



# Subsurface Drip Lessons Learned

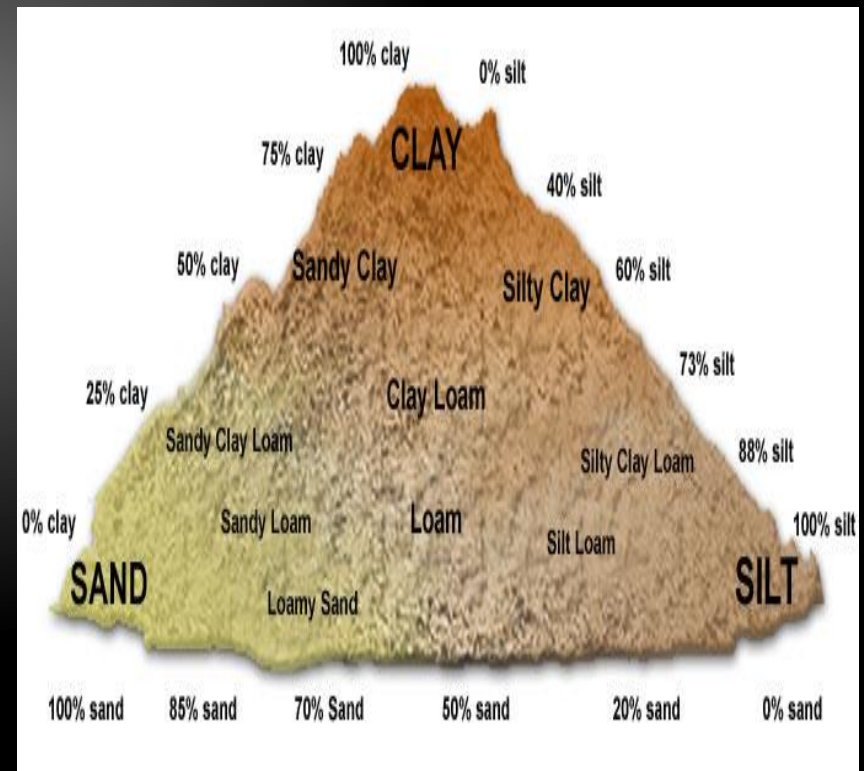
SW Onsite Conference  
Laughlin, NV 2020

Presented By Karen Ferguson, Geoflow, Inc.



# Soils – Drip Area

- GPD / Sq. Ft
  - Volume of Effluent
  - Quality of Effluent
  - Soil
    - texture
    - structure
    - color



# Soils – Limiting Layers

- Distance to restrictive layer?
  - Impervious material
  - Shallow water / gleying
  - State regulations
- Beware of hidden limiting layers
  - Perc Test





# Soils – Fill

- Fill – Abrupt interface



# Protect Soil Structure

**NOTICE**  
**PLEASE**  
**KEEP OFF**

- Keep heavy equipment and construction debris off drip field
  - New construction





