

Rethinking SWPPP Success

Advancing Sustainable
BMPs and EDPs in
Construction and Roadwork
Projects

Part 2:
Updating Tools & Practices to
Create More Sustainable
Outcomes in Stormwater
Protection



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CONGRATULATIONS

First of all, congratulations on taking another step towards understanding more about the importance of protecting the waterways that can be impacted by earth-moving activities near them.

Secondly, know that progress comes from simple, small steps so don't be discouraged if you can't implement all of these changes on your next project. Instead, do what you can and continue to add levels as you move forward and soon you will be doing more than you thought possible.

Remember it's not just the rest of our lifetimes that we are impacting - we have the generations of those that come after us to consider as well.

As a father of three school age daughters and a lover of all things outdoors, I want to make sure that my daughters have the opportunity to enjoy our beautiful world and even more importantly to have clean drinking water for their lifetimes and their children's lifetimes as well.

**EVERY POSITIVE
STEP,**
no matter how
small,
still has a
POSITIVE IMPACT
on the **Overall Goal.**

LET'S GET STARTED!

A QUICK REVIEW

Before we launch into this next section, let's take a quick moment to review what we learned in Part 1 of this journey.

In Part 1: How BMPs, SWPPPs & EDPs working together are the new standard for protecting our waterways, we covered the **WHAT** behind each of these levels when planning any earth-disturbing projects.

We also provided context around the term sustainability for purposes of this planning.

Next up we addressed the **WHY** behind all of this:

Sustainability, in conjunction with Protecting Our Waterways, is about making sure that water - one of the essential elements of life - is available to consume for ourselves and all other living things for our generation today, the next generation as our kids grow, and the generations that follow.

Finally, we addressed the question of whether or not a balance could be achieved between simple compliance and more complicated efforts to improve sustainability in the process.

I say **ABSOLUTELY YES** it can be achieved. Now it's time to talk about the **who** and the **how** to make this a reality.



BMP
Best
Management
Practice

SWPPP
Stormwater
Pollution
Prevention Plan



EDP
Environmental
Development
Plan

CHALLENGING THE STATUS QUO

EDPs challenge us to look at new ways to get things done, not just rely on how we've always done it.

In order to separate ourselves a bit from our day-to-day where we may just be focusing on the negatives, let's instead look to other adjacent industry initiatives and how they are also being challenged to find more sustainable practices that have become part of our everyday expectations.

One we should all be familiar with is creating energy efficient designs that allow us to incorporate renewable energy sources, such as solar panels. Currently, there's a focus on natural lighting and ventilation, and optimizing HVAC systems, and electrical systems for reduced energy use.

Not only are we trying to bring new energy sources in, we're trying to optimize the systems that use energy to reduce the amount we're consuming. For those that have been in the industry for many years, this is a major change from how plans were designed in the past.

So, now that we realize it's not just "us" (*aka those responsible for stormwater and other environmental protections*) that are being challenged to make changes that provide more protections for our natural resources, we can begin to look for solutions.

Design is the first practical step contractors can take to integrate a SWPPP and EDP.



RESPONSIBILITY

The opening statement from the last section is worth repeating: *EDPs challenge us to look at new ways to get things done, not just rely on how we've always done it.*

Now we have to focus on one of the hardest parts of a journey like this - **TAKING RESPONSIBILITY** for our personal actions and the actions of those who are executing the work we are designing or implementing. We have to challenge the status quo, ask about alternatives and be willing to ask, "Have you considered a better way"?

There is a collision on SWPPPs and EDPs where you'll see failed attempts to manage these things because they're such big issues. An obvious example of this that you often see as you pass construction sites is the clearing of all of the vegetation to have a blank slate because it's easier to manage. The problem is you're destroying the natural vegetation Mother Nature gave us for clean water.

Those root bases and vegetation systems are natural filters. Responsible land use should always be a best practice and can be done by encouraging compact site planning to maximize open space and leaving some open space that's not developing at all.

Why would you do that? **Water conservation.** Moving further in our journey, we now can see how each level is an important step in the ongoing process.

DID YOU KNOW...



