

## **FAX COVER**

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TVA 15536 (5-1999)

## ATTACHMENT 1 CLOSURE QUANTITIES

	E A1 – COMPACTED CLAY FINAL COVER		
ITEM	DESCRIPTION	UNITS	Quantity
1.00	1' of Compacted Clay Soil 95% Std Proctor	bcy	103907
	Placed in 6" lift		
2.00	1' of Vegetated Clay Layer 90% Std.	bcy	103907
3.00	Seeding	ac	64.4
4.00	Erosion Control Matting	sy	311722

TABLE	A2 - GEOCOMPOSITE FINAL COVER		
ITEM	DESCRIPTION	UNITS	Quantity
1.00	Geomembrane	sy	311722
2.00	Geocomposite Drainage Layer	sy	311722
3.00	1' Cover Soil	bcy	103907
4.00	6" Vegetation Layer	bcy	51954
5.00	Seed	ac	64.4
6.00	Erosion Control Matting	sy	311722

## ATTACHMENT 2 CLOSURE/POST CLOSURE COST ESTIMATES

# Cost Estimate Work Sheet A Closure Activities

#### Notes:

- 1) This worksheet is to be submitted as part of the C/PC Plan.
- 2) Provide a cost for all activities which apply.
- 3) Additional cost information may be attached as needed.
- 1. Establishing final cover:

Δ	Ton	Soil	
Λ.	1.	Quantity Needed (cu.yd.)	103907
	2.	Excavation unit cost (\$/cu.yd.)	\$3.95
	3.	Excavation cost (1.x 2.)	\$410,203.57
	4.	Placement / spreading unit cost (\$/cu.yd.)	\$9.21
	5.	Placement cost (1.x 4.)	\$957,141.66
		* TOTAL: Top Soil (3.+ 5.)	\$1,367,345.23
В	Lan	dfill cap	
		On-site Clay	
	••	a. Quantity needed (cu.yd.)	
		b. Excavation unit cost (\$/cu.yd.)	
		c. Excavation cost (a.x b.)	
		d. Placement / spreading unit cost (\$/cu.yd.)	
		e. Placement cost (a.x d.)	
		f. Compaction unit cost (\$/cu.yd.)	
		g. Compaction cost (a.x f.)	
		* TOTAL On-site Clay (c.+ e.+ g.)	Ō
	_		
	2		103907
		a. Quantity needed (cu.yd.)	\$1.32
		b. Purchase unit cost (\$/cu.yd.)	\$136,734.52
		c. Purchase cost (a.x b.)	\$5.26
		d. Delivery unit cost (\$/cu.yd.)	\$546,938.09
		e. Delivery cost (a.x d.)	\$2.63
		f. Placement / spreading unit cost (\$/cu.yd.)	\$273,469.05
		g. Placement cost (a.x f.)	\$1.32
		h. Compaction unit cost (\$/cu.yd.)	\$136,734.52
		i. Compaction cost (a.x h.)	\$130,734.52
		* TOTAL Off-site Clay (c.+ e.+ g.+ i.)	\$1,093,876.19
	3.	Quality control/testing of clay	
		<b>a.</b>	
		<b>b.</b>	
		<b>c.</b>	
		+ TOTAL Clouds stine (LC)	\$26,318.64
		* TOTAL Clay testing (LS)	Ψ20,310.04

