

NO LONGER PASSIVE ABOUT PASSIVE TREATMENT

No more passiveness about Passive Treatment

While the 2009 Construction General Permit does not expressly prohibit passive treatment where anionic polymers are used for erosion and sediment control, it also did not address the use of them. But with the advent of the 2022 CGP, the State Water Board is no longer passive about passive treatment. [Attachment G](#) of the new permit provides guidelines for the selection and use of passive treatment products. For this edition of [The Monthly Dirt](#), we consulted with some experts on passive treatment to help our readers understand how passive treatment products and techniques may help to control erosion and sediment at construction sites.

What is considered to be passive treatment?

The 2022 CGP glossary provides the following definition:

*Passive treatment is the application of natural or synthetic chemicals and products **to reduce turbidity in discharges** through coagulation and flocculation. Passive treatment does not rely on computerized, enclosed systems with pumps, filters, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the construction site. Passive treatment products are available in a variety of forms and may be land-applied for soil stabilization (e.g., bonded fiber matrixes, hydromulches) or water-applied for sediment removal (e.g., liquid treatment chemicals, powders, slow-releasing solid blocks/socks).*

Attachment G further specifies that only anionic chemicals are authorized for use in passive treatment systems and typically consist of polyacrylamides (PAM). These are large linear-chain polymer chemicals that are highly water-absorbent and form a soft gel when hydrated. Being an anionic chemical they carry a negative charge. Cationic, or positively charged, polymers are prohibited from passive treatment and may only be used in the more controlled active treatment applications. This is because these positively charged molecules are attracted to the negatively charged gills of fish (opposites attract) and cause the fish to suffocate. Which is also why cationic chemicals are so effective at removing suspended sediment from turbid water. The small suspended clay or silt particles generally have a negative electric charge. The

positive cationic chemicals attract the negatively charged particles, form larger and heavier particles (called floc) which settles out in sediment basins or tanks. So if suspended soil particles have negative charges, how does introducing a negatively charged polymer help? Wouldn't it make matters worse? Well, you would think so; but it works because of a principal called anionic exchange. Anionic PAM can work with anionic charged particles in soils; in that positive calcium ions (Ca++) have been added to the anionic polymer creating a bridging and binding of the soil particles enabling flocculation.

But, going back to the CGP definition of passive treatment you might have noticed the bold underlined phrase "**to reduce turbidity in discharges**". If you stop and think about it, that is a sediment control (something causing sedimentation to occur) and is not an erosion control (something that prevents soil particles from becoming detached from the soil matrix). Attachment G states, "*This Attachment is for the use of **water applied** passive treatment products **that remove suspended solids** such as sediment from stormwater (e.g., liquid treatment chemicals, powders, slow-releasing solid blocks/socks)*" which narrows the definition to products that are water-applied and are used to remove suspended solids. This eliminates from the definition of passive treatment the land application of PAM (with or without a hydraulic mulch) as an erosion control or soil

binder. The same bridging and binding that forms floc and causes sedimentation to occur can also be used to keep particles from breaking loose in the first place. But, when used as an erosion control, these chemicals are not subject to the requirements in Attachment G. However, we were finding a possible conflict with the second half of the 2022 CGP glossary definition which mentions that these products may be land-applied for soil stabilization, so [The Monthly Dirt](#) consulted with Brandon Roosenboom the State Water Board's NPDES Construction Stormwater Lead Staff who verified that Attachment G applies only to products used in water or storm water conveyance (channels/ditches) as specified in [Attachment D](#) Section II.D.2 and Attachment G Section A.2.

Passive Treatment Products and Techniques:

When it comes to implementing passive treatment the key is to get sufficient contact of the polymer containing products with the turbid water, which means movement and mixing. But, equally important is to provide a place for floc particles to settle out before discharging off site. The contact and mixing is usually achieved by one of the following techniques:

1. Floc Logs¹ or Floc Roll / Floc Tabs² are blocks of semi-hydrated anionic PAM that are typically installed in storm water conveyance swales or ditches. Turbid

water flowing past them cause the blocks to slowly dissolve and release the anionic polymer. They are designed for placement within ditches averaging three feet wide by two feet deep. Block placement is based on gallon per minute flow rates. Typically they have built in ropes with attachment loops which can be looped over stakes to ensure they remain where placed. Mixing is key! If the flow rate is too slow, adding sand bags, cinder blocks, etc., can create the turbulence required for proper mixing. A settling basin should be located downgradient of the placement of the floc blocks.

