Appendix H

Appendix H

Solid Waste Generation Table
Fort Greely Reuse Solid Waste Generation Scenario
WITH 42.5% WASTE REDUCTION THROUGH INCINERATION

	Year	Solid Waste** (tons/year)	Solid Waste (tons/day)	Waste Diverted (tons)	Waste to Landfill (tons)	Waste to Landfill (cubic yards)	Daily Cover (cubic yards)	Accumulated Cover (cubic yards)	Annual Volume of Landfill Space Required (cubic yards)	Accumulated Volume (cubic yards)	
0	2001	1,360	3.73								
1	2002	1,383	3.79	588	795	2,272	681	681	2,953	2,953	
2	2003	1,406	3.85	597	808	2,309	693	1,374	3,002	5,955	
3	2004	1,429	3.92	607	822	2,348	704	2,079	3,052	9,007	
4	2005	1,453	3.98	618	835	2,387	716	2,795	3,103	12,110	Existing Landfill
5	2006	3,134	8.58	1,332	1,802	5,148	1,544	4,339	6,692	6,692	
6	2007	3,158	8.65	1,342	1,816	5,189	1,557	5,896	6,745	13,437	
7	2008	3,184	8.72	1,353	1,831	5,230	1,569	7,465	6,799	20,237	
8	2009	3,209	8.79	1,364	1,845	5,272	1,582	9,046	6,854	27,091	
9	2010	3,236	8.86	1,375	1,860	5,315	1,595	10,641	6,910	34,001	
10	2011	3,262	8.94	1,386	1,876	5,359	1,608	12,249	6,967	40,968	
11	2012	3,289	9.01	1,398	1,891	5,404	1,621	13,870	7,025	47,993	
12	2013	3,317	9.09	1,410	1,907	5,450	1,635	15,505	7,085	55,078	
13	2014	3,345	9.17	1,422	1,924	5,496	1,649	17,154	7,145	62,223	
14	2015	3,374	9.24	1,434	1,940	5,543	1,663	18,817	7,206	69,429	
15	2016	3,404	9.32	1,447	1,957	5,592	1,677	20,494	7,269	76,698	
16	2017	3,433	9.41	1,459	1,974	5,641	1,692	22,187	7,333	84,031	
17	2018	3,464	9.49	1,472	1,992	5,691	1,707	23,894	7,398	91,429	
18	2019	3,495	9.58	1,485	2,010	5,742	1,723	25,616	7,464	98,894	
19	2020	3,527	9.66	1,499	2,028	5,794	1,738	27,354	7,532	106,426	
20	2021	3,559	9.75	1,513	2,046	5,847	1,754	29,108	7,601	114,026	
21	2022	3,592	9.84	1,526	2,065	5,901	1,770	30,879	7,671	121,697	
22	2023	3,625	9.93	1,541	2,084	5,956	1,787	32,665	7,742	129,439	
23	2024	3,659	10.03	1,555	2,104	6,012	1,803	34,469	7,815	137,254	
24	2025	3,694	10.12	1,570	2,124	6,069	1,821	36,289	7,889	145,143	
25	2026	3,729	10.22	1,585	2,144	6,127	1,838	38,127	7,965	153,108	
26	2027	3,765	10.32	1,600	2,165	6,186	1,856	39,983	8,042	161,150	
27	2028	3,802	10.42	1,616	2,186	6,246	1,874	41,857	8,120	169,270	
28	2029	3,840	10.52	1,632	2,208	6,308	1,892	43,749	8,200	177,470	
29	2030	3,878	10.62	1,648	2,230	6,370	1,911	45,660	8,282	185,752	
30	2031	3,917	10.73	1,665	2,252	6,434	1,930	47,591	8,365	194,116	
31	2032	3,956	10.84	1,681	2,275	6,499	1,950	49,541	8,449	202,565	
32	2033	3,996	10.95	1,698	2,298	6,566	1,970	51,510	8,535	211,100	
33	2034	4,038	11.06	1,716	2,322	6,633	1,990	53,500	8,623	219,723	
34	2035	4,079	11.18	1,734	2,346	6,702	2,011	55,511	8,712	228,436	
35	2036	4,122	11.29	1,752	2,370	6,772	2,032	57,542	8,804	237,240	
36	2037	4,166	11.41	1,770	2,395	6,843	2,053	59,595	8,896	246,136	
37	2038	4,210	11.53	1,789	2,421	6,916	2,075	61,670	8,991	255,127	
38	2039	4,255	11.66	1,808	2,447	6,990	2,097	63,767	9,087	264,214	
39	2040	4,301	11.78	1,828	2,473	7,066	2,120	65,887	9,186	273,400	
40	2041	4,348	11.91	1,848	2,500	7,143	2,143	68,030	9,286	282,686	
41	2042	4,396	12.04	1,868	2,527	7,221	2,166	70,196	9,388	292,074	
42	2043	4,444	12.18	1,889	2,555	7,301	2,190	72,387	9,492	301,565	
43	2044	4,494	12.31	1,910	2,584	7,383	2,215	74,601	9,597	311,163	
44	2045	4,544	12.45	1,931	2,613	7,466	2,240	76,841	9,705	320,868	
45	2046	4,596	12.59	1,953	2,643	7,550	2,265	79,106	9,815	330,683	
46	2047	4,648	12.73	1,975	2,673	7,636	2,291	81,397	9,927	340,610	
47	2048	4,702	12.88	1,998	2,703	7,724	2,317	83,714	10,041	350,651	
48	2049	4,756	13.03	2,021	2,735	7,813	2,344	86,058	10,157	360,809	
49	2050	4,811	13.18	2,045	2,767	7,905	2,371	88,430	10,276	371,085	
50	2051	4,868	13.34	2,069	2,799	7,997	2,399	90,829	10,397	381,481	New Landfill

