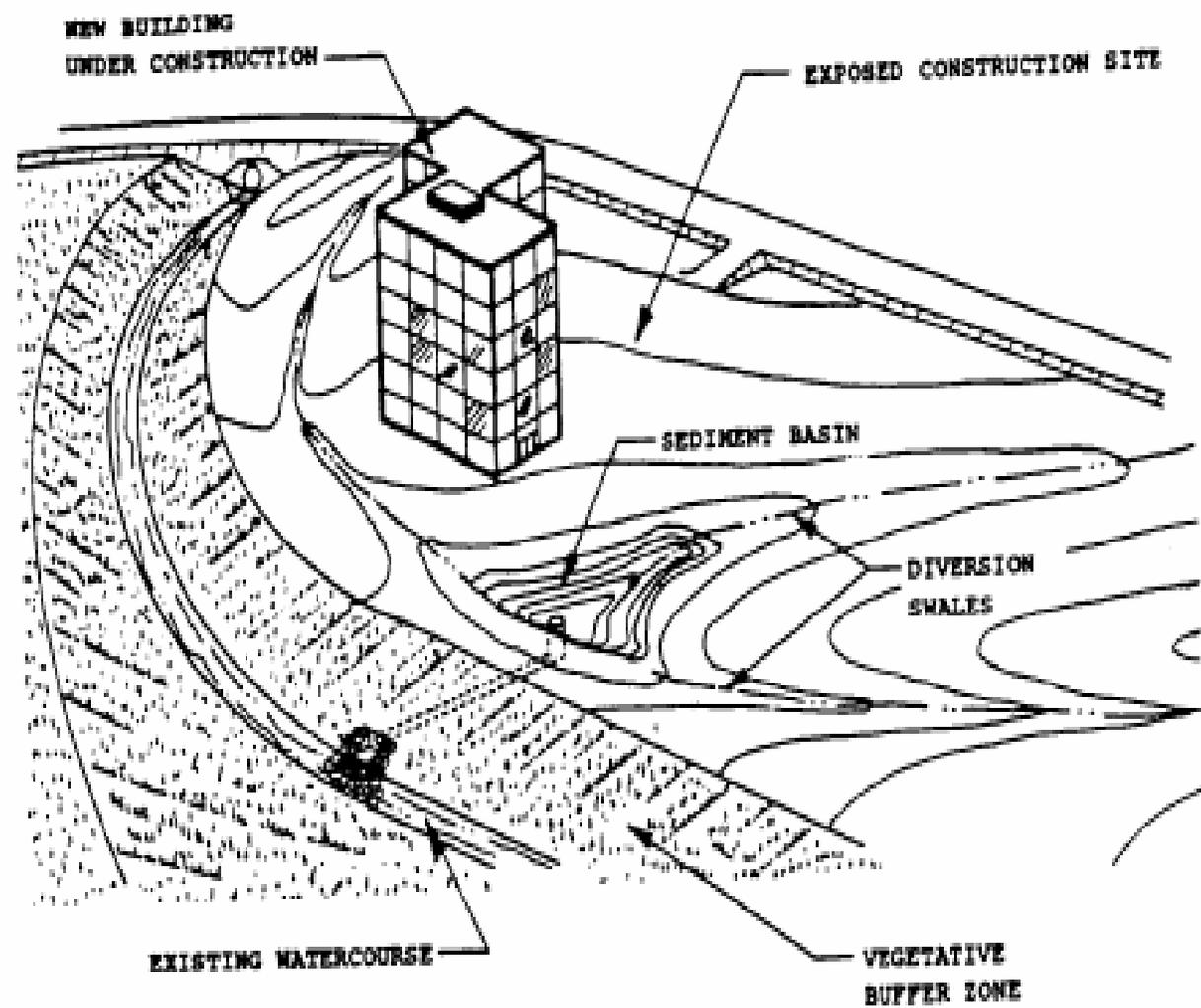




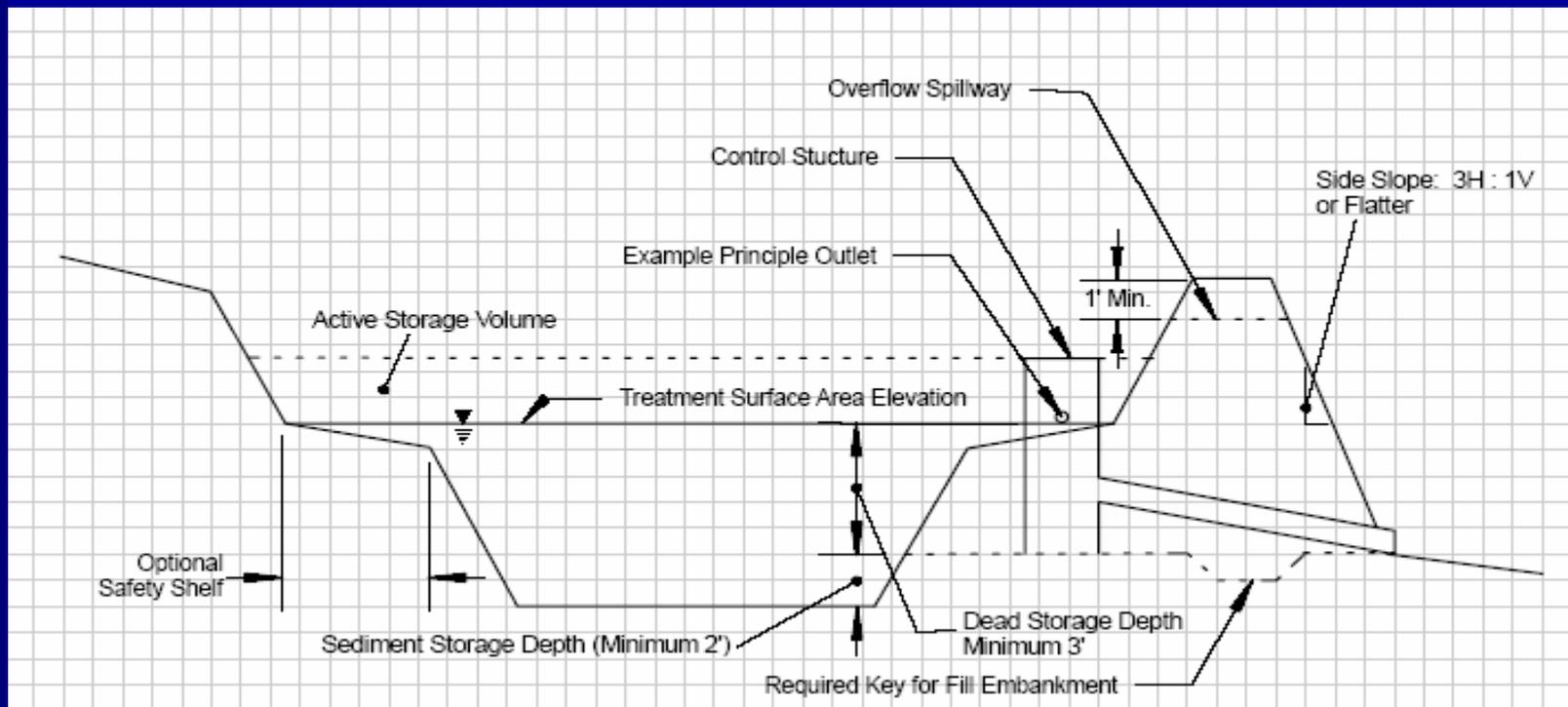
# Sediment Basin

1064



# New Sediment Basin Criteria

- Treatment Surface Area
- Depth of Treatment Surface Area
- Active Storage Volume