)		C.	Synthetic Membrane		
			1. Quantity needed (		
			2. Purchase unit cos		
			3. Purchase cost (1.)		
			4. Installation unit co		
			<ol><li>Installation cost (1</li></ol>	.x 4.)	
			* TOTAL	Synthetic Membrane (3.+ 5.)	0
		D.	Geotextile Filter Fabric	; ;	
	•		1. Quantity needed (		
			2. Purchase unit cos		
			3. Purchase cost (1.		
			4. Installation unit co	ost (\$/sq.yd.)	
			5. Installation cost (	1.x 4.)	
			* TOTAL	Geotextile Filter Fabric (3.+ 5.)	0
٠					
		то	TAL for establishing fina	al cover (*):	\$2,487,540.06
			(A.+ B.+ C.+ D.)		
			,		
2.	Establishing vegetation co	ver			
	25.0.0.0.0.0.0	A.	Labor (\$/acre)		\$460.58
ı		В.	Seeding (\$/acre)		\$460.58
		C.	Fertilizing (\$/acre)		\$328.98
		D.	Erosion control mattin	g (\$/acre)	\$65.80
		Ε.	Number of acres		64.4
		<b>T</b> C	TAL for establishing you	detation cover:	\$84,746.01
	•	10	TAL for establishing ve		
			E.x (A.+ B.+ C.+	U.)	
•	Establishing or completing		eten to minimize and		
3.	control erosion/sedimenta		Stell to Illianiaze and		
	30,111.3, 3, 3, 3, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Α.	Sediment pond		
			1. Excavation/cons	truction (\$)	
			2. Materials (e.g. pi	pe, riprap) (\$)	
					inception of the section of the sect
		* 7	OTAL (1.+ 2	.)	<u> </u>
		В.	Diversion ditch		
		ъ.	1. Construction (\$)		
			2. Materials (\$)		
			Z. Waterials (4)		Same and the second sec
		* .	TOTAL (1.+ 2	<b>.)</b>	
		C	Temporary structure	S	
			1. Comstruction (\$	)	
			2. Materials (\$)		

		* TOTAL	(1.+ 2.)		0
	TOTAL for extablishing or control erosion and sedime			nize and	<u> </u>
4.	Establishing or completing and treatment system:	leachate c	ollection removal,		
		1. 2. 3. 4.	llation Number of feet Piping system uni Piping system cos Storage tanks (\$) Pumps (\$)		
	TOTAL for establishing or (3.+ 4.+ 5.)	completing	leachate system:		
5.	Establishing or completing	A. Insta 1. 2. 3.	allation Materials (e.g. pip Equipment (e.g. p Labor (e.g. drilling	oing) umps) j)	
	TOTAL for establishing or gases: (1.+ 2.+ 3.)	completing	a system to colle	ct or vent	0
6.	Establishing or completing monitoring system:	groundwa	ter/surface water		
		3. 4. 5. 6.	Number of wells Drilling unit cost ( Drilling cost (1.x 2 Materials unit cost Materials (1.x 4.) Equipment (e.g. p	2.) st (\$/well)	
	TOTAL for establishing or monitoring system: (3.+ 5		groundwater		
	TOTAL CLOSURE COST	'S:			\$2,572,286.06

(Sum of TOTALS for section 1. thru 6.)

## Cost Estimate Work Sheet B Post Closure Activities

#### Notes:

- 1) This worksheet is to be submitted as part of the C/PC Plan.
- 2) This facility will be maintained and monitired for 30 years after final closure of Class I and II landfills and 2 years after final closure of Class III and IV landfills.
- 3) Fill in blanks for all activities which apply.
- 4) All costs are to be calculated on an ANNUAL BASIS.

1.	Survey inspections to	confirm final grad	de and drainage are mainta	ined:

Α.	Transportation		INCLUSIVE
-	Labor		 INCLUSIVE

TOTAL for Surveying inspections: (A.+ B.)	\$15,791.18
ICHAL for Surveying inspections: (A.T.D.)	
1017L 101 Out 10 July moposition (* ":)	Andrewson of State of the State of Stat

2. Maintain healthy vegetation:

A.	Transportation		INCLUSIVE
B.	Labor		\$3,947.80
C.	Seeding		\$3,947.80
D.	Fertilizing		\$2,763.46
E.	Mulching		\$657.97
F.	Rodent Control		N/A
G.	Mowing		\$15,791.18

TOTAL for Maintaining healthy vegetation:		\$27,7108.19
(A.+ B.+ C.+ D.+ E.+ F.+ G.)		

3. Maintain the drainage facilities, sediment ponds and other erosion/sedimentation control measures.

Α.	Transportation	N/A
В.	Labor	\$7,895.59
C.	Cleaning out of systems	
Ď.	Repair of gullies or rills	\$7,895.59
	1 Soil aquistion	
	a. Quantity	1000
	b. Purchase unit cost (\$/cu.yd.)	\$1.32
	c. Purchase cost (a.x b.)	\$1,315.93
	d. Delivery unit cost (\$/cu.yd.)	\$5.26
	e. Delivery cost (a.x d.)	\$5,263.73
	2. Placement/spreading/compaction	5000
	3. Revegetation	3000

TOTAL for Maintaining drainage: (A.+ B.+ C.+ D.) \$23,791.18

TOTAL D: (1.+ 2.+ 3.)

