ACF WEST INC.
GEOSYNTHETICS

Presented By

Kevin Jenison, CESCL

WHY DOES SEDIMENT AND EROSION CONTROL MATTER?

ENVIRONMENTAL IMPACT:

IMPACTS ON FISH HABITAT

- Spawning Gravels: Clogging and Impairment
- Eggs and Fry: Smothering
- Gill Abrasion: Adverse Effects

STREAM ECOSYSTEM DISTURBANCES

- Decreased Photosynthesis
- Increased Temperature
- Water Quality Degradation

LOCAL AREA CONSEQUENCES

- Clogged Storm Sewer Systems
- Localized Flooding
- Dust Pollution
- Reservoirs, Shipping Channels, and Harbors: Filling-in Risks

Perimeter Controls & Entrances

SILT FENCE

PURPOSE

- Silt fence is specifically engineered for managing sheet flows.

CRITICAL INSTALLATION CONSIDERATIONS

- Effectiveness hinges on proper installation practices:
- Trenching to a depth of at least 6 inches.
- Reinforcement with stakes, strategically positioned on the opposite side of the fence from the approaching runoff.

VIGILANT INSPECTION AND MAINTENANCE

- Regular checks and maintenance are imperative due to the common occurrence of silt fence failures.
- Prompt sediment removal is necessary when buildup reaches 1/3 the height of the fence.

SILT FENCE

MULTIPLYING ROWS FOR ENHANCED PERFORMANCE

- Acknowledge that a single line of silt fence may be insufficient.
- Implementing multiple rows becomes essential for effectively reducing sheet flow velocities.

KEY TAKEAWAY

- Grasp the fundamental purpose of silt fence in managing sheet flows.
- Prioritize proper installation, vigilant inspection, and timely maintenance for sustained effectiveness.
- Understand the need for strategic deployment of multiple rows to optimize velocity reduction for sheet flows.

WATTLES

PURPOSE

- Wattles play a crucial role in reducing slope flow velocities by disrupting slope length and guiding water flow.

IMPORTANCE OF PROPER INSTALLATION

- Ineffectiveness stems from improper installation.
- Trenching and staking must be executed perpendicular to the direction of runoff flow for optimal performance.

ENHANCING WATTLES PLACEMENT

- Tight abutment of wattles is essential.
- Ends, particularly at the slope edge, should be tilted upward to create a 'smiley face,' ensuring water follows a centralized path.

WATTLES

ADAPTABILITY TO SLOPE GRADIENT

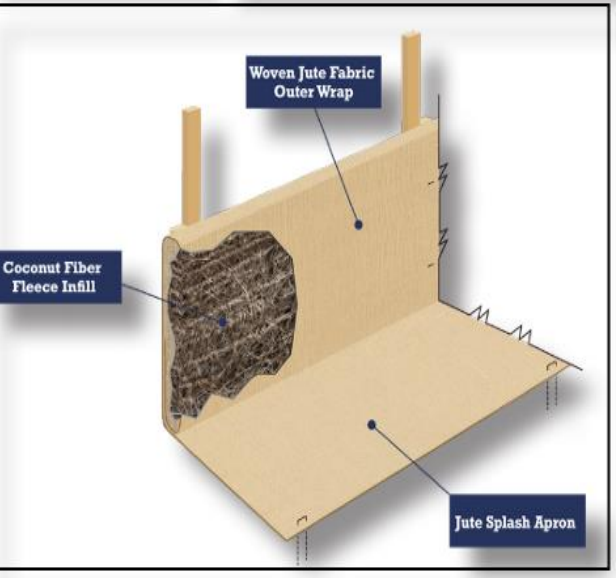
- On low-grade slopes, wattles can be spaced farther apart.
- For steeper slopes, close spacing in rows is recommended, or consideration of a rolled erosion control product (recp) as a replacement (blanket or mat).

KEY TAKEAWAY:

- Adjust wattle spacing based on slope gradient, optimizing their effectiveness and considering alternatives like recp on steep slopes for enhanced erosion control.

Wattle Fence / Bio D Silt Checks

New Products are always on Horizon.



Gator Guard

KEY TAKEAWAY:

- Return on ROI
- Longivity
- Can be ran over
- Reusable
- Not a Fix all

FODS

PURPOSE

- FODS Trackout Control Mats provide a durable, reusable construction entrance system minimizing sediment and debris tracked onto impermeable roadways. With FODS, contractors can quickly establish a stabilized entrance and relocate access locations as the project progresses.