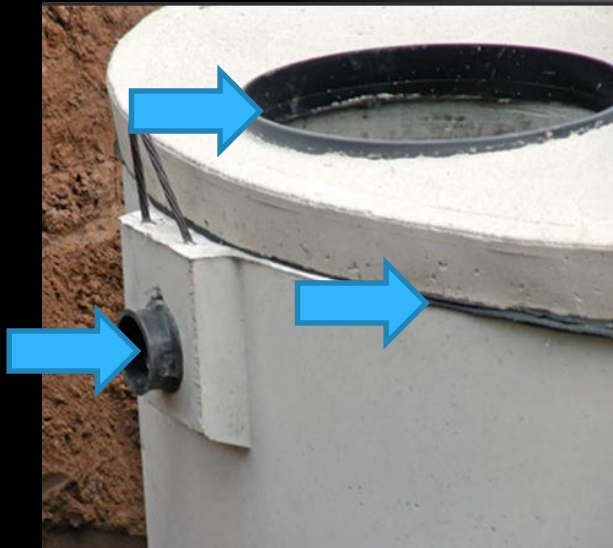
# Keep Excess Water Off Field

- Surface Drainage
  - Low spots
  - Gutters
  - Hardscapes



# Keep Excess Water Off Field

- Watertight Tanks
- Leaking Fixtures

