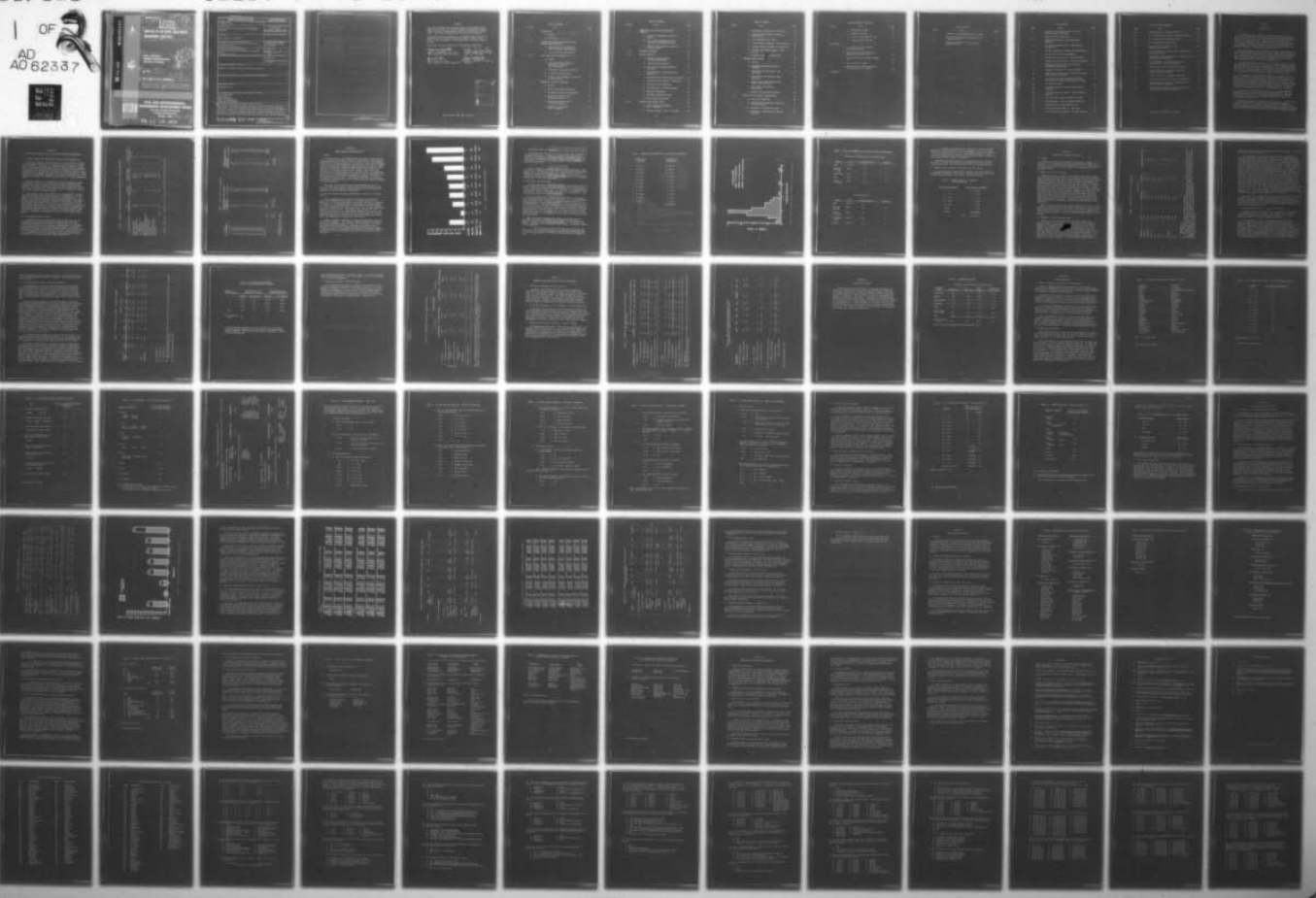
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RESOURCES CONSERVATION BRANCH
DIRECTORATE OF ENVIRONICS

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TYNDALL AIR FORCE BASE
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This report discusses solid waste management practices within the Air Force. The discussion is organized according to a specific area of the waste management function, namely: type of mission function/activity; generation characteristics; collection practices; processing activities; disposal practices; costs; and recycling. The report includes comparison of waste management practices on a selected command-by-command basis, and with national data, whenever available.

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PREFACE

This report documents work performed during the period May 1975 to February 1978 by the Civil and Environmental Engineering Development Office, Air Force Systems Command, Tyndall Air Force Base, Florida 32403. Capt Robert Olfenbuttel was the principal investigator.

This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nations.

This report has been reviewed and is approved for publication.

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SECTION I

INTRODUCTION

A. General

In December 1976, 173 Air Force installations were instructed to complete a questionnaire on their Fiscal Year 76 solid waste management practices, as part of the Air Force's annual Environmental Status Report, RCS: DD-H&E (A) 1269. The purpose of the survey was to establish a comprehensive data baseline from which the Air Force can make reasonable decisions on how best to meet the growing number of governmental solid waste directives. The survey concentrated on residential, commercial, and institutional solid wastes.

The installations surveyed included all those in the Continental United States (CONUS), Alaska, Canada, Hawaii, Guam, and the Panama Canal Zone. Thirteen installations did not respond because they either deactivated during the year or had their responses included with that of other installations that managed the solid waste function for both. (The survey questionnaire is included as Appendix A.)

The questionnaire was designed to cover as many solid waste management arrangements as possible. However, some of the responses received indicated that there are unique situations on various installations that were not covered by the survey. These unique situations are described in the report, wherever applicable. They simply reaffirm the complexity of solid waste management experienced by managers across the nation.

The responses to the survey were analyzed in a number of ways in order to facilitate identification of common characteristics and unique situations, such as referred to above. A group of 41 installations identifying their primary function/activity as being "Radar Site" were analyzed and reported separately because they comprise a unique grouping of Air Force installations. Where necessary, telephone calls were made to installations to resolve questions of meaning, unique or seemingly unusual waste management conditions, and appropriateness of response.

All results were studied and compared on a selected command-by-command basis, and with national data, whenever available. The computerized printout for all 160 responding installations is included as Appendix B; printouts of each command response could not be included because of their bulk.

This report discusses the results of those analyses. The discussion is organized according to a specific area of the waste management function, namely, type of mission function/activity; generation characteristics; collection practices; processing activities; disposal practices; costs; and recycling. In some areas, such as landfill disposal, responses

from the 1975 Environmental Status Report were analyzed. Where used, they are so noted.

B. Definitions

The following Environmental Protection Agency waste category definitions were used throughout this survey (Reference 1).

1. "Commercial solid waste" means all types of solid wastes generated by stores, offices, restaurants, warehouses and other non-manufacturing activities, and non-processing wastes such as office and packing wastes generated at industrial facilities.

2. "Construction and demolition waste" means the waste building materials, packaging, and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings, and other structures.

3. "Institutional solid waste" means solid wastes generated by educational, health care, correctional, and other institutional facilities.

4. "Residential solid waste" means the wastes generated by the normal activities of households, including but not limited to, food wastes, rubbish, ashes, and bulky wastes.

The following command abbreviations are used in this report:

AAC	Alaskan Air Command
ADC	Aerospace Defense Command
AFLC	Air Force Logistics Command
ATC	Air Training Command
MAC/AFSC	Military Airlift Command/Air Force Systems Command
PACAF	Pacific Air Forces
SAC	Strategic Air Command
TAC	Tactical Air Command
USAF	United States Air Force

The Military Airlift Command (MAC) and Air Force Systems Command (AFSC) are combined because MAC became responsible for various Air Force Systems Command installations after Fiscal Year 76 (FY 76).

SECTION II

INSTALLATION FUNCTION/ACTIVITY AND WASTE GENERATION RELATIONSHIPS

A. Primary Functions and Related Waste Generation Characteristics

Although the goal of the Air Force is to "Fly and Fight" in support of the country's defense, not all installations have such a direct mission involvement. Consequently, it would be highly erroneous to associate all Air Force solid waste generation with strictly flying operations. To illustrate the diversity of the functions performed in support of the defense mission, each respondent was requested to indicate how they would best describe the primary function/activity on their installation. Twelve functional categories were offered in this regard. They were based on the investigator's experience, since the Air Force has no official categorization.

The data collected was correlated with daily generation of wastes and tabulated in Table 1. Although the solid waste generation data reported in the survey showed variances with other data subsequently reported to HQ USAF and the Environmental Protective Agency (see Section III), Table 1 does provide a fair representation of solid waste generation vis a vis mission support function.

Interestingly, only "Flying Operations" and "Radar Sites" showed a marked difference between their proportional relationships to the total number of reporting installations and the solid waste generated. For example, while "Flying Operations" comprised approximately 31 percent of the installations, they generated 45 percent of the waste; on the other hand, "Radar Sites" made up 26 percent of the installations, but contributed only about 6 percent. For most other functions, the proportional installation representations agreed very closely with the proportional waste generation representation. (Example: Industrial/Logistics Support installations comprised 10 percent of all installations; their waste generation amounted to approximately 9 percent of all the waste generated.)

B. Correlations Between Functions

An attempt was made to determine if installations reporting the same primary function generated similar amounts of waste as other installations with different functions. Unfortunately, the variances in solid waste generation from category to category were so significant that only installations with "Flying Training" showed a statistical probability that they generate similar quantities of solid waste as those with "Admin/Headquarters" and vice versa. (A 97.5 percent confidence level was chosen to account for the wide variance and possible errors anticipated in the reporting of solid waste quantities.)

TABLE 1. SUMMARY OF INSTALLATION SUPPORT FUNCTIONS AND SOLID WASTE GENERATION

Function/Activity	No. Installations	Total Installations (Percent)	Median Daily Tonnage (TPD)	Percent of Total Daily Tonnage (Percent)
Flying Operations	49	31	1222.5	45
Flying Training	22	14	345.0	13
Industrial/Logistics Support	10	6	250.0	9
Technical/Academic Training	10	6	230.0	8
Medical Services	0	0	0	0
Administrative/Headquarters	7	4	207.5	8
R&D Laboratory/Center	7	4	112.5	4
Flight Test Center	2	1	35.0	1
Test Range	6	4	55.0	2
Missile Operations	5	3	72.5	3
Ground/Basic Training	1	1	27.5	1
Radar Site	41	26	167.5	6
Total	160	100	2,725.0 **	100

** Relative values only. See Section III for more accurate solid waste generation data.

TABLE 2. DAILY SOLID WASTE GENERATION*

Average Daily Tonnage	Environmental Status Report** Installations Responding	Environmental Status Report** Percent	USAF Weighing Survey** Installations Responding	USAF Weighing Survey** Percent
0 - 4.9	21	17.6	18	16.8
5 - 9.9	14	11.8	12	11.2
10 - 14.9	17	14.3	21	19.6
15 - 19.9	16	13.4	23	21.5
20 - 24.9	12	10.1	14	13.1
25 - 29.9	9	7.6	4	3.7
30 - 34.9	8	6.7	3	2.8
35 - 39.9	5	4.2	2	1.9
40 - 44.9	4	3.4	4	3.7
45 - 49.9	3	2.5	3	2.8
50 - 54.9	5	4.2	1	0.9
55 - 59.9	1	0.8	1	0.9
60 - 64.9	0	0.0	0	0.0
65 - 69.9	1	0.8	0	0.0
70 - 74.9	1	0.8	0	0.0
75 - 79.9	0	0.0	0	0.0
80 - 84.9	1	0.8	0	0.0
85 - 89.9	1	0.8	0	0.0
90 - 94.9	0	0.0	1	0.9
95 - 99.9	0	0.0	0	0.0
100 plus	0	0.0	0	0.0
Total	119	99.8	107	99.8
Avg	21.5 TPD		17.8 TPD	
Median	15-19.9 TPD		15.7 TPD	

* Based on 260- day year
**No "Radar sites" included

SECTION III

WASTE GENERATION CHARACTERISTICS

A. General

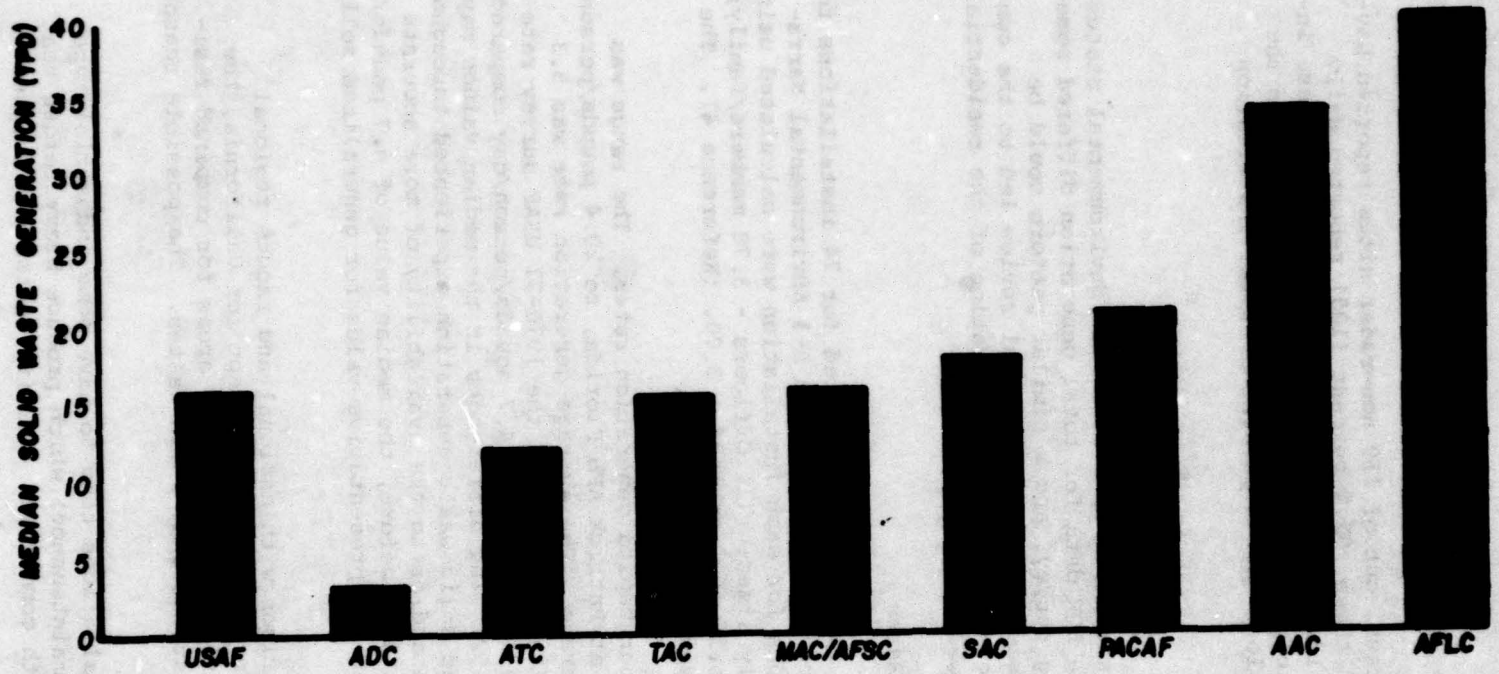
The acquisition of precise daily waste quantities was difficult to obtain because of the nature of the survey questionnaire (which required respondents to answer to multiple choice ranges of value) and continuing difficulties at some installations in using volume (cubic yard) to tonnage conversion factors that adequately represent the local situation. Nevertheless, supplementary tonnage data was obtained from a weighing survey specifically directed by HQ USAF in March 1976 and reported to the Environmental Protection Agency (EPA) in November 1976. (Reference 2). This data, which theoretically was available at each base and should have been reported in the Environmental Status Report (which illustrates the problem of getting good data), is tabulated in Appendix C and used in the remainder of this section. The weighing survey did not include any installation generating less than 1.0 ton per day (TPD), which is peculiar to only a few bases.

This report focuses primarily on installations which do not fit into the "Radar Site" category. The surveys revealed that radar sites form a fairly unique class of installation and, as such, are reported separately in the last section of this report.

B. Daily Solid Waste Generation - Residential, Commercial, and Institutional

Table 2 tabulates daily solid waste generation as reported in both the Environmental Status Report and the USAF weighing survey. (Reference 3). Although installations generating less than 1.0 TPD were not reported in the weighing survey, supplementary information showed that waste generation ranged from a low of 0.041 TPD (a radar site) to 91.6 TPD at Hickam AFB, HI (flying operations). The average installation generated 17.8 tons per day. The median generation was 15.7 TPD. Ninety- seven percent of the installations generate less than 50.0 TPD; none generate more than 100.0 TPD. The annual generation for 107 non-radar sites reported in the USAF weighing survey totaled almost 500,000 tons. The daily quantity amounted to 1,901.5 tons.

Figure 1 provides a comparison of daily waste generation quantities among various commands. AFLC, which is Industrial/Logistics oriented, has a median generation rate over twice that of the USAF. The range of generation within each command is extensive and illustrates that caution must be exercised in applying average generation rates, USAF or command-specific, to individual installations. The median is usually a more reliable indicator and should be used if a need arises for such a statistic.



	USAF	ADC	ATC	TAC	MAC/AFSC	SAC	PACAF	AAC	AFLC
NO. BASES	107	5	14	17	22	27	3	2	7
AVG. (TPD)	17.8	19.5	12.6	15.0	17.5	18.2	38.7	34.0	38.8
RANGE (TPD)	1.0-91.6	1.4-48.2	1.8-30.5	6.2-20.9	2.5-57.0	8.8-27.1	3.8-91.6	15.5-52.4	3.0-49.3
MEDIAN (TPD)	15.7	3.3	12.2	15.7	15.8	18.1	20.8	34.0	40.0

Figure 1. Comparison of USAF-Command Waste Generation

C. Residential Solid Waste Generation

One hundred and thirteen out of 119 non-radar sites reported having residential areas. Of these, 92.9 percent (105) reported daily residential generation of 14.9 tons or less. The average for these installations was approximately 5.7 TPD. For all 113 installations the proportionate residential load was 32 percent of total installation solid waste generation.

Table 3 summarizes basic data reported in the Environmental Status Report (ESR). Although the ESR data for total generation differed somewhat from the USAF weighing survey, and a similar pattern could be expected in the ESR for residential data, careful review led to the conclusion that the ESR data gives a good representation of the residential contribution to the solid waste stream.

D. Per Capita Generation Rates

Per capita generation rates were calculated for 74 installations for which reliable data could be obtained from TAB A-1 Environmental Narratives. Effective populations for each installation were calculated using the following average family sizes: (1) Officers - 3.78 members/family; (2) Enlisted - 3.50; (3) Worldwide combined - 3.70. (Reference 4). The USAF weighing survey was used for weight data.

Figure 2 illustrates per capita generation rates. The range was from 0.9 pounds/person/day at Patrick AFB Florida, to 20.4 pounds/person/day at Peterson Field, Colorado. The average generation rate was 5.3 pounds/person/day, which slightly exceeded the 1970-71 USAF survey rate of 5.11 (Reference 5). The median value was 4.7 pounds/person/day compared to the 1970-71 median of 3.52. The differences in the median values may be attributable to increased solid waste generation experienced throughout the nation during this time and/or to the availability of more accurate weight data in FY 76. As stated before, the median value of 4.7 pounds/person/day should be used as a representative value for generalized solid waste discussions.

Table 4 provides comparison with national and random regional samplings of per capita generation rates. Except for California, the USAF rate is higher than national and regional areas for combined residential, commercial, and institutional solid wastes. The possible reasons for this include:

1. Military installations tend to have some industrial-type activities (e.g., aircraft maintenance) which produce heavy refuse that is collected right along with commercial activity wastes and weighed as such.

TABLE 3. SUMMARY OF RESIDENTIAL DAILY SOLID WASTE GENERATION

Average Daily Tonnage	Installations Responding
0 - 4.9	53 (46.9%)
5 - 9.9	37 (32.7%)
10 - 14.9	15 (13.3%)
15 - 19.9	3 (2.6%)
20 - 24.9	1 (0.9%)
25 - 29.9	0 (0.0%)
30 - 34.9	2 (1.8%)
35 - 39.9	2 (1.8%)
40 - 44.9	0 (0.0%)
45 - 49.9	0 (0.0%)
50 plus	0 (0.0%)
	113 (100.0%)

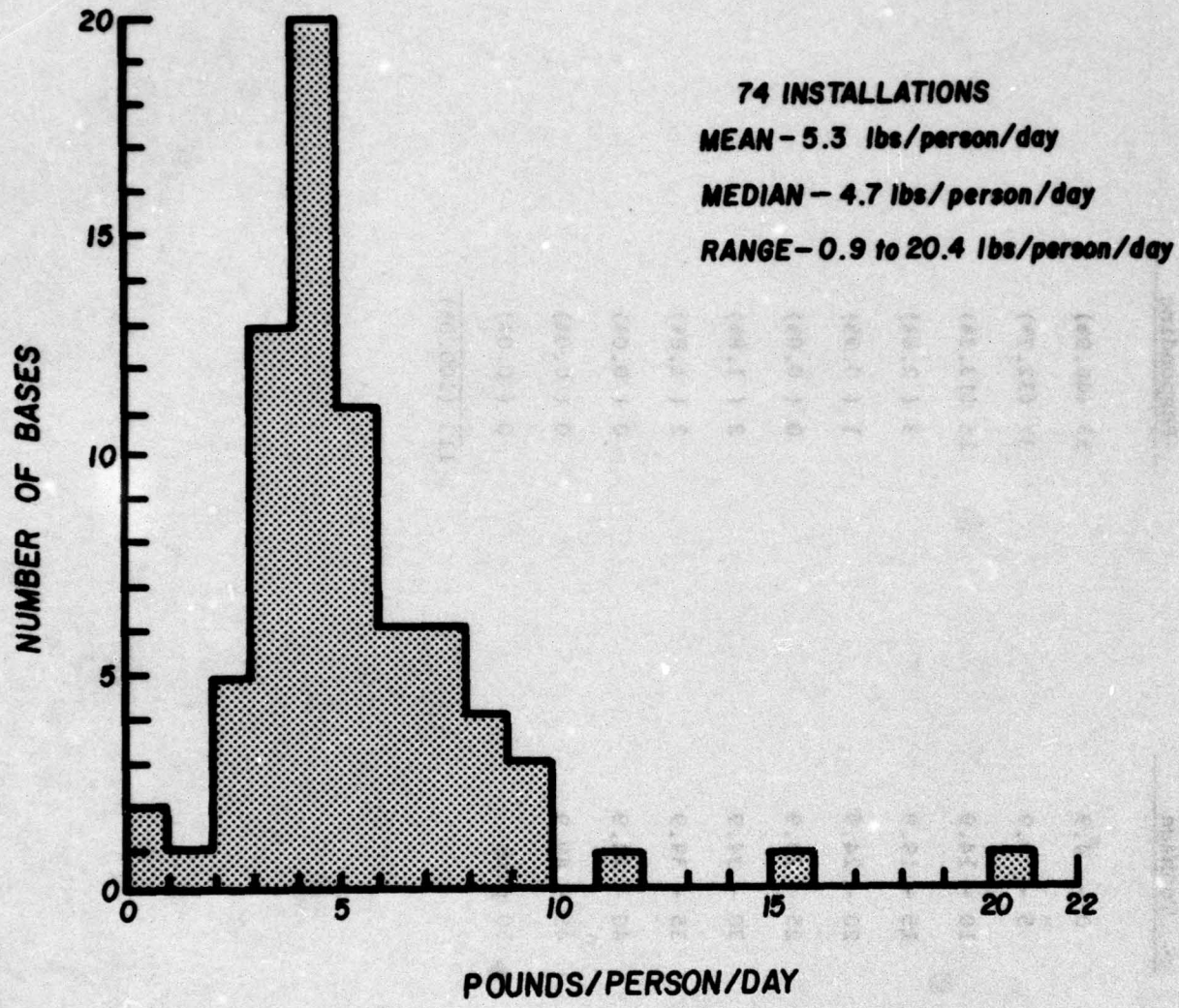


Figure 2. Base Solid Waste Frequency Diagram for Per Capita Generation

TABLE 4. PER CAPITA GENERATION RATES-USAF, NATIONAL, AND REGIONAL

Residential, Commercial And Institutional Rates

Source	Year	Pounds/Capita/Day	Reference
USAF	1975-76	4.7	-
National (US EPA)	1975	3.2	6
California	1975	4.7	7
Ohio	1974	3.1	8
Denver, Colorado	1975	4.0	9

Residential Rates

Source	Year	Pounds/Capita/Day	Reference
USAF	1975-76	2.1	-
National (US EPA)	1973	2.2	10
Denver, Colorado	1975	2.4	9
Cincinnati, Ohio	1970-73	2.1	8
US EPA	1972-73	2.4	8

2. Military installations can be expected to collect a higher proportion of solid wastes than civilian communities. In the civilian environment, wastes often do not reach accountable disposal sites because of on-location incineration, burying, indiscriminate dumping, highway littering, inadequate collection services, collection rates, and selective source separation for recycling (Reference 11).

Residential generation averaged 2.5 pounds/person/day. The median rate was 2.1. These rates showed close agreement with national and regional statistics. The range was from 0.44 to 25.9 pounds/person/day.

E. Sludges, Street Sweepings, Demolition, and Ground Wastes

All installations were requested to indicate their daily generation of wastewater treatment sludges, street sweepings, demolition wastes, and ground maintenance wastes. The results are tabulated below.

TABLE 5. SLUDGES, DEMOLITION, SWEEPINGS, AND GROUND WASTES

Average Daily Tonnage	Installations Responding
0 - 4.9	61 (51.3%)
5 - 9.9	6 (5.0%)
10 - 14.9	2 (1.7%)
15 - 19.9	0 (0.0%)
20 - 24.9	1 (0.8%)
25 plus	5 (4.2%)
Unknown	44 (37.0%)
Total	119 (100.0%)

SECTION IV

RESIDENTIAL COLLECTION PRACTICES

A. General

Productivity and effectiveness are key concerns of managers in all endeavors. For installation solid waste managers both of these are directly tied to the collection arrangements and service levels employed. The following discussion keys into these areas and compares them to national practices.

B. Bulky "White Goods" Collection

Separate collection of bulky, "white goods" items, such as appliances. furniture and tree limbs, can be an expensive service, although some installations probably have no choice because of collection vehicle capacity restrictions, crew size, or other resource limitations, which preclude simultaneous collection of the items with normal residential waste. Picking up these items on a separate fixed schedule is normally only efficient if there are usually many pickups to be made. On-call collection is usually efficient because collectors only have to go where there are pickups to be made, and proper scheduling can make it possible to concentrate pickups in compact areas. Another method employed is to use the normal collection crews to report bulky items set out for pickup and then to utilize another crew to collect them. The latter system can lead to items sitting outside for more than one day unless radio communication is available. In addition, such reports will be sporadic and result in inefficient routing of the bulk-pickup vehicles. (Reference 13).

The data from reporting installations indicates that the Air Force collection of bulky items is usually done efficiently. Of those installations with residential areas, 49.1 percent pick up bulky items when the regular refuse is collected. Another 32.1 percent make separate collections on an on-call basis. Only 18.8 percent reported pickups on a fixed schedule.

C. Residential Collection Arrangements

Contract collection dominates USAF collection arrangements. As Table 6 indicates, 83.2 percent of the installations used contractor services. This compared with the national practice of using private industry for residential collection in 45.2 percent of the cities. (Some of these cities use both contract and municipal services; 66.7 percent of all cities used both municipal agencies and private industry, while 32.5 percent used municipal agencies exclusively) (Reference 14). Only AFLC and AAC ran contrary to the USAF pattern, although two AFLC installations (out of five with in-house services) were planning to change to contractor operation. The AAC consists mainly of radar sites

TABLE 6. RESIDENTIAL COLLECTION ARRANGEMENTS

Source	Year	Arrangement (%) Contractor	In-House	Total Installations
National *	1975	45.2% (a)	32.5% (a)	NA
National **	1977	47.0 (b)	53.0 (c)	NA
USAF (d)	1976	83.2	16.8	113
AAC	1976	0.0	100.0	17
AFLC	1976	16.7	83.3	6
ATC	1976	86.6	13.4	15
SAC	1976	92.9	7.1	28
MAC/AFSC	1976	94.7	5.3	19
ADC	1976	97.3	2.7	37
TAC	1976	100.0	0.0	18

* Reference 14
** Reference 18
(a) 66.7 percent of cities use both arrangements.
(b) Private haulers handle 31 percent, and combination of private and municipal crews handle 16 percent.
(c) Regionally, the southeast and southwest have predominantly municipal collection, at 69 and 72 percent, respectively. Private collection is strong in the Far West (53 percent private, 16 percent combined); Midwest (41 percent private, 16 percent combined); and in cities with less than 50,000 population (40 percent private, 7 percent combined) (Reference 19).
(d) Radar sites not included.

whose remote locations appear to preclude contractor operation. TAC uses contractor services exclusively.

The predominance of contract services appears to reflect both manpower utilization policies and economics. In the former regard, Air Force Regulation (AFR) 26-10 does not recognize any military positions in refuse collection and disposal services as being military essential, which therefore requires either in-service civilian or contract manning. The same regulation also requires each installation to analyze and employ the most economical means of service (Reference 15). In this regard, economics will favor the most productive arrangement, which usually means private industry rather than governmental operation. For example, a national study in 1974-75 provided evidence which suggests that contract operation is more efficient (in terms of cost) than municipal collection for cities up to 10,000 population. This study indicated that factors contributing to high municipal cost (in cities over 50,000 people; however, the factors certainly have relevance to smaller areas) include: higher employee absentee rates (12.0 percent versus 7.5 percent) among municipal refuse collection agencies; fewer households served per shift (632 versus 686); more time spent servicing each household (4.35 man-hours per year versus 2.37); larger crews employed (3.26 men versus 2.18); less likely to utilize labor incentive systems (80.0 percent versus 89.0 percent); and use of smaller trucks (19.8-cubic-yard capacity versus 23.1) (Reference 16). Other surveys appear to substantiate the 1974-75 findings, although percentages do vary (Reference 17, 18, and 19).

Some installations reported differences in their collection arrangements when they utilized "Family Housing Annexes" which are located off-base. For example, Maxwell AFB, Alabama, uses in-house collections and on-base disposal for their on-base residential areas. However, they use contractor collection and off-base landfill disposal for servicing Maxwell's off-base housing annex.

D. Residential Service Levels - Point of Collection

Curbside and back alley service was accomplished by 65.5 percent of the installations. This compares very closely to 60.0 percent curbside and alley collection nation-wide (Reference 20). Table 7 provides a summary and selected command comparisons.

Curbside service is the most economical point of collection practice. However, the issue of curbside versus backyard service appears to have been as difficult to resolve on some installations as it has in civilian communities. Curbside service requires residents to carry their refuse to the curb rather than leave it to be collected at the back door. In the civilian sector, this decrease in service level manifests itself as a political consideration which often takes precedence over economic savings (Reference 21). Similarly, although HQ USAF has directed that curbside service be utilized wherever economically justified, some managers cite morale and welfare losses as reasons to

TABLE 7. RESIDENTIAL SERVICE LEVELS - TYPE AND METHOD

I. Service Type

	Percent of Specific Service								
	National	USAF*	AAC	AFLC	ATC	SAC	MAC/AFSC	ADC	TAC
Curbside/Back Alley Service	60.0	65.5	11.8	83.3	60.0	60.7	68.5	75.7	72.2
Non-Curbside/Back Door Service	40.0	34.5	88.2	16.7	40.0	39.3	31.5	24.3	27.8

II. Service and Method

Contractor, Curbside/ Back Alley	NA	54.0	0.0	0.0	53.3	53.6	63.2	75.7	72.2
Contractor, Non-Curbside/ Back Door	NA	29.2	0.0	16.7	33.3	39.3	31.5	21.6	27.8
In-house, Curbside/ Back Alley	NA	11.5	11.8	83.3	6.7	7.1	5.3	0.0	0.0
In-house, Non-Curbside/ Back Door	NA	5.3	88.2	0.0	6.7	0.0	0.0	2.7	0.0
Total Installations	NA	113	17	6	15	28	19	37	18

* Does not include Radar Sites.

maintain (or switch back to) backyard collection, despite savings evident with curbside operation (References 22 and 23). (See "Plans to Change" Section below.)

E. Residential Service Levels - Collection Frequency

The majority of installations (69.0 percent) utilize two pickups per week, which directly contrasts to national statistics indicating that from 50.0 to 59.7 percent of cities utilize only one pickup per week (References 24, 25, and 26). As indicated in Table 8, only AFLC uses once per week collection predominately. The AAC, with its many radar sites which usually have dormitory units only and use the commercial collection system for pickups, uses three or more collections per week.

The reason for predominance of twice-a-week service can only be speculated at, although indications are that it stems from climate variations, health control beliefs, and governmental requirements (a 1974-75 survey showed that governments tend to overproduce services) (Reference 27). However, studies have shown that with properly sealed containers and sufficient storage capability, health problems (i.e., with flys and vectors) can be avoided and once-a-week collection is possible and economical. For example, the same studies have shown that relatively efficient systems can realize 23 to 33 percent fewer vehicle requirements for once-a-week vis a vis twice-a-week collection; fuel consumption is about 30 percent less. Collectively, the reduction in trucks, manpower and miles driven can cut costs by as much as 50 percent (References 28 and 29). Use of bags and or the 80-gallon-plus wheeled containers now on the market may provide both the security and storage capabilities needed to adopt once-a-week service, although state or regional regulations must still be investigated to determine if such service is allowable. Air Force regulations do allow collection frequencies of less than twice a week.