- Granular or powder PAM can be applied to the surface of drainage swales that have been stabilized with jute mesh or another



LSC Floc Roll ©

type of erosion control mat. The PAM is then hydrated either by humidity, wet soil conditions, or by manually wetting the material with a water hose. Once wetted, the material becomes a sticky gel-like substance that will gradually dissolve with the storm water flow in the swale. The swale should flow to a sediment basin where the floc can settle out.

- Anionic polymers can also be applied to a sediment basin to treat turbid water, but in this case it will be necessary to use a pump to recirculate the pond water so that it comes in contact with the product. This can be accomplished by pumping the water into a swale equipped with blocks of polymer that leads back into the pond or inserting and securing a block of polymer into an oversized pipe and allowing the pumped water to flow across it. It is less effective to just place the product in the pond.

Since they are all sediment controls, the above three treatment techniques would be subject to Attachment G.

Attachment G Requirements:

In addition to the requirement that passive

¹ Floc Logs is a registered trademark of Applied Polymer Systems, Inc.

² Floc Roll and Floc Tabs are registered trademarks of LSC Environmental Products

treatment only utilize anionic polymers, Attachment G also requires the following of projects utilizing passive treatment:

- ⇒ Passive treatment cannot be a standalone BMP. It must be utilized in conjunction with non-chemical BMPs for erosion and sediment control.
- ⇒ It must be specified and applied by a trained person knowledgeable in the principles and practices of passive treatment and in accordance with the manufacturer's guidance.
- ⇒ A QSD must prepare a site-specific Passive Treatment Plan as a SWPPP amendment to be submitted and certified on SMARTS at least 14 days prior to the use of passive treatment.
- ⇒ The distance or barrier between the treatment zone and the receiving water must comply with the 50-foot surface water buffer requirement. Applying passive treatment products directly into a receiving water is prohibited.
- ⇒ A QSP is required to visually inspect the passive treatment zone surface condition within 72 hours before forecasted precipitation events (of any size) and within 48 hours after a qualifying precipitation event.

Hear from the Experts ...

The Monthly Dirt interviewed two providers of passive treatment products. Both organizations closely monitored the Attachment G development process and have been in communication with the Water Board. You can view those interviews at the links provided below.

Follow-up from the Boots on the Ground Article:

Last month The Monthly Dirt ran an article on the new role for QSDs in the 2022 CGP. As a part of that newsletter, we offered our QSD readers to participate in an informal survey about whether or not they would be likely to perform the field inspections required by the new permit. We had 111 QSDs respond to the survey. Here are the results:

Q1: Describe your QSD credential.

ANSWER CHOICES	RESPONSES	
Took the 3-day CASQA-sponsored Training and passed the exam	76.36%	84
Registered on SMARTS as a Professional Engineer or Professional Geologist	13.64%	15
Other (please specify)	10.00%	11
TOTAL		110

Q2: On average, how many SWPPPs do you prepare per year?

ANSWER CHOICES	RESPONSES	
2 or less	52.25%	58
3 - 12	30.63%	34
13-24	8.11%	9
>24	9.01%	10
TOTAL		111

Q3: On average, how many times a month are you currently performing site inspections for any reason?

ANSWER CHOICES	RESPONSES	
I don't perform field inspections	27.03%	30
2 or less per month	25.23%	28
3 - 5 per month	22.52%	25
6 - 12 per month	6.31%	7
>12 per month	18.92%	21
TOTAL		111

Q4: For how many active projects are you currently the QSD?

ANSWER CHOICES	RESPONSES	
2 or less	53.15%	59
3 - 5	17.12%	19
6 - 10	7.21%	8
>10	22.52%	25
TOTAL		111

Q5: Will you be doing the QSD inspections required by the 2022 CGP for the projects that you are listed as the QSD?

ANSWER CHOICES	RESPONSES	
Yes	65.45%	72
No	34.55%	38
TOTAL		110

This informal and somewhat limited survey seems to confirm our suspicions that a little more than one third of QSDs will not be willing or able to perform the field inspections required in the new CGP. This leaves approximately 4,356 QSDs to cover nearly 11,000 active projects and would indicate that there could be a shortage of QSDs when the permit becomes applicable to all sites.

Please contact us if you have any questions ...

