

PLi

POTOMAC LANDFILL DUMFRIES, VA

EXPANSION AND END USE PROPOSAL

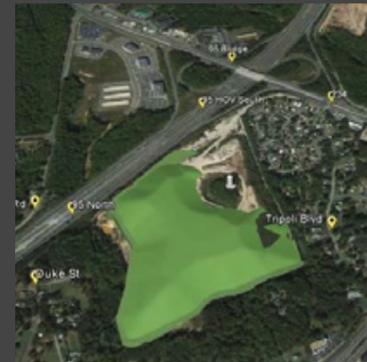
Potomac Landfill



Future Plan



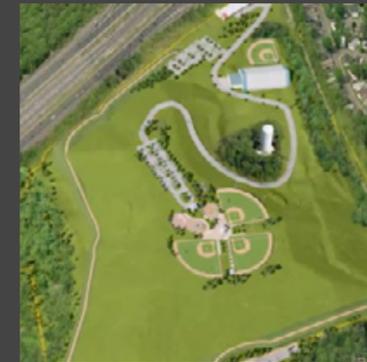
Phasing
Construction of
Expansion



View Corridor
Studies



End Use Proposal
Envisioning the Future



Potomac Landfill
Feature Presentation



Case Studies

HOST FEE



Support Documents
Host Fee

PHASING



Support Documents
Phasing Technical
Drawings

BERM



Support Documents
Macroencapsulated
Berms

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8 Landfills Transformed

Cesar Chavez Park, Berkeley



Chambers Gully, Australia



Millennium Park, Massachusetts



Freshkills Park, New York



Hiriya, Israel



Sai Tso Wan, Hong Kong



Tifft Nature Preserve, New York



Mount Trashmore, Virginia



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CASE STUDY: Cesar Chavez Park



90-acre peninsula in Berkeley, CA
Originally known as North Waterfront.

Park, the landfill was sealed in 1991
after over 30 years of use.

Park features a large multi-purpose turf
field, picnic areas with barbeque grills,
hiking trails, an off-leash dog area, and
more.

Park also features a wildlife sanctuary
at undeveloped northern end of the
park.

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CASE STUDY: Chambers Gully, Australia

Former landfill that was reclaimed, naturalized, and reopened as a park in 1997.

The park was reclaimed by local volunteers, and features a number of walking and hiking trails.

Chambers Gully is part of a larger wildlife reserve, Cleland Wildlife Park, in South Australia.

It is a popular hangout for hikers and koalas. Many hikers report seeing 5-15 koalas during a single hike.

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CASE STUDY: Millennium Park, Massachusetts



Features a number of amenities, including trails/paths, fields, a tot lot, and more.

Walking trails are divided into three lengths to accommodate all types of exercise.

Canoe/small boat launch provided for non-motorized watercraft access to the Charles River.

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CASE STUDY: Freshkills Park, New York



At one time, the Freshkills Landfill was the largest landfill in the world, as well as the largest man-made structure. It was the primary landfill for New York City's municipal waste for the second half of the 20th century.

The landfill closed in March 2001, and was temporarily reopened in September 2001 to assist with sorting through the debris from Ground Zero. In 2008, reclamation of the site began for a multi-phase, 30-year site redevelopment for reuse as Freshkills Park.

Completed features of the park include sports courts, a playground, pathways, soccer fields, parking areas, and open lawn space.

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CASE STUDY: Hiriya, Israel



Landfill in Tel Aviv, Israel that closed in 1999
In 2001, the process of rehabilitating the
mountain began for reuse as a park.

Sections of the park are already open,
but the master plan will be completed in
2020. The plan includes walking and cy-
cling trails, a recreational pond, a tiny zoo
and picnic areas

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CASE STUDY: Sai Tso Wan, Hong Kong



Sai Tso Wan was a landfill before being repurposed into a large community park.

The park was commissioned on April 30, 2004.

The park features a multi-purpose grass field, two batting cages, a playground, a jogging track and more.