One installation (Shaw AFB) reported that the level of service is related to whether garbage disposals are used or not. For example, once-a-week collection is used in housing areas which have garbage disposals; the frequency is twice-a-week where garbage disposals are not present.

The response of installations was further analyzed to determine if there were any relationships among collection frequency, arrangements and point of collection. Table 9 tabulates the results of this analysis. When contractor services were employed, over 75 percent of collections were twice-a-week, regardless of whether curbside or back door pickup was used. In contrast, only in-house, non-curbside, collection frequency showed a similar tendency. On the other hand, in-house, curbside service showed a fairly equal distribution of collection frequencies of from 1 to 3 weekly pickups. The number of installations included in this group was small, however, when compared to contractor, curbside collection. AFLC accounted for much of the variation. For example, of the 13 installa-

TABLE 8. RESIDENTIAL SERVICE LEVELS - COLLECTION FREQUENCY

Pickups Per Week	(a) National	(b) National	(c,d) National	(e) USAF	AAC	AFLC	ATC	SAC	MAC/AFSC	ADC	TAC
	Percent of Pickups										
1	50.0	59.7	53.0	20.4	0.0	66.7	6.7	21.4	15.8	32.4	27.8
2	45.0	NA	40.0	69.0	0.0	0.0	86.7	75.0	84.2	54.5	66.6
3		NA		8.0	88.2	16.7	6.7	3.6	0.0	8.1	0.0
More	5.0	NA	2.0	1.8	11.8	16.7	0.0	0.0	0.0	0.0	0.0
Combination		NA	NA	0.9	0.0	0.0	0.0	0.0	0.0	0.0	5.6

(a) Reference 24

(b) Reference 25

(c) Reference 26

(d) This survey indicated that 4.0 percent of cities collect on an "on-call" basis, and 1.0 percent collect less than once a week.

(e) Does not include Radar Sites.

TABLE 9. RESIDENTIAL SERVICE LEVEL AND COLLECTION ARRANGEMENT RELATIONSHIPS

Number of Weekly Pickups	Installations with Contractor Collection		Installations with In-House Collection	
	Curbside	Non-Curbside	Curbside	Non-Curbside
1	18.0%	18.2%	38.5%	16.7%
2	75.4%	75.8%	30.8%	50.0%
3	4.9%	6.1%	23.1%	16.7%
More	0.0%	0.0%	7.1%	16.7%
Total Installations	61*	33	13	6

* One installation reported once-a-week collection in two housing areas with garbage disposals, and twice-a-week in two areas without garbage disposals. This collection combination represents 1.7 percent of the 61 installations.

tions comprising this group, 5 belonged to AFLC; 3 of its installations had once-a-week collection, 1 had 3-times-a-week service, and 1 had more than 3-times-a-week operation.

F. Residential Collection - Plans For Change

All installations were asked to indicate if they planned to change their FY 76 method of residential area collection during FY 77. The response is tabulated in Table 10. Most installations had no plans to change their arrangements or service level. All installations using in-house, non-curbside/back door collection planned to stay with it, although that number of installations is small. The data clearly shows that contractor operation is preferable over in-house service.

TABLE 10. RESIDENTIAL COLLECTION - PLANS FOR CHANGE

New Method	Current Methods: Contractor with Curbside	Contractor with Non-Curbside	In-House with Curbside	In-House with Non-Curbside
1. No Change	93.4%	84.8%	46.2%	100.0%
2. Contractor with Curbside	0.0%	12.1%	23.1%	0.0%
3. Contractor with Non-Curbside	3.3%	0.0%	0.0%	0.0%
4. In-House with Curbside	0.0%	0.0%	0.0%	0.0%
5. In-House with Non-Curbside	0.0%	0.0%	0.0%	0.0%
6. Undecided	3.3%	3.0%	30.7%	0.0%
Number of Installations	61	33	13	6

Note: Percentages indicate how many installations plan to change from the current method (FY 76) listed at the top to a new method listed on the left. For example, 23.1 percent of the installations using in-house curbside collection planned to change to contractor, curbside collection.

SECTION V

COMMERCIAL AND INSTITUTIONAL COLLECTION PRACTICES

A. Collection Arrangements and Service Levels

Contractor service accounts for 58.8 percent of non-radar site commercial and institutional solid waste collections. (See Table 11.) This compares closely to the 60.0 percent of United States cities that use private industry for commercial/industrial solid waste collection (Reference 30). SAC, AFLC, and AAC are the biggest users of in-house services. Installations using contract services predominantly use scheduled pickups, whereas in-house operations primarily employ a combination of scheduled and on-call collections.

B. Use of Same Arrangements in Both Commercial and Residential Areas

Unlike some cities, USAF does not have both private industry and in-house resources service commercial and institutional wastes on the same installation (except for recycling programs). However, 26.5 percent of the installations with both residential and commercial/institutional areas employ in-house collection services in one area and contract operations in the other. A majority of installations use the same arrangement in both areas rather than a mix, as can be seen in Table 12.

C. Commercial/Institutional Collection - Plans For Change

All installations were asked if they planned to change their FY 76 method of collection during FY 77: 75.6 percent said no changes were contemplated; 7.6 percent were undecided; and 16.8 percent said "yes". Although specific changes were not identified, most installations planning to do so indicated they were changing or thinking of changing from in-house combined on-call and scheduled service levels to some other arrangement and/or service level.

TABLE 11. COMMERCIAL AND INSTITUTIONAL COLLECTION ARRANGEMENTS AND SERVICE LEVELS

Arrangement & Service Level	National[a,b]	USAF[c]	AAC	AFLC	ATC	SAC	MAC/AFSC	ADC	TAC
	Percent of Installations with Specific Arrangements								
I. Contractor									
A. with on-call pickups	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B. with scheduled pickups	NA	71.4	0.0	100.0	38.5	60.0	86.7	89.2	83.3
C. with combination	NA	28.6	0.0	0.0	61.5	40.0	13.3	10.8	16.7
Number of installations	NA	70	0	1	13	10	15	37	12
Percentage of all installations	60.0	58.8	0.0	14.3	86.7	35.7	68.2	97.4	66.7
II. In-house									
A. with on-call pickups	NA	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
B. with scheduled pickups	NA	34.7	0.0	16.7	50.0	50.0	14.3	0.0	33.3
C. with combination	NA	65.3	100.0	83.3	50.0	50.0	85.7	0.0	66.7
Number of installations	NA	49	17	6	2	18	7	1	6
Percentage of all installations	40.0	41.2	100.0	85.7	13.3	64.3	31.8	2.6	33.3

(a) Reference 30
(b) National figures are broken out as commercial/industrial, but do provide reasonable comparison data.
(c) Does not include Radar Sites.

TABLE 12. USE OF SAME COLLECTION ARRANGEMENTS IN BOTH RESIDENTIAL AND COMMERCIAL/INSTITUTIONAL AREAS

Arrangement	USAF*	AAC	AFLC	ATC	SAC	MAC/AFSC	ADC	TAC
I. Contractor - both areas								
A. Number of installations	64	0	0	13	10	12	36	12
B. Percentage of total	56.6	0.0	0.0	86.7	35.7	63.2	94.7	66.7
II. In-house - both areas								
A. Number of installations	19	17	5	2	2	1	1	0
B. Percentage of total	16.8	100.0	83.3	13.3	7.1	5.3	2.6	0.0
III. Mix - contractor and in-house								
A. Number of installations	30	0	1	0	16	6	0	6
B. Percentage of total	26.5	0.0	16.7	0.0	57.1	31.6	0.0	33.3
Total installations	113	17	6	15	28	19	37	18

* Does not include Radar Sites.

SECTION VI

PROCESSING OF WASTES

Installations process their wastes in many ways, although over one-half do nothing other than collect their residential, commercial, and institutional wastes. As Table 13 indicates, compaction is common to all waste producing areas (installations were asked to exclude the compaction capability of the collection vehicles in responding to the question on residential solid waste). Commissaries and base exchanges (retail stores) usually process their solid wastes by compaction, baling, or a combination of 2 or more processes. Incineration is used, although by few installations. A large proportion (87.4 percent) of installations indicated no plans to increase their solid waste processing capabilities in FY 77; none of the installations were asked if they planned to decrease their processing capabilities.

TABLE 13. PROCESSING OF WASTE

Processing Type	Percent of Installations By Collection Area			
	Residential	Commissary	Base Exchange	Commercial/* Institutional
Compaction	18.5	21.7	18.5	20.2
Baling	0.0	20.0	19.3	0.0
Incineration	3.6	1.8	2.5	5.0
Shredding	0.8	0.0	0.0	0.8
Other	13.3	11.3	9.2	10.1
Two or more of the above	0.8	24.3	18.5	10.1
None	62.9	20.9	31.9	53.8
Total Installations	113	115	119	119

*Does not include commissary and base exchange wastes.

SECTION VII

DISPOSAL PRACTICES

A. Disposal Practices and the Collection Arrangement

Off-base disposal is favored by a majority of the non-radar site installations. Approximately 63 percent of installations with residential areas dispose of these solid wastes off-base. The figure is 55 percent for commercial/institutional waste disposal.

Installations using contract collection services usually utilize off-base disposal. For example, of the 94 installations using contract residential collection, 66 (70.2%) dispose of their residential wastes off-base. Similarly, the figure is 75.7 percent for the 70 installations using contractual commercial/institutional waste collection services.

In contrast to contractual arrangements, use of in-house collection services is likely to be accompanied by on-base disposal. Of the 19 installations using in-house residential collection, 10 (53 percent) use on-base disposal. Similarly, for in-house commercial/institutional collection, 31 of 49 installations (63 percent) dispose on base.

A few installations utilize both on-base and off-base disposal for the same collection areas. Three installations had residential area contract disposal in this manner and five installations had their in-house collected residential wastes disposed of both on and off base. Such a disposal combination for commercial/institutional waste was found only with seven installations, which used in-house forces for the work.

B. On-Base Sanitary Landfills

Less than one-half (47.1 percent) of the non-radar site installations use on-base sanitary landfills. They are listed in Table 14. However, only 22.7 percent (27 installations) use on-base sanitary landfill disposal exclusively for all their solid wastes.

Of the installations, 22.2 percent did not know how much refuse was daily disposed of in their landfill (Reference Table 15). For those that do use on-base landfills, the median tonnage disposed of is in the range of 15 - 19.9, which corresponds to the median daily generation (Reference Table 2). (However, some of this tonnage represents other users of the landfill.) Of these landfills, 91.2 percent receive less than 50.0 tons per day. This compares to the 1976 national disposal picture in which approximately two-thirds (66.7 percent) of the known sites receive less than 50.0 tons per day. (The number of national sites in this tonnage category is expected to be reduced by one-half in the near future as a result of more stringent pollution control laws and waste management regionalization (Reference 31).

TABLE 14. INSTALLATIONS WITH ON-BASE LANDFILL DISPOSAL*

Eielson
Elmendorf
Tyndall
AFA
Maxwell
Lowry
Moody
Robins
Tinker
Wright-Patterson
Arnold EDC
Brooks
Edwards
Eglin
Kirtland
Patrick
McChord
Norton
Scott
Andersen
Barksdale
Beale
Blytheville
Castle
Davis Monthan
Ellsworth
F. E. Warren
Fairchild
Grand Forks
Griffiss
K. I. Sawyer
Kincheloe (Now deactivated)
Loring
Malmstrom
Minot AFB
Offutt
Plattsburgh
Rickenbacker
Vandenberg
Whiteman
Wurtsmith
Bergstrom
Cannon
Gila Bend
Holloman
Indian Springs
Langley
MacDill
Mt. Howe
Nellis
Seymour-Johnson
Shaw
Goodfellow
Dobbins
King Salmon Airport
Hurlburt Field

Total: 56 installations

* No Radar Sites included.

TABLE 15. FY76 AVERAGE DAILY TONNAGE - ON-BASE SANITARY LANDFILLS*

Tonnage	Percent of Installations
0 - 4.9	12.5
5 - 9.9	8.9
10 - 14.9	17.9
15 - 19.9	16.1
20 - 24.9	8.9
25 - 29.9	14.3
30 - 34.9	3.6
35 - 39.9	1.8
40 - 44.9	5.4
45 - 49.9	1.8
50 - 54.9	3.6
70 - 74.9	3.6
85 - 89.9	1.8

Median tonnage: 15 - 19.1

* Radar Sites not included.

C. Use of On-Base Sanitary Landfills by Others

As indicated in Table 16, 20.0 percent of installations with sanitary landfills also dispose of waste from other Air Force, federal, or non-federal organizations/agencies. Of these 11 installations, only one (Beale) receives a tipping/dumping fee. The fee is in the range of $7.00 to $7.99 per ton.

D. Life Expectancy - On-Base Sanitary Landfills

Of installations with landfills, 33.9 percent had anticipated remaining landfill lifetimes of 4 years or less. However, 17 out of the 19 installations with 4 years or less had selected another site or alternate means of disposal. Only the Air Force Academy and Nellis indicated otherwise. (See Table 17.)

E. Exclusions From On-Base Landfill Use

Proper sanitary landfill operation does not allow receipt of certain wastes that are known to be chemically or biologically unstable, or hazardous to landfill personnel or nearby population. At the time of this survey a nationally uniform set of rules for what can or cannot go into sanitary landfills was not in force; however, guidelines were available from Environmental Protection Agency (EPA) documents and AFM 91-11 (Reference 32 and 33).

The survey response to exclusions is tabulated in Table 18. Almost 50 percent of the installations exclude industrial wastes. Construction and demolition wastes, which are bulky and difficult to reduce in volume and can damage compaction equipment, are excluded from 38.6 percent of the installation sanitary landfills. Infectious wastes, which are generally referred to as pathological wastes and normally processed through special incinerators, are excluded from 89.5 percent of the 56 installations with on-base landfill disposal. The remaining sites hopefully follow the EPA recommendation that they be buried immediately under one foot of cover material (Reference 34).

Although raw sewage sludges should not be placed in a sanitary landfill, dewatered sludges received from water treatment plants and dewatered digested sludges from waste water treatment plants can be placed in the landfill and covered immediately. If their moisture content is relatively high, the sludges should be mixed with other solid wastes before being covered in order to minimize the potential for localized leaching (Reference 35). In this regard, 65.0 percent of the installations exclude sludges, and 79.0 percent exclude liquid wastes.

F. On-Base Sanitary Landfills - Other Data

Table 19 contains landfill planning site characteristics, and operational and pollution control data gathered from the 1975 Environmental Status Report.

TABLE 16. USE OF ON-BASE SANITARY LANDFILLS BY OTHERS*

Use	Percent of Those With On-Base Landfills
A. Other Air Installations Only Maxwell Loring	3.8
B. Off-Base Federal Agencies Only Langley Beale Vandenberg	5.4
C. Non-federal Organizations Only Arnold EDC Seymour Johnson	3.6
D. Other AF Installations and Off-Base Federal Agencies Only Tinker	1.8
E. Other AF Installations and Non-federal Organizations	0.0
F. Federal Agencies and Non-federal Organizations Only Kirtland	1.8
G. AF Installations, Federal and Non-federal Organizations Patrick Edwards	3.6
H. No Others Use On-Base Landfill	80.0

*No Radar Sites included

TABLE 17. LIFE EXPECTANCY - ON-BASE SANITARY LANDFILLS[a]

Expected Lifetime[b]	Percent of Installations with On-Base Landfill
6 Months	71.1
*Tyndall *Norton *Shaw *Castle	
1 Year	8.9
AFA *Robins *Lowry *Wright-Patterson *Offutt	
2 Years	5.4
*Langley * Elmendorf *Beale	
3 Years	5.4
*Moody *Scott Nellis	
4 Years	7.1
*Arnold EDC *Hurlburt Field *Ellsworth	
5 Years	10.7
6 Years	1.8
6 - 10 Years	10.7
Over 10 Years	42.9

(a) No Radar Sites included.
(b) Installations with short term life expectancy (4 years or less) are listed with their respective category.
* Other landfill site or alternate disposal means selected.

TABLE 18. EXCLUSIONS FROM ON-BASE LANDFILL USE[a]

The following percentages reflect waste exclusions with on-base sanitary landfills. Installations with specific exclusions are listed.

I. Construction, Demolition, Industrial Wastes

A. All of the Above	B. Construction, Demolition Only	C. Industrial Only	D. No Exclusions
28.1%	10.5%	21.5%	40.4%

Installations are listed for the following exclusions:

Holloman	Cannon	Robins	
Plattsburgh	Fielson	Ellsworth	
Arnold EDC	Vandenberg	Castle	
Blytheville	Langley	Seymour-Johnson	
Dobbins	Elmendorf	Minot AFB	
	Kincheloe	Hancock	
	Fairchild	King Salmon Airport	
	K I Sawyer	Mt Home	
	Loring		
	Edwards		

II. Infectious Wastes - 89.5% Exclusion

III. Sludges and Liquid Wastes

A. Both of the Above	B. Sludges Only	C. Liquid Wastes Only	D. No Exclusions
63.2%	1.8%	15.8%	17.5%

Installations are listed for the following exclusions:

Eglin	Robins	K. I. Sawyer	Cannon	King Salmon Apt
	Edwards	Arnold EDC	Minot AFB	Ellsworth
	MacDill	Norton	AFA	F E Warren
	Rickenbacker		Whiteman	Loring

(a) Radar Sites are not included

TABLE 19. ON-BASE SANITARY LANDFILLS - OTHER DATA

The following data on on-base landfills was collected in the 1975 Environmental Status Report. They include radar-site landfills; nevertheless, characterization of the non-radar site landfills will be adequately represented by the data presented. Percentages represent response of those landfill-using installations.

I. Planning and Design

A. Was a detailed design made for the landfill?

37.8%	1. Yes
62.2%	2. No

B. Is an operational plan available for the landfill?

21.6%	1. Yes, and it was prepared by a professional engineer.
58.1%	2. Yes, but it was not prepared by a professional engineer.
20.3%	3. No operational plan available.

II. Site Characteristics

A. What is the maximum depth of excavation?

5.3%	1. Less than 3 feet
8.0%	2. 3 to 5 feet
20.0%	3. 6 to 8 feet
24.0%	4. 9 to 11 feet
8.0%	5. 12 to 14 feet
5.3%	6. 15 to 17 feet
18.7%	7. 18 to 20 feet
10.7%	8 Deeper than 20 feet

TABLE 19. ON-BASE SANITARY LANDFILLS - OTHER DATA (CONTINUED)

B. What is the approximate depth to the predicted high of the groundwater table?

9.1%	1. Less than 3 feet
11.7%	2. 3 to 5 feet
5.2%	3. 6 to 8 feet
3.9%	4. 9 to 11 feet
3.9%	5. 12 to 14 feet
7.8%	6. 15 to 17 feet
2.6%	7. 18 to 20 feet
55.8%	8. Deeper

C. What is the closest approximate distance to the nearest surface water (pond, lake, stream)?

7.9%	1. Less than 100 feet
1.3%	2. About 100 feet
9.2%	3. About 200 feet
6.6%	4. Between 300-500 feet
6.6%	5. Between 500-1000 feet
7.9%	6. About 1000 feet
9.2%	7. About 1/2 mile
43.4%	9. One mile or more

TABLE 19. ON-BASE SANITARY LANDFILLS - OTHER DATA (CONTINUED)

D. What is the distance to the nearest inhabited building or complex of buildings?

34.2%	1. Less than 1/4 mile
30.3%	2. About 1/2 mile
11.8%	3. About 3/4 mile
23.7%	4. One mile or more

E. What is the distance to the nearest residential area?

5.3%	1. Less than 1/4 mile
15.8%	2. About 1/2 mile
10.5%	3. About 3/4 mile
68.4%	4. One mile or more

III. Operational Control

A. Is the landfill covered with earth and compacted on a daily basis?

71.6%	1. Yes
1.4%	2. No, every other day
9.5%	3. No, about once per week
17.6%	4. No, several times each month

Note: Climate conditions at some northern sites may preclude necessity for daily cover.

B. Are completed areas of the landfill covered with at least two feet of compacted earth?

86.8%	1. Yes
13.2%	2. No

TABLE 19. ON-BASE SANITARY LANDFILLS - OTHER DATA (CONTINUED)

C. What method is used for compaction at the landfill?

80.3%	1. The treads on the tractor
9.2%	2. A sheeps-foot roller or similar high density compactor
10.5%	3. We do not compact

D. Are safety equipment such as hard hats, gloves, footwear, fire extinguishers, seatbelts, rollbars, etc., required and used?

66.2%	1. Yes
33.8%	2. No

E. Are pesticides used for control of insects?

23.3%	1. Yes, monthly or more often
38.4%	2. Yes, but only occasionally
38.4%	3. No

F. Are pesticides used for control of rodents?

8.1%	1. Yes, continuously
32.4%	2. Yes, periodically
59.5%	3. No

G. Are pesticides used for control of birds?

1.4%	1. Yes, continuously
11.0%	2. Yes, periodically
87.7%	3. No

Note: See Appendix D for article on waste disposal and the bird aircraft strike hazard (BASH).

TABLE 19. ON-BASE SANITARY LANDFILLS - OTHER DATA (CONCLUDED)

IV. Pollution Control

A. Which best describes leachate control measures?

44.2%	1.	None
45.4%	2.	Surface water runoff diverted away from fill operation
3.9%	3.	Incorporate natural or artificial impermeable barrier in the excavations
5.2%	4.	Do both 2 and 3, above
0.0%	5.	Incorporate a leachate treatment process
1.3%	6.	Do 5 and 2, and/or 3, above

B. Are special means, such as vents or barriers (membrane, asphaltic, concrete, etc) used to control combustible gases generated by the landfill?

0.0%	1.	Vents are used
0.0%	2.	Barriers are used
1.3%	3.	Use system other than vents and barriers
98.7%	4.	No control used

C. Have special measures been taken to improve the aesthetics of the landfill site during its operating life?

1.3%	1.	Yes, Planting
11.7%	2.	Yes, Seeding
16.9%	3.	Yes, 1 and 2, above
11.7%	4.	Yes, but other than 1 and 2, above
58.4%	5.	No

G. Off-Base Sanitary Landfills

As discussed previously, many installations dispose of their solid wastes in both on-base and off-base landfills (or other facilities). For example, while 63 installations do not have an on-base landfill and utilize off-base facilities, 85 reported use of an off-base landfill.

Only 1.2 percent (1 installation) of the installations using this disposal means did not know how much was being disposed of (versus 22.2 percent for on-base users; tipping fees likely forces more accurate accounting of wastes in an off-base situation). The median tonnage disposed of is in the range of 5 to 9.9 tons per day, which is below the median for on-base disposal. The reasons for the differences, when compared for generation rates, is not entirely clear, although they are related to dual on-base/off-base disposal, more accurate record keeping for off-base disposal, and the type and size of installations generating the solid wastes.

Table 20 tabulates off-base landfill disposal usage. As with on-base usage, approximately 92 percent of the off-base disposal sites received less than 50.0 tons per day from the Air Force. The off-base data is slightly distorted, however, by the fact that at least one installation (McClellan AFB) reported a final disposal site as being both a transfer station and an off-base sanitary landfill. For all practical purposes, this installation's waste is left for county disposal at the transfer station. From there, it is transported to the county landfill.

H. Life Expectancy - Off-Base Sanitary Landfills

Table 21 lists the life expectancies of off-base landfills. Over 50 percent had 10 or more years of remaining usefulness. Of these landfills 14.2 percent had 4 years or less remaining capacity. Eight of the 12 installations using these short-lived disposal facilities had selected another site or alternate means of disposal.

I. Off-Base Incinerators

Only three non-radar site installations (2.5 percent) sent their solid wastes to off-base incinerators. There were no on-base incinerators used as primary disposal facilities, although six installations did process solid wastes in this manner. The daily tonnages sent to the off-base incinerators were in the following respective ranges: 0 - 4.9 TPD; 5 - 9.9 TPD; and 25 - 29.9 TPD.

J. Solid Waste Transfer Stations

Seven non-radar site installations use transfer stations. Of these, four (Patrick, Hill, McClellan, and Chanute) use one or more on-base transfer facilities. The remaining three (Bolling, Hickam, and Los Angeles AFS) use one or more off-base transfer stations. One installation, Tyndall, had plans to use an on-base transfer facility during FY 77.

TABLE 20. FY 76 AVERAGE DAILY TONNAGE - OFF-BASE LANDFILLS[a]

Tonnage	Number and Percentage of Installations	
	No.	Percent
0 - 4.9	28	33.3
5 - 9.9	15	17.9
10 - 14.9	8	9.5
15 - 19.9	8	9.5
20 - 24.9	3	3.6
25 - 29.9	5	6.0
30 - 34.9	5	6.0
35 - 39.9	4	4.8
40 - 44.9	1	1.2
55 - 59.9	1 (Albrook)	1.2
60 - 64.9	1 (Peterson Field)	1.2
70 - 74.9	1 (Hickam)	1.2
80 - 84.9	1 (Andrews)	1.2
90 - 94.9	1 (Chanute)	1.2
Greater than 100.0	1 (Howard)	1.2

Median tonnage: 5 - 9.9

(a) Radar Sites not included.

TABLE 21. LIFETIME EXPECTANCY - OFF-BASE LANDFILLS [a]

Expected Lifetime [b]	Percent of Installations Using Off-Base Landfills
6 Months *Cannon	1.2
1 Year *Dover Grissom *Homestead	3.5
2 Years *McGuire *Grandforks Pease *Los Angeles AFS	4.7
3 Years Columbus *Offutt	2.4
4 Years *Mt Hebo Eglin	2.4
5 Years	10.6
6 Years	4.7
6-10 Years	20.0
Over 10 Years	50.6

(a) No Radar Sites included

(b) Installations with short term off-base landfills (4 years or less) are listed with their respective category.

* Other landfill site or alternate disposal means selected

(Tyndall later cancelled the project.) Table 22 lists the installations and their daily tonnages.

TABLE 22. FY 76 AVERAGE DAILY TONNAGE - TRANSFER STATIONS

I. On-Base Facilities	Daily Tonnage
Chanute	15 - 19.9
Patrick	20 - 24.9
Hill	25 - 29.9
McClellan	35 - 39.9

II. Off-Base Facilities	Daily Tonnage
Los Angeles AFS	0 - 4.9
Bolling	25 - 29.9
Hickam	40 - 44.9

MCClellan AFB's transfer station is owned by the county, on land leased by the Air Force to the county. Anyone, government or private, can use the facility. Wastes are disposed of off-base.

K. Other Disposal Facilities

The installations were surveyed to determine if they used any disposal facility other than landfills, off-base incinerators and transfer stations. Nine installations (7.6 percent) use facilities other than material and/or energy recovery oriented. The installations were not queried to determine what their facilities were. Eight installations used material recovery facilities. They are: Hill, Wurtsmith, Robins, Edwards, Barksdale, Reese, Norton, and Chanute. No installations reported use of energy recovery disposal systems, or combined material and energy recovery disposal systems.

SECTION VIII

COLLECTION AND DISPOSAL COSTS

A. FY 76 Collection and Disposal Costs - Overview

The format of the survey did not permit an exact determination of solid waste management costs. Nonetheless, the data provides a relatively conservative and understated estimate of these costs.

For the 160 installations analyzed, the minimum total costs for FY 76 collection and disposal was almost $17 million. Subtracting the 41 radar sites slightly reduces this figure to $16.5 million. The understatement of this figure can be seen in Table 23; although the uppermost range for costs was $325,000.00 plus, at least one logistics installation (Robins) indicated its total costs were $581,997.00. In addition, the figures reported do not include significant additional costs incurred in the custodial waste gathering area. Over one-half of the non-radar site installations paid out $130,000 or more for collection and disposal of their residential, commercial, and institution wastes. Table 24 provides data for selected commands; relative average and median installation costs are provided in this table and in Figure 3.

B. Collection Costs - Share of the Total

Most installations with contract services do not break out individual costs for the collection and disposal functions. This necessitated their working with the contractor to obtain needed estimates, or contacting disposal facility personnel for the information. Other installations used a proportionate share of the costs based on national averages; however, the number of installations doing this was small and should not unduly bias the data reported.

Collection costs averaged 74 percent of non-radar installations' total management costs for residential, commercial and institutional solid wastes. This falls within the national average of 70 to 85 percent (Reference 36). As Table 24 indicates, the collection proportion ranged from 54 percent for the AAC to 78 percent for SAC. The low percentage for AAC can be attributed to the fact that HQ AAC used a 60/40 collection to disposal cost ratio when calculating the estimated disposal cost for its many remote radar-sites.

One-half of the installations pay out $100,000.00 or more per year for collection services. Of these installations, approximately 34 percent have costs in excess of $200,000.00. At least one installation (Robins) reported a collection cost of almost $500,000.00.

C. Residential Collection - Costs Per Ton

The collection costs on a per ton basis varies from $0.99 or less

TABLE 23. TOTAL FY76 COLLECTION AND DISPOSAL COST FOR RESIDENTIAL/COMMERCIAL/INSTITUTIONAL SOLID WASTE

Minimum Total Cost = $ 16,535,000.

Percentage responses per cost category (cost is in thousands of dollars)

0.0 - 4.0 = 1.7%	5.0 - 9.9 = 5.0%	10.0 - 14.9 = 4.2%	15.0 - 19.9 = 2.5%
20.0 - 24.9 = 2.5%	25.0 - 29.9 = 1.7%	35.0 - 39.9 = 1.7%	40.0 - 44.9 = 0.8%
45.0 - 49.9 = 2.5%	65.0 - 69.9 = 0.8%	70.0 - 74.9 = 0.8%	75.0 - 79.9 = 3.4%
80.0 - 84.9 = 4.2%	85.0 - 89.9 = 1.7%	95.0 - 99.9 = 4.2%	100.0 - 104.9 = 1.7%
105.0 - 109.9 = 0.8%	110.0 - 114.9 = 0.8%	115.0 - 119.9 = 2.5%	120.0 - 124.9 = 3.4%
125.0 - 129.9 = 0.8%	130.0 - 134.9 = 2.5%	135.0 - 139.9 = 0.8%	140.0 - 144.9 = 1.7%
145.0 - 149.9 = 3.4%	150.0 - 154.9 = 1.7%	160.0 - 164.9 = 2.5%	165.0 - 169.9 = .8%
175.0 - 179.9 = 1.7%	180.0 - 184.9 = 4.2%	185.0 - 189.9 = 1.7%	190.0 - 194.9 = 3.4%
195.0 - 199.9 = 1.7%	200.0 - 204.9 = 5.0%	210.0 - 214.9 = 0.8%	215.0 - 219.9 = 1.7%
225.0 - 229.9 = 0.8%	235.0 - 239.9 = 0.8%	240.0 - 244.9 = 1.7%	245.0 - 249.9 = 0.8%
255.0 - 259.9 = 1.7%	265.0 - 269.9 = 1.7%	275.0 - 279.9 = 0.8%	285.0 - 289.9 = 1.7%
300.0 - 304.9 = 0.8%	305.0 - 309.9 = 0.8%	320.0 - 324.9 = 0.8%	325.0 - **** = 5.9%

TABLE 24. FY76 COMMAND COST COMPARISONS (X 1,000)

	USAF[a]	USAF[b]	ADC	AAC	ATC	TAC	MAC/AFSC	SAC	AFLC
Minimum Total Costs	$16,535	16,960	605	860	2,065	2,515	3,305	4,515	1,780
Minimum Total Collection Costs	12,235	12,460	440	465	1,545	1,840	2,490	3,520	1,180
Percent Costs For Collection	74%	73	73	54	75	73	75	78	66
Total Installations	119	160	38	17	15	18	22	28	7
Average Collection and Disposal Costs	$138.9	106.0	15.9	50.6	137.7	139.7	150.0	161.2	254.3
Average Collection Cost	$102.8	77.9	11.6	27.4	103.0	102.2	113.1	125.7	168.6
Median Collection and Disposal Costs	$134.5	87.5	7.5	17.5	117.5	132.5	147.5	162.5	325.0 plus
Median Collection Costs	$104.5	64.5	5.0	7.5	84.5	114.5	114.5	124.5	200.0 plus

(a) Without 41 Radar Sites
(b) With Radar Sites

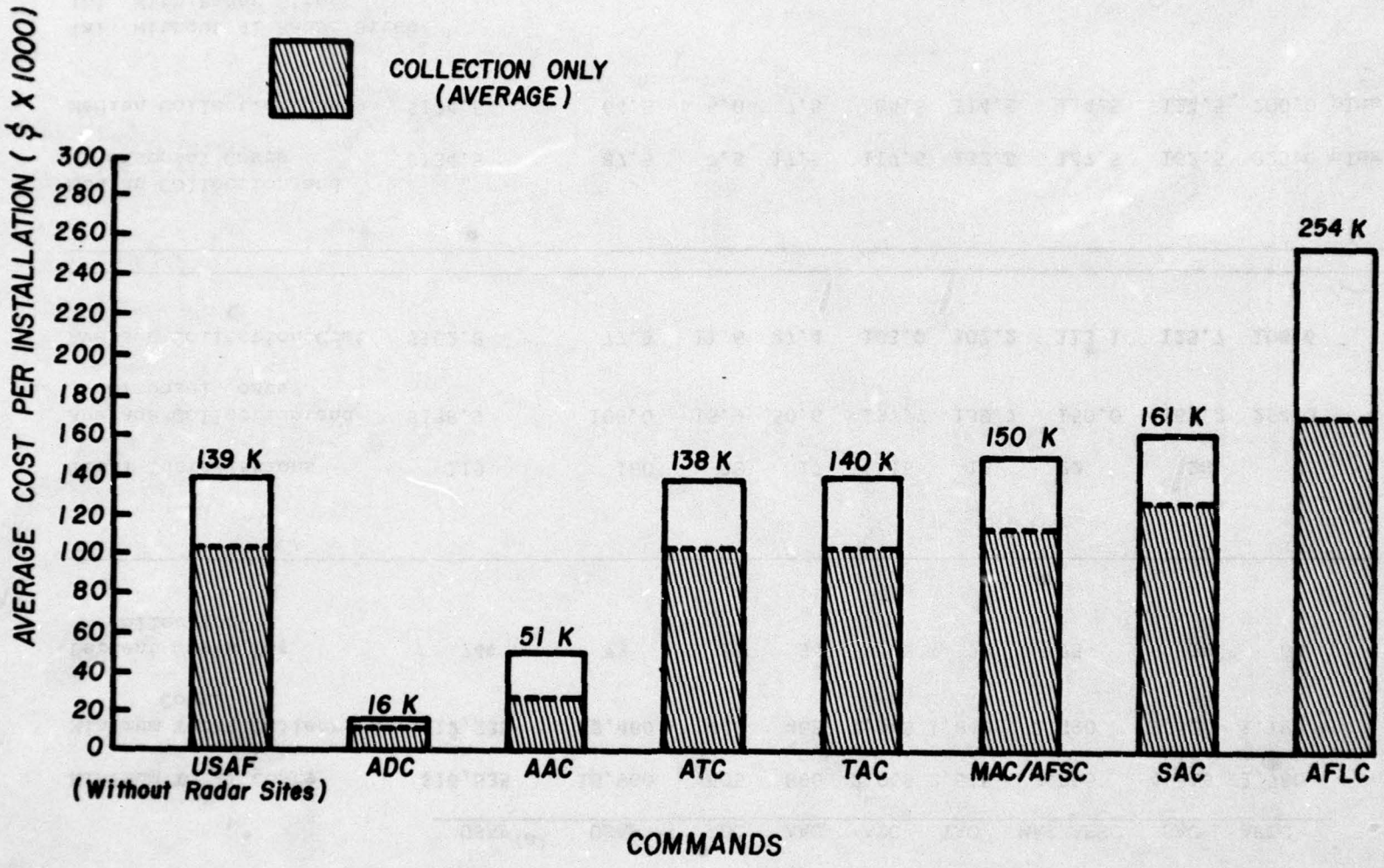


Figure 3. Comparison of Relative Average Refuse Management Costs

to over $30.00 per ton. One installation (Robins) reported they paid $73.64 per ton of waste collected.