•Reuse throughout highway or pipeline projects

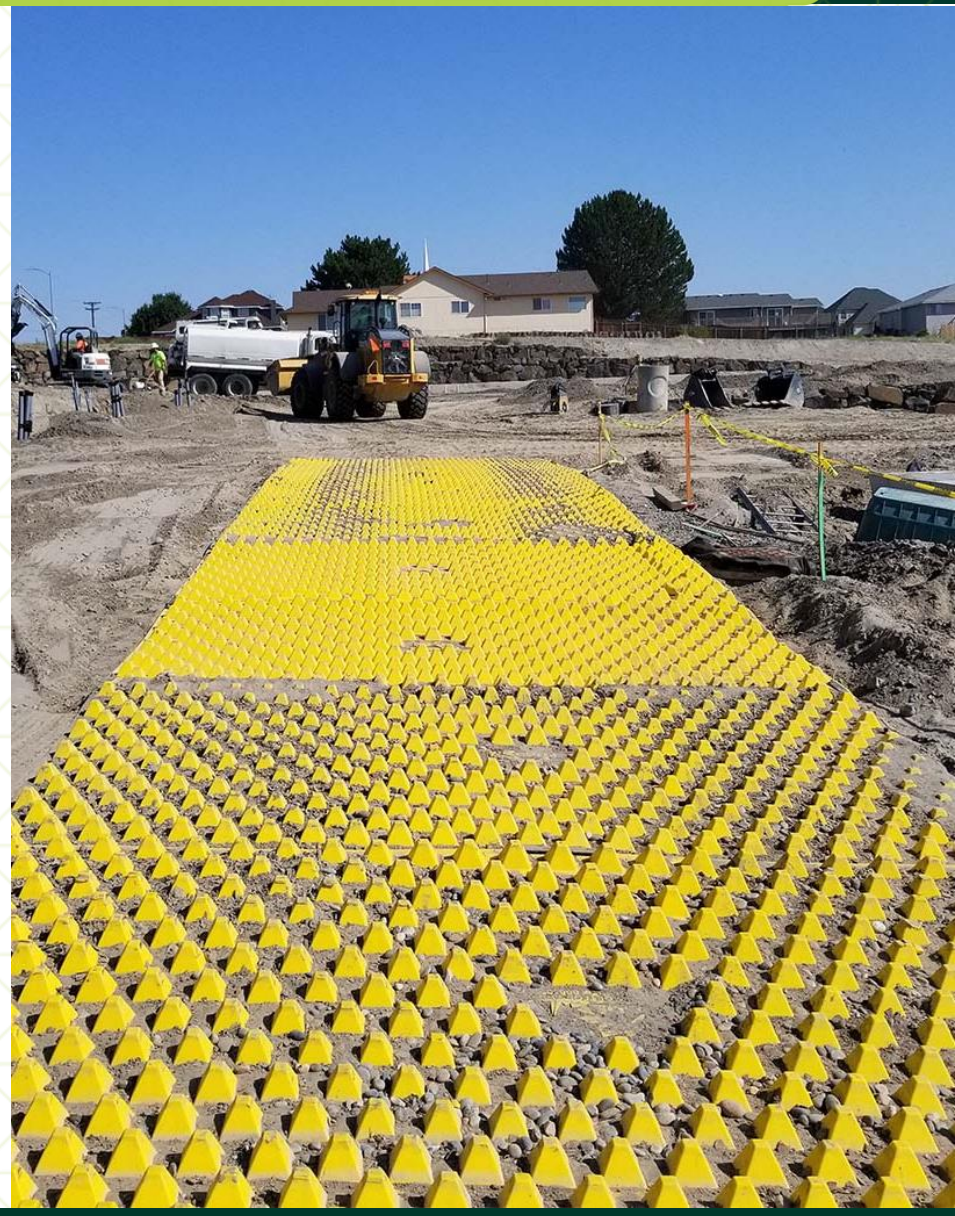
•Reduce trackout on land development work

•Eliminate rocks tracking onto active roadways

•Install over asphalt on urban projects

•Deploy a stabilized entrance in 30 minutes

•Can save in ROI Costs



Wheel Wash

PURPOSE

- Reduce environmental impact, maintain road safety, and comply with regulations. By cleaning the wheels before vehicles leave a site, it helps prevent the transfer of soil, debris, or chemicals onto public roads, minimizing the potential for accidents and environmental damage. Wheel wash systems often consist of water jets or brushes that clean the wheels as the vehicle passes through the wash area.