Variables used for calculations:

Yearly solid waste inflation rate:	1.89%	(The 5-year average population growth rate; see Table 3.1)
Percent of waste diverted:	42.5%	
In place density (lb/yd^3):	700	
Daily cover volume (percent of solid waste):	30%	

Equations

Solid waste	=inflation rate*(tons of waste/year)
Waste Diverted	=% diverted*Solid waste
Waste to Landfill (tons)	=Solid waste-Waste diverted
Waste to Landfill (cubic yards)	=(Weight of Waste to landfill/In place density)*(2000 lb/ton)
Daily Cover	=Daily cover volume*Waste to landfill
Annual Volume of Landfill Space Required	=Waste to landfill+Daily cover
Accumulated Volume	=Accumulated volume previous year+Annual volume current year

** 1360 Tons per year based on Delta Sanitation data of quantities of solid waste deposited in landfill (1194 tons per year) and estimated annual waste generation from residual force at Fort Greely (166 tons per year).
Study dates were from July 1, 2000-December 31, 2000.

The Waste Diverted percentage was calculated based on incineration of 50% of the solid waste stream, with 15% of that being returned to the landfill as ash.

Projected data based on Fort Greely reuse becoming operational in 2006, increasing tonnage by 1656 tons per year (See Appendix B)

Note: Solid waste generated by Fort Greely reuse is not inflated. It is assumed this waste generation rate remains constant.

COST ESTIMATE TABLE FOR:

Recommended Solid Waste Disposal System

Includes: Incineration, Household hazardous waste collection, Septage lagoons, and Closure of existing landfill

Capital Costs for New Landfill

Initial Land Purchase

Description	Unit Costs	Units	Quantity	Total Cost
Land	$1,000	AC.	80	**$80,000**

Solid Waste Trench Disposal Area (10-Acre portion)

Description	Unit Costs	Units	Quantity	Total Cost
Engineering Design, Permitting, & Construction Management	20%	%	1	$116,749
Mob/Demob	$50,000	LS	1	$50,000
Clear	$2,500	AC.	8.06	$20,150
Grub	$2.50	CY.	13,003	$32,508
Berm Construction	$3.00	CY.	6,633	$19,899
Access Road	$4.00	CY.	2,398	$9,592
Fence	$25	LF.	2,500	$62,500
Trench Excavation	$4.00	CY.	84,450	$337,800
Final Cover System	--		--	--
Final Gravel Cover (1.5 ft. thick)	$2.50	CY.	14,314	$35,785
Topsoil	$3.00	CY.	4,142	$12,426
Grass	$500	AC.	6.17	$3,085
Construction Contingency	15%	%	1	$87,562
				$788,055

Equipment Maintenance Building

Description	Unit Costs	Units	Quantity	
Engineering Design, Permitting, & Construction Management	20%	%	1	$69,000
Building (40' W x 50' L x 16' H insulated, heated building with 2 roll-up doors)				$300,000
Utilities (Well, Septic System, and Electrical and Telephone distribution)				$45,000
Construction Contingency	15%	%	1	$51,750
				$465,750

Total New Landfill Construction Costs **$1,333,805**

Landfill Equipment Purchase

Description	Unit Costs	Units	Quantity	Total Cost
Cat D-6R Track Dozer	$240,000	1 vehicle	1	$240,000
Cat 924G Front-End Wheel Loader	$125,000	1 vehicle	1	$125,000
Dump Truck (10 CY)	$50,000	1 vehicle	1	$50,000
Procurement Costs	10%	%	1	$41,500
				$456,500

Solid Waste Incinerator System

Description	Unit Costs	Units	Quantity	Total Cost
Engineering Design, Permitting, & Construction Management	20%	%	1	$80,200
Incinerator System	$295,000	LS	1	$295,000
Foundation & Site Improvements	$100,000	LS	1	$100,000
Electrical Power, Fuel Tanks, & Misc. Accessories	$6,000	LS	1	$6,000
Construction Contingency	15%	%	1	$60,150
				$541,350

COST ESTIMATE TABLE FOR:
Recommended Solid Waste Disposal System

Septage Lagoon Facility

Description	Unit Costs	Units	Quantity	Total Cost
Engineering Design, Permitting, & Construction Management	20%	%	1	$120,000
Site Clearing	$2,500	AC	7.65	$19,125
Site Grubbing	$2.50	CY	12,350	$30,875
Site Fencing	$25	LF	1,590	$39,750
Lagoon Construction	$510,250	LF	1	$510,250
Construction Contingency	15%	%	1	$90,000
				$810,000

Household Hazardous Waste Collection

Description	Unit Costs	Units	Quantity	Total Cost
Engineering Design, Permitting, & Construction Management	20%	%	1	$4,600
Building	$20,000	LS	1	$20,000
Site Improvements	$2,000	LS	1	$2,000
Electrical Power	$1,000	LS	1	$1,000
Construction Contingency	15%	%	1	$3,450
				$31,050

Total Capital Costs for New Landfill **$3,172,705**

Closure of Existing Landfill

Description	Unit Costs	Units	Quantity	Total Cost
Fill Material	$2.50	CY.	12,407	$31,018
Regrade and Compact Area	$1,000	AC.	3.84	$3,840
Final Cover System	--		--	--
Final Gravel Cover (1.5 ft. thick)	$2.50	CY.	9,305	$23,263
Topsoil	$3.00	CY.	3,101	$9,303
Grass	$500	AC.	3.84	$1,920
Construction Contingency	15%	%	1	$10,401
Engineering Design, Permitting, & Construction Management	20%	%	1	$13,869
				$93,613

