

A misty, teal-toned landscape with mountains and a lake. The scene is hazy and atmospheric, with a soft light source in the center background. The mountains are layered, and the water in the foreground reflects the surrounding environment.

Weeds on Ditches

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Who, What, Where, When, Why, How

- Why: Is this really that important? (yes, yes it is)
- How: They spread, and how to help control them
- Where: Irrigation ditches and other waterways
- Who: Which weeds are most problematic?
- When: Seasonal Impacts/Timing events
- What: We can do?

Roto-tilling the ditch...



Dissemination of Weed Seeds by Surface Irrigation water in Western Nebraska

-By R.G. Wilson Jr.

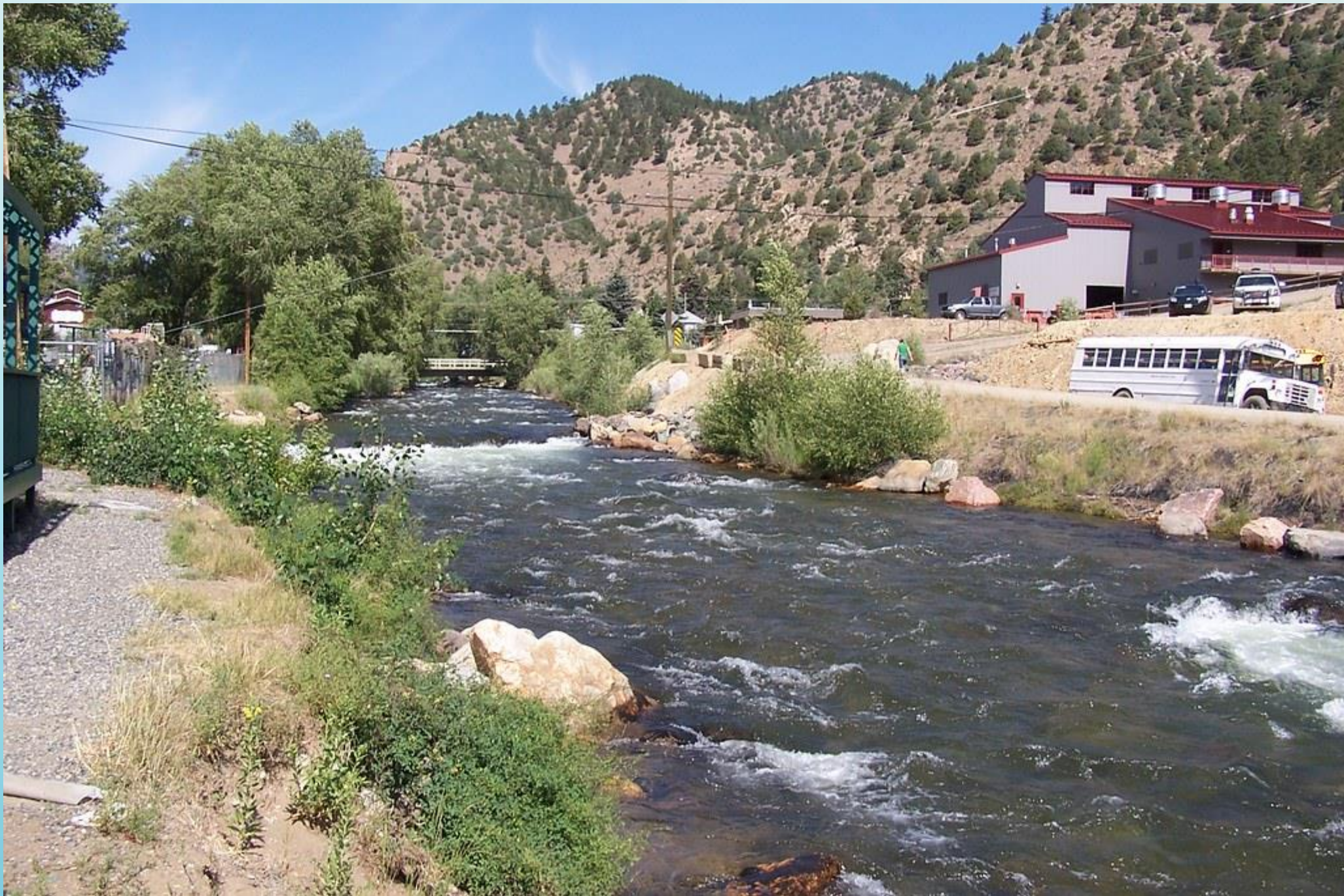
“Studies were conducted in 1977 and 1978 to evaluate the impact of surface irrigation water on the dissemination of weed seed in the North Platte River Project from May through September each year. Seventy-seven different plant species were found in irrigation water, with germination averaging 26%. Two-five times more weed seed were found in two irrigation canals than in the North Platte River. As water moved through the canals the weed seed content in the water increased dramatically. The majority of seed collected was found floating on the water surface. Amounts of seed collected varied with time with the largest amounts being collected in June and July and gradually declining in August and September. Samples were also taken to determine the amount of seed entering the field with irrigation water during the growing season. During the 1978 growing season irrigation water disseminated 48,400 seeds per ha in the sampled fields.”

