Approaches to Dealing with Turbidity on Your Construction Site

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During Development: Consequences

Options for Getting There

- Improved practices to retain sediment
- Reduce exposed soil area
- Treat water to remove fine sediment

Improvement from Surface Outlet/Porous Baffles

- Will increase sediment capture from 60% to 90+%.
- This will increase maintenance needs.
- Turbidity will still be an issue
- Now what?

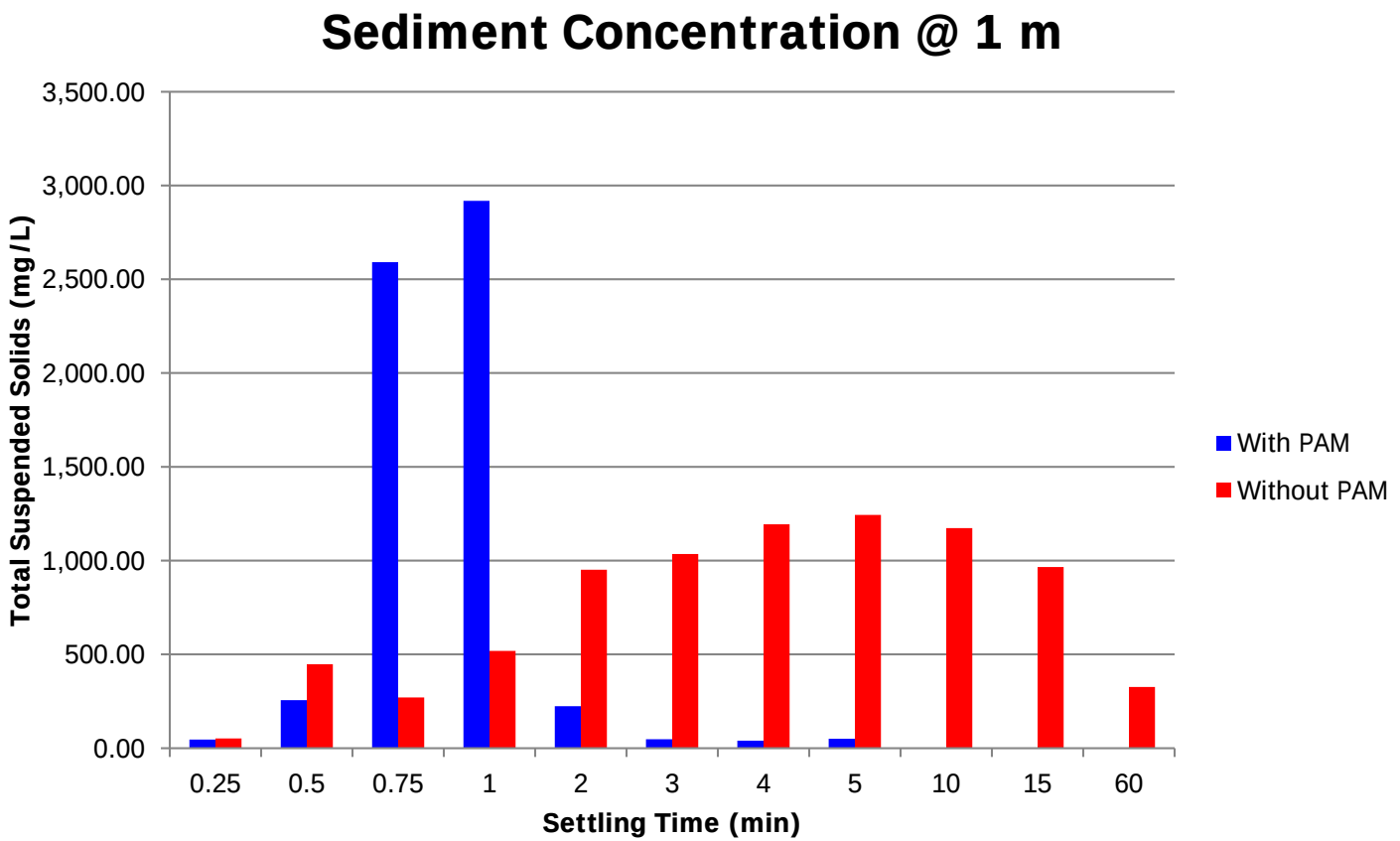
Turbidity Standard?

- Construction site runoff >1,000 NTU
- Remember 280 NTU?
- Biological response at 10-20 NTU

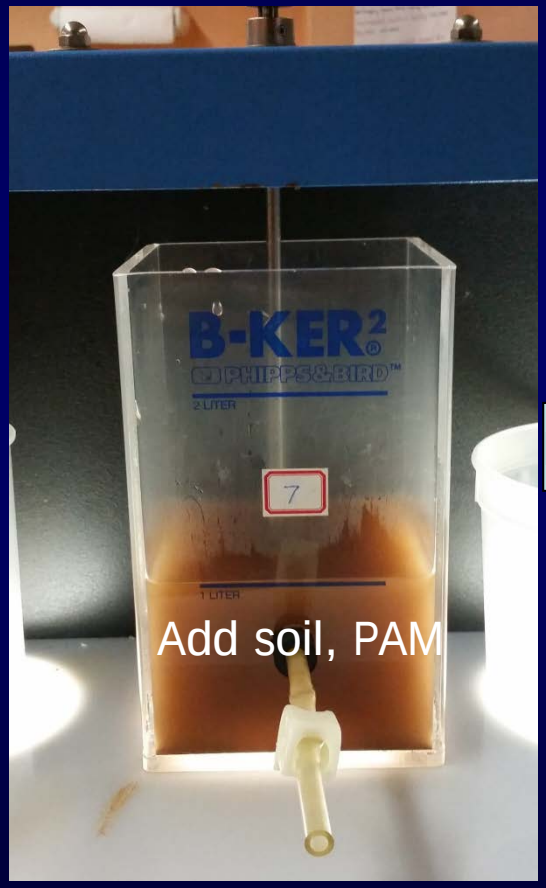
Answer? Flocculation!

