Laying the Groundwork

While the use of geosynthetic geomembranes in coal ash landfills and ponds has been shown to provide superior protection compared to not using a liner, there is still significant risk of leakage when a geomembrane is installed without additional geosynthetic products, such as geosynthetic clay liners, as shown in the diagram below.

GSE has been a worldwide leader in the manufacture of geomembranes, waste containment barrier systems for decades. This geomembrane and geosynthetic clay barrier system has been instrumental in providing extra containment in regulated and unregulated sites. The various concerns associated with coal ash generation need to be addressed.

Investing time and resources into the management of coal ash containment and development of comprehensive programs to control the risk of third party issues.

Addressing opponents and concerned communities.

Managing impact to power costs and consumer rates.

Coal ash barrier system

The EPA conducted a study (Ref: 2002 Bonaparte, Daniel and Koerner, U.S. EPA) that categorized coal ash as Subtitle D waste and determined that regulations were warranted. However, regulations were never put into place, but incidents of groundwater contamination at or near coal combustion residual storage facilities have resulted in the EPA considering new regulation of coal ash storage and significant companion actions on the legal, federal, congressional and multiple governmental fronts. In light of pending regulations, utility companies are attempting to better contain coal ash using EPA Subtitle D minimum guidelines, but are facing multiple challenges, including:

1. Developing a comprehensive and adaptable management framework for coal ash containment.
2. Addressing the need for comprehensive groundwater protection strategies.
3. Addressing the risk of third party liability issues.
4. Developing effective community outreach strategies.
5. Addressing the economic and environmental impacts of borrowing materials.
6. Addressing state regulations and compliance.
7. Addressing power costs and consumer rates.
Proposed regulations require every coal ash landfill to be sufficiently capped to prevent groundwater contamination. GSE’s durable geosynthetics ensure the highest level of protection and compliance possible.

Composite Liner System
A composite liner system combines the best geomembrane with the non-woven geocomposites to provide the best protection in the industry. In many cases, the geomembrane layer can be removed in the field and replaced.

Geocomposite
A geocomposite replaces the filter layer in a typical Subtitle D liner system. It uses a highly engineered geotextile with the self-sealing characteristics of bentonite clay to provide superior protection against leachate breakthrough.

Geomembrane
A geomembrane covers the composite liner system. GSE’s High Performance GeoMembrane is comprised of a purpose-fit solution.

MULTIPLE LAYERS OF RELIABILITY
GSE collaborated with leading utility companies to develop its Coal Ash Barrier System, which outperforms other Subtitle D-like constructions. It is the only system of its kind and combines three of our innovative geosynthetic products working in tandem to provide superior results.

COAL ASH BARRIER SYSTEM

Bentonite Coal Ash Resistant GCL
Our Bentonite Coal Ash Resistant geosynthetic clay liner (GCL) contains geosynthetics with sodium-bentonite clay to form a highly impermeable barrier that replaces drain layers of expensive compacted clay liners. GCL has related polymer enhancement to enhance the liner while providing superior coal ash protection.

Leak Location System
The leak location system was constructed high-density polyethylene (HDPE) geomembrane specifically designed for use in the most stringent applications. This product has a UV-stabilized upper white surface that reflects light, enables damage detection and reduces wrinkles and subgrade desiccation. In addition to its electronically conductive bottom layer, which can be tested for leaks, the product’s coal ash resistant sublayer prevents leaks from forming in the event of failures.

CoalDrain Geocomposite
CoalDrain replaces the filter layer and the leachate collection layer in a typical Subtitle D liner system. It is a highly engineered geocomposite that has been developed specifically for Subtitle D. The filter layer is comprised of bentonite clay and polymer-enhanced sodium bentonite clay to form a highly impermeable barrier that often replaces thick layers of expensive compacted clay liners. GSE has added polymer enhancement to our standard GCL to provide superior coal ash protection.

CoalDrain Benefits
- Prevents up to two feet of liquid from escaping, thereby reducing costs,
- Simpler and less costly to install than traditional systems,
- Requires less equipment and personnel to handle due to its greater flexibility,
- Lower quality assurance costs,
- Improves groundwater quality by preventing leachate breakthrough,
- Meets the necessary requirements for a purpose-fit solution.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We’ve built a reputation of reliability through our dedication to providing products that meet your specific needs for maximum efficiency and protection for the entire duration of the system’s lifecycle. Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

[Image: Coal Ash Barrier System Diagram]

[Subtitle D Cover System]

Top Soil
Drainage
Compact Clay Liner [> 40mils]
CoalDrain Geocomposite
Resistant Coal Ash Liner
Compacted Clay Liner
GCL
Base Material
Existing Soil

Worldwide Locations
Our business is global in nature and we serve our customers globally. We operate 20 manufacturing facilities in the U.S., 5 in Europe, 1 in the Middle East, and 3 in Asia. GSE can provide local service to our worldwide customers.

[Geographic Locations Map]