8000

4.	Maintain and monitor the le and treatment system:	_				
		Α.	Treatment of leachate	9		
			1. On-site			
			<ul> <li>a. Quantity (cu.)</li> </ul>	/d.)		
			b. Treatment un	it cost (\$/cu.yd)		
			c. Treatment co			
			d. Sewer discha			
			e. Discharge co			
	•		5. Districting 5 55.			
			Total 1:	On-Site (c.+e.)	•	N/A
			2. Off-site			
			a. Quantity (cu.)	/d.)		
			b. Hauling unit of			, <del></del>
			c. Hauling cost			
			d. Treatment un			
			e. Treatment co			
			e. Heatinent co	1313 (a. · u.)		
			Total 2:	Off-Site (c.+e.)		N/A
		*TO	TAL: (1 or 2 Total)			Ó
		B.	Maintenance of leach	nate collection system:		
			1. Transportation			
			2. Labor			
			Repairs/Material	<b> </b>		
			a. Pumps			
			b. Cleaning out	evetem		
			c. Leak detection			
			d. Other	41		
			u. Other			
- *			Total 3: (a.+ b.+c.+	d.)		
			*TOTAL:	(1.+ 2.+ 3.)		N/A
		TO:	TAL for Monitoring and	d maintaining leachate		.0
			tem (*): ( A.+ B.)			
		0,0	.5 ( ) ( )			
5.	Maintain and monitor the g	as co	ollection or venting sys	tem:		
		Α.	Transportation			
		В.	Labor			
		C.	Repairs/Materials			
		Ψ.	1. Cleaning	•		
			2. Caps			
			3. Other			
			J. Olliei			
			Total: (1 + 2 + 2 \			N/A
			Total: (1.+ 2.+ 3.)			TANAMA SAME SAME
	TOTAL for maintaining and	d moi	nitoring gas control sys	stems: (A.+ B.+ C.)		<u>, 0</u>

6. Maintain and monitor the groundwater and/or surface water monitoring system:

water monitoring system.		
	A. Monitoring of groundwater systems:	
	Number of wells/springs	5
	2. Number of samples/well	2
	3. Unit costs of analysis	\$1,315.93
	4. Cost of sampling + analysis (1 x 2 x 3.)	\$13,159.32
	5. Labor cost per well	INCLUSIVE
	6. Labor costs (1.x 5.)	INCLUSIVE
	, ,	
	*TOTAL A: (4.+ 6.)	\$13,159.32
	B. Inspection and maintenance of system:	
	1. Transportation	N/A
	2. Labor	\$5,263.73
	3. Repairs/Materials	\$526.37
	a. Caps	\$526.37
	b. Tubing	\$526.37
	c. Pumps	\$526.37
	d. Well replacement	\$526.37
	e. Other	\$526.37
	Total 3: (a.+ b.+ c.+ d.+ e.)	\$2,631.86
	Total 3. (a. 1 b. 1 c. 1 d. 1 e.)	Ψ2,001.00
	*TOTAL B: (1.+ 2.+ 3.)	\$7,895.59
	TOTAL B. (1.+ 2.+ 3.)	ψ, ψ, υσυ.υσ
	d monitoring groundwater	
systems(*): (A.+ B.)		\$21,054.91
TOTAL POST CLOSUR	E COSTS:	
Annual Basis:		\$87,745.47
(Sum of sections 1. thru 6	Y	
(2011) 31 3331313 77 4114 3		
Inflation Rate Utilized:		5.00%
imation Nate Offized.		
20 Vana Baning		¢e 063 773
30 Year Basis:		\$6,063,773
(Annual Cost)(Inflation rate	e)(30yr)	