Add a chemical to cause the sediment to settle

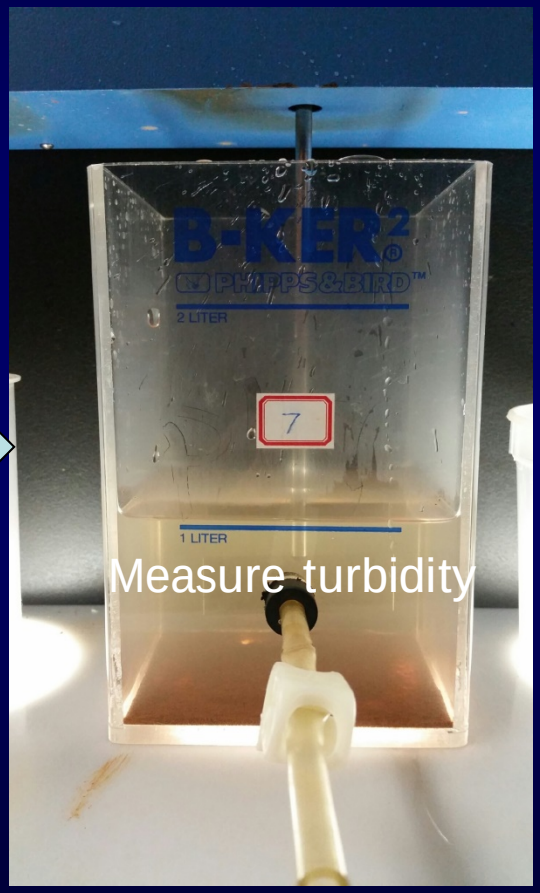
How well does flocculation work?