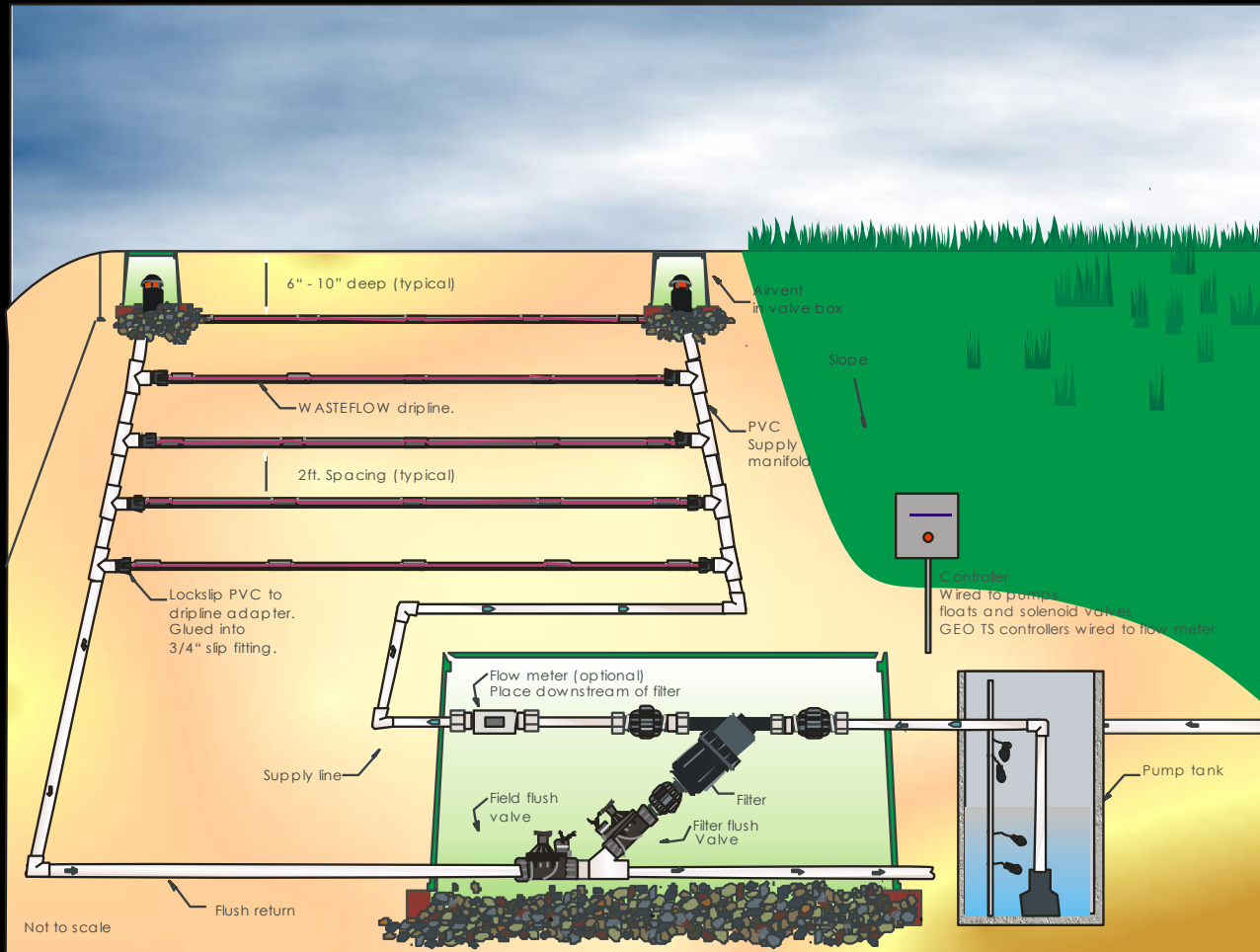




# Pump Tank

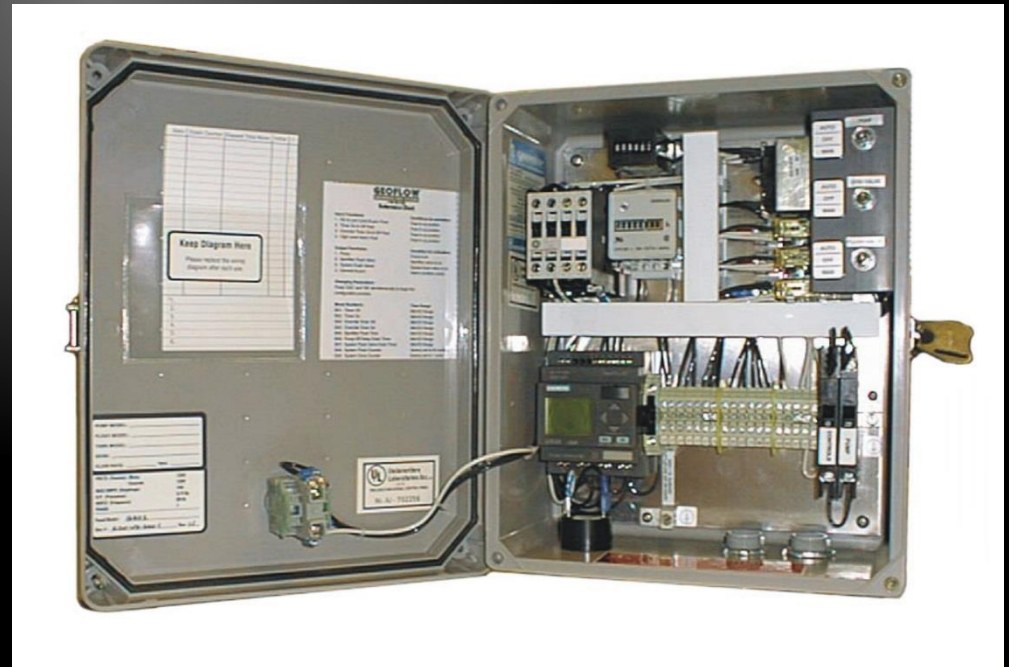
- Bigger tanks -> Fewer Alarms
  - Flow equalization – longer retention times
  - Useable Area