The Monthly Dirt

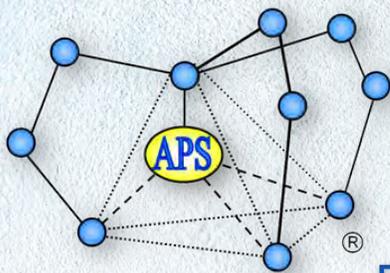
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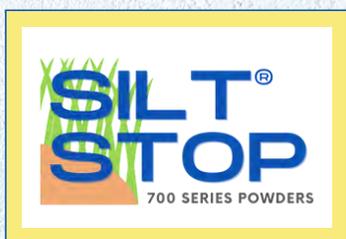
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Applied Polymer Systems was founded in 1997 and our anionic polyacrylamide (PAM) products have seen decades of success in water treatment, erosion control, dust control, and demucking. APS products were created by science, endless hours of research and development, integrity, and dirty boots. All products are anionic polyacrylamide based, NSF/ANSI/CAN Standard 60 Certified (drinking water grade), and have undergone third party, EPA certified toxicity testing to ensure safety for aquatic life and environmental use.



EROSION CONTROL DUST CONTROL DEMUCKING

Control erosion, stabilize soil, clarify run-off, quickly establish vegetation, decrease dust, and thicken sediment for demucking - all with our site specific **Silt Stop** Powders and Emulsions!



WATER TREATMENT

APS Floc Logs can remove more than 95% of turbidity from flowing water in passive and active treatment. Also remove metals, nutrients, and other contaminants from storm-water!



WATER TREATMENT

APS Pond Logs remove sediment and nutrients from ponds and lakes to improve water quality and clarity. Remove 60-90% of phosphorus with safe, cost effective **Pond Logs**.



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Our new water clarifying powder! Remove 95%+ of turbidity by applying a small amount of **Silt Clear** to existing erosion and sediment control BMPs!



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All APS products are anionic polyacrylamide based, have been toxicity tested by EPA certified laboratories, and are safe for sensitive aquatic organisms.



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PERMIT PREVIEW

WGR's unofficial preview of the new 2022
Construction General Permit.

One day of in-person training on June 22, 2023 in Lodi, CA

\$100/person



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Instant Erosion and Dust Control. Simple, Effective & Affordable.

EarthGuard® Liquid will minimize erosion, and dust, and keep your effluent stormwater clean.



Water from untreated soil on the left, water from soil treated with EarthGuard® Liquid shown on the right.

EarthGuard® Liquid is your solution for erosion and dust control. Simply apply EarthGuard® Liquid blended with water to exposed soils to control erosion, dust and turbidity. **It activates immediately and can be applied even during a rain event.**

Controls:

- Turbidity
- Total Suspended Solids
- Nutrients
- Heavy Metals
- Ash
- Other Harmful Constituents



The EarthGuard® Advantage:

- No specialized equipment needed – apply with a water truck, hydroseeder or any spray rig.
- Safe for equipment – non-corrosive and easy to clean out.
- Actively controls turbidity, heavy metals, and other harmful constituents.
- Inexpensive application.
- Environmentally friendly.
- Can be applied over existing vegetation.
- Low application rates: 3 -10 gal per acre.
- 5 gal containers are easy to ship, handle and store.





SWPPP Insert for: Temporary Soil Stabilization BMP

Definition: EarthGuard® Liquid is a temporary erosion and dust control product that stabilizes soil by maintaining existing soil structure and by settling out any fine sediment or ash that may get dislodged by stormwater or wind.

Function: EarthGuard® Liquid is used to immediately stabilize active and inactive areas including landfill decks, roads, slopes, construction sites, and stockpiles for impending rain or wind events.

Installation Instructions:

Soil preparation is not required and EarthGuard® Liquid can be applied over existing vegetation. Simply add EarthGuard® Liquid to a water truck, hydroseeder or spray rig and apply to disturbed soil for immediate erosion and dust control protection. Make multiple applications if necessary, to avoid over saturation and the creation of run-off. EarthGuard® Liquid is active immediately and will not harm equipment.

EarthGuard® Liquid is specifically designed to work with all soil types to reduce soil movement and turbidity, helping maintain compliance with environmental regulations.



Temporary Erosion and Dust Control – Up to 4” of Rain

Slope	EarthGuard®	Water (gal/ac)*
≤ 4:1	3 gal/ac	As required to properly cover 1 acre of area: <ul style="list-style-type: none"> • Spray Rig ≥ 1500 gal/ac • Water Truck ≥ 2000 gal/ac
3:1	4 gal/ac	
2:1	5 gal/ac	
1.5:1	6 gal/ac	
1:1	8 gal/ac	
Stockpiles	10 gal/ac	

Extended Erosion and Dust Control on Flat Areas

Time	EarthGuard®†	Water (gal/ac)*
1-2 months	3-5 gal/ac	As required to properly cover 1 acre of area: <ul style="list-style-type: none"> • Spray Rig ≥ 1500 gal/ac • Water Truck ≥ 2000 gal/ac
2-3 months	5-8 gal/ac	
3-6 months	8-10 gal/ac	
6-12 months	10-15 gal/ac	

* Minimum dilution 1 gal of EarthGuard® per 800 gallons of water.