Journal of Weed Science, 1980

Why it's important

- Preventing weeds from spreading is a good management practice.
- Saves labor and money.
- Weed seeds travel by water and will germinate after being in water for months or even years depending on the seed



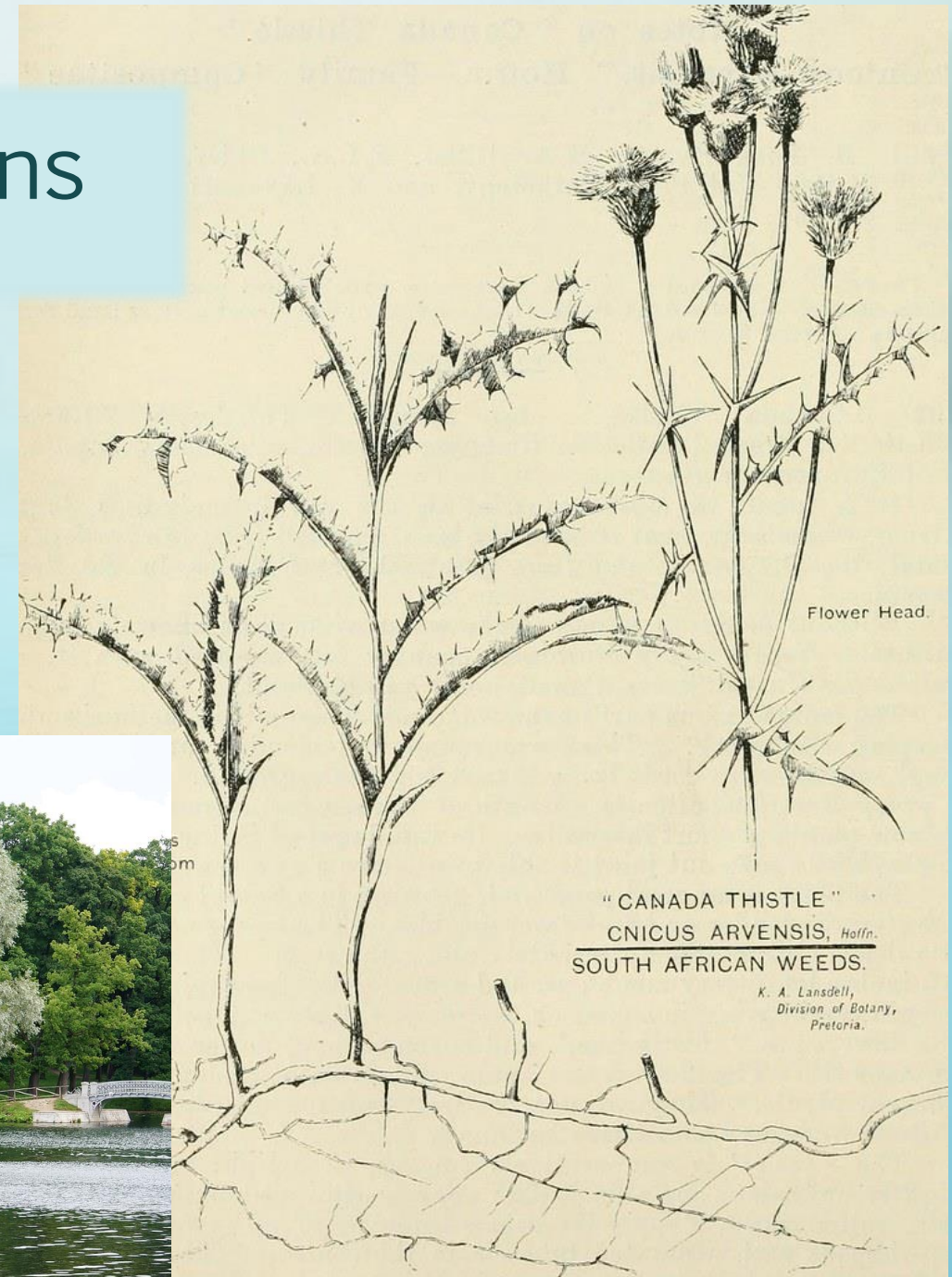






How it Happens

Cover crop seed demo



Flower Head.

"CANADA THISTLE"
CNICUS ARVENSIS, Hoffm.
SOUTH AFRICAN WEEDS.

K. A. Lansdell,
Division of Botany,
Pretoria.

Who

- Most problematic
 - Thistles
 - Bindweed
 - Mullin
 - Knapweeds
 - Toadflax
 - Russian Olive
 - Cheat grass



Weeds that spread via “waterways”

- Common caraway
- Poison hemlock
- Swamp milkweed
- Showey milkweed
- Common ragweed
- Common Burdock
- Biennial wormwood
- Common sagewort
- Musk thistle
- Canada goldenrod
- Smooth scouringrush
- Common reed
- Purple loosestrife
- Spurred anoda
- Reed canarygrass
- Japanese knotweed
- Virginia groundcherry
- Common cattail
- Wild licorice
- Hogpotato
- Perennial sowthistle
- Saltgrass
- Rabbitfoot polypogon
- Kikuyugrass
- Curley dock
- Bittersweet nightshade
- Common cocklebur
- Wild mustard
- Perennial pepperweed
- London rocket
- Kochia
- Purple nutsedge
- Common teasle
- Castorbean
- Goatsrue
- Stinging nettle

When

- Seasonal Impacts
- Seeds surviving in frozen water
- Winter annuals



Fire impacts



- Year 1?
- Year 2?
- Year 3?

What we can do

- Prevention!
 - Control weeds, work with neighbors
 - Burning ditches
- Physically Capture Weeds
 - Socks
 - Screens
 - Bubblers
- Chemically treat weeds
 - Pre-Emergents
 - Herbicides in waterways
 - Weed treatment in fields