# Treatment Surface Area

$$Sa = 1.2 * (Q_{out}/Vs)$$

- **Sa = Surface area at lowest outlet (sq ft)**
- **Qout = Peak outflow during 1-yr, 24-hr event (cfs)**
- **Vs = Target particle settling velocity (fps); 3 soil classes with polymer option**



# Depth of Treatment Surface Area

- 50% of surface area minimum 5-ft deep
- Maximize 5-ft deep area for surface area < 5,000 sq ft



# Active Storage Volume

- TR-55 detention basin storage volume method or pond routing calculations
- 1-yr, 24-hr design storm through principle outlet



- Permanent storm water ponds can be used as sediment basins during site construction



Can the basin be constructed?

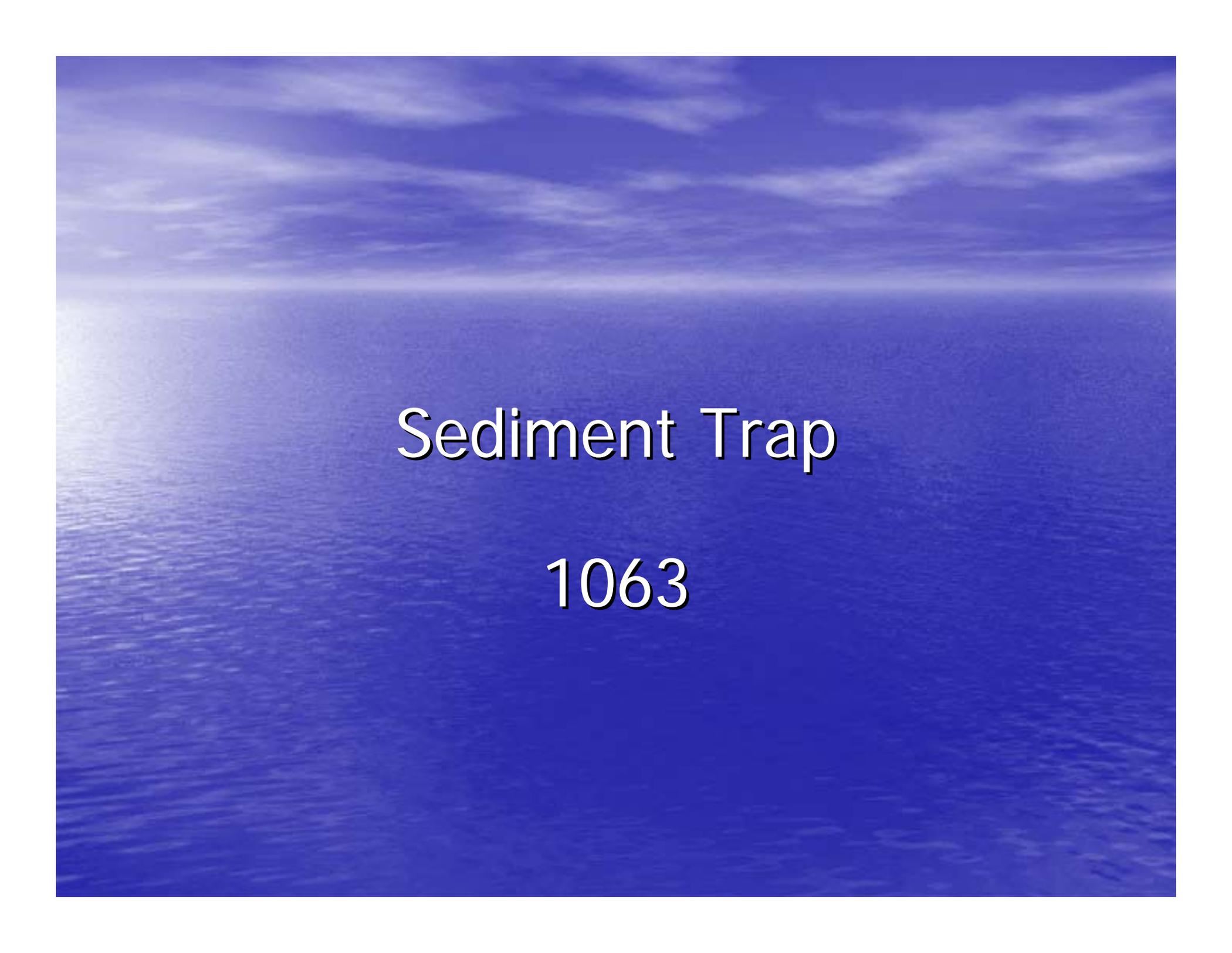


Where will excess soil be placed?



When will outlet structures be installed?