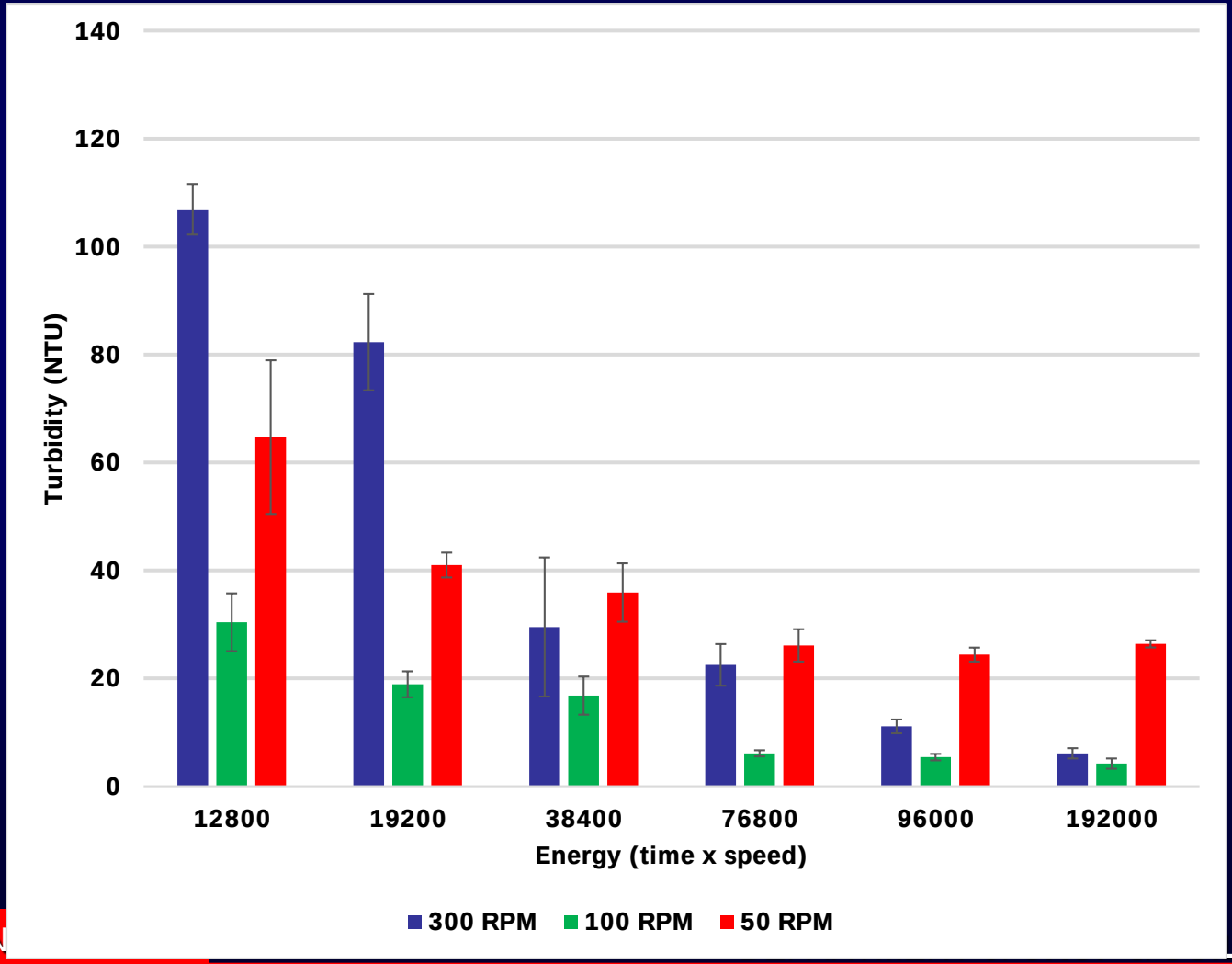
Traditional Jar Testing



Mix for set time



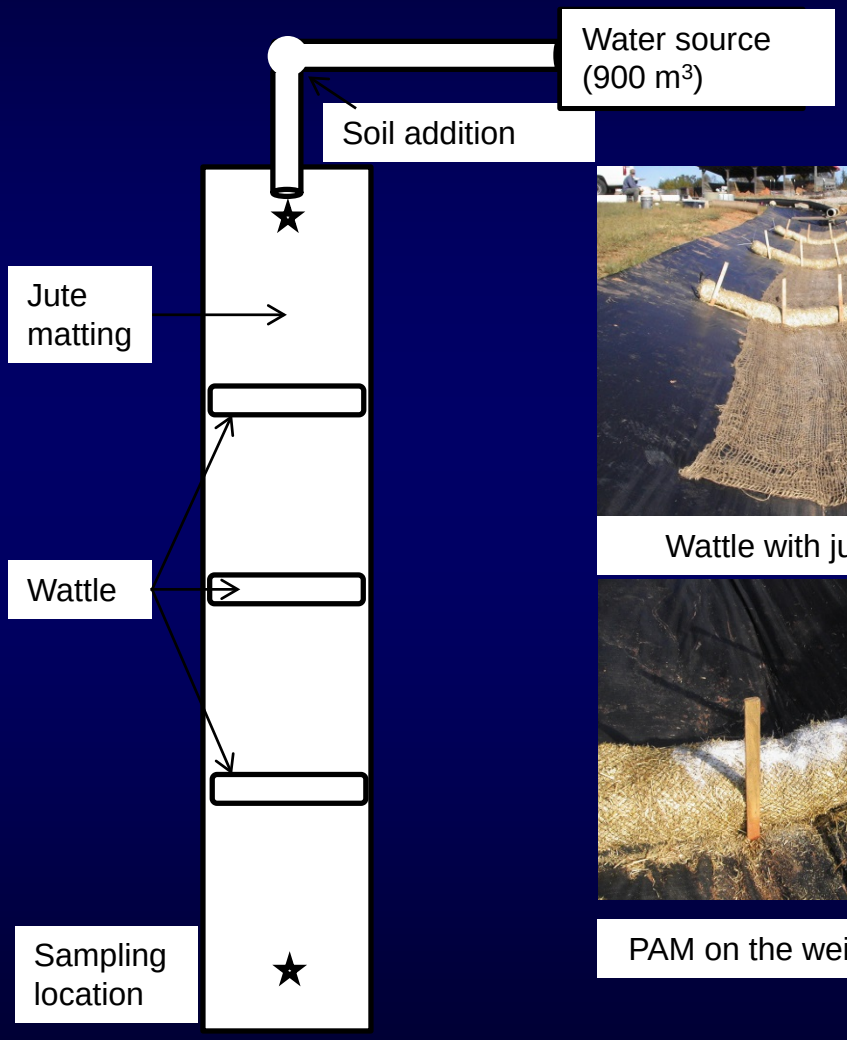
Mixing Time/Energy Effects



Optimizing Methods to Introduce PAM

- Current practice: place granular PAM onto fiber check dams and, if present, ditch liner.
- Could distribution along liner provide more contact and surface area?
- Could a natural fiber liner provide more mixing/turbulence and/or floc removal?

Testing Flocculation Methods



Wattle with jute matting

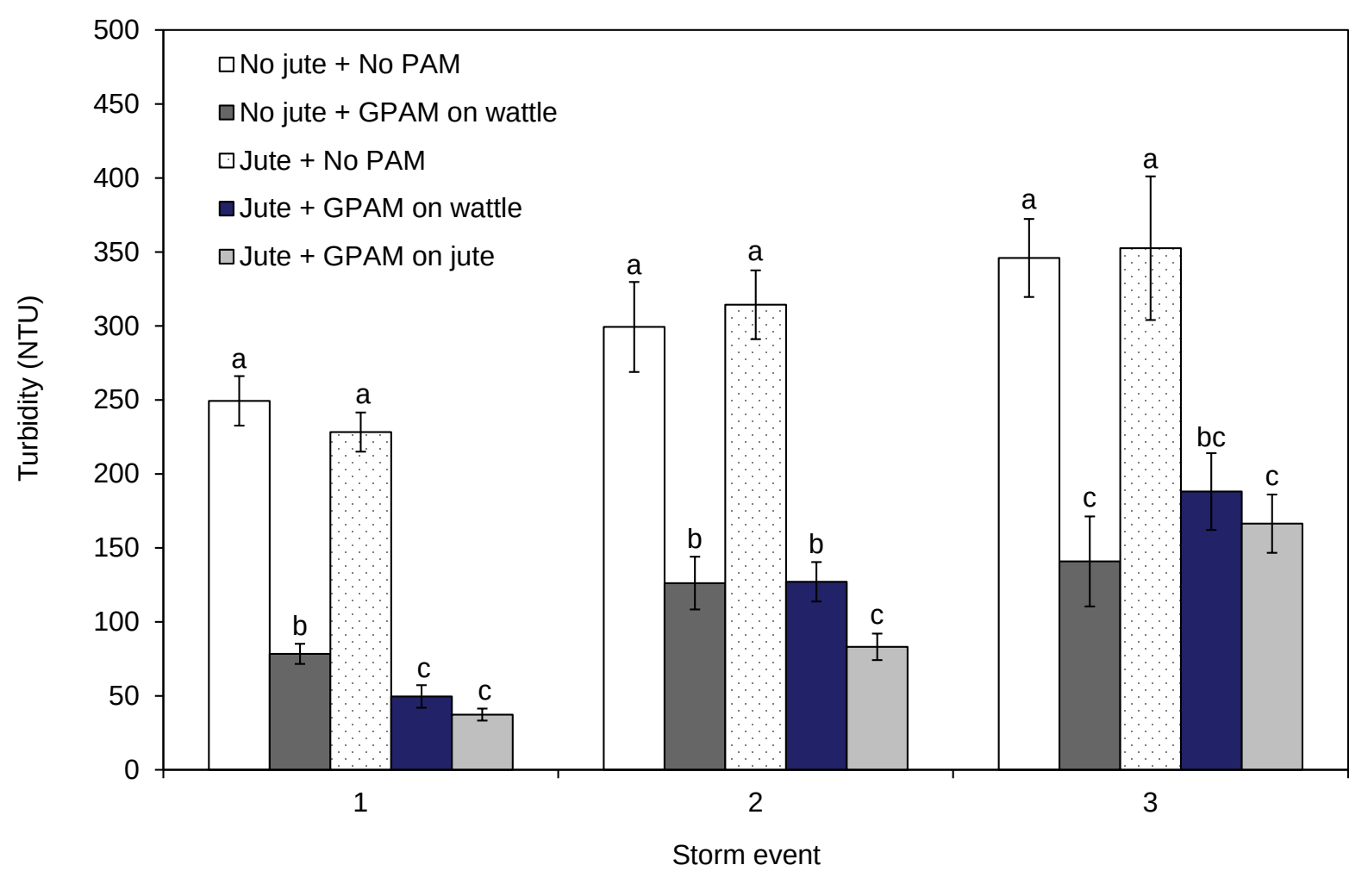
Wattle without jute matting

PAM on the weir of wattle

PAM on jute matting

Three Simulated Storm Events

Results: Turbidity Reduction



Different letters within an event denote statistically significant differences

Conclusions

- Adding PAM to the swale system significantly reduced turbidity (as expected)
- The different methods of distributing the PAM didn't have clear differences
- The addition of the jute liner also did not clearly change turbidity

