



INDOT

Storm Water Management

Lessons Learned, Moving Forward

A conversation with INDOT and consultants

Topics for Discussion

- INDOT Storm Water Management Program
- New Plant Growth Layer Specs
- Compliance
- Assistance in the Field

Environmental Compliance

What is your RISK?

- Laws, Regulations, Enforcement
- More entities have jurisdiction over storm water creating more oversight of construction activities
- On time on Budget
 - Erosion and off site sediment release issues are expensive and time consuming to repair
 - Erosion can lead to structure damage
 - Can lead to hazardous road conditions
 - Violations can be expensive

INDOTs Storm Water Management Program

RSP 205-R-636 (INDOT Storm Water Management Specs)

- Level Determination
- Storm Water Quality Manager
- Storm Water Quality Control Plan
- Concrete Waste Water Plan
- Inspections

Level Determinations

What makes a project Level I or Level II?

Greater environmental risk

General criteria:

- New terrain development
- Potential impacts to multiple regulated waterways
- Stream relocation
- Formal consultation for Endangered Species
- Potential ground disturbance involving a karst feature
- More than 5 acre watershed flowing to a point requiring a basin
- Known hazardous waste site
- Fast track contracts ahead of environmental documents

Trainings and Certifications

Level I Requirements:

- INDOT Construction Storm Water Management Training

Level II Requirements:

- INDOT Construction Storm Water Management Training +
- CESSWI/CISEC – National Certification Program

Storm Water Quality Control plan

- New Emphasis in the New RSP 205-R-636
- Developed by the contractor via a professional engineer
- Designer required to have CPESC or CPESC in-training
- Contain any revisions to the design SWPPP and plans
- Address phasing and sequencing of installation, maintenance and removal of storm water management measures

Storm Water Quality Control plan

- Must include haul roads, stockpiles sites, equipment storage sites, concrete washout sites, plant sites, and borrow and disposal sites, etc....
- Concrete Waste Water/ Other Waste Water Plan
- Must be submitted to the INDOT Engineer 14 days prior to operations, but can be submitted in phases.
- In mandatory usage on all INDOT projects

Concrete Waste Water Plans



Concrete Waste Water Plans

- An estimate of total gallons of washout waste water produced on project
- Description and sizing of containment
- Location of containment
- Free Board Allowance
- Removal procedure
- Emergency Spill Response procedure including emergency washout facilities
- Signage
- Straw Bale Containment PROHIBITED

Concrete Waste Water Plans



Inspections

- Think of inspections as a punch list of maintenance needs prioritized.
- Show compliance along with issues
- Protect INDOT and the Contractor
- Help avoid repeat issues
- Save Money
- Save Time

Inspections

- Rain Gages
- Frequency of Inspections
- Access to Past Reports



Plant Growth Layer Specs.



- New Top Soil Requirements
- Required in all Rule 5s
- New Seed mixes
- New installation and finishing language

RSP 629-R-630

Compliance Issues

- Storm Water Management is an Art Form, experience needed
- Understanding the **GRAY** areas of Storm Water Management
- Putting Storm Water Management into the Construction Process
- Right BMPs for the need
- Stream Impacts

Help from INDOT

- Each INDOT District has an Erosion Control Specialist working under construction
- INDOT Central Office now has three Storm Water Specialist
- Trainings
- Technical Assistance

