APPENDIX G PAGES ARE NOT
NUMBERED SEQUENTIALLY

INITIAL gj DATE 10/22/03

Appendix G

Cost Estimates

Appendix G

Cost Estimates

Life-cycle costs for all alternatives are included on the sheets that follow. Total Project Costs can be found on the accompanying CD.

The following pages are a printout of information contained on referenced Compact Disk (CD)

INEEL
Idaho National Engineering & Environmental Laboratory

INTEROFFICE MEMORANDUM

Date: September 24,2003

To: W. H. Landman MS 3211 **6-5279**

From: R. J. Turk MS 3878 6-3611

Subject: Stage 111 Treatment Options (RJT 10-03REV1)

Purpose:

As requested an Economic and Life-Cycle Cost (LCC) has been conducted to evaluate the Stage III Treatment Options. This facility is part of the Pit **9** Demonstration and will treat waste and soil retrieved from Pit **9.**

Methodology:

This economic analysis is based on information provided from engineering studies for materials/equipment, facility sizing and typical operation data, to accommodate this activity. Three options were evaluated for this activity: Within each option different disposal costs for WIPP were evaluated to show the sensitivity of each option to that parameter.

- Option one Compact All,
- Option Two Melt All,
- Option Four A Thermal Desorption, Chemical Leach, and Incineration.

To further evaluate the study different size of processing acreage was evaluated utilizing One-acre, Four-acre and Eight-acre scenarios.

R. D. Adams provided cost estimates.

The Economic Evaluation titled Stage Three Treatment Options assumed a two year operating period for processing and then the waste will be shipped to final repository.
The alternatives evaluated the initial development, construction, operation and post-operating costs over the life-cycle. A discounted LCC analysis assumes a constant-dollar basis, discounted at 4.2 % annually per the Office of Management and Budget (OMB) Circular **A-94.** All costs are conservatively discounted assuming the end-of-year convention.

Assumptions:

The LCC analysis was generated to match cost estimating cost structure. These costs include Permitting, Direct and Indirect Construction, G&A, Procurement Fee, Engineering, Inspection, Project Management, Construction Management, Escalation and Contingency costs.

Treatment option 1 (Low Cost WIPP)

Life-Cycle Cost (LCC) Analysis

							2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
							0	1	2	3	4	5	6	7	8	- '9	10	11
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355
							Concept Design		Prelim Design	Final Design	Construction		Start-up	Operations			DD&D	Closeout
							10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04- 9/30/05	10/1/05- 02/28/07	3/01/06 06/30/09		07/01/09- 08/31/10	09/1/10 8/28/12			9/1/12-9/31/13	10/1/13- 12/31/13
(ALL COST X1000)																		
ther Project Cost (OPC)		min	mean	max	expected value	Total Cost												
OPC																		
Conceptual Design, Project Mgt, & Permitting		27,544	42,572	57,599	42,572	42,572	1,299	7,919	17,390	15,134	830							
Testing and Start-up		8,496	13,131	17.766	13,131	13,131							4,378	8,753				
Total OPC (unescalated)			55,703			55,703	1,299	7,919	17,390	15,134	830	-	4,378	8,753				-
plus escalation of			5,064			5,064	118	720	1,581	1,376	75	-	398	796				-
plus contingency of			25,336			25,336	591	3,602	7,910	6,884	378	-	1,991	3,981				-
Total OPC including escalation, mgt reserve, & contingency		$	86,103			86,103	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530	$ -	$ -	$ -	$ -
TEC																		
ESH&Q		10,830	16,739	22,648	16,739	16,739				4,105	5,022	5,022	2,511					
Project mgt		7,562	11,687	15.513	11,687	11,687				2,921	3,506	3,506	1,753					
Construction, Equip, G&A & Procurement		99,709	154,110	208,510	154,110	154,110				38,529	46,232	46,232	23,116					
Total TEC (unescalated)			182,536			182,536		-	-	45,636	54,760	54,760	27,380					-
plus escalation of			18,262			18,262		-	-	4,566	5,478	5,478	2,739					-
plus contingency of			98,578			98,578		-	-	24,645	29,573	29,573	14,786					-
Total TEC including escalation, mgt reserve, contingency						$ 299.375	$ -	$ -	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$ -	$ -	$ -	$ -	$ -
Total Project Cost (TPC)																		
TPC unescalated			238,238			238,238	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753				-
plus escalation of			23,326			23,326	118	720	1,581	5,942	5,554	5,478	3,137	796				
plus contingency of			123,913			123,913	591	3,602	7,910	31,529	29,951	29,573	16,778	3,981				
Total TPC including esc. mgt res. contingency		$	385,477			$ 385,477	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 80,811	$ 51,673	$ 13,530	$ -	$ - 8	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost						$ 326,244	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$ -	$ -	$ -	$ -
^perations	2080 hr-shif	min	mean	max	expected value													
Tangible Costs						308.271	-	-					35,487	80,778	109,718	82,289		-
Managerial		1,498	1,872	2,340	1,903	7,702							1,123	2,309	2,440	1,830		
Supervision		6,964	8,705	10,881	8,850	35,816							5,222	10,737	11,347	8,510		
Labor (Production)		16,548	20,686	25,857	21,030	85,112							12,410	25,515	26,964	20,223		
(Maintenance)		5,251	5,834	8,480	6,175	25,754							3,644	7,492	8,353	6,265		
Maintenanceof Equipment		10,070	12.189	17,674	12,900	53,803							7.612	15,651	17,451	13,088		
Propane		87	109	137	111	450							66	135	143	107		
Grout		250	312	390	317								187	385	407	305		
Consumables		4,555	5,694	7,117	5,788	23,426							3,416	7,023	7,422	5,566		
Utilities(Power&Water)		710	887	1,109	902	3,649							532	1,094	1,156	867		
STEAM		8	10	13	10	41							6	12	13	10		
Disposal (m3)	16,403.0	1,500	1,875	2,343	1,906	7,714							1,125	2,312	2,444	1,833		
Analytical		192	240	300	244	987							144	296	313	235		
WIPP Disposal m^3	7522	49,206	61,507	76,884	62,533	62,533								7,817	31,266	23,450		
Operations subtotal						308,271	-	-	-	-	-	-	35,487	80,778	109,718	82,289	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	66,792							7,689	17,502	23,772	17,829		-
Total Operations (w/contingency)						375,064	-	-	-	-	-	-	43,176	98,279	133,491	100,118		
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost						$ 272,606	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,731	$ 73,687	$ 96,053	$ 69,136	$ -	$ -
		min	mean	max	expected value													
Post Operations																		
Decommission		5,718	7,147	8,934	7,266	7,266										908	3,633	2,725
Decontamination/surveillance		9,530	11,912	14,890	12,110	12,110										1,514	6,055	4,541
Demolition		19.059	23.824	29,780	24,221	24,221										3,028	12,110	9,083
Post-Operations Subtotal		34,306	42,883	53,604	43,598	43,598	-	-	-	-	-	-	-	-	-	5,450	21,799	16,349
plus Escalation						14,274	-	-	-	-	-	-	-	-	-	1,538	6,933	5,803
plus Post-Operations Contingency @		15%	40%	58%	38%	21,798	-	-	-	-	-	-	-	-	-	2,632	10,822	8,344
Total Post-Operations (w/ escalation a contingency)						79.670										9,619	39,554	30,496
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
D Annual Cost						$ 52,251	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	$	$ 26,209	$ 19,392
Total Cost						590,107	1,299	7,919	17,390		55,590	54,760	67,245	89,531	109,718	87,738	21,799	16,349
Cumulative Total LCC							1,299	9,217		87,377	142,967	197,727	264,972	354,503	464,221	551,959	573,758	590,107
Total Cost (w/mgt reserve, & contingency)						840,211	2,007	12,240	26,881	98,240	91,095	89,811	94,848	111,810	133,491	109,737	39,554	30,496
Cumulative Total LCC						-	2,007	14,248	41,128	139,369	230,463	320,275	415,123	526,933	660,423	770,160	809,714	840,211
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost							2,007	11,747	24,757	86,833	77,272	73,113	74,101	83,831	96,053	75,778	26,213	19,396
Cumulative Discounted LCC						$ 651,101	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 349,831	$ 433,662	$ 529,714	$ 605,492	$ 631,705	$ 651,101

Treatment option 1 (High Cost WIPP)