Prevention



Burning Ditches



Screen/Socks/Bubblers

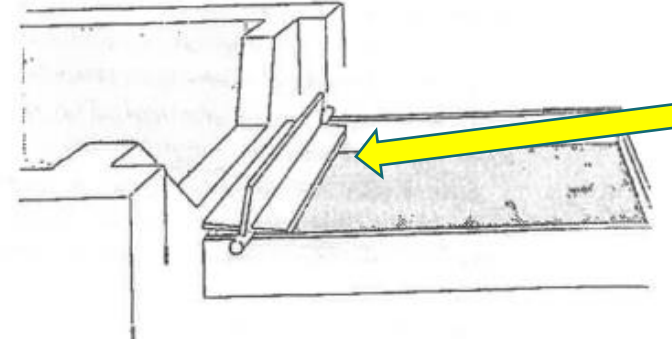
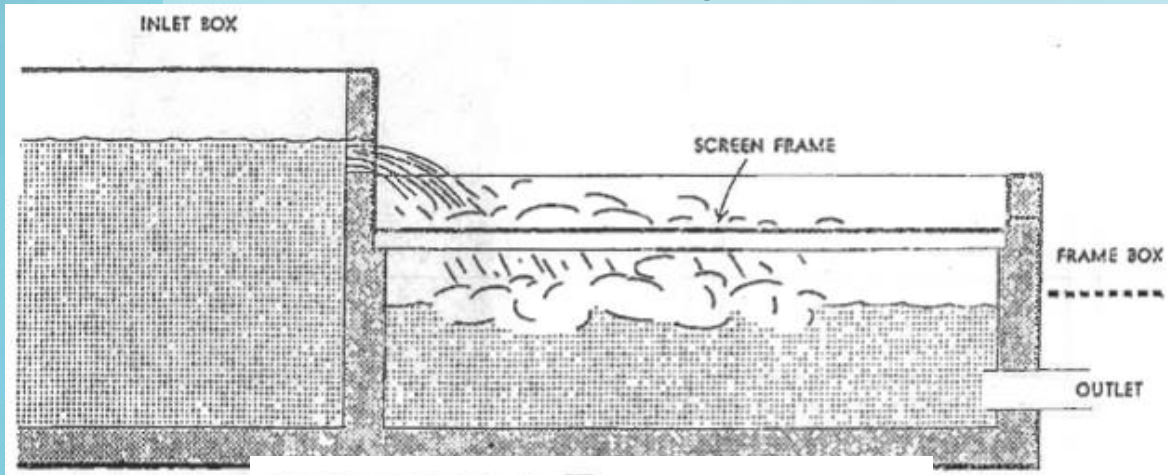
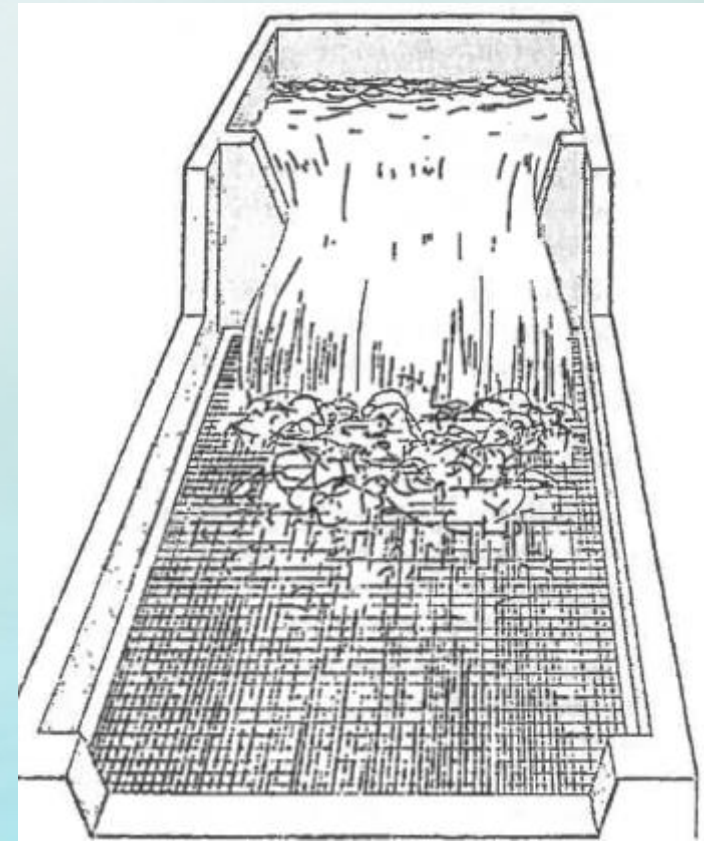
- Samples of materials gathered from these materials contained up to 4.5% weed seeds with over 40 different weed species
- It is much easier to clean screens and burn seeds than to spray a field for weeds!
- Cleans out other debris
- Prevents clogging in irrigation systems (sprinkler, drip, pipe)



The best system for each situation varies!

