The FLINT Advantage

Flint Industries has installed more sludge cap reinforcement systems than any other installer in North America.... nearly 20 million square feet.

Our company has installed these systems in both wet (requiring floating) and dry (sewn in place) conditions, working with such contaminates as radiation, PCB's, asbestos, heavy metals, phosphorous and ph extremes.

Flint has worked with the DOE at the Savannah River Site, Oak Ridge and the Idaho National Laboratory as well as numerous Superfund Sites for various general contractors.

Although each site is unique, our vast experience allows us to approach each project with confidence as well as enabling us to assist other contractors on site for the benefit of the overall project.

Flint has developed its own unique geotextile fabric for the exclusive purpose of working with sludge, either as reinforcement in a sludge cap or as a geotextile tube for dewatering. This highly specialized geotextile exhibits superb tensile strength, is capable of achieving extraordinary seam efficiencies, has an extended UV lifespan for cases where the backfill is delayed and is competitively priced.

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Sludge Lagoon Cap Reinforcement Installation Services

Geotextiles versus Geogrids

Geotextiles possess greater strength than geogrids for slightly less cost. It is recommended that the reinforcement system should be designed to function at about a 5% to 7% strain... not the ultimate strength (point of failure) that most try to work with. Flint's FL4x6pp (Style 1853) geotextile outperforms geogrids by a wide margin, even allowing for seaming at a 60% or greater seam efficiency. To best see this comparison, refer to Table 1.

Table 1 - Strength Comparisons

	2% *(ppf)*		*5%* *(ppf)*		*10%* *(ppf)*		*Ultimate* *(ppf)*	
	FL4x6pp	**BX1100**	**FL4x6pp**	**BX1100**	**FL4x6pp**	**BX1100**	**FL4x6pp**	**BX1100**
MD	276	280	1092	580	3024	na	5856	850
CMD	1896	450	4032	920	7356	na	8064	1300

** FL4x6pp (with style 1853)is a Geotextile & BX1100 is a Geogrid.*

When used for sludge reinforcement, geotextiles consistently outperform geogrids in soft soils with a vane shear of under 300 psf. See Table 2.

Table 2 - Vane Shear vs Mud Waves

Vane Shear (psf)	**Recommended Seam Strength** (ppi)	**Mud Wave Height Potential** (ft)
0-50	350	8 (+)
51-100	338	7
101-150	325	6
151-200	313	5
201-250	300	4
251-300	266	3
301-350	233	2
351-400	200	1

A sewn geotextile will not separate when undergoing "mud waves" whereas a "lapped" geogrid will. The only manner in which this can be prevented in a grid system is by substantially increasing the required lap of the geogrid from a standard 3' to a more conservative 5' or by using bodkin bars to mechanically secure the grid panels together... both of which significantly increase the price of a grid reinforcement system over that of a geotextile.

The process of migration occurs when there is no separation and fine soils or sediments are backfilled causing mud waves to occur due to "heaving". This "kneading" introduces the soft soil sediment being covered into the backfill zone and can eventually cause the deformation of the geomembrane, thus placing it under additional stress and possibly failure. In the case of geogrids used in this application, a nonwoven or woven geotextile should be added to the geogrid to prevent this. When using a High Strength Woven Geotextile (HSWG), the fabric performs both the separation as well as the structural support functions.