Total Capital Costs for New Landfill and Closure of Existing Landfill **$3,266,318**

COST ESTIMATE TABLE FOR:
Recommended Solid Waste Disposal System

Operating & Maintenance Costs for Existing Landfill (2002-2005)

Landfill

Equipment	Quant.	$ Maint. Per Hour	Fuel per Hour (Gal.)	Hours per Week	Hours per Year	Cost per Year
Dump Truck (10 CY)	1	$7	3.5	12	624	$7,644
Case Track Loader	1	$12	3.5	12	624	$10,764
Burn Cage	1	--	--	--	--	$2,000
						$20,408

**Note: Diesel Price used for estimate= $1.50 per gallon

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
Equipment Operators	2	$22.50	20	1040	$46,800
Landfill Operator/Record-keeping	1	$22.50	3	156	$3,510
					$50,310

**Notes: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits
Equipment operators will operate burn cage, excavate gravel for daily cover stockpile, construct berm along west side of existing disposal area, and compact solid waste and apply daily cover.

Utilities		Cost per Year
Electricity	$	1,800
Heat (oil)	$	1,200
		$3,000

Subtotal Operating and Maintenance Costs for Existing Landfill:	**$73,718**
Landfill Operator Profit @ 15%	**$11,058**

Total Operating and Maintenance Costs for Existing Landfill:	**$84,776**

NOTE: ALL COSTS ARE PRESENTED IN YEAR 2001 DOLLARS.

Septage Pit Operations

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
Facility Operators	1	$22.50	5	260	**$5,850**

**Notes: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits.
Facility operator required to be present when pumping trucks unload.

	Cost per Year
Maintenance	**$5,000**

Subtotal Septage Pit Operating & Maintenance Costs	**$10,850**
Operator Profit @ 15%	**$1,628**

Total Septage Pit Operating & Maintenance Costs	**$12,478**

COST ESTIMATE TABLE FOR:
Recommended Solid Waste Disposal System

Operating & Maintenance Costs for New Landfill

Landfill

Equipment	Quant.	$ Maint. Per Hour	Fuel per Hour (Gal.)	Hours per Week	Hours per Year	Cost per Year
Cat D-6R Track Dozer	1	$15	3.5	16	832	$16,848
Cat 924G Front-End Wheel Loader	1	$12	3.5	8	416	$7,176
Dump Truck (10 CY)	1	$7	3.5	4	208	$2,548
						$26,572

**Note: Diesel Price used for estimate= $1.50 per gallon

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
Equipment Operators	2	$22.50	20	1040	$46,800
Landfill Operator/Record-keeping	1	$22.50	4	208	$4,680
					$51,480

**Note: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits

Utilities & Building Maintenance	Cost per Year
Electricity	$1,800
Heat (oil)	$1,200
Building Maintenance	$2,000
	$5,000

Total Landfill Operating & Maintenance Costs **$83,052**

Solid Waste Incinerator System

Equipment	
Replace Refractory Panels	$3,000
Fan & Motor Repair	$1,000
General System Repairs	$1,000
	$5,000

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
System Operator	1	$22.50	20	1040	**$23,400**

**Note: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits

Utilities	Cost per Year
Electricity	$2,000
Fuel Oil	$3,000
	$5,000

Total Solid Waste Incinerator System Operating & Maintenance Costs **$33,400**

COST ESTIMATE TABLE FOR:

Recommended Solid Waste Disposal System

Household Hazardous Waste Collection

Consolidation & Disposal Costs	Number of Events	Number of Drums per Event	Cost Each	Cost per Year
Consolidation	2	--	$5,000	$10,000
Disposal	2	5	$500	$5,000
				$15,000

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
Landfill Collection Personnel	1	$22.50	4	208	**$4,680**

**Notes: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits.
HHW accepted only one day per week at landfill.

Utilities	Cost per Year
Electricity	**$1,000**

Total Household Hazardous Waste Operating & Maintenance Costs	**$20,680**
Subtotal Operating & Maintenance Costs	**$137,132**
Operator Profit @ 15%	**$20,570**
Total Operating and Maintenance Costs for New Landfill:	**$157,702**

Septage Lagoon Facility

Employees	Quantity	Cost per Hour	Hours per Week	Hours per Year	Cost per Year
Facility Operators	1	$22.50	5	260	**$5,850**

**Notes: Cost per hour includes $15 wages and 50% mark-up for overhead and benefits.
Facility operator required to be present when pumping trucks unload.

Utilities & Maintenance	Cost per Year
Electricity	$500
Maintenance	$10,000
	$10,500

Subtotal Septage Lagoon Facility Operating & Maintenance Costs	**$16,350**
Operator Profit @ 15%	**$2,453**
Total Septage Lagoon Facility Operating & Maintenance Costs	**$18,803**

ECONOMIC ANALYSIS TABLE

Recommended Solid Waste Disposal System for Fort Greely Reuse Waste Generation Scenario

COSTS ARE CONCEPTUAL AND SUBJECT TO CHANGE BASED ON MORE IN-DEPTH ANALYSES.

Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Tons of Waste	0	1,383	1,406	1,429	1,453	3,134	3,156	3,184	3,209	3,236	3,262	3,289	3,317	3,345	3,374	3,404	3,433	3,464	3,495	3,527	3,559
New Landfill																					
Capital Costs	2001 Costs:																				
Land	$80,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Landfill	$788,055	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,302,535	$0	$0	$0
Building	$465,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Equipment	$456,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incinerator	$541,350	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$732,548	$0	$0	$0
Septic Lagoon	$810,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HHW	$31,050	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Close Existing Landfill	$93,613	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total 2001 Capital Costs	**$3,266,318**																				
Capital Replacement Cost																					
Landfill		$0	$0	$0	$0	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$86,687	$123,594	$123,594	$123,594	$123,594
Equipment		$0	$0	$0	$0	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$54,318	$69,510	$69,510	$69,510	$69,510	$69,510
Incinerator		$0	$0	$0	$0	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769	$39,769
Total Yearly Dedicated Fund		**$0**	**$0**	**$0**	**$0**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$180,773**	**$195,965**	**$232,873**	**$232,873**	**$232,873**	**$232,873**
Yearly Operating Costs for Existing Landfill																					
Equipment		$20,408	$21,020	$21,651	$22,300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Employees		$50,310	$51,819	$53,374	$54,975	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Utilities		$3,000	$3,090	$3,183	$3,278	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal Yearly Operating Costs		$73,718	$75,930	$78,207	$80,554	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Landfill Operator Profit @ 15%		$11,058	$11,389	$11,731	$12,083	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operating Costs for Existing Landfill		**$84,776**	**$87,319**	**$89,939**	**$92,637**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Yearly Operating Costs for New Landfill																					
Landfill	$83,052	$0	$0	$0	$0	$96,280	$99,168	$102,143	$105,208	$108,364	$111,615	$114,963	$118,412	$121,965	$125,624	$129,392	$133,274	$137,272	$141,390	$145,632	$150,001
Incinerator	$33,400	$0	$0	$0	$0	$36,720	$39,881	$41,078	$42,310	$43,579	$44,887	$46,233	$47,620	$49,049	$50,520	$52,036	$53,597	$55,205	$56,861	$58,567	$60,324
HHW	$20,680	$0	$0	$0	$0	$23,974	$24,693	$25,434	$26,197	$26,983	$27,792	$28,626	$29,485	$30,369	$31,280	$32,219	$33,185	$34,181	$35,206	$36,263	$37,350
Subtotal Yearly Operating Costs	$137,132	$0	$0	$0	$0	$158,974	$163,743	$168,655	$173,715	$178,926	$184,294	$189,823	$195,517	$201,383	$207,424	$213,647	$220,057	$226,658	$233,458	$240,462	$247,676
Landfill Operator Profit @ 15%	$20,570	$0	$0	$0	$0	$23,846	$24,561	$25,298	$26,057	$26,839	$27,644	$28,473	$29,328	$30,207	$31,114	$32,047	$33,008	$33,999	$35,019	$36,069	$37,151
Operating Costs for New Landfill	**$157,702**	**$0**	**$0**	**$0**	**$0**	**$182,820**	**$188,304**	**$193,953**	**$199,772**	**$205,765**	**$211,938**	**$218,296**	**$224,845**	**$231,590**	**$238,538**	**$245,694**	**$253,065**	**$260,657**	**$268,477**	**$276,531**	**$284,827**
Total Yearly Operating Cost		**$84,776**	**$87,319**	**$89,939**	**$92,637**	**$182,820**	**$188,304**	**$193,953**	**$199,772**	**$205,765**	**$211,938**	**$218,296**	**$224,845**	**$231,590**	**$238,538**	**$245,694**	**$253,065**	**$260,657**	**$268,477**	**$276,531**	**$284,827**
Total Yearly Costs		$84,776	$87,319	$89,939	$92,637	$363,593	$369,077	$374,726	$380,545	$386,538	$392,711	$399,069	$405,618	$412,364	$419,311	$426,467	$449,030	$493,530	$501,350	$509,404	$517,700
Cost per Ton		**$61.31**	**$62.12**	**$62.93**	**$63.76**	**$116.03**	**$116.86**	**$117.71**	**$118.58**	**$119.47**	**$120.38**	**$121.32**	**$122.28**	**$123.26**	**$124.27**	**$125.30**	**$130.78**	**$142.48**	**$143.45**	**$144.45**	**$145.47**
Collection Cost per Ton		**$80.00**	**$82.40**	**$84.87**	**$87.42**	**$90.04**	**$92.74**	**$95.52**	**$98.39**	**$101.34**	**$104.38**	**$107.51**	**$110.74**	**$114.06**	**$117.48**	**$121.01**	**$124.64**	**$128.38**	**$132.23**	**$136.19**	**$140.28**
Total Cost for Collection and Disposal per Ton		**$141.31**	**$144.52**	**$147.81**	**$151.17**	**$206.07**	**$209.60**	**$213.23**	**$216.97**	**$220.81**	**$224.76**	**$228.83**	**$233.02**	**$237.32**	**$241.75**	**$246.31**	**$255.42**	**$270.85**	**$275.68**	**$280.64**	**$285.75**

Dedicated Fund interest rate 4%
Inflation rate used: 3%

Initial Capital Costs are in year 2001 dollars; Future Capital Costs have been inflated at 3% per year from 2001.
Yearly Operating Costs have been inflated 3% per year.

Note: Septage Lagoon operating costs not included in total Landfill Operating Costs, however, a septage lagoon should be operated in conjunction with the landfill.
Initial operating costs for a septage lagoon are: $18,803 and should be inflated at a rate of 3% compounded annually over time.