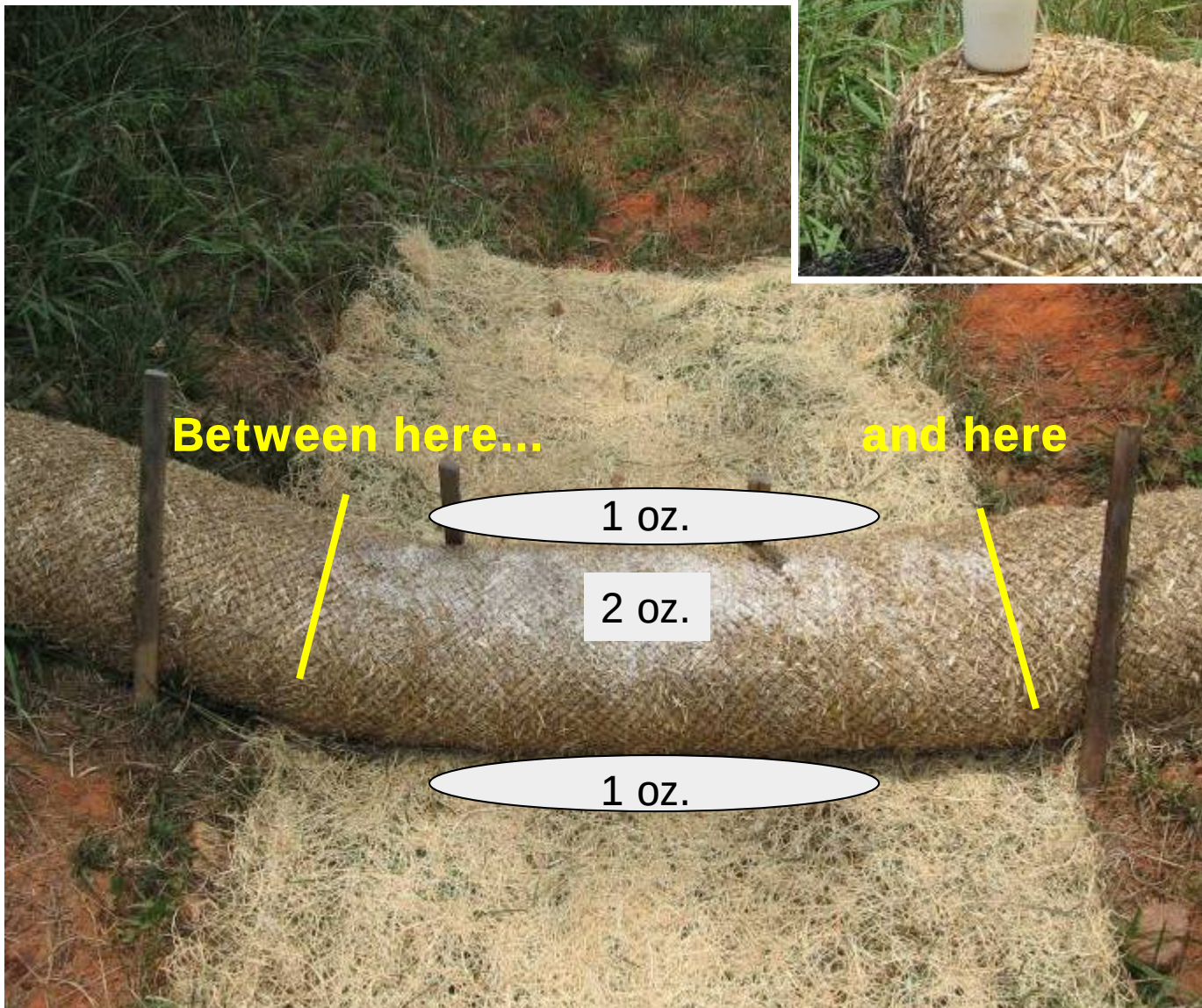
Flocculation in the Field: Wattles for PAM delivery

- Function as an alternative to rock checks dams
- Effective delivery devices for polyacrylamide (PAM)
- Requires matting underneath and proper staking

4 oz. (1/2 cup) PAM

Sprinkle 2 oz. of PAM on the weir (lower, center portion) and 1 oz. on <u>both</u> sides of the wattle.

Reapply after rainfall of ½”



