CLOSURE COST ESTIMATE WORKSHEET FOR INDUSTRIAL LANDFILL

OWNER:_____ **PERMIT NO.**_____

CURRENT PERMIT RENEWAL YEAR:_____ **CONVERSION FACTOR: 4840.02 SQ. YDS./ACRE**

TOTAL PERMITTED AREA:_____**ACRES** **CONVERSION FACTOR : 0.3333 YDS./FT.**

AREA CURRENTLY OPEN:_____**ACRES**

LARGEST AREA TO EVER BE OPEN AT ANY TIME:_____**ACRES**
(use this area for estimating closure costs)

Note: Industrial landfills which have waste containment systems and appurtenances with planned maintenance schedules, environmental monitoring systems with planned maintenance schedules and periodic sampling and analysis requirements, or requirements to maintain insurance coverage during the long-term care period must also complete the "Post-Closure Cost Estimate for Industrial Landfill" worksheet.

ITEM	QUANTITY	UNITS	UNIT COST	COST	SUBTOTALS
Low Permeability Soil Layer					
Preparation of landfill to receive cover (final grading)		ACRE	$53.75	$ 0.00	
Soil--compacted, off-site		CU. YD.	$5.63	$ 0.00	
Soil--compacted, on-site		CU. YD.	$2.20	$ 0.00	
Low Permeability Soil Layer Subtotal					**$ 0.00**
Vegetative Soil Layer					
Vegetative soil--off-site		CU. YD.	$5.20	$ 0.00	
Vegetative soil--on-site		CU. YD.	$1.77	$ 0.00	
Seeding and mulching		ACRE	$1,500.00	$ 0.00	
Vegetative Soil Layer Subtotal					**$ 0.00**
Erosion Control					
Terraces		Lin. FT.	$0.55	$ 0.00	
Grass ditching/channels		Lin. FT.	$9.00	$ 0.00	
Riprap ditching/channels		Lin. FT.	$13.00	$ 0.00	
Erosion Control Subtotal					**$ 0.00**
Professional Services					
Engineering (bid documents)		Lump Sum		$	
Topographic and boundary survey		Lump Sum		$	
Engineering (construction oversight)		Lump Sum		$	
Professional Services Subtotal					**$ 0.00**
Estimated Closure Cost	(sum of all subtotals above)				**$ 0.00**
Administration and Contingency					
Administration and contingency (Estimated Closure Cost x 10%				$ 0.00	
Administration and Contingency Subtotal					**$ 0.00**
Total Current Closure Costs					**$ 0.00**

(Instructions and explanations of bid items and sources of unit costs are provided on the back of this page.)

Contact Person/Cost Estimate Prepared By:_____
Phone Number:_____

The minimum final cover requirements for an industrial landfill include a landfill cap consisting of a minimum of 18 inches of compacted soil overlaid by a minimum of 12 inches of soil capable of supporting vegetation. Closure is complete when the cap has been seeded and vegetation is fully established. All estimates submitted must be consistent with the KDHE-approved closure plan.

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NOTES:

The closure cost estimate should reflect all expenses required for a third party to perform closure activities on your landfill. The closure activities must be based on the largest area ever to need final closure as per State requirements and the specifics of your closure plan. KDHE has supplied some third party unit costs for certain items based on previously submitted estimates, Means Cost Guides (*Environmental Remediation Cost Data-Assemblies*, *Environmental Remediation Cost Data-Unit Price* and *Site Work & Landscape Cost Data*) and other estimates provided to KDHE by contractors. The Means estimates were multiplied by a factor of 0.85 to adjust national averages to locations in Kansas. You may line out the KDHE-supplied unit costs and write in numbers obtained from actual bids for your site or bids from third party contractors. However, please supply KDHE with the source of your unit cost.

Some unit costs are not provided. KDHE could not obtain usable data to establish a unit cost, or the item is too site-specific. The permittee should complete these unit costs based on characteristics of their particular site.

CLOSURE ITEMS:

Low Permeability Soil Layer

Preparation of landfill to receive cover (final grading): Cost includes grading of waste, daily or intermediate cover, and stockpiles to the required base grades and to develop a working surface on which to apply final cover. (Source: Means 18-05-0101)

Soil--compacted, off-site: Cost includes purchase of the soil, hauling and spreading of the soil in a minimum of two lifts and compaction. This layer must have a minimum thickness of 18". *Do not include this item if soil is available on-site.* (Source: state-wide average + soil Means 17-03-0424 + compaction Means 226-6000)

Soil--compacted, on-site: Cost includes hauling and spreading of on-site materials in a minimum of two lifts and compaction. This layer must have a minimum thickness of 18". (Source: state-wide average + compaction Means 226-6000)

Vegetative Soil Layer

Vegetative soil--off-site: Cost includes purchasing and hauling soil to the landfill and spreading of soil capable of supporting vegetation on top of the low permeability layer. *Do not include this item if soil is available on-site.* (Source: state-wide average + soil Means 17-03-0424)

Vegetative soil--on-site: Cost includes the loading of on-site soil capable of supporting vegetation and spreading of soil on top of the low permeability layer. (Source: state-wide average from last year's estimates)

Seeding and mulching: Cost includes seeding and application of 1" of straw mulch. (Source: state-wide average from last year's estimates)

Erosion Control

Terraces: Cost includes the construction of soil terraces to control erosion. (Source: US Natural Resources Conservation Service)

Grass ditching/channels: Cost includes the construction of grass-lined ditches to provide drainage from the top of the landfill. (Source: Means 33-05-0805)

Riprap ditching/channels: Cost includes the construction of riprap-lined ditches to provide drainage from the top of the landfill. Riprap should be used where flow velocities are in excess of 5 feet/sec. (Source: Means 33-05-0804)

Professional Services

Engineering (bid documents): Cost should include development bid documents for project letting from existing closure plans.

Topographic and boundary survey: Cost should include development final closure survey and establishment of final waste boundaries.

Engineering (construction oversight): Cost includes all construction quality assurance inspections and testing required to properly close the landfill and preparation of the certification of closure report.

Administration and Contingency

Administration and contingency: Cost should include third party administration of closure and any additional cost contingencies. Assume 10%.