The park is powered by wind turbines, solar cells and energy generated from combustion of methane gas.

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CASE STUDY: Tifft Nature Preserve, New York

A 264-acre nature refuge dedicated to conservation and environmental education.

Created in 1972 from land purchased by the City of Buffalo for a landfill site. The reserve opened in 1976.

The preserve features five miles of nature trails, three boardwalks with bird-watching areas, trails open all year, and guided walks through the park.

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CASE STUDY: Mount Trashmore, Virginia Beach



165-acre recreation area comprised of two man-made mountains, and two lakes.

The main mountain, Mount Trashmore, is over 60 feet high and 800 feet long.

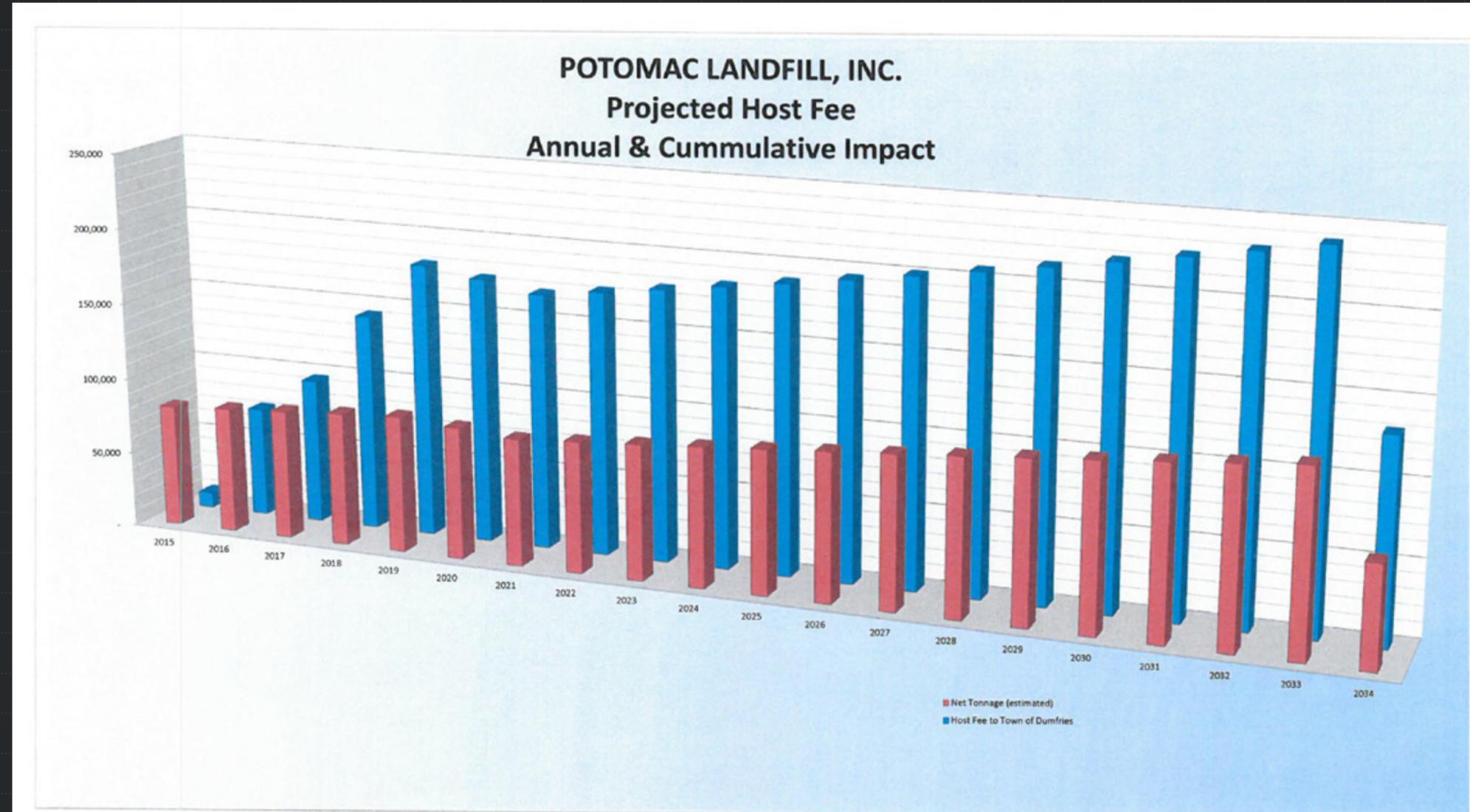
The park features grassy areas, picnic shelters, grills, volleyball courts, horseshoe pits, outdoor fitness stations, a concession stand, a skate park and halfpipe, playgrounds, trails, and xeriscaping. Fishing is also permitted with the appropriate permits.