Screens – For drop systems

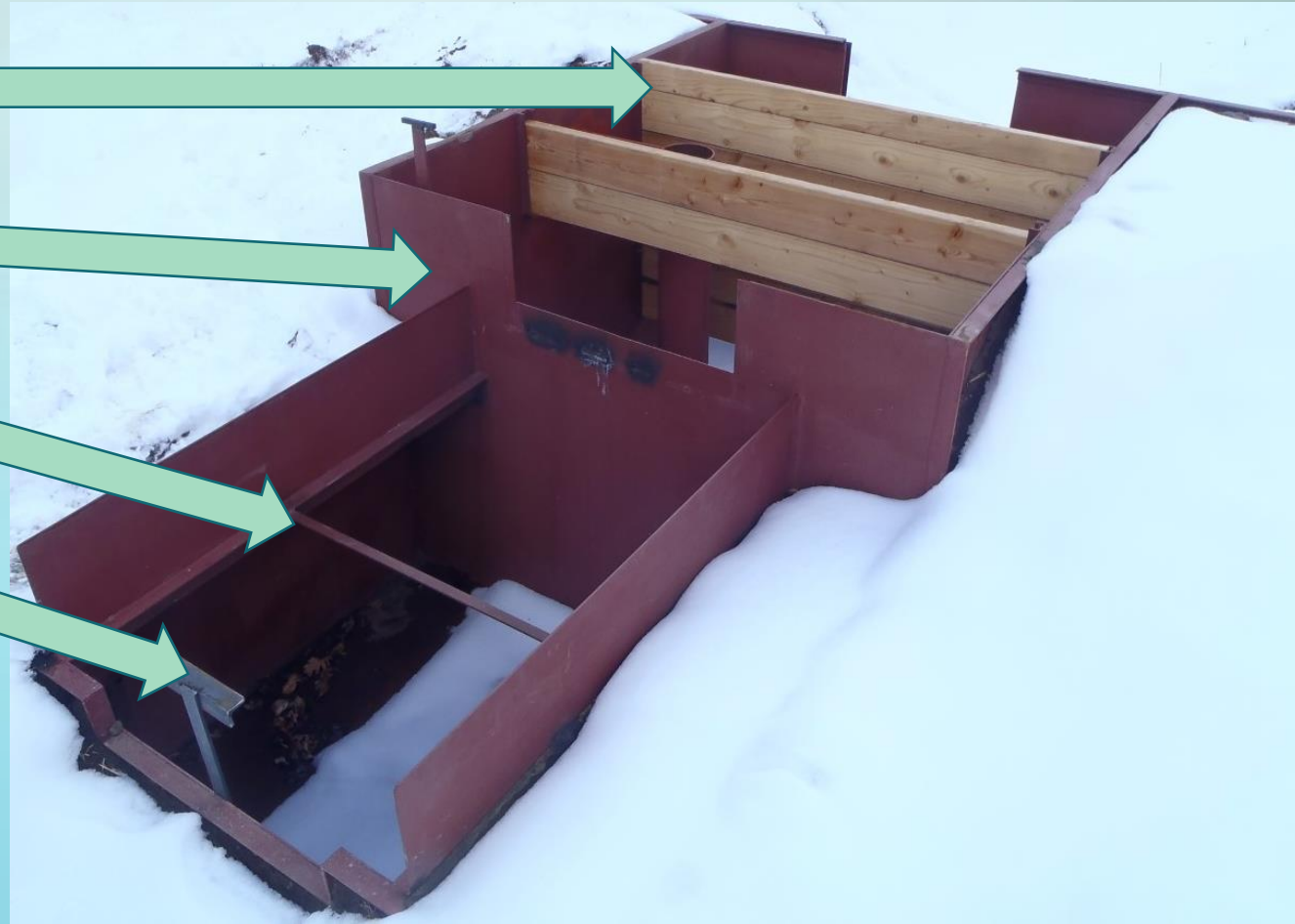
- If the system has a drop you can use a flat screen.
- Screen is stretched over a frame places in a box with high sides to control splashing and overflow.
- Must have a drop of 9” to make screen self cleaning.