Appendix I

Community Questionnaires

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

Your opinions are important to the success of this project. Please answer the following questions and return the form to City Hall. You may also mail the form to the address listed below:

City of Delta Junction
P. O. Box 229
Delta Junction, Alaska 99737

Name MIKE MURPHY (please print) Telephone _____ (optional)

Address 2490 HAYES ST. e-mail _____ (optional)

BOX 351 DELTA JCT AK 99737

		YES	NO
1.	Do you live in the City of Delta Junction?	X	
	In the Delta Junction Area?		
	On Ft. Greely?		
2.	How long have you lived in the Delta Junction Area? 11 YEARS		
3.	Do you: X own your residence? ____ rent?		
4.	How many people reside in your household? 2 Adults ____ Children?		
5.	Is your solid waste picked up by the City Contractor, Delta Sanitation?		X
6.	If no, do you haul your own solid waste to the landfill?	X	
	How often? AS REQUIRED		
	About how much each trip? ____ (number of bags per week)		
7.	Do you think the existing landfill is operated satisfactorily?	X	
	Hours open?	X	
	Costs?	X	
	Environmental impacts?	X	
8.	Should the existing landfill be upgraded, and continue to be used, for local solid waste disposal?	THIS WOULD WORK.	
9.	Should the City of Delta Junction build a new landfill?	THIS WOULD WORK.	
10.	If a new landfill is constructed, should the existing landfill be converted to, and used as, a City maintained demolition debris disposal area?	THIS WOULD WORK.	
11.	Should the City of Delta Junction close the existing landfill and haul all solid waste to the Fairbanks North Star Borough landfill?		X

12. The average family of 4 in Alaska generates approximately 4 tons of solid waste per year (1 ton per year per person). What price range are you willing to pay for your future solid waste collection and disposal?

___$25 to $50 per ton ___$50 to $75 per ton ___$75 to $100 per ton ___ more

$100 PER TON IS NOT UNREASONABLE, BUT LESS IS BETTER.

$5 6# / PERSON / DAY

CONTINUED ON BACK

365 | 2190 | 1825 | 175

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

		YES	NO
13.	Would you pay more for your solid waste collection and disposal if:		
	A. The landfill accepted Household Hazardous Wastes (paint, household chemicals, auto batteries, used oil, etc.)	____	X
	B. Waste to the landfill could be reduced through recycling materials such as glass, paper, tires, aluminum, etc.?	____	X

Please write any comments you have about the existing landfill, a new landfill and reduce, reuse and recycling opportunities in Delta Junction Area.

Thank you for you comments.

If you have any further questions or comments, please feel free to contact me.

Richard Bonwell
Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, Alaska 99701
(907) 451-7774

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

Your opinions are important to the success of this project. Please answer the following questions and return the form to City Hall. You may also mail the form to the address listed below:

City of Delta Junction
P. O. Box 229
Delta Junction, Alaska 99737

Name Pat Fellman (please print) Telephone 8954090 (optional)

Address Hc60 Bx 4200 e-mail udder_farm@hotmail.com (optional)

		YES	NO
1.	Do you live in the City of Delta Junction?		X
	In the Delta Junction Area?	X	
	On Ft. Greely?		
2.	How long have you lived in the Delta Junction Area? 13 yrs		
3.	Do you: X own your residence? ____ rent?		
4.	How many people reside in your household? 3 Adults 6 Children?		
5.	Is your solid waste picked up by the City Contractor, Delta Sanitation?	X	
6.	If no, do you haul your own solid waste to the landfill?		
	How often? ____		
	About how much each trip? ____ (number of bags per week)		
7.	Do you think the existing landfill is operated satisfactorily?		
	Hours open?		
	Costs?		
	Environmental impacts?		
8.	Should the existing landfill be upgraded, and continue to be used, for local solid waste disposal?		
9.	Should the City of Delta Junction build a new landfill?	X	
10.	If a new landfill is constructed, should the existing landfill be converted to, and used as, a City maintained demolition debris disposal area?		X
11.	Should the City of Delta Junction close the existing landfill and haul all solid waste to the Fairbanks North Star Borough landfill?		

12. The average family of 4 in Alaska generates approximately 4 tons of solid waste per year (1 ton per year per person). What price range are you willing to pay for your future solid waste collection and disposal?

___$25 to $50 per ton ___$50 to $75 per ton ___$75 to $100 per ton ___ more

CONTINUED ON BACK

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

		YES	NO
13.	Would you pay more for your solid waste collection and disposal if:		
	A. The landfill accepted Household Hazardous Wastes (paint, household chemicals, auto batteries, used oil, etc.)	X	
	B. Waste to the landfill could be reduced through recycling materials such as glass, paper, tires, aluminum, etc.?	X	

Please write any comments you have about the existing landfill, a new landfill and reduce, reuse and recycling opportunities in Delta Junction Area.

Thank you for you comments.

If you have any further questions or comments, please feel free to contact me.

Richard Bonwell
Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, Alaska 99701
(907) 451-7774

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

Your opinions are important to the success of this project. Please answer the following questions and return the form to City Hall. You may also mail the form to the address listed below:

City of Delta Junction
P. O. Box 229
Delta Junction, Alaska 99737

Name Michael Purviance (please print)

Telephone 907-895-2076 (optional)

Address PO Box 1656 Delta Junction, AK 99737

e-mail mikepurv@wildak.net (optional)

		YES	NO
1.	Do you live in the City of Delta Junction?		✓
	In the Delta Junction Area?	✓	
	On Ft. Greely?		
2.	How long have you lived in the Delta Junction Area? 2½ years		
3.	Do you: ____own your residence? ✓ rent?		
4.	How many people reside in your household? 2 Adults ____ Children?		
5.	Is your solid waste picked up by the City Contractor, Delta Sanitation?	✓	
6.	If no, do you haul your own solid waste to the landfill?		
	How often? ____		
	About how much each trip? ____ (number of bags per week)		
7.	Do you think the existing landfill is operated satisfactorily?		✓
	Hours open?		✓
	Costs?	✓	
	Environmental impacts?		✓
8.	Should the existing landfill be upgraded, and continue to be used, for local solid waste disposal?		✓
9.	Should the City of Delta Junction build a new landfill?	✓	
10.	If a new landfill is constructed, should the existing landfill be converted to, and used as, a City maintained demolition debris disposal area?	✓	
11.	Should the City of Delta Junction close the existing landfill and haul all solid waste to the Fairbanks North Star Borough landfill?		✓

12. The average family of 4 in Alaska generates approximately 4 tons of solid waste per year (1 ton per year per person). What price range are you willing to pay for your future solid waste collection and disposal?