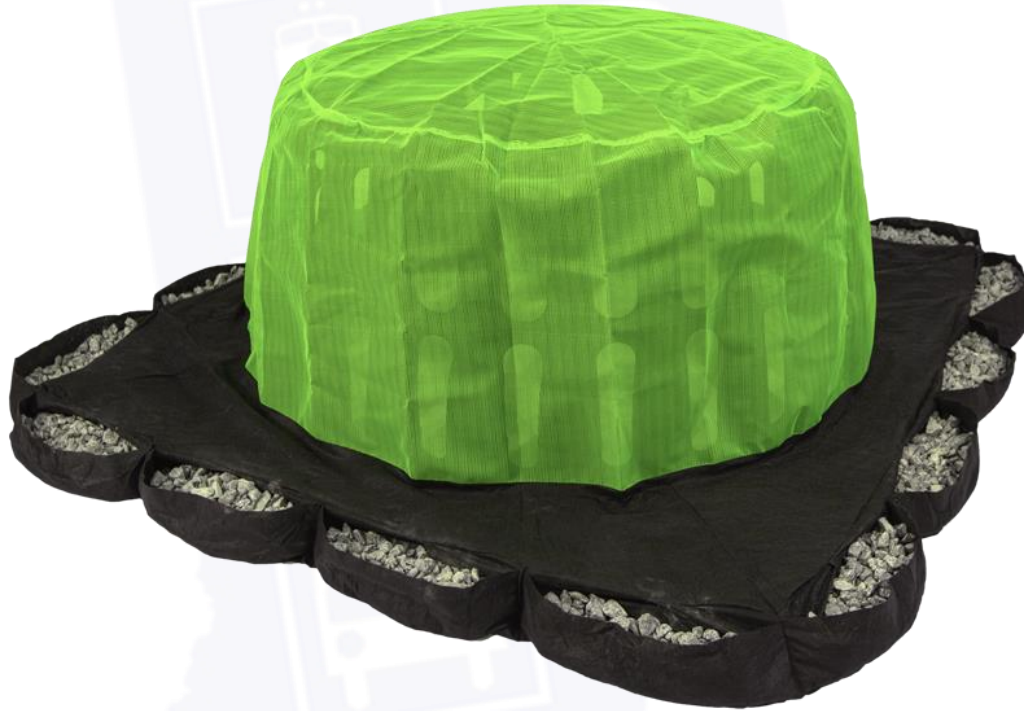
Help from Industry

- Stage release silt fence for high water flow areas
- Used in specific areas for high volume filtration
- Durable for long term jobsite use
- High visibility



Help from Industry

- Stage release HDPE Inlet Protection devices
- Used at specific inlets for high volume filtration
- Durable for long term jobsite use
- Reusable
- High Visibility



Help from Industry

- Aqua-Solution granules solidify waste water per EPA Text Method 9095 eliminating “free water” for regular landfill disposal
- Geotextile insert with capacity for solids from ~35 trucks
- Blue vinyl containment liner for high pH water from ~100 trucks
- Targeted pollutants include high pH water, suspended solids, assorted metals, chromium, sulfate, potassium, magnesium, and calcium compounds



Help from Industry

- Stabilization geotextiles for haul roads and subgrade stabilization
- Silty-sand site soils
- Site soils placed directly on reinforcement geotextile



Help from Industry

- Flexamat roll out vegetated concrete TRM
- Roll out armor for outfalls and roadside ditches
- Weighs 10 pounds per square foot
- Vegetates with grass and is MOWABLE



Help from Industry

- EPA approved polyacrylamide flocculants
- Useful for dust control on haul roads and surface stabilization
- Solidify saturated soils to prevent leaking and track out
- Improve dewatering bag performance and effectiveness
- Useful for coffer dams and pump arounds

What are flocculants?
Flocculants are chemicals that cause suspended soil particles to aggregate into larger, heavier soil particles that settle out of suspension.

Flocculants for stormwater clarification
Soil Specific
Are not charged the same

Flocculants, suspended soil particles, and flocculants interact and "chain" soil particles together.

Soil as it is
Soil and an or heavy

Coconut or Jute Matting (Provides attachment surface)

Soil + Flocculants

Flocculants + Soil matrix forms an agglomeration Or FLOC

(must be tested before application)

Help from Industry

- FLOC Hog high dosage PAM delivery device
- Useful for dewatering operations from 100 to 1000 gallons per minute
- Clarify sediment basins for dewatering