Life Cycle Cost (LCC) Analysis

(ALL COST X1000)		min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
							0	1	2	3	4	5	6	7	8	9	10	11
							1.000	1.028	1.057	1.088	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355
							Concept Design		Prelim Design	Final Design	Construction		Start-up	Operations			DD&D	Closeout
							10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04- 9/30/05	10/1/05- 02/28/07	3/01/06-06/30/09		07/01/09- 08/31/10	09/1/10-8/28/12			9/1/12-9/31/13	10/1/13- 12/31/13
Other Project Cost (OPC)		min	mean	max	expected value	Total Cost												
OPC																		
Conceptual Design, Project Mgt, & Permitting		27,544	42,572	57,599	42,572	42,572	1,299	7,919	17,390	15,134	830							
Testing and Start-up		8,496	13,131	17,766	13,131	13,131							4,378	8,753				
Total OPC (unescalated)			55,703			55,703	1,299	7,919	17,390	15,134	830		4,378	8,753		-		-
plus escalation of			5,064			5,064	118	720	1,581	1,376	75		398	796		-		-
plus contingency of			25,336			25,336	591	3,602	7,910	6,884	378		1,991	3,981		-		-
Total OPC including escalation, mgt reserve, & contingency			$ 86,103			$ 86,103	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530	$	-	$ -	$ -
TEC																		
ESH&Q		10,830	16,739	22,648	16,739	16,739				4,185	5,022	5,022	2,511					
Project mgt		7,562	11,687	15,813	11,687	11,687				2,921	3,506	3,506	1,753					
Construction, Equip, G&A & Procurement		99,709	154,110	208,510	154,110	154,110				38,529	46,232	46,232	23,116					
Total TEC (unescalated)			182,536			182,536				45,636	54,760	54,760	27,380	-				-
plus escalation of			18,262			18,262				4,566	5,478	5,478	2,739	-				-
plus contingency of			98,578			98,578				24,645	29,573	29,573	14,786	-				-
Total TEC including escalation, mgt reserve, contingency						$ 299,375	$ -	$ -	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$ -	$	-	$ -	$ -
Total Project Cost (TPC)																		
TPC unescalated			238,238			238,238	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753		-	-	-
plus escalation of			23,326			23,326	118	720	1,581	5,942	5,554	5,478	3,137	796		-	-	-
plus contingency of			123,919			123,919	591	9,992	7,910	31,520	29,951	29,570	16,778	3,981		-	-	-
Total TPC including esc, mgt res, contingency			$ 385,477			$ 385,477	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 89,811	$ 51,673	$ 13,530	$	-	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334		1.448	1.509	1.572
Discounted Annual Cost						$ 326,244	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$	-	$ -	$ -
Operations	2080 hr-shif	min	mean	max	expected value													
Tangible Costs						803,515	-	-	-	-	-	-	35,487	142,683	357,340	268,005	-	-
Managerial		1,498	1,872	2,340	1,903	7,702							1,123	2,309	2,440	1,830		
Supervision		6,964	8,705	10,881	8,850	35,816							5,222	10,737	11,347	8,510		
Labor (Production)		16,548	20,686	25,857	21,030	85,112							12,410	25,515	26,964	20,223		
(Maintenance)		5,251	5,834	8,460	6,175	25,754							3,644	7,492	8,353	6,265		
Maintenance of Equipment		10,970	12,189	17,674	12,900	53,803							7,612	15,651	17,451	13,088		
Propane		87	109	137	111	450							66	135	143	107		
Grout		250	312	390	317	1,284							187	385	407	305		
Consumables		4,555	5,694	7,117	5,788	23,426							3,416	7,023	7,422	5,566		
Utilities(Power&Water)		710	887	1,109	902	3,649							532	1,094	1,156	867		
STEAM		8	10	13	10	41							6	12	13	10		
Disposal (m3)	16,403.0	1,500	1,875	2,343	1,906	7,714							1,125	2,312	2,444	1,833		
Analytical		192	240	300	244	987							144	296	313	235		
WIPP Disposal m^3	7522	438,906	548,632	685,790	557,776	557,776								69,722	278,888	209,166		
Operations subtotal						803,515	-	-	-	-	-	-	35,487	142,683	357,340	268,005	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	174,095	-	-	-	-	-	-	7,689	30,915	77,424	58,068	-	-
Total Operations (w/contingency)						977,610	-	-	-	-	-	-	43,176	173,598	434,764	326,073	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost						$ 701,888	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,731	$ 130,158	$ 312,832	$ 225,167	$ -	$ -
		min	mean	max	expected value													
Post Operations																		
Decommission		5,718	7,147	8,934	7,266	7,266										908	3,633	2,725
Decontamination/surveillance		9,530	11,912	14,890	12,110	12,110										1,514	6,055	4,541
Demolition		19,059	23,824	29,780	24,221	24,221										3,028	12,110	9,083
Post-Operations Subtotal		34,308	42,883	53,604	43,598	43,598	-	-	-	-	-	-	-	-	-	5,450	21,799	16,349
plus Escalation						14,274	-	-	-	-	-	-	-	-	-	1,538	6,933	5,803
plus Post-Operations Contingency @		15%	40%	58%	38%	21,798	-	-	-	-	-	-	-	-	-	2,632	10,822	8,344
Total Post-Operations (w/ escalation & contingency)						79,670	-	-	-	-	-	-	-	-	-	9,619	39,554	30,496
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334		1.448	1.509	1.572
Discounted Annual Cost						$ 52,251	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	6,642	$ 26,213	$ 19,396
Total Cost						1,085,351	1,299	7,919	17,390	60,770	55,590	54,760	67,245	151,436	357,340	273,455	21,799	16,349
Cumulative Total LCC						-	1,299	9,217	26,607	87,377	142,967	197,727	264,972	416,408	773,748	1,047,203	1,069,002	1,085,351
Total Cost (w/mgt reserve, & contingency)						1,442,757	2,007	12,240	26,881	98,240	91,095	89,811	94,848	187,128	434,764	335,692	39,554	30,496
Cumulative Total LCC						-	2,007	14,248	41,128	139,369	230,463	320,275	415,123	602,251	1,037,014	1,372,706	1,412,261	1,442,757
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost							2,007	11,747	24,757	86,833	77,272	73,113	74,101	140,302	312,832	231,810	26,213	19,396
Cumulative Discounted LCC						$ 1,080,383	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 349,831	$ 490,133	$ 802,965	$ 1,034,775	$ 1,060,987	$ 1,080,383

Treatment option 1 (LOW Cost WIPP)-4Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)		min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
							0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393	1.432	1.472	1.513	1.556
							Concept Design		Prelim Design	Final Design	Construction		Start-up	Operations								DD&D	Closeout
							10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04- 9/30/05	10/1/05- 02/28/07	3/01/06-06/30/09		07/01/09- 08/31/10	09/1/10-8/28/17								9/1/17-9/31/18	10/1/18- 12/31/19
Other Project Cost (OPC)																							
OPC																							
Conceptual Design, Project Mgt, & Permitting		27,544	42,572	57,599	42,572	42,572	1,299	7,919	17,390	15,134	830												
Testing and Start-up		8,496	13,131	17,766	13,131	13,131							4,378	8,753									
Total OPC (unescalated)			55,703			55,703	1,299	7,919	17,390	15,134	830	-	4,378	8,753			-	-	-	-	-	-	-
plus escalation of			5,064			5,064	118	720	1,581	1,376	75	-	398	796			-	-	-	-	-	-	-
plus contingency of			25,336			25,336	591	3,602	7,910	6,884	378	-	1,991	3,981			-	-	-	-	-	-	-
Total OPC including escalation, mgt reserve, & contingency			$ 86,103			$ 86,103	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TEC																							
ESH&Q		10,830	16,739	22,648	16,739	16,739				4,185	5,022	5,022	2,511										
Project mgt		7,562	11,687	15,813	11,687	11,687				2,921	3,506	3,506	1,753										
Construction, Equip, G&A & Procurement		99,709	154,110	208,510	154,110	154,110				38,529	46,232	46,232	23,116										
Total TEC (unescalated)			182,536			182,536			-	45,636	54,760	54,760	27,380	-			-	-	-	-	-	-	-
plus escalation of			18,262			18,262			-	4,566	5,478	5,478	2,739	-			-	-	-	-	-	-	-
plus contingency of			98,578			98,578			-	24,645	29,573	29,573	14,786	-			-	-	-	-	-	-	-
Total TEC including escalation, mgt reserve, contingency						$ 299,375	$	-	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$ -	$		$ -	$			-	6	-
Total Project Cost (TPC)																							
TPC unescalated			238,238			238,238	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753			-						-
plus escalation of			23,326			23,326	118	720	1,581	5,942	5,554	5,478	3,137	796	-	-	-	-	-	-	-	-	-
plus contingency of			123,913			123,913	591	3,602	7,910	31,529	29,951	29,573	16,778	3,981	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency			$ 385,477			$ 385,477	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 89,811	$ 51,673	$ 13,530	$	$ -	8	$ -	$ -	$ -	$	$	$
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.181	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost						$ 326,244	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$ -	$	$ -	$ -	$ -	8	$ -	$ -	$ -
Operations	2080 hr-shif	min	mean	max	expected value																		
Tangible Costs						870,023	-	-	-	-	-	-	35,487	80,778	106,270	108,370	110,529	112,749	115,030	117,375	83,435	-	-
Managerial		1,498	1,872	2,340	1,903	20,575							1,123	2,309	2,374	2,440	2,509	2,579	2,651	2,725	1,866		
Supervision		6,964	8,705	10,881	8,850	95,675							5,222	10,737	11,038	11,347	11,665	11,991	12,327	12,672	8,676		
Labor (Production)		16,548	20,686	25,857	21,030	227,356							12,410	25,515	26,230	26,964	27,719	28,495	29,293	30,113	20,617		
(Maintenance)		5,251	5,834	8,460	6,175	67,088							3,644	7,492	7,701	7,917	8,139	8,366	8,601	8,842	6,387		
Maintenance of Equipment		10,970	12,189	17,674	12,900	140,156							7,612	15,651	16,089	16,540	17,003	17,479	17,968	18,471	13,343		
Propane		87	109	137	111	1,202							66	135	139	143	147	151	155	159	109		
Grout		250	312	390	317	3,429							187	385	396	407	418	430	442	454	311		
Consumables		4,555	5,694	7,117	5,788	62,578							3,416	7,023	7,219	7,422	7,629	7,843	8,063	8,288	5,675		
Utilities(Power&Water)		710	887	1,109	902	9,748							532	1,094	1,125	1,156	1,188	1,222	1,256	1,291	884		
STEAM		8	10	13	10	110							6	12	13	13	13	14	14	15	10		
Disposal (m3)	16,403.0	1,500	1,875	2,343	1,906	20,605							1,125	2,312	2,377	2,444	2,512	2,582	2,655	2,729	1,868		
Analytical		192	240	300	244	2,638							144	296	304	313	322	331	340	349	239		
WIPP Disposal (m3)	7522	49,206	61,507	76,884	62,533	218,864								7,817	31,266	31,266	31,266	31,266	31,266	31,266	23,450		
Operations subtotal						870,023	-	-	-	-	-	-	35,487	80,778	106,270	108,370	110,529	112,749	115,030	117,375	83,435	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	188,505	-	-	-	-	-	-	7,689	17,502	23,025	23,480	23,948	24,429	24,923	25,431	18,078	-	-
Total Operations (w/contingency)						1,058,528	-	-	-	-	-	-	43,176	98,279	129,295	131,851	134,477	137,177	139,953	142,807	101,512	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost						$ 694,002	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,731	$ 73,687	$ 93,034	$ 91,048	$ 89,119	$ 87,244	$ 85,422	$ 83,650	$ 57,065	$ -	$ -
		min	mean	max	expected value																		
Post Operations																							
Decommission		5,718	7,147	8,934	7,266	7,266															908	3,633	2,725
Decontamination/survellance		9,530	11,912	14,890	12,110	12,110															1,514	6,055	4,541
Demolition		19,059	23,824	29,780	24,221	24,221															3,028	12,110	9,083
Post-Operations Subtotal		34,306	42,883	53,604	43,598	43,598	-	-	-	-	-	-	-	-							5,450	21,799	16,349
plus Escalation						22,842	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,572	11,187	9,083
plus Post-Operations Contingency @		15%	40%	58%	38%	25,026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,022	12,425	9,579
Total Post-Operations (w/ escalation & contingency)						91,466	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,043	45,411	35,012
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost						$ 48,834	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,208	$ 24,499	$ 18,127
Total Cost						1,151,859	1,299	7,919	17,390	60,770	55,590	54,760	67,245	89,531	106,270	108,370	110,529	112,749	115,030	117,375	88,885	21,799	16,349
Cumulative Total LCC						-	1,299	9,217	26,607	87,377	142,967	197,727	264,972	354,503	460,773	569,143	679,672	792,421	907,451	1,024,826	1,113,711	1,135,510	1,151,859
Total Cost (w/mgt reserve, & contingency)						1,535,471	2,007	12,240	26,881	98,240	91,095	89,811	94,848	111,810	129,295	131,851	134,477	137,177	139,953	142,807	112,556	45,411	35,012
Cumulative Total LCC						-	2,007	14,248	41,128	139,369	230,463	320,275	415,123	526,933	656,228	788,078	922,556	1,059,733	1,199,686	1,342,493	1,455,049	1,500,460	1,535,471
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost							2,007	11,747	24,757	86,833	77,272	73,113	74,101	83,831	93,034	91,048	89,119	87,244	85,422	83,650	63,273	24,499	18,127
Cumulative Discounted LCC						$ 1,069,079	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 349,831	$ 433,662	$ 526,695	$ 617,744	$ 706,863	$ 794,108	$ 879,530	$ 963,180	$ 1,026,453	$ 1,050,952	$ 1,069,079