- Increasing the width of the waterfall reduces the needed drop.
- Adding agitation devices can help increase water width.
- Vibrations are crucial for self cleaning.

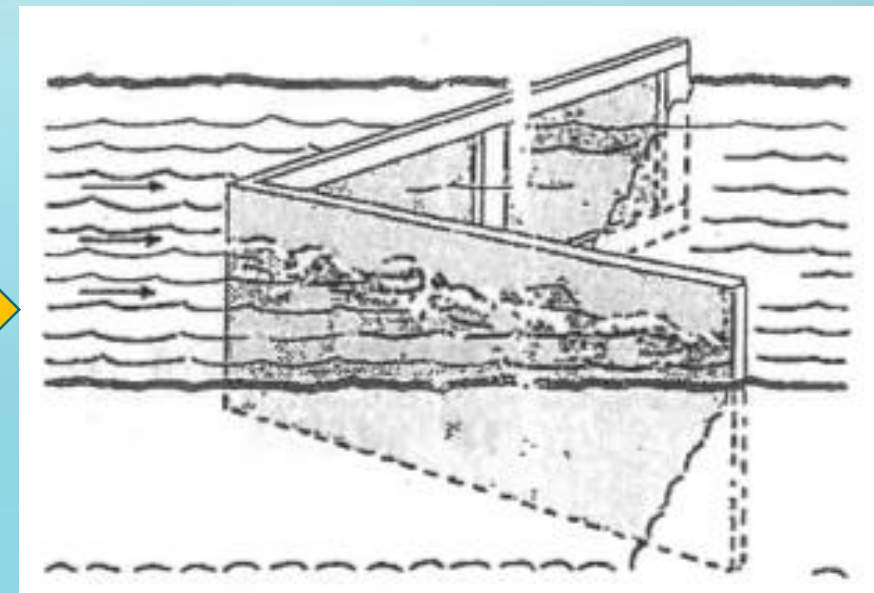
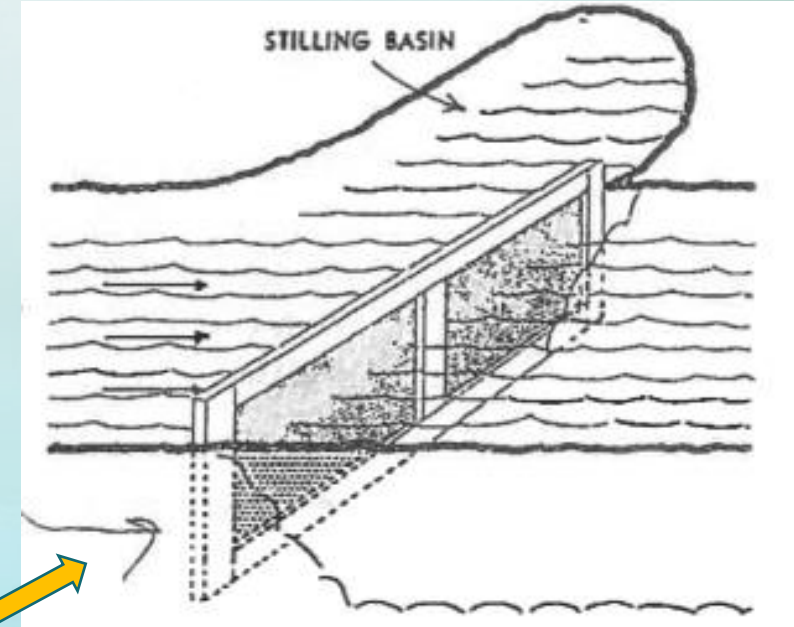
In real life!