# Typical Layout



# Control Panels

- Time dose drip systems
- Program the panel please
- Watertight



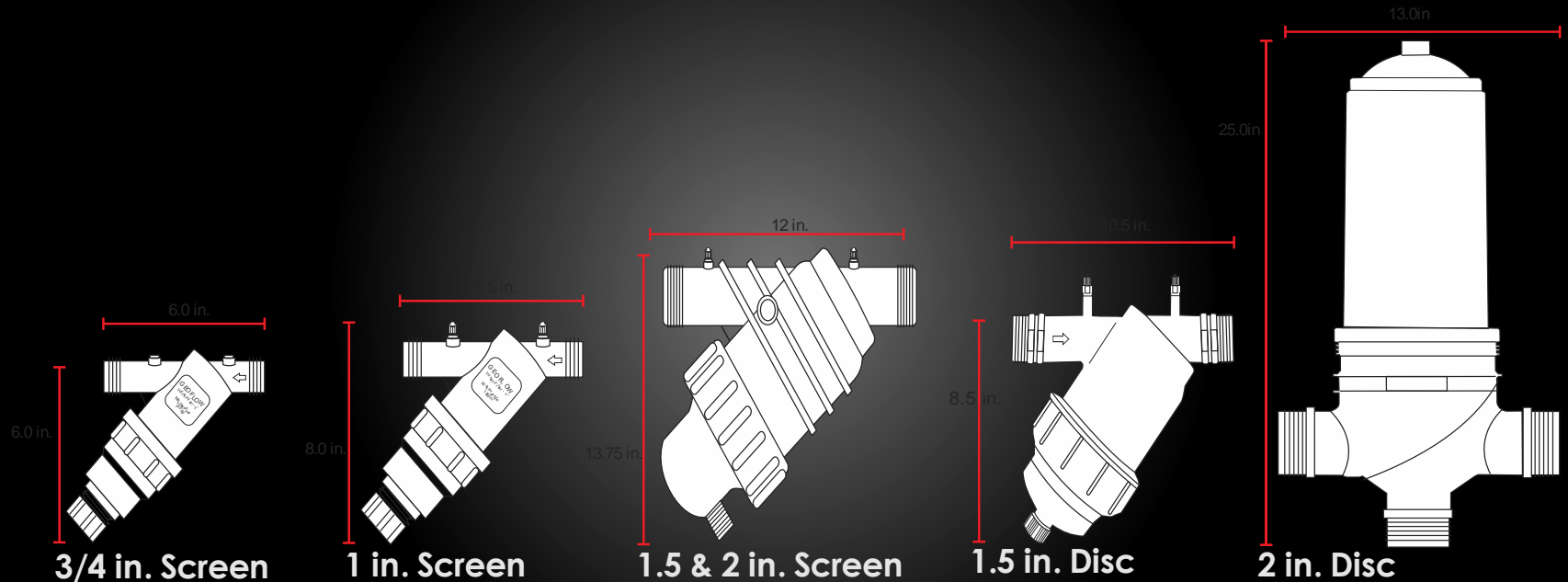


# Drip Filters





# Filter Surface Area



23.6

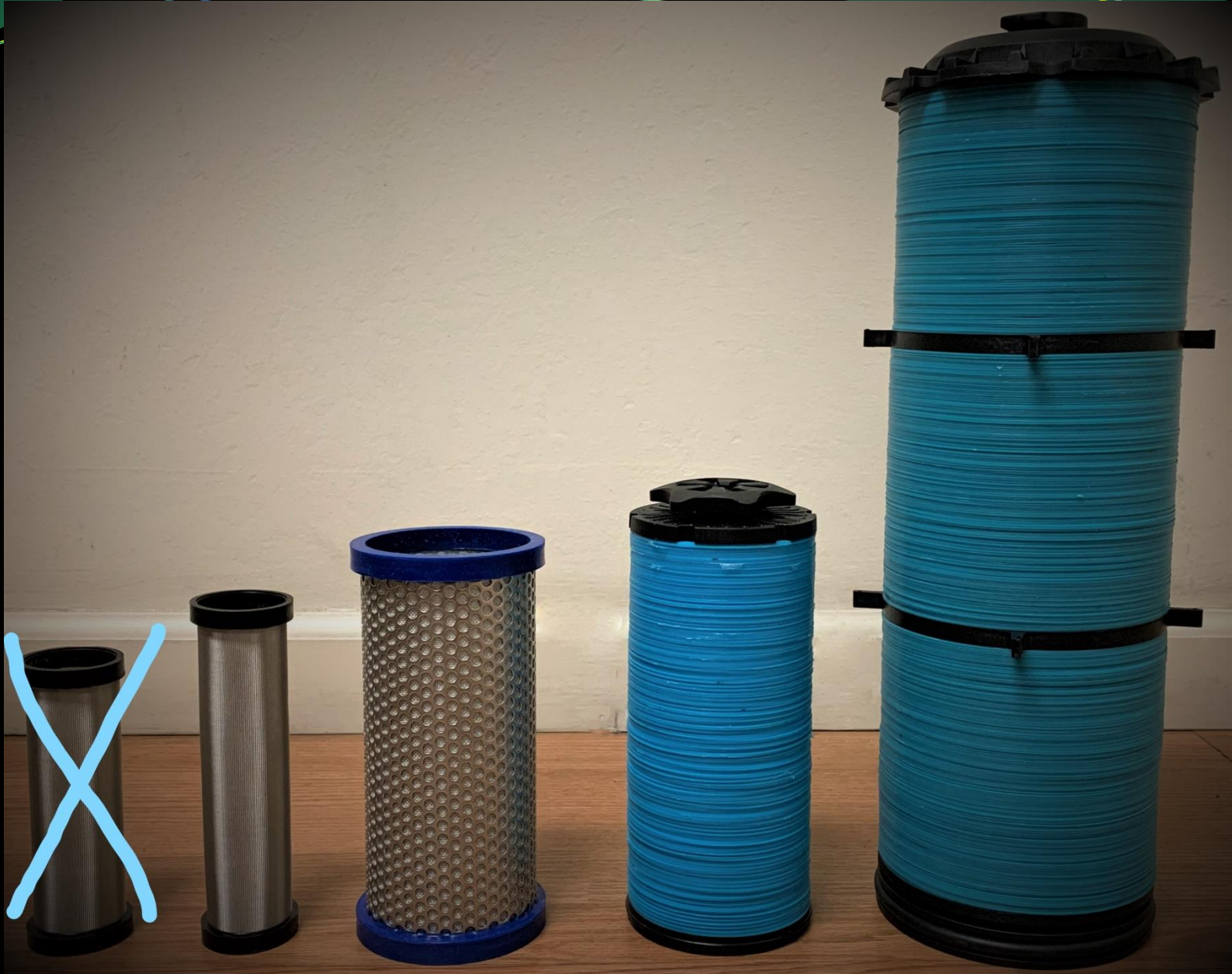
28.4

60.8

99.0

259.0

(square inches)



# Drip Field

- Keep Dripline Clean
  - Cover ends to keep soil out during installation