KEY TAKEAWAY:

- Size units based on volume of Trucks
- Type of soils will matter when using flocculants to keep water clean
- Maintance

SWEEPING

PURPOSE

- Sweeping is a dedicated practice to remove fine particles from roads and paved surfaces, capturing them with an exhaust air filter to minimize discharges to air and stormwater.

ENHANCING EFFECTIVENESS THROUGH PRE-WETTING

- Pre-wet roads and exposed soils to enhance the efficacy of sweeping operations.

STRATEGIC TIMING FOR TREATMENT

- Treat areas early in the day, particularly if they exhibit signs of dryness and dustiness.
- Early intervention mitigates challenges later in the day when traffic and temperatures escalate.

SWEEPING

REGULAR BROOM ADJUSTMENT FOR EFFICIENCY

- Periodically adjust brooms to optimize the efficiency of sweeping operations.

CRITICAL CONSIDERATION FOR AIR FILTER

- Ensure the exhaust air filter is sufficiently fine and well-contained.
- Inadequate filtration may disperse materials into the air, compromising the effectiveness of the sweeping process.

KEY TAKEAWAYS

- Recognize the purpose of sweeping in fine particle management.
- Implement strategic measures such as pre-wetting and timely treatment for enhanced effectiveness.
- Regularly adjust brooms and ensure the adequacy of the air filter to maintain optimal sweeping efficiency.

CATCH BASIN INLET PROTECTION

PURPOSE

- Catch basin inlet protection employs temporary barriers, such as silt sacks or witches' hats, to prevent and filter sediment and debris flow into storm drains or other stormwater conduits.
- Insert bags, woven fabric bags beneath inlet grates, are specifically designed to capture fine particles.

DURABILITY AND LIFESPAN

- Inlet bag material typically lasts three months and one year without replacement, depending on traffic conditions.

CATCH BASIN INLET PROTECTION

MAINTENANCE IMPERATIVE

- Regular maintenance is crucial for sustained effectiveness.
- Timely removal of these devices post-work prevents drains from becoming blocked, averting potential flooding issues.

KEY TAKEAWAYS

- Understand the role of catch basin inlet protection in sediment and debris filtration.
- Acknowledge the lifespan of inlet bag materials and the importance of routine maintenance to prevent drainage blockages and mitigate the risk of flooding