Less than 1% of Earth's water is accessible in freshwater lakes, rivers, and groundwater that we rely on for drinking.

CONSERVATION CONSIDERATIONS

Let's be clear EDPs don't only talk about sediment erosion control as that's the role of the SWPPP; instead, they take into account everything that impacts water usage and conservation.

When we build roads, put sewer systems in, and build water conveyance systems, we have to be aware of how those pollutant sources affect our water systems. Promoting drought tolerant plants and water efficient fixtures and appliances inside the home are great starts. We can do this through EDP management.

In Chicago where I live, when we get a big rainfall we usually get a public notification that the beaches are closed from E. coli. This is because our water treatment facilities have overflowed into Lake Michigan where we get our drinking water. We have E. coli as a result.



When Chicago was built, things like SWPPPs and EDPs didn't exist, and while the Burnham Plan set out to preserve the natural beauty of the Lake Michigan lakefront, it did not see far enough ahead to consider the impacts that we see today.

Examples like this lead us to the next layer of our journey where we think even more deeply about the importance of upfront planning to create successful outcomes for the long-term.

LEVEL 4: LIDs

Now that we understand how BMPs are a part of SWPPPs and that EDPs look at the much larger planning picture, it's time to bring LIDs along the journey as well.

Low Impact Development (LID), also known as Green Infrastructure (GI), is defined by the EPA as systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat.¹

Like the Chicago example in the previous section, many non-rural areas struggle with the volume and velocity of stormwater runoff as the land is covered by non-permeable surfaces such as buildings, parking lots and paved roadways. Placing importance on LIDs as we plan will minimize this type of event from happening in the long-term.

Examples of practices used in LID include:

- Using permeable pavements to reduce runoff and incorporating how the water gets back into the ground instead of creating sheet flow.
- Incorporating green roofs and bioswales to help reduce the amount of water that ends up in the stormwater conveyance system.



Low-Impact Development (LID) is an enhanced planning tool for EDP management.

STARTING THE JOURNEY

Now that we understand that it's up to us - Designers, Engineers, Contractors, Municipalities, Erosion & Sediment Control Providers, Project Owners, and everyone else in the circle of these projects - to take on these responsibilities, it's now time to focus on **HOW** we can make an impact nearly immediately using a combination of this information.

Again, acknowledging that all of this is MONUMENTAL to consider in one simple step, it's imperative that we keep our minds open as we plan and execute our earth-disturbing projects.

Remember to focus on those things you can control, and then be an advocate to help others follow your lead so they can make an impact on those things in their control.

This is one reason I do the amount of educational sessions each year that I do. If I can impact one person in each of the 50+ trainings, webinars, speaking engagements, etc. and each of them can impact one more in their circle, soon there will be thousands of more people working to preserve our environment and specifically our waterways.

The biggest pollutant in our waterways by volume is sediment from construction sites. When we talk about how to control that, we think about SWPPPs and using BMPs along with sustainable materials. Let's look at some current BMPs and how we can be more mindful to help lessen the overall impact today.



SEDIMENT, by volume, from construction sites is the biggest pollutant in our waterways.

GEOTEXTILES

According to a U.S. Fish and Wildlife study from 2022, we are doing a good job on keeping the largest pollutant - sediment - from the waterway. Unfortunately, now we are allowing chemical, biological, and physical pollutants to enter they system. As an educational piece, they created a presentation from the study with a plea to “Make the change to Wildlife-Friendly Erosion Control Products” available on their website.²

When we think about SWPPP planning, it’s important to think through the practices and what we are doing - from road fabrics to dewatering to silt fence to filter socks to geogrid - there’s a real chemical, biological and physical impact.

How can that be?

The answer to that is simple: **geotextiles**

A geotextile is a polypropylene or polyester. It’s basically a plastic, but by definition, it’s a permeable fabric that’s used in association with soil. It has the ability to separate, filter, reinforce, protect, or drain. Geotextile fabrics come in two forms, woven and nonwoven.

These geotextiles create chemical, biological, and physical problems for our waterways, which in turn is creating havoc for fish and wildlife. This means our efforts to control sediment pollution are now creating a new problem: **microplastics**.