Treatment option 1 (High Cost WIPP)-4Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)

Other Project Cost (OPC)	min	mean	max	expected value	Total Cost
OPC					
Conceptual Design, Project Mgt, & Permitting	27,544	42,572	57,599	42,572	
Testing and Start-up	8,496	13,131	17,766	13,131	13,131
Total OPC (unescalated)		55,703			55,703
plus escalation of		5,064			5,064
plus contingency of		25,336			25,336
Total OPC including escalation, mgt reserve, & contingency	0	86,103			$ 86,103
TEC					
ESH&Q	10,830	16,739	22,648	16,739	16,739
Project mgt	7,562	11,687	15,813	11,687	11,687
Construction, Equip, G&A & Procurement	99,709	154,110	208,510	154,110	154,110
Total TEC (unescalated)		182,536			182,536
plus escalation of		18,262			18,262
plus contingency of		98,578			98,578
Total TEC including escalation, mgt reserve, contingency					$ 299,375
Total Project Cost (TPC)					
TPC unescalated		238,238			238,238
plus escalation of		23,326			23,326
plus contingency of		123,913			123,913
Total TPC including esc, mgt res, contingency		$ 385,477			$ 385,477
discount factor @ OMB discount rate of	4.20%				
Discounted Annual Cost					$ 326,244

Operations (2080 hr-shif)	min	mean	max	expected value	Total Cost
Tangible Costs					2,603,375
Managerial	1,498	1,872	2,340	1,903	20,575
Supervision	6,964	8,705	10,881	8,850	95,675
Labor (Production)	16,548	20,686	25,857	21,030	227,356
(Maintenance)	5,251	5,834	8,460	6,175	67,088
Maintenance of Equipment	10,970	12,189	17,674	12,900	140,156
Propane	87	109	137	111	1,202
Grout	250	312	390	317	3,429
Consumables	4,555	5,694	7,117	5,788	62,578
Utilities(Power&Water)	710	887	1,109	902	9,748
STEAM	8	10	13	10	110
Disposal (m3) 16,403.0	1,500	1,875	2,343	1,906	20,605
Analytical	192	240	300	244	2,638
WIPP Disposal (m3) 7522	438,906	548,632	685,790	557,776	1,952,216
Operations subtotal					2,603,375
plus Operations Contingency @	5.0%	15.0%	45.0%	22%	564,065
Total Operations (w/contingency)					3,167,440
discount factor @ OMB discount rate of	4.20%				
Discounted Annual Cost					$ 2,053,939

Post Operations	min	mean	max	expected value	Total Cost
Decommission	5,718	7,147	8,934	7,266	7,266
Decontamination/survellance	9,530	11,912	14,890	12,110	12,110
Demolition	19,059	23,824	29,780	24,221	24,221
Post-Operations Subtotal	34,306	42,883	53,604	43,598	43,598
plus Escalation					22,842
plus Post-Operations Contingency @	15%	40%	58%	38%	25,026
Total Post-Operations (w/ escalation & contingency)					91,466
discount factor @ OMB discount rate of	4.20%				
Discounted Annual Cost					$ 48,834

	Total Cost
Total Cost	2,885,211
Cumulative Total LCC	-
Total Cost (w/mgt reserve, & contingency)	3,644,383
Cumulative Total LCC	-
discount factor @ OMB discount rate of	
Discounted Annual Cost	
Cumulative Discounted LCC	$ 2,429,017

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1.000	1.098	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393	1.432	1.472	1.513	1.556
	Concept Design		Prelim Design	Final Design	Construction		Start-up	Operations								DD&D	Closeout
	10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04- 9/30/05	10/1/05- 02/28/07	3/01/06-06/30/09		07/01/09- 08/31/10	09/1/10-8/28/17								9/1/17-9/31/18	10/1/18- 12/31/19
OPC																	
Conceptual Design, Project Mgt, & Permitting	1,299	7,919	17,390	15,134	830												
Testing and Start-up							4,378	8,753									
Total OPC (unescalated)	1,299	7,919	17,390	15,134	830	-	4,378	8,753									-
plus escalation of	118	720	1,581	1,376	75	-	398	796									-
plus contingency of	591	3,602	7,910	6,884	378	-	1,991	3,981									-
Total OPC including escalation, mgt reserve, & contingency	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TEC																	
ESH&Q				4,185	5,022	5,022	2,511										
Project mgt				2,921	3,506	3,506	1,753										
Construction, Equip, G&A & Procurement				38,529	46,232	46,232	23,116										
Total TEC (unescalated)	-	-	-	45,636	54,760	54,760	27,380	-									-
plus escalation of	-	-	-	4,566	5,478	5,478	2,739	-		-	-	-	-	-			-
plus contingency of	-	-	-	24,645	29,573	29,573	14,786	-						-			-
Total TEC including escalation, mgt reserve, contingency	$ -	$ -	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$ -	$		-	$		-	$		-
Total Project Cost (TPC)																	
TPC unescalated	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753						-	-	-	-
plus escalation of	118	720	1,581	5,942	5,554	5,478	3,137	796	-	-		-	-	-	-	-	-
plus contingency of	591	3,602	7,910	31,529	29,951	29,573	16,778	8,001	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 89,811	$ 51,673	$ 13,530	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operations																	
Tangible Costs	-	-	-	-	-	-	35,487	142,683	353,892	355,992	358,151	360,370	362,652	364,997	269,151	-	-
Managerial							1,123	2,309	2,374	2,440	2,509	2,579	2,651	2,725	1,866		
Supervision							5,222	10,737	11,038	11,347	11,665	11,991	12,327	12,672	8,676		
Labor (Production)							12,410	25,515	26,230	26,964	27,719	28,495	29,293	30,113	20,617		
(Maintenance)							3,644	7,492	7,701	7,917	8,139	8,366	8,601	8,842	6,387		
Maintenance of Equipment							7,612	15,651	16,089	16,540	17,003	17,479	17,968	18,471	13,343		
Propane							66	135	139	143	147	151	155	159	109		
Grout							187	385	396	407	418	430	442	454	311		
Consumables							3,416	7,023	7,219	7,422	7,629	7,843	8,063	8,288	5,675		
Utilities(Power&Water)							532	1,094	1,125	1,156	1,188	1,222	1,256	1,291	884		
STEAM							6	12	13	13	13	14	14	15	10		
Disposal (m3)							1,125	2,312	2,377	2,444	2,512	2,582	2,655	2,729	1,868		
Analytical							144	296	304	313	322	331	340	349	239		
WIPP Disposal (m3)								69,722	278,888	278,888	278,888	278,888	278,888	278,888	209,166		
Operations subtotal	-	-	-	-	-	-	35,487	142,683	353,892	355,992	358,151	360,370	362,652	364,997	269,151	-	-
plus Operations Contingency @	-	-	-	-	-	-	7,689	30,915	76,677	77,132	77,599	78,080	78,575	79,083	58,316	-	-
Total Operations (w/contingency)	-	-	-	-	-	-	43,176	173,598	430,568	433,124	435,750	438,451	441,226	444,080	327,467	-	-
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,731	$ 130,158	$ 309,814	$ 299,090	$ 288,776	$ 278,853	$ 269,308	$ 260,124	$ 184,086	$ -	$ -
Post Operations																	
Decommission															908	3,633	2,725
Decontamination/survellance															1,514	6,055	4,541
Demolition															3,028	12,110	9,083
Post-Operations Subtotal	-	-	-	-	-	-	-	-							5,450	21,799	16,349
plus Escalation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,572	11,187	9,083
plus Post-Operations Contingency @	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,022	12,425	9,579
Total Post-Operations (w/ escalation & contingency)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,043	45,411	35,012
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,208	$ 24,499	$ 18,127
Total Cost	1,299	7,919	17,390	60,770	55,590	54,760	67,245	151,436	353,892	355,992	358,151	360,370	362,652	364,997	274,601	21,799	16,349
Cumulative Total LCC	1,299	9,217	26,607	87,377	142,967	197,727	264,972	416,408	770,300	1,126,292	1,484,443	1,844,813	2,207,465	2,572,462	2,847,063	2,868,862	2,885,211
Total Cost (w/mgt reserve, & contingency)	2,007	12,240	26,881	98,240	91,095	89,811	94,848	187,128	430,568	433,124	435,750	438,451	441,226	444,080	338,511	45,411	35,012
Cumulative Total LCC	2,007	14,248	41,128	139,369	230,463	320,275	415,123	602,251	1,032,819	1,465,943	1,901,693	2,340,144	2,781,370	3,225,450	3,563,961	3,609,371	3,644,383
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931
Discounted Annual Cost	2,007	11,747	24,757	86,833	77,272	73,113	74,101	140,302	309,814	299,090	288,776	278,853	269,308	260,124	190,294	24,499	18,127
Cumulative Discounted LCC	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 349,831	$ 490,133	$ 799,946	$ 1,099,037	$ 1,387,812	$ 1,666,665	$ 1,935,973	$ 2,196,097	$ 2,386,391	$ 2,410,890	$ 2,429,017