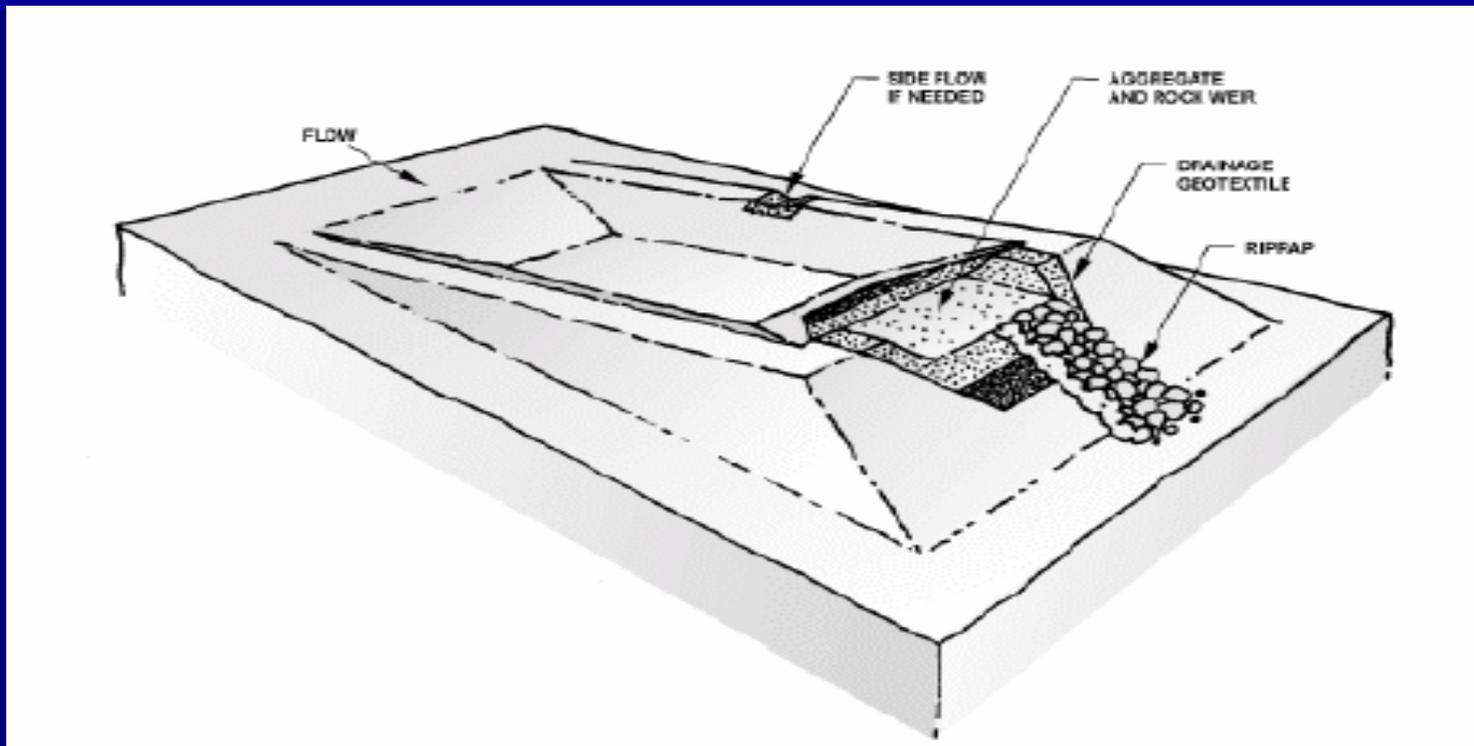
An aerial photograph of a vast, deep blue ocean stretching to the horizon. The sky is a lighter blue with wispy white clouds. The water's surface shows subtle ripples and a slight gradient of blue from the foreground to the horizon.

# Sediment Trap

1063

# New Sediment Trap Criteria

- Surface Area
- Depth
- Outlet



# Surface Area

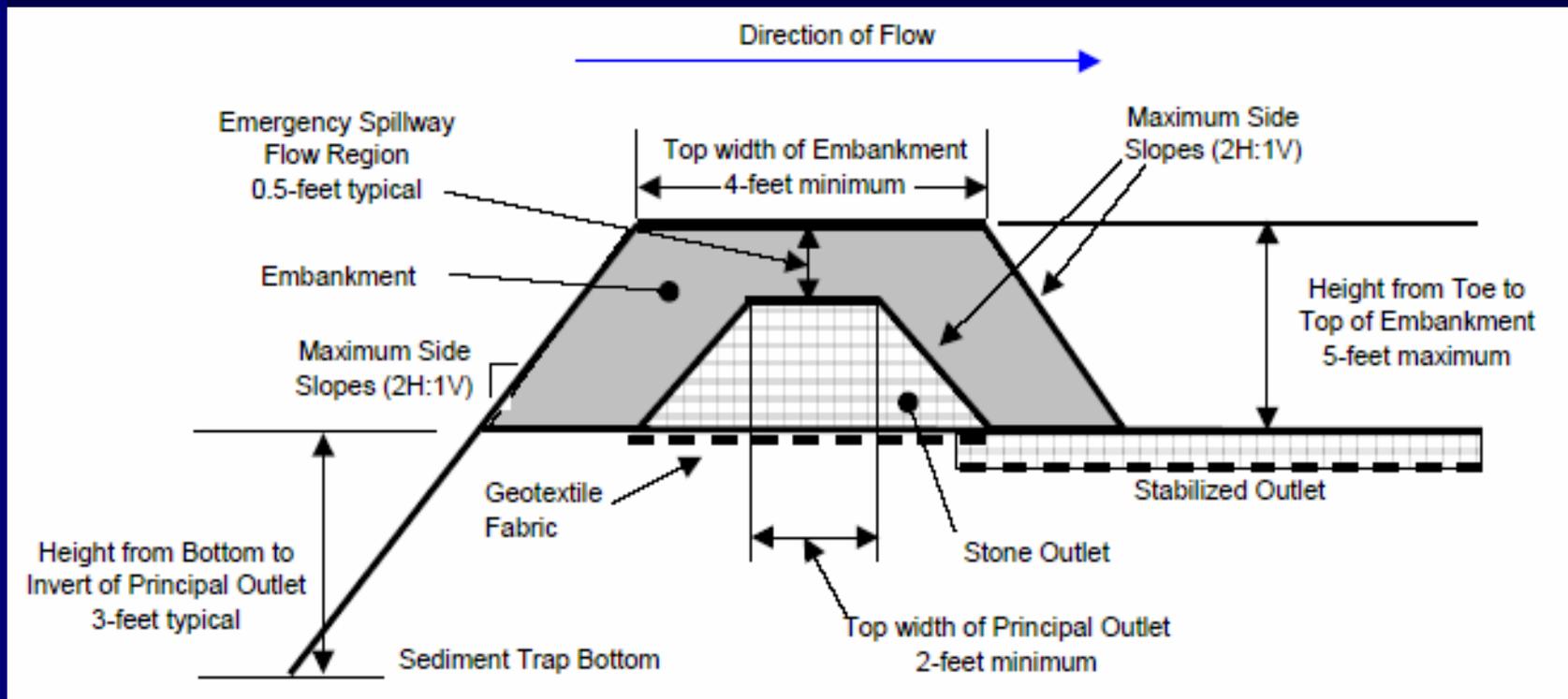
$$A_s = SF * A_{dr}$$

- $A_s$  = Surface area at invert of stone outlet (sq ft)
- $A_{dr}$  = Contributing drainage area (acres)
- SF = Factor based on soil texture; 3 soil classes with polymer option