† Rates dependent on anticipated precipitation throughout duration of required protection. For extended erosion control on slopes combine with Mesic™ Wood Fiber for improved performance.

For technical services or to locate your nearest EarthGuard® dealer:



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Water Clarification and Sediment Control

Primary Applications

- Construction Sites
- Industrial Facilities
- Landfills
- Mines
- Coal Ash Facilities

Features and Benefits

- Turbidity and Total Suspended Solids (TSS) reduction in effluent stormwater.
- Sediment, nutrients and heavy metal removal from stormwater.
- Settling rate acceleration in detention/sediment ponds.
- Keep sites in compliance with stormwater regulations.
- Protect downstream waterbodies.
- Allows for quicker effluent water discharge.

Floc Roll and Floc Tabs are manufactured with a blend of polyacrylamides that are designed for water clarification and sediment control.

Floc Roll and Floc Tabs flocculate sediment being transported by storm, agricultural or effluent water, significantly reducing turbidity and pollutant loading.



FLOC TABS – Polyacrylamide Sediment Removal Tablets



FLOC ROLL – Polyacrylamide Sediment Removal Roll



<1 NTU	20 NTU	75 NTU	250 NTU	450 NTU	750 NTU
0 mg/L	40 mg/L	100 mg/L	420 mg/L	1250 mg/L	3300 mg/L



Floc Tabs and Floc Roll

Specifications/Compliance Information

ANSI/NSF Standard 60 Drinking Water Treatment Chemical Additives
48 Hr. or 96 Hr. Acute Toxicity Tests (D.magna or O.mykiss)
7 day Chronic Toxicity Tests (P. promelas or C.dubia)

Technical Information

Appearance: Semi-Solid, Rubbery Log or Round Tablets
Moisture: Approximately 50%
pH of 0.5% Solution: 6-8
Shelf Life: Up to 1 Year

Directions For Use Maximum exposure of water with Floc Roll and Floc Tabs is crucial. Each should be placed at the upper end of a drainage channel or as close as possible to active earth moving activities. They should be attached to a stake set in the center of the channel system where flow starts to concentrate.

Floc Roll and Floc Tabs can easily be transferred to different locations as site conditions change. Construction of mixing weirs may be required in areas with: short ditch lines; swelling clays; heavy particle concentrations; or steep slopes.

Placement Floc Roll and Floc Tabs are designed for placement within a drainage channel. Quantity and placement is based on flow rates and constituent loading.

Precautions/Limitations Floc Roll and Floc Tabs will become extremely slippery when wet. Clean up spills quickly, but DO NOT use water unless necessary as extremely slippery conditions will result. Floc Roll and Floc Tabs will remain viable for up to 6 months.

Handling Plastic or rubber gloves are recommended during installation. Use soap & water to wash hands after handling.

Packaging

Floc Rolls are packaged in boxes of 4 -10 lb. rolls.

Floc Tabs are packaged in a 35 lb. container with netting tubes for placement inside waterways.

For technical services or to locate your nearest Floc Tabs or Floc Roll dealer:



Call: **1-800-800-7671** • Email: **Sales@LSCenv.com**

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MEET THE BIOLOGIST:

Danielle Teravskis, Biological Monitor

Danielle has had experience as a biological technician providing monitoring for several notable organizations including U.S. Fish and Wildlife. She specializes in monitoring construction activities and the impact on wildlife, conducting field investigations for habitat analysis, and monitoring for protected species.

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GIVE BACK TO THE COMMUNITY

- Instead of making storm water a cut throat industry, take a moment of your time to give back to the community. We've actually seen a lot of competitors become collaborators because of this event.

02

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- In preparing and presenting a workshop during Storm Water Awareness Week you are actually getting in the professional development continuing education requirements you need to meet!

03

NETWORKING OPPORTUNITY

- Ever been to a storm water conference where you are running into people and trying to network with people who are in your same position? Storm Water Awareness Week is catered to the people who need the education and not just other vendors and consultants.

04

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05

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July 25-27, 2023
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PERMIT PREVIEW

WGR's unofficial preview of the new 2022
Construction General Permit.

One day of online training on June 28, 2023

\$100/person