Treatment option 1 (LOW Cost WIPP)-8Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)	min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
						1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393	1.432	1.472	1.513	1.556	1.599	1.644	1.690	1.737	1.786	1.836	1.887	1.940
						Concept Design		Prelim Design	Final Design	Construction		Start-up								Operations									DD&D	Closeout
						10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04-9/30/05	10/1/05-02/28/07	3/01/06-06/30/09		07/01/09-08/31/10								09/1/10-8/28/25									9/1/25-9/31/26	10/1/26-12/31/27
Other Project Cost (OPC)																														
OPC																														
Conceptual Design, Project Mgt, & Permitting	27,544	42,572	57,599		42,572	1,299	7,919	17,390	15,134	830																				
Testing and Start-up	8,496	13,131	17,766	13,131	13,131							4,378	8,753																	
Total OPC (unescalated)		55,703			55,703	1,299	7,919	17,390	15,134	830	-	4,378	8,753	-	-	-					-	-						-	-
plus escalation of		5,064			5,064	118	720	1,581	1,376	75	-	398	796	-	-	-					-	-						-	-
plus contingency of		25,336			25,336	591	3,602	7,910	6,884	378	-	1,991	3,981								-	-						-	-
Total OPC including escalation, mgt reserve, & contingency		$ 86,103			$ 86,103	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -					-	$ -
TEC																														
ESH&Q	10,830	16,739	22,648	16,739	16,739				4,185	5,022	5,022	2,511																		
Project mgt	7,562	11,687	15,813	11,687	11,687				2,921	3,506	3,506	1,753																		
Construction, Equip, G&A & Procurement	99,709	154,110	208,510	154,110	154,110				38,529	46,232	46,232	23,116																		
Total TEC (unescalated)		182,536			182,536	-	-	-	45,636	54,760	54,760	27,380									-	-	-	-	-	-	-	-	-	
plus escalation of		18,262			18,262	-	-	-	4,566	5,478	5,478	2,739									-	-	-	-	-	-	-	-	-	
plus contingency of		98,578			98,578	-	-	-	24,645	29,573	29,573	14,786									-	-	-	-	-	-	-	-	-	
Total TEC including escalation, mgt reserve, contingency					$ 299,375	$ -	$ -	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$				-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Total Project Cost (TPC)																														
TPC unescalated		238,238			238,238	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
plus escalation of		23,326			23,326	118	720	1,581	5,942	5,554	5,478	3,137	796	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
plus contingency of		123,913			123,913	591	3,602	7,910	31,529	29,951	29,573	16,778	3,981	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency		$ 385,477			$ 385,477	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 89,811	$ 51,673	$ 13,530	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of	4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost					$ 326,244	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operations 2080 hr-shif	min	mean	max	expected value																										
Tangible Costs					1,986,523	-	-	-	-	-	-	43,303	104,227	106,270	108,370	110,529	112,749	118,127	117,375	119,787	122,265	124,813	127,432	130,125	132,893	135,739	138,664	133,854	-	-
Managerial	1,498	1,872	2,340	1,903	46,939							1,123	2,309	2,374	2,440	2,509	2,579	2,651	2,725	2,801	2,880	2,961	3,043	3,129	3,216	3,306	3,399	3,494		
Supervision	6,964	8,705	10,881	8,850	218,967							5,222	10,737	11,038	11,347	11,665	11,991	13,027	12,672	13,027	13,392	13,767	14,152	14,548	14,956	15,374	15,805	16,247		
Labor (Production)	16,548	20,686	25,857	21,030	520,341							12,410	25,515	26,230	26,964	27,719	28,495	30,956	30,113	30,956	31,823	32,714	33,630	34,572	35,540	36,535	37,558	38,610		
(Maintenance)	5,251	5,834	8,460	6,175	152,289							3,644	7,492	7,701	7,917	8,139	8,366	8,601	8,842	9,089	9,344	9,605	9,874	10,151	10,435	10,727	11,027	11,336		
Maintenance of Equipment	10,970	12,189	17,674	12,900	318,153							7,612	15,651	16,089	16,540	17,003	17,479	17,968	18,471	18,988	19,520	20,067	20,629	21,206	21,800	22,410	23,038	23,683		
Propane	87	109	137	111	2,751							66	135	139	143	147	151	164	159	164	168	173	178	183	188	193	199	204		
Grout	250	312	390	317	7,848							187	385	396	407	418	430	467	454	467	480	493	507	521	536	551	566	582		
Consumables	4,555	5,694	7,117	5,788	143,219							3,416	7,023	7,219	7,422	7,629	7,843	8,520	8,286	8,520	8,759	9,004	9,256	9,516	9,782	10,056	10,337	10,627		
Utilities(Power&Water)	710	887	1,109	902	22,310							532	1,094	1,125	1,156	1,188	1,222	1,327	1,291	1,327	1,364	1,403	1,442	1,482	1,524	1,566	1,610	1,655		
STEAM	8	10	13	10	252							6	12	13	13	13	14	15	15	15	15	16	16	17	17	18	18	19		
Disposal (m3) 16,403.0	1,500	1,875	2,343	1,906	47,158							1,125	2,312	2,377	2,444	2,512	2,582	2,806	2,729	2,806	2,884	2,965	3,048	3,133	3,221	3,311	3,404	3,499		
Analytical	192	240	300	244	6,037							144	296	304	313	322	331	359	349	359	369	380	390	401	412	424	436	448		
WIPP Disposal (m3) 7522	49,206	61,507	76,884	62,533	500,260							7,817	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	31,266	23,450		
Operations subtotal					1,986,523	-	-	-	-	-	-	43,303	104,227	106,270	108,370	110,529	112,749	118,127	117,375	119,787	122,265	124,813	127,432	130,125	132,893	135,739	138,664	133,854	-	-
plus Operations Contingency @	5.0%	15.0%	45.0%	22%	430,413	-	-	-	-	-	-	9,382	22,583	23,025	23,480	23,948	24,429	25,594	25,431	25,954	26,491	27,043	27,610	28,194	28,793	29,410	30,044	29,002	-	-
Total Operations (w/contingency)					2,416,937	-	-	-	-	-	-	52,686	126,810	129,295	131,851	134,477	137,177	143,722	142,807	145,740	148,756	151,856	155,043	158,319	161,687	165,149	168,708	162,856	-	-
discount factor @ OMB discount rate of	4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost					$ 1,344,896	$ -	$ -	$ -	$ -	$ -	$ -	$ 41,161	$ 95,078	$ 93,034	$ 91,048	$ 89,119	$ 87,244	$ 87,722	$ 83,650	$ 81,928	$ 80,252	$ 78,623	$ 77,037	$ 75,494	$ 73,992	$ 72,530	$ 71,107	$ 65,874	$ -	$ -
	min	mean	max	expected value																										
Post Operations																														
Decommission	5,718	7,147	8,934	7,266	7,266																							908	3,633	2,725
Decontamination/surveillance	9,530	11,912	14,890	12,110	12,110																							1,514	6,055	4,541
Demolition	19,059	23,824	29,780	24,221	24,221																							3,028	12,110	9,083
Post-Operations Subtotal	34,306	42,883	53,604	43,598	43,598	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,450	21,799	16,349
plus Escalation					39,268	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,555	19,342	15,371
plus Post-Operations Contingency @	15%	40%	58%	38%	31,213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,769	15,496	11,948
Total Post-Operations (w/ escalation & contingency)					114,078	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,774	56,637	43,667
discount factor @ OMB discount rate of	4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost					$ 43,825	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,571	$ 21,986	$ 16,268
Total Cost					2,268,359	1,299	7,919	17,390	60,770	55,590	54,760	75,061	112,980	106,270	108,370	110,529	112,749	118,127	117,375	119,787	122,265	124,813	127,432	130,125	132,893	135,739	138,664	139,304	21,799	16,349
Cumulative Total LCC					-	1,299	9,217	26,607	87,377	142,967	197,727	272,789	385,769	492,039	600,409	710,939	823,687	941,814	1,059,190	1,178,976	1,301,241	1,426,055	1,553,487	1,683,612	1,816,505	1,952,244	2,090,907	2,230,211	2,252,010	2,268,359
Total Cost (w/mgt reserve, & contingency)					2,916,493	2,007	12,240	26,881	98,240	91,095	89,811	104,358	140,340	129,295	131,851	134,477	137,177	143,722	142,807	145,740	148,756	151,856	155,043	158,319	161,687	165,149	168,708	176,630	56,637	43,667
Cumulative Total LCC					-	2,007	14,248	41,128	139,369	230,463	320,275	424,633	564,973	694,269	826,119	960,596	1,097,774	1,241,495	1,384,302	1,530,042	1,678,798	1,830,654	1,985,697	2,144,015	2,305,702	2,470,850	2,639,558	2,816,188	2,872,825	2,916,493
discount factor @ OMB discount rate of	4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost						2,007	11,747	24,757	86,833	77,272	73,113	81,531	105,222	93,034	91,048	89,119	87,244	87,722	83,650	81,928	80,252	78,623	77,037	75,494	73,992	72,530	71,107	71,445	21,986	16,268
Cumulative Discounted LCC					$ 1,714,965	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 357,260	$ 462,483	$ 555,517	$ 646,565	$ 735,684	$ 822,929	$ 910,651	$ 994,301	$ 1,076,229	$ 1,156,481	$ 1,235,104	$ 1,312,141	$ 1,387,636	$ 1,461,628	$ 1,534,158	$ 1,605,265	$ 1,676,711	$ 1,698,697	$ 1,714,965

Treatment option 1 (High Cost WIPP)-8Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)

Other Project Cost (OPC)		min	mean	max	expected value	Total Cost
OPC						
Conceptual Design, Project Mgt, & Permitting		27,544	42,572	57,599	42,572	42,[illegible]
Testing and Start-up		8,496	13,131	17,766	13.131	13,[illegible]
Total OPC (unescalated)			55,703			55,703
plus escalation of			5,064			5,064
plus contingency of			25,336			25,336
Total OPC including escalation, mgt reserve, & contingency			$ 86,103			86,103
TEC						
ESH&Q		10,830	16,739	22,648	16,739	16,739
Project mgt		7,562	11,687	15,813	11,687	11,687
Construction, Equip, G&A & Procurement		99,709	154,110	208,510	154,110	154,110
Total TEC (unescalated)			182,536			182,536
plus escalation of			18,262			18,262
plus contingency of			98,578			98,578
Total TEC including escalation, mgt reserve, contingency						$ 299,375
Total Project Cost (TPC)						
TPC unescalated			238,238			238,238
plus escalation of			23,326			23,326
plus contingency of			123,913			123,913
Total TPC including esc, mgt res, contingency			$ 385,477			$ 385,477
discount factor @ OMB discount rate of		4.20%				
Discounted Annual Cost						$ 326,244
Operations	2080 hr-shif	min	mean	max	expected value	
Tangible Costs						5,948,471
Managerial		1,498	1,872	2,340	1,903	46,939
Supervision		6,964	8,705	10,881	8,850	218,967
Labor (Production)		16,548	20,686	25,857	21,030	520,341
(Maintenance)		5,251	5,834	8,460	6,175	152,289
Maintenance of Equipment		10,970	12,189	17,674	12,900	318,153
Propane		87	109	137	111	2,751
Grout		250	312	390	317	7,848
Consumables		4,555	5,694	7,117	5,788	143,219
Utilities(Power&Water)		710	887	1,109	902	22,310
STEAM		8	10	13	10	252
Disposal (m3)	16,403.0	1,500	1,875	2,343	1,906	47,158
Analytical		192	240	300	244	6,037
WIPP Disposal (m3)	7522	438,906	548,632	685,790	557,776	4,462,208
Operations subtotal						5,948,471
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	1,288,835
Total Operations (w/contingency)						7,237,307
discount factor @ OMB discount rate of		4.20%				
Discounted Annual Cost						$ 4,075,867
		min	mean	max	expected value	
Post Operations						
Decommission		5,718	7,147	8,934	7,266	7,266
Decontamination/survellance		9,530	11,912	14,890	12,110	12,110
Demolition		19,059	23,824	29,780	24,221	24,221
Post-Operations Subtotal		34,306	42,883	53,604	43,598	43,598
plus Escalation						39,268
plus Post-Operations Contingency @		15%	40%	58%	38%	31,213
Total Post-Operations (w/ escalation & contingency)						114,078
discount factor @ OMB discount rate of		4.20%				
Discounted Annual Cost						$ 43,825
Total Cost						6,230,307
Cumulative Total LCC						-
Total Cost (w/mgt reserve, & contingency)						7,736,862
Cumulative Total LCC						-
discount factor @ OMB discount rate of		4.20%				
Discounted Annual Cost						
Cumulative Discounted LCC						$ 4,445,936