- Skimming boards
- De-silting box
- Screening box
- Pipe inlet



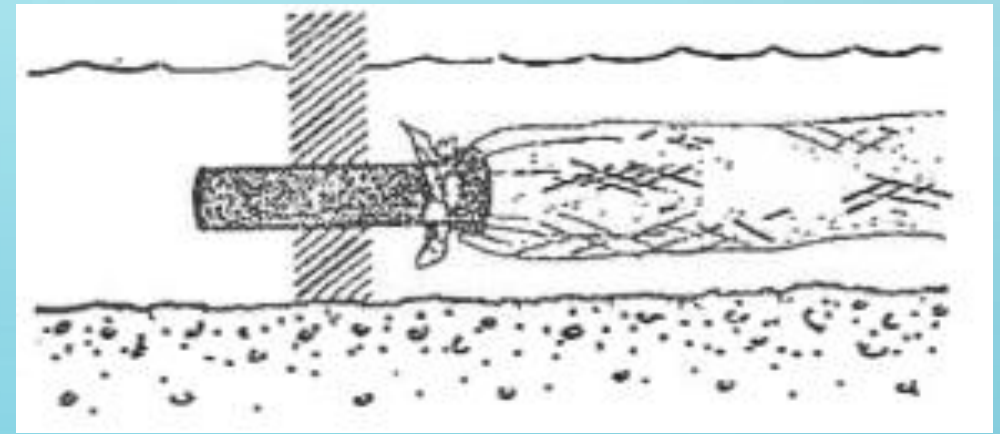
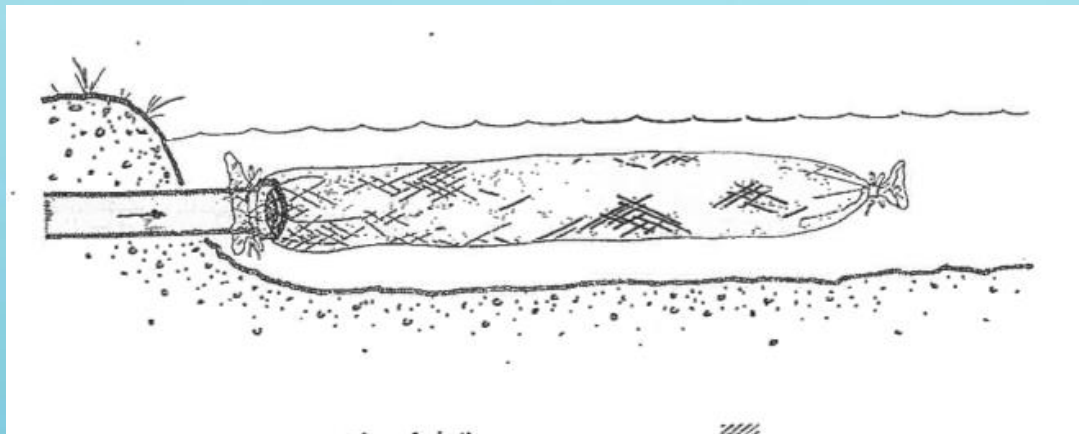
Screens – For Systems Without a Drop

- Flat screen on edge
- Limited use due to lack of self cleaning
- Needs a very large screen area
- Buried frame edges and a weight on top of the screen are needed.
- Vertical diagonal screens that cross the ditch at about a 45 degree angle divert trash into a stilling basin
- Vertical A-frame screens trap trash but are hard to clean and must be cleaned often