As larger plastic things begin to fall apart, either by forces like waves and sunlight or from small microorganisms chewing them into smaller pieces, eventually they reach a micro level and sneak their way into the environment, into the soil, into our water, and even into animals.

MICROPLASTICS

What we also learned from the U.S. Fish and Wildlife study is that microplastics are tiny plastic particles that are around the size of a grain of rice. Some products we use in construction contain these small pieces to begin with, while others start off as larger plastic pieces, such as silt fence or filter socks.

As larger plastic pieces begin to fall apart, they find their way into the soil, our water, and our animals. This can occur from rain, sunlight, or even by microorganisms chewing them into smaller pieces.

It takes plastic hundreds of years to fully break down, releasing chemical toxins the entire time. This impacts our food and water.

Microplastics are often seen by fish and wildlife as food. Once it enters their body, it can cause sickness, fertility issues, and death.

Reducing the amount of plastic we use on construction sites and replacing it with alternative materials, including new environmentally friendly plastics, can create a more sustainable future.

Can we as designers create plans that minimize or eliminate the use of plastics? Or can we use other best management practices that are better for our harmony with Earth?



Microplastics are so small they can run through our veins and our lungs. They have even been discovered in human breast milk.³

CONSTRUCTION

As an owner of an Erosion & Sediment Control company that both manufactures millions of feet per year of filter sock using geotextiles and installs the same amount of geotextiles and other products containing microplastics, I understand the cost vs sustainability challenge.

Things like using green infrastructure or buffer strips all intersect and should be included in your SWPPP. When I got started 15 years ago, there wasn't much talk about biodegradable materials; now they are included in SWPPP designs. When we think about sustainable materials, we can use recycle to reclaim construction materials to achieve great pollution prevention on sites. We can source things locally. We can emphasize low VOC paints, finishes, and adhesives.

Green infrastructure and rain gardens are another great way to take what Mother Nature gave us and create positive drainage situations for us. When we have shallow landscape depressions that we plant with native species, we capture and infiltrate stormwater, filtering it on site.

It's always easier to capture a pollutant on site before it gets into the conveyance system. It's also cheaper and helps improve aesthetics and urban cooling benefits. Leaving vegetation is a great way to control sediment on a SWPPP and when we do that, we're enhancing biodiversity and how the habitat connects.



*We've got to think about
today to change tomorrow.*

INTERSECTION

As designers, we have to think through plans that minimize or eliminate the use of plastics and discover new BMPs that are better for our planet. This is where the intersection of sustainability, SWPPP planning, and EDPs come together.

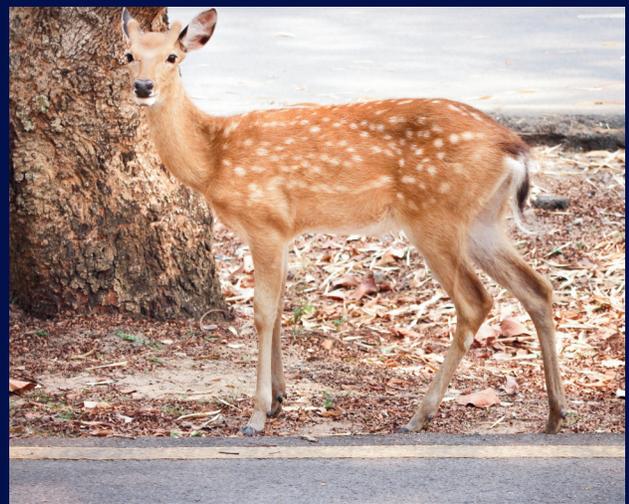
But are we willing to design it? Are we willing to implement it as a best management practice across the board? Are we willing to pay extra for it?

Knowing what's at stake, can we afford not to?

As we continue to disturb habitats, animals are getting stuck in netting. Fish are being poisoned by toxins from plastics. Birds are dying from eating microplastics. Deer are getting hit more on the roads from eating leftover straw from blankets and wattles.