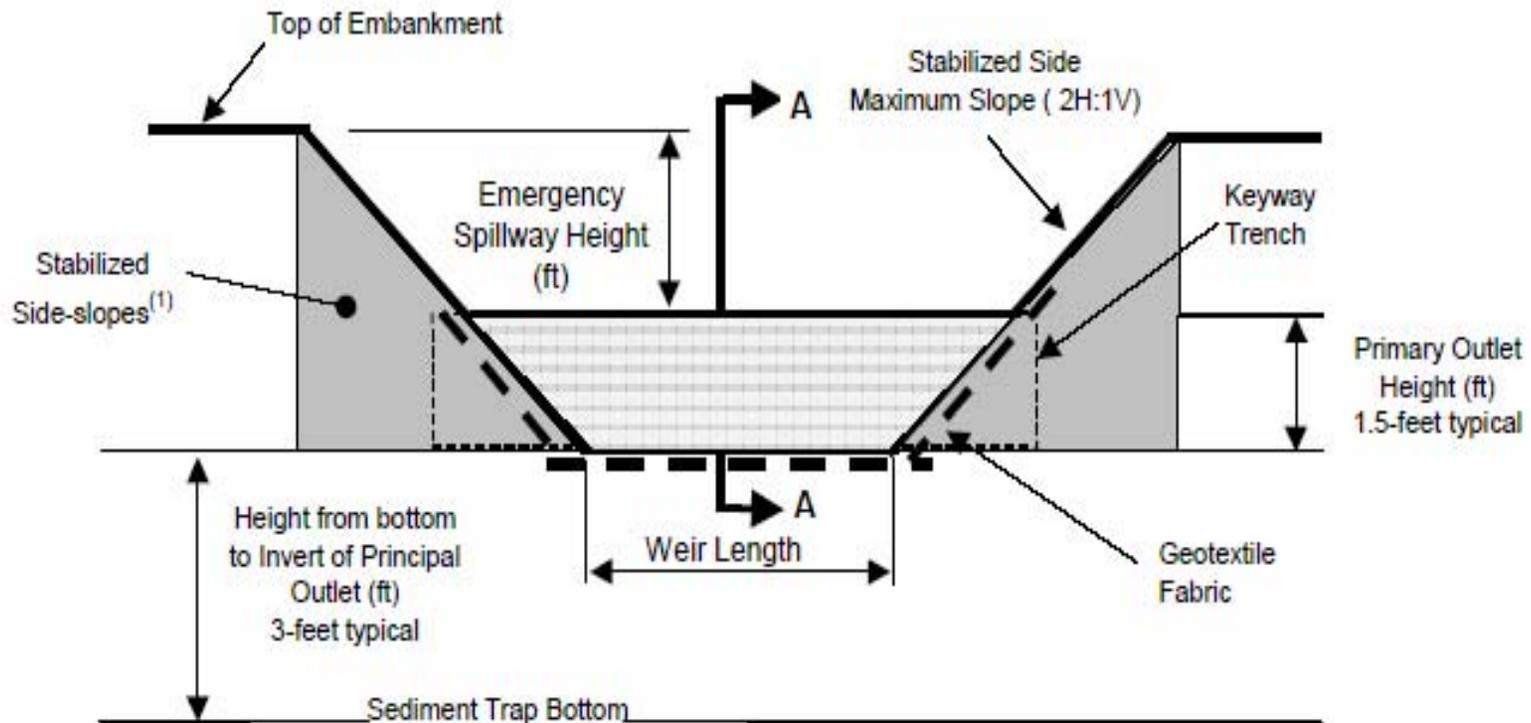
# Depth

- 3-ft from bottom of trap to invert of stone outlet
- Side slopes no steeper than 2:1
- If site conditions prevent 3-ft depth, equivalent storage volume must be created by increasing surface area



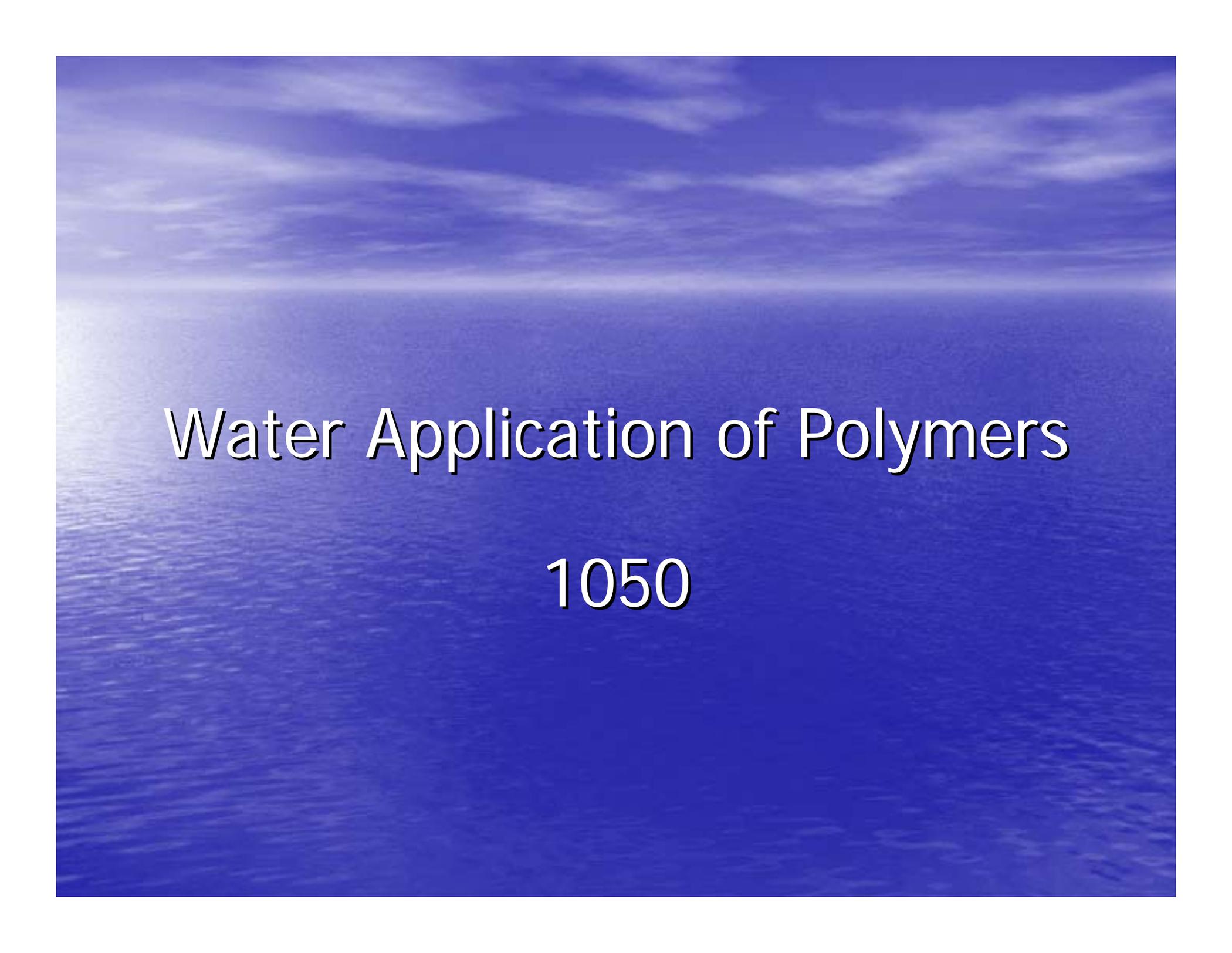
# Outlet

- Use angular well graded 3 to 6 inch clear washed stone
- Use keyway trench to protect from undercutting
- Filter fabric optional