___$25 to $50 per ton ___$50 to $75 per ton ✓ $75 to $100 per ton ___ more

CONTINUED ON BACK

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

		YES	NO
13.	Would you pay more for your solid waste collection and disposal if:		
	A. The landfill accepted Household Hazardous Wastes (paint, household chemicals, auto batteries, used oil, etc.)	✓	
	B. Waste to the landfill could be reduced through recycling materials such as glass, paper, tires, aluminum, etc.?	✓	

Please write any comments you have about the existing landfill, a new landfill and reduce, reuse and recycling opportunities in Delta Junction Area.

I would like to see a facilty which can optimize recycling and compost in a solid waste facility. A facilty that can create some local jobs for the community and create a by-product that would be beneficial to the soil instead of utilizing a cheaper method. A environmentally friendly way to manage solid waste

Thank you for you comments.

If you have any further questions or comments, please feel free to contact me.

Richard Bonwell
Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, Alaska 99701
(907) 451-7774

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

Your opinions are important to the success of this project. Please answer the following questions and return the form to City Hall. You may also mail the form to the address listed below:

City of Delta Junction
P. O. Box 229
Delta Junction, Alaska 99737

Name E. L. Gilbert (please print) Telephone 907-895-4338 (optional)

Address H.C. 60 Box 4210 Delta Junction 99737 e-mail _____ (optional)

		YES	NO
1.	Do you live in the City of Delta Junction?	____	X
	In the Delta Junction Area?	X	____
	On Ft. Greely?	____	____
2.	How long have you lived in the Delta Junction Area? 26 yrs		
3.	Do you: X own your residence? ____ rent?		
4.	How many people reside in your household? 3 Adults ____ Children?		
5.	Is your solid waste picked up by the City Contractor, Delta Sanitation?	X	____
6.	If no, do you haul your own solid waste to the landfill?	____	____
	How often? ____		
	About how much each trip? ____ (number of bags per week)		
7.	Do you think the existing landfill is operated satisfactorily?	?	____
	Hours open?	X	____
	Costs?	____	X
	Environmental impacts?	[illegible]	X
8.	Should the existing landfill be upgraded, and continue to be used, for local solid waste disposal?	____	X
9.	Should the City of Delta Junction build a new landfill?	X	____
10.	If a new landfill is constructed, should the existing landfill be converted to, and used as, a City maintained demolition debris disposal area?	____	X
11.	Should the City of Delta Junction close the existing landfill and haul all solid waste to the Fairbanks North Star Borough landfill?	____	X

12. The average family of 4 in Alaska generates approximately 4 tons of solid waste per year (1 ton per year per person). What price range are you willing to pay for your future solid waste collection and disposal?

___$25 to $50 per ton ___$50 to $75 per ton ___$75 to $100 per ton X more

CONTINUED ON BACK

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

		YES	NO
13.	Would you pay more for your solid waste collection and disposal if:		
	A. The landfill accepted Household Hazardous Wastes (paint, household chemicals, auto batteries, used oil, etc.)	X	
	B. Waste to the landfill could be reduced through recycling materials such as glass, paper, tires, aluminum, etc.?	X	

Please write any comments you have about the existing landfill, a new landfill and reduce, reuse and recycling opportunities in Delta Junction Area.

Thank you for you comments.

If you have any further questions or comments, please feel free to contact me.

Richard Bonwell
Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, Alaska 99701
(907) 451-7774

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

Your opinions are important to the success of this project. Please answer the following questions and return the form to City Hall. You may also mail the form to the address listed below:

City of Delta Junction
P. O. Box 229
Delta Junction, Alaska 99737

Name Mike Sarver (please print) Telephone 895-4178 (optional)

Address PO Box 1014 DJ AK 99737 e-mail _____ (optional)

		YES	NO
1.	Do you live in the City of Delta Junction?		X
	In the Delta Junction Area?		
	On Ft. Greely?		
2.	How long have you lived in the Delta Junction Area? 22 yrs		
3.	Do you: ✓ own your residence? ____ rent?		
4.	How many people reside in your household? 2 Adults ____ Children?		
5.	Is your solid waste picked up by the City Contractor, Delta Sanitation?	Y	
6.	If no, do you haul your own solid waste to the landfill?		
	How often? ____		
	About how much each trip? ____ (number of bags per week)		
7.	Do you think the existing landfill is operated satisfactorily?	✓	
	Hours open?	✓	
	Costs?	✓	
	Environmental impacts?		✓ need water tests
8.	Should the existing landfill be upgraded, and continue to be used, for local solid waste disposal?		
9.	Should the City of Delta Junction build a new landfill?	maybe	
10.	If a new landfill is constructed, should the existing landfill be converted to, and used as, a City maintained demolition debris disposal area?	need more info	
11.	Should the City of Delta Junction close the existing landfill and haul all solid waste to the Fairbanks North Star Borough landfill?		X

12. The average family of 4 in Alaska generates approximately 4 tons of solid waste per year (1 ton per year per person). What price range are you willing to pay for your future solid waste collection and disposal?

___ $25 to $50 per ton X $50 to $75 per ton ___ $75 to $100 per ton ___ more

CONTINUED ON BACK

Delta Junction Solid Waste Management Plan

Public Meeting
Delta Junction City Hall
18 January 2001

		YES	NO
13.	Would you pay more for your solid waste collection and disposal if:		
	A. The landfill accepted Household Hazardous Wastes (paint, household chemicals, auto batteries, used oil, etc.)	maybe	
	B. Waste to the landfill could be reduced through recycling materials such as glass, paper, tires, aluminum, etc.?	Maybe	

Please write any comments you have about the existing landfill, a new landfill and reduce, reuse and recycling opportunities in Delta Junction Area.