SUMMARY OF POSTED SCALE TICKETS

	TOTAL GROSS TONS	TONS EXCLUDED FROM HOST FEE					TOTAL EXCLUDED TONS	TOTAL NET TONS	HOST FEE \$2.00/TON	
		CONCRETE	DIRT	AGGREGATE	METAL	OCC	MISC			
2011	112,721	11,547	1,355	420	3,673	725	8,842	26,562	86,159	\$ 172,318
2012	100,787	16,589	15,840	1,823	2,278	752	5,041	42,323	58,464	\$ 116,928
2013	101,887	9,279	10,918	3,769	1,489	690	182	26,327	75,560	\$ 151,120
2014	<u>127,705</u>	<u>10,090</u>	<u>20,285</u>	<u>5,484</u>	<u>1,090</u>	<u>422</u>	<u>87</u>	<u>37,458</u>	<u>90,247</u>	\$ 180,494
TOTAL	443,100	47,505	48,398	11,496	8,530	2,589	14,152	132,670	310,430	\$ 620,860
AVERAGE	110,775	11,876	12,100	2,874	2,133	647	3,538	33,168	77,608	\$ 155,215

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Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Net Tonnage (estimated)	80,500	81,305	82,118	82,939	91,233	92,145	93,067	93,998	94,938	95,887	96,846	97,814	98,792	99,780	100,778	101,786	102,804	103,832	104,870	96,067
Host Fee to Town of Dumfries	\$ 10,063	\$ 72,551	\$ 96,078	\$ 142,942	\$ 182,466	\$ 184,290	\$ 186,134	\$ 187,996	\$ 189,876	\$ 191,774	\$ 193,692	\$ 195,628	\$ 197,584	\$ 199,560	\$ 201,556	\$ 203,572	\$ 205,608	\$ 207,664	\$ 209,740	\$ 192,134
Projected Cumulative Host Fee	\$ 10,063	\$ 82,613	\$ 178,691	\$ 321,633	\$ 504,099	\$ 688,389	\$ 874,523	\$ 1,062,519	\$ 1,252,395	\$ 1,444,169	\$ 1,637,861	\$ 1,833,489	\$ 2,031,073	\$ 2,230,633	\$ 2,432,189	\$ 2,635,761	\$ 2,841,369	\$ 3,049,033	\$ 3,258,773	\$ 3,450,907
Host Fee Rate	\$ 0.50	\$ 1.00	\$ 1.50	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00	\$ 2.00



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POTOMAC CDD LANDFILL TOWN OF DUMFRIES, VIRGINIA		JOYCE ENGINEERING 1654 GAINBY LANE FREDERICKS, VA 22030 PHONE: (804) 386-4323	
PROJECT NO. 382		PHASING PLAN: PHASE 1 BERM	
SCALE AS SHOWN		DRAWING NO. 1A	
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POTOMAC CDD LANDFILL TOWN OF DUMFRIES, VIRGINIA			
PHASING PLAN: PHASE 1 FILL			
PROJECT NO. 382			
SCALE AS SHOWN			
DRAWING NO. 1B			

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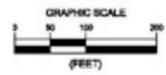


NOTE: ALL GRADES REPRESENT TOP OF INTERMEDIATE COVER.