### BRF Area 1, A, and 2 Post Closure Costs

Annual Cost	Year		Inflation Rate (%)	Annua	al Cost w/In	flation
	87745	1.	5.0			92133
		2				95818
		3				100609
		4				105639
		5				110921
	* · ·	6				116467
		7				122291
		8				128405
		9				134826
		10				141567
		11				148645
		12				156078
		13				163881
		14				172075
*		15				180679
		16				189713
		17				199199
	•	18				209159
		19				219617
		20				230598
		21 22				242127 254234
		23				266945
		24				280293
•		25				294307
•		26				309023
		27				324474
		28				340698
		29				357732
•		30				375619
	Total					6063773

### **Cost Estimate Work Sheet A Closure Activities**

#### Notes:

- 1) This worksheet is to be submitted as part of the C/PC Plan.
- 2) Provide a cost for all activities which apply.3) Additional cost information may be attached as needed.
- 1. Establishing final cover:

Δ	Top	Soil		
,	1.	Quantity Nee	eded (cu.vd.)	51954
			nit cost (\$/cu.yd.)	\$3.95
	3.	Excavation c	•	\$205,103.76
	4.		spreading unit cost (\$/cu.yd.)	\$9.21
	5.	Placement c	ost (1.x 4.)	\$478,575.44
		* TOTAL:	Top Soil (3.+ 5.)	\$683,679.20
В.	Lan	dfill cap		
	1.	On-site Clay	•	
	,,,	•	needed (cu.yd.)	
			on unit cost (\$/cu.yd.)	
			n cost (a.x b.)	
		d. Placemer	nt / spreading unit cost (\$/cu.yd.)	
			nt cost (a.x d.)	
			ion unit cost (\$/cu.yd.)	:
		g. Compact	on cost (a.x f.)	
		* TOTAL	On-site Clay (c.+ e.+ g.)	0
	2.	Off-site Clay		
			needed (cu.yd.)	103907
			unit cost (\$/cu.yd.)	\$1.32
			cost (a.x b.)	\$136,734.52
			unit cost (\$/cu.yd.)	\$5.26
		e. Delivery	cost (a.x d.)	\$546,938.09
		f. Placeme	nt / spreading unit cost (\$/cu.yd.)	\$2.63
			nt cost (a.x f.)	\$273,469.05
			ion unit cost (\$/cu.yd.)	\$1.32
		i. Compact	ion cost (a.x h.)	\$136,734.52
		* TOTAL	Off-site Clay (c.+ e.+ g.+ i.)	\$1,093,876.19
	3.	Quality conti	ol/testing of clay	
		a.		
		b.		
		C.		
		* TOTAL	Clay testing (LS)	\$26,318.64

	C.	Synthetic Membrane	
		Quantity needed (sq.yd.)	311722
		2. Purchase unit cost (\$/sq.yd.)	4.5
		3. Purchase cost (1.x 2.)	1402749
		4. Installation unit cost (\$/sq.yd.)	0.1
		5. Installation cost (1.x 4.)	31172
		*TOTAL Outlies Name (2 + 5)	1400004
		* TOTAL Synthetic Membrane (3.+ 5.)	1433921
	ח .	Geotextile Filter Fabric (Geocomposite drainage layer)	
	О.	Quantity needed (sq.yd.)	311722
		2. Purchase unit cost (\$/sq.yd.)	4.5
		3. Purchase cost (1.x 2.)	1402749
		4. Installation unit cost (\$/sq.yd.)	0.1
		5. Installation cost (1.x 4.)	31172
			. I common company and a factor depth of the company
		* TOTAL Geotextile Filter Fabric (3.+ 5.)	1433921
	TO	TAL for establishing final cover (*):	\$4,671,716.42
		(A.+ B.+ C.+ D.)	
		(A. B. O. B.)	
2. Establishing vegetation cov	/er		
i. Establishing vogetalion oo	Α.	Labor (\$/acre)	\$460.58
	В.	Seeding (\$/acre)	\$460.58
	C.	Fertilizing (\$/acre)	\$328.98
	D.	Erosion control matting (\$/acre)	\$65.80
	E.	Number of acres	64.4
	TO	TAL for establishing vegetation cover:	\$84,746.01
		E.x (A.+ B.+ C.+ D.)	
2 Fatablishing as accordation			
<ol><li>Establishing or completing control erosion/sedimentat</li></ol>		sten to minimize and	
	Α.	Sediment pond	
	<i>,</i>	Excavation/construction (\$)	
		2. Materials (e.g. pipe, riprap) (\$)	
•		=	
	* T(	OTAL (1.+ 2.)	0
	В.	Diversion ditch	
		1. Construction (\$)	
		2. Materials (\$)	
			사람들이 많은 함께 함께 함께 보다.
	* T(	OTAL (1.+2.)	
	<b>C</b>	Temporary structures	
	· .	COLLEGIAL V GUADIGIGO	