PAM on Check Dams

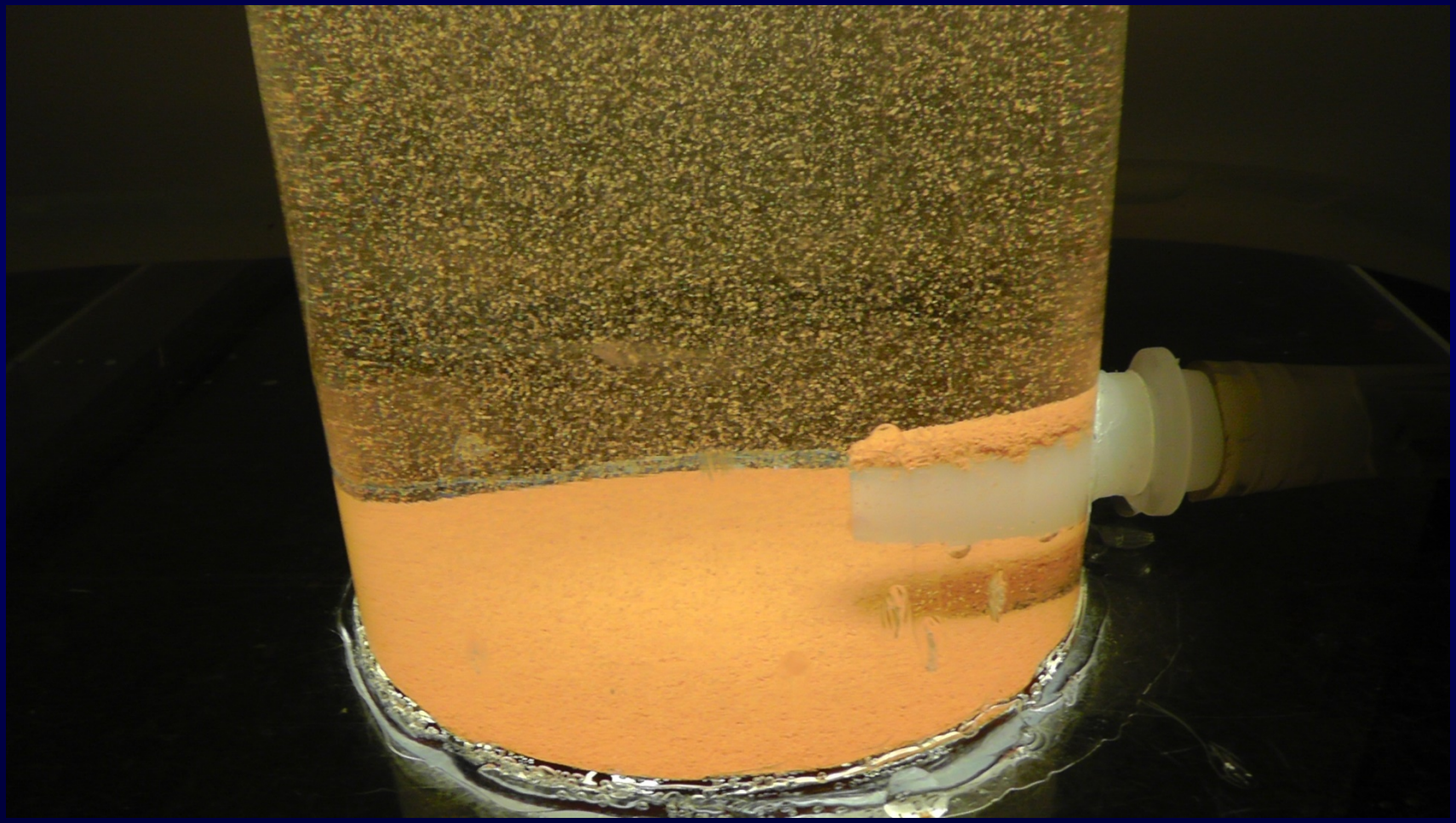
Wattles biodegrade…rock doesn’t

Other Wattle Uses

Slope Interrupter

Perimeter control (small area)

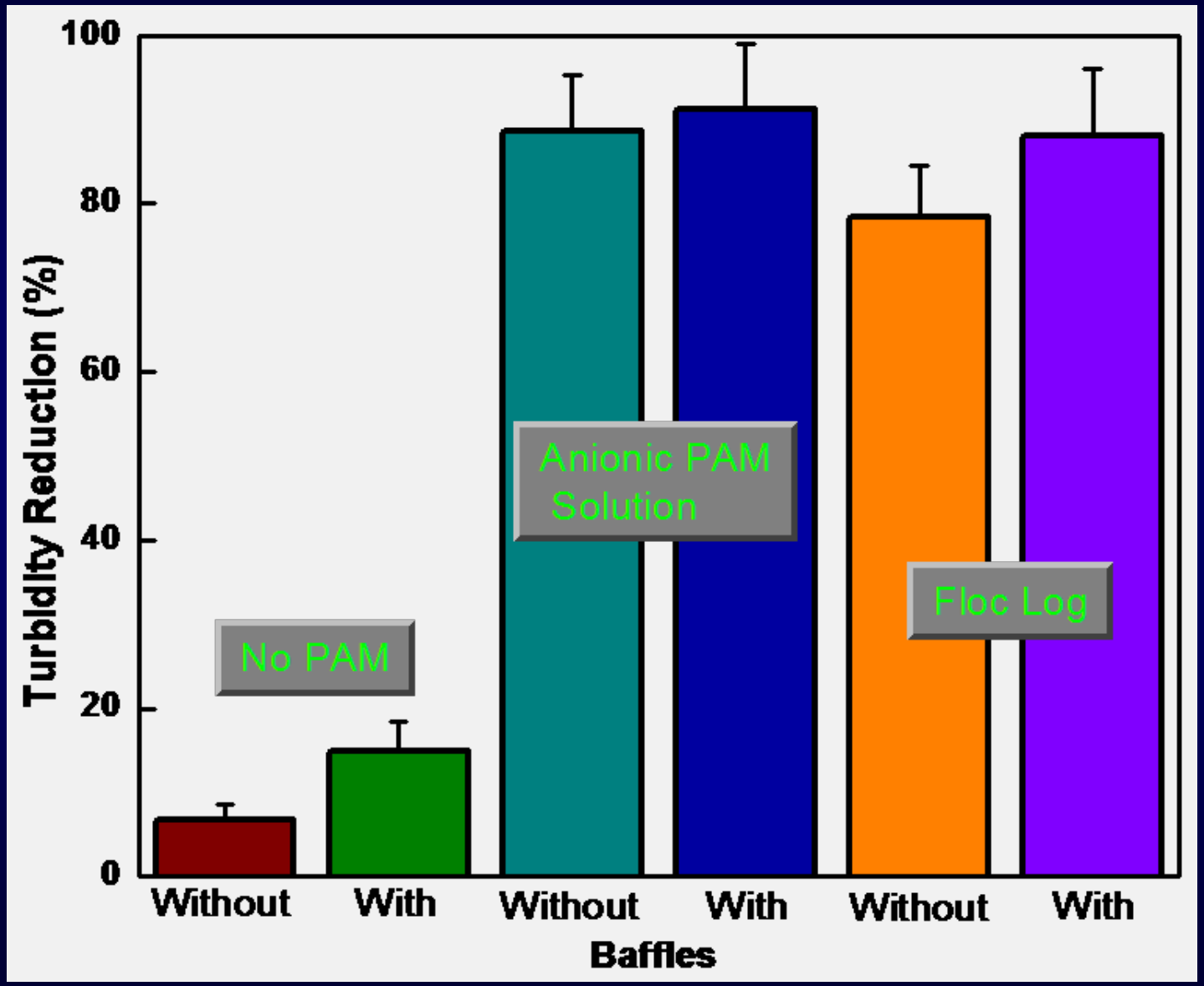
Review of Other Turbidity Control Methods