As Tables 25 and 26 indicate, contractor collection is accomplished on a lower unit cost basis than using in-house services. For example, the median unit cost for contractor collection is $22.00 to 23.99 per ton versus $30.00 plus for in-house service. Whereas 29.8 percent of the installations with a contractor pay $30.00 plus per ton for collection, 52.6 percent of the installations using in-house forces pay $30.00 or more.

When viewed from the level of service, contractor curbside collection is accomplished at a lower unit cost than contractor non-curbside pickup, which confirms civilian experiences as discussed in Section IV. (The number of weekly pickups (2x) is about the same for both methods. The median unit cost for contractor curbside service is $22 to 23.49 per ton versus $26 to 27.99 for non-curbside pickup.)

Contractor curbside collection also appears to be cheaper than in-house curbside service, which has a median unit cost of $30,00 plus. Interestingly, the situation is reversed for in-house operations: In-house non-curbside service has a median unit cost of $22 to 23.99 per ton versus $30.00 plus for in-house curbside service. Caution is necessary in drawing any real conclusions about the latter comparison because the number of installations with in-house non-curbside service is small (6) and less than one-half of those with curbside service (13). In addition, the number of weekly collections is higher for more installations with in-house curbside service than those with non-curbside pickup; this higher service level will usually cost more and may partly account for the high cost differences discussed. It will also explain some of the cost differences with contractor curbside collection which is predominately twice a week versus three or more times for the same in-house service.

D. Commercial-Institutional Collection - Costs Per Ton

As with residential collection, the cost per ton ranged from $0.99 or less to over $30.00 per ton (Reference Tables 27 and 28). The median unit cost for contractor commercial collection was the same as for contractor residential service, $22.00 to 23.99 per ton. Contrary to residential collection, however, in-house services showed a slightly lower per unit cost than contractor operations; the in-house median cost unit was $20.00 to $21.99 per ton.

The level of service appeared to have little influence on the cost of collection. No installation used "on-call service only." Contractor and in-house "scheduled service only" had an identical median unit cost of $22.00 to $23.99 per ton. In-house combined on-call and scheduled service collection had a median unit cost of $20.00 to 21.99 per ton versus $22.00 to 23.99 for the same level of service by contractor operation. The unit costs reveal little data on why "scheduled service

TABLE 25. $/TON FY76 COLLECTION COST (FOR RESIDENTIAL SOLID WASTE)

A.) CONTRACTOR

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99 =	3.2%	1.00- 1.99 =	2.1%	2.00- 2.99 =	1.1%	3.00- 3.99 =	1.1%
4.00- 4.99 =	5.3%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	4.3%	9.00- 9.99 =	3.2%	10.00-10.99 =	2.1%	11.00-11.99 =	1.1%
12.00-12.99 =	2.1%	13.00-13.99 =	1.1%	14.00-14.99 =	2.1%	15.00-15.99 =	2.1%
16.00-16.99 =	1.1%	17.00-17.99 =	2.1%	18.00-18.99 =	2.1%	19.00-19.99 =	6.4%
20.00-21.99 =	5.3%	22.00-23.99 =	3.2%	24.00-25.99 =	6.4%	26.00-27.99 =	8.5%
28.00-29.99 =	4.3%	30.00-***** =	29.8%				

2) CURBSIDE/BACK ALLEY SERVICE (ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	3.3%	1.00- 1.99 =	3.3%	2.00- 2.99 =	1.6%	3.00- 3.99 =	1.6%
4.00- 4.99 =	8.2%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	4.9%	9.00- 9.99 =	3.3%	10.00-10.99 =	1.6%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	1.6%	15.00-15.99 =	3.3%
16.00-16.99 =	0.0%	17.00-17.99 =	3.3%	18.00-18.99 =	0.0%	19.00-19.99 =	8.2%
20.00-21.99 =	3.3%	22.00-23.99 =	4.9%	24.00-25.99 =	9.8%	26.00-27.99 =	6.6%
28.00-29.99 =	4.9%	30.00-***** =	26.2%				

3) NON-CURBSIDE/BACK DOOR SERVICE(ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	3.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	3.0%	9.00- 9.99 =	3.0%	10.00-10.99 =	3.0%	11.00-11.99 =	3.0%
12.00-12.99 =	6.1%	13.00-13.99 =	3.0%	14.00-14.99 =	3.0%	15.00-15.99 =	0.0%
16.00-16.99 =	3.0%	17.00-17.99 =	0.0%	18.00-18.99 =	6.1%	19.00-19.99 =	3.0%
20.00-21.99 =	9.1%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	12.1%
28.00-29.99 =	3.0%	30.00-***** =	36.4%				

B.) IN-HOUSE

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	10.5%	5.00- 5.99 =	5.3%	6.00- 6.99 =	5.3%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	10.5%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	10.5%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	5.3%	30.00-***** =	52.6%				

2) CURBSIDE/BACK ALLEY SERVICE (ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	7.7%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	15.4%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	7.7%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	7.7%	30.00-***** =	61.5%				

3) NON-CURBSIDE/BACK DOOR SERVICE(ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	33.3%	5.00- 5.99 =	0.0%	6.00- 6.99 =	16.7%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	16.7%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	33.3%				

TABLE 26. FY 76 RESIDENTIAL COLLECTION COSTS (DOLLARS/TON) - MEDIAN COST RANGES

I. Command:	USAF (without radar sites)	ADC	AAC	ATC	TAC	MAC/AFSC	SAC	AFLC	Radar Sites Only
II. Means of Accomplishment:									
A. Contractor									
No. of Bases	94	36	0	13	18	18	26	1	26
Total	$22-24	$24-26	-	$19-20	$20-21	$26-28	$24-26	$30 plus	$24-30 plus
Curbside/Back Alley	$22-24	$24-26	-	$15-16	$22-24	$22-24	$19-20	-	$24-26
Non-Curbside/ Back Door	$26-28	$30 plus	-	$19-20	$13-14	$30 plus	$26-28	$30 plus	$30 plus
B. In-House									
No. of Bases	19	1	17	2	0	1	2	6	14
Total	$30 plus	$1-2	$11-12	$4-30 plus	-	$30 plus	$20-30 plus	$30 plus	$11-12
Curbside/ Back Alley	$30 plus	-	$13-30	$30 plus(a)	-	$30 plus	$28-30	$30 plus	-
Non-Curbside/ Back Door	$14-15	$1-2	$10-11	$4-6(a)	-	-	-	-	$11-12

(a) One base

TABLE 27. $/TON FY76 COLLECTION COST (FOR COMMERCIAL AND INSTITUTIONAL SOLID WASTE)

A.) CONTRACTOR

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99	=	2.9%	1.00- 1.99	=	4.3%	2.00- 2.99	=	0.0%	3.00- 3.99	=	4.3%
4.00- 4.99	=	2.9%	5.00- 5.99	=	2.9%	6.00- 6.99	=	0.0%	7.00- 7.99	=	1.4%
8.00- 8.99	=	2.9%	9.00- 9.99	=	2.9%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	4.3%	13.00-13.99	=	4.3%	14.00-14.99	=	0.0%	15.00-15.99	=	2.9%
16.00-16.99	=	1.4%	17.00-17.99	=	2.9%	18.00-18.99	=	2.9%	19.00-19.99	=	2.9%
20.00-21.99	=	4.3%	22.00-23.99	=	4.3%	24.00-25.99	=	5.7%	26.00-27.99	=	2.9%
28.00-29.99	=	5.7%	30.00-*****	=	31.4%						

2) ON-CALL SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

3) SCHEDULED SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	4.0%	1.00- 1.99	=	4.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	6.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	4.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	2.0%
8.00- 8.99	=	4.0%	9.00- 9.99	=	4.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	4.0%	13.00-13.99	=	6.0%	14.00-14.99	=	0.0%	15.00-15.99	=	2.0%
16.00-16.99	=	2.0%	17.00-17.99	=	0.0%	18.00-18.99	=	2.0%	19.00-19.99	=	2.0%
20.00-21.99	=	4.0%	22.00-23.99	=	4.0%	24.00-25.99	=	4.0%	26.00-27.99	=	4.0%
28.00-29.99	=	4.0%	30.00-*****	=	34.0%						

4) COMBINED ON-CALL & SCHEDULED SERVICE (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	5.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	10.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	5.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	5.0%
16.00-16.99	=	0.0%	17.00-17.99	=	10.0%	18.00-18.99	=	5.0%	19.00-19.99	=	5.0%
20.00-21.99	=	5.0%	22.00-23.99	=	5.0%	24.00-25.99	=	10.0%	26.00-27.99	=	0.0%
28.00-29.99	=	10.0%	30.00-*****	=	25.0%						

B.) IN-HOUSE

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	2.0%	3.00- 3.99	=	2.0%
4.00- 4.99	=	4.1%	5.00- 5.99	=	0.0%	6.00- 6.99	=	6.1%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	2.0%	11.00-11.99	=	2.0%
12.00-12.99	=	2.0%	13.00-13.99	=	4.1%	14.00-14.99	=	0.0%	15.00-15.99	=	4.1%
16.00-16.99	=	6.1%	17.00-17.99	=	0.0%	18.00-18.99	=	6.1%	19.00-19.99	=	2.0%
20.00-21.99	=	10.2%	22.00-23.99	=	4.1%	24.00-25.99	=	0.0%	26.00-27.99	=	6.1%
28.00-29.99	=	2.0%	30.00-*****	=	34.7%						

2) ON-CALL SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

3) SCHEDULED SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	5.9%	3.00- 3.99	=	5.9%
4.00- 4.99	=	5.9%	5.00- 5.99	=	0.0%	6.00- 6.99	=	5.9%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	5.9%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	5.9%
16.00-16.99	=	5.9%	17.00-17.99	=	0.0%	18.00-18.99	=	5.9%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	5.9%	24.00-25.99	=	0.0%	26.00-27.99	=	5.9%
28.00-29.99	=	0.0%	30.00-*****	=	41.2%						

4) COMBINED ON-CALL & SCHEDULED SERVICE (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	3.1%	5.00- 5.99	=	0.0%	6.00- 6.99	=	6.3%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	3.1%	11.00-11.99	=	0.0%
12.00-12.99	=	3.1%	13.00-13.99	=	6.3%	14.00-14.99	=	0.0%	15.00-15.99	=	3.1%
16.00-16.99	=	6.3%	17.00-17.99	=	0.0%	18.00-18.99	=	6.3%	19.00-19.99	=	3.1%
20.00-21.99	=	15.6%	22.00-23.99	=	3.1%	24.00-25.99	=	0.0%	26.00-27.99	=	6.3%
28.00-29.99	=	3.1%	30.00-*****	=	31.3%						

TABLE 28. FY 76 COMMERCIAL AND INSTITUTIONAL COSTS (DOLLARS/TON)
-MEDIAN COST RANGES-

I. Command:	USAF (Without radar sites)	ADC	AAC	ATC	TAC	MAC/AFSC	SAC	AFLC	Radar Sites Only
II. Means of Accomplishment									
A. Contractor Service									
No of bases	70	37	0	13	12	15	10	1	27
Total	$22-24	$24-26	-	$17-18	$24-26	$22-24	$28-30	$3-4	$26-28
On-Call Only	-	-	-	-	-	-	-	-	-
Scheduled Only	$22-24	$26-28	-	$13-14	$22-24	$22-24	$26-28	$3-4	$26-30 plus
Combined On-Call and Scheduled	$22-24	$20-21	-	$17-18	$24-30 plus	$18-30 plus	$28-30 plus	-	$14-20
B. In-House									
No. of bases	49	1	17	2	6	7	18	6	14
Total	$20-21	$3-4	$11-12	$4-30 plus	$18-19	$18-19	$24-26	$20-30 plus	$11-12
On-Call Only	-	$3-4 (a)	-	-	-	-	-	-	
Scheduled Only	$22-24	-	-	$4-5	$15-16	$30 plus	$16-17	$30 plus	-
Combined On-Call and Scheduled	$20-21	-	$11-12	$30 plus	$18-19	$18-19	$28-30	$2021	$11-12

(a) Radar site

only" is a preferred level of service with contractor arrangement, and "combined service" is preferred with in-house operations as discussed in Section V.

E. FY 76 Disposal Costs - Total

For the 119 non-radar site installations surveyed, the minimum total disposal costs were almost $3.60 million. (If the 41 radar sites are included, the costs increase slightly to $3.76 million.) The median cost range was $20,000 to 24,900 for disposal. The range was from $4,900 or less to $200,000 or more. Ten installations paid out $80,000 or more; of these, two paid over $200,000 in FY 76.

F. On-Base Landfill Disposal - Costs Per Ton

The median unit cost for on-base sanitary landfill disposal (55 installations) was $6.00 to $6.99 per ton. This falls within the national range of $1.50 to $8.00 per ton (Reference 37). The costs ranged from $0.99 or less for three installations to $30.00 or more for six installations. The unit disposal cost for the only installation using both an on-base landfill and a transfer station was $0.00 to $0.99 per ton.

G. Off-Base Landfill Disposal - Costs Per Ton.

The off-base landfill costs were divided into three categories: no transfer station(s) used; on-base transfer station used; and off-base transfer station used. These costs amount to tipping or dump fees.

For those installations without transfer stations the per unit cost ranged from $0.00 to $0.99 per ton to $30.00 or more. In contrast to on-base landfill costs, off-base landfill use had a lower median unit cost of $4.00 to $4.99 per ton (versus on-base of $6.00 to $6.99).

Four installations used on-base transfer stations. Two of these incurred costs of $0.00 to $0.99 per ton. One paid $2.00 to $2.99 and the other paid $3.00 to $3.99 per ton.

Three installations used off-base transfer stations. The costs were scattered. One paid $6.00 to $6.99 per ton; another $10.00 to $10.99; and the other, $30.00 plus.

H. Off-Base Incinerator Disposal - Costs Per Ton

Two installations used off-base transfer stations to transfer their solid wastes to an incinerator, which was considered a final disposal site by the installations. The costs per ton were $0.00 to $0.99 and $10.00 to $10.99, respectively.

For the one installation that hauled its solid waste directly to an incinerator, the disposal cost per ton was $6.00 to $6.99.

I. Transfer Stations - Costs Per Ton

Four installations used transfer stations as their final disposal site. The costs (tipping fees) were widely scattered; one installation incurred a cost of $0.00 to $0.99 per ton; the others paid $5.00 to $5.99, $15.00 to $15.99, and $30.00 plus per ton, respectively.

SECTION IX

REFUSE RESOURCE RECOVERY

A. General

The policy of DOD is to recover solid wastes of value wherever economically feasible. In part, this policy is based upon Environmental Protection Agency (EPA) guidelines for mandatory recovery of materials and energy. Consequently, all installations were queried on past, present, and future recovery activities in order to provide a perspective on the extent and potential for USAF refuse resource recovery, particularly as it relates to the requirements and policy criteria of EPA and DOD.

B. Residential Newspaper Recycling - Potential

The number of residential family units serves as criteria for mandatory determination of the ability of an installation to sustain a newspaper recovery program. In effect, where more than 500 families (dwelling units) reside, the installation must recycle newspapers or use them as an energy resource, unless it is not economically feasible to do so. Where there are 500 or less families, such investigation is encouraged (References 38, 39, and 40).

The FY 76 survey revealed that 80 installations have more than 500 dwelling units. They are listed in Table 29. (Two of the installations have since been deactivated (Craig and Kincheloe AFBs) and are not listed.)

C. Residential Area Recycling - Past and Present

Eighty-one of the installations surveyed indicated that they did not, and have not had, a recycling program involving non-DOD surplus personal property (such as newspapers, beverage cans, and glass) from the residential areas on the installation. Twenty installations had a program which is no longer active, and 18 installations said that they had an active program. The latter are listed in Table 30.

For installations who have considered recycling but do not have or never had a residential recovery program, 54.0 percent reported that cost analysis showed that such a program was not feasible; 14.3 percent reported that cost analysis supported the concept but other factors denied implementation. The remaining 31.7 percent reported that they considered recycling but did not conduct a cost analysis to determine its viability.

For those installations with active or previous recovery programs, the following statements reflect some important characteristics of their recovery efforts:

TABLE 29. INSTALLATIONS WITH OVER 500 DWELLING UNITS

Command and Installation
Air University (AU)
Maxwell AFB
Tactical Air Command (TAC)
Bergstrom AFB
Cannon AFB
England AFB
Davis-Monthan AFB
George AFB
Holloman AFB
Homestead AFB
Luke AFB
MacDill AFB
Mt Home AFB
Mytrle Beach AFB
Nellis AFB
Seymour-Johnson AFB
Shaw AFB
AF Academy (AFA)
Air Force Academy
Strategic Air Command (SAC)
Andersen AFB
Barksdale AFB
Beale AFB
Blytheville AFB
Carswell AFB
Castle AFB
Dyess AFB
Ellsworth AFB
Fairchild AFB
Grand Forks AFB
Griffiss AFB
Grissom AFB
K. I. Sawyer AFB
Loring AFB
Malmstrom AFB
March AFB
McConnell AFB
Offutt AFB
Pease AFB
Plattsburgh AFB
Rickenbacker AFB
Vandenberg AFB
Whiteman AFB
Wurtsmith AFB
Minot AFB
Aerospace Defense Command (ADC)
Peterson AFB
Tyndall AFB
AF Communications Service (AFCS)
Richards-Gebaur AFB
AF Logistics Command (AFLC)
Hill AFB
McClellan AFB
Robins AFB
Tinker AFB
Wright-Patterson AFB
Alaskan Air Command (AAC)
Eielson AFB
Elmendorf AFB
Military Airlift Command/Systems Command (MAC/AFSC)
Charleston AFB
Little Rock AFB
Travis AFB
Altus AFB
Scott AFB
Andrews AFB
Bolling AFB
Dover AFB
McGuire AFB
McChord AFB
Edwards AFB
Eglin AFB
L. G. Hanscom AFB
Kirtland AFB
Patrick AFB

TABLE 29. INSTALLATIONS WITH OVER 500 DWELLING UNITS (CONCLUDED)

Command and Installation

Air Training Command (ATC)

- Chanute AFB
- Columbus AFB
- Keesler AFB
- Lackland AFB
- Laughlin AFB
- Lowry AFB
- Mather AFB
- Randolph AFB
- Sheppard AFB
- Williams AFB

Pacific Air Forces (PACAF)

- Hickam AFB

Southern Command

- Howard AFB

TABLE 30. INSTALLATIONS WITH ACTIVE NON-DOD SURPLUS PROPERTY RECYCLING PROGRAMS*

COMMAND AND INSTALLATION
Tactical Air Command (TAC)
Davis-Monthan AFB
George AFB
Nellis AFB
AF Academy (AFA)
Air Force Academy
Strategic Air Command (SAC)
Fairchild AFB
Malmstrom AFB
AF Communications Service (AFCS)
Richards-Gebaur AFB
AF Logistics Command (AFLC)
Hill AFB
Robins AFB
Wright-Patterson AFB
Military Airlift Command/Systems Command (MAC/AFSC)
Bolling AFB
Edwards AFB
Kirtland AFB
L. G. Hanscom AFB
Air Training Command (ATC)
Chanute AFB
Lackland AFB
Lowry AFB
AF Reserve (AFRES)
Dobbins AFB

*Excludes Base Exchange and Commissary wastes.

1. Four of the installations did not consider their current programs successful from the standpoint of base citizen support and economics. Roughly 25 percent considered their program successful only from the standpoint of base citizen support. A slightly higher percentage believed that their program was successful only from an economics standpoint, and an equal number believed that their program was successful both economically and because of residential support.

2. A majority of the inactive and unsuccessful active programs relied on permanent in-house engineering personnel which were not adequate to support both primary mission functions and a recycling program.

3. A slight majority of currently active, successful programs used either contractor personnel or a combination of contractor and permanent in-house engineering personnel to support the program. These installations overwhelmingly indicated that in-house forces were inadequate to support both the mission and recycling activities.

4. A majority of the installations, whether they had active or inactive programs, indicated that they had conducted a study of the potentially recoverable materials available in their installation's solid waste stream.

5. Almost all installations had conducted waste material market studies before embarking on the program. Most studies were accomplished through a cooperative effort of both base Civil Engineering personnel and Defense Property Disposal Office (DPDO) staff. However, 12 out of 20 installations with inactive programs stated that the DPDO was interested but unsuccessful in locating markets. Similarly, 3 out of the 4 installations with currently unsuccessful programs had no success with DPDO locating markets. On the other hand, DPDO success in locating markets for recovered items appear to positively support programs currently termed successful.

6. A majority of the installations indicated that cost analysis had been conducted prior to program implementation to determine if the program would be economically feasible through capital returns and cost avoidance. (However, a significant number (40 percent) of installations with inactive programs did not conduct cost analyses.) In addition, 2 out of the 4 installations with currently unsuccessful programs failed to conduct a cost analysis.

7. Economic viability appeared to be a key factor in deciding to implement currently successful programs. On the other hand, implementation of past programs appeared to be strongly influenced by the good public image that they were perceived to convey.

8. A significant 75 percent of the installations with inactive programs reported that market constraints on material preparation before

sale impeded the sale of these materials. One-half of the installations with successful active programs and one-half of those with unsuccessful active programs also encountered material preparation constraint problems.

9. Curbside pickup only of recovered materials was practiced by only one installation. Most preferred on-base recycling centers or some other method separate, or in combination with, recycling centers and curbside pickup.

Seventy percent of the 20 installations that have inactive programs planned to reimplement a program after FY 77. Similarly, 71.3 percent of installations with no history of recycling planned to implement a program after FY 77.

D. Base Exchange and Commissary Waste Recycling

Cardboard recycling by installations is specifically addressed by the EPA and DOD directives referenced previously. In this regard, over one-half (54.6 percent) of the 119 installations surveyed recycle cardboard from their Base Exchanges and Commissaries. A small percentage (6.7 percent) recycle other wastes as well as cardboard from these activities. The remainder do not recycle cardboard.

E. Central Plant Steam Generation and Refuse Derived Fuel Use

One of the more promising, but underdeveloped, means of refuse resource recovery involves co-firing of refuse derived fuel (RDF) with fossil fuels in large steam generating boilers. Co-firing with coal appears to be the most practical, near term application of RDF. Co-firing with oil is also being investigated. Consequently, installations were asked to provide some very general data on their steam generating systems that would provide a perspective on the current use of RDF in USAF boiler systems and the type of fuel-use systems that will have to be considered in any future program to promote wider spread utilization of RDF as a supplemental fuel.

Table 31 provides a summary of survey responses. Over one-half (56.1 percent) of existing steam plants (excluding radar sites) use natural gas as a a basic fuel, and most of these also have the capability to burn oil. Only 10 out of 82 installations with central steam plants burn coal as a primary fuel. Only Wright-Patterson AFB can utilize RDF in their coal-fired boiler system. Duluth IAP is planning to use RDF in FY 77. Four other installations (Pope, Kirtland, Charleston, and Chanute AFB) are planning to develop the capability to burn RDF in their boilers beyond FY 77.

The use of RDF as a supplemental or primary fuel may be promoted beyond what these survey responses indicate because Congress has emphasized the goals of reducing DOD dependence on oil and natural gas, con-

TABLE 31. CENTRAL PLANT STEAM GENERATION AND RDF USE[a]

I. Basic Fuel Used

Fuel	Number of Installations	Percent of Total
A. Oil	26	31.7
B. Coal	10	12.2
C. Natural Gas	46	56.1
D. Refuse Derived Fuel (RDF)	0	0.0
E. Other	0	0.0
Total	82	100.0

II. Fuels That Can Be Utilized

Fuel	Number of Installations	Percent of Total
A. Oil	19	23.2
B. Coal	6	7.3
C. Natural Gas	8	9.8
D. Refuse Derived Fuel (RDF)	0	0.0
*E. RDF and one or more of the above	1	1.2
F. Oil and Coal	4	4.9
G. Oil and Natural Gas	43	52.4
H. Coal and Natural Gas	1	1.2
I. Oil, Coal and Natural Gas	0	0.0
J. Other	0	0.0
Total	82	100.0

*Wright-Patterson AFB

(a) Excludes Radar Sites

verting to coal, and increased use of RDF within the DOD (Reference 41).

F. Use of Waste Heat Recovery Incinerators

The use of incinerators to process solid wastes and recover the heat is another area of refuse energy recovery potential. As Table 32 indicates, only McConnell AFB used a waste heat recovery incinerator. Eleven installations planned to use such incinerators in either FY 77 or FY 78.

G. Regional Refuse Resource Recovery

DOD policy for resource recovery includes the utilization of joint or regional civilian community recovery facilities/systems, whenever possible (Reference 42). Within this context, installations were asked if they resided in a region which has, or is planning to have refuse material and/or energy resource recovery. The results are tabulated in Table 33. At least 37 installations are in regions in which some form of refuse materials and/or energy recovery is in operation or being developed.

Installations were also asked if they were planning to be, or already were involved with civilian local or regional solid waste management systems which include some phase of materials and/or energy recovery.

Almost 75 percent (89 installations) indicated that they had no involvement. Twenty-five installations indicated that they were in the planning stage, and five indicated that they were already involved. (See Table 34 for the listing of specific installations.)

In the absence of civilian programs and a locally available commercial recycling industry, DOD and EPA policy require federal establishment of resource recovery facilities under the conditions stated below:

DOD facilities located within a Standard Metropolitan Statistical Area (SMSA) are required to participate with other DOD Components and Federal facilities in the establishment and/or utilization of a single resource recovery facility if: (1) any one Federal facility generate 50 tons or more of residential, commercial, and institutional solid waste per day after complying with waste reduction and source separation policies; and (2) the combined total of this solid waste for all Federal facilities within the SMSA is 100 tons per day. The Federal Agency having jurisdiction over a Federal facility that generates the largest quantity of residential, commercial and institutional solid waste in the SMSA will be designated the lead agency in the planning, programming, and budgeting for the resource recovery facility in accordance with EPA Guidelines" (Reference 43).

The installations located in a SMSA were identified by the survey and are listed in Appendix E.

TABLE 32. USE OF SOLID WASTE HEAT RECOVERY INCINERATORS

I. Installations with the capability

McConnell AFB

II. Installations planning to expand the capability

None

III. Installations without the capability but planning to have it during FY 77.

Bolling AFB
Barksdale AFB

IV. Installations without the capability but planning to have it beyond FY 77.

Air Force Academy
Andrews AFB
Carswell AFB
Charleston AFB
Eglin AFB
Hancock AFB
Langley AFB
Rickenbacker AFB
Scott AFB

TABLE 33. INSTALLATIONS IN REGIONS WITH REFUSE RESOURCE RECOVERY PLANS OR OPERATION[a]

I. Installations located in region with resource recovery operations:

Installation	County/State	SMSA
Malstrom AFB	Cascade/MT	Great Falls, MT
Vandenberg AFB	Santa Barbara/CA	Santa Barbara, CA
Niagara Falls IAP	Niagara/NY	Buffalo, NY

II. Installations located in region where resource recovery operations are being built:

Gen Mitchell Field	Milwaukee/WI	Milwaukee, WI

III. Installations located in region which are planning resource recovery operations:

Dover AFB	Kent/DE	None
Wheeler AFB	Honolulu/HI	Honolulu, HI
Eglin AFB	Okaloosa/FL	None
MacDill AFB	Hillsborough/FL	Tampa-St Petersburg, FL
Griffiss AFB	Oneida/NY	Utica-Rome, NY
Homestead AFB	Dade/FL	Miami, FL
Ellsworth AFB	Pennington/SD	None
Scott AFB	St. Clair/IL	St. Louis, IL
Wright-Patterson AFB	Greene-Montgomery/OH	Dayton/OH
Patrick AFB	Brevard/FL	Melbourne-Titusville-Cocoa, FL
Bergstrom AFB	Travis/TX	Austin, TX
Tyndall AFB	Bay/FL	None
Cheyenne Mountain	El Paso/CO	Colorado Springs, CO
Elmendorf AFB	Anchorage/AK	Anchorage, AK
Mather AFB	Sacramento/CA	Sacramento, CA
Norton AFB	San Bernardino/CA	Riverside-San Bernardino-Ontario, CA
Charleston AFB	Charleston/SC	Charleston-North Charleston, SC
Andrews AFB	Prince George/MD	Washington, DC
Langley AFB	Hampton/VA	Newport News-Hampton, VA
Air Force Academy	El Paso/CO	Colorado Springs, CO
K. I. Sawyer	Marquette/MI	None
Lowry AFB	Denver/CO	Denver-Boulder, CO

(a) Radar Sites excluded

TABLE 33. INSTALLATIONS IN REGIONS WITH REFUSE RESOURCE RECOVERY PLANS OR OPERATION (CONCLUDED)

Installation	County/State	SMSA
Richards-Gebaur AFB	Jackson-Cass/MO	Kansas City, MO
L. G. Hanscom AFB	Middlesex/MA	Boston, MA
McClellan AFB	Sacramento/CA	Sacramento, CA
Hickam AFB	Honolulu/HI	Honolulu, HI
Mt Hebo	Tillamook-Yamhill/OR	None
Pope AFB	Cumberland/NC	Fayetville, NC
Sheppard AFB	Wichita/TX	Wichita Falls, TX
March AFB	Riverside/CA	Riverside-San Bernardino-Ontario, CA
Kelly AFB	Bexar/TX	San Antonio, TX
Youngstown Arpt	Mahoning/OH	Youngstown-Warren, OH
Chanute AFB	Champaign/IL	Champaign-Urbana-Rantol, IL

(Total = 33 installations)

IV. Twenty-two installations did not know if their regions were involved in refuse resource recovery.

TABLE 34. INSTALLATIONS PLANNING OR INVOLVED WITH LOCAL/REGIONAL REFUSE RESOURCE RECOVERY(a)

I. Installations involved with local/regional resource recovery:

Grissom AFB	Mather AFB	Davis Montham AFB
Chanute AFB	Beale AFB	

II. Installations planning involvement with local/regional resource recovery:

Dover AFB	Langley AFB	Pope AFB
Elmendorf AFB	Norton AFB	Scott AFB
Wright-Patterson AFB	Hickam AFB	Eglin AFB
MacDill AFB	Lowry AFB	Gen Mitchell Field
McClellan AFB	Wheeler AFB	Tyndall AFB
Malstrom AFB	Richards-Gebaur AFB	L.G. Hanscom AFB
Tinker AFB	Bergstrom AFB	AFA
K. I. Sawyer AFB	Kelly AFB	Vandenberg AFB
Blytheville AFB		

(a) Radar Sites excluded

SECTION X

RADAR SITE SOLID WASTE CHARACTERISTICS

A. Daily Waste Generation

Forty one installations reported their primary function/activity as Radar Sites. Of these, 92.7 percent (38 sites) reported a daily generation of between 0.0 and 4.9 tons of residential, commercial, and institutional solid waste. This compares significantly to the 17.6 percent of non-radar sites reporting daily tonnages in this range. The lowest known generation was 0.04 TPD; the highest was between 50 to 54.9 TPD (Reference 12). Residential waste generation data could not be accurately identified, because radar sites usually only have dormitories whose wastes are not separately collected from the rest of the site.

B. Sludges, Street Sweepings, Demolition, and Ground Wastes

Thirty-five of the 41 installations reported daily generation of these wastes in the range of 0.0 to 4.9 tons per day. The remaining six installations did not know how much they generated.