	1. 2.		comstruction (\$) faterials (\$)		
	* TOT/	AL	(1.+ 2.)		0
	TOTAL for extablishing or complet control erosion and sedimentation	_	•		6
4.	Establishing or completing leachate and treatment system:	e co	llection removal,		
	A. In	stall	ation		
	1.	. N	lumber of feet		
	2.	. Р	Piping system unit cost (\$/ft)		
	3.	. Р	Piping system cost (1.x 2.)		
	4.		Storage tanks (\$)		
	5.	. P	Pumps (\$)		
	TOTAL for establishing or complet	ting I	eachate system:		
	(3.+ 4.+ 5.)				on in response si
_					
5.	Establishing or completing a system				
			ation		
	1.		Materials (e.g. piping)		<del></del>
	2.		Equipment (e.g. pumps)		
	3.	. L	abor (e.g. drilling)		<u> </u>
	TOTAL for autoblishing or complet	lina a	a system to pollost or yent		
	TOTAL for establishing or complet gases: (1.+ 2.+ 3.)	ung	a system to collect or vent		0.00
	gases. (1.1 2.1 5.)				
6.	Establishing or completing ground monitoring system:	wate	er/surface water		•
	A.				
	1.	٨	lumber of wells		
	2		Orilling unit cost (\$/well)		
	3		Orilling cost (1.x 2.)		
	4		Materials unit cost (\$/well)		
	5		Materials (1.x 4.)		
	6		Equipment (e.g. pumps)		
	7		abor		
		_	•		
	TOTAL for establishing or complet	ting o	groungwater		
	monitoring system: (3.+ 5.+ 6.+ 7.		en e		0
	- · · · · ·				
	TOTAL CLOSURE COSTS:				\$4,756,462.43
	(Sum of TOTALS for section 1. thr	ru 6.)	<b>)</b>		

## Cost Estimate Work Sheet B Post Closure Activities

#### Notes:

- 1) This worksheet is to be submitted as part of the C/PC Plan
- 2) This facility will be maintained and monitired for 30 years after final closure of Class I and II landfills and 2 years after final closure of Class III and IV landfills.
- 3) Fill in blanks for all activities which apply.
- 4) All costs are to be calculated on an ANNUAL BASIS.
- 1. Survey inspections to confirm final grade and drainage are maintained:

A. Transportation	INCLUSIVE
B. Labor	INCLUSIVE

TOTAL for Surveying inspections: (A.+ B.) \$15,791.18

2. Maintain healthy vegetation:

Α.	Transportation	INCLUSIVE
B.	Labor	\$3,947.80
C.	Seeding	\$3,947.80
D.	Fertilizing	\$2,763.46
E.	Mulching	 \$657.97
F.	Rodent Control	N/A
G.	Mowing	\$15,791.18

TOTAL for Maintaining healthy vegetation: \$27,108,19

3. Maintain the drainage facilities, sediment ponds and other erosion/sedimentation control measures.

A.	Transportation	N/A
B.	Labor	\$7,895.59
C.	Cleaning out of systems	
D.	Repair of gullies or rills	\$7,895.59
	1. Soil aquistion	
	a. Quantity	1000
	b. Purchase unit cost (\$/cu.yd.)	\$1.32
	c. Purchase cost (a.x b.)	1315.93
	d. Delivery unit cost (\$/cu.yd.)	\$5.26
	e. Delivery cost (a.x d.)	5263.73
	2. Placement/spreading/compaction	5000
	3. Revegetation	3000
то	ΓAL D: (1.+ 2.+ 3.)	8000

TOTAL for Maintaining drainage: (A.+ B.+ C.+ D.) \$23,791.18

(A.+ B.+ C.+ D.+ E.+ F.+ G.)