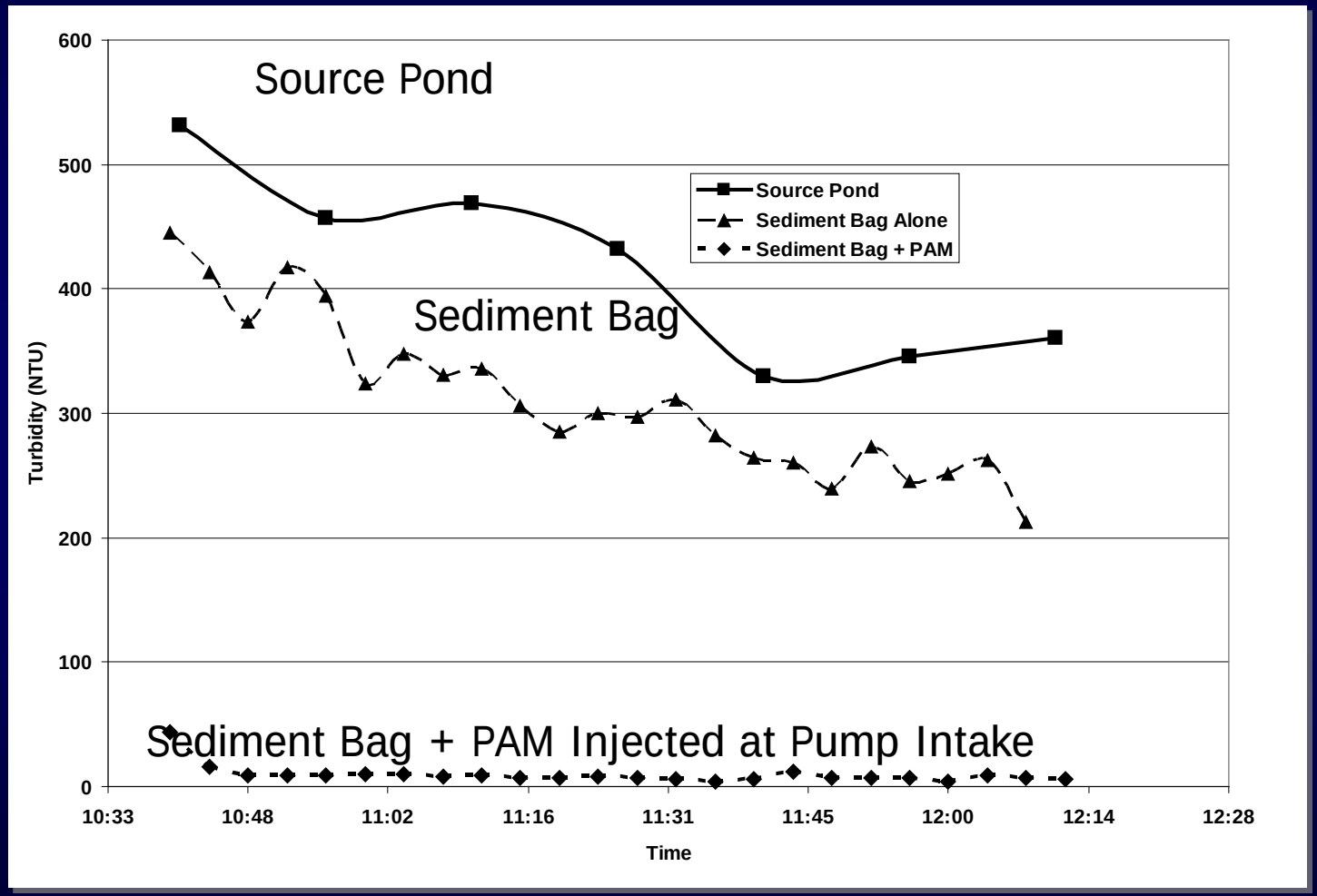
Tiered Basin: Sediment + Turbidity

Pumped Water: Lots of Options

Dosing System: Solution vs. Solid Block



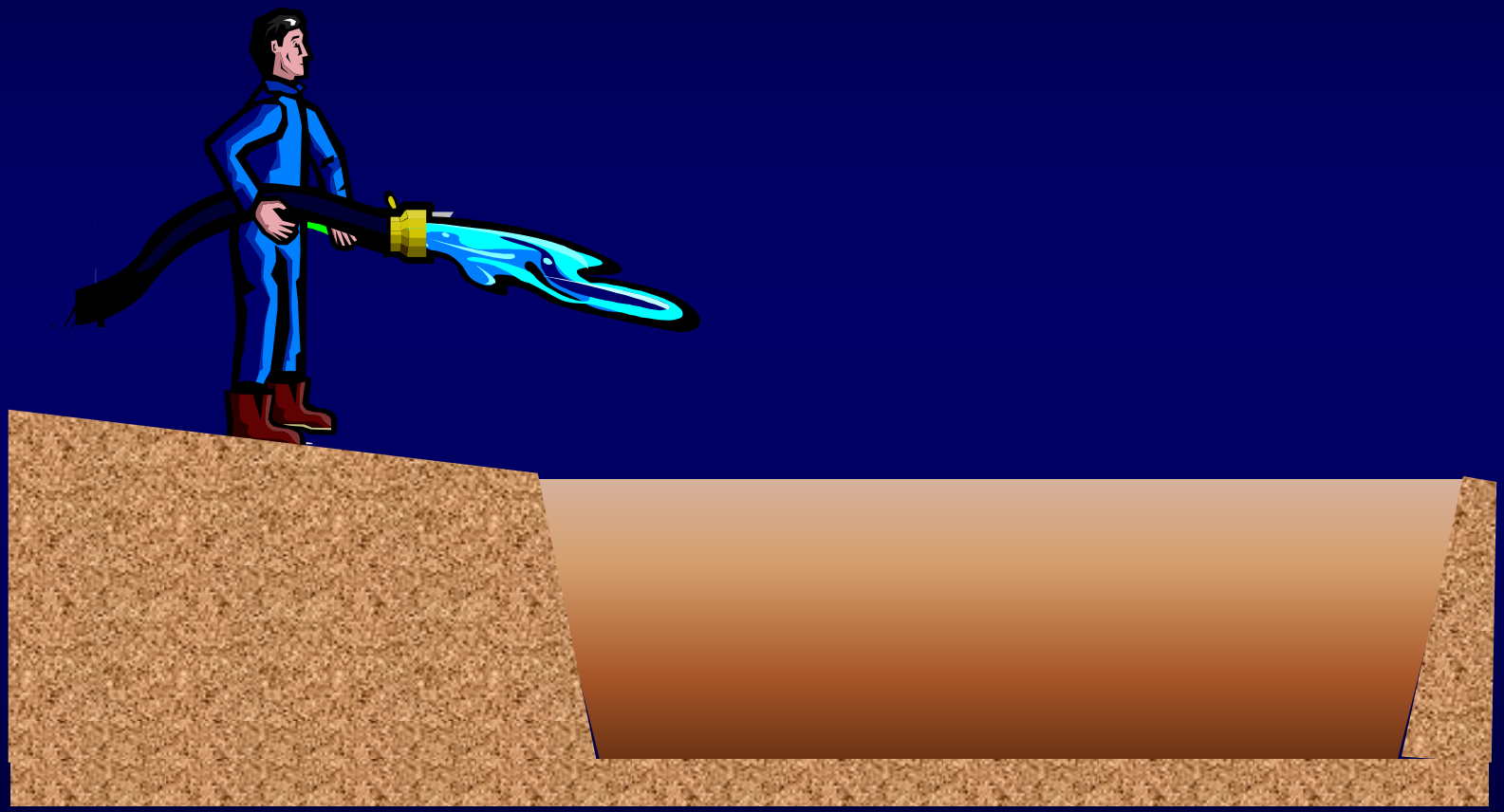