C. Residential Collection Practices

Over one-half (57.5 percent) of the 40 installations with residential areas do not make separate collections for bulky "white goods" items. Most of the remainder (40.0 percent) pick up these items on an on-call basis.

All radar sites belonging to the AAC (13 installations) use in-house resources to collect their residential solid wastes. All provide a non-curbside/back door level of service. A majority (52.5 percent) of the radar sites use contractors and curbside/back alley service.

Collection frequency varies among the sites. Twenty-five percent utilize once a week service; 35.0 percent use twice a week service; and 43.0 percent use three or more pickups per week. Sites utilizing contractor services usually collect wastes 2 or less times per week, whereas those with in-house forces usually collect 3 or more times weekly. The latter use the same collection schedules and resources to collect their commercial and institutional wastes.

None of the installations had any plans to change their collection arrangements and levels of service.

D. Commercial-Institutional Collection Practices

All sites appear to use the same collection arrangement in the commercial-institutional areas as they do in their residential areas. In a reflection of the non-radar site collection frequencies, most

installations with contractor services collect their commercial-institutional solid wastes on a scheduled basis. On the other hand, in-house collections primarily involve a combination of scheduled and on-call pickups; none use scheduled pickups only. No radar site planned any changes in the near future.

E. Processing of Waste

Approximately 32 percent of the sites utilize incineration to process their solid wastes from all sources. (This contrasts to the 3.6 percent for non-radar site installations.) All of these sites belong to the AAC. Of the installations, 48.8 percent do not process their residential waste; 56.1 percent do not process their commercial-institutional waste. No site planned to increase its processing capabilities in FY 77.

F. Disposal Practices

Thirteen of the 41 radar sites use on-base sanitary landfills. Sites using in-house service normally used the on-base disposal facility. The average daily disposed tonnage is in the range of 0 to 4.9 tons. All on-base landfills have life expectancies of 6 or more years. Most exclude infectious wastes; almost all have no exclusion criteria for other wastes.

Almost all sites using contractors dispose off-base. Twenty-six sites use off-base landfills; 85.2 percent of these installations dispose of from 0.0 to 4.9 tons per day in the landfills. Approximately 4.0 percent did not know what their daily disposal quantity was. Only two off-base landfills used by the sites had 4 or less years remaining lifetime; however, both of the sites involved had selected another landfill site or alternate means of disposal.

Two sites use off-base incinerators as their final disposal destination. One site (Blaine AFS) reported that it used both an incinerator and an off-base landfill; the landfill is used whenever the incinerator is not operating. None use transfer stations as a final disposal site.

G. Collection and Disposal Costs

Approximately 54 percent of the sites paid $10,000 or less in FY 76 for collection and disposal; 96.2 percent paid less than $25,000. Altogether, sites paid at least $425,000 for their FY 76 collection and disposal operations. Contrary to a 70 plus percent share of the total cost with non-radar site installations, radar site collection accounted for only about 50 percent of the FY 76 solid waste management budget.

The collection costs on a unit basis varies from $0.99 or less to over $30.00 per ton, for both residential and commercial-institutional solid wastes. The median unit cost for contractor residential collection is $30.00 plus per ton, compared to the non-radar site contractor residential collection cost of $22.00 to $23.99 per ton. The median in-house radar site residential unit collection cost is $11.00 to $11.99 per ton versus $30.00 plus for non-radar site in-house collections.

The median unit cost for contractor commercial collection is $26.00 to $27.99 per ton; for in-house commercial collection the cost was $11.00 to $11.99. Scheduled collection only, which is the most common contractor pickup method, has a median unit cost of $28.00 to $29.99 per ton. The most common in-house collection method is combined on-call and scheduled service with a median unit cost of $11.00 to $11.99.

The median unit cost for on-base sanitary landfill (mainly remote AAC sites) is $15.00 to $15.99 per ton. Off-base landfill median unit cost is $7.00 to $7.99 per ton. The two sites utilizing off-base incinerators paid $7.00 to $7.99 and $24.00 to $25.99 per ton, respectively.

H. Refuse Resource Recovery

No radar site had over 500 family dwelling units that would have required them to automatically study the feasibility of newspaper recycling. One installation indicated that it had a non-appropriated fund recycling program that was now inactive. There were no active programs. Forty of the sites planned to implement a recycling program after FY 77.

Oil is the primary fuel used in radar site central steam plants. None planned to develop a capability for using refuse derived fuel. Similarly, no site presently has or plans to utilize refuse waste heat recovery incinerators.

One installation (New Hampshire Satellite Tracking Station) is located in a region in which refuse material and/or energy recovery is in operation. The region encompassing Lockport AFS is building a facility for refuse resource recovery; and Ft Fisher, North Bend, and North Charleston are in regions planning refuse resource recovery. Ft Fisher and New Hampshire Satellite Tracking Station are actively involved in their region's refuse resource recovery systems or planning. Eight sites did not know of their region's status.

Only Lockport AFS, Mill Valley, and North Charleston are located in Standard Metropolitan Statistical Areas.

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APPENDIX A

1976

US AIR FORCE

SOLID WASTE MANAGEMENT SURVEY

ENVIRONMENTAL STATUS REPORT

RCS: DD-H&E (A) 1269

PARTICIPATING INSTALLATIONS

Code	Installation	Code	Installation
AA	Campion AFS	CA	Opheim
AB	Cape Lisburne	CB	Peterson Fld
AC	Cape Newenham	CC	Point Arena
AD	Cape Romanzof	CD	Port Austin
AE	Eielson	CE	Roanoke Rapids
AF	Elmendorf	CF	Saratoga
AG	Ft Yukon	CG	Sault Ste Marie
AH	Galena Apt	CH	St Albans
AI	Indian Mountain	CI	Tyndall
AJ	Murphy Dome	CJ	Watertown
AK	Shemya	DA	AFA
AL	Tatalina	EA	AF AFC
AM	Tin City	FA	Maxwell
BA	Almaden	FB	Gunter
BB	Antigo	GA	Chanute
BC	Baudette	GB	Columbus
BD	Blaine	GC	Craig
BE	Calumet	GD	Keesler
BF	Cambria	GE	Lackland
BG	Cape Charles	GF	Laughlin
BH	Caswell	GG	Lowry
BI	Charleston AFS	GH	Mather
BJ	Cheyenne Mt	GI	Moody
BK	Clear	GJ	Randolph
BL	Duluth IAP	GK	Reese
BM	Empire	GL	Sheppard
BN	Ent	GM	Vance
BO	Finland	GN	Webb
BP	Finley	BO	Williams
BQ	Fortuna	HA	Richards-Gebaur
BR	Ft Fisher	IA	Gentile AFS
BS	Ft Lee, VA	IB	Hill
BT	Gibbsboro	IC	Kelly
BU	Hancock	ID	McClellan
BV	Havre	IE	Newark AFS
BW	Kalispell	IF	Robins
BX	Kingsley	IG	San Antonio AFS
BY	Klamath	IH	Tinker
BZ	Lockport	II	Wright-Patterson
BO	Mill Valley	IJ	Oklahoma AFS
B1	Minot AFS	JA	Arnold EDC
B2	Montauk	JB	Brooks
B3	Mt Hebo	JC	Edwards
B4	Mt Laguna	JD	Eglin
B5	North Bend	JE	Kirtland
B6	North Charleston	JF	LG Hanscom
B7	North Truro		

PARTICIPATING INSTALLATIONS (Concluded)

Code	Installation
JG	Los Angeles AFS
JH	Patrick
JI	Sunnyvale AFS
KA	Andrews
KB	Bolling
LA	Altus
LB	Charleston AFB
LC	Dover
LD	Little Rock
LE	McChord
LF	McGuire
LG	Norton
LH	Pope
LI	Scott
LJ	Travis
MA	Hickam
MB	Wheeler
NA	Albrook
NB	Howard
OA	Andersen
OB	Barksdale
OC	Beale
OD	Blytheville
OE	Carswell
OF	Castle
OG	Davis Monthan
OH	Dyess
OI	Ellsworth
OJ	F E Warren
OK	Fairchild
OL	Grand Forks
OM	Griffiss
ON	Grissom
OO	K I Sawyer
OP	Kincheloe
OQ	Loring
OR	Malmstrom
OS	March
OT	McConnell
OU	Minot AFB
OV	Offutt
OW	Pease
OX	Plattsburgh
OY	Rickenbacker
OZ	Vandenberg
O1	Whiteman
02	Wurtsmith
PA	Avon Park
PB	Bergstrom
PC	Cannon
PD	England
PE	George
PF	Gila Bend
PG	Holloman
PH	Homestead
PI	Indian Springs
PJ	Langley
PK	Luke
PL	MacDill
PM	Mt Home
PN	Myrtle Beach
PO	Nellis
PP	Seymour-Johnson
PQ	Shaw
QA	Goodfellow
RA	Buckley
RB	Selfridge
RC	Ontario IAP
SA	Chicago/O'Hare IAP
SB	Dobbins
SE	Gen Mitchell Fld
SF	Hamilton
SG	Minn/St Paul IAP
SH	Niagara Falls IAP
SI	Westover
SJ	Youngstown MPT
AN	Cold Bay AFS
AO	King Salmon Aprt
AP	Kotzebue AFS
AQ	Sparrevohn AFB
JJ	N H Satellite Tracking Station
PR	Hurlburt Fld

1. Using the codes with the list of installations on page iii, what is the first code letter for your installation?

a. A	h. H	n. N
b. B	i. I	o. O
c. C	j. J	p. P
d. D	k. K	q. Q
e. E	l. L	r. R
f. F	m. M	s. S
g. G		

2. Using the codes with the list of installations on page one, what is the second code letter for your installation?

a. A	h. H	o. O	v. V	2. 2
b. B	i. I	p. P	w. W	3. 3
c. C	j. J	q. Q	x. X	4. 4
d. D	k. K	r. R	y. Y	5. 5
e. E	l. L	s. S	z. Z	6. 6
f. F	m. M	t. T	0. 0	7. 7
g. G	n. N	u. U	1. 1	

3. In support of the overall Air Force Defense mission, how would you best describe the primary function/activity on your installation?

a. Flying Operations	g. R&D Laboratory/Center
b. Flying Training	h. Flight Test Center
c. Industrial/Logistics Support	i. Test Range
d. Technical/Academic Training	j. Missile Operations
e. Medical Services	k. Ground/Basic Training
f. Administrative/Headquarters	l. Radar Sites

4. How would you best describe the <u>secondary</u> function/activity on your installation?

a. Flying Operations	g. R&D laboratory/center
b. Flying Training	h. Flight Test Center
c. Industrial/Logistics Support	i. Test Range
d. Technical/Academic Training	j. Missile Operations
e. Medical Services	k. Ground/Basic Training
f. Administrative/Headquarters	l. Radar Site

5. How many dwelling units (i.e., number of families) are there on your installation?

a. 500 or less b. Greater than 500

c. We have no residential areas.

6. What was the average daily tonnage of solid wastes collected from all residential, commercial and institutional sources during Fiscal year 76? (Include quantities of waste materials collected for recycling, regardless of who collects or processes it). Average daily tonnage should be based on annual tonnage averaged over a 260 day period. Do not include industrial solid wastes.

a.	0- 4.9 Tons	h.	35-39.9	o.	70-74.9
b.	5- 9.9	i.	40-44.9	p.	75-79.9
c.	10-14.9	j.	45-49.9	q.	80-84.9
d.	15-19.9	k.	50-54.9	r.	85-89.9
e.	20-24.9	l.	55-59.9	s.	90-94.9
f.	25-29.9	m.	60-64.9	t.	95-99.9
g.	30-34.9	n.	65-69.9	u.	100 or greater

7. What was the FY 76 average daily tonnages of collected wastewater treatment sludges, street sweepings, construction/demolition wastes and grounds maintenance wastes?

a.	0- 4.9	e.	20-24.9
b.	5- 9.9	f.	25 or greater
c.	10-14.9	g.	Do not know
d.	15-19.9		

8. What was the average FY 76 daily tonnage of solid waste collected in your base residential areas? Average daily tonnage should be based on annual tonnage averaged over a 260 day period.

a.	0- 4.9	e.	20-24.9	i.	40-44.9
b.	5- 9.9	f.	25-29.9	j.	45-49.9
c.	10-14.9	g.	30-34.9	k.	50 or greater
d.	15-19.9	h.	35-39.9	l.	We have no residential areas.

9. Are residential bulky, "white good" type items picked up separately from routine collection?

a. Yes, on a fixed schedule
b. Yes, on an on-call basis
c. No
d. We have no residential areas
e. Combination of a and b above

10. What method of collection is used in your base residential areas?

a. Contractor, with curbside/back alley service
b. Contractor, with non-curbside/back door service
c. In-house, with curbside/back alley service
d. In-house, with non-curbside/back door service
e. We have no residential areas.

11. How many pickups per week are made for routine collection in your base residential areas?

a. 1
b. 2
c. 3
d. More than 3
e. Some combination of the above.
f. We have no residential areas.

12. Are there plans to change your current method of residential area collection during FY 77?

a. No
b. Yes, to contractor with curbside/back alley service
c. Yes, to contractor with non-curbside/back door service
d. Yes, to in-house with curbside/back alley service
e. Yes, to in-house with non-curbside/back door service
f. Undecided, but considering it
g. We have no residential areas.

13. What method of collection is used in your commercial and institutional areas?

a. Contractor, with on-call pickups
b. Contractor, with scheduled pickups
c. Contractor, with combination of on-call and scheduled pickups
d. In-house, with on-call pickup
e. In-house, with scheduled pickups
f. In-house, with combination of on-call and scheduled pickups.

14. Are there plans to change your current method of commercial and institutional collection during FY 77?

a. Yes
b. Undecided, but considering it
c. No

15. Does contractor dispose of solid waste on-base?

a. Yes, residential contractor onlh
b. Yes, commercial and institutional area contractor only
c. Yes, both residential and commercial-institutional contractor
d. No
e. No, we have no contractors

16. What type of processing is used in managing residential area solid waste? (Do not include compaction capability of collection vehicle).

a. Compaction
b. Baling
c. Incineration
d. Shredding
e. Other
f. Two or more of the above
g. None
h. We have no residential area

17. What type of processing is used in managing commissary solid waste?

a. Compaction
b. Baling
c. Incineration
d. Shredding
e. Other
f. Two or more of the above
g. None
h. We have no commissary

18. What type of processing is used in managing Base Exchange solid waste?

a. Compaction
b. Baling
c. Incineration
d. Shredding
e. Other
f. Two or more of the above
g. None
h. We have no Base Exchange

19. What type of processing is used in managing commercial and institutional solid waste, other than the commissary and Base Exchange activities?

a. Compaction
b. Baling
c. Incineration
d. Shredding
e. Other
f. Two or more of the above
g. None

20. Do you have plans to increase your solid waste processing capabilities in FY 77?

a. Yes, in residential areas only
b. Yes, in commercial and institutional areas only
c. Yes, in residential, commercial and institutional areas.
d. Undecided, but considering it
e. No.

21. What was the average FY 76 daily tonnage of solid waste disposed of in your on-base sanitary landfill? (Average daily tonnage is defined in questions on collection.) "On-base" also includes Air Force responsible landfill which may be physically located outside the actual boundary of the base.

a.	0- 4.9 Tons	i.	40-44.9	q.	80-84.9
b.	5- 9.9	j.	45-49.9	r.	85-89.9
c.	10-14.9	k.	50-54.9	s.	90-94.9
d.	15-19.9	l.	55-59.9	t.	95-99.9
e.	20-24.9	m.	60-64/9	u.	100 or greater
f.	25-29.9	n.	65-69.9	v.	Do not know
g.	30-34.9	o.	70-74.9	w.	Our waste does not go into an on-base sanitary landfill.
h.	35-39.9	p.	75-79.9		

22. Does any other Air Force installation, off-base federal or nonfederal agency/organization utilize your on-base sanitary landfill?

a. Yes, other Air Force installation(s) only
b. Yes, off-base federal agency(ies) only.
c. Yes, non-federal organization(s) only
d. Yes, both other Air Force and Off-base federal agency (ies) only
e. Yes, both other Air Force and non-federal organization(s) only.
f. Yes, both other federal and non-federal organization(s) only
g. Yes, other Air Force, federal and non-federal organizations
h. No
i. We do not have an on-base sanitary landfill

23. Do the above pay your installations for use of the on-base sanitary landfill?

a. Yes
b. No
c. Some pay and some don't
d. None of the above utilize our on-base sanitary landfill
e. We do not have an on-base sanitary landfill.

24. If other Air Force installations, off-base federal or non-federal organizations pay a "tipping/dumping" fee ($ ton) for use of your on-base sanitary landfill, does it amount to (use average, if paid by more than one user):

a. 0.1 -0.99
b. 1.00-1.99
c. 2.00-2.99
d. 3.00-3.99
e. 4.00-4.99
f. 5.00-5.99
g. 6.00-6.99
h. 7.00-7.99
i. 8.00-8.99
j. 9.00-0.99
k. 10.00-10.99
l. 11.00-11.99
m. 12.00-12.99
n. 13.00-13.99
o. 14.00-14.99
p. 15.00-15.99
q. 16.00-16.99
r. 17.00-17.99
s. 18.00-18.99
t. 19.00-19.99
u. 20.00-21.99
v. 22.00-23.99
w. 24.00-25.99
x. 26.00-27.99
y. 28.00-29.99
z. 30.00 or greater
Ø. No tipping fee paid
1. None of the above utilize our on-base sanitary landfill
2. We have no on-base sanitary landfill

25. What is the estimated remaining life expectancy of your active on-base sanitary landfill?

a. Six months
b. One year
c. Two years
d. Three years
e. Four years
f. Five years
g. Six years
h. Between six and ten years
i. More than 10 years
j. Our waste does not go into an on-base sanitary landfill

26. If the estimated life of the on-base sanitary landfill is four years or less, do you have another landfill site selected or an alternate means of disposal?

a. Yes
b. No
c. Our wastes do not go to an on-base sanitary landfill
d. Estimated life time is greater than four years.

27. Do you exclude construction, demolition, and industrial wastes from your on-base sanitary landfill?

a. Yes
b. We exclude only construction and demolition materials
c. We exclude only industrial wastes.
d. No. We accept all of the wastes dexcribed in this question
e. We do not have an on-base sanitary landfill

28. Do you exclude infectious wastes from your on-base sanitary landfill?

a. Yes
b. No
c. We do not have an on-base sanitary landfill

29. Do you exclude sludges and liquid wastes from your on-base sanitary landfill?

a. Yes
b. We exclude sludges only
c. We exclude liquid wastes only
d. No, we accept both
e. We do not have an on-base sanitary landfill

30. What was the average FY 76 daily tonnage of solid wastes disposed of in off-base landfill(s)?

a. 0- 4.9
b. 5- 9.9
c. 10-14.9
d. 15-19.9
e. 20-24.9
f. 25-29.9
g. 30-34.9
h. 35-39.9
i. 40-44.9
j. 45-49.9
k. 50-54.9
l. 55-59.9
m. 60-64.9
n. 65-69.9
o. 70-74.9
p. 75-79.9
Q. 80-84.9
r. 85-89.9
s. 90-94.9
t. 95-99.9
u. 100 or greater
v. Do not know
w. Our wastes do not go into off-base landfills

31. What is the estimated remaining life expectancy of the landfill use off-base? (If more than one landfill is used, give average of their expected lifetimes.)

a. Six months
b. One year
c. Two years
d. Three years
e. Four years
f. Five years
g. Six years
h. Between six and ten years
i. More than ten years
j. Our wastes do not go into off-base landfills

32. If the estimated life of the off-base landfill(s) is four years or less, do you have another landfill site selected or an alternate means of disposal?

a. Yes
b. No
c. Our wastes do not go to an off-base landfill
d. Estimated life time is greater than four years

33. What was the average FY 76 daily tonnage of solid wastes disposed of in off-base incinerator site(s)?

a. 0- 4.9
b. 5- 9.9
c. 10-14.9
d. 15-19.9
e. 20.24.9
f. 25-29.9
g. 30-34.9
h. 35-39.9
i. 40-44.9
j. 45-49.9
k. 50-54.9
l. 55-59.9
m. 60-64.9
n. 65-69.9
o. 70-74.9
p. 75-79.9
q. 80-84.9
r. 85-59.9
s. 90-94.9
t. 95-99.9
u. 100 or greater
v. Do not know
w. Our wastes do not go to off-base incinerators

34. Do you use solid waste transfer stations?

a. No
b. No, but we plan to use on-base transfer stations during FY 77
c. No, but we plan to use off-base transfer stations during FY 77
d. Yes, we use one or more on-base transfer stations
e. Yes, we use one or more off-base transfer stations

35. What was the average FY 76 daily tonnage of solid waste handled through transfer station(s)?

a. 0- 4.9	i. 40-44.9	q. 80-84.9
b. 5- 9.9	j. 45-49.9	r. 85-89.9
c. 10-14.9	k. 50-54.9	s. 90-94.9
d. 15-19.9	l. 55-59.9	t. 95-99.9
e. 20-24.9	m. 60-64.9	u. 100 or greater
f. 25-29.9	n. 65-69.9	v. Do not use transfer station
g. 35.39.9	o. 70-74.9	
h. 35-39.9	p. 75-79.9	

36. Do you utilize some other type of disposal facility other than or in addition to landfills, off-base incinerators and transfer stations?

a. Yes, and it is material recovery oriented
b. Yes, and it is energy recovery oriented
c. Yes, and it is both material and energy recovery oriented
d. Yes
e. No

37. How is residential area solid waste disposed of?

a. Contractor, with on-base disposal
b. Contractor, with off-base disposal
c. In-house, with on-base disposal
d. In-house, with off base disposal
e. Combination of the above
f. We have no residential area

38. How is commercial and institutional solid waste disposed of?

a. Contractor, with on-base disposal
b. Contractor, with off-base disposal
c. In-house, with on-base disposal
d. In-house with off-base disposal
e. Combination of the above.

39. What was your total FY 76 collection and disposal costs for residential, commercial and institutional solid waste? (Include "storage" and "processing," sanitary landfill, etc., costs)

a. $0-4,999
b. 5,000-9,999
c. 10,000-14,999
d. 15,000-19,999
e. 20,000-24,999
f. 25,000-29,999
g. 30,000-34,999
h. 35,000-39,999
i. 40,000-44,999
j. 45,000-49,999
k. 50,000-54,999
l. 55,000-59,999
m. 60,000-64,999
n. 65,000-69,999
o. 70,000-74,999
p. 75,000-79,999
q. 80,000-84,999
r. 85,000-89,999
s. 90,000-94,999
t. 95,000-99,999
u. 100,000-104,999
v. 105,000-109,999
w. 110,000-114,999
x. 115,000-119,999
y. 120,000-124,999
z. 125,000-129,999
Ø. 130,000-134,999
1. 135,000-139,999
2. 140,000-144,999
3. 145,000-149,999
4. 150,000-154,999
5. 155,000-159,999
6. 160,000-164,999
7. None above; see following question

40. Question 39 continued: Total FY 76 collection and disposal cost

a. Answered above
b. 165,000-.69,999
c. 170,000-174,999
d. 175,000-179,999
e. 180,000-184,999
f. 185,000-189,999
g. 190,000-194,999
h. 195,000-199,999
i. 200,000-204,999
j. 205,000-209,999
k. 210,000-214,999
l. 215,000-219,999
m. 220,000-224,999
n. 225,000-229,999
o. 230,000-234,999
p. 235,000-239,999
q. 240,000-244,999
r. 245,000-249,999
s. 250,000-254,999
t. 255,000-259,000
u. 260,000-264,999
v. 265,000-264,999
w. 270,000-274,999
x. 275,000-279,999
y. 280,000-284,999
z. 285,000-289,999
Ø. 290,000-294,999
1. 295,000-299,999
2. 300,000-304,999
3. 305,000-309,999
4. 310,000-314,999
5. 315,000-319,999
6. 320,000-324,999
7. 325,000-greater

41. What was your total FY 76 collection cost for residential, commercial and institutional solid waste? (Include "storage" and "processing" costs).

a. $0-4,999
b. 5,000-9,999
c. 10,000-14,999
d. 15,000-19,999
e. 20,000-24,999
f. 25,000-29,999
g. 30,000-34,999
h. 35,000-39,999
i. 40,000-44,999
j. 45,000-49,999
k. 50,000-59,999
l. 60,000-69,999
m. 70,000-79,999
n. 80,000-89,999
o. 90,000-99,999
p. 100,000-109,999
q. 110,000-119,999
r. 120,000-129,999
s. 130,000-139,999
t. 140,000-149,999
u. 150,000-159,999
v. 160,000-169,999
w. 170,000-179,999
x. 180,000-189,999
y. 190,000-199,999
z. 200,000 or greater

42. What was your FY 76 dollar per ton ($/ton) collection cost for residential solid wastes?

a.	$0-0.99/ton	j.	9.00-9.99	s.	18.00-18.99
b.	1.00-1.99	k.	10.00-10.99	t.	19.00-19.99
c.	2.00-2.99	l.	11.00-11.99	u.	20.00-21.99
d.	3.00-3.99	m.	12.00-12.99	v.	22.00-23.99
e.	4.00-4.99	n.	13.00-13.99	w.	24.00-25.99
f.	5.00-5.99	o.	14.00-14.99	x.	26.00-27.99
g.	6.00-6.99	p.	15.00-15.99	y.	28.00-28.99
h.	7.00-7.99	q.	16.00-16.99	z.	30.00 or greater
i.	8.00-8.99	r.	17.00-17.99	Ø.	We have no residential area

43. What was your FY 76 dollar per ton ($/ton) collection cost for commercial and institutional solid waste?

a.	$0-0.99	j.	9.00-9.99	s.	18.00-18.99
b.	1.00-1.99	k.	10.00-10.99	t.	19.00-19.99
c.	2.00-2.99	l.	11.00-11.99	u.	20.00-21.99
d.	3.00-3.99	m.	12.00-12.99	v.	22.00-23.99
e.	4.00-4.99	n.	13.00-13.99	w.	24.00-25.99
f.	5.00-6.99	o.	14.00-14.99	x.	26.00-27.99
g.	6.00-6.99	p.	15.00-15.99	y.	28.00-29.99
h.	7.00-7.99	q.	16.00-16.99	z.	30.00 or greater
i.	8.00-8.99	r.	17.00-17.99		

44. What was your total FY 76 <u>disposal</u> costs for residential, commercial and institutional solid waste?

a.	$0-4,999	j.	45,000-49,999	s.	130,000-139,999
b.	5,000-9,999	k.	50,000-59,999	t.	140,000-149,999
c.	10,000-14,999	l.	60,000-69,999	u.	150,000-159,999
d.	15,000-19,999	m.	70,000-79,999	v.	160,000-169,999
e.	20,000-24,999	n.	80,000-89,999	w.	170,000-179,000
f.	25,000-29,999	o.	90,000-99,999	x.	180,000-189,999
g.	30,000-34,999	p.	100,000-109,999	y.	190,000-199,999
h.	35,000-39,999	q.	110,000-119,999	z.	200,000 or greater
i.	40,000-44,999	r.	120,000-129,999	z.	200,000 or greater

45. What was your FY 76 dollar per ton ($/ton) cost for on-base sanitary landfill disposal of residential, commercial and institutional solid waste? (Include cost of transfer station, if used between collection and final disposition in the landfill)

a. $0-0.99
b. 1.00-1.99
c. 2.00-2.99
d. 3.00-3.99
e. 4.00-4.99
f. 5.00-5.99
g. 6.00-6.99
h. 7.00-7.99
i. 8.00-8.99
j. 9.00-9.99
k. 10.00-10.99
l. 11.00-11.99
m. 12.00-12.99
n. 13.00-13.99
o. 14.00-14.99
p. 15.00-15.99
q. 16.00-16.99
r. 17.00-17.99
s. 18.00-18.99
t. 19.00-19.99
u. 20.00-21.99
v. 22.00-23.99
w. 24.00-25.99
x. 26.00-27.99
y. 28.00-29.99
z. 30.00 or greater
Ø. Our wastes do not go into on-base sanitary landfills

46. What was your FY 76 dollar per ton ($/ton) cost for off-base sanitary landfill disposal of residential, and commercial and institutional solid waste? (Include cost of transfer station if used between collection and final disposition in the landfill)

a. $0.-0.99
b. 1.00-1.99
c. 2.00-2.99
d. 3.00-3.99
e. 4.00-4.99
f. 5.00-5.99
g. 6.00-6.99
h. 7.00-7.99
i. 8.00-8.99
j. 9.00-9.99
k. 10.00-10.99
l. 11.00-11.99
m. 12.00-12.99
n. 13.00-13.99
o. 14.00-14.99
p. 15.00-15.99
q. 15.00-15.99
r. 17.00-17.99
s. 18.00-19.99
t. 19.00-19.99
u. 20.00-21.99
v. 22.00-23.99
w. 24.00-25.99
x. 26.00-27.99
y. 28.00-29.99
z. 30.00 or greater
Ø. Our wastes do not go into off-base sanitary landfills

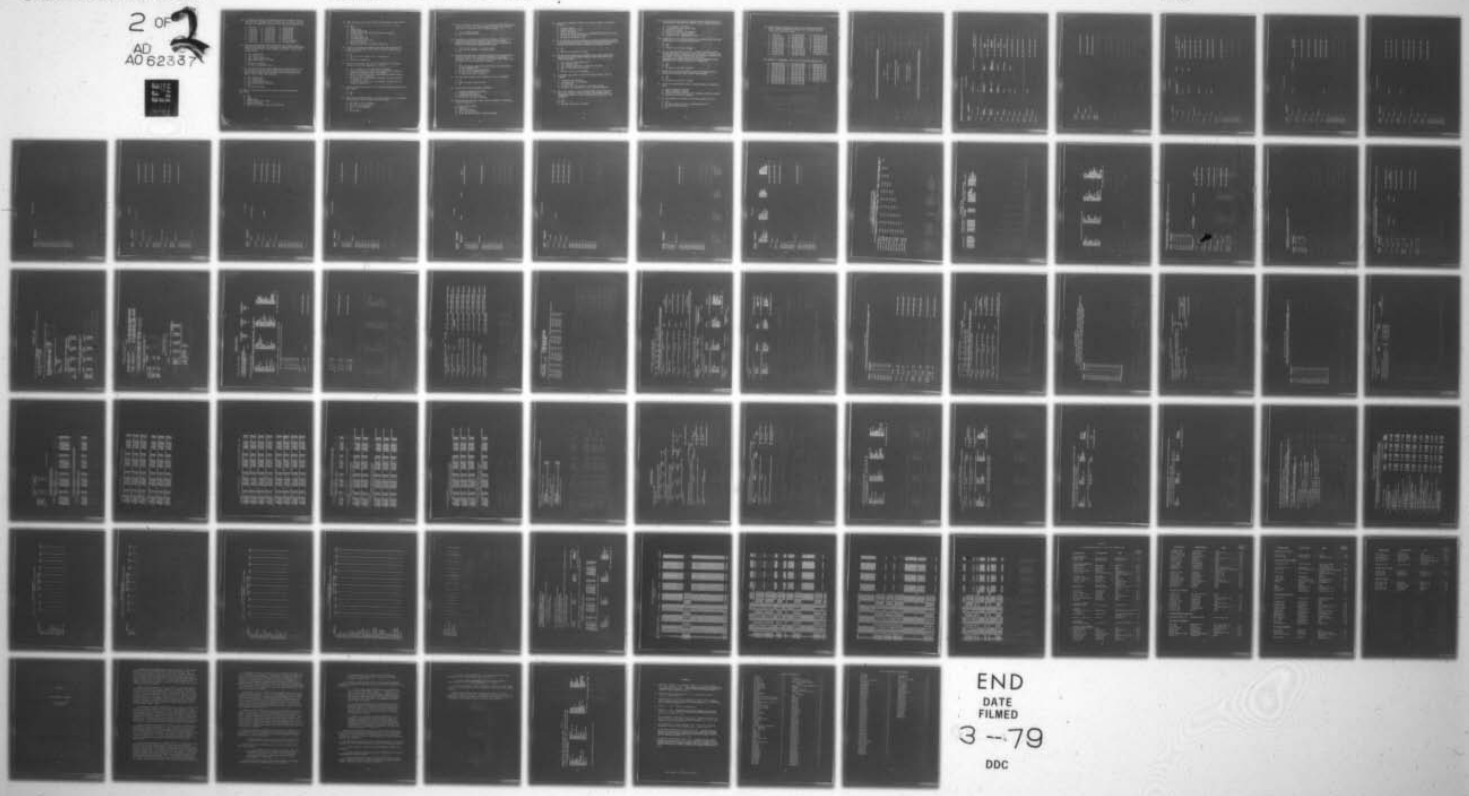
47. If incineration is considered your final disposal location, what was your FY 76 dollar per ton ($/ton) cost for off-base incineration disposal of residential, commercial and institutional solid waste? (Include cost of transfer station if used between collection and final disposition in the incinerator).

a. $0-0.99
b. 1.00-1.99
c. 2.00-2.99
d. 3.00-3.99
e. 4.00-4.99
f. 5.00-5.99
g. 6.00-6.99
h. 7.00-7.99
i. 8.00-8.99
j. 0.00-9.99
k. 10.00-10.99
l. 11.00-11.99
m. 12.00-12. 99
n. 13.00-13.99
o. 14.00-14.99
p. 15.00-15.99
q. 16.00-17.99
r. 17.00-17.99
s. 18.00-18.99
t. 19.00-19.99
u. 20.00-21.99
v. 22.00-23.99
w. 24.00-25.99
x. 26.00-27.99
y. 28.00-29.99
z. 30.00 or greater
Ø. Our wastes do not go to off-base incinerators

AD-A062 337 CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFIC--ETC F/G 13/2
ANALYSIS OF AIR FORCE SOLID WASTE MANAGEMENT PRACTICES.(U)
MAY 78 R F OLFENBUTTEL

UNCLASSIFIED CEEDO-TR-78-28 NL

2 OF 2
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48. If transfer stations are considered your final disposal location, what was your corresponding FY 76 dollar per ton ($/ton) cost for disposal of residential, commercial and institutional solid waste?

a.	$0-0.99	j.	9.00-9.99	s.	18.00-18.99
b.	1.00-1.99	k.	10.00-10.99	t.	10.00-19.99
c.	2.00-2.99	l.	11.00-11.99	u.	20.00-21.99
d.	3.00-3.99	m.	12.00-12.99	v.	22.00-23.99
e.	4.00-4.99	n.	13.00-13.99	w.	24.00-25.99
f.	5.00-5.99	o.	14.00-14.99	x.	26.00-27.99
g.	6.00-6.99	p.	15.00-15.99	y.	28.00-29.99
h.	7.00-7.99	q.	16.00-16.99	z.	30.00 or greater
i.	8.00-8.99	r.	17.00-17.99	ø.	Not applicable

49. For your non-recycling related residential solid waste contract, does the base guarantee the contractor a specified minimum tonnage/volume per month and/or dollar payment per month? ("Put or pay" type contract.)

a. Yes, tonnage only
b. Yes, volume only
c. Yes, dollar payment only
d. Some combination of the above
e. No
f. We have no contract
g. We have no residential area

50. For your non-recycling related commercial and institutional solid waste contract, does the base guarantee the contractor a specified minimum tonnage/volume per month and/or dollar payment per month? ("Put or pay" type contract)

a. Yes, tonnage only
b. Yes, volume only
c. Yes, dollar payment only
d. Some combination of the above
e. No
f. We have no contract

51. What is the basic fuel used for on-base central plant steam generation?

a. Oil
b. Coal
c. Natural Gas
d. Refuse Derived Fuel (RDF)
e. None of the above
f. We have no central steam plant facilities

52. What fuels can you utilize in your on-base central steam plants?

a. Oil
b. Coal
c. Natural Gas
d. Refuse derived fuel
e. Refuse derived fuel and one or more of the above
f. Oil and coal
g. Oil and natural gas
h. Coal and natural gas
i. Oil, coal and natural gas
j. None of the above
k. We have no central steam plant facilities

53. If you do not have the capability to burn Refuse Derived Fuel (RDF) in your boilers, do you plan to create a capability to do so in FY 77?

a. No
b. No, but we are planning for it beyond FY 77
c. Yes
d. We have the capability

54. Do you utilize waste heat recovery incinerators, or are you planning to have this capability in FY 77?

a. Yes, we utilize one or more such incinerators
b. Yes, we utilize one or more such incinerators and plan to expand our capability in FY 77 or beyond
c. No, we do not utilize such incinerators and have no future plans for such a capability
d. No, we do not utilize such incinerators, but plan for such a capability in FY 77
e. No, we do not utilize such incinerators, but plan for the capability beyond FY 77

55. Is your installation located in a Standard Metropolitan Statistical Area (SMSA)?

a. Yes
b. No

56. Does your installation reside in a region which has, or is planning refuse material and/or energy resource recovery?

a. Yes, and it is in operation
b. Yes, and it is being built
c. Yes, it is in planning
d. No
e. Do not know.