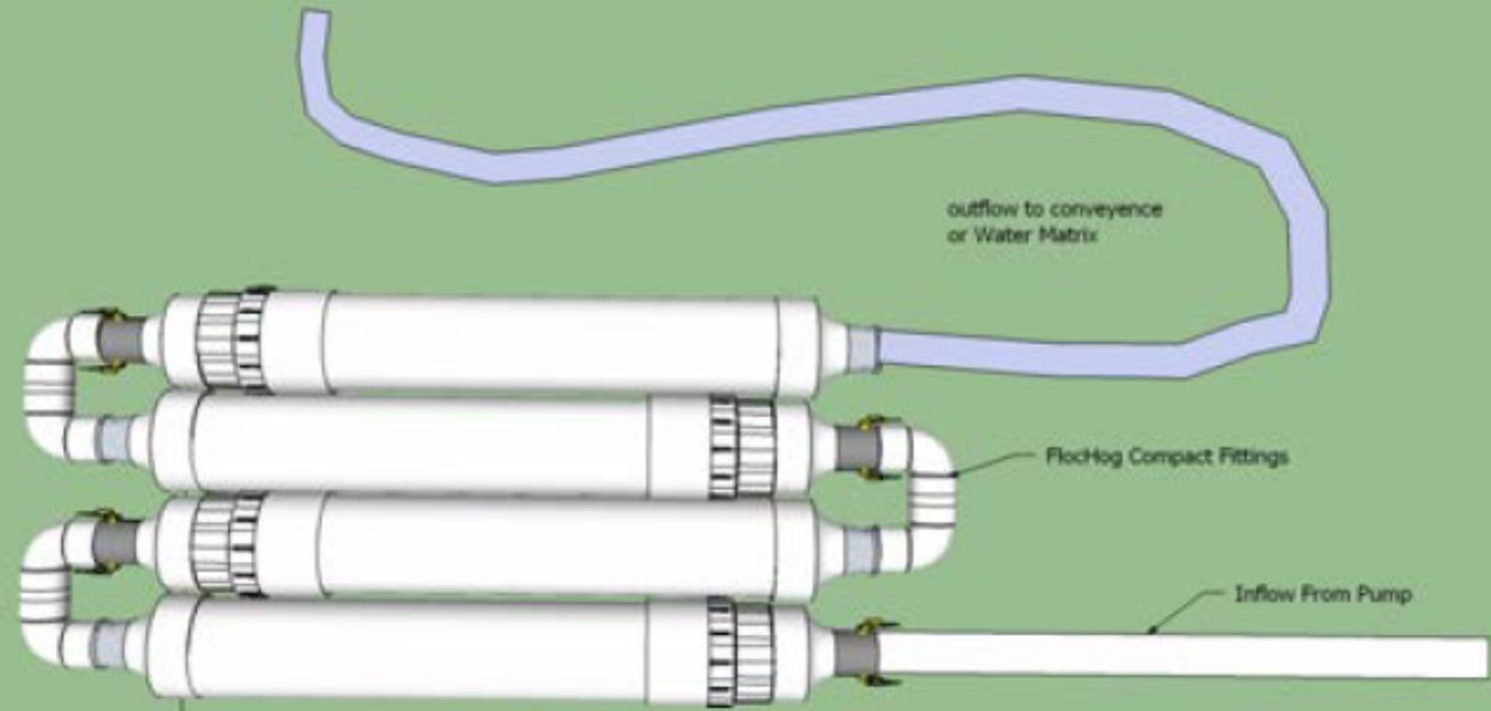
Floc Hog ready to go out to site.



Help from Industry

- FLOC Hogs may be used in series for high volume dewatering
- Portable water matrix device for three step use of PAMs
- Mixing, settlement, and capture chambers
- \$200 per month rental
- 500 to 1000 gpm capacity
- 12' x 50' footprint
- Treatment costs of ~\$0.0005 per gallon

Example of high dose - compact setup



Help from Industry

- Pump around volumes may exceed capacity of dewatering bags
- Fine grained colloidal soils plug and bypass dewatering bags
- Polymers enhance the utility and effectiveness of dewatering bags
- Smaller footprint portable water matrix device for small bridge and culvert projects
- \$125 per month rental
- 200 to 500 gpm within a 12' x 25' footprint
- Treatment costs of ~\$0.0005 per gallon



Questions

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