Sediment Bag and PAM



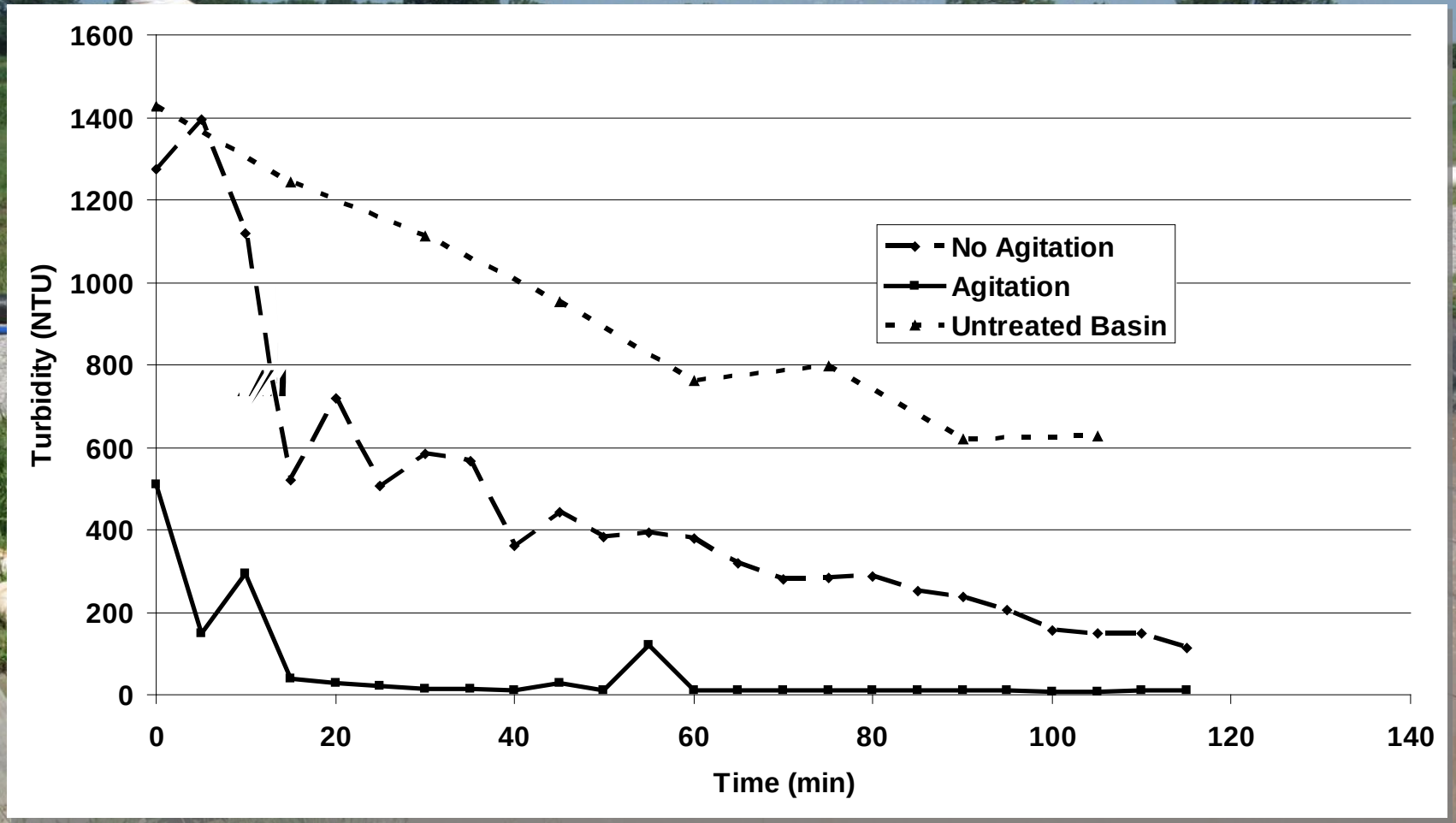
Sediment Bags and Flocculants

Pores Will Clog, Need More Bags

Surface PAM Solution Application?



Surface PAM Solution Application?