  - Flush regularly
- Record startup flows and pressures



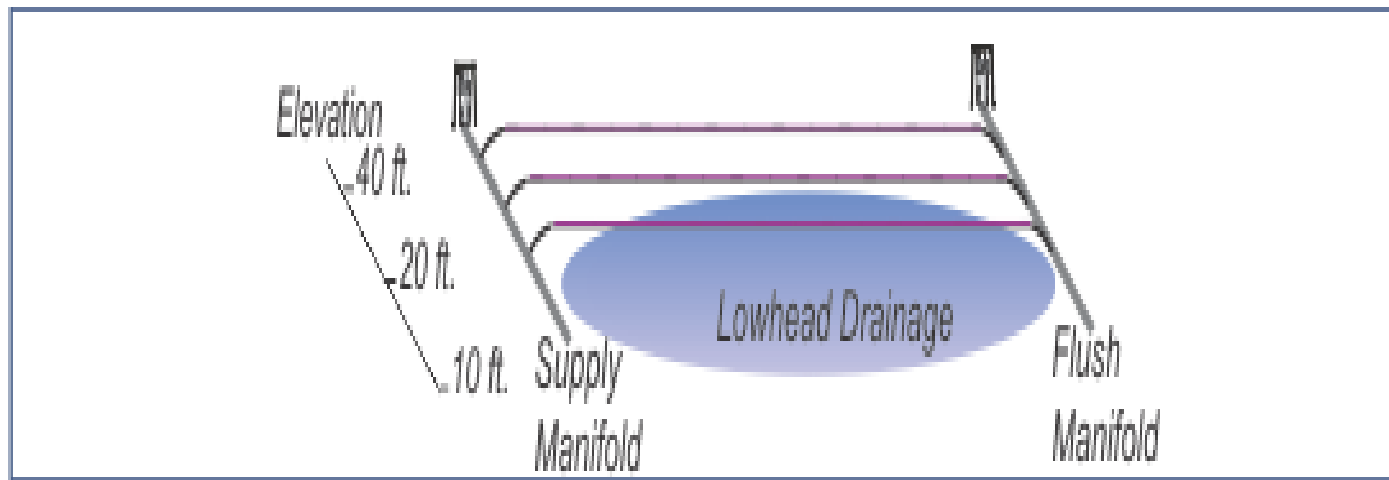
# Common Sense Protections

- Don't dispose strong chemicals into system
- Don't drive or park vehicles over the dripfield
- Don't allow large animals / livestock to walk on it
- Don't build structures over the dripfield area



