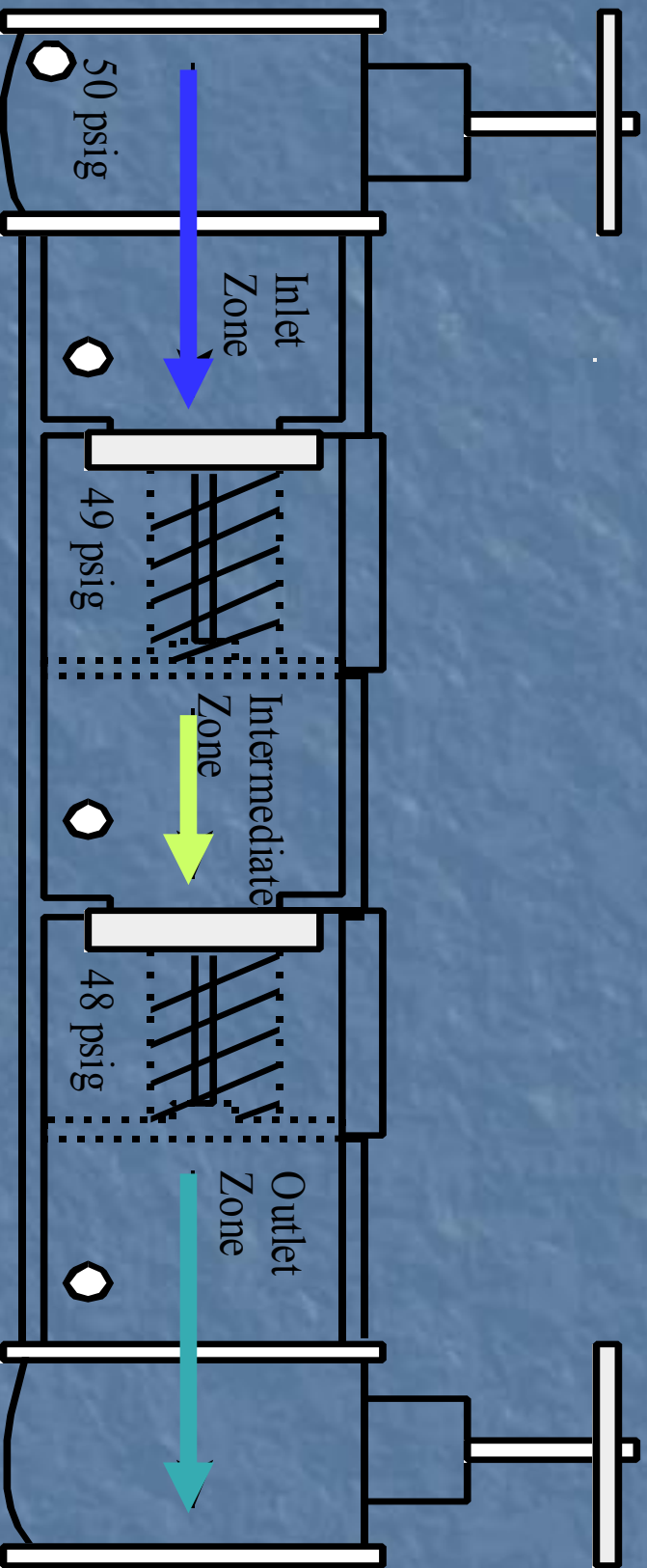
# Thermal Expansion Protection



T & P Valve

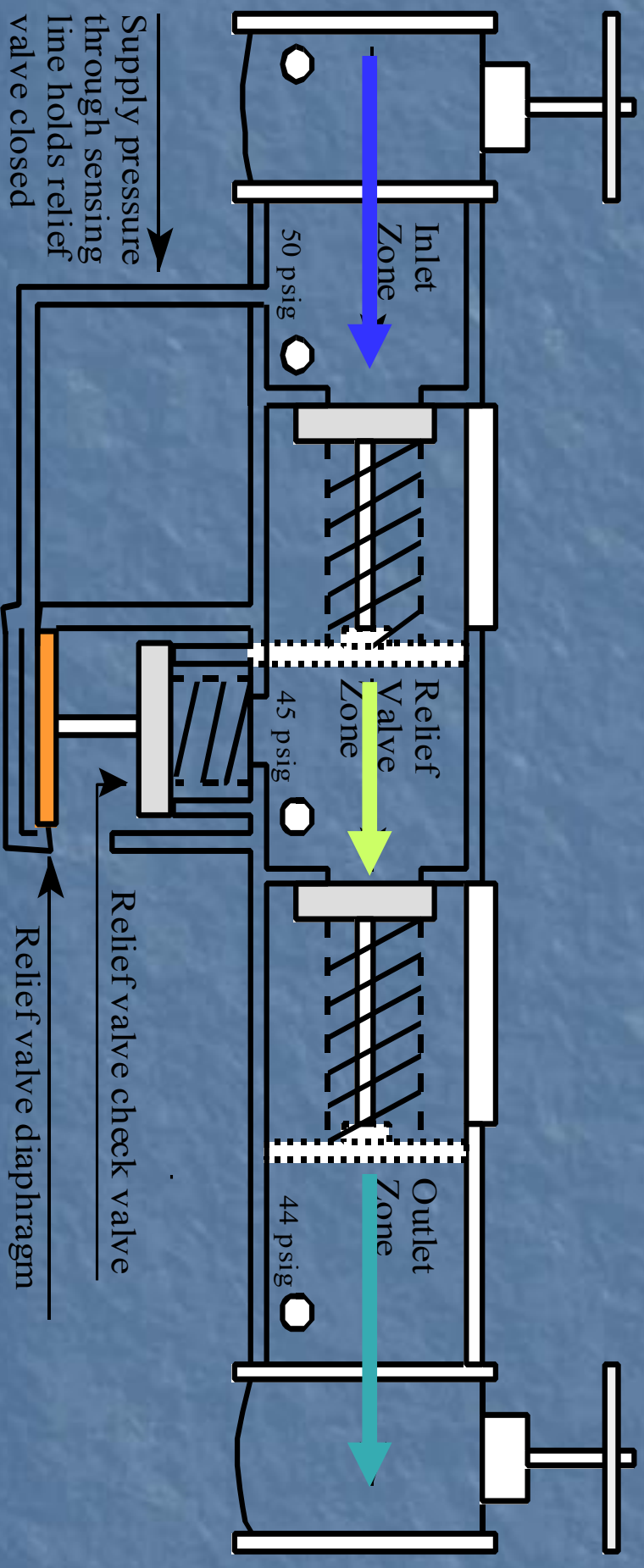


# Double Check Valve Assembly

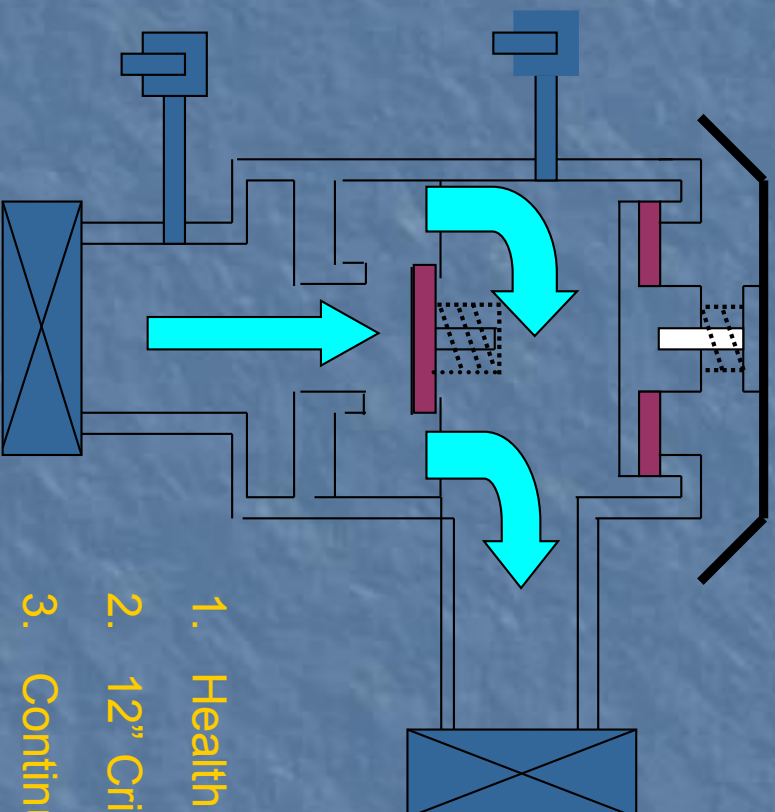


 = test cocks

# Reduced Pressure Assembly



# Pressure Vacuum Breaker



1. Health or Non-Health Hazard (backsiphonage only)
2. 12" Critical Installation Level
3. Continuous Pressure
4. Downstream Valve is OK

# How does an ASSE1013 Operate?