I live on Tenana Lp Extension.
Have surface water & ground water tested for purity.
Have Clearwater Lake tested - Water runs downhill -
Ideas of meeting were useful
Need follow up in newspaper to any decisions arrived at.
Where is the money to come from to close the present landfill + start up the new one.

Thank you for you comments.

If you have any further questions or comments, please feel free to contact me.

Richard Bonwell
Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, Alaska 99701
(907) 451-7774

Regional Questionnaires

Harding ESE
A MACTEC COMPANY

Harding ESE, Inc.
1255 Airport Way
Suite 201
Fairbanks, AK 99701
Telephone: 907/451-7774
Fax: 907/451-7775
Home Page: www.mactec.com

February 8, 2001

Subject: Regional Landfill in Delta Junction, Alaska

Dear

Harding ESE, Inc. has been contracted by the City of Delta Junction to prepare a Solid Waste Management Plan Financial Feasibility Study (SWMP) for the City and surrounding area. As part of the preparation of the SWMP Harding is tasked to investigate the interest and viability of constructing a regional landfill at Delta Junction. We are soliciting input from communities east of Delta Junction to the Canadian border and south to Glennallen.

Regardless of your opinion for or against a regional landfill, your thoughts and comments are respectfully requested and greatly needed. Harding has prepared a questionnaire to assist you in responding. Please fill out the enclosed questionnaire and mail it back to us in the envelope provided.

Thank you for your time and consideration. If you have any questions, please call me at 907-451-7774 in Fairbanks.

Very truly yours,

Harding ESE, Inc.

Richard J. Bonwell, PE/RLS
Managing Principal Engineer

Enclosures

Dry Creek Community Landfill
Dry Creek Community, Inc.
Mile 1379 Alaska Highway
Delta Junction, AK 99737

Mr. Bill Miller
Dot Lake Village Council
Box 2279
Dot Lake, AK 99737

Ms. Sharon Daniel
Copper Basin Sanitation
P. O. Box 88
Glenallen, AK 99588

Reyne Brockman, Executive Director
Greater Copper Valley Chamber of Commerce
P. O. Box 469
Glenallen, AK 99588

Mr. Dan Turner & Rich Kaloostian
Haines Borough
P. O. Box 1209
Haines, AK 99827

Haines Sanitation
P. O. Box 575
Haines, AK 99827

J. D. Refuse Service
P. O. Box 363
Tok, AK 99780

Mr. Dale Young, Acting President
Tok Chamber of Commerce
P. O. Box 389
Tok, AK 99780

City of Delta Junction, Alaska
Solid Waste Management Plan Financial Feasibility Study
Regional Landfill Questionnaire

If your community currently has a landfill, what ADEC class is it?

☐ Class II ☑ Class III

With population growth, do you anticipate that your facility could be reclassified as a Class II facility in the next 10 years?

☑ Yes ☐ No

Is groundwater contamination a potential concern at your facility?

☐ Yes ☑ No

Are you concerned about groundwater contamination issues?

☐ Yes ☑ No

Does your facility meet the current community needs?

☑ Yes ☐ No

Considering population growth projections, will it still meet the community needs in ten years?

☑ Yes ☐ No

How many tons or cubic yards of solid waste does your community produce?

5 Tons/day _____ Cubic yards/day

_____ Tons/year _____ Cubic yards/year

Do you face problems with:	Yes	No
Public/neighbor complaints (noise, smell, etc.)?	____	✓
Refuse containment and litter?	✓	____
Animals at the site?	✓	____

Does your current facilities include:

☐ A Refuse Transfer Station

☑ Residential collection service?

☑ Business collection service?

☐ Other? _____

If fees for service, how much?

3 See attached rates.

If given an option of using a regional landfill, what tipping fee range would you consider?

☐ $25-50 per ton ☐ $50-100 per ton ☐ $100-150 per ton

☑ Other? $20 to $25

Would you consider a long-term contract with the City of Delta Junction for disposal of refuse at a regional landfill located in Delta Junction?

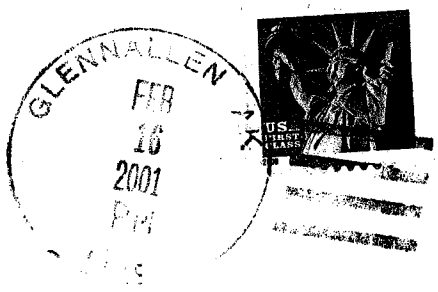
☐ Yes ☑ No

Thank you for your time. Please add any additional comments: _____

Please return to:

Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, AK 99701

Copper Basin Sanitation



RICHARD BONWELL
HARDING ESE
1255 AIRPORT WAY, SUITE 201
FAIRBANKS, AK 99701

73

City of Delta Junction, Alaska
Solid Waste Management Plan Financial Feasibility Study
Regional Landfill Questionnaire

If your community currently has a landfill, what ADEC class is it?

☐ Class II ☒ Class III

With population growth, do you anticipate that your facility could be reclassified as a Class II facility in the next 10 years?

☐ Yes ☒ No

Is groundwater contamination a potential concern at your facility?

☐ Yes ☒ No

Are you concerned about groundwater contamination issues?

☐ Yes ☒ No

Does your facility meet the current community needs?

☒ Yes ☐ No

Considering population growth projections, will it still meet the community needs in ten years?

☒ Yes ☐ No

How many tons or cubic yards of solid waste does your community produce?