The reality is, responsible manufacturers want to create safe solutions that don't break the bank for constructors. That helps everyone be sustainably responsible.

There are products on the market today that can create sustainable solutions to be implemented into designs and SWPPP plans. You'll need to balance upfront cost while thinking about maintenance costs together to find the best solution.



An estimated 14,000 deer are hit on the roads in Indiana every year. Engineers need to think about the physical impact associated with lining roadways with straw wattles and blankets.

LEADING THE WAY

Responsible manufacturer's lead the charge when it comes to creating sustainable products that limit the negative impact construction can have in our communities. Here are a few leading the way for the rest of the industry. The top one - BioWorm from my company - and the rest from other manufacturer's, continue working on solutions today to provide a better tomorrow.

BioWorm - An eco-friendly specially treated filter sock filled with recycled, kiln dried soft wood from construction waste. It boasts an ASTM 7351 sediment capture rate of 85%, while keeping 94% of the microplastics from entering the water column as it disintegrates. And it's with a price point only 10% higher than our traditional filter socks. www.siltworm.com

PaveDrain - A permeable pavement solution that creates a performance pavement with an arched reservoir for stormwater. www.pavedrain.com

Flexamat - A vegetated concrete block mat designed to control erosion while providing a stable walking/driving surface. www.flexamat.com

FODS - A trackout control system that replaces costly traditional rock stabilized entrances. Reusable and recyclable. www.getfods.com

THE NEXT STEP IS UP TO YOU!

As is often quoted:

Teamwork Makes the Dream Work

and in this case that couldn't be more true.

We need to team our BMPs with our SWPPP plans and consider EDPs together with LID/GI to build a comprehensive plan that will provide long-term positive impacts to our waterways and the environment overall.

We also need to work together as a complete ecosystem from project planning and design all the way through project implementation and finalization to prioritize sustainable methods wherever feasible vs simply letting the lowest cost alternative or “the way we have always done it” rule the day.

I hope you all will join me in thinking about a new sustainable step you can take on your next project because remember

WATER IS A SCARCE RESOURCE

**Approximately
2,250
people were born
while you read this.**



WE'RE NOT GETTING MORE WATER.

**THE TIME TO START PLANNING FOR A
MORE SUSTAINABLE FUTURE IS NOW.**

MEET THE EXPERT: JOE MOORE

As an avid outdoorsman with a deep belief in the Clean Water Clean World initiative, Joe actively works to protect waterways while enjoying the outdoor activities he loves. Whether casting a line while fishing, refining his archery skills, or coaching CYO girls' basketball, he brings together his passion for nature and his commitment to sustainability through his professional work and the companies he has founded. His dedication to environmental stewardship and inspiring a love for the outdoors makes Joe Moore a genuine ambassador for the balance between nature and recreation.



Professionally, Joe is the Founder and Chief Brand Ambassador of Erosion and Construction Solutions, which has earned a place on the Inc. Magazine Inc. 5000 list for three consecutive years. He plays an active role in advancing the stormwater community through service on several boards, including the International Erosion Control Association Board of Directors, the Indiana MS4 Partnership Board of Directors as Sponsorship Director, and the Northwest Indiana Stormwater Advisory Group. Joe holds certifications as a CPESC, MS4 CEI, and INDOT CSC. In 2024, he received the Michael Mang Award for leadership in stormwater management and water quality improvement in Indiana as well as his continued support of the Indiana MS4 Partnership. That same year, Joe and the Erosion and Construction Solutions team were honored with a Team Award from the Purdue University Society of Innovators for the development of the BioWorm™ product.

Joe is a highly sought-after speaker at conferences across the country. In 2025, he presented at events such as the International Erosion Control Conference, the Ohio Stormwater Conference, Pay Dirt, and the Quad Cities Stormwater Conference, as well as multiple sessions for Stormwater Week held virtually. He has also delivered numerous other in-person and online presentations throughout the year. Joe's expertise was recently featured in the Third Quarter 2025 issue of Environmental Connection magazine.

REFERENCES

1. LID Definition

2. U.S. Fish and Wildlife Study

3. Article: How Many Animals Die From Plastic