Contributing drainage area must be less than 5 acres

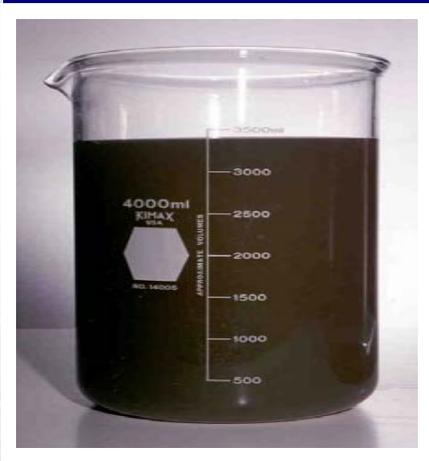




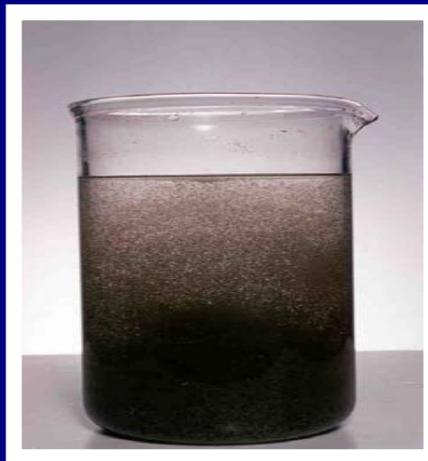
# Water Application of Polymers

1050

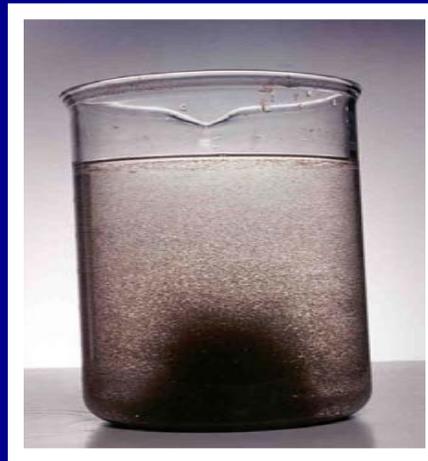
# Polymers can be used to enhance settling and reduce surface area of sediment basins and sediment traps