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	0	1	2	3	4	5	6	7	8	9	10	11
	1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355
	Concept Design		Prelim Design	Final Design	Construction		Start-up					
	10/1/03 - 4/30/04	04/30/04 - 09/30/04	9/30/04-9/30/05	10/1/05-02/28/07	3/01/06-06/30/09		07/01/09-08/31/10					
Conceptual Design, Project Mgt, & Permitting	1,299	7,919	17,390	15,134	830							
Testing and Start-up							4,378	8,753				
Total OPC (unescalated)	1,299	7,919	17,390	15,134	830	-	4,378	8,753	-	-	-	-
plus escalation of	118	720	1,581	1,376	75	-	398	796	-	-	-	-
plus contingency of	591	3,602	7,910	6,884	378	-	1,991	3,981	-	-	-	-
Total OPC including escalation, mgt reserve, & contingency	$ 2,007	$ 12,240	$ 26,881	$ 23,394	$ 1,283	$ -	$ 6,767	$ 13,530	$ -	$ -	$ -	$ -
ESH&Q				4,185	5,022	5,022	2,511					
Project mgt				2,921	3,506	3,506	1,753					
Construction, Equip, G&A & Procurement				38,529	46,232	46,232	23,116					
Total TEC (unescalated)	-	-	-	45,636	54,760	54,760	27,380	-	-	-	-	-
plus escalation of	-	-	-	4,566	5,478	5,478	2,739	-	-	-	-	-
plus contingency of	-	-	-	24,645	29,573	29,573	14,786	-	-	-	-	-
Total TEC including escalation, mgt reserve, contingency	-	$ -	$ -	$ 74,846	$ 89,812	$ 89,811	$ 44,905	$ -	$ -	$ -	$ -	$ -
TPC unescalated	1,299	7,919	17,390	60,770	55,590	54,760	31,758	8,753	-	-	-	-
plus escalation of	118	720	1,581	5,942	5,554	5,478	3,137	796	-	-	-	-
plus contingency of	591	3,602	7,910	31,529	29,951	29,573	16,778	3,981	-	-	-	-
Total TPC including esc, mgt res, contingency	$ 2,007	$ 12,240	$ 26,881	$ 98,240	$ 91,095	$ 89,811	$ 51,673	$ 13,530	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost	$ 2,007	$ 11,747	$ 24,757	$ 86,833	$ 77,272	$ 73,113	$ 40,370	$ 10,144	$ -	$ -	$ -	$ -
Tangible Costs	-	-	-	-	-	-	105,209	351,849	353,892	355,992	358,151	360,370
Managerial							1,123	2,309	2,374	2,440	2,509	2,579
Supervision							5,222	10,737	11,038	11,347	11,665	11,991
Labor (Production)							12,410	25,515	26,230	26,964	27,719	28,495
(Maintenance)							3,644	7,492	7,701	7,917	8,139	8,366
Maintenance of Equipment							7,612	15,651	16,089	16,540	17,003	17,479
Propane							66	135	139	143	147	151
Grout							187	385	396	407	418	430
Consumables							3,416	7,023	7,219	7,422	7,629	7,843
Utilities(Power&Water)							532	1,094	1,125	1,156	1,188	1,222
STEAM							6	12	13	13	13	14
Disposal (m3)							1,125	2,312	2,377	2,444	2,512	2,582
Analytical							144	296	304	313	322	331
WIPP Disposal (m3)							69,722	278,888	278,888	278,888	278,888	278,888
Operations subtotal	-	-	-	-	-	-	105,209	351,849	353,892	355,992	358,151	360,370
plus Operations Contingency @	-	-	-	-	-	-	22,795	76,234	76,677	77,132	77,599	78,080
Total Operations (w/contingency)	-	-	-	-	-	-	128,004	428,083	430,568	433,124	435,750	438,451
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,004	$ 320,962	$ 309,814	$ 299,090	$ 288,776	$ 278,853
Post-Operations Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
plus Escalation	-	-	-	-	-	-	-	-	-	-	-	-
plus Post-Operations Contingency @	-	-	-	-	-	-	-	-	-	-	-	-
Total Post-Operations (w/ escalation & contingency)	-	-	-	-	-	-	-	-	-	-	-	-
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Cost	1,299	7,919	17,390	60,770	55,590	54,760	136,967	360,602	353,892	355,992	358,151	360,370
Cumulative Total LCC	1,299	9,217	26,607	87,377	142,967	197,727	334,694	695,296	1,049,188	1,405,180	1,763,331	2,123,701
Total Cost (w/mgt reserve, & contingency)	2,007	12,240	26,881	98,240	91,095	89,811	179,677	441,613	430,568	433,124	435,750	438,451
Cumulative Total LCC	2,007	14,248	41,128	139,369	230,463	320,275	499,951	941,565	1,372,133	1,805,257	2,241,007	2,679,457
discount factor @ OMB discount rate of	1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572
Discounted Annual Cost	2,007	11,747	24,757	86,833	77,272	73,113	140,374	331,107	309,814	299,090	288,776	278,853
Cumulative Discounted LCC	$ 2,007	$ 13,754	$ 38,512	$ 125,345	$ 202,617	$ 275,730	$ 416,103	$ 747,210	$ 1,057,024	$ 1,356,114	$ 1,644,890	$ 1,923,743

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	12	13	14	15	16	17	18	19	20	21	22	23	24
	1.393	1.432	1.472	1.513	1.556	1.599	1.644	1.690	1.737	1.786	1.836	1.887	1.940
			Operations									DD&D	Closeout
			09/1/10-8/28/25									9/1/25-9/31/26	10/1/26-12/31/27
Total OPC (unescalated)	-	-					-	-	-	-	-	-	-
plus escalation of	-	-					-	-	-	-	-	-	-
plus contingency of	-	-					-	-	-	-	-	-	-
Total OPC including escalation, mgt reserve, & contingency	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -					-
Total TEC (unescalated)	-	-					-						-
plus escalation of	-	-					-						-
plus contingency of	-	-					-						-
Total TEC including escalation, mgt reserve, contingency	$ -	$ -					$ -						-
TPC unescalated	-	-	-	-	-	-	-	-	-	-	-	-	-
plus escalation of	-	-	-	-	-	-	-	-	-	-	-	-	-
plus contingency of	-	-	-	-	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tangible Costs	365,749	364,997	367,408	369,887	372,435	375,054	377,747	380,515	383,360	386,286	319,571	-	-
Managerial	2,651	2,725	2,801	2,880	2,961	3,043	3,129	3,216	3,306	3,399	3,494		
Supervision	13,027	12,672	13,027	13,392	13,767	14,152	14,548	14,956	15,374	15,805	16,247		
Labor (Production)	30,956	30,113	30,956	31,823	32,714	33,630	34,572	35,540	36,535	37,558	38,610		
(Maintenance)	8,601	8,842	9,089	9,344	9,605	9,874	10,151	10,435	10,727	11,027	11,336		
Maintenance of Equipment	17,968	18,471	18,988	19,520	20,067	20,629	21,206	21,800	22,410	23,038	23,683		
Propane	164	159	164	168	173	178	183	188	193	199	204		
Grout	467	454	467	480	493	507	521	536	551	566	582		
Consumables	8,520	8,288	8,520	8,759	9,004	9,256	9,516	9,782	10,056	10,337	10,627		
Utilities(Power&Water)	1,327	1,291	1,327	1,364	1,403	1,442	1,482	1,524	1,566	1,610	1,655		
STEAM	15	15	15	15	16	16	17	17	18	18	19		
Disposal (m3)	2,806	2,729	2,806	2,884	2,965	3,048	3,133	3,221	3,311	3,404	3,499		
Analytical	359	349	359	369	380	390	401	412	424	436	448		
WIPP Disposal (m3)	278,888	278,888	278,888	278,888	278,888	278,888	278,888	278,888	278,888	278,888	209,166		
Operations subtotal	365,749	364,997	367,408	369,887	372,435	375,054	377,747	380,515	383,360	386,286	319,571	-	-
plus Operations Contingency @	79,246	79,083	79,605	80,142	80,694	81,262	81,845	82,445	83,061	83,695	69,240	-	-
Total Operations (w/contingency)	444,995	444,080	447,013	450,029	453,129	456,316	459,592	462,960	466,422	469,981	388,811	-	-
discount factor @ OMB discount rate of	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost	$ 271,608	$ 260,124	$ 251,288	$ 242,787	$ 234,606	$ 226,733	$ 219,156	$ 211,864	$ 204,845	$ 198,088	$ 157,271	$ -	$ -
Decommission											908	3,633	2,725
Decontamination/survellance											1,514	6,055	4,541
Demolition											3,028	12,110	9,083
Post-Operations Subtotal	-	-	-	-	-	-	-	-	-	-	5,450	21,799	16,349
plus Escalation	-	-	-	-	-	-	-	-	-	-	4,555	19,342	15,371
plus Post-Operations Contingency @	-	-	-	-	-	-	-	-	-	-	3,769	15,496	11,948
Total Post-Operations (w/ escalation & contingency)	-	-	-	-	-	-	-	-	-	-	13,774	56,637	43,667
discount factor @ OMB discount rate of	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,571	$ 21,986	$ 16,268
Total Cost	365,749	364,997	367,408	369,887	372,435	375,054	377,747	380,515	383,360	386,286	325,020	21,799	16,349
Cumulative Total LCC	2,489,450	2,854,447	3,221,856	3,591,743	3,964,177	4,339,231	4,716,978	5,097,493	5,480,853	5,867,139	6,192,159	6,213,958	6,230,307
Total Cost (w/mgt reserve, & contingency)	444,995	444,080	447,013	450,029	453,129	456,316	459,592	462,960	466,422	469,981	402,585	56,637	43,667
Cumulative Total LCC	3,124,452	3,568,532	4,015,545	4,465,574	4,918,703	5,375,019	5,834,611	6,297,571	6,763,992	7,233,973	7,636,558	7,693,195	7,736,862
discount factor @ OMB discount rate of	1.638	1.707	1.779	1.854	1.931	2.013	2.097	2.185	2.277	2.373	2.472	2.576	2.684
Discounted Annual Cost	271,608	260,124	251,288	242,787	234,606	226,733	219,156	211,864	204,845	198,088	162,842	21,986	16,268
Cumulative Discounted LCC	$ 2,195,351	$ 2,455,475	$ 2,706,763	$ 2,949,550	$ 3,184,155	$ 3,410,888	$ 3,630,044	$ 3,841,908	$ 4,046,752	$ 4,244,840	$ 4,407,683	$ 4,429,668	$ 4,445,936