Covering BMPs

HYDROSEED

PURPOSE

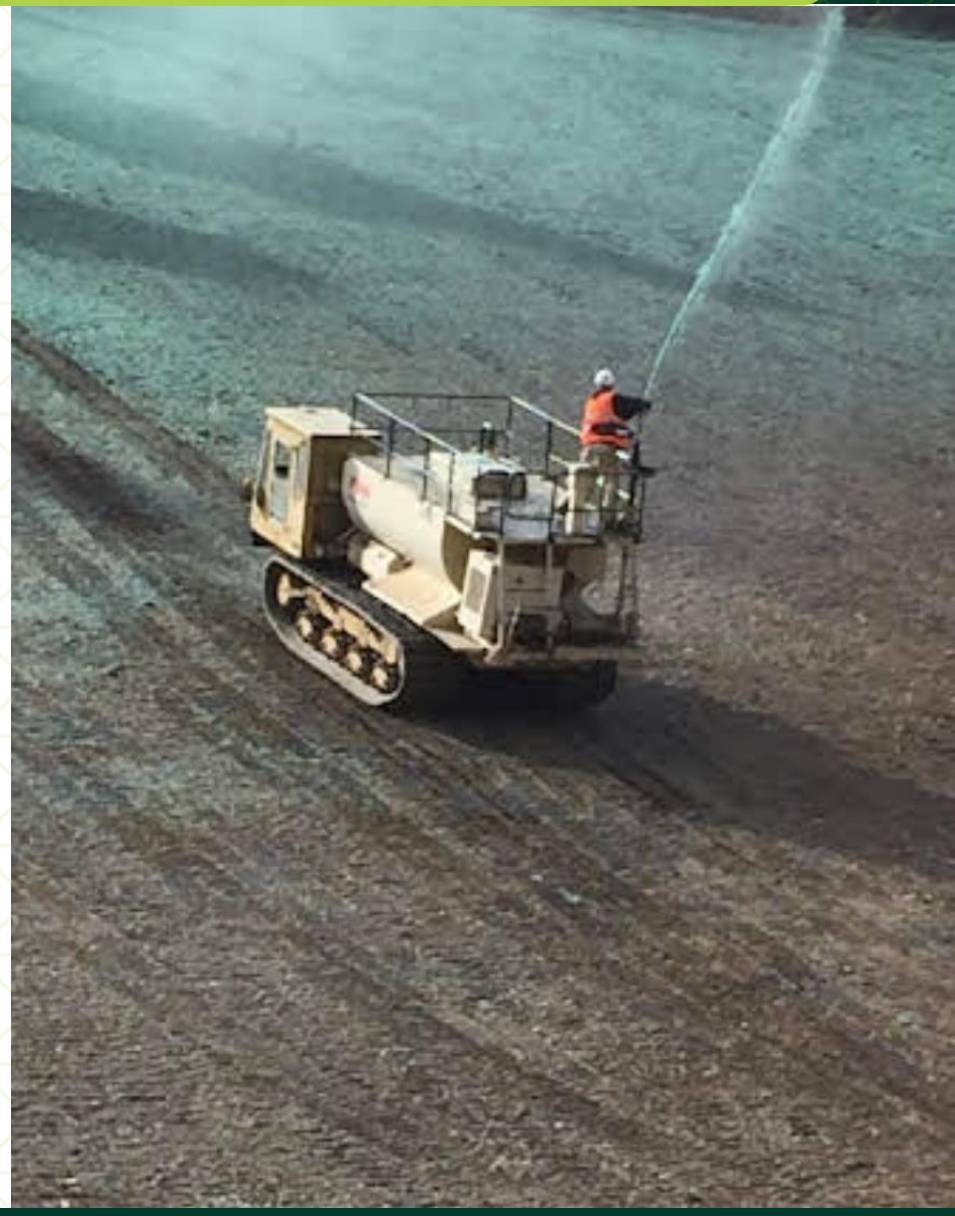
- Tailored for fostering new vegetation growth and safeguarding seeds by retaining water and soil.

ENHANCED EFFECTIVENESS ON UNEVEN SURFACES

- Hydroseeding thrives on uneven, slightly compacted soil surfaces.
- For slopes, strategic track-walking (tracks perpendicular to the slope) is essential.
- Multiple hydroseeding applications from varied directions enhance effectiveness.

MULTI-DIRECTIONAL APPLICATIONS FOR SUPERIOR COVERAGE

- To achieve optimal coverage, more than one application from different directions is often necessary.



HYDROSEED

VEGETATIVE IMPACT ON RUNOFF MANAGEMENT

- Vegetation resulting from hydroseeding significantly contributes to:
  - Reducing runoff volumes
  - Lowering runoff velocities
  - Mitigating raindrop impact energy
  - Acting as a natural filter for sediment
  - Diminishing pollution
  - Retaining soil integrity

KEY TAKEAWAY

- Recognize the potential of hydroseeding on uneven surfaces, employing multi-directional applications for robust vegetation growth that serves as a powerful tool in reducing runoff and enhancing overall environmental resilience.

Erosion Blanket

PURPOSE

- **Soil Stabilization**

Erosion control blankets provide immediate ground cover and stabilization. They are often used in areas with disturbed soil, such as construction sites, slopes, or areas where vegetation has been removed. The blankets help prevent soil particles from being carried away by water or wind.

- **Seed Germination and Plant Establishment:**

Many erosion control blankets are designed to support vegetation growth. They often contain seeds and other materials that promote seed germination and plant establishment. As the plants grow, their roots further stabilize the soil, enhancing the long-term effectiveness of erosion control measures.

Erosion Blanket

- **Sediment Control**

  By reducing the movement of soil particles, erosion control blankets contribute to sediment control. This is particularly important in construction sites where loose soil can be transported by stormwater runoff, potentially causing sedimentation in water bodies.

- **Protection Against Weather Elements:**

Erosion control blankets provide a protective layer that shields the soil from the impact of rain, wind, and other weather elements. This protection helps maintain the integrity of the soil structure and minimizes the risk of erosion.