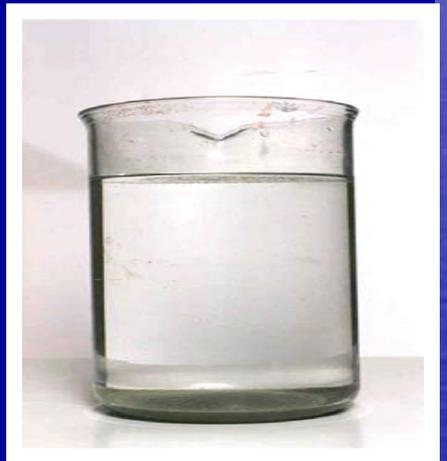
**Time 0**



**1 min.**



**15 min.**



**2 hours**



Soil Net-TRIPAM Polymer

- Polymers products need DNR use restriction and application rate letter

Storm-Klear Gel-Floc™

APS 700 Series Floc Log

CF-505

# Passive Application





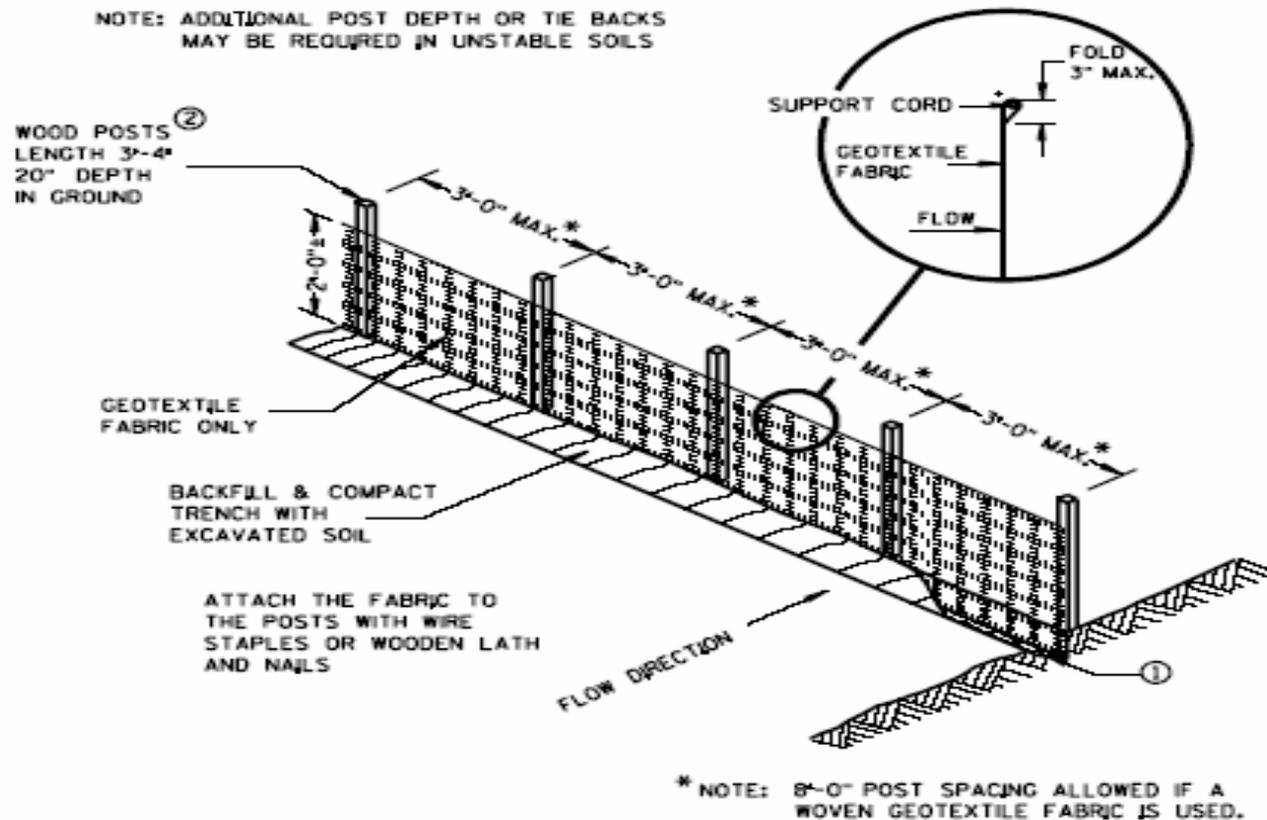
Active Application



# Silt Fence

1056

# New Fabric Specifications & Detail



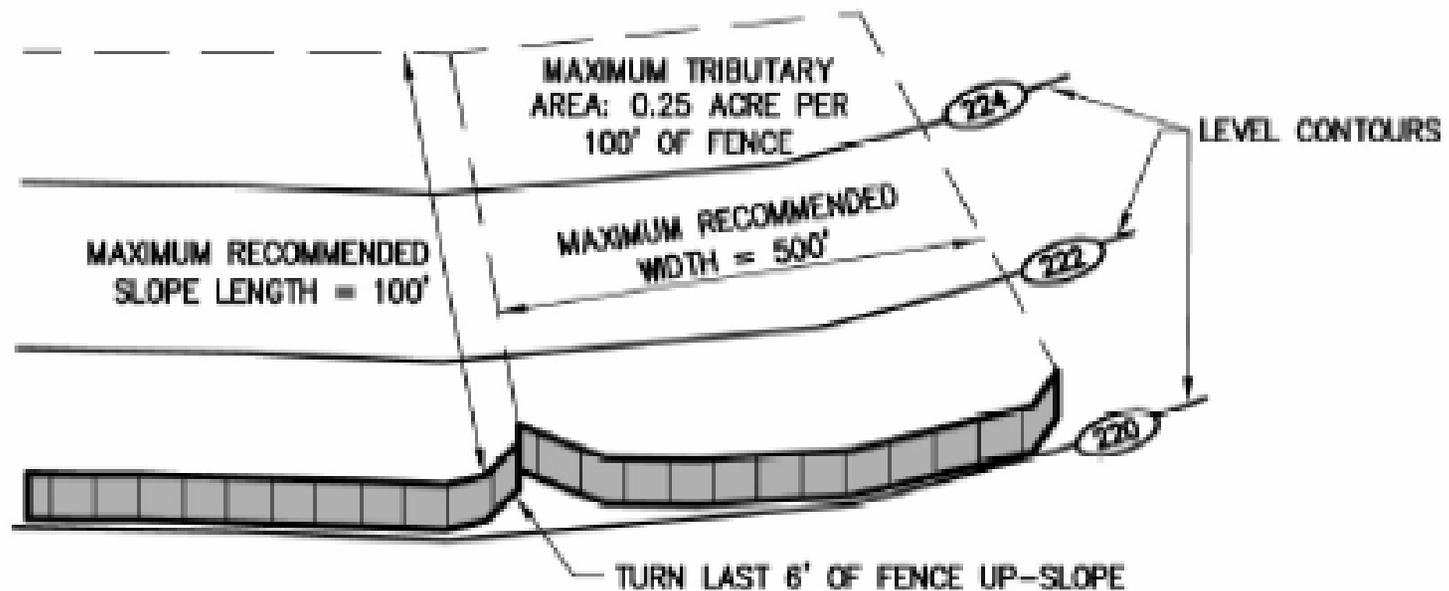
**SILT FENCE**

Joining two lengths of silt fence is addressed in the new detail



# Placement

- Maximum slope length (see Table 1)
- Place on the contour
- Extend ends upslope



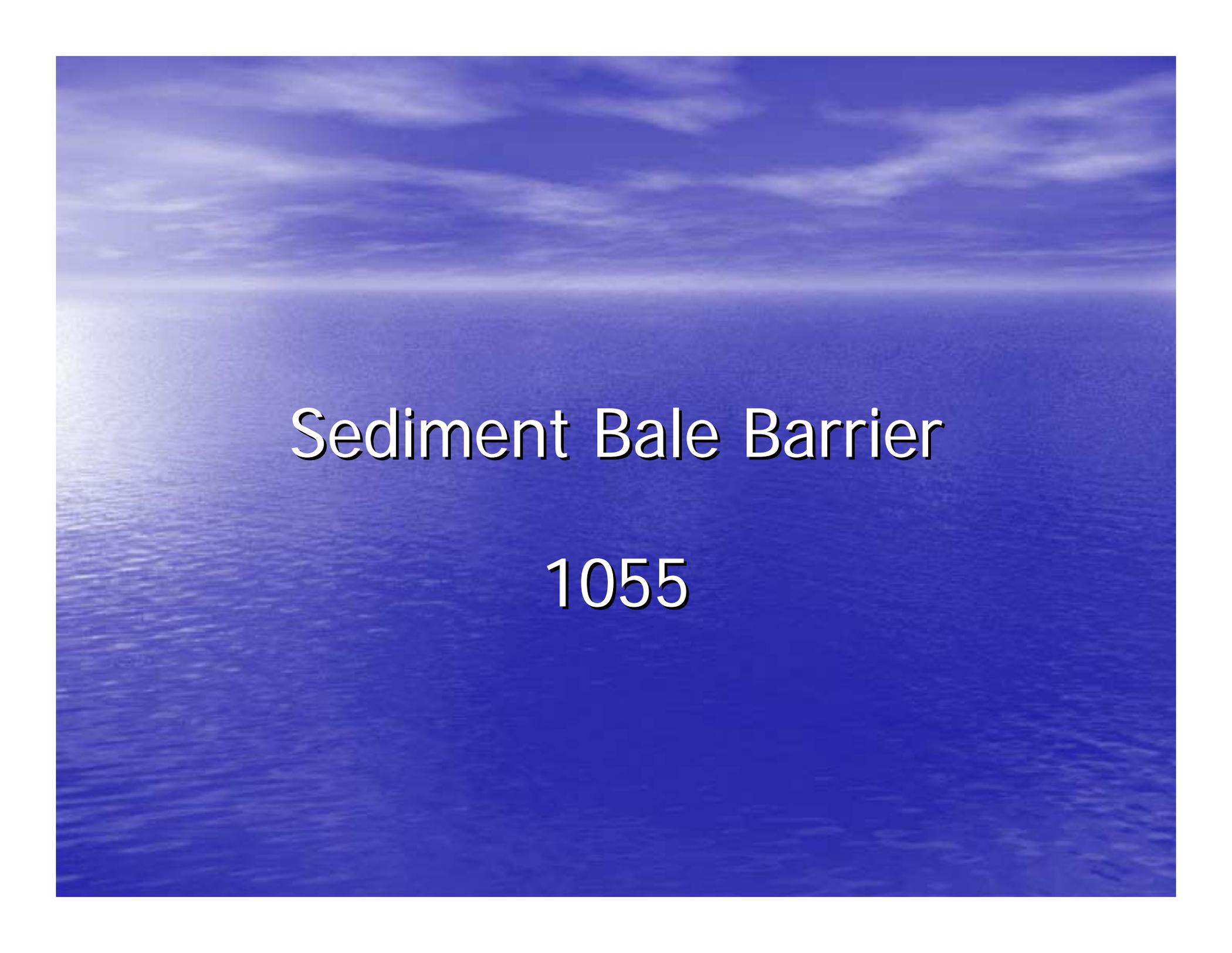
TYPICAL PREFABRICATED SEDIMENT FENCE LAYOUT

Silt fence is only appropriate for small drainage areas (sheet flow conditions)



Silt fence should not be placed in swales, ditches or any other locations where flow is concentrated



A blue-tinted photograph of a vast ocean under a cloudy sky. The text "Sediment Bale Barrier" is centered in the middle of the image.