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PROJECT NO. 382	DRAWING NO. 2A
SCALE AS SHOWN	GRAPHIC SCALE (FEET)
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PROJECT NO. 382	
SCALE AS SHOWN	
DRAWING NO. 3B	

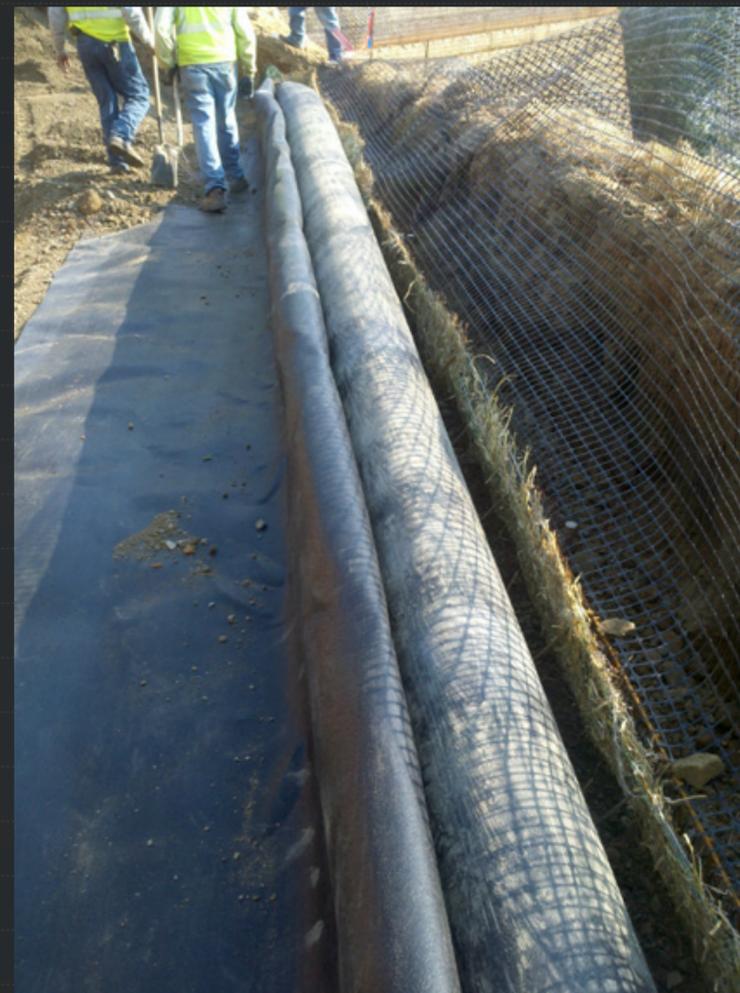
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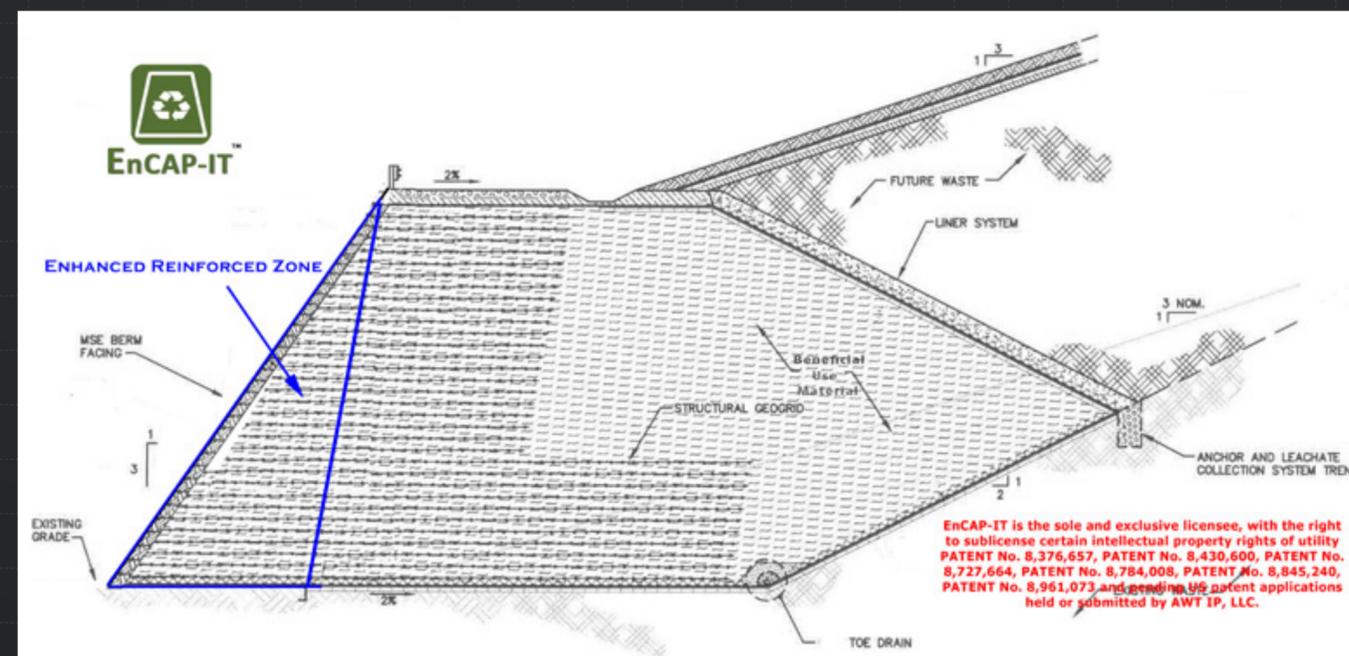
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Solution: The EnCAP-IT Method