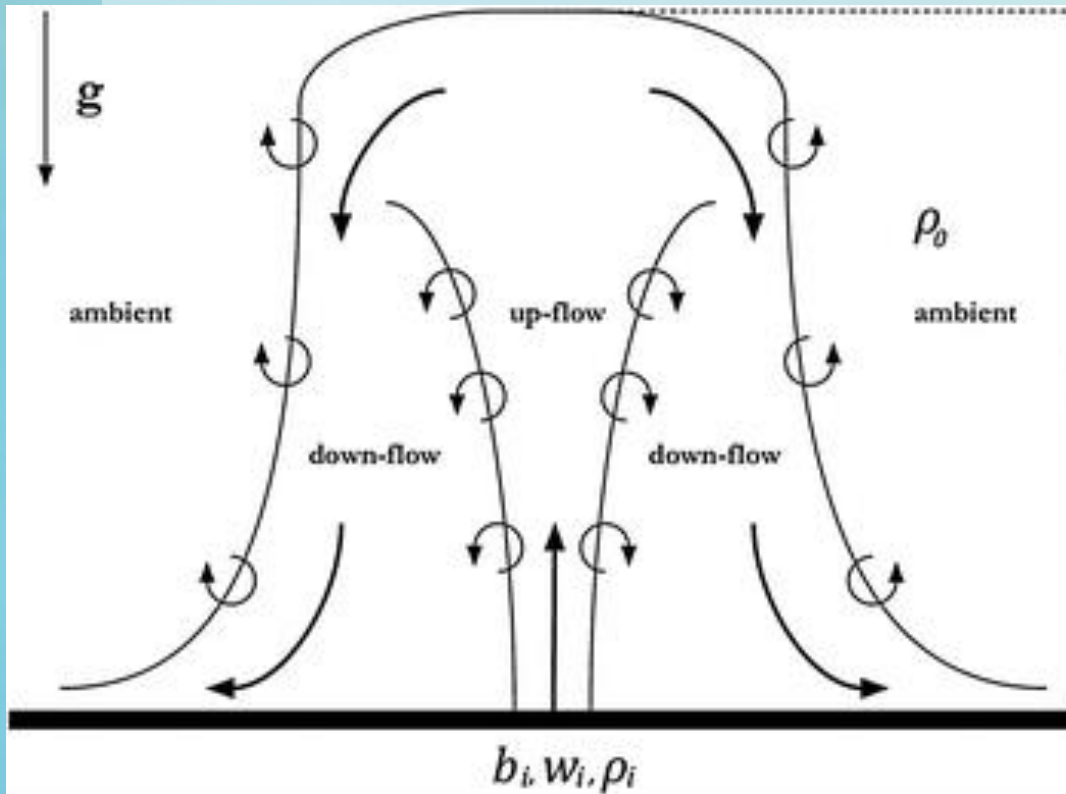
Socks

- Simpler and cheaper to install than framed screens
- Tubes of plastic filter cloth
- Usually attach to inlet pipes
- Do not work well on sites with moss/algae issues
- Needed length of sock varied on amount of water flowing in the system
- A 10' sock will be able to screen about 60 square feet or 3 second ft of water



Turbulent Fountain / Bubbler

- <https://www.youtube.com/watch?v=cWJHXpWW1gM>



Care and Keeping of Weed Screening Devices

- Most screens need at least daily cleanings, although they can need MUCH more depending on the structure, water flow, and debris/weed density.
- Moss and algae are really troublesome for these systems. If present keep spare screens for cleaning times and consider using copper sulfate.
- “From the standpoint of irrigation water flow, a neglected screen is worse than none at all.” -Weed Seed Screens for Irrigation systems, PNW Extension

Cover Crops



Avoiding bare spots



Herbicides

When weeds do make it in the system

- Copper sulfate
- Aquatic herbicides
- Pre-emergent
- Field herbicides



Weeds on Ditches

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