# Sediment Bale Barrier

1055

## Placement

- **Similar to silt fence**
- **Sheet flow conditions**
- **No channels**  
(see Ditch Check tech standard for bales in channels)



Sediment bale barriers are only effective for 3 months



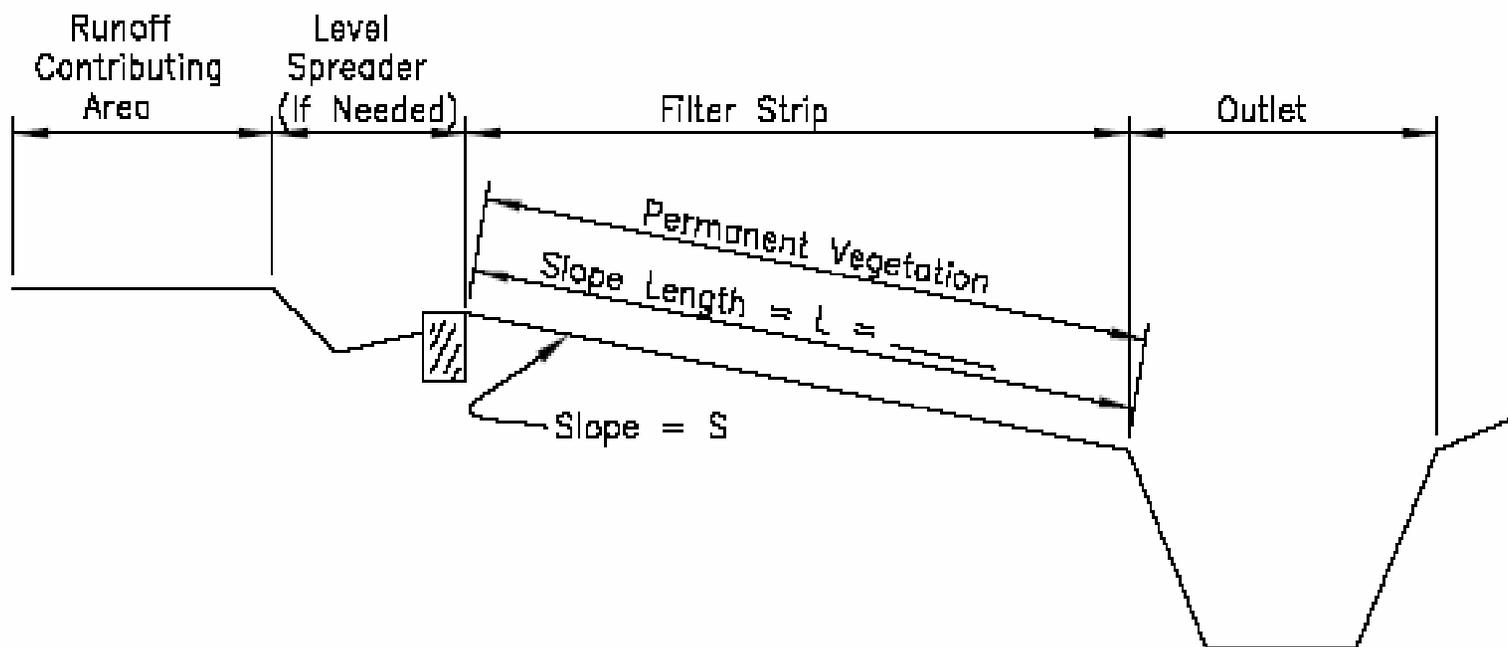


# Vegetative Buffer for Construction Sites

1054

# Vegetated Buffer Criteria

- Sheet flow conditions
- Located along entire length of disturbed area
- Located on the contour
- Densely vegetated before land disturbance



SECTION VIEW

## Vegetated Buffer Criteria

- Disturbed area to buffer 6% slope or less
- Width of buffer < 5% slope
- Buffer width 25-ft minimum