Treatment option 2 (LOW Cost WIPP)

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)		min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
							0	1	2	3	4	5	6	7	8	9	10	11	12
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393
							Concept Design		Prelim Design	Final Design		Construction		Start-up		Operations		DD&D	Closeout
							10/1/03 -4/30/04		9/30/04-8/31/05	9/01/05-09/30/06		10/01/06-01/31/10		02/01/10-08/31/11		09/01/11-08/31/13		9/01/13-12/31/14	1/01/15-3/31/15
Other Project Cost (OPC)																			
OPC																			
Conceptual Design, Project Mgt, & Permitting		29,135	45,031	60,926		45,031	1,422	8,472	18,251	16,886									
Testing and Start-up		11,321	17,497	23,674	17,497	17,497							-	4,374	13,123				
Total OPC (unescalated)			62,528			62,528	1,422	8,472	18,251	16,886	-	-	-	4,374	13,123				-
plus escalation of			5,919			5,919	135	802	1,728	1,598	-	-	-						-
plus contingency of			49,414			49,414	1,123	6,695	14,423	13,345	-		-	3,457	10,371				-
Total OPC including escalation, mgt reserve, & contingency						117,860	$ 2,679	$ 15,969	$ 34,401	$ 31,830	$ -	$ -	$ -	$ 8,245	$ 24,736	$ -	$ -	$ -	$ -
TEC						-													
ESH&Q		11,855	18,324	24,792	18,324	18,339				1,652	5,006	5,006	5,006	1,667					
Project mgt		8,278	12,794	17,310	12,794	12,804				1,154	3,496	3,496	3,496	1,164					
Construction, Equip, G&A & Procurement		108,084	167,054	226,024	167,054	167,191				15,062	45,643	45,643	45,643	15,199					
Total TEC (unescalated)			198,171			198,334	-	-	-	17,868	54,145	54,145	54,145	18,030	-	-			-
plus escalation of			20,200			20,217	-	-	-	1,821	5,519	5,519	5,519	1,838	-	-			-
plus contingency of			127,011			127,115	-	-	-	11,452	34,703	34,703	34,703	11,556	-	-			-
Total TEC including escalation, mgt reserve, contingency						345,666	$ -	$ -	$ -	$ 31,141	$ 94,367	$ 94,367	$ 94,367	$ 31,424	$ -	$ -	$ -	$ -	$ -
						-													
Total Project Cost (TPC)						-													
TPC unescalated			260,699			260,861	1,422	8,472	18,251	34,754	54,145	54,145	54,145	22,405	13,123	-	-	-	-
plus escalation of			26,119			26,135	135	802	1,728	3,420	5,519	5,519	5,519	2,252	1,242	-	-	-	-
plus contingency of			176,425			176,529	1,123	6,695	14,423	24,797	34,703	34,703	34,703	15,013	10,371	-	-	-	-
Total TPC including esc, mgt res, contingency			$ 463,243			463,526	$ 2,679	$ 15,969	$ 34,401	$ 62,971	$ 94,367	$ 94,367	$ 94,367	$ 39,669	$ 24,736	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						383,483	$ 2,679	$ 15,325	$ 31,684	$ 55,659	$ 80,048	$ 76,821	$ 73,725	$ 29,743	$ 17,798	$ -	$ -	$ -	$ -
						-													
Operations	2080 hr-shif	min	mean	max	expected value	-													
Tangible Costs						413,316	-	-	-	-	-	-	-	73,231	106,791	109,781	94,042		-
Managerial		1,747	2,184	2,730	2,220	10,299								2,244	2,769	2,847	2,439		
Supervision		11,232	14,040	17,550	14,274	66,208								14,426	17,803	18,301	15,678		
Labor (Production)		17,114	21,393	26,741	21,749	100,881								21,981	27,126	27,886	23,888		
(Maintenance)		6,206	6,895	9,998	7,297	86,035								7,782	26,904	27,657	23,692		
Maintenance of Equipment		10,924	12,138	17,600	12,846	60,299								13,698	16,022	16,470	14,109		
Propane		87	109	137	111	516								112	139	143	122		
Grout		582	728	910	740	3,433								748	923	949	813		
Consumables		7,163	8,954	11,192	9,103	42,222								9,200	11,353	11,671	9,998		
Utilities(Power&Water)		1,519	1,899	2,374	1,931	8,955								1,951	2,408	2,475	2,120		
STEAM		8	10	13	10	47								10	13	13	11		
Disposal (m3)	2,696.7	456	570	712	579	2,688								586	723	743	636		
Analytical		384	480	600	488	2,264								493	609	626	536		
WIPP Disposal m^3	3545	23,190	$28,987	36,234	29,471	29,471									3,684	14,735	11,051		
Operations subtotal						413,316	-	-	-	-	-	-	-	73,231	110,475	124,517	105,094	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	89,552	-	-	-	-	-	-	-	15,867	23,936	26,979	22,770	-	-
Total Operations (w/contingency)						502,868	-	-	-	-	-	-	-	89,097	134,411	151,495	127,864	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						352,868	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,802	$ 96,715	$ 104,614	$ 84,737	$ -	$ -
		min	mean	max	expected value	-													
Post Operations						-													
Decommission		6,257	7,821	9,776	7,951	7,951											2,272	4,544	1,136
Decontamination/survellance		10,428	13,035	16,294	13,252	13,252											3,786	7,573	1,893
Demolition		20,856	26,070	32,587	26,504	26,504											7,573	15,145	3,786
Post-Operations Subtotal		37,541	46,926	58,657	47,708	47,708	-	-	-	-	-	-	-	-	-	-	13,631	27,262	6,815
plus Escalation						16,690	-	-	-	-	-	-	-	-	-	-	4,335	9,677	2,678
plus Post-Operations Contingency @		15%	40%	58%	38%	24,256	-	-	-	-	-	-	-	-	-	-	6,767	13,913	3,576
Total Post-Operations (w/ escalation & contingency)						88,654	-	-	-	-	-	-	-	-	-	-	24,733	50,852	13,069
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						56,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,391	$ 32,342	$ 7,977
						-													
Total Cost						721,885	1,422	8,472	18,251	34,754	54,145	54,145	54,145	95,635	123,598	124,517	118,725	27,262	6,815
Cumulative Total LCC						-	1,422	9,893	28,144	62,899	117,044	171,189	225,334	320,969	444,567	569,084	687,808	715,070	721,885
Total Cost (w/mgt reserve, & contingency)						1,055,048	2,679	15,969	34,401	62,971	94,367	94,367	94,367	128,767	159,147	151,495	152,597	50,852	13,069
Cumulative Total LCC						-	2,679	18,648	53,050	116,021	210,388	304,754	399,121	527,888	687,035	838,530	991,127	1,041,979	1,055,048
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost							2,679	15,325	31,684	55,659	80,048	76,821	73,725	96,545	114,513	104,614	101,128	32,342	7,977
Cumulative Discounted LCC						793,059	$ 2,679	$ 18,005	$ 49,689	$ 105,348	$ 185,396	$ 262,217	$ 335,942	$ 432,486	$ 547,000	$ 651,614	$ 752,741	$ 785,083	$ 793,059

Treatment option 2 (HIGH Cost WIPP)