57. Are you presently planning to be or already involved with civilian, local or regional solid waste management systems which include some phase of materials and/or energy recovery?

a. Yes, in planning stage
b. Yes, already involved
c. No

58. Excluding Base Exchange and Commissary wastes, is there or has there been a recycling program on your installation that involves non-DOD surplus personal property (i.e., property not originally purchased with appropriated funds)?

a. Yes, and the program is currently active
b. Yes, but the program is no longer active
c. No

59. If there has never been a recycling program on your installation involving non-DOD surplus personal property and Exchange/ Commissary wastes, is it because cost analysis study showed such a program to be not economically feasible?

a. Yes
b. No, cost analysis supported the concept, but other factors denied implementation
c. No cost analysis was accomplished
d. We have never considered recycling
e. We have or had such a program

60. Does the Base Exchange and/or Commissary recycle cardboard?

a. Yes
b. Yes, and other wastes as well
c. No

61. Is/was your recycling program operated by:

a. In-house engineering personnel
b. Contractor personnel
c. Combination of the above
d. We have not had such a program

62. Do you believe that the current recycling program is successful from the standpoint of:

a. Base citizen support
b. Economics
c. Both of the above
d. It is not successful
e. We do not have a current recycling program

63. Is/was your residential (MFH) area recycling effort accomplished through:

a. Curbside pickup
b. On-base recycling centers
c. Both of the above
d. Some other method separate or in combination with a and b above
e. We have not had such a program
f. We have no residential area

64. If you have/had a recycling program, did Civil Engineering, DSA/DPDO or any other organization do a study of the potentially recoverable materials available in the installation solid waste stream?

a. Yes
b. No
c. We have not had such a program

65. Did base Civil Engineering, DSA/DPDO or any other organization conduct waste material market studies before embarking on the recycling program?

a. Yes, base Civil Engineering only
b. Yes, DSA/DPDO only
c. Yes, another organization other than the above
d. Yes, a combination of the above
e. No
f. We have not had such a program

66. If DSA/DPDO was asked to assist in locating markets, was its response:

a. Interested and successful
b. Interested but non-successful
c. Non-interested
d. We didn't ask, but had/have a recycling program
e. We didn't ask, and have not had a recycling program

67. Was a cost analysis study conducted before establishing the recycling program to indicate whether the program would be economically feasible either through capital returns or cost avoidance?

a. Yes
b. No
c. We have not had such a program

68. If a cost analysis study was conducted which revealed that the program was not economically feasible, was it implemented because:

a. It was marginally feasible
b. It presented a good public image
c. Both of the above
d. We didn't conduct a cost analysis
e. We have not had such a program
f. Program is/was economically feasible

69. Do/did market constraints on material preparation before purchase impede sale of your recyclable materials?

a. Yes
b. No
c. We have not had such a program

70. For all recycling efforts on base, including DSA/DPDO handled surplus DOD personal property: do/did recycling of materials such as cardboard from the Commissary and Base Exchange, aluminum cans from clubs, and computer paper/cards from data processing areas depend entirely on the base recycling program (without which the materials would be landfilled)?

a. Yes
b. No
c. We have not had such a program

71. Is/was Civil Engineering manning adequate to support both the recycling program and normal mission requirements?

a. Yes
b. No
c. We have not had such a program

72. Is/was Civil Engineering recycling program support accomplished with:

a. Mainly permanent personnel
b. Mainly temporary overhires
c. Even split between permanent and temporary overhire personnel
d. We have not had such a program

73. Are you planning to implement a recycling program in FY 77?

a. Yes
b. No, but we have plans for a program beyond FY 77
c. We have an active program
d. No

74. What was your installation's total FY 76 janitorial/custodial cost? (Include in-house janitorial cost (if known) and all contractual janitorial costs)

a.	$0-4,999	m.	60,000-64,999	y.	120,000-124,999
b.	5,000-9,999	n.	65,000-69,999	z.	125,000-129,999
c.	10,000-14,999	o.	70,000-74,999	ø.	130,000-134,999
d.	15,000-19,999	p.	75,000-79,999	1.	135,000-139,999
e.	20,000-24,999	q.	80,000-84,999	2.	140,000-144,999
f.	25,000-29,999	r.	85,000-89,999	3.	145,000-149,000
g.	30,000-34,999	s.	90,000-94,999	4.	150,000-154,999
h.	35,000-39,999	t.	95,000-99,999	5.	155,000-159,999
i.	40,000-44,999	u.	100,000-104,999	6.	160,000-164,999
j.	45,000-49,999	v.	105,000-109,999	7.	None above; see following question
k.	50,000-54,999	w.	110,000-114,999		
l.	55,000-59,999	x.	115,000-119,999		

75. Question 74 continued: Total FY 76 Janitorial/custodian cost

a.	answered above	m.	220,000-224,999	y.	280,000-284,999
b.	165,000-169,999	n.	225,000-229,999	z.	285,000-289,999
c.	170,000-174,999	o.	230,000-234,999	ø.	290,000-294,999
d.	175,000-179,999	p.	235,000-239,999	1.	295,000-299,999
e.	180,000-184,999	q.	240,000-244,999	2.	300,000-304,999
f.	185,000-189,999	r.	245,000-249,999	3.	305,000-309,999
g.	190,000-194,999	s.	250,000-254,999	4.	310,000-314,999
h.	195,000-199,999	t.	255,000-259,999	5.	315,000-319,999
i.	200,000-204,999	u.	260,000-264,999	6.	320,000-324,999
j.	205,000-209,999	v.	265,000-269,999	7.	325,000 or greater
k.	210,000-214,999	w.	270,000-274,999		
l.	215,000-219,999	x.	275,000-279,999		

APPENDIX B

UNITED STATES AIR FORCE

SOLID WASTE MANAGEMENT SURVEY RESULTS

FOR FISCAL YEAR 1976

ENVIRONMENT STATUS REPORT

RCS: DD-H&E(A)1269

REPORTED DAILY TONNAGE FOR EACH INSTALLATION FOR EACH CATEGORY
TOTAL INSTALLATIONS REPORTING = 160

FLYING OPERATIONS

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9 =	KINGSLEY	YOUNGSTOWN MPT	NIAGRA FALLS IAP	GREATER PITTS. FLD.
				TOTAL INSTALLATIONS LISTED = 4
5- 9.9 =	MYRTLE BEACH	DYESS		
				TOTAL INSTALLATIONS LISTED = 2
10-14.9 =	LANGLEY ENGLAND BLYTHEVILLE	HURLBURT FIELD GRAND FORKS	CARSWELL PEASE	MARCH CASTLE
				TOTAL INSTALLATIONS LISTED = 9
15-19.9 =	BERGSTROM POPE MCCONNELL	CANNON SEYMOUR-JOHNSON SHAW	MOODY RICKENBACKER CHARLESTON AFB	LITTLE ROCK WURTSMITH
				TOTAL INSTALLATIONS LISTED = 11
20-24.9 =	DOVER LORING	HOLLOMAN MOUNTAIN HOME	ANDERSON	EIELSON
				TOTAL INSTALLATIONS LISTED = 6
25-29.9 =	GRISSOM FAIRCHILD	BEALE	PLATTSBURGH	SCOTT
				TOTAL INSTALLATIONS LISTED = 5
30-34.9 =	TRAVIS	HICKAM	MCGUIRE	
				TOTAL INSTALLATIONS LISTED = 3
35-39.9 =	MCCHORD	OFFUTT		
				TOTAL INSTALLATIONS LISTED = 2
40-44.9 =	NORTON			
				TOTAL INSTALLATIONS LISTED = 1
45-49.9 =				
50-54.9 =	BARKSDALE	HOWARD		
				TOTAL INSTALLATIONS LISTED = 2
55-59.9 =	KINCHELOE			
				TOTAL INSTALLATIONS LISTED = 1
60-64.9 =				

65-69.9 =
70-74.9 =
ELMENDORF

TOTAL INSTALLATIONS LISTED = 1

75-79.9 =
80-84.9 =
ANDREWS

TOTAL INSTALLATIONS LISTED = 1

85-89.9 =
K I SAWYER

TOTAL INSTALLATIONS LISTED = 1

90-94.9 =
95-99.9 =
100-**** =

FLYING TRAINING

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9 =				
	GILA BEND	CHICAGO/O'HARE IAP	DOBBINS	GEN. MITCHELL FIELD
	AVON PARK	INDIAN SPRINGS		
				TOTAL INSTALLATIONS LISTED = 6
5- 9.9 =				
	WILLIAMS AFBB	CRAIG	ALTUS	LAUGHLIN
				TOTAL INSTALLATIONS LISTED = 5
10-14.9 =				
	GEORGE	TYNDALL AFB	REESE	
				TOTAL INSTALLATIONS LISTED = 3
15-19.9 =				
	DAVIS-MONTHAN			
				TOTAL INSTALLATIONS LISTED = 1
20-24.9 =				
	COLUMBUS	HOMESTEAD		
				TOTAL INSTALLATIONS LISTED = 2
25-29.9 =				
30-34.9 =				
	VANCE	LUKE		
				TOTAL INSTALLATIONS LISTED = 2
35-39.9 =				
	MACDILL	RANDOLPH		
				TOTAL INSTALLATIONS LISTED = 2
40-44.9 =				
45-49.9 =				
50-54.9 =				
	NELLIS			
				TOTAL INSTALLATIONS LISTED = 1
55-59.9 =				
60-64.9 =				
65-69.9 =				
70-74.9 =				
75-79.9 =				
80-84.9 =				
85-89.9 =				
90-94.9 =				
95-99.9 =				
100-**** =				

INDUS/LOGIS SUPPORT

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9 =				
5- 9.9 =	WHEELER	HANCOCK	KING SALMON APT	GALENA AIRPORT
				TOTAL INSTALLATIONS LISTED = 4
10-14.9 =				
15-19.9 =	NEWARK AFS			
				TOTAL INSTALLATIONS LISTED = 1
20-24.9 =				
25-29.9 =	TINKER			
				TOTAL INSTALLATIONS LISTED = 1
30-34.9 =				
35-39.9 =	KELLY			
				TOTAL INSTALLATIONS LISTED = 1
40-44.9 =	MCCLELLAN			
				TOTAL INSTALLATIONS LISTED = 1
45-49.9 =	HILL	ROBINS		
				TOTAL INSTALLATIONS LISTED = 2
50-54.9 =				
55-59.9 =				
60-64.9 =				
65-69.9 =				
70-74.9 =				
75-79.9 =				
80-84.9 =				
85-89.9 =				
90-94.9 =				
95-99.9 =				
100-**** =				

TECH/ACADMC TRAINING

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING		
0- 4.9 =			
	GUNTER AFB		
			TOTAL INSTALLATIONS LISTED = 1
5- 9.9 =			
	MATHER	GOODFELLOW	
			TOTAL INSTALLATIONS LISTED = 2
10-14.9 =			
	MAXWELL AFB		
			TOTAL INSTALLATIONS LISTED = 1
15-19.9 =			
20-24.9 =			
	SHEPPARD	LOWRY AFB	
			TOTAL INSTALLATIONS LISTED = 2
25-29.9 =			
	AFA		
			TOTAL INSTALLATIONS LISTED = 1
30-34.9 =			
	KEESLER AFB		
			TOTAL INSTALLATIONS LISTED = 1
35-39.9 =			
40-44.9 =			
	ALBROOK		
			TOTAL INSTALLATIONS LISTED = 1
45-49.9 =			
50-54.9 =			
	CHANUTE		
			TOTAL INSTALLATIONS LISTED = 1
55-59.9 =			
60-64.9 =			
65-69.9 =			
70-74.9 =			
75-79.9 =			
80-84.9 =			
85-89.9 =			
90-94.9 =			
95-99.9 =			
100-**** =			

MEDICAL SERVICES

AVG DAILY TONNAGE		INSTALLATIONS RESPONDING
0- 4.9	=	
5- 9.9	=	
10-14.9	=	
15-19.9	=	
20-24.9	=	
25-29.9	=	
30-34.9	=	
35-39.9	=	
40-44.9	=	
45-49.9	=	
50-54.9	=	
55-59.9	=	
60-64.9	=	
65-69.9	=	
70-74.9	=	
75-79.9	=	
80-84.9	=	
85-89.9	=	
90-94.9	=	
95-99.9	=	
100-****	=	

ADMIN/HQT RS

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING		
0- 4.9 =			
	LOS ANGELES AFS	DULUTH IAP	TOTAL INSTALLATIONS LISTED = 2
5- 9.9 =			
10-14.9 =			
	RICHARDS-GEBAUR		TOTAL INSTALLATIONS LISTED = 1
15-19.9 =			
20-24.9 =			
	PATRICK		TOTAL INSTALLATIONS LISTED = 1
25-29.9 =			
30-34.9 =			
35-39.9 =			
40-44.9 =			
45-49.9 =			
	WRIGHT-PATTERSON		TOTAL INSTALLATIONS LISTED = 1
50-54.9 =			
	ROLLING		TOTAL INSTALLATIONS LISTED = 1
55-59.9 =			
60-64.9 =			
65-69.9 =			
	PETERSON FIELD		TOTAL INSTALLATIONS LISTED = 1
70-74.9 =			
75-79.9 =			
80-84.9 =			
85-89.9 =			
90-94.9 =			
95-99.9 =			
100-**** =			

100

R & D LAB/CENTR

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING		
0- 4.9	=		
	BROOKS	CHEYENNE MOUNTAIN	
			TOTAL INSTALLATIONS LISTED = 2
5- 9.9	=		
10-14.9	=		
	ARNOLD EDC		
			TOTAL INSTALLATIONS LISTED = 1
15-19.9	=		
	GRIFFISS	L G HANSCOM	
			TOTAL INSTALLATIONS LISTED = 2
20-24.9	=		
25-29.9	=		
	EGLIN		
			TOTAL INSTALLATIONS LISTED = 1
30-34.9	=		
	KIRTLAND		
			TOTAL INSTALLATIONS LISTED = 1
35-39.9	=		
40-44.9	=		
45-49.9	=		
50-54.9	=		
55-59.9	=		
60-64.9	=		
65-69.9	=		
70-74.9	=		
75-79.9	=		
80-84.9	=		
85-89.9	=		
90-94.9	=		
95-99.9	=		
100-****	=		

FLIGHT TEST CENTER

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING
0- 4.9	=
	SUNNYVALE AFS
	TOTAL INSTALLATIONS LISTED = 1
5- 9.9	=
10-14.9	=
15-19.9	=
20-24.9	=
25-29.9	=
30-34.9	=
	EDWARDS
	TOTAL INSTALLATIONS LISTED = 1
35-39.9	=
40-44.9	=
45-49.9	=
50-54.9	=
55-59.9	=
60-64.9	=
65-69.9	=
70-74.9	=
75-79.9	=
80-84.9	=
85-89.9	=
90-94.9	=
95-99.9	=
100-****	=

TEST RANGE

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9 =				
	CAPE CHARLES SARATOGA	ALMADEN	MT HEBO	EMPIRE
				TOTAL INSTALLATIONS LISTED = 5
5- 9.9 =				
10-14.9 =				
15-19.9 =				
20-24.9 =				
25-29.9 =				
30-34.9 =				
35-39.9 =				
40-44.9 =				
	VANDENBERG			
				TOTAL INSTALLATIONS LISTED = 1
45-49.9 =				
50-54.9 =				
55-59.9 =				
60-64.9 =				
65-69.9 =				
70-74.9 =				
75-79.9 =				
80-84.9 =				
85-89.9 =				
90-94.9 =				
95-99.9 =				
100-**** =				

MISSLE OPERATIONS

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING		
0- 4.9	=		
5- 9.9	=		
	F E WARREN		TOTAL INSTALLATIONS LISTED = 1
10-14.9	=		
	MALSTROM	WHITEMAN	TOTAL INSTALLATIONS LISTED = 2
15-19.9	=		
	ELLSWORTH		TOTAL INSTALLATIONS LISTED = 1
20-24.9	=		
	MINOT AFB		TOTAL INSTALLATIONS LISTED = 1
25-29.9	=		
30-34.9	=		
35-39.9	=		
40-44.9	=		
45-49.9	=		
50-54.9	=		
55-59.9	=		
60-64.9	=		
65-69.9	=		
70-74.9	=		
75-79.9	=		
80-84.9	=		
85-89.9	=		
90-94.9	=		
95-99.9	=		
100-****	=		

GROUND/BASIC TRAIN

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING
0- 4.9	=
5- 9.9	=
10-14.9	=
15-19.9	=
20-24.9	=
25-29.9	=
	LACKLAND AFB
30-34.9	=
35-39.9	=
40-44.9	=
45-49.9	=
50-54.9	=
55-59.9	=
60-64.9	=
65-69.9	=
70-74.9	=
75-79.9	=
80-84.9	=
85-89.9	=
90-94.9	=
95-99.9	=
100-****	=

TOTAL INSTALLATIONS LISTED = 1

RADAR SITE

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9 =				
	CLEAR	KALISPELL	HAVRE	CAMBRIA
	CASWELL	FORTUNA	FT FISHER	FINLAND
	FINLEY	ANTIGO	BAUDETTE	LOCKPORT
	MINOT AFS	MT LUGUNA	NORTH BEND	NORTH TRURO
	POINT ARENA	PORT AUSTIN	ST ALBANS	WATERTOWN
	N.H. SAT. TRACK. STA	BLAINE	CAMPION AFS	COLD BAY AFS
	FORT YUKON	INDIAN MOUNTAIN	KOTZEBUE AFS	MURPHY DOME
	SPARREVOHN AFS	TATALINA	TIN CITY	ROANOKE RAPIDS
	NORTH CHARLESTON	CHARLESTON AFS	CALUMET	CAPE LISBURNE
	CAPE NEWENHAM	CAPE ROMANZOF		
				TOTAL INSTALLATIONS LISTED = 38
5- 9.9 =				
	MONTAUK			
				TOTAL INSTALLATIONS LISTED = 1
10-14.9 =				
	SHEMYA			
				TOTAL INSTALLATIONS LISTED = 1
15-19.9 =				
20-24.9 =				
25-29.9 =				
30-34.9 =				
35-39.9 =				
40-44.9 =				
45-49.9 =				
50-54.9 =				
	MILL VALLEY			
				TOTAL INSTALLATIONS LISTED = 1
55-59.9 =				
60-64.9 =				
65-69.9 =				
70-74.9 =				
75-79.9 =				
80-84.9 =				
85-89.9 =				
90-94.9 =				
95-99.9 =				
100-**** =				

PRIMARY FUNCTION/TONNAGE CATEGORY UNIQUENESS

("F" PROBABILITY DISTRIBUTION TABLE -- "P" VALUES)

NOTE -- "*" INDICATES THAT THERE IS UNIQUENESS ("P" < .025)
"0." INDICATES THAT NO EVALUATION WAS POSSIBLE.

	.RADAR SITE.	.GROUND/BAS.IC TRAIN	.MISSLE OPE.RATIONS	.TEST RANGE.	.FLIGHT TES.T CENTER	.R & D LAB/.CENTR	.ADMIN/HQT .RS	.MEDICAL SE.RVICES	.TECH/ACADM.C TRAINING	.INDUS/LOGI.S SUPPORT	.FLYING TRA.INING
FLYING OPERATIONS	1.000	0.000	.986	.605	.273	.902	.106	0.000	.687	.584	.919
FLYING TRAINING	.999	0.000	.958	.310	.157	.706	* .020	0.000	.312	.222	
INDUS/LOGIS SUPPORT	1.000	0.000	.978	.538	.257	.844	.136	0.000	.588		
TECH/ACADMC TRAINING	.999	0.000	.970	.464	.224	.796	.097	0.000			
MEDICAL SERVICES	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
ADMIN/HQT RS	1.000	0.000	.995	.839	.448	.968					
R & D LAB/CENTR	.922	0.000	.901	.206	.113						
FLIGHT TEST CENTER	.989	0.000	.980	.749							
TEST RANGE	.996	0.000	.968								
MISSLE OPERATIONS	.275	0.000									
GROUND/BASIC TRAIN	0.000										

PROBABILITY FUNCTION
FOR
PRIMARY/SECONDARY VS PRIMARY/SECONDARY FUNCTIONAL CATEGORY COMBINATIONS

PRIMARY CATEGORY	SECONDARY CATEGORY	"P" VALUE UNIQUENESS	PRIMARY CATEGORY	SECONDARY CATEGORY
FLYING OPERATIONS	MISSLE OPERATIONS	.02007	FLYING TRAINING	ADMIN/HQT RS
FLYING OPERATIONS	MISSLE OPERATIONS	.00660	FLYING TRAINING	TEST RANGE
FLYING OPERATIONS	MISSLE OPERATIONS	.02307	INDUS/LOGIS SUPPORT	FLYING OPERATIONS
FLYING OPERATIONS	MISSLE OPERATIONS	.01807	INDUS/LOGIS SUPPORT	ADMIN/HQT RS
FLYING OPERATIONS	MISSLE OPERATIONS	.01333	TECH/ACADMC TRAINING	TECH/ACADMC TRAINING
FLYING OPERATIONS	MISSLE OPERATIONS	.01802	ADMIN/HQT RS	INDUS/LOGIS SUPPORT
FLYING OPERATIONS	MISSLE OPERATIONS	.00813	ADMIN/HQT RS	R & D LAB/CENTR
FLYING TRAINING	FLYING OPERATIONS	.01223	FLYING TRAINING	TEST RANGE
FLYING TRAINING	FLYING OPERATIONS	.02031	ADMIN/HQT RS	R & D LAB/CENTR

INSTALLATIONS WITH OVER 500 DWELLING UNITS

DOVER
ANDREWS
BERGSTROM
PETERSON FIELD
WILLIAMS
ALTUS
MACDILL
KIRTLAND
SHEPPARD
ANDERSEN
CARSWELL
DYESS
BEALE
WURTSMITH
LORING
VANDENBERG
SCOTT
MCCLELLAN
WHITEMAN
CHANUTE

MAXWELL AFB
BOLLING
CANNON
EGLIN
HILL
LITTLE ROCK
MYRTLE BEACH
MALSTROM
COLUMBUS
EIELSON
MARCH
OFFUTT
ELLSWORTH
PLATTSBURGH
MCCONNELL
LUKE
MINOT AFB
RANDOLPH
CASTLE
BLYTHEVILLE

GRISSOM
TRAVIS
GEORGE
TYNDALL AFB
ROBINS
MCCHORD
SEYMOUR-JOHNSON
K I SAWYER
GRIFFISS
ELMENDORF
ENGLAND
MATHER
GRAND FORKS
PEASE
SHAW
DAVIS-MONTHAN
CHARLESTON AFB
TINKER
FAIRCHILD
WRIGHT-PATTERSON

PATRICK
HICKAM
HOLLOMAN
AFA
CRAIG
MCGUIRE
LAUGHLIN
RICKENBACKER
BARKSDALE
LOWRY AFB
HOMESTEAD
RICHARDS-GEBAUR
LACKLAND AFB
KINCHELOE
L G HANSCOM
HOWARD
EDWARDS
NELLIS
KEESLER AFB
MOUNTAIN HOME

TOTAL INSTALLATIONS LISTED = 80

TOTAL SOLID WASTE COLLECTIONS: PER TONNAGE CATEGORY
LISTED ARE INSTALLATIONS WITH 50 OR MORE TONS --(STAND.METRO.STAT.AREAS (SMSA) ARE INDICATED)
(TOTAL ANNUAL MINIMUM TONNAGE = 1020500. TONS.)

AVG DAILY TONNAGE		INSTALLATIONS RESPONDING
0- 4.9	=	59 (36.9%)
5- 9.9	=	15 (9.4%)
10-14.9	=	18 (11.3%)
15-19.9	=	16 (10.0%)
20-24.9	=	12 (7.5%)
25-29.9	=	9 (5.6%)
30-34.9	=	8 (5.0%)
35-39.9	=	5 (3.1%)
40-44.9	=	4 (2.5%)
45-49.9	=	3 (1.9%)
50-54.9	=	6 (3.8%)

IN A SMSA-MILL VALLEY
IN A SMSA-NELLIS

IN A SMSA-BOLLING
IN A SMSA-CHANUTE

IN A SMSA-BARKSDALE

HOWARD

TOTAL INSTALLATIONS LISTED = 6

55-59.9	=	1 (.6%)	
KINCHELOE			
60-64.9	=	0 (0.0%)	TOTAL INSTALLATIONS LISTED = 1
65-69.9	=	[illegible]	
IN A SMSA-PETERS			
70-74.9	=	1 (	TOTAL INSTALLATIONS LISTED = 1
IN A SMSA-ELMENDORF			
75-79.9	=	0 (0.0%)	TOTAL INSTALLATIONS LISTED = 1
80-84.9	=	1 (.6%)	
IN A SMSA-ANDREWS			
85-89.9	=	1 (.6%)	TOTAL INSTALLATIONS LISTED = 1
K I SAWYER			
90-94.9	=	0 (0.0%)	TOTAL INSTALLATIONS LISTED = 1
95-99.9	=	0 (0.0%)	
100-****	=	0 (0.0%)	

DAILY TONNAGE OF
COLLECTED WASTEWATER TREATMENT SLUDGES, STREET SWEEPINGS,
DEMOLITION WASTES AND GROUND MAINT. WASTES

AVG DAILY TONNAGE		INSTALLATIONS RESPONDING
0- 4.9	=	96 (60.0%)
5- 9.9	=	6 (3.8%)
10-14.9	=	2 (1.3%)
15-19.9	=	0 (0.0%)
20-24.9	=	1 (.6%)
25-****	=	5 (3.1%)
UNKNOWN	=	31.3%

RESIDENTIAL COLLECTION AREA -- AVERAGE DAILY TONNAGES

INSTALLATIONS ARE LISTED WHICH HAVE TOTAL TONNAGES (RESIDENTIAL, COMMERCIAL, & INSTITUTIONAL) OF 50 TONS PER DAY (TPD)
"*" INDICATES TOTAL TONNAGE OF 100 TPD AND OVER.

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING			
0- 4.9	= 91 (51.4%)			
	NELLIS			
				TOTAL INSTALLATIONS LISTED = 1
5- 9.9	= 38 (24.8%)			
	MILL VALLEY	PETERSON FIELD	K I SAWYER	KINCHELOE
				TOTAL INSTALLATIONS LISTED = 4
10-14.9	= 16 (10.4%)			
	BOLLING	BARKSDALE	CHANUTE	
				TOTAL INSTALLATIONS LISTED = 3
15-19.9	= 4 (2.6%)			
	ANDREWS			
				TOTAL INSTALLATIONS LISTED = 1
20-24.9	= 1 (.6%)			
25-29.9	= 0 (0.0%)			
30-34.9	= 2 (1.2%)			
	HOWARD			
				TOTAL INSTALLATIONS LISTED = 1
35-39.9	= 2 (1.2%)			
	ELMENDORF			
				TOTAL INSTALLATIONS LISTED = 1
40-44.9	= 0 (0.0%)			
45-49.9	= 0 (0.0%)			
50-****	= 0 (0.0%)			

COLLECTION OF WASTES

BULKY "WHITE GOOD TYPE ITEMS SEPARATELY COLLECTED (OF INSTALLATIONS WHO HAVE A RESIDENTIAL AREA)

	INSTALLATIONS RESPONDING
A. YES, ON A FIXED SCHEDULE	= 14.5%
B. YES, ON AN ON-CALL BASIS	= 34.2%
C. NO	= 51.3%
TOTAL BASES	= 152

METHOD OF COLLECTION IN RESIDENTIAL AREAS (OF THOSE WHO HAVE RESIDENTIAL AREAS)

	INSTALLATIONS RESPONSE
CONTRACTOR,CURBSIDE/BACK ALLEY SERVICE	= 53.6%
CONTRACTOR,NON-CURB/BACK DOOR SERVICE	= 24.8%
IN-HOUSE ,CURBSIDE/BACK ALLEY SERVICE	= 8.5%
IN-HOUSE ,NON-CURB/BACK DOOR SERVICE	= 13.1%
TOTAL BASES	= 153

ROUTINE RESIDENTIAL COLLECTION PICKUPS MADE PER WEEK

	INSTALLATIONS RESPONSE
A. 1	21.6%
B. 2	60.1%
C. 3	15.7%
D. MORE	2.0%
E. COMBNATN.	.7%
TOTAL INST.	153

METHOD OF COLLECTION / NUMBER OF PICKUPS--MATRIX
(OF THOSE INSTALLATIONS WHO HAVE RESIDENTIAL AREAS)

	INSTALLATIONS WITH CONTRACTOR COLLECTION		INSTALLATIONS WITH IN-HOUSE COLLECTION	
	CURBSIDE TYPE A	NON-CURB TYPE B	CURBSIDE TYPE C	NON-CURB TYPE D
1	22.0%	21.1%	38.5%	10.0%
2	69.5%	73.7%	30.8%	15.0%
3	7.3%	5.3%	23.1%	65.0%
MORE	0.0%	0.0%	7.7%	10.0%
METHOD TOT.=	81	38	13	20

METHOD OF COLLECTION / PLANS TO CHANGE METHOD--MATRIX
(OF THOSE INSTALLATIONS WHO HAVE RESIDENTIAL AREAS)

	PRESENT METHOD			
	CURBSIDE TYPE A	NON-CURB TYPE B	CURBSIDE TYPE C	NON-CURB TYPE D
CHANGE TO METHOD:				
NO CHG	95.1%	86.8%	46.2%	100.0%
TYPE A	0.0%	10.5%	23.1%	0.0%
TYPE B	2.4%	0.0%	0.0%	0.0%
TYPE C	0.0%	0.0%	0.0%	0.0%
TYPE D	0.0%	0.0%	0.0%	0.0%
UNDECD	2.4%	2.6%	30.8%	0.0%
METHOD TOT.=	82	38	13	20

COMMERCIAL AND INSTITUTIONAL AREAS

METHOD OF COLLECTION

RESPONSES

CONTRACTOR W/ON-CALL PICKUPS	0.0%	OF INSTALLATIONS WITH CONTRACTOR COLLECTION.
CONTRACTOR W/SCHEDULED PICKUPS	76.3%	OF INSTALLATIONS WITH CONTRACTOR COLLECTION.
CONTRACTOR W/COMBINATION	23.7%	OF INSTALLATIONS WITH CONTRACTOR COLLECTION.
TOTAL =	97(60.6%)	OF TOTAL INSTALLATIONS.
IN-HOUSE W/ON-CALL PICKUPS	1.6%	OF INSTALLATIONS WITH IN-HOUSE COLLECTION.
IN-HOUSE W/SCHEDULED PICKUPS	27.0%	OF INSTALLATIONS WITH IN-HOUSE COLLECTION.
IN-HOUSE W/COMBINATION	71.4%	OF INSTALLATIONS WITH IN-HOUSE COLLECTION.
TOTAL =	63(39.4%)	OF TOTAL INSTALLATIONS.