New Zealand Flocculant Doser

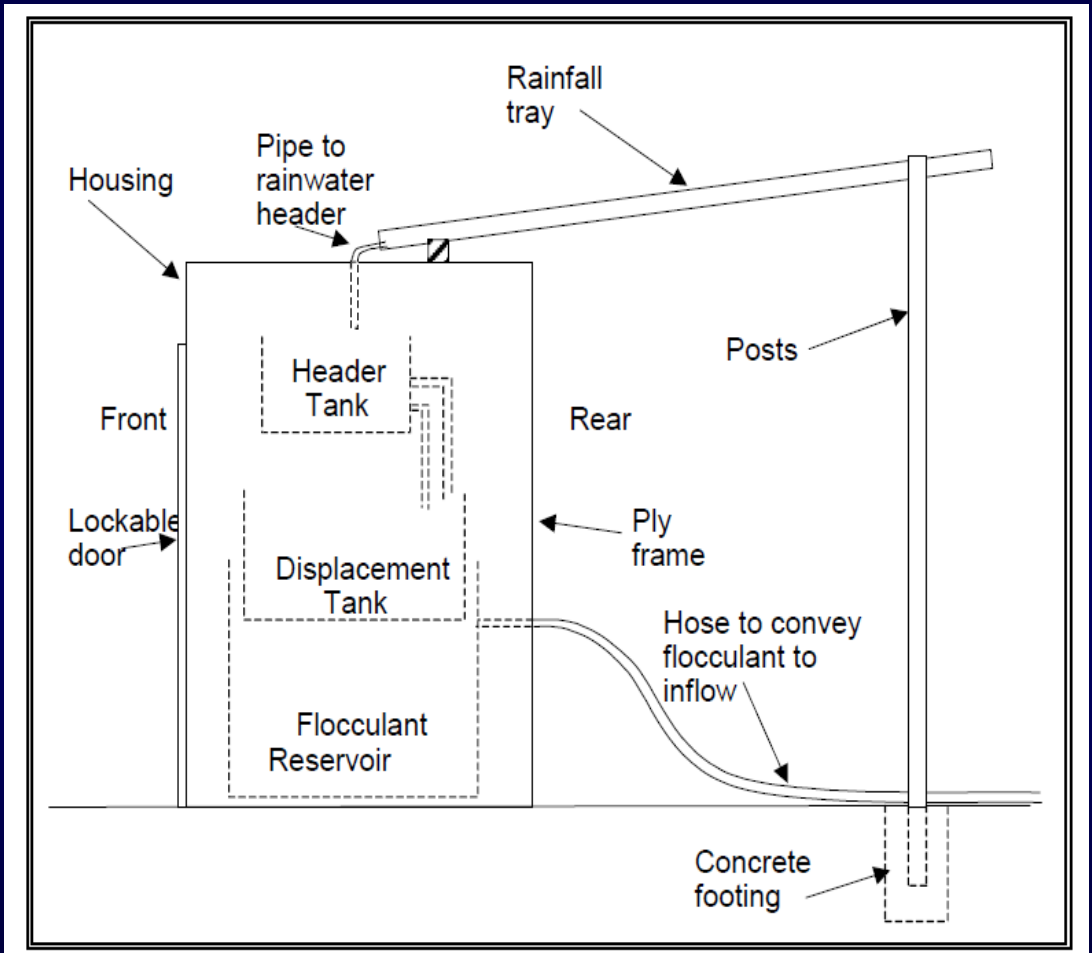
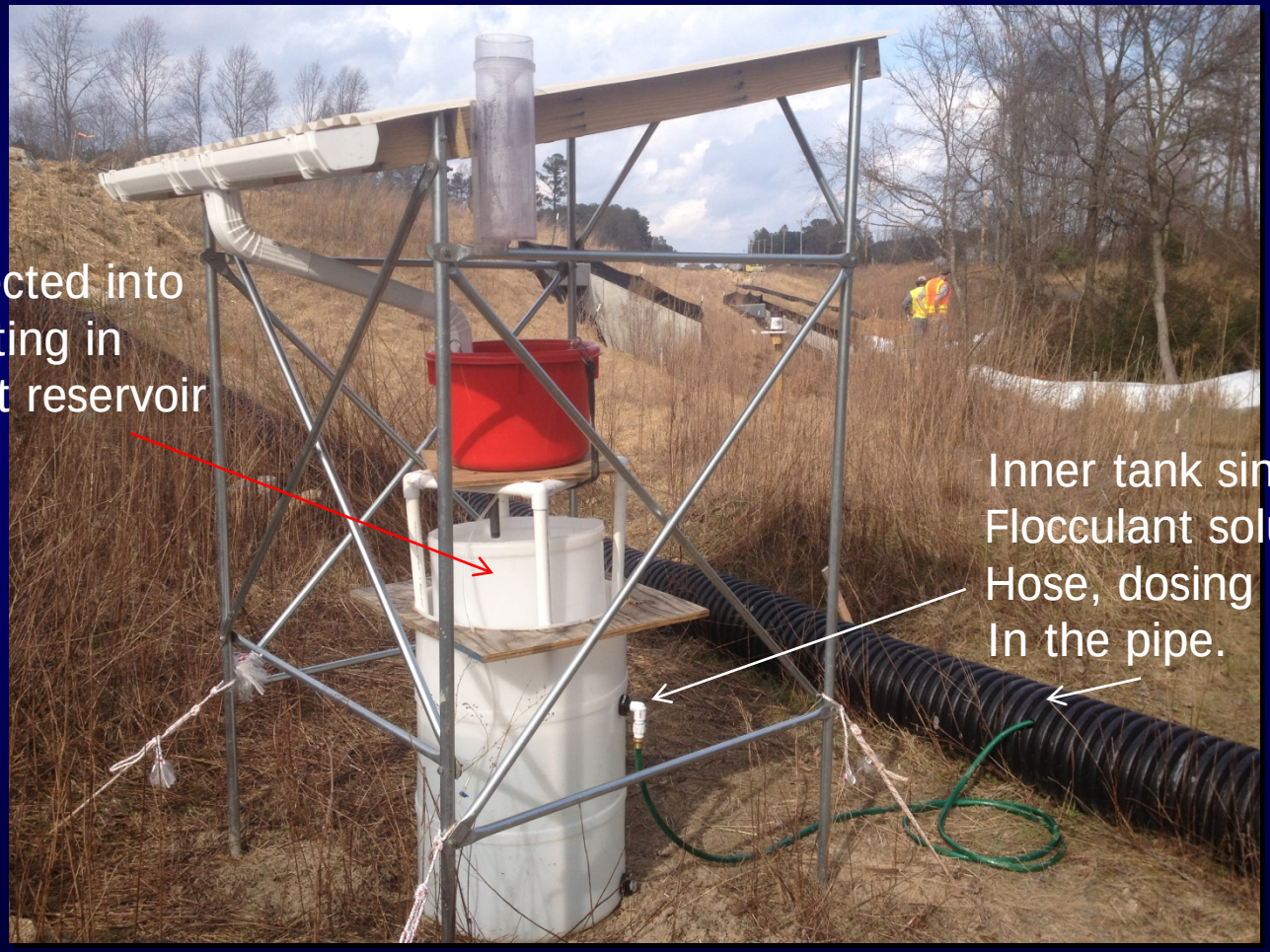


Figure 3. *Rainfall Activated Flocculation System Housing Detail – Side View*

North Carolina Version of New Zealand Doser



Pump, Flocculate, Filter

Pump and Treat: Hillsborough Street in Raleigh

Questions?

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