_____ Tons/day 9 to 5 Cubic yards/day

_____ Tons/year _____ Cubic yards/year

Do you face problems with:	Yes	No
Public/neighbor complaints (noise, smell, etc.)?	____	X
Refuse containment and litter?	____	X
Animals at the site?	____	X

Does your current facilities include:

If fees for service, how much?

☐ A Refuse Transfer Station _____

☐ Residential collection service? _____

☐ Business collection service? _____

☐ Other? _____

If given an option of using a regional landfill, what tipping fee range would you consider?

☐ $25-50 per ton ☐ $50-100 per ton ☐ $100-150 per ton

☐ Other? ~ 0 ~

Would you consider a long-term contract with the City of Delta Junction for disposal of refuse at a regional landfill located in Delta Junction?

☐ Yes ☒ No

Thank you for your time. Please add any additional comments: _____

_____

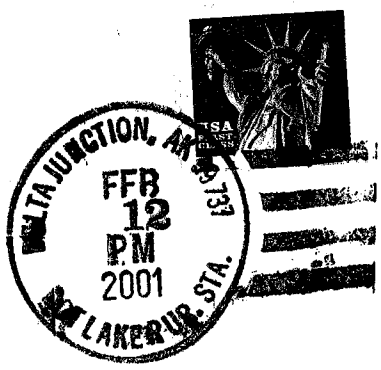
_____

_____

Please return to:

Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, AK 99701

Dot Lake Village Council
Box 2279
Dot Lake, AK 99737



RICHARD BONWELL
HARDING ESE
1255 AIRPORT WAY, SUITE 201
FAIRBANKS, AK 99701

City of Delta Junction, Alaska
Solid Waste Management Plan Financial Feasibility Study
Regional Landfill Questionnaire

If your community currently has a landfill, what ADEC class is it?

☐ Class II ☑ Class III

With population growth, do you anticipate that your facility could be reclassified as a Class II facility in the next 10 years?

☐ Yes ☑ No

Is groundwater contamination a potential concern at your facility?

☐ Yes ☑ No

Are you concerned about groundwater contamination issues?

☐ Yes ☑ No

Does your facility meet the current community needs?

☑ Yes ☐ No

Considering population growth projections, will it still meet the community needs in ten years?

☑ Yes ☐ No

How many tons or cubic yards of solid waste does your community produce?

_____ Tons/day _____ Cubic yards/day

10 Tons/year _____ Cubic yards/year

Do you face problems with:	Yes	No
Public/neighbor complaints (noise, smell, etc.)?	____	✓
Refuse containment and litter?	____	✓
Animals at the site?	____	✓

Does your current facilities include:

If fees for service, how much?

☐ A Refuse Transfer Station _____

☐ Residential collection service? _____

☐ Business collection service? _____

☐ Other? _____

If given an option of using a regional landfill, what tipping fee range would you consider?

☑ $25-50 per ton ☐ $50-100 per ton ☐ $100-150 per ton

☐ Other? _____

Would you consider a long-term contract with the City of Delta Junction for disposal of refuse at a regional landfill located in Delta Junction?

☐ Yes ☑ No

Thank you for your time. Please add any additional comments: _____

_____

_____

_____

Please return to:

Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, AK 99701

Dry Creek

RICHARD BONWELL
HARDING ESE
1255 AIRPORT WAY, SUITE 201
FAIRBANKS, AK 99701

City of Delta Junction, Alaska
Solid Waste Management Plan Financial Feasibility Study
Regional Landfill Questionnaire

If your community currently has a landfill, what ADEC class is it?

☐ Class II ☒ Class III

With population growth, do you anticipate that your facility could be reclassified as a Class II facility in the next 10 years?

☐ Yes ☒ No

Is groundwater contamination a potential concern at your facility?

☐ Yes ☒ No

Are you concerned about groundwater contamination issues?

☒ Yes ☐ No

Does your facility meet the current community needs?

☒ Yes ☐ No

Considering population growth projections, will it still meet the community needs in ten years?

☒ Yes ? ☐ No

How many tons or cubic yards of solid waste does your community produce?

_____ Tons/day _____ Cubic yards/day

_____ Tons/year app. 10,000. Cubic yards/year

Do you face problems with:	Yes	No
Public/neighbor complaints (noise, smell, etc.)?	____	X
Refuse containment and litter?	____	X
Animals at the site?	____	X

Does your current facilities include: If fees for service, how much?

☐ A Refuse Transfer Station _____

☒ Residential collection service? _____

☒ Business collection service? _____

☐ Other? _____

X If given an option of using a regional landfill, what tipping fee range would you consider?

☐ $25-50 per ton ☐ $50-100 per ton ☐ $100-150 per ton

☐ Other? _____

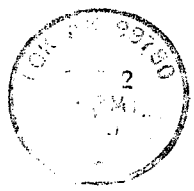
X Would you consider a long-term contract with the City of Delta Junction for disposal of refuse at a regional landfill located in Delta Junction?

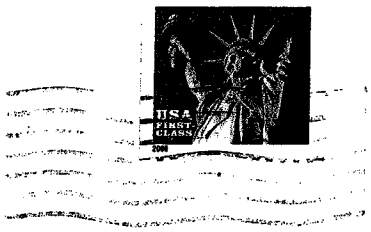
☐ Yes ☐ No

X Thank you for your time. Please add any additional comments: It is very difficult to answer these two questions at this time as it appears it would be considerable increase in cost to haul the garbage to Delta.

Please return to: Harding ESE, Inc.
1255 Airport Way, Suite 201
Fairbanks, AK 99701

J. D. REFUSE SERVICE
P. O. BOX 363
TOK, AK. 99780-0363





RICHARD BONWELL
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1255 AIRPORT WAY, SUITE 201
FAIRBANKS, AK 99701