INSTALLATIONS W/CONTRACTOR COLLECTION IN BOTH RESIDENTIAL, AND COMMERCIAL AND INSTITUTIONAL AREAS = 90 (58.8%) OF INSTALLATIONS.

INSTALLATIONS W/ IN-HOUSE COLLECTION IN BOTH RESIDENTIAL, AND COMMERCIAL AND INSTITUTIONAL AREAS = 33 (21.6%) OF INSTALLATIONS.

METHOD OF COLLECTION / PLANS TO CHANGE METHOD--MATRIX
(OF COMMERICAL AND INSTITUTIONAL AREAS)

	YES	UNDECIDED CONSIDERING	NO
ALL BASES	12.5%	5.6%	81.9%
PLANS TO CHANGE FROM THIS METHOD:			
CONTRACTOR			
ONCALL	0.0%	0.0%	
SCHED.	20.0%	11.1%	
COMBO.	0.0%	0.0%	
IN-HOUSE			
ONCALL	0.0%	0.0%	
SCHED.	25.0%	22.2%	
COMBO.	55.0%	66.7%	
TOTAL =	20	9	

PROCESSING OF WASTES

PROCESSING TYPE BY AREA -- MATRIX

PROCESSING TYPE	RESIDNTIAL	COMMISSARY	B.EXCHANGE	COMM/INSTI (NOT INCLUDING COMMISSARY, BX)
COMPACTION	14.4%	16.3%	14.4%	15.0%
BALING	0.0%	14.4%	14.4%	0.0%
INCINERTION	11.1%	9.4%	10.0%	11.9%
SHREDDING	.6%	0.0%	0.0%	.6%
OTHER	13.7%	11.3%	10.0%	10.6%
2 OR MORE	.6%	17.5%	13.8%	7.5%
NONE	54.9%	28.8%	37.5%	54.4%
TOTAL BASES	153	160	160	160

PLANS TO INCREASE SOLID WASTE PROCESS CAPABILITIES FOR FY77

A. YES -- RESIDENTIAL	0.0%
B. YES -- COMM./INSTI.	1.9%
C. YES -- BOTH A & B	1.9%
D. UNDECIDED/CONSIDR G	5.6%
E. NO	90.6%
TOTAL BASES	160

- DISPOSAL OF WASTES -

CONTRACTOR'S ON-BASE DISPOSAL

	%'S OF TOTAL INSTALLATIONS	%'S OF RESID. CONTRACTOR	%'S OF COMM/INSTI. CONTRACTOR
A.) RESIDENTIAL AREA CONTRACTOR ONLY	7.5%	10.0%	
B.) COMM./INSTI. AREA CONTRACTOR ONLY	.6%		1.0%
C.) RESID. AND COMM./INSTI. AREA CONTRACTOR	10.0%	13.3%	16.5%
D.) NO CONTRACTORS DISPOSE ON BASE	65.6%	75.8%	81.4%
E.) BASE HAS NO CONTRACTORS	16.3%		
TOTAL	160	120	97

ON-BASE SANITARY LANDFILL DISPOSAL

A. BASES WITHOUT AN ON-BASE LANDFILL(56.9% OF INSTALLATIONS) ARE LISTED HERE:
("*" INDICATES THAT THE BASE GENERATES MORE THAT 50 TONS TOTAL PER DAY)

KALISPELL
FORTUNA
ANTIGO
MINOT AFS
POINT ARENA
MONTAUK
ROANOKE RAPIDS
DOVER
* ANDREWS
WHEELER
HANCOCK
HILL
MCGUIRE
CHEYENNE MOUNTAIN
SHEPPARD
CARSWELL
MYESS
LACKLAND AFB
GEN. MITCHELL FIELD
LUKF
NIAGRA FALLS IAP
ALBROOK
KEESLER AFB
HAVRE
FT FISHER
BAUDETTE
MT LUGUNA
PORT AUSTIN
N.H. SAT. TRACK. STA
NORTH CHARLESTON
CAPE CHARLES
* BOLLING
GEORGE
MT HEBO
CRAIG
POPE
NEWARK AFS
VANCE
MARCH
MATHER
PEASE
SUNNYVALE AFS
AVON PARK
SARATOGA
MCCLELLAN
* CHANUTE
CAMBRIA
FINLAND
LOCKPORT
NORTH BEND
ST ALBANS
BLAINE
CHARLESTON AFS
GRISSOM
TRAVIS
CHICAGO/O'HARE IAP
* PETERSON FIELD
ALTUS
MYRTLE BEACH
KINGSLEY
COLUMBUS
ENGLAND
RICHARDS-GEBAUR
MCCONNELL
L G HANSCOM
* HOWARD
CHARLESTON AFB
RANDOLPH
DULUTH IAP
CASWELL
FINLEY
* MILL VALLEY
NORTH TRURO
WATERTOWN
KOTZEBUE AFS
CALUMET
GUNTER AFB
MICKAM
ALMADEN
WILLIAMS
LITTLE ROCK
LAUGHLIN
EMPIRE
WEBB
HOMESTEAD
KELLY
LOS ANGELES AFS
YOUNGSTOWN MPT
GALENA AIRPORT
GREATER PITTS. FLD.
REESE

TOTAL INSTALLATIONS LISTED = 91

B. FY76 AVERAGE DAILY TONNAGE-- (PERCENT OF THOSE WHO HAVE AN ON-BASE FILL)

(BASES THAT GENERATE MORE THAN 50 TONS TOTAL PER DAY ARE LISTED)

0-	4 =	29.0%
5-	9 =	7.2%
10-	14 =	14.5%
15-	19 =	13.0%
20-	24 =	7.2%
25-	29 =	11.6%
30-	34 =	2.9%
35-	39 =	1.4%
40-	44 =	4.3%
45-	49 =	1.4%

KINCHELOE

TOTAL INSTALLATIONS LISTED = 1

50-	54 =	2.9%

BARKSDALE NELLIS

TOTAL INSTALLATIONS LISTED = 2

55-	59 =	0.0%

60- 64 = 0.0%
65- 69 = 0.0%
70- 74 = 2.9%

ELMENDORF

75- 79 = 0.0%
80- 84 = 0.0%
85- 89 = 1.4%

K I SAWYER

90- 94 = 0.0%
95- 99 = 0.0%
100-**** = 0.0%
DON'T KNOW 15.0%

TOTAL INSTALLATIONS LISTED = 1

TOTAL INSTALLATIONS LISTED = 1

USE OF ON-BASE SANITARY LANDFILL BY OTHERS TOTAL BASES = 160

A. OTHER AIR INSTALLATIONS ONLY = 1.3% OF TOTAL INSTALLATIONS; 2.9% OF THOSE W/ON-BASE LANDFILLS.

MAXWELL AFB LORING

TOTAL INSTALLATIONS LISTED = 2

B. OFF-BASE FEDERAL AGENCIES ONLY = 1.9% OF TOTAL INSTALLATIONS; 4.3% OF THOSE W/ON-BASE LANDFILLS.

LANGLEY BEALE VANDENBERG

TOTAL INSTALLATIONS LISTED = 3

C. NON-FEDERAL ORGANIZATIONS ONLY = 1.3% OF TOTAL INSTALLATIONS; 2.9% OF THOSE W/ON-BASE LANDFILLS.

ARNOLD EDC SEYMOUR-JOHNSON

TOTAL INSTALLATIONS LISTED = 2

D. OTHER AF INSTALLATIONS AND OFF-BASE FEDERAL AGENCIES = .6% OF TOTAL INSTALLATIONS; 1.4% OF THOSE W/ON-BASE LANDFILLS.

TINKER

TOTAL INSTALLATIONS LISTED = 1

E. OTHER AF INSTALLATIONS AND NON-FEDERAL ORGANIZATIONS = .0% OF TOTAL INSTALLATIONS; 0.0% OF THOSE W/ON-BASE LANDFILLS.

TOTAL INSTALLATIONS LISTED = 0

F. FEDERAL AGENCIES AND NON-FEDERAL ORGANIZATIONS = .6% OF TOTAL INSTALLATIONS; 1.4% OF THOSE W/ON-BASE LANDFILLS.

KIRTLAND

TOTAL INSTALLATIONS LISTED = 1

G. AF INSTALL, FED. AGEN., AND NON-FED. ORGS. = 1.3% OF TOTAL INSTALLATIONS; 2.9% OF THOSE W/ON-BASE LANDFILLS.

PATRICK EDWARDS

TOTAL INSTALLATIONS LISTED = 2

H. NO OTHERS USE ON-BASE LANDFILL = 36.9% OF TOTAL INSTALLATIONS; 84.8% OF THOSE W/ON-BASE LANDFILLS.

I. THERE IS NO ON-BASE LANDFILL = 56.9% OF TOTAL INSTALLATIONS

PAYMENT FOR USE OF ON-BASE LANDFILL

A. YES	= 8.3%		OF THOSE WHO HAVE OUTSIDE USERS
B. NO	= 83.3%		OF THOSE WHO HAVE OUTSIDE USERS
C. SOME	= 8.3%		OF THOSE WHO HAVE OUTSIDE USERS
D. NO OUTSIDE USERS	= 36.3%		OF TOTAL INSTALLATIONS
E. NO ON-BASE FILLS	= 56.3%		OF TOTAL INSTALLATIONS

FOR THOSE INSTALLATIONS RECEIVING A "TIPPING/DUMPING" FEE. THE FOLLOWING PERCENTAGES REFLECT THE FEES($/TON):

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	50.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	0.0%				

LIFE EXPECTANCY -- ON-BASE SANITARY LANDFILL

(%'S OF TOTAL BASES WITH ON-BASE FILL)

6 MO.	1 YR.	2 YR.	3 YR.	4 YR.	5 YR.	6 YR.	6 - 10	OVER 10
5.8%	7.2%	4.3%	4.3%	5.8%	8.7%	1.4%	10.1%	52.2%

LISTED BASES FOR SHORT TERM LIFE EXPECTANCY (4 YEARS OF LESS) FOR ON-BASE SANITARY LANDFILL:
("*" INDICATES ANOTHER LANDFILL SITE OR ALTERNATE MEANS OF DISPOSAL HAS BEEN SELECTED.)

6 MONTHS ("*" 21.1% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* TYNDALL AFB * NORTON * SHAW * CASTLE

TOTAL INSTALLATIONS LISTED = 4

1 YEAR(S) ("*" 21.1% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

AFA * ROBINS * LOWRY AFB * OFFUTT
* WRIGHT-PATTERSON

TOTAL INSTALLATIONS LISTED = 5

2 YEAR(S) ("*" 15.8% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* LANGLEY * ELMENDORF * BEALE

TOTAL INSTALLATIONS LISTED = 3

3 YEAR(S) ("*" 10.5% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* MOODY * SCOTT NELLIS

TOTAL INSTALLATIONS LISTED = 3

4 YEAR(S) ("*" 21.1% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* ARNOLD EDC * HURLBURT FIELD * ELLSWORTH * MINOT AFB

TOTAL INSTALLATIONS LISTED = 4

(IN SUMMARY: 89.5% OF THE INSTALLATIONS WITH SHORT TERM LANDFILLS HAVE SELECTED ANOTHER SITE OR ALTERNATE MEANS OF DISPOSAL)

EXCLUSIONS FROM ON-BASE LANDFILL USE:

(THE FOLLOWING PERCENTAGES REFLECT WASTE EXCLUSIONS BY INSTALLATIONS WITH ON-BASE SANITARY LANDFILLS)

A) CONSTRUCTION, DEMOLITION, INDUSTRIAL WASTES	B) CONSTRUCTION, DEMOLITION ONLY	C) INDUSTRIAL WASTES ONLY	D) NO EXCLUSIONS FOR CONST,DEMO,INDUST WASTES	
22.9%	8.6%	17.1%	51.4%	= 100%

INSTALLATIONS ARE LISTED FOR THE FOLLOWING: (IF ANY)

B) CONSTRUCTION,DEMOLITION ONLY:

HOLLOMAN ARNOLD EDC DOBBINS MALSTROM
PLATTSBURGH BLYTHEVILLE

TOTAL INSTALLATIONS LISTED = 6

D) NO EXCLUSIONS (CONSTR,DEMO,INDUS WASTES):

CLEAR SHEMYA CAMPION AFS COLD BAY AFS
FORT YUKON INDIAN MOUNTAIN MURPHY DOME SPARREVOHN AFS
TATALINA TIN CITY CAPE LISBURNE CAPE NEWENHAM
CAPE ROMANZOF CANNON LANGLEY HANCOCK
AFA ROBINS SEYMOUR-JOHNSON K I SAWYER
ANDERSON EIELSON ELMENDORF KING SALMON APT
LOWRY AFB ELLSWORTH KINCHELOE LORING
SHAW VANDENBERG MINOT AFB EDWARDS
WHITEMAN CASTLE FAIRCHILD MOUNTAIN HOME

TOTAL INSTALLATIONS LISTED = 36

E)INFECTIOUS WASTES = 90.0% EXCLUSION

F) SLUDGES, LIQUID WASTES	G) SLUDGES ONLY	H) LIQUID WASTES ONLY	I) NO EXCLUSIONS SLUDGES & LIQ. WASTES	
52.9%	1.4%	12.9%	31.4%	= 100%

INSTALLATIONS ARE LISTED FOR THE FOLLOWING: (IF ANY)

G) SLUDGES ONLY:

FGLIN

TOTAL INSTALLATIONS LISTED = 1

H) LIQUID WASTES ONLY:

ROBINS	ARNOLD EDC	MACDILL	HURLBURT FIELD
K I SAWYER	RICKENBACKER	NORTON	SCOTT
EDWARDS			

TOTAL INSTALLATIONS LISTED = 9

I) NO EXCLUSIONS (SLUDGES,LIQUID WASTES):

SHEMYA	CAMPION AFS	COLD BAY AFS	FORT YUKON
INDIAN MOUNTAIN	MURPHY DOME	SPARREVOHN AFS	TATALINA
TIN CITY	CAPE LISBURNE	CAPE NEWENHAM	CAPE ROMANZOF
CANNON	AFA	F E WARREN	BARKSDALE
KING SALMON APT	ELLSWORTH	LORING	SHAW
MINOT AFB	WHITEMAN		

TOTAL INSTALLATIONS LISTED = 22

OFF-BASE LANDFILLS

1. FOR INSTAL. THAT HAVE OFF-BASE LANDFILLS, THE FOLLOWING %'S REFLECT DAILY TONNAGES DISPOSED
2. LISTED ARE INSTALLATIONS DISPOSING 50 TONS OR MORE PER DAY IN OFF-BASE LANDFILLS

AVG DAILY TONNAGE	INSTALLATIONS RESPONDING	
0- 4.9	= 51	(45.9%)
5- 9.9	= 16	(14.4%)
10-14.9	= 9	(8.1%)
15-19.9	= 8	(7.2%)
20-24.9	= 3	(2.7%)
25-29.9	= 5	(4.5%)
30-34.9	= 5	(4.5%)
35-39.9	= 4	(3.6%)
40-44.9	= 1	(.9%)
45-49.9	= 0	(0.0%)
50-54.9	= 0	(0.0%)
55-59.9	= 1	(.9%)
ALBROOK		
		TOTAL INSTALLATIONS LISTED = 1
60-64.9	= 1	(.9%)
PETERSON FIELD		
		TOTAL INSTALLATIONS LISTED = 1
65-69.9	= 1	(.9%)
MILL VALLEY		
		TOTAL INSTALLATIONS LISTED = 1
70-74.9	= 1	(.9%)
HICKAM		
		TOTAL INSTALLATIONS LISTED = 1
75-79.9	= 0	(0.0%)
80-84.9	= 1	(.9%)
ANDREWS		
		TOTAL INSTALLATIONS LISTED = 1
85-89.9	= 0	(0.0%)
90-94.9	= 1	(.9%)
CHANUTE		
		TOTAL INSTALLATIONS LISTED = 1
95-99.9	= 0	(0.0%)
GREATER THAN 100		(.9%)
HOWARD		
		TOTAL INSTALLATIONS LISTED = 1
DON'T KNOW		(1.8%)

LIFE EXPECTANCY -- OFF-BASE SANITARY LANDFILL

6 MO.	1 YR.	2 YR.	3 YR.	4 YR.	5 YR.	6 YR.	6 - 10	OVER 10	NO OFF-BASE FILL USED	
.6%	2.5%	2.5%	1.3%	1.9%	8.1%	3.8%	14.4%	35.0%	30.0%	= 100% OF ALL INSTALLATIONS.
(%'S OF INSTALLATIONS USING OFF-BASE SANITARY LANDFILL)										
.9%	3.6%	3.6%	1.8%	2.7%	11.6%	5.4%	20.5%	50.0%		

LISTED BASES FOR SHORT TERM LIFE EXPECTANCY (4 YEARS OF LESS) FOR OFF-BASE SANITARY LANDFILL:
("*" INDICATES ANOTHER LANDFILL SITE OR ALTERNATE MEANS OF DISPOSAL HAS BEEN SELECTED.)

6 MONTHS ("*" 7.1% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* CANNON

TOTAL INSTALLATIONS LISTED = 1

1 YEAR(S) ("*" 21.4% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* ANTIGO * DOVER GRISSOM * HOMESTEAD

TOTAL INSTALLATIONS LISTED = 4

2 YEAR(S) ("*" 21.4% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* MCGUIRE * GRAND FORKS PEASE * LOS ANGELES AFS

TOTAL INSTALLATIONS LISTED = 4

3 YEAR(S) ("*" 7.1% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

COLUMBUS * OFFUTT

TOTAL INSTALLATIONS LISTED = 2

4 YEAR(S) ("*" 14.3% OF INSTALLATIONS WITH SHORT TERM LANDFILLS)

* PORT AUSTIN * MT HEBO EGLIN

TOTAL INSTALLATIONS LISTED = 3

(IN SUMMARY: 71.4% OF THE INSTALLATIONS WITH SHORT TERM LANDFILLS HAVE SELECTED ANOTHER SITE OR ALTERNATE MEANS OF DISPOSAL)

OFF-BASE INCINERATORS

1. INSTALLATIONS WITHOUT OFF-BASE INCINERATOR SITE = 96.9% OF TOTAL INSTALLATIONS
2. THE FOLLOWING PERCENTAGES REFLECT AVERAGE DAILY TONNAGES DISPOSED IN OFF-BASE INCINERATOR SITES
3. LISTED ARE INSTALLATIONS DISPOSING 50 TONS OR MORE PER DAY IN OFF-BASE INCINERATORS

PERCENT OF INSTALLATIONS PER TONNAGE CATEGORY -- FOR THOSE WITH OFF-BASE INCINERATOR SITE

AVG DAILY TONNAGE		INSTALLATIONS RESPONDING
0- 4.9	=	2 (40.0%)
5- 9.9	=	1 (20.0%)
10-14.9	=	0 (0.0%)
15-19.9	=	0 (0.0%)
20-24.9	=	0 (0.0%)
25-29.9	=	1 (20.0%)
30-34.9	=	0 (0.0%)
35-39.9	=	0 (0.0%)
40-44.9	=	0 (0.0%)
45-49.9	=	0 (0.0%)
50-54.9	=	0 (0.0%)
55-59.9	=	0 (0.0%)
60-64.9	=	0 (0.0%)
65-69.9	=	0 (0.0%)
70-74.9	=	0 (0.0%)
75-79.9	=	0 (0.0%)
80-84.9	=	0 (0.0%)
85-89.9	=	0 (0.0%)
90-94.9	=	0 (0.0%)
95-99.9	=	0 (0.0%)
GREATER THAN 100		(0.0%)
DON'T KNOW		(20.0%)

SOLID WASTE TRANSFER STATIONS

USE OF SOLID WASTE TRANSFER STATIONS	-- %'S OF TOTAL INSTALLATIONS	
A) DO NOT USE	95.0%	
B) DO NOT USE -- BUT HAVE PLANS FOR USE OF ON-BASE FACILITY DURING FY77	.6%	
C) DO NOT USE -- BUT HAVE PLANS FOR USE OF OFF-BASE FACILITY DURING FY77	0.0%	
D) ONE OR MORE ON-BASE FACILITIES	2.5%	(INSTALLATIONS ARE LISTED BELOW)
PATRICK HILL MCCLELLAN CHANUTE		
		TOTAL INSTALLATIONS LISTED = 4
E) ONE OR MORE OFF-BASE FACILITIES	1.9%	(INSTALLATIONS ARE LISTED BELOW)
BOLLING HICKAM LOS ANGELES AFS		
		TOTAL INSTALLATIONS LISTED = 3

SOLID WASTE TRANSFER STATION TONNAGES

1. INSTALLATIONS WITHOUT TRANSFER STATIONS = 93.1% OF TOTAL INSTALLATIONS
2. THE FOLLOWING PERCENTAGES REFLECT AVERAGE DAILY TONNAGES HANDLED THROUGH TRANSFER STATIONS
3. LISTED ARE INSTALLATIONS HANDLING 50 TONS OR MORE PER DAY THROUGH TRANSFER STATIONS

AVG DAILY TONNAGE		INSTALLATIONS RESPONDING	
0- 4.9	=	4	(36.4%)
5- 9.9	=	1	(9.1%)
10-14.9	=	0	(0.0%)
15-19.9	=	1	(9.1%)
20-24.9	=	1	(9.1%)
25-29.9	=	2	(18.2%)
30-34.9	=	0	(0.0%)
35-39.9	=	1	(9.1%)
40-44.9	=	1	(9.1%)
45-49.9	=	0	(0.0%)
50-54.9	=	0	(0.0%)
55-59.9	=	0	(0.0%)
60-64.9	=	0	(0.0%)
65-69.9	=	0	(0.0%)
70-74.9	=	0	(0.0%)
75-79.9	=	0	(0.0%)
80-84.9	=	0	(0.0%)
85-89.9	=	0	(0.0%)
90-94.9	=	0	(0.0%)
95-99.9	=	0	(0.0%)
GREATER THAN 100		0	(0.0%)

DISPOSAL FACILITY USE (OTHER THAN OR IN ADDITION TO LANDFILLS AND OFF-BASE INCINERATORS/TRANSFER STATIONS)

INSTALLATIONS ANSWERING A,B, OR C ARE LISTED RESPECTIVELY.

A) MATERIAL RECOVERY ORIENTED 5.0% OF TOTAL INSTALLATIONS

HILL
WURTSMITH

ROBINS
EDWARDS

BARKSDALE
REESE

NORTON
CHANUTE

TOTAL INSTALLATIONS LISTED = 8

B) ENERGY RECOVERY ORIENTED 0.0% OF TOTAL INSTALLATIONS

C) MATERIAL AND ENERGY RECOVERY ORIENTED 0.0% OF TOTAL INSTALLATIONS

D) OTHER THAN MATERIAL AND/OR ENERGY ORIENTED 13.8% OF TOTAL INSTALLATIONS

E) DO NOT USE OTHER DISPOSAL FACILITIES 81.3% OF TOTAL INSTALLATIONS

DISPOSAL METHOD OF SOLID WASTE

	RESIDENTIAL AREA	COMMERCIAL/ INSTITUTIONAL
CONTRACTOR		
ON-BASE	15.6%	11.3%
OFF-BASE	58.1%	50.6%
IN-HOUSE		
ON-BASE	13.8%	26.9%
OFF-BASE	2.5%	6.3%
COMBINATION	5.6%	5.0%
TOTAL	100.0%	100.0%

OF TOTAL INSTALLATIONS

TOTAL FY76 COLLECTION AND DISPOSAL COST (FOR RESID./COMMER./INSTI. SOLID WASTE)

MINIMUM TOTAL COST = $ 16960000.

PERCENTAGE RESPONSES PER COST CATEGORY (COST IS IN THOUSANDS OF DOLLARS)

0.0- 4.9 =	6.9%	5.0- 9.9 =	11.9%	10.0- 14.9 =	6.9%	15.0- 19.9 =	6.9%
20.0- 24.9 =	3.8%	25.0- 29.9 =	1.3%	30.0- 34.9 =	1.3%	35.0- 39.9 =	1.3%
40.0- 44.9 =	1.9%	45.0- 49.9 =	.6%	50.0- 54.9 =	.6%	55.0- 59.9 =	2.5%
60.0- 64.9 =	3.8%	65.0- 69.9 =	1.3%	70.0- 74.9 =	.6%	75.0- 79.9 =	2.5%
80.0- 84.9 =	.6%	85.0- 89.9 =	1.3%	95.0- 99.9 =	3.1%	100.0-104.9 =	1.3%
105.0-109.9 =	.6%	110.0-114.9 =	.6%	115.0-119.9 =	1.9%	120.0-124.9 =	2.5%
125.0-129.9 =	.6%	130.0-134.9 =	1.9%	135.0-139.9 =	.6%	140.0-144.9 =	1.3%
145.0-149.9 =	2.5%	150.0-154.9 =	1.3%	160.0-164.9 =	1.9%	165.0-169.9 =	.6%
175.0-179.9 =	1.3%	180.0-184.9 =	3.1%	185.0-189.9 =	1.3%	190.0-194.9 =	2.5%
195.0-199.9 =	1.3%	200.0-204.9 =	3.8%	210.0-214.9 =	.6%	215.0-219.9 =	1.3%
225.0-229.9 =	.6%	235.0-239.9 =	.6%	240.0-244.9 =	1.3%	245.0-249.9 =	.6%
255.0-259.9 =	1.3%	265.0-269.9 =	1.3%	275.0-279.9 =	.6%	285.0-289.9 =	1.3%
300.0-304.9 =	.6%	305.0-309.9 =	.6%	320.0-324.9 =	.6%	325.0-***** =	4.4%

TOTAL FY76 COLLECTION COST (FOR RESID./COMMER./INSTI. SOLID WASTE)

MINIMUM TOTAL COST = $ 12460000.

PERCENTAGE RESPONSES PER COST CATEGORY (COST IS IN THOUSANDS OF DOLLARS)

0.0- 4.9 =	8.1%	5.0- 9.9 =	23.1%	10.0- 14.9 =	4.4%	15.0- 19.9 =	2.5%
20.0- 24.9 =	1.3%	25.0- 29.9 =	.6%	30.0- 34.9 =	1.3%	35.0- 39.9 =	1.3%
40.0- 44.9 =	.6%	45.0- 49.9 =	1.3%	50.0- 59.9 =	1.9%	60.0- 69.9 =	3.8%
70.0- 79.9 =	3.8%	80.0- 89.9 =	5.0%	90.0- 99.9 =	2.5%	100.0-109.9 =	3.8%
110.0-119.9 =	3.1%	120.0-129.9 =	3.1%	130.0-139.9 =	3.1%	140.0-149.9 =	2.5%
150.0-159.9 =	1.9%	160.0-169.9 =	1.3%	170.0-179.9 =	1.9%	180.0-189.9 =	3.8%
190.0-199.9 =	1.9%	200.0-***** =	12.5%				

$/TON FY76 COLLECTION COST (FOR RESIDENTIAL SOLID WASTE)

A.) CONTRACTOR

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99 =	3.3%	1.00- 1.99 =	5.0%	2.00- 2.99 =	.8%	3.00- 3.99 =	.8%
4.00- 4.99 =	4.2%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	.8%
8.00- 8.99 =	4.2%	9.00- 9.99 =	2.5%	10.00-10.99 =	2.5%	11.00-11.99 =	.8%
12.00-12.99 =	1.7%	13.00-13.99 =	.8%	14.00-14.99 =	1.7%	15.00-15.99 =	1.7%
16.00-16.99 =	.8%	17.00-17.99 =	1.7%	18.00-18.99 =	1.7%	19.00-19.99 =	5.8%
20.00-20.19 =	5.0%	22.00-23.99 =	2.5%	24.00-25.99 =	7.5%	26.00-27.99 =	6.7%
28.00-29.99 =	3.3%	30.00-***** =	34.2%				

2) CURBSIDE/BACK ALLEY SERVICE (ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	3.7%	1.00- 1.99 =	6.1%	2.00- 2.99 =	1.2%	3.00- 3.99 =	1.2%
4.00- 4.99 =	6.1%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	1.2%
8.00- 8.99 =	4.9%	9.00- 9.99 =	2.4%	10.00-10.99 =	2.4%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	1.2%	15.00-15.99 =	2.4%
16.00-16.99 =	0.0%	17.00-17.99 =	2.4%	18.00-18.99 =	0.0%	19.00-19.99 =	7.3%
20.00-21.99 =	3.7%	22.00-23.99 =	3.7%	24.00-25.99 =	11.0%	26.00-27.99 =	4.9%
28.00-29.99 =	3.7%	30.00-***** =	30.5%				

3) NON-CURBSIDE/BACK DOOR SERVICE(ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	2.6%	1.00- 1.99 =	2.6%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	2.6%	9.00- 9.99 =	2.6%	10.00-10.99 =	2.6%	11.00-11.99 =	2.6%
12.00-12.99 =	5.3%	13.00-13.99 =	2.6%	14.00-14.99 =	5.6%	15.00-15.99 =	0.0%
16.00-16.99 =	2.6%	17.00-17.99 =	0.0%	18.00-18.99 =	5.3%	19.00-19.99 =	2.6%
20.00-21.99 =	7.9%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	10.5%
28.00-29.99 =	2.6%	30.00-***** =	42.1%				

B.) IN-HOUSE

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99 =	0.0%	1.00- 1.99 =	3.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	3.0%
4.00- 4.99 =	6.1%	5.00- 5.99 =	3.0%	6.00- 6.99 =	3.0%	7.00- 7.99 =	3.0%
8.00- 8.99 =	3.0%	9.00- 9.99 =	3.0%	10.00-10.99 =	6.1%	11.00-11.99 =	3.0%
12.00-12.99 =	3.0%	13.00-13.99 =	6.1%	14.00-14.99 =	12.1%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	6.1%	24.00-25.99 =	3.0%	26.00-27.99 =	0.0%
28.00-29.99 =	3.0%	30.00-***** =	30.3%				

2) CURBSIDE/BACK ALLEY SERVICE (ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	7.7%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	15.4%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	7.7%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	7.7%	30.00-***** =	61.5%				

3) NON-CURBSIDE/BACK DOOR SERVICE(ONLY) (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99 =	0.0%	1.00- 1.99 =	5.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	5.0%
4.00- 4.99 =	10.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	5.0%	7.00- 7.99 =	5.0%
8.00- 8.99 =	5.0%	9.00- 9.99 =	5.0%	10.00-10.99 =	10.0%	11.00-11.99 =	5.0%
12.00-12.99 =	5.0%	13.00-13.99 =	0.0%	14.00-14.99 =	20.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	5.0%	24.00-25.99 =	5.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	10.0%				

$/TON FY76 COLLECTION COST (FOR COMMERCIAL AND INSTITUTIONAL SOLID WASTE)

A.) CONTRACTOR

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99	=	4.1%	1.00- 1.99	=	5.2%	2.00- 2.99	=	0.0%	3.00- 3.99	=	4.1%
4.00- 4.99	=	2.1%	5.00- 5.99	=	2.1%	6.00- 6.99	=	1.0%	7.00- 7.99	=	2.1%
8.00- 8.99	=	2.1%	9.00- 9.99	=	2.1%	10.00-10.99	=	1.0%	11.00-11.99	=	0.0%
12.00-12.99	=	3.1%	13.00-13.99	=	3.1%	14.00-14.99	=	0.0%	15.00-15.99	=	2.1%
16.00-16.99	=	1.0%	17.00-17.99	=	2.1%	18.00-18.99	=	2.1%	19.00-19.99	=	3.1%
20.00-21.99	=	4.1%	22.00-23.99	=	3.1%	24.00-25.99	=	7.2%	26.00-27.99	=	3.1%
28.00-29.99	=	4.1%	30.00-*****	=	36.1%						

2) ON-CALL SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

3) SCHEDULED SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	5.4%	1.00- 1.99	=	5.4%	2.00- 2.99	=	0.0%	3.00- 3.99	=	4.1%
4.00- 4.99	=	0.0%	5.00- 5.99	=	2.7%	6.00- 6.99	=	1.4%	7.00- 7.99	=	2.7%
8.00- 8.99	=	2.7%	9.00- 9.99	=	2.7%	10.00-10.99	=	1.4%	11.00-11.99	=	0.0%
12.00-12.99	=	2.7%	13.00-13.99	=	4.1%	14.00-14.99	=	0.0%	15.00-15.99	=	1.4%
16.00-16.99	=	1.4%	17.00-17.99	=	0.0%	18.00-18.99	=	1.4%	19.00-19.99	=	1.4%
20.00-21.99	=	4.1%	22.00-23.99	=	2.7%	24.00-25.99	=	6.8%	26.00-27.99	=	4.1%
28.00-29.99	=	2.7%	30.00-*****	=	39.2%						

4) COMBINED ON-CALL & SCHEDULED SERVICE (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	4.3%	2.00- 2.99	=	0.0%	3.00- 3.99	=	4.3%
4.00- 4.99	=	8.7%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	4.3%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	4.3%
16.00-16.99	=	0.0%	17.00-17.99	=	8.7%	18.00-18.99	=	4.3%	19.00-19.99	=	8.7%
20.00-21.99	=	4.3%	22.00-23.99	=	4.3%	24.00-25.99	=	8.7%	26.00-27.99	=	0.0%
28.00-29.99	=	8.7%	30.00-*****	=	26.1%						

B.) IN-HOUSE

1) RESPONSES OF INSTALLATIONS USING SUCH SERVICES AND THE RESPECTIVE COSTS

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	1.6%	3.00- 3.99	=	4.8%
4.00- 4.99	=	3.2%	5.00- 5.99	=	0.0%	6.00- 6.99	=	4.8%	7.00- 7.99	=	1.6%
8.00- 8.99	=	1.6%	9.00- 9.99	=	1.6%	10.00-10.99	=	4.8%	11.00-11.99	=	3.2%
12.00-12.99	=	3.2%	13.00-13.99	=	3.2%	14.00-14.99	=	6.3%	15.00-15.99	=	3.2%
16.00-16.99	=	4.8%	17.00-17.99	=	0.0%	18.00-18.99	=	4.8%	19.00-19.99	=	1.6%
20.00-21.99	=	7.9%	22.00-23.99	=	3.2%	24.00-25.99	=	1.6%	26.00-27.99	=	4.8%
28.00-29.99	=	1.6%	30.00-*****	=	27.0%						

2) ON-CALL SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	100.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

3) SCHEDULED SERVICE ONLY (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	5.9%	3.00- 3.99	=	5.9%
4.00- 4.99	=	5.9%	5.00- 5.99	=	0.0%	6.00- 6.99	=	5.9%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	5.9%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	5.9%
16.00-16.99	=	5.9%	17.00-17.99	=	0.0%	18.00-18.99	=	5.9%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	5.9%	24.00-25.99	=	0.0%	26.00-27.99	=	5.9%
28.00-29.99	=	0.0%	30.00-*****	=	41.2%						

4) COMBINED ON-CALL & SCHEDULED SERVICE (RESPONSES OF INSTALLATIONS USING THIS PARTICULAR METHOD)

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	2.2%
4.00- 4.99	=	2.2%	5.00- 5.99	=	0.0%	6.00- 6.99	=	4.4%	7.00- 7.99	=	2.2%
8.00- 8.99	=	2.2%	9.00- 9.99	=	2.2%	10.00-10.99	=	6.7%	11.00-11.99	=	2.2%
12.00-12.99	=	4.4%	13.00-13.99	=	4.4%	14.00-14.99	=	8.9%	15.00-15.99	=	2.2%
16.00-16.99	=	4.4%	17.00-17.99	=	0.0%	18.00-18.99	=	4.4%	19.00-19.99	=	2.2%
20.00-21.99	=	11.1%	22.00-23.99	=	2.2%	24.00-25.99	=	2.2%	26.00-27.99	=	4.4%
28.00-29.99	=	2.2%	30.00-*****	=	22.2%						

TOTAL FY76 DISPOSAL COST (FOR RESID./COMMER./INSTI. SOLID WASTE)

MINIMUM TOTAL COST = $ 3760000.