4.	Maintain and monitor the and treatment system:	leacha			
		A.	Treatment of leachate		
-			1. On-site		4.4
			a. Quantity (cu.y	d.)	
			b. Treatment uni		·
			c. Treatment cos		
				•	-
			d. Sewer dischar		
			e. Discharge cos	sts (a.+ d.)	
			Total 1:	On-Site (c.+e.)	N/A
			2. Off-site		
			a. Quantity (cu.y	d.)	
			b. Hauling unit c		
			c. Hauling cost (		
			d. Treatment uni		
			e. Treatment cos	sts (a.+ d.)	
			Total 2:	Off-Site (c.+e.)	N/A
			Total 2.	On-one (6. (6.)	·,
		*TO	TAL: (1 or 2 Total)		N/A
		В.	Maintenance of leach	ate collection system:	
		-	1. Transportation		
			2. Labor		
				_	
			3. Repairs/Materials	<b>S</b>	
			a. Pumps		
			b. Cleaning out	system	
			c. Leak detection	n	,
			d. Other		
			Total 3: (a.+ b.+c.+c	d.)	
			*TOTAL:	(1.+ 2.+ 3.)	N/A
		TOT	AL for Monitoring and	maintaining leachate	# O
		syst	em (*): (A.+ B.)		
		- ·			
5.	Maintain and monitor the		Meetion or venting evel	łam:	
J.	maintain and monitor the	_		ioni.	
		Α.	Transportation		
		В.	Labor		
		C.	Repairs/Materials		
	•		1. Cleaning		
			2. Caps		
			3. Other		
			T-1-1: /4 - 0 - 0 > 1		N/A
			Total: (1.+ 2.+ 3.)		 IN/M
	TOTAL for maintaining a	and mor	nitoring gas control sys	stems: (A + B.+ C.)	2 - 2 - 0

6. Maintain and monitor the groundwater and/or surface water monitoring system:

	A. Monitoring of groundwater systems:  1. Number of wells/springs  2. Number of samples/well  3. Unit costs of analysis  4. Cost of sampling + analysis (1.x 2.x 3.)  5. Labor cost per well  6. Labor costs (1.x 5.)  *TOTAL A: (4.+ 6.)	5 2 \$1,315.93 \$13,159.32 INCLUSIVE INCLUSIVE \$13,159.32
	<ul> <li>B. Inspection and maintenance of system:</li> <li>1. Transportation</li> <li>2. Labor</li> <li>3. Repairs/Materials <ul> <li>a. Caps</li> <li>b. Tubing</li> <li>c. Pumps</li> <li>d. Well replacement</li> <li>e. Other</li> </ul> </li> <li>Total 3: (a.+ b.+ c.+ d.+ e.)</li> </ul>	N/A \$5,263.73 \$526.37 \$526.37 \$526.37 \$526.37 \$526.37 \$526.37 \$526.37
	*TOTAL B: (1.+2.+3.)	\$7,895.59
TOTAL for Maintaining and systems(*): (A.+ B.)		\$21,054.91
TOTAL POST CLOSURE	COSTS:	•
Annual Basis: (Sum of sections 1. thru 6.)		\$87,745.47
Inflation Rate Utilized:		5.00%
30 Year Basis: (Annual Cost)(Inflation rate)	(30yr)	\$6,063,773

	ear	Inflation	Rate (%)	Annual	Cost w/Inflation
87745.47	1		5.0		92133
	2				95818
	3				100609
	4				105639
	5				110921
	6				116467
	7				122291
	8				128405
	9				134826
	10				141567
	11				148645
	12				156078
	13				163881
	14				172075
	15				180679
	16				189713
	17				199199
	18				209159
	19				219617
	20				230598
	21				242127
	22				254234
	23				266945
	24				280293
	25				294307
	26				309023
	27				324474
	28				340698
	29				357732
	30				375619
To	otal				6063773