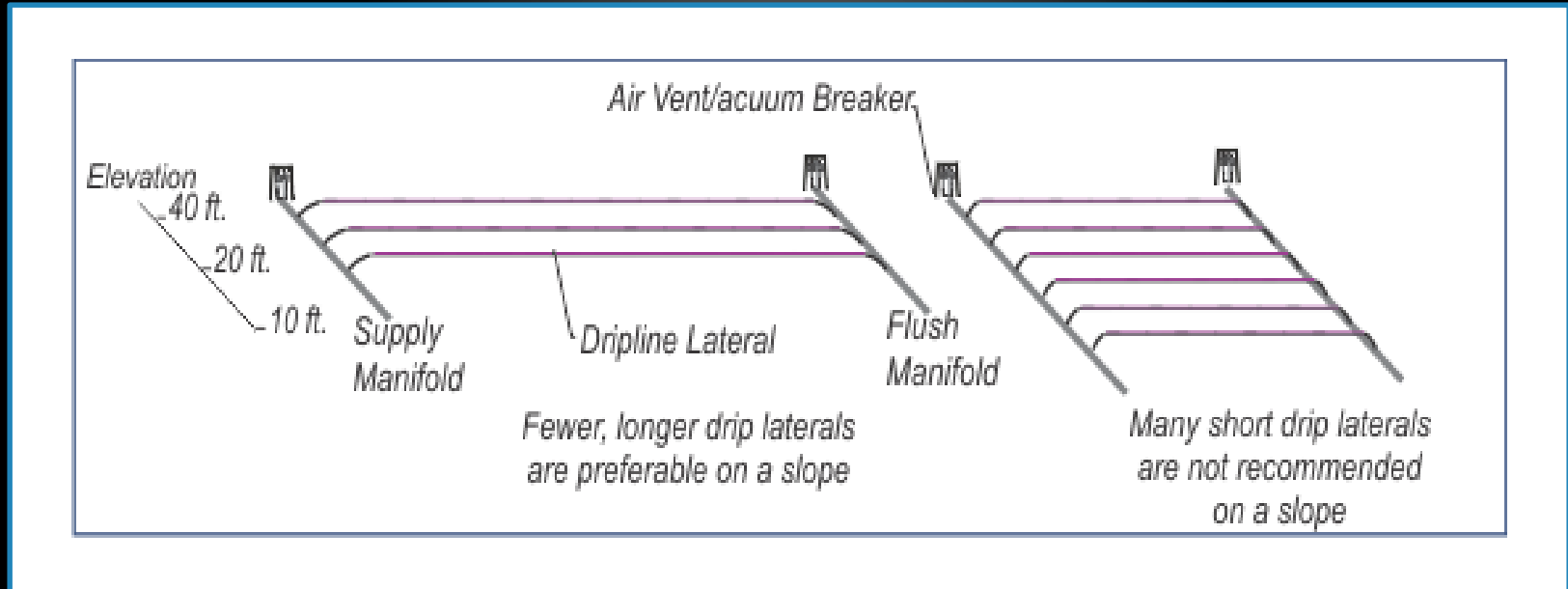
# Drip Field: Low head Drainage

- Water flows in the pipeline and in the soil



# Drip Field: Low head Drainage

- Fewer, longer drip laterals are preferable



# Freezing

- Drain manifolds and dripline back
- Drain rapidly
- Make sure force mains slope properly
  - And are lower than the dripline
- Insulate headworks (if not in pump chamber)
- Insulate air valves
- Install with 8" cover minimum.
- Consider temporary insulation (peat, sawdust etc.) for first year.

# Trained Professionals



- Treatment
- Discharge to Park
- U UV
- F Drip Filter
- Park Boundary

## Sawmill Village

- Water Sources:
  - 2000 gpd tertiary treated effluent plus
  - 1.4 acre storm water detention pond.
- Idea was to create a park and refuge area in a newly developed part of town
- Installation awarded to lowest bid.....

Photo Courtesy of  
Water Management Assoc.



# Trained Professionals



..... Landscaper

- Too many riparian plants for 2000 gpd
- No field or filter flush lines
- Drain lines had NC valves instead of NO valves
- UV placed upstream of filter
- System turned off for winter

# Trained Professionals

- ..... Good news from Richard Jennings, the engineer:  
  
“With collaboration of qualified parties, the original vision of a park using sourced water with carbon sequestration will happen.”
- Owners and NM State ED agreed to monitoring and reporting plan
- Licensed operator will direct the project
- Auto flush BioDisc filters will replace irrigation filters
- Appropriate zoning and plants will be installed
- Will run year – doubling water budget

# Training

NAWT

[www.nawt.org](http://www.nawt.org)

NOWRA

[www.nowra.org](http://www.nowra.org)

GEOFLOW

[www.geoflow.com](http://www.geoflow.com)



# Questions