CHECK DAMS

PURPOSE

- Engineered to curb channel erosion by moderating flow velocity

MATERIAL SELECTION FOR ENHANCED FUNCTIONALITY

- Employ materials with sediment-filtering properties (e.G., Loose rock [type i or ii], fiber rolls, compost socks, bio bags) to construct check dams.

MULTI-DIRECTIONAL APPLICATIONS FOR SUPERIOR COVERAGE

- More than one application from different directions is often necessary to achieve optimal coverage.

STRATEGIC CONSTRUCTION FOR STABILITY

- Ensure the toe of the upslope check dam matches the height of the next dam in line.

CHECK DAMS

DESIGN CONSIDERATIONS FOR WIDTH MANAGEMENT

- For check dams six feet or smaller in width:
  - Construct the center at least six inches lower than the ends.
  - This creates a spillway, preventing water from circumventing the dam and eroding the bank.

MAINTENANCE MEASURES FOR SUSTAINABLE FUNCTIONALITY

- Periodically remove sediment accumulation behind the dam.
- This prevents damage to channel vegetation and facilitates drainage through the dam

CHECK DAMS

KEY TAKEAWAY

- Learn the art of strategically implementing check dams, incorporating sediment-filtering materials and adhering to design considerations for optimal erosion control and channel stability. Regular maintenance is vital to ensuring sustained functionality.
- What do you have available to you?

Rock!