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)		min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
							0	1	2	3	4	5	6	7	8	9	10	11	12
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393
							Concept Design		Prelim Design	Final Design		Construction		Start-up		Operations		DD&D	Closeout
							10/1/03 -4/30/04		9/30/04-8/31/05	9/01/05-09/30/06		10/01/06-01/31/10		02/01/10-08/31/11		09/01/11-08/31/13		9/01/13-12/31/14	1/01/15-3/31/15
Other Project Cost (OPC)		*min*	*mean*	*max*	expected value	Total Cost													
OPC																			
Conceptual Design, Project Mgt, & Permitting		29,135	45.031	60,926	45,031	45,031	1,422	8,472	18,251	16,886									
Testing and Start-up		11,321	17,407	23,674	17,497	17,497							-	4,374	13,123				
Total OPC (unescalated)			62,528			62,528	1,422	8,472	18,251	16,886	-	-	-	4,374	13,123	-	-	-	-
plus escalation of			5,919			5,919	135	802	1,728	1,598	-	-	-	414	1,242	-	-	-	-
plus contingency of			49,414			49,414	1,123	6,695	14,423	13,345	-	-	-	3,457	10,371	-	-	-	-
Total OPC including escalation, mgt reserve, & contingency						117,860	$ 2,679	$ 15,969	$ 34,401	$ 31,830	$ -	$ -	$ -	$ 8,245	$ 24,736	$ -	$ -	$ -	$ -
TEC						-													
ESH&Q		11,855	18,324	24,792	18,324	18,339				1,652	5,006	5,006	5,006	1,667					
Project mgt		8,278	12,794	17,310	12,794	12,804				1,154	3,496	3,496	3,496	1,164					
Construction, Equip, G&A & Procurement		108,084	167,054	226,024	167,054	167,191				15,062	45,643	45,643	45,643	15,199					
Total TEC (unescalated)			198,171			198,334			-	17,868	54,145	54,145	54,145	18,030	-	-			-
plus escalation of			20,200			20,217			-	1,821	5,519	5,519	5,519	1,838	-	-			-
plus contingency of			127,011			127,115			-	11,452	34,703	34,703	34,703	11,556	-	-			-
Total TEC including escalation, mgt reserve, contingency						345,666	$ -	$ -	$ -	$ 31,141	$ 94,367	$ 94,367	$ 94,367	$ 31,424	$ -	$ -	$ -	$ -	$ -
Total Project Cost (TPC)						-													
TPC unescalated			260,699			260,861	1,422	8,472	18,251	34,754	54,145	54,145	54,145	22,405	13,123	-	-	-	-
plus escalation of			26,119			26,135	135	802	1,728	3,420	5,519	5,519	5,519	2,252	1,242	-	-	-	-
plus contingency of			176,425			176,529	1,123	6,695	14,423	24,797	34,703	34,703	34,703	15,013	10,371	-	-	-	-
Total TPC including esc, mgt res, contingency			$ 463,243			463,526	$ 2,679	$ 15,969	$ 34,401	$ 62,971	$ 94,367	$ 94,367	$ 94,367	$ 39,669	$ 24,736	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						383,483	$ 2,679	$ 15,325	$ 31,684	$ 55,659	$ 80,048	$ 76,821	$ 73,725	$ 29,743	$ 17,798	$ -	$ -	$ -	$ -
						-													
Operations	2080 hr-shif	*min*	*mean*	*max*	expected value	-													
Tangible Costs						646,716	-	-	-	-	-	-	-	73,231	106,791	109,781	94,042		-
Managerial		1,747	2,184	2,730	2,220	10,299								2,244	2,769	2,847	2,439		
Supervision		11,232	14,040	17,550	14,274	66,208								14,426	17,803	18,301	15,678		
Labor (Production)		17,114	21,393	26,741	21,749	100,881								21,981	27,126	27,886	23,888		
(Maintenance)		6,206	6,895	9,998	7,297	86,035								7,782	26,904	27,657	23,692		
Maintenance of Equipment		10,924	12,138	17,600	12,846	60,299								13,698	16,022	16,470	14,109		
Propane		87	109	137	111	516								112	139	143	122		
Grout		582	728	910	740	3,433								748	923	949	813		
Consumables		7,163	8,954	11,192	9,103	42,222								9,200	11,353	11,671	9,998		
Utilities(Power&Water)		1,519	1,899	2,374	1,931	8,955								1,951	2,408	2,475	2,120		
STEAM		8	10	13	10	47								10	13	13	11		
Disposal (m3)	2,696.7	456	570	712	579	2,688								586	723	743	636		
Analytical		384	480	600	488	2,264								493	609	626	536		
WIPP Disposal m^3	3545	206,849	$258,562	323,202	262,871	262,871									32,859	131,436	98,577		
Operations subtotal						646,716	-	-	-	-	-	-	-	73,231	139,650	241,217	192,619	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	140,122	-	-	-	-	-	-	-	15,867	30,258	52,264	41,734	-	-
Total Operations (w/contingency)						786,838	-	-	-	-	-	-	-	89,097	169,908	293,480	234,353	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						547,027	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,802	$ 122,256	$ 202,661	$ 155,308	$ -	$ -
		min	*mean*	*max*	expected value	-													
Post Operations						-													
Decommission		6,257	7,821	9,776	7,951	7,951											2,272	4,544	1,136
Decontamination/survellance		10,428	13,035	16,294	13,252	13,252											3,786	7,573	1,893
Demolition		20,856	26,070	32,587	26,504	26,504											7,573	15,145	3,786
Post-Operations Subtotal		37,541	46,926	58,657	47,708	47,708	-	-	-	-	-	-	-	-	-	-	13,631	27,262	6,815
plus Escalation						16,690	-	-	-	-	-	-	-	-	-	-	4,335	9,677	2,678
plus Post-Operations Contingency @		15%	40%	58%	38%	24,256	-	-	-	-	-	-	-	-	-	-	6,767	13,913	3,576
Total Post-Operations (w/ escalation & contingency)						88,654	-	-	-	-	-	-	-	-	-	-	24,733	50,852	13,069
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost						56,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,391	$ 32,342	$ 7,977
						-													
Total Cost						955,286	1,422	8,472	18,251	34,754	54,145	54,145	54,145	95,635	152,773	241,217	206,250	27,262	6,815
Cumulative Total LCC						-	1,422	9,893	28,144	62,899	117,044	171,189	225,334	320,969	473,742	714,959	921,209	948,470	955,286
Total Cost (w/mgt reserve, & contingency)						1,339,018	2,679	15,969	34,401	62,971	94,367	94,367	94,367	128,767	194,643	293,480	259,086	50,852	13,069
Cumulative Total LCC						-	2,679	18,648	53,050	116,021	210,388	304,754	399,121	527,888	722,531	1,016,011	1,275,098	1,325,949	1,339,018
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638
Discounted Annual Cost							2,679	15,325	31,684	55,659	80,048	76,821	73,725	96,545	140,055	202,661	171,699	32,342	7,977
Cumulative Discounted LCC						987,219	$ 2,679	$ 18,005	$ 49,689	$ 105,348	$ 185,396	$ 262,217	$ 335,942	$ 432,486	$ 572,541	$ 775,202	$ 946,900	$ 979,242	$ 987,219

Treatment option 2 (low Cost WIPP)4 Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)		min	mean	max	expected value	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
							0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393	1.432	1.472	1.513	1.556	1.599	1.644
							Concept Design		Prelim Design	Final Design		Construction		Start-up							Operations			DD&D	Closeout
							10/1/03 -4/30/04		9/30/04-8/31/05	9/01/05-09/30/06		10/01/06-01/31/10		02/01/10-08/31/11							09/01/11-08/31/19			9/01/19-12/31/20	1/01/20-3/31/21
Other Project Cost (OPC)																									
OPC																									
Conceptual Design, Project Mgt, & Permitting		29,135	45,031	60,926	45,031	45,031	1,422	8,472	18,251	16,886															
Testing and Start-up		11,321	17,497	23,674	17,497	17,497							-	4,374	13,123										
Total OPC (unescalated)			62,528			62,528	1,422	8,472	18,251	16,886	-	-	-	4,374	13,123	-	-								
plus escalation of			5,919			5,919	135	802	1,728	1,598	-	-	-	414	1,242	-	-								
plus contingency of			49,414			49,414	1,123	6,695	14,423	13,345	-	-	-	3,457	10,371										
Total OPC including escalation, mgt reserve, & contingency						117,860	$ 2,679	$ 15,969	$ 34,401	$ 31,830	$ -	$ -	$ -	$ 8,245	$ 24,736	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TEC						-																			
ESH&Q		11,855	18,324	24,792	18,324	18,339				1,652	5,006	5,006	5,006	1,667											
Project mgt		8,278	12,794	17,310	12,794	12,804				1,154	3,496	3,496	3,496	1,164											
Construction, Equip, G&A & Procurement		108,084	167,054	226,024	167,054	167,191				15,062	45,643	45,643	45,643	15,199											
Total TEC (unescalated)			198,171			198,334			-	17,868	54,145	54,145	54,145	18,030	-										
plus escalation of			20,200			20,217			-	1,821	5,519	5,519	5,519	1,838	-										
plus contingency of			127,011			127,115			-	11,452	34,703	34,703	34,703	11,556	-										
Total TEC including escalation, mgt reserve, contingency						345,666	$ -	$ -	$ -	$ 31,141	$ 94,367	$ 94,367	$ 94,367	$ 31,424	$ -	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -	
Total Project Cost (TPC)						-																			
TPC unescalated			260,699			260,861	1,422	8,472	18,251	34,754	54,145	54,145	54,145	22,405	13,123	-	-	-							
plus escalation of			26,119			26,135	135	802	1,728	3,420	5,519	5,519	5,519	2,252	1,242	-	-	-	-	-	-	-	-	-	-
plus contingency of			176,425			176,529	1,123	6,695	14,423	24,797	34,703	34,703	34,703	15,013	10,371	-	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency			$ 463,243			463,526	$ 2,679	$ 15,969	$ 34,401	$ 62,971	$ 94,367	$ 94,367	$ 94,367	$ 39,669	$ 24,736	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448							1.931	2.013	2.097
Discounted Annual Cost						383,483	$ 2,679	$ 15,325	$ 31,684	$ 55,659	$ 80,048	$ 76,821	$ 73,725	$ 29,743	$ 17,798	$ -							$ -	$ -	$ -
Operations	2080 hr-shif	min	mean	max	expected value	-																			
Tangible Costs						1,244,973	-	-	-	-	-	-	-	73,231	110,475	124,517	127,590	130,750	133,999	137,338	140,771	144,300	122,002	-	-
Managerial		1,747	2,184	2,730	2,220	29,574								2,244	2,769	2,847	2,927	3,009	3,093	3,179	3,268	3,360	2,878		
Supervision		11,232	14,040	17,550	14,274	190,112								14,426	17,803	18,301	18,814	19,341	19,882	20,439	21,011	21,599	18,496		
Labor (Production)		17,114	21,393	26,741	21,749	289,675								21,981	27,126	27,886	28,667	29,469	30,294	31,143	32,015	32,911	28,183		
(Maintenance)		6,206	6,895	9,998	7,297	273,281								7,782	26,904	27,657	28,432	29,228	30,046	30,887	31,752	32,641	27,952		
Maintenance of Equipment		10,924	12,138	17,600	12,846	171,807								13,698	16,022	16,470	16,931	17,406	17,893	18,394	18,909	19,438	16,646		
Propane		87	109	137	111	1,481								112	139	143	147	151	155	159	164	168	144		
Grout		582	728	910	740	9,858								748	923	949	976	1,003	1,031	1,060	1,089	1,120	959		
Consumables		7,163	8,954	11,192	9,103	121,238								9,200	11,353	11,671	11,998	12,334	12,679	13,034	13,399	13,774	11,795		
Utilities(Power&Water)		1,519	1,899	2,374	1,931	25,713								1,951	2,408	2,475	2,545	2,616	2,689	2,764	2,842	2,921	2,502		
STEAM		8	10	13	10	135								10	13	13	13	14	14	15	15	15	13		
Disposal (m3)	2,696.7	456	570	712	579	7,717								586	723	743	764	785	807	830	853	877	751		
Analytical		384	480	600	488	6,500								493	609	626	643	661	680	699	718	738	632		
Disposal (m3)	3545	23,190	28,987	36,234	29,471	117,882									3,684	14,735	14,735	14,735	14,735	14,735	14,735	14,735	11,051		
Operations subtotal						1,244,973	-	-	-	-	-	-	-	73,231	110,475	124,517	127,590	130,750	133,999	137,338	140,771	144,300	122,002	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	269,744	-	-	-	-	-	-	-	15,867	23,936	26,979	27,645	28,329	29,033	29,757	30,500	31,265	26,434	-	-
Total Operations (w/contingency)						1,514,717	-	-	-	-	-	-	-	89,097	134,411	151,495	155,235	159,080	163,032	167,095	171,271	175,565	148,436	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost						937,415	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,802	$ 96,715	$ 104,614	$ 102,876	$ 101,174	$ 99,508	$ 97,877	$ 96,280	$ 94,716	$ 76,852	$ -	$ -
		min	mean	max	expected value	-																			
Post Operations						-																			
Decommission		6,257	7,821	9,776	7,951	7,951																	2,272	4,544	1,136
Decontamination/surveilance		10,428	13,035	16,294	13,252	13,252																	3,786	7,573	1,893
Demolition		20,856	26,070	32,587	26,504	26,504																	7,573	15,145	3,786
Post-Operations Subtotal		37,541	46,926	58,657	47,708	47,708	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,631	27,262	6,815
plus Escalation						28,295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,573	16,333	4,388
plus Post-Operations Contingency @		15%	40%	58%	38%	28,628	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,987	16,421	4,220
Total Post-Operations (w/ escalation & contingency)						104,630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29,190	60,016	15,424
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost						52,269	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,113	$ 29,820	$ 7,355
Total Cost						1,553,543	1,422	8,472	18,251	34,754	54,145	54,145	54,145	95,635	123,598	124,517	127,590	130,750	133,999	137,338	140,771	144,300	135,633	27,262	6,815
Cumulative Total LCC						-	1,422	9,893	28,144	62,899	117,044	171,189	225,334	320,969	444,567	569,084	696,674	827,424	961,423	1,098,761	1,239,533	1,383,833	1,519,465	1,546,727	1,553,543
Total Cost (w/mgt reserve, & contingency)						2,082,874	2,679	15,969	34,401	62,971	94,367	94,367	94,367	128,767	159,147	151,495	155,235	159,080	163,032	167,095	171,271	175,565	177,626	60,016	15,424
Cumulative Total LCC						-	2,679	18,648	53,050	116,021	210,388	304,754	399,121	527,888	687,035	838,530	993,765	1,152,845	1,315,876	1,482,971	1,654,243	1,829,808	2,007,434	2,067,450	2,082,874
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost							2,679	15,325	31,684	55,659	80,048	76,821	73,725	96,545	114,513	104,614	102,876	101,174	99,508	97,877	96,280	94,716	91,965	29,820	7,355
Cumulative Discounted LCC						1,373,186	$ 2,679	$ 18,005	$ 49,689	$ 105,348	$ 185,396	$ 262,217	$ 335,942	$ 432,486	$ 547,000	$ 651,614	$ 754,489	$ 855,663	$ 955,172	$ 1,053,049	$ 1,149,330	$ 1,244,045	$ 1,336,011	$ 1,365,831	$ 1,373,186