PERCENTAGE RESPONSES PER COST CATEGORY
(COST IS IN THOUSANDS OF DOLLARS)

0.0- 4.9 =	31.3%	5.0- 9.9 =	7.5%	10.0- 14.9 =	12.5%	15.0- 19.9 =	8.8%
20.0- 24.9 =	5.0%	25.0- 29.9 =	6.9%	30.0- 34.9 =	4.4%	35.0- 39.9 =	2.5%
40.0- 44.9 =	.6%	45.0- 49.9 =	3.1%	50.0- 54.9 =	3.8%	60.0- 64.9 =	4.4%
70.0- 79.9 =	3.1%	80.0- 89.9 =	3.1%	110.0-119.9 =	.6%	120.0-129.9 =	.6%
140.0-149.9 =	.6%	200.0-***** =	1.3%				

$/TON FY76 DISPOSAL COST (FOR RESID./COMMER./INSTI. SOLID WASTE)

A.) ON-BASE LANDFILL

1) 54.4% OF ALL INSTALLATIONS DO NOT USE THIS TYPE DISPOSAL

FOR THOSE INSTALLATIONS THAT HAVE SUCH DISPOSAL:

2) THE COST FOR THOSE THAT DON'T USE TRANSFER STATIONS IS AS FOLLOWS: = 72 INSTALLATIONS

0.00- .99 =	4.2%	1.00- 1.99 =	8.3%	2.00- 2.99 =	2.8%	3.00- 3.99 =	8.3%
4.00- 4.99 =	6.9%	5.00- 5.99 =	4.2%	6.00- 6.99 =	8.3%	7.00- 7.99 =	1.4%
8.00- 8.99 =	4.2%	9.00- 9.99 =	2.8%	10.00-10.99 =	0.0%	11.00-11.99 =	5.6%
12.00-12.99 =	5.6%	13.00-13.99 =	0.0%	14.00-14.99 =	8.3%	15.00-15.99 =	4.2%
16.00-16.99 =	0.0%	17.00-17.99 =	1.4%	18.00-18.99 =	2.8%	19.00-19.99 =	2.8%
20.00-21.99 =	1.4%	22.00-23.99 =	5.6%	24.00-25.99 =	1.4%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	9.7%				

3) THE COST FOR THOSE INSTALLATIONS THAT USE ON-BASE TRANSFER STATIONS ARE AS FOLLOWS: = 1 INSTALLATIONS

0.00- .99 =	100.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	0.0%				

B.) OFF-BASE LANDFILL

1) 30.6% OF ALL INSTALLATIONS DO NOT USE THIS TYPE DISPOSAL

FOR THOSE INSTALLATIONS THAT HAVE SUCH DISPOSAL:

2) THE COST FOR THOSE THAT DON'T USE TRANSFER STATIONS IS AS FOLLOWS: = 104 INSTALLATIONS

0.00- .99 =	23.1%	1.00- 1.99 =	9.6%	2.00- 2.99 =	3.8%	3.00- 3.99 =	5.8%
4.00- 4.99 =	6.7%	5.00- 5.99 =	6.7%	6.00- 6.99 =	4.8%	7.00- 7.99 =	2.9%
8.00- 8.99 =	1.9%	9.00- 9.99 =	3.8%	10.00-10.99 =	1.0%	11.00-11.99 =	1.0%
12.00-12.99 =	1.0%	13.00-13.99 =	0.0%	14.00-14.99 =	3.8%	15.00-15.99 =	1.0%
16.00-16.99 =	0.0%	17.00-17.99 =	1.0%	18.00-18.99 =	0.0%	19.00-19.99 =	1.9%
20.00-21.99 =	1.9%	22.00-23.99 =	1.0%	24.00-25.99 =	2.9%	26.00-27.99 =	0.0%
28.00-29.99 =	2.9%	30.00-***** =	11.5%				

3) THE COST FOR THOSE INSTALLATIONS THAT USE ON-BASE TRANSFER STATIONS ARE AS FOLLOWS: = 4 INSTALLATIONS

0.00- .99 =	50.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	25.0%	3.00- 3.99 =	25.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	0.0%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	0.0%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	0.0%				

4) THE COST FOR THOSE INSTALLATIONS THAT USE OFF-BASE TRANSFER STATIONS ARE AS FOLLOWS: = 3 INSTALLATIONS

0.00- .99 =	0.0%	1.00- 1.99 =	0.0%	2.00- 2.99 =	0.0%	3.00- 3.99 =	0.0%
4.00- 4.99 =	0.0%	5.00- 5.99 =	0.0%	6.00- 6.99 =	33.3%	7.00- 7.99 =	0.0%
8.00- 8.99 =	0.0%	9.00- 9.99 =	0.0%	10.00-10.99 =	33.3%	11.00-11.99 =	0.0%
12.00-12.99 =	0.0%	13.00-13.99 =	0.0%	14.00-14.99 =	0.0%	15.00-15.99 =	0.0%
16.00-16.99 =	0.0%	17.00-17.99 =	0.0%	18.00-18.99 =	0.0%	19.00-19.99 =	0.0%
20.00-21.99 =	0.0%	22.00-23.99 =	0.0%	24.00-25.99 =	0.0%	26.00-27.99 =	0.0%
28.00-29.99 =	0.0%	30.00-***** =	33.3%				

C.) OFF-BASE INCINERATOR

1) 96.9% OF ALL INSTALLATIONS DO NOT USE THIS TYPE DISPOSAL

FOR THOSE INSTALLATIONS THAT HAVE SUCH DISPOSAL:

2) THE COST FOR THOSE THAT DON'T USE TRANSFER STATIONS IS AS FOLLOWS: = 3 INSTALLATIONS

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	33.3%	7.00- 7.99	=	33.3%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	33.3%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

3) THE COST FOR THOSE INSTALLATIONS THAT USE ON-BASE TRANSFER STATIONS ARE AS FOLLOWS: = 0 INSTALLATIONS

0.00- .99	=	0.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

4) THE COST FOR THOSE INSTALLATIONS THAT USE OFF-BASE TRANSFER STATIONS ARE AS FOLLOWS: = 2 INSTALLATIONS

0.00- .99	=	50.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	0.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	50.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	0.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	0.0%						

D.) TRANSFER STATIONS AS FINAL DESTINATION

1) 97.5% OF ALL INSTALLATIONS DO NOT USE THIS TYPE DISPOSAL

FOR THOSE INSTALLATIONS THAT HAVE SUCH DISPOSAL:

2) THE COST FOR THOSE THAT USE TRANSFER STATIONS AS FINAL DESTINATIONS IS AS FOLLOWS: = 4 INSTALLATIONS

0.00- .99	=	25.0%	1.00- 1.99	=	0.0%	2.00- 2.99	=	0.0%	3.00- 3.99	=	0.0%
4.00- 4.99	=	0.0%	5.00- 5.99	=	25.0%	6.00- 6.99	=	0.0%	7.00- 7.99	=	0.0%
8.00- 8.99	=	0.0%	9.00- 9.99	=	0.0%	10.00-10.99	=	0.0%	11.00-11.99	=	0.0%
12.00-12.99	=	0.0%	13.00-13.99	=	0.0%	14.00-14.99	=	0.0%	15.00-15.99	=	25.0%
16.00-16.99	=	0.0%	17.00-17.99	=	0.0%	18.00-18.99	=	0.0%	19.00-19.99	=	0.0%
20.00-21.99	=	0.0%	22.00-23.99	=	0.0%	24.00-25.99	=	0.0%	26.00-27.99	=	0.0%
28.00-29.99	=	0.0%	30.00-*****	=	25.0%						

NON-RECYCLING RELATED SOLID WASTE CONTRACT -- MINIMUM PAYMENT/TONNAGE/VOLUME PER MONTH GUARANTEE

A) RESIDENTIAL AREA

1) THOSE WITH CONTRACTS RESPONDED AS FOLLOWS:

A) TONNAGE ONLY	=	2.5%
B) VOLUME ONLY	=	1.7%
C) DOLLAR AMOUNT ONLY	=	50.0%
D) SOME COMBINATION OF TONNAGE/VOLUME/DOLLAR AMOUNT	=	3.3%
E) NO MINIMUM	=	42.5%

2) NO CONTRACTS = 20.6% OF TOTAL BASES

B) COMMERCIAL/INSTITUTIONAL AREA

1) THOSE WITH CONTRACTS RESPONDED AS FOLLOWS:

A) TONNAGE ONLY	=	2.1%
B) VOLUME ONLY	=	1.0%
C) DOLLAR AMOUNT ONLY	=	53.6%
D) SOME COMBINATION OF TONNAGE/VOLUME/DOLLAR AMOUNT	=	5.2%
E) NO MINIMUM	=	38.1%

2) NO CONTRACTS = 39.4% OF TOTAL BASES

- RECYCLING AND FUELS -

ON-BASE CENTRAL STEAM PLANTS

A.) BASIC FUEL USED

1) 26.3% OF TOTAL BASES HAVE NO CENTRAL STEAM PLANTS

2) THERE ARE 118 STEAM PLANTS RESPONDING AS FOLLOWS:

A) OIL	B) COAL	C) NAT. GAS	D) REF.FUEL (RDF)	E) OTHER
49.2%	9.3%	41.5%	0.0%	0.0%

THE FOLLOWING BASES USE REFUSE DERIVED FUEL (RDF) AS A BASIC FUEL: NONE.

B.) FUEL THAT CAN BE UTILIZED

1) 26.3% OF TOTAL BASES HAVE NO CENTRAL STEAM PLANTS

2) THERE ARE 118 STEAM PLANTS RESPONDING AS FOLLOWS:

A) OIL	B) COAL	C) NATURAL GAS	D) REF.DERIVD.FUEL (RDF)	E) RDF & A.B. OR C.
42.4%	5.9%	6.78%	0.00%	.8%

F) OIL & COAL	G) OIL & NAT. GAS	H) COAL & NAT. GAS	I) OIL,COAL & NAT. GAS	J) OTHER
3.4%	39.8%	.85%	0.00%	0.0%

THE FOLLOWING BASES CAN UTILIZE REFUSE DERIVED FUEL (RDF):

WRIGHT-PATTERSON

TOTAL INSTALLATIONS LISTED = 1

USE OF REFUSE DERIVED FUEL (RDF) -- %'S OF TOTAL INSTALLATIONS

A) THOSE WHO DO NOT HAVE AND ARE NOT PLANNING FOR THE CAPABILITY = 95.6%

B) THOSE WHO DO NOT HAVE AND ARE PLANNING FOR THE CAPABILITY BEYOND FY77 = 2.5% THEY ARE:

POPE KIRTLAND CHARLESTON AFB CHANUTE

TOTAL INSTALLATIONS LISTED = 4

C) THOSE WHO DO NOT HAVE AND ARE PLANNING FOR THE CAPABILITY IN FY77 = .6% THEY ARE:

DULUTH IAP

TOTAL INSTALLATIONS LISTED = 1

D) THOSE WHO PRESENTLY HAVE THE CAPABILITY = 1.3% THEY ARE:

MCCONNELL WRIGHT-PATTERSON

TOTAL INSTALLATIONS LISTED = 2

USE OF WASTE HEAT RECOVERY INCINERATORS -- %'S OF TOTAL INSTALLATIONS

A) THOSE WHO DO NOT HAVE AND ARE NOT PLANNING FOR THE CAPABILITY = 92.5%

B) THOSE WHO DO NOT HAVE AND ARE PLANNING FOR THE CAPABILITY BEYOND FY77 = 5.6% THEY ARE:

ANDREWS AFA
CHARLESTON AFB
LANGLEY
RICKENBACKER
HANCOCK
CARSWELL
EGLIN
SCOTT

TOTAL INSTALLATIONS LISTED = 9

C) THOSE WHO DO NOT HAVE AND ARE PLANNING FOR THE CAPABILITY IN FY77 = 1.3% THEY ARE:

BOLLING
BARKSDALE

TOTAL INSTALLATIONS LISTED = 2

D) THOSE WHO PRESENTLY HAVE THE CAPABILITY = .6% THEY ARE:

MCCONNELL

TOTAL INSTALLATIONS LISTED = 1

E) THOSE WHO PRESENTLY HAVE AND ARE PLANNING TO EXPAND THE CAPABILITY = 0.0% THEY ARE: NONE

STANDARD METROPOLITAN STATISTICAL AREA (SMSA)

A) 59.4% OF THE TOTAL INSTALLATIONS ARE NOT LOCATED IN THIS TYPE AREA

B) 40.6% OF THE TOTAL INSTALLATIONS ARE LOCATED IN THIS TYPE AREA AND ARE LISTED BELOW:

LOCKPORT
GUNTER AFB
HICKAM
CHICAGO/O'HARE IAP
AFA
BROOKS
POPE
CHEYENNE MOUNTAIN
VANCE
LOWRY AFB
MATHER
NORTON
L G HANSCOM
SCOTT
MCCLELLAN
NELLIS
WRIGHT-PATTERSON
MILL VALLEY
ANDREWS
WHEELER
ALMADEN
WILLIAMS
LITTLE ROCK
MACDILL
MALSTROM
GRIFFISS
CARSWELL
RICHARDS-GEBAUR
MCCONNELL
VANDENBERG
NIAGRA FALLS IAP
RANDOLPH
FAIRCHILD
NORTH CHARLESTON
BOLLING
BERGSTROM
HANCOCK
HILL
MCCHORD
DOBBINS
RICKENBACKER
BARKSDALE
MARCH
KELLY
LOS ANGELES AFS
YOUNGSTOWN MPT
CHARLESTON AFB
TINKER
CHANUTE
MAXWELL AFB
TRAVIS
LANGLEY
PETERSON FIELD
ROBINS
MCGUIRE
KIRTLAND
SHEPPARD
ELMENDORF
OFFUTT
LACKLAND AFB
GEN. MITCHELL FIELD
LUKE
GREATER PITTS. FLD.
REESE
DULUTH IAP

TOTAL INSTALLATIONS LISTED = 65

REFUSE MATERIAL & ENERGY RESOURCE RECOVERY

(INSTALLATIONS IN REGIONS WHICH HAVE OR ARE PLANNING FOR RESOURCE RECOVERY)

REGION STATUS:

A) IN OPERATIONS = 2.5% OF TOTAL INSTALLATIONS RESIDE IN THIS REGION.

N.H. SAT. TRACK. STA
MALSTROM
VANDENBERG

THEY ARE:
NIAGRA FALLS IAP

TOTAL INSTALLATIONS LISTED = 4

B) BEING BUILT = 1.3% OF TOTAL INSTALLATIONS RESIDE IN THIS REGION.

LOCKPORT
GEN. MITCHELL FIELD

THEY ARE:

TOTAL INSTALLATIONS LISTED = 2

C) IN PLANNING = 22.5% OF TOTAL INSTALLATIONS RESIDE IN THIS REGION.

FT FISHER
PATRICK
BERGSTROM
TYNDALL AFB
CHEYENNE MOUNTAIN
ELMENDORF
MATHER
NORTON
CHARLESTON AFB
NORTH BEND
ANDREWS
LANGLEY
AFA
K I SAWYER
LOWRY AFB
RICHARDS-GEBAUR
L G HANSCOM
MCCLELLAN
NORTH CHARLESTON
HICKAM
MT HEBO
POPE
SHEPPARD
MARCH
KELLY
YOUNGSTOWN MPT
CHANUTE

THEY ARE:
DOVER
WHEELER
EGLIN
MACDILL
GRIFFISS
HOMESTEAD
ELLSWORTH
SCOTT
WRIGHT-PATTERSON

TOTAL INSTALLATIONS LISTED = 36

D) NO = 55.0% OF TOTAL INSTALLATIONS RESIDE IN THIS REGION.

E) DO NOT KNOW = 18.8% OF TOTAL INSTALLATIONS RESIDE IN THIS REGION.

PLANS OF OR INVOLVEMENT IN A CIVILIAN, LOCAL, OR REGIONAL SOLID WASTE MANAGEMENT SYSTEMS WHICH INCLUDES SOME PHASE OF MATERIALS AND/OR ENERGY RECOVERY

A. 80.0% OF THE TOTAL INSTALLATIONS HAVE NO INVOLVEMENT.

B. 15.6% OF THE TOTAL INSTALLATIONS ARE IN THE PLANNING STAGE. THEY ARE:

DOVER	HICKAM	WHEELER	BERGSTROM
LANGLEY	EGLIN	TYNDALL AFB	AFA
POPE	MACDILL	MALSTROM	K I SAWYER
ELMENDORF	LOWRY AFB	RICHARDS-GEBAUR	KELLY
NORTON	GEN. MITCHELL FIELD	L G HANSCOM	VANDENBERG
SCOTT	MCCLELLAN	TINKER	BLYTHEVILLE
WRIGHT-PATTERSON			

TOTAL INSTALLATIONS LISTED = 25

C. 4.4% OF THE TOTAL INSTALLATIONS ARE ALREADY INVOLVED. THEY ARE:

FT FISHER	N.H. SAT. TRACK. STA	GRISSOM	MATHER
BEALE	DAVIS-MONTHAN	CHANUTE	

TOTAL INSTALLATIONS LISTED = 7

RECYCLING PROGRAMS INVOLVING NON-DOD SURPLUS PROPERTY (I.E. NOT PURCHASED WITH APPROPRIATED FUNDS) EXCLUDING BASE EXCHANGE & COMMISSARY WASTE:

A. 75.6% OF THE TOTAL INSTALLATIONS HAVE NO SUCH PROGRAM

B. 13.1% OF THE TOTAL INSTALLATIONS HAD A PROGRAM WHICH IS NO LONGER ACTIVE

C. 11.3% OF THE TOTAL INSTALLATIONS HAVE A CURRENTLY ACTIVE PROGRAM. THEY ARE:

BOLLING	GEORGE	AFA	HILL
PORTS	DOBBINS	KIRTLAND	MALSTROM
LOWRY AFB	RICHARDS-GEBAUR	LACKLAND AFB	L G HANSCOM
DAVIS-MONTHAN	EDWARDS	NELLIS	FAIRCHILD
CHANUTE	WRIGHT-PATTERSON		

TOTAL INSTALLATIONS LISTED = 18

FOR THOSE INSTALLATIONS THAT NEVER HAD RECYCLING PROGRAMS INVOLVING NON-DOD SURPLUS PROPERTY INCLUDING BASE EXCHANGE & COMMISSARY WASTES:

1.) 28.8% REPORTED THAT RECYCLING WAS NEVER CONSIDERED.

2.) FOR THOSE INSTALLATIONS WHO HAVE CONSIDERED, BUT DON'T HAVE A PROGRAM:

A. 54.7% REPORTED COST ANALYSIS SHOWED THAT SUCH A PROGRAM WAS NOT FEASIBLE.
B. 12.0% REPORTED COST ANALYSIS SUPPORTED THE CONCEPT, BUT OTHER FACTORS DENIED IMPLEMENTATION.
C. 33.3% REPORTED COST ANALYSIS WAS NOT ACCOMPLISHED, BUT RECYCLING WAS CONSIDERED.

BASE EXCHANGE & COMMISSARY WASTES

A. 40.6% OF THE TOTAL INSTALLATIONS RECYCLE CARDBOARD ONLY.
B. 5.0% OF THE TOTAL INSTALLATIONS RECYCLE CARDBOARD AND OTHER WASTES.
C. 54.4% OF THE TOTAL INSTALLATIONS DO NOT RECYCLE CARDBOARD.

RECYCLE PROGRAM OPERATION:

(70.6% RESPONDED: DO NOT HAVE SUCH A PROGRAM.)

FOR THOSE THAT HAVE SUCH A PROGRAM:

A) 53.2% RESPONDED: OPERATION IS BY IN-HOUSE ENGINEERING PERSONNEL.
B) 19.1% RESPONDED: OPERATION IS BY CONTRACTOR PERSONNEL.
C) 27.7% RESPONDED: OPERATION IS BY COMBINATION OF BOTH.

RECYCLE PROGRAM OPERATION:

(82.5% RESPONDED: DO NOT HAVE SUCH A PROGRAM.)

FOR THOSE THAT HAVE SUCH A PROGRAM:

A. 25.0% RESPONDED: SUCCESSFUL FROM THE STANDPOINT OF BASE CITIZEN SUPPORT.
B. 28.6% RESPONDED: SUCCESSFUL FROM THE STANDPOINT OF ECONOMICS.
C. 28.6% RESPONDED: SUCCESSFUL FROM THE STANDPOINT OF BOTH.
D. 17.9% RESPONDED: NOT SUCCESSFUL.

GLOSSARY OF RECYCLING PROGRAM FACTORS
AND
SUMMARY OF INSTALLATION RESPONSES

- NOTE: THE SUMMATION OF ALL ANSWERS FOR EACH QUESTION IN EACH CATEGORY IS 100% (OR 0% IF NO INSTALLATIONS ANSWER IN THAT CATEGORY), AND FOR EACH QUES., EXCLUDES THOSE THAT ANSWER THAT THEY HAVE NO SUCH PROGRAM.

SURVEY QUESTIONS CONSIDERED	INSTALLATION RESPONSES: ACTIVE SUCCESSFUL PROGRAMS	ACTIVE UNSUCCESSFUL PROGRAMS	NON-ACTIVE PROGRAMS	ONLY DPDO-DOD SURPLUS PROPERTY PROGRAMS
Q. 61 RECYCLE PROGRAM OPERATION				
A. BY IN-HOUSE ENGINEERING PERSONNEL	5.(33.3%)	3.(60.0%)	12.(35.3%)	1.(50.0%)
B. BY CONTRACTOR PERSONNEL	3.(40.0%)	1.(40.0%)	2.(23.5%)	2.(50.0%)
C. BY A COMBINATION OF BOTH	4.(26.7%)	0.(0.0%)	7.(41.2%)	0.(0.0%)
Q. 63 MFH RECYCLING METHOD				
A. CURBSIDE PICKUP	1.(15.4%)	0.(0.0%)	0.(0.0%)	0.(0.0%)
B. ON-BASE RECYCLING CENTERS	6.(23.1%)	2.(50.0%)	8.(21.1%)	0.(0.0%)
C. BOTH A & B	1.(15.4%)	0.(0.0%)	2.(21.1%)	0.(0.0%)
D. OTHER METHOD: ONLY, OR WITH A & B	3.(23.1%)	0.(0.0%)	5.(26.3%)	0.(0.0%)
E. THERE IS NO SUCH PROGRAM	3.(23.1%)	2.(50.0%)	6.(31.6%)	42.(100.0%)
Q. 64 POTENTIAL RECOVERABLE MATERIALS STUDY				
A. ACCOMPLISHED	11.(47.8%)	3.(60.0%)	14.(50.0%)	3.(100.0%)
B. NOT ACCOMPLISHED	3.(52.2%)	1.(40.0%)	7.(50.0%)	0.(0.0%)
Q. 65 WASTE MATERIAL MARKET STUDIES ACCOMPLISHED				
A. BY BASE CIVIL ENGINEERING ONLY	2.(20.0%)	0.(0.0%)	6.(24.5%)	0.(0.0%)
B. BY DSA/DPDO ONLY	2.(20.0%)	1.(33.3%)	3.(24.5%)	1.(33.3%)
C. BY OTHER THAN A OR B	1.(20.0%)	0.(0.0%)	2.(16.3%)	1.(33.3%)
D. BY SOME COMBINATION OF THE ABOVE	8.(20.0%)	2.(33.3%)	9.(18.4%)	1.(33.3%)
E. WAS NOT ACCOMPLISHED	1.(20.0%)	1.(33.3%)	1.(16.3%)	0.(0.0%)
Q. 66 ASKED ASSISTANCE OF DSA/DPDO IN LOCATING MARKETS				
A. DSA/DPDO INTERESTED AND SUCCESSFUL	9.(31.0%)	0.(0.0%)	4.(22.2%)	2.(25.0%)
B. DSA/DPDO INTERESTED, BUT UNSUCCESSFUL	2.(27.6%)	3.(60.0%)	12.(33.3%)	1.(25.0%)
C. DSA/DPDO NOT INTERESTED	0.(0.0%)	0.(0.0%)	1.(22.2%)	2.(25.0%)
D. DID NOT ASK DSA/DPDO	3.(41.4%)	1.(40.0%)	4.(22.2%)	1.(25.0%)
Q. 67 RECYCLE PROGRAM PRE-IMPLEMENTATION COST ANALYSIS STUDY				
A. ACCOMPLISHED	10.(55.6%)	2.(50.0%)	12.(57.1%)	2.(50.0%)
B. NOT ACCOMPLISHED	4.(44.4%)	2.(50.0%)	9.(42.9%)	1.(50.0%)
Q. 68 RECYCLE PROGRAM WAS IMPLEMENTED, ALTHOUGH COST ANALYSIS SHOWED NOT ECONOMICALLY FEASIBLE BECAUSE:				
A. IT IS MARGINALLY FEASIBLE	7.(36.8%)	1.(33.3%)	5.(30.3%)	0.(0.0%)
B. IT PRESENTED A GOOD PUBLIC IMAGE	1.(21.1%)	0.(0.0%)	0.(0.0%)	0.(0.0%)
C. BOTH A & B	2.(21.1%)	1.(33.3%)	7.(42.4%)	2.(50.0%)
D. COST ANALYSIS STUDY WAS NOT ACCOMPLISHED	4.(21.1%)	2.(33.3%)	9.(27.3%)	1.(50.0%)
Q. 69 MARKET CONSTRAINTS ON MATERIAL PREPARATION				
A. IMPEDES SALE	7.(50.0%)	2.(50.0%)	15.(55.6%)	0.(0.0%)
B. DOES NOT IMPEDE SALE	7.(50.0%)	2.(50.0%)	6.(44.4%)	3.(100.0%)
Q. 71 B.C.E. MANNING FOR RECYCLING & MISSION				
A. ADEQUATE	4.(44.4%)	1.(40.0%)	6.(44.4%)	1.(50.0%)
B. NOT ADEQUATE	10.(55.6%)	3.(60.0%)	15.(55.6%)	2.(50.0%)
Q. 72 TYPE OF B.C.E. MANPOWER SUPPORT FOR RECYCLING				
A. MAINLY PERMANENT PERSONNEL	9.(36.0%)	4.(100.0%)	20.(55.6%)	2.(42.1%)
B. MAINLY TEMPORARY OVERHIRE	0.(0.0%)	0.(0.0%)	0.(0.0%)	0.(0.0%)
C. EVEN SPLIT BETWEEN A & B	1.(32.0%)	0.(0.0%)	1.(44.4%)	0.(0.0%)
D. THERE IS NO B.C.E. SUPPORT	4.(32.0%)	0.(0.0%)	0.(0.0%)	44.(57.9%)

RECYCLING PROGRAM BREAKDOWN

RESPONSES OF INSTALLATIONS WITH ____SUCCESSFUL____ RECYCLING PROGRAMS

LISTED INSTALLATIONS	SURVEY QUESTIONS CONSIDERED									
	Q. 61	Q. 63	Q. 64	Q. 65	Q. 66	Q. 67	Q. 68	Q. 69	Q. 71	Q. 72
ROLLING	C	B	B	E	D	B	D	B	B	A
GEORGE	B	E	A	D	D	A	A	A	B	A
AFA	B	B	A	C	D	A	A	A	B	D
HILL	A	D	A	A	A	A	A	B	A	A
KIRTLAND	A	B	A	D	A	B	D	B	A	A
MALSTROM	A	B	A	A	A	A	B	A	A	A
RICHARDS-GEBAUR	C	A	B	B	A	B	D	B	A	A
LACKLAND AFB	C	E	A	D	A	A	A	B	B	A
L G HANSCOM	B	B	A	D	A	B	D	B	B	D
DAVIS-MONTHAN	A	D	A	D	B	A	A	A	B	A
EDWARDS	D	B	A	D	A	A	C	A	B	D
FAIRCHILD	D	D	A	D	A	A	A	A	B	D
CHANUTE	C	C	B	B	B	A	C	B	B	C
WRIGHT-PATTERSON	A	E	A	D	A	A	A	A	B	A
	-	-	-	-	-	-	-	-	-	-

RECYCLING PROGRAM BREAKDOWN

RESPONSES OF INSTALLATIONS WITH UNSUCCESSFUL RECYCLING PROGRAMS

LISTED INSTALLATIONS	SURVEY QUESTIONS CONSIDERED																					
	Q. 61		Q. 63		Q. 64		Q. 65		Q. 66		Q. 67		Q. 68		Q. 69		Q. 71		Q. 72			
RORINS	-	A	-	B	-	A	-	D	-	B	-	A	-	C	-	A	-	B	-	A		
DOBBINS	-	A	-	B	-	B	-	E	-	D	-	B	-	D	-	B	-	A	-	A		
LOWRY AFB	-	B	-	E	-	A	-	D	-	B	-	A	-	A	-	A	-	B	-	A		
NELLIS	-	A	-	E	-	A	-	B	-	B	-	B	-	D	-	B	-	B	-	A		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

RECYCLING PROGRAM BREAKDOWN

RESPONSES OF INSTALLATIONS WITH ____NON-ACTIVE____ RECYCLING PROGRAMS

LISTED INSTALLATIONS	SURVEY QUESTIONS CONSIDERED								
	Q. 61	Q. 63	Q. 64	Q. 65	Q. 66	Q. 67	Q. 68	Q. 69	Q. 71	Q. 72
MT LUGUNA	A	D	A	C	D	B	D	B	A	A
DOVER	A	E	B	E	D	B	D	A	B	A
PATRICK	A	E	B	B	A	A	A	B	A	A
HOLLOMAN	C	B	A	B	B	B	D	B	B	A
PETERSON FIELD	C	B	A	D	B	A	A	A	B	A
BROOKS	A	E	A	D	B	A	C	A	B	A
MCGUIRE	C	B	A	D	A	A	A	B	B	A
POPE	C	D	B	C	D	B	D	B	B	A
MYRTLE BEACH	A	B	A	A	B	A	C	A	B	A
SHEPPARD	A	E	B	D	A	B	D	A	B	A
GRIFFISS	A	D	A	D	A	A	C	A	B	A
F E WARREN	C	B	B	D	B	A	C	A	B	A
CARSWELL	A	D	A	A	B	A	A	A	A	C
MARCH	A	D	A	A	B	A	C	A	A	A
DYESS	B	B	A	D	B	B	D	A	A	A
GRAND FORKS	A	B	A	A	B	A	C	A	B	A
NORTON	C	C	A	D	B	A	A	A	B	A
VANDENBERG	A	C	B	A	C	B	D	A	B	A
TINKER	A	B	A	B	B	B	D	A	B	A
CASTLE	B	E	B	A	D	B	D	A	A	A
KEESLER AFB	C	E	A	D	B	A	C	B	B	A

RECYCLING PROGRAM BREAKDOWN

RESPONSES OF INSTALLATIONS WITH DPDO/DOD SURPLUS PROP RECYCLING PROGRAMS ONLY

LISTED INSTALLATIONS	SURVEY QUESTIONS CONSIDERED									
	Q. 61	Q. 63	Q. 64	Q. 65	Q. 66	Q. 67	Q. 68	Q. 69	Q. 71	Q. 72
CLEAR	D	E	C	F	E	C	E	C	C	D
SHEMYA	D	E	C	F	E	C	E	C	C	D
KALISPELL	D	E	C	F	E	C	E	C	C	D
CAMBRIA	D	E	C	F	E	C	E	C	C	D
CASWELL	D	E	C	F	E	C	E	C	C	D
FINLAND	D	E	C	F	E	C	E	C	C	D
FINLEY	D	E	C	F	E	C	E	C	C	D
ANTIGO	D	E	C	F	E	C	E	C	C	D
NORTH BEND	D	E	C	F	E	C	E	C	C	D
ST ALBANS	D	E	C	F	E	C	E	C	C	D
WATERTOWN	D	E	C	F	E	C	E	C	C	D
MONTAUK	D	E	C	F	E	C	E	C	C	D
CAMPION AFS	D	E	C	F	E	C	E	C	C	D
COLD BAY AFS	D	E	C	F	E	C	E	C	C	D
FORT YUKON	D	E	C	F	E	C	E	C	C	D
INDIAN MOUNTAIN	D	E	C	F	E	C	E	C	C	D
KOTZEBUE AFS	D	E	C	F	E	C	E	C	C	D
MURPHY DOME	D	E	C	F	E	C	E	C	C	D
SPARREVOHN AFS	D	E	C	F	E	C	E	C	C	D
TATALINA	D	E	C	F	E	C	E	C	C	D
TIN CITY	D	E	C	F	E	C	E	C	C	D
ROANOKE RAPIDS	D	E	C	F	E	C	E	C	C	D
NORTH CHARLESTON	D	E	C	F	E	C	E	C	C	D
CHARLESTON AFS	D	E	C	F	E	C	E	C	C	D
CALUMET	D	E	C	F	E	C	E	C	C	D
CAPE LISBURNE	D	E	C	F	E	C	E	C	C	D
CAPE NEWENHAM	D	E	C	F	E	C	E	C	C	D
CAPE ROMANZOF	D	E	C	F	E	C	E	C	C	D
GILA BEND	D	E	C	F	E	C	E	C	C	D
ALMADEN	D	E	C	F	E	C	E	C	C	D
MT HERO	D	E	C	F	E	C	E	C	B	D
WILLIAMS	B	E	A	C	D	A	C	B	A	A
MCCHORD	D	E	C	F	C	C	E	C	C	D
SEYMOUR-JOHNSON	B	E	A	B	A	B	D	B	C	D
HURLBURT FIELD	D	E	C	F	B	C	E	C	C	D
CHEYENNE MOUNTAIN	D	F	C	F	E	C	E	C	C	D
NEWARK AFS	D	F	C	F	E	C	E	C	C	D
EIELSON	D	E	C	F	E	C	E	C	C	D

ELMENDORF	-	D	-	E	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
KING SALMON APT	-	D	-	E	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
KINCHELOE	-	D	-	E	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
GEN. MITCHELL FIELD	-	D	-	F	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
AVON PARK	-	D	-	E	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
GALENA AIRPORT	-	D	-	E	-	C	-	F	-	E	-	C	-	E	-	C	-	C	-	D
NIAGRA FALLS IAP	-	A	-	F	-	A	-	D	-	A	-	A	-	C	-	B	-	B	-	A
SARATOGA	-	D	-	E	-	C	-	F	-	C	-	C	-	E	-	C	-	C	-	D
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

RESPONSES TO RECYCLING OR MATERIALS SUCH AS
1. CARDBOARD FROM THE COMMISSARY & BASE EXCHANGE,
2. ALUMINUM CANS FROM CLUBS, AND
3. COMPUTER PAPER & CARDS FROM DATA AUTOMATION
THAT DEPEND ENTIRELY ON BASE RECYCLING PROGRAM.
(WITHOUT WHICH MATERIALS WOULD BE LANDFILLED.)