The EnCAP-IT Method

99.7% of EnCAP-IT systems consist of recycled fill material of all types; from coal combustion residuals (CCRs) and other environmentally controversial substances to common soil, crushed concrete and glass. By using a sustainable method of full encapsulation that responsibly reuses the material and keeps it stable and harmless for hundreds of years. EnCAP-IT supports recycling and responsible reuse.

For the Environment

In our work with the waste industry, constructing high berms adjacent to landfills extends the landfills' lifespan by increasing vertical capacity (airspace) without enlarging their geographic footprint. However, the ultimate beneficiaries are communities and municipalities who find their long-term waste disposal dilemmas resolved.

Unparalleled Safety

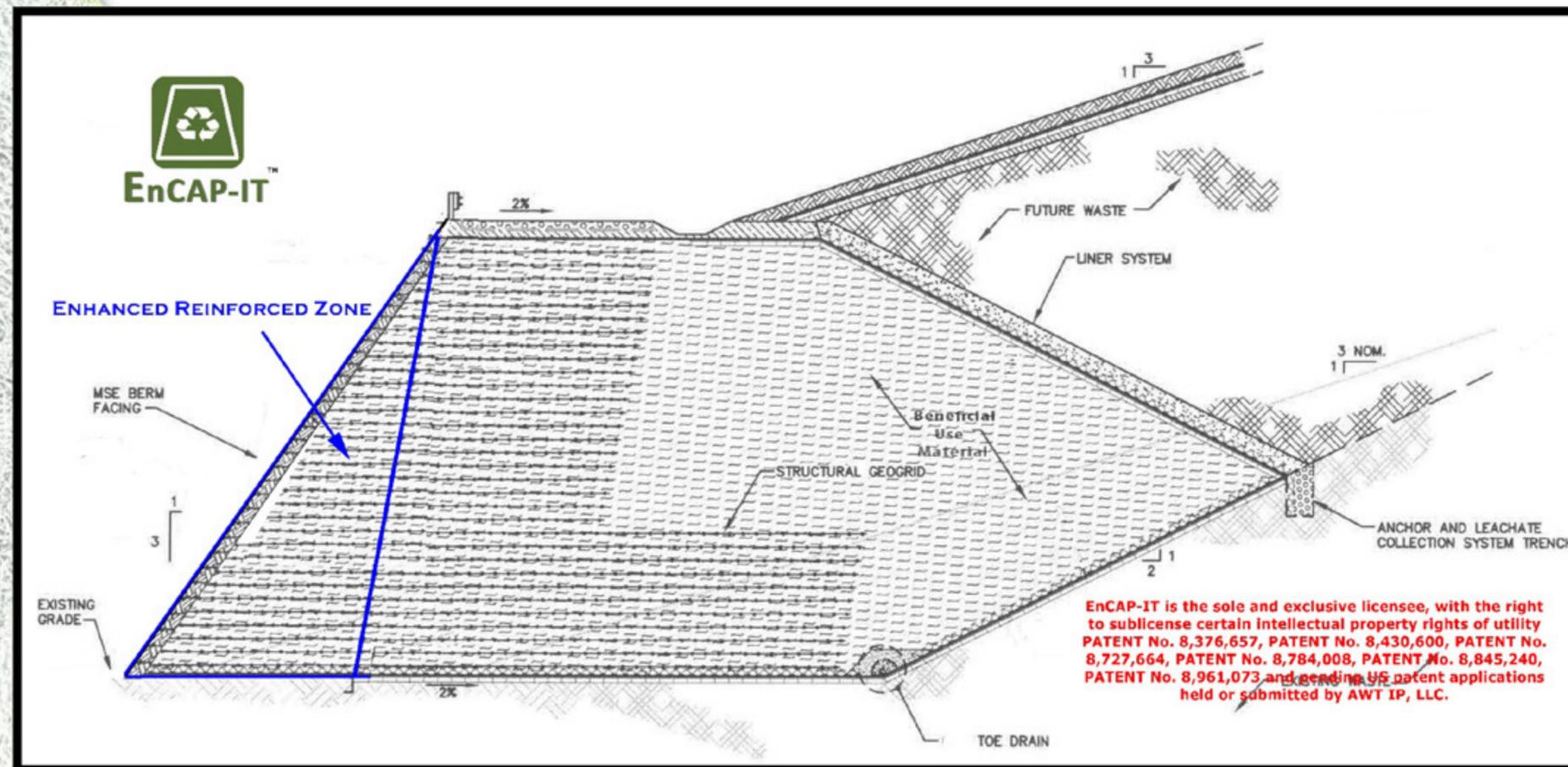
- Proper design, construction quality control (CQC) and construction quality assurance (CQA).
- Internal and external drainage controls using an EnCAP-IT-patented proactive internal drainage system.
- Liquid/pore pressure management. No liquids = No liquefaction.
- Encapsulation to eliminate moisture, with a uniaxial geogrid for added stability.
- Berms constructed with un-encapsulated, non-cohesive CCRs or other materials do not have this important protection.



Why are EnCAP-IT Methods Unique?

- Uses multiple common and proven technologies including:
 - Subtitle D Composite liners & Geomembrane cap systems
 - MSE (mechanically stabilized earthen) berms
 - Geogrids for structural stability
- The manner in which these technologies are combined – complete encapsulation, structural stabilization and pore pressure management – make them unique.
- Methods are extremely flexible and can be used in various combinations dependent on site specific conditions and requirements.
- Certain key elements of encapsulation techniques are trade secret and patent(s) pending protected.
- The unique configurations for all MSE berm sections (> 150) are currently utility patent(s) or patent(s) pending.

EnCAP-IT Macroencapsulation Berm



Sustainable

EnCAP-IT Vertical Expansion Berm



- The EnCAP-IT berm shown is 55' high and constructed of CCP's and contaminated soil.
- The EnCAP-IT vertical expansion berm recently withstood a 5.8 – 6.0 (Richter Scale) earthquake.
- Three days later it withstood Hurricane Irene impacts of 7-8" of rain in a 12-hour period coupled with 65 mph wind gusts and 45 mph sustained winds .
- Upon follow-up inspections **NO** impacts were noted either from the earthquake or the hurricane remnants.