Treatment option 2 (High Cost WIPP)4 Acre

Life-Cycle Cost (LCC) Analysis

(ALL COST X1000)

						Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
							0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
							1.000	1.028	1.057	1.086	1.117	1.148	1.180	1.213	1.247	1.282	1.318	1.355	1.393	1.432	1.472	1.513	1.556	1.599	1.644
							Concept Design		Prelim Design	Final Design		Construction		Start-up							Operations			DD&D	Closeout
							10/1/03 -4/30/04		9/30/04-8/31/05	9/01/05-09/30/06		10/01/06-01/31/10		02/01/10-08/31/11							09/01/11-08/31/19			9/01/19-12/31/20	1/01/20-3/31/21
Other Project Cost (OPC)		*min*	*mean*	*max*	*expected value*																				
OPC																									
Conceptual Design, Project Mgt, & Permitting		29,135	45,031	60,926	45,031	45,031	1,422	8,472	18,251	16,886															
Testing and Start-up		11,321	17,497	23,674	17,497	17,497							-	4,374	13,123										
Total OPC (unescalated)			62,528			62,528	1,422	8,472	18,251	16,886	-	-	-	4,374	13,123	-	-								
plus escalation of			5,919			5,919	135	802	1,728	1,598	-	-	-	414	1,242	-	-								
plus contingency of			49,414			49,414	1,123	6,695	14,423	13,345	-	-	-	3,457	10,371	-	-								
Total OPC including escalation, mgt reserve, & contingency						117,860	$ 2,679	$ 15,969	$ 34,401	$ 31,830	$ -	$ -	$ -	$ 8,245	$ 24,736	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TEC						-																			
ESH&Q		11,855	18,324	24,792	18,324	18,339																			
Project mgt		8,278	12,794	17,310	12,794	12,804				1,652	5,006	5,006	5,006	1,667											
Construction, Equip, G&A & Procurement		108,084	167,054	226,024	167,054	167,191				1,154	3,496	3,496	3,496	1,164											
Total TEC (unescalated)			198,171			198,334	-	-	-	15,062	45,643	45,643	45,643	15,199											
plus escalation of			20,200			20,217	-	-	-	17,868	54,145	54,145	54,145	18,030	-		-						-	-	-
plus contingency of			127,011			127,115	-	-	-	1,821	5,519	5,519	5,519	1,838	-		-	-					-	-	-
Total TEC including escalation, mgt reserve, contingency						345,666	$ -	$ -	$ -	11,452	34,703	34,703	34,703	11,556	-								-	-	-
						-				$ 31,141	$ 94,367	$ 94,367	$ 94,367	$ 31,424	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Project Cost (TPC)						-																			
TPC unescalated			260,699			260,861	1,422	8,472	18,251	34,754	54,145	54,145	54,145	22,405	13,123	-	-	-	-	-	-	-	-	-	-
plus escalation of			26,119			26,135	135	802	1,728	3,420	5,519	5,519	5,519	2,252	1,242	-	-	-	-	-	-	-	-	-	-
plus contingency of			176,425			176,529	1,123	6,695	14,423	24,797	34,703	34,703	34,703	15,013	10,371	-	-	-	-	-	-	-	-	-	-
Total TPC including esc, mgt res, contingency			$ 463,243			463,526	$ 2,679	$ 15,969	$ 34,401	$ 62,971	$ 94,367	$ 94,367	$ 94,367	$ 39,669	$ 24,736	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448							1.931	2.013	2.097
Discounted Annual Cost						383,483	$ 2,679	$ 15,325	$ 31,684	$ 55,659	$ 80,048	$ 76,821	$ 73,725	$ 29,743	$ 17,798	$ -						$ -	$ -	$ -	$ -
						-																			
Operations	2080 hr-shif	*min*	*mean*	*max*	*expected value*	2,178,575	-	-	-	-	-	-	-	73,231	139,650	241,217	244,291	247,451	250,699	254,038	257,471	261,000	209,527	-	-
Tangible Costs						29,574								2,244	2,769	2,847	2,927	3,009	3,093	3,179	3,268	3,360	2,878		
Managerial		1,747	2,184	2,733	2,220	190,112								14,426	17,803	18,301	18,814	19,341	19,882	20,439	21,011	21,599	18,496		
Supervision		11,232	14,040	17,550	14,274	289,675								21,981	27,126	27,886	28,667	29,469	30,294	31,143	32,015	32,911	28,183		
Labor (Production)		17,114	21,393	26,741	21,749	273,281								7,782	26,904	27,657	28,432	29,228	30,046	30,887	31,752	32,641	27,952		
(Maintenance)		6,206	6,895	9,998	7,297	171,807								13,698	16,022	16,470	16,931	17,406	17,893	18,394	18,909	19,438	16,646		
Maintenance of Equipment		10,924	12,138	17,600	12,846	1,481								112	139	143	147	151	155	159	164	168	144		
Propane		87	109	137	111	9,858								748	923	949	976	1,003	1,031	1,060	1,089	1,120	959		
Grout		582	728	910	740	121,238								9,200	11,353	11,671	11,998	12,334	12,679	13,034	13,399	13,774	11,795		
Consumables		7,163	8,954	11,192	9,103	25,713								1,951	2,408	2,475	2,545	2,616	2,689	2,764	2,842	2,921	2,502		
Utilities(Power&Water)		1,519	1,899	2,374	1,931	135								10	13	13	13	14	14	15	15	15	13		
STEAM		8	10	13	10	7,717								586	723	743	764	785	807	830	853	877	751		
Disposal (m3)	2,696.7	456	570	712	579	6,500								493	609	626	643	661	680	699	718	738	632		
Analytical		384	480	600	488	1,051,484									32,859	131,436	131,436	131,436	131,436	131,436	131,436	131,436	98,577		
Disposal (m3)	3545	206,849	258,562	323,202	262,871	2,178,575																			
Operations subtotal						472,025	-	-	-	-	-	-	-	73,231	139,650	241,217	244,291	247,451	250,699	254,038	257,471	261,000	209,527	-	-
plus Operations Contingency @		5.0%	15.0%	45.0%	22%	2,650,599	-	-	-	-	-	-	-	15,867	30,258	52,264	52,930	53,614	54,318	55,042	55,785	56,550	45,398	-	-
Total Operations (w/contingency)							-	-	-	-	-	-	-	89,097	169,908	293,480	297,220	301,065	305,017	309,080	313,257	317,550	254,925	-	-
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost						1,626,782	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,802	$ 122,256	$ 202,661	$ 196,971	$ 191,476	$ 186,171	$ 181,047	$ 176,097	$ 171,316	$ 131,986	$ -	$ -
		min	*mean*	*max*	*expected value*	-																			
Post Operations						-																			
Decommission		6,257	7,821	9,776	7,951	7,951																	2,272	4,544	1,136
Decontamination/survellance		10,428	13,035	16,294	13,252	13,252																	3,786	7,573	1,893
Demolition		20,856	26,070	32,587	26,504	26,504																	7,573	15,145	3,786
Post-Operations Subtotal		37,541	46,926	58,657	47,708	47,708	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,631	27,262	6,815
plus Escalation						28,295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,573	16,333	4,388
plus Post-Operations Contingency @		15%	40%	58%	38%	28,628	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,987	16,421	4,220
Total Post-Operations (w/ escalation & contingency)						104,630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29,190	60,016	15,424
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost						52,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,113	$ 29,820	$ 7,355
						-																			
Total Cost						2,487,144	1,422	8,472	18,251	34,754	54,145	54,145	54,145	95,635	152,773	241,217	244,291	247,451	250,699	254,038	257,471	261,000	223,158	27,262	6,815
Cumulative Total LCC						-	1,422	9,893	28,144	62,899	117,044	171,189	225,334	320,969	473,742	714,959	959,250	1,206,700	1,457,399	1,711,438	1,968,909	2,229,909	2,453,067	2,480,329	2,487,144
Total Cost (w/mgt reserve, & contingency)						3,218,756	2,679	15,969	34,401	62,971	94,367	94,367	94,367	128,767	194,643	293,480	297,220	301,065	305,017	309,080	313,257	317,550	284,115	60,016	15,424
Cumulative Total LCC						-	2,679	18,648	53,050	116,021	210,388	304,754	399,121	527,888	722,531	1,016,011	1,313,232	1,614,297	1,919,314	2,228,394	2,541,651	2,859,201	3,143,316	3,203,332	3,218,756
discount factor @ OMB discount rate of		4.20%					1.000	1.042	1.086	1.131	1.179	1.228	1.280	1.334	1.390	1.448	1.509	1.572	1.638	1.707	1.779	1.854	1.931	2.013	2.097
Discounted Annual Cost							2,679	15,325	31,684	55,659	80,048	76,821	73,725	96,545	140,055	202,661	196,971	191,476	186,171	181,047	176,097	171,316	147,099	29,820	7,355
Cumulative Discounted LCC						2,062,554	$ 2,679	$ 18,005	$ 49,689	$ 105,348	$ 185,396	$ 262,217	$ 335,942	$ 432,486	$ 572,541	$ 775,202	$ 972,172	$ 1,163,649	$ 1,349,820	$ 1,530,866	$ 1,706,963	$ 1,878,279	$ 2,025,378	$ 2,055,199	$ 2,062,554