(58.8% RESPONDED: DO NOT HAVE SUCH A PROGRAM.)

FOR THOSE THAT HAVE SUCH A PROGRAM:

A. 54.0% ARE ENTIRELY DEPENDENT.
B. 44.0% ARE NOT ENTIRELY DEPENDENT.

PLANS TO IMPLEMENT RECYCLE PROGRAM FOR FY77

1.) FOR THOSE INSTALLATIONS THAT CURRENTLY HAVE NO PROGRAM:

A. 7.7% DO NOT PLAN TO IMPLEMENT A PROGRAM
B. 8.5% PLAN TO IMPLEMENT A PROGRAM IN FY77
C. 78.9% PLAN TO IMPLEMENT A PROGRAM AFTER FY77

PLANS TO IMPLEMENT RECYCLE PROGRAM FOR FY77

2.) FOR THOSE INSTALLATIONS THAT PREVIOUSLY HAD A PROGRAM,THAT IS NOW INACTIVE: (INSTALLATIONS ARE LISTED,IF ANY)

A. 14.3% DO NOT PLAN TO IMPLEMENT A PROGRAM
B. 4.8% PLAN TO IMPLEMENT A PROGRAM IN FY77

)OVER

TOTAL INSTALLATIONS LISTED = 1

C. 71.4% PLAN TO IMPLEMENT A PROGRAM AFTER FY77

MT LUGUNA	PATRICK	HOLLOMAN	PETERSON FIELD
BROOKS	POPE	MYRTLE BEACH	SHEPPARD
GRIFFISS	CARSWELL	MARCH	GRAND FORKS
TINKER	CASTLE	KEESLER AFB	

TOTAL INSTALLATIONS LISTED = 15

TOTAL COST OF JANITORIAL/CUSTODIAL SERVICE (INCLUDING ALL IN-HOUSE AND CONTRACT JANITORIAL SERVICE)

MINIMUM TOTAL COST = $ 16225000.

PERCENTAGE RESPONSES PER COST CATEGORY
(COST IS IN THOUSANDS OF DOLLARS)

0.0- 4.9 =	18.1%	5.0- 9.9 =	1.9%	15.0- 19.9 =	.6%	20.0- 24.9 =	1.3%
25.0- 29.9 =	.6%	30.0- 34.9 =	.6%	35.0- 39.9 =	1.3%	40.0- 44.9 =	1.9%
45.0- 49.9 =	1.9%	50.0- 54.9 =	1.3%	55.0- 59.9 =	1.9%	60.0- 64.9 =	2.5%
65.0- 69.9 =	1.9%	70.0- 74.9 =	1.9%	75.0- 79.9 =	3.1%	80.0- 84.9 =	.6%
85.0- 89.9 =	1.3%	90.0- 94.9 =	1.3%	100.0-104.9 =	1.9%	105.0-109.9 =	1.3%
110.0-114.9 =	1.3%	125.0-129.9 =	.6%	130.0-134.9 =	.6%	135.0-139.9 =	1.3%
140.0-144.9 =	2.5%	145.0-149.9 =	2.5%	150.0-154.9 =	.6%	155.0-159.9 =	1.3%
160.0-164.9 =	.6%	165.0-169.9 =	1.3%	170.0-174.9 =	.6%	180.0-184.9 =	1.3%
185.0-189.9 =	.6%	195.0-199.9 =	1.3%	200.0-204.9 =	.6%	205.0-209.9 =	.6%
225.0-229.9 =	.6%	240.0-244.9 =	.6%	250.0-254.9 =	1.3%	255.0-259.9 =	.6%
260.0-264.9 =	.6%	270.0-274.9 =	.6%	285.0-289.9 =	.6%	305.0-309.9 =	.6%
325.0-***** =	20.6%						

LISTED BELOW ARE THE INSTALLATIONS, IF ANY, WITH $325,000. OR GREATER TOTAL COST:

CLEAR	MAXWELL AFB	ANDREWS	BOLLING
TRAVIS	HICKAM	LANGLEY	EGLIN
AFA	HILL	ROBINS	ARNOLD EDC
MCGUIRE	MACDILL	KIRTLAND	CHEYENNE MOUNTAIN
GRIFFISS	ELMENDORF	MARCH	OFFUTT
RICHARDS-GEBAUR	NORTON	LOS ANGELES AFS	SUNNYVALE AFS
L G HANSCOM	VANDENBERG	MCCLELLAN	RANDOLPH
TINKER	NELLIS	KEESLER AFB	CHANUTE
WRIGHT-PATTERSON			

TOTAL INSTALLATIONS LISTED = 33

RESOURCE RECOVERY FEASIBILITY STUDY

EDIT SECTION

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EDIT OPTION: USE ALL INPUT.
CARD      1234567890      1234567890      1234567890      1234567890      1234567890      1234567890      1234567890      1234567890
 NO.

    1      BKLLAAAABA      CABCAGGGGE      AHD1HDDBAW      JCWAAEAAQA      LZZCJ000CC      BBACBDCCDC      DEECFECECC      CDD77
    2      AKLLACACBD      DAFCECCCCE      AHD1IDDADW      JCWAVDCCIA      BDDHF000FF      FKACBDCCDC      DEECFECECC      CDDMA
    3      BWLLAAAACA      BABCDGGGGE      WIE2JCECEA      HDWAVEBBBA      BZZA0G00EE      AAACBECCDC      DEECFECECC      CDDAA
    4      AVLLAAGACA      AABCDGGGGE      WIE2JCECEC      IDWAVEBBBA      BZZA0A00EE      AAACBDCCCC      DEECFECECC      CDDAA
    5      AFLLAAAACA      AAHCDEEEEE      WIE2JCECEA      IDWAVEBBBA      BWXA0W00CC      AAACBDCCDC      DEECFECECC      CDD7A
    6      BWLLAAAACA      BACCDEEEEE      WIE2JCECEA      IDWAVEBBAA      ABDA0E00DD      AAACBECCDC      DEECFECECC      CDDAA
    7      BQLLAAAACB      AABCDGGGGE      WIE2JCECEW      JCWAVEBBBA      BZZA0000CC      AAACBECCCC      DEECFECECC      CDD7A
    8      BWLLAAAACA      AABCDEEEEE      WIE2JCECEA      FDWAVEBBCA      BUUB0Y00EE      AAACBCBCAC      DEECFECECC      CDDAA
    9      BOLLAAGABA      BABCDEEEEE      WIE2JCECEA      IDWAVEBBCA      CZZA0Z00EE      AAACBDCCDC      DEECFECECC      CDDAA
   10      BPLLAAAACA      BABCDGGGGE      WIE2JCECEA      HDWAVEBBBA      BZZA0Z00EE      AAACBECCDC      DEECFECECC      CDD7A
   11      BBLLAAAACA      BABCDGGGGE      WIE2JCECEA      BAWAVEBBAA      AZZA0Z00CC      AAACBDCCDC      DEECFECECC      CDD7A
   12      BCLLAAAACA      AABCDGGGGE      WIE2JCECEA      HDWAVEBBAA      ABAA0B00EE      AAACBDCCAC      DEECFECECC      CDDAA
   13      BZLLAAAACA      AABCDEGGGE      WIE2JCECEA      FDWAVEBABA      BWZA0Y00CC      AGACABCCAC      DEECFECECC      CDD7A
   14      BOLLAKGBCB      BABCDGGGGE      WIE2JCECEN      IDWAVEBBBA      BBBA0A00EE      AAACAECCCC      DEECFECECC      CDD7A
   15      BILLAAAACB      BABCDGGGGE      WIE2JCECEA      IDWAVEBBAA      AZZA0Z00BB      CGACBECCAC      DEECFECECC      CDD7A
   16      B4LLAAAACA      BABCDGGGGE      WIE2JCECEA      IDWAVEBBCA      CKKA0A00CC      AAACBDCBEC      AEDACDBDBA      AADAA
   17      B5LLAAAACA      BABCDGEEGE      WIE2JCECEA      HDWAVEBBBA      AAAA0A00EE      AAACBCCCDC      DEECFECECC      CDDAA
   18      B7LLAAAABB      AABCDAAAGE      WIE2JCECEA      HDWAVEBBCA      CZZA0A00EE      AAACBDCCAC      DEECFECECC      CDDAA
   19      CCLLAAAACA      AACCDGGGGE      WIE2JCECEA      IDWAVEBBCA      BZZA0Z00CC      AAACBECCCC      DEECFECECC      CDDAA
   20      CDLLAAGACD      AADCEGGGGE      WIE2JCECEA      EAWAVEBBBA      BBDA0F00FF      CGACBDCCCC      DEECFECECC      CDD8A
   21      CHLLAAAACA      CACCDGGGGE      WIE2JCECEA      HDWAVEBBAA      ATTA0T00EE      AAACBDCCDC      DEECFECECC      CDD7A
   22      CJLLAAAACA      AABCDGGGGE      WIE2JCECEA      FBWAVEBBBA      BIGA0H00CC      AAACBDCCDC      DEECFECECC      CDDAA
   23      B2LLABAAAB      BABCDGGGGE      WIE2JCECEB      IDWAVEBBAA      AZZA0Z00EE      AAACBECCDC      DEECFECECC      CDD7A
   24      JJLLCAALDE      FGBCDHGGEE      WIE2JCECEA      FDWAVEFBAA      A0WA0W00GC      FKACBABCAC      CAFACDACBA      CDCMA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
   25      BOLLAAAACA      BABCDGGGGE      WIE2JCECEA      IDAAVEBBBA      BWWB0WW0CC      CGACBDCCAC      DEECFECECC      CDD7A
   26      AALLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BHHCL000FF      AAACBDCCDC      DEECFECECC      CDDAA
   27      ANLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCCA      BWW8Z000FF      FKACBDCCDC      DEECFECECC      CDDAA
   28      AGLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BIICM000FF      FKACBDCCDC      DEECFECECC      CDDAA
   29      AILLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCEA      BKKCP000FF      AAACBDCCDC      DEECFECECC      CDDAA
   30      APLLAAAABD      CAFCECCCCE      WIE2JCECEA      IDWAVDEEDA      BJJC0000FF      FKACBDCCDC      DEECFECECC      CDDAA
   31      AJLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BLLCR000FF      AAACBDCCDC      DEECFECECC      CDDAA
   32      AQLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCEA      BKKCP000FF      AAACBDCCDC      DEECFECECC      CDDAA
   33      ALLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCEA      BMMCS000FF      AAACBDCCDC      DEECFECECC      CDDAA
   34      AMLLAAAABD      CAFCECCCCE      AHD1IDDADW      JDWAVDCCDA      BOOCV000FF      AAACBDCCDC      DEECFECECC      CDDAA
   35      CELLAAAACA      BABCDGGGGE      WIE2JCECEA      GDWAVEBBBA      BBBA0A00EE      AAACBDCCDC      DEECFECECC      CDD7A
   36      B6LLAAGACA      BABCDEGGGE      WIE2JCECEV      IDVAVEBBAA      AHHA0HH0AA      AAACACCCDC      DEECFECECC      CDD7A
   37      BILLAAAACA      BABCDGGGGE      WIE2JCECEA      GDWABEBBAA      AZWA0A00CC      AAACBDCCDC      DEECFECECC      CDD7A
   38      BELLAAGACA      CABCDGGGGE      WIE2JCECEA      IDWAVEBBBA      BZZA0A00CC      AAACBDCCDC      DEECFECECC      CDD7A
   39      ARLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BOOCV000FF      AAACBDCCDC      DEECFECECC      CDDAA
   40      ACLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BOOCV000FF      AAACBDCCDC      DEECFECECC      CDDAA
   41      ADLLAAAABD      CAFCECCCCE      AHD1IDDADW      JCWAVDCCDA      BOOCV000FF      AAACBDCCDC      DEECFECECC      CDDAA
   42      LCACBEGRA8      ABFADGABGE      WIE2JCECEE      BAWAVEBD6A      TZSC0C00CF      AAACBCABEA      AEEBEDBDA8      8A8VA
   43      HGIIAAAARA      BABCDGGGGE      WIE2JCECEA      FDWAVEBBBA      BZZA0B00CC      AAACBDCCAC      DEECFECECC      CDDAA
   44      FADFBCAACD      BAECEGAAGE      DAB0IDAAAW      JCWAVECC7G      XZZBD000FF      CGACADCCAA      DEECFECECC      CDD77
   45      ONABBFGHAA      BAHCDGFFGE      WIE2JCECEF      BBWAVEB9TA      MYIF0M00CC      AFACBEBCAA      DEECFECECC      CDD2A
   46      FADFAAAACD      BAECEGAAGE      WIE2JCECEA      IDWAVEBBYA      MZZA0F00FF      CGACADCCAA      DEECFECECC      CDD7S
   47      JHFCBEARCA      BABCCABBAE      FGB0IDCAAA      IDWDEEAA7H      YWYAAA0PCC      CGACBCCBEA      AEEBBAAABB      AADTI
   48      KAAFBCGDAB      BBBCDGAAGE      WIE2JCECEQ      HDWAVEBB77      ZZZT0G00CC      AAAEACCCAA      DEECFECECC      CDB77
   49      KBFCBKACAB      BBBCDGAGGE      WIE2JCECEF      IDFEFEBB3A      OZNK0KK0CC      AAADAECAEC      CCBBEOHDBA      BAC77
   50      LJABBGACCA      AAFCDGFFGE      WIE2JCECEG      HDWAVEBD77      ZYUF0G00EF      CGACADCCCA      DEECFBCECC      CDB77
   51      MAAFBGGGCA      BAFADGGGGE      WIE2JCECEO      IDAEIEBD77      ZYZZ0ZAZEF      FKACACACCA      DEECFECECC      CDB77
   52      MBCFABGBCA      BABCDGGGGE      WIE2JCECEB      IDWAVEB8NA      KZZB0F00EE      FKACACACCC      DEECFECECC      CDB9A
   53      PBABBDAACA      BABCCGBBGE      DHD1IDCAAW      JCWAVEAAWA      LVPJL000CC      FKACACACAA      DEECFBCECC      CDD2A
   54      BCABBDABBB      AAFADGGGGE      DHD1IDDADC      AAWAVEBC4A      RQUFGA00CF      FKACBDCCBC      DEECFECECC      CDD2A
   55      PERABCABBA      BACCDGFFGE      WIE2JCECEC      IDWAVEB87I      XZWD0E00CC      FKACBECAEA      BCEADDAAAB      8AC7J
   56      PFBFAAAABA      BABCDGGGGE      AHD1FDCAAA      IDWAVEB8BA      AAA8AA00EE      FKACBDCCDC      DEECFECECC      CDD8A
   57      PGABBFABAA      AABCCABAAE      EHD1HDBAAW      JCWAVEAA73      ZZZML000EE      FKACBDCBEA      CEBA8B8D88      8AD7H
   58      PJAFACAABA      AAHCCABBAE      EBB0CADAAW      JCWAVEAA70      TZZFI000CC      AAAEACACAA      DEECFCCECC      CDA77
   59      SABAAAGACA      BABCDGGGGC      WIE2JCECEA      HDWAVEB8EA      DBHA0A00EE      BBACAECCAC      DEECFBCECC      CDA3A
   60      BAIIAAAARA      AAHCDEEEGE      WIE2JCECEA      FBWAVEBBCA      CUFA0I00CC      FKACAECCDC      DEECFECECC      CDD7A
   61      BUCEABGARA      BABCDGAGGE      WIE2JCDCEB      HDWAVEB8DA      DZZD0Z00CC      CGAEAECCBC      DEECFECECC      BD8PA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
   62      B3IIAAAACA      BABCDGGGGE      WIE2JCECEA      EAWAVEB8BA      BZZA0D00CC      FKACBCCCDC      DEECFECECC      BDDBA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
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  63     CMFBHNGMCH      AAHLDGABGE      WIE2JCECEM      IDWAVEHB3A      NKDL0D00CC      FKACADCBEA      CEBADBAAAB      BAD75
  64     JNGIHFCBHR      BABCHGFFFE      FHD1GDAABH      FBWAVEBA7Z      ZZVGCB00CC      CGAEBCACCA      DEECFBCECC      CDB77
  65     CIHARCGACB      BABCCGBRGE      CHD1AAAAAW      JCWBVEAA4A      QZYHM000CC      FKACBCACCA      DEECFECECC      CDDWA
  66     DADBBFABBH      AACCCGAGCE      FHD1HBDADW      JCWAVDAA7G      UUUFD000CC      CGAEACAAEA      BABACDAAAB      BDC77
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
  67     GIAFADAAAA      BABCCGBRGE      CHD1DAAAAW      JCWAVEAAIA      GBHBB000CC      FKACBDCCAA      CCEAADBDAA      BDCRA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
  68     GOBGBHBACA      BACCDG8BCE      WIE2JCECEB      IDWAVDBBRA      NZRN0Z00CC      FKACAECCD8      BBEACDACBA      AACZA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
  69     IBCARJFACC      AAFCEGAAAE      WIE2JCECEM      IDWDFADD7Q      ZZUF0D00FF      CGACADCAEA      ABDAAAAA8B      AAC77
  70     IFCFRJACAC      AFFAEGHBGD      IHD1BADACW      JCWAVACC77      ZZZNI000FF      CGACADCAEA      ADBADBACAB      BAC77
  71     GCBABBBAAA      BACCDGGGGE      WIE2JCECEB      GDWAVERBQA      NERN0A00CC      CGACBDCCAC      DEEABBACAC      BDD7B
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
  72     JAGGACAABA      BACCCAAAAE      BCB0EABBCW      JCWAVDAATA      NZZDZ000EE      CGACBDCCAC      DEECFECECC      CDD77
  73     JAGDAAAABA      BABCCAFAFE      AHD1HDAAAW      JCWAVDAAPA      IZZJZ000CC      CGACADCBEA      AEEADBACAA      BAD7T
  74     LARARBAACA      BABCDAAAAE      WIE2JCECEB      HDWAVEBBRA      JTUD0U00EE      FKACBDCCAC      DEECFBCECC      CADWA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
  75     LDAJBDGBAA      BABABEFFEE      WIE2JCECED      GDWAVEBBYA      PTWF0K00CC      FKACADCCAA      DEECFBCECC      CD87E
  76     LEARRHAHCA      AAFCDEFFEE      HHD1FDAAAW      JCWAVEAC7F      TUXKG000CF      CGACAECCDA      DEECFCCECC      CDA7W
  77     LFAFRGAHAA      AFBCDGAGGE      WIE2JCECEE      CAWAVDB87I      XXTD0L00CC      AGACADCBEC      CEBADAAABA      BAA77
  78     LHABADGACB      BAFADEEEEE      WIE2JCECED      IDWAVEBDJA      JMMA0A00EF      CGBCACABEA      CEDBCDBDBA      BADNA
  79     PLARRHABCA      BAFCDCFFAE      DHD1FDCACW      JCBAVEBC7R      VUQMM0G0CF      FKACACACAB      DEECFBCECC      CDD77
  80     PNABRBGACA      AACCDGEAGE      WIE2JCECEI      IDWAVEBBQA      KZZE0Z00EE      AAACBDCBEC      AEBAABACAB      BADOA
  81     PPAFRDACCR      BAEADAAAAE      BCB0IDDAAC      IDWAVEBCUA      MSLEDF00EF      AAACBDCCDA      BBEABABDBA      CDD2A
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
  82     PRAHACAABB      BAFAAAFFAD      CHD1EACACW      JCWAVEACOA      LIQLI000BF      AAACBDCCDA      DEECFBCECC      CDDSA
  83     SRBAAAAACC      BAECDGEEGE      AHD1IDBAAW      JCWAVECCMA      EZZDZ000FF      CGACAECAEC      AD8BED0D0B      AACMA
  84     GFHDRBGACB      BABCDGGGGE      WIE2JCECEB      IDWAVEBBPA      LTZB0E00CC      FKACBECCCC      DEECFECECC      CDDPA
  85     JFGFRGARHA      AABCCGGGGE      GFB0IDAAAW      JCWAVEAAIE      QTMLG000CC      CGBCADCAEA      ACBADA0D8A      AAC77
  86     HJGFCAGLDE      FGBCDMHGGE      WIE2JCECEA      YDWAVEFBBA      R0BA0A00GD      FKACACCCDC      DEFCFECECC      CDD77
  87     IECGCDALDE      FGACDHGGAE      WIE2JCECED      IDWAAEFBDA      C0DA0B00GC      CGACBECCDC      DEFCFECECC      CDD0A
  88     ORJARCAHHA      AAFHAGRGGE      CHD1HDBAAW      JCWAVEAC2A      PWZGL000EF      CCACAAAAEA      AABAAAABAA      AACKA
  89     BXALAAGACA      BACCDGAGGE      WIE2JCECEA      JDWAVEBBFA      DVVB0J00CC      BBACBDCCAC      DEECFECECC      CDDDA
  90     BMIIAAAACB      BABCDGGGGE      WIE2JCECEA      FDWAVEBBAA      AUUA0U00DD      AAACBDCCBC      DEECFECECC      CDDAA
  91     OOABBRGBBR      BAECAABBAE      RHD1IDDACW      JCWAVEAC2A      PZCGR000EF      BFACBCACAA      DEECFECECC      CDB1A
  92     OYAABDAARA      BAECDAAAAE      CHD1FDAACB      FDWAVERC0A      PZQEDH00AF      BBAEAECCBC      DEECFECECC      CDAJA
  93     GLDBREGBCA      BACCDEEFEE      WIE2JCECEE      FDWAVEB87G      WZWC0Y00CC      CCACACCBEA      AEEBDABDAB      BAD4A
  94     GMBAAGACAD      BAECEGAGGE      WIE2JCECEG      HDWAVEDDMA      HEEA0A00FF      FKACADCCCC      DEECFECECC      CDD7H
  95     GRBKREAACA      BACCDGHAGE      WIE2JCECEF      DBWAVEBBXA      HZMQ0P00CC      FKACBDCCCA      ABEABBCEAA      AACMA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
  96     GNBAABGABB      BABCDAAAAE      WIE2JCECEB      FBWAVEBBQA      NUZN0Z00EE      CCACBDCCAC      DEEBBBCEAA      BAD3A
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
  97      OMGABDGRRC        AFFBEGHBGE      DHD1HDAAAW      JCWAVECC7L      TYYMOOOOFF      AAACACCBEA      AEDADAACAB      BAD77
  98      OJJFARGABB        HARCCGHGGF      BHD1IDAADW      JCWAVEAA7E      SZZJUOOODD      FKACBDCBEB      CEBBDBACAB      BAAEA
  99      OBAFRKCCCA        AAFCAAFFAE      KHD1IDAADW      JCWAVAAC7I      ZTTZTOOOEF      CHADADCCAA      DEECFDCECC      CDD5A
 100      OAABREGCBC        AFFBOEFFGE      FHD1IDDAAA      IDWAVECE72      ZZZNZVOOFF      FKACBDCCCC      DEECFECECC      CDD5A
 101      AEAFREACHC        CAFCEAAAAE      EHD1HDDAAW      JCWAVECC7V      YZZLMOOOFF      BFACBDCCDC      DEECFECECC      CDD7N
 102      AFAFHOAHBC        CAFCEAAAAE      OHD1CADAAW      JCWAVECC76      ZNNMOOOOFF      CGACACACDC      DEECFECECC      CDD77
 103      AOCAARABRD        CAFCECCCCE      AHD1IDDADW      JCWAVDCCFA      BEEDGOOOFF      AAACBDCCDC      DEECFECECC      CDDAA
 104      GGDCREAARC        BBFADGAAFB      AHD1BADAAD      IDWAVEDD7E      XZZAAAOOFF      CGACACAAEA      BDEADBAAAA      BAC7Q
 105      OFARRCAAAA        RFCCDAFAAE      WIE2JCECEC      GDWAVEBBTA      NXYAOAOOEE      FKAEAECBEA      AEDAABAAAB      ACDJA
 106      OSACRCRAHA        AACCDGGGGE      WIE2JCECEC      IDWAVEBB7B      VXZAOAOOCC      CGACACCBEA      AEDAABACAA      AAD77
 107      PDABRCAAAR        HARCDGFFGD      WIE2JCECEC      IDWAVEBBYA      PNVDOAOOCC      FKACBECCCA      DEECFECECC      CDBLA
 108      PHRAHFRCCA        BCHCDGFGGF      WIE2JCECEF      BAWAVEB87I      WWZHOBOOEE      FKACBCCCCA      DEECFECECC      CDD7E
 109      OHABRBAHCA        HAHCDGFGGE      WIE2JCECED      IDWAVEAB0A      QRZDODOOEE      CCACBDCBEB      BEBADBBDAA      AACHA
 110      OVAFRHRDCA        RAEHDGGGGE      AHO1BACAAM      OAWAVEBD7L      ZZVADCOOCF      CGACADCCAB      DEECFECECC      CDD77
 111      GHDBBRGACH        AACCDGFGGE      WIE2JCECEB      IDWAVEBB7I      YZZCOEOOEE      FKACACBCAA      DEECFECECC      CDD7F
 112      HAFARCGACB        BABCDGABGE      WIE2JCECEC      IDWAVEBBTA      MXQEOGOOEE      CGACACAAEA      CCABBABDBA      AAC77
 113      ICCFAHGACC        CBEADGGGGE      WIE2JCECEG      HDWAVEDD77      ZVZC0B00FF      CCACACACAA      ABEAEABDAB      AAC7B
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
 114      OCAHRFRCAB        RAEBAAFFFE      FBAHCACAAW      JCWAVECC7E      SXXJH000EF      CGACBDBCCA      BBEADBBDAB      CDDIA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
 115      OIJARDABRH        RBEADGGGGE      DHD1EADADB      IDWAVEBC7P      XXZKZZ00CF      CGACBCCCBC      ADEADBAAAA      AADOA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
 116      OLAJRCARCA        BAECDAAFAE      BHD1IOCAAB      CAWAVEBC7D      RWZKPJ00CF      AAACBDCBEA      AEBAABACAA      BADNA
 117      GEKDHFFACR        CACCDGABFE      WIE2JCECEF      IDWAVEBB7K      FABC0B00AA      CGACADCAEA      CCEADAAABB      BAC7U
 118      LGABBAIAACA       HAFADGABGD      IHD1AACACA      IDWAVABC1A      RWKCBC00CF      CGACACABEA      CECADBAAAA      BAC77
 119      O2AFBDGBAA        BAFCDFEEEE      CHD1IDAAAB      IDWAVABCQA      NTSAAA0CCF      AAACBDCCAC      DEECFBCECC      CDDMA
 120      OXABRFACBA        BAEAAGFFGE      FHD1IDBAAW      JCWAVEACXA      OJPED000CF      AAACBDCCAA      DEECFECECC      CDDNA
 121      OWAFHCBACA        BABCDEEEEE      WIE2JCECEC      CBWAVEBBUA      NPWD0E00EE      AGACBDCCAA      DEECFBCECC      CDDFA
 122      OPAAPLGBCH        BAECDAEFEE      JHD1IDDAAB      IDWAVEBE3A      RJGEBA00EF      BBACBDCCDA      DEECFECECC      CDDUA
 123      OQARBEGCCB        CAFCAGBBGE      FAH0IDDADW      JCWAVEAC7G      ULZMG000CF      BFACBDCCAC      DEECFBCECC      CDD3A
 124      OTAJRDAABH        BAFADAFFAE      WIE2JCECED      HDWAVEB8VA      QSUC0D0OCF      FKOAADCCBA      DEECFBCECC      CDDLA
 125      JGFBCAADEE        FGCCDHHFFE      WIE2JCECEA      CAWEAEFBEA      D0SA0G00GC      FKACAECCCA      DEFCFECECC      CDD77
 126      SDABDCAALDE       FGHADHGGGH      WIE2JCECEA      IDWAVEFBBA      B0ZADZ00GC      AAACABACDC      DEFCFECECC      CDAVA
 127      PQAHADRBAA        EAFADGRBGE      CHD1AADADV      IDWAVEBC6A      RYZGFB00EF      CGACBDCCCA      DEECFBCECC      CDDOA
 128      JIHFCAGLDE        FGRCDHHEEE      WIE2JCECEA      IDWAVEFBCA      B0IA0F00GE      CGACBDCCAC      DEFCFECECC      CDD77
 129      JFGFADGHAB        RABCDGBGGH      WIE2JCECED      HDWAVEB83A      SZZ00E00EE      AGACACAAEA      BABADABDBA      BDC77
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
 130      OZIJRIFDEA        BAFCAGRBFC      OHB0IODAAW      JCWAVEAC7X      ZRXGB000EF      FKACAAABEA      AECBACBDAB      BAA77
 131      SJACAAAACD        AAFCDAGAAE      WIE2JCECEA      HDWAVEBBAA      AVGAOD00FF      AGACACCCAC      DEECFECECC      CDAPA
 132      PKRARGGBAB        BABCDEFEEE      WIE2JCECEG      IDWAAEBB0A      QMND0C00EE      FKACADCCAC      DEECFECECC      CDD1A
 133      PARFAAAACA        BAHCCCGCCE      WEC2JCECEA      IDWAVEEECA      BIJB0I00CC      FKACBDCCDC      DEECFECECC      CDDAA
 134      OGBCRDGHCA        BAHADGBBGE      DHD1IDAAAW      JCWAVEBA7I      SXXLE000EE      CGACBDBAEB      ACDADBAAAA      BACJA
 135      NBAFBKAGCA        CACCDGEGGE      WIE2JCECEU      HDWAVEBBZA      QEEA0A00CC      FKACBDCCAA      DEECFECECC      CDDKA
 136      LIAFRFABAC        HAECDFAAFD      EHD1DAAACA      HDWAVEEC77      ZZZFF000FF      AAAEACACBC      DEECFECECC      CDB73
 137      AHCAABABBD        OAFCECCCCE      