Gravel Bags

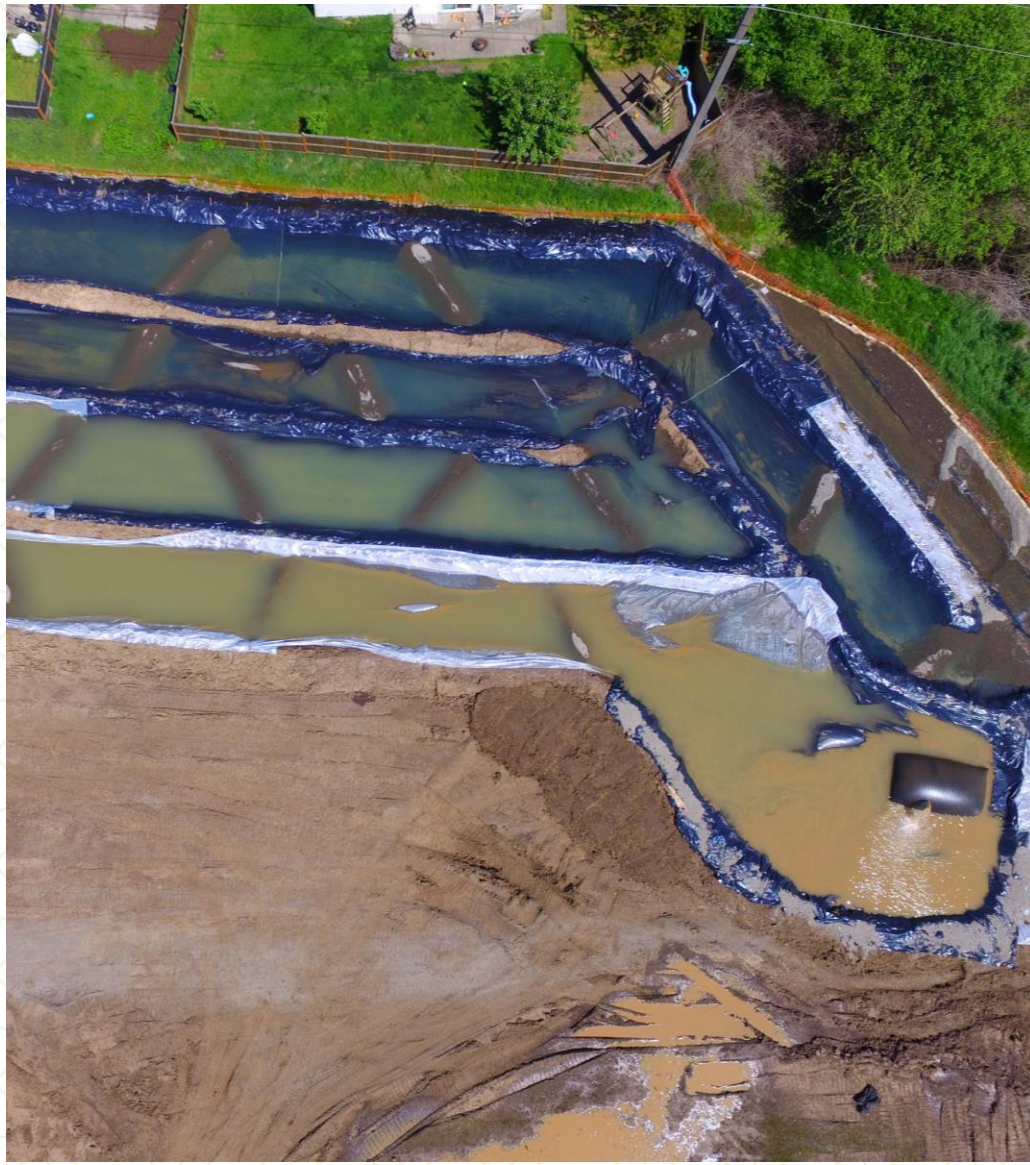
Snake Tubes

Super Sacks

Summary

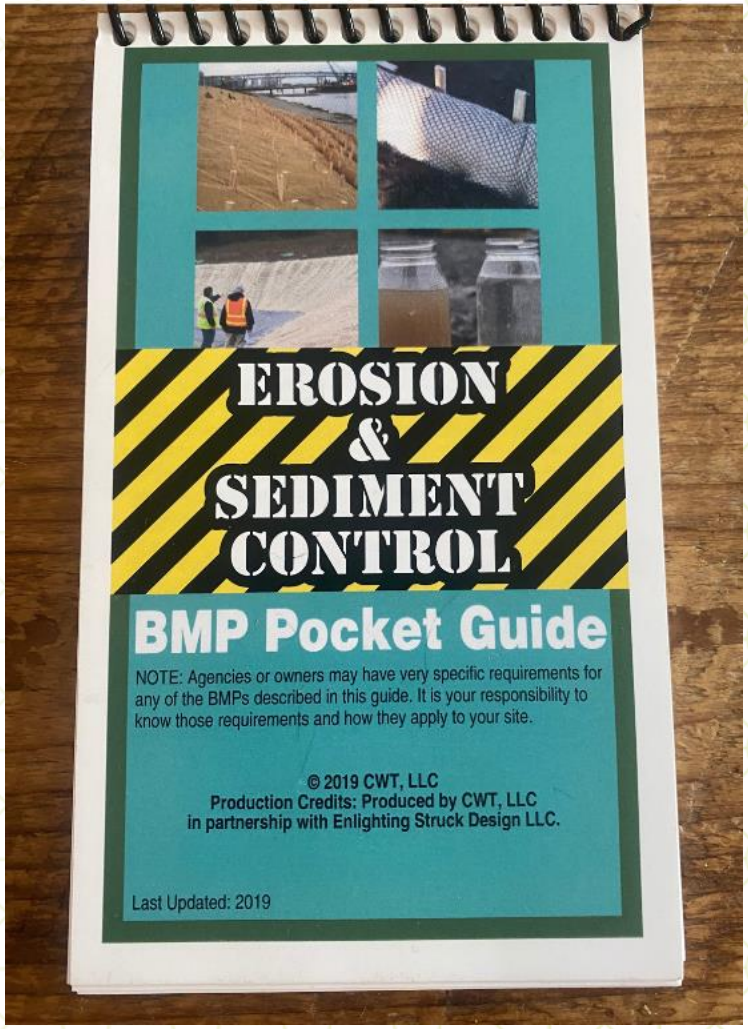
BMP TIPS

- Often, the most effective stormwater control measures are a combination of two or more BMPs
- Perimeter-control BMPs are not nearly as effective as source-control BMPs
- Spacing for velocity control BMPs is dependent on the barrier height; the lower the barrier height, the closer
- Together, the rows of BMPs should be installed
- Wattles, fiber rolls, socks, etc., Can float – they must be trenched and staked on bare ground, and they must
- Be weighted or replaced with a more effective measure on asphalt/concrete/impervious surfaces
- There is no such thing as a BMP that requires no maintenance or follow up!



BMP POCKET GUIDE

- It takes a Team
- You can not know it all!
- Build your resources and contacts



ACF WEST INC.
GEOSYNTHETICS

THANK YOU.