# Dewatering (1061)

# Dewatering Solutions



Too Small







# Water Application of Polymer for Dewatering



# Passive Application (Super Simple)

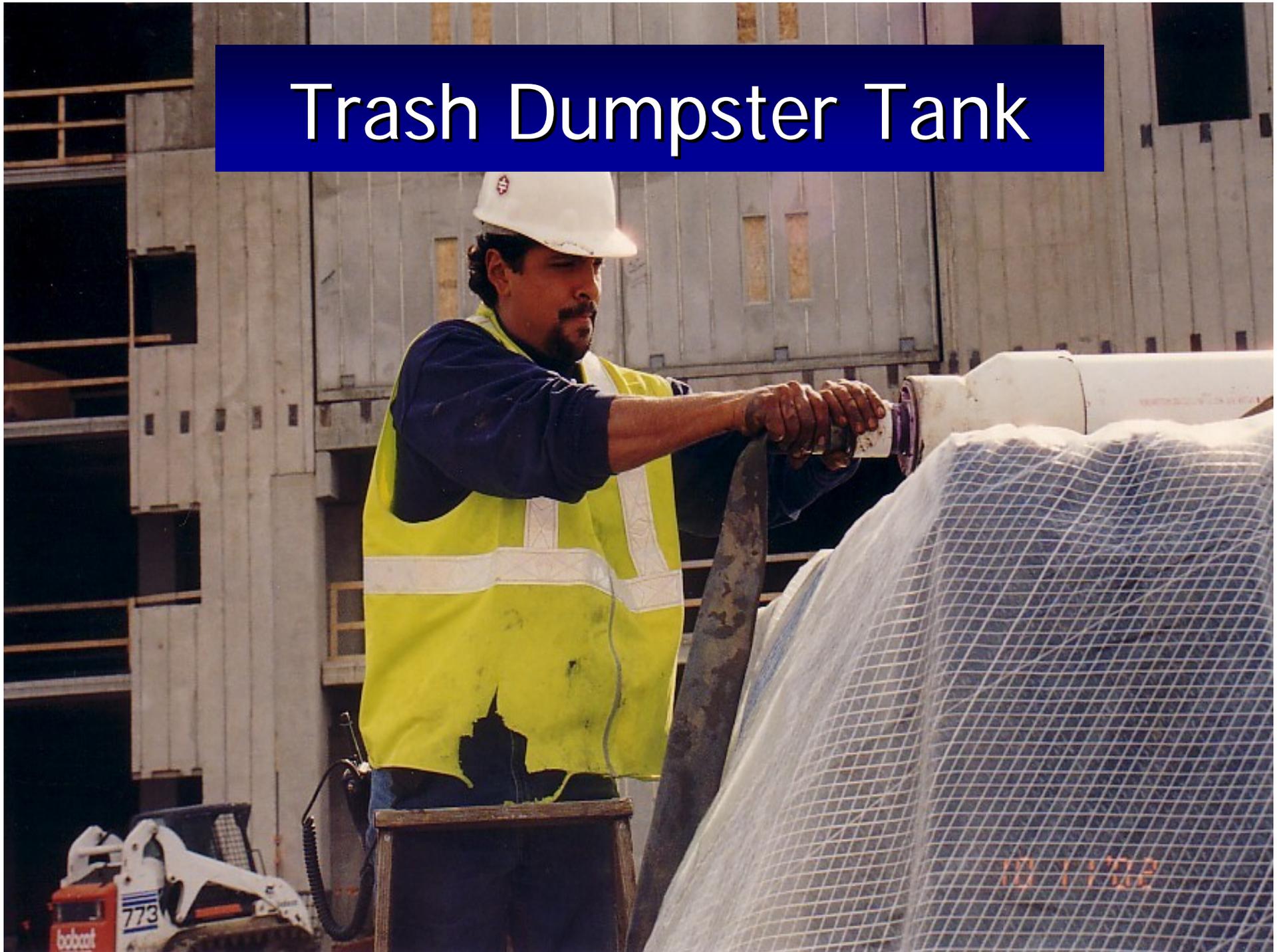




# Simple Dewatering



# Trash Dumpster Tank



# Rain For Rent Sand Filtration



# Sand Filters

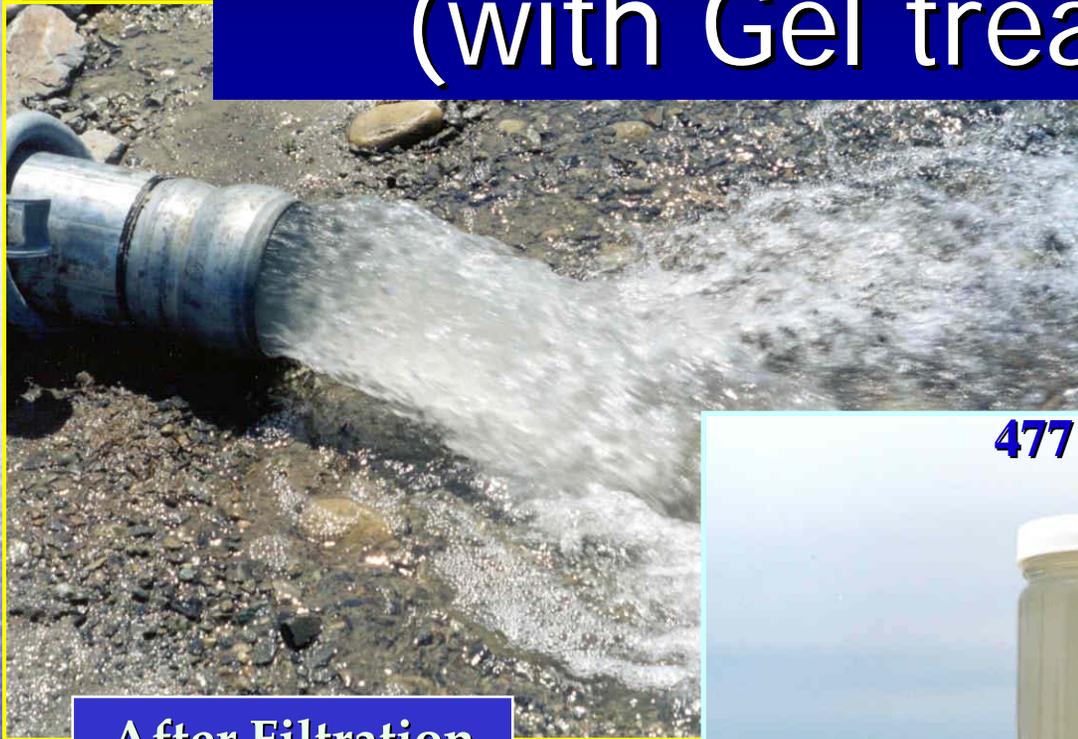


# Sand Filters

- Presently available for rent in Wisconsin
- Can be set up and working in minutes
- Perfect for congested or urban sites
- Cost effective and worry free for contractors



# Dirty In - Clean Out (with Gel treatment)



After Filtration

Typical Filter  
Performance

477 NTU

<10 NTU



Before and After  
Filtration

# Sequencing & Phasing

Staging  
(on roadway projects)



# Staging Using Mobilizations







# Sequencing

- The plan must identify when specific erosion & sediment control practices will be installed or implemented relative to major construction operations



## Sequencing Table

	Construction Activity	Schedule Consideration
<b>1</b>	Identify and label protection areas (e.g., buffer zones, filter strips, trees).	Site delineation should be completed before construction begins.
<b>2</b>	Construction access. Construction entrance, construction routes, equipment parking areas and cutting of vegetation (necessary perimeter controls).	First land-disturbing activity -- Establish protected areas and designated resources for protection. Stabilize bare areas immediately with gravel and temporary vegetation as construction takes place.
<b>3</b>	Sediment traps and barriers. Basin traps, sediment fences, and outlet protection (necessary perimeter controls).	Install principal basins after construction site is accessed. Install additional traps and barriers as needed during grading.
<b>4</b>	Runoff control. Diversions, silt fence, perimeter dikes, water bars, and outlet protection.	Install key practices after principal sediment traps and before land grading. Install additional runoff control measures during grading.
<b>5</b>	Runoff conveyance system. Stabilize stream banks, storm drains, channels, inlet and outlet protection, and slope drains.	Where necessary, stabilize stream banks as early as possible. Install principal runoff conveyance system with runoff-control measures. Install remainder of system after grading.
<b>6</b>	Grubbing and grading. Site preparation: cutting, filling and grading, sediment traps, barriers, diversions, drains, surface roughening.	Begin major grubbing and grading after principal sediment and key runoff control measures are installed. Clear borrow and disposal areas only as needed. Install additional control measures as grading progresses.
<b>7</b>	Surface stabilization: temporary and permanent seeding, mulching, sodding and installing riprap.	Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or complete.
<b>8</b>	Building construction: buildings, utilities, paving.	Install necessary erosion and sedimentation control practices as work takes place.
<b>9</b>	Landscaping and final stabilization: topsoiling, planting trees and shrubs, permanent seeding, mulching, sodding, installing riprap.	Last construction phase - Stabilize all open areas, including borrow and spoil areas. Remove and stabilize all temporary control measures.
<b>10</b>	Maintenance	Maintenance inspections should be performed weekly, and maintenance repairs should be made immediately after periods of rainfall.

Source: MPCA, 2000

## Phasing

- Break a large project into smaller parts to reduce disturbed soil areas and exposure time
- Start subsequent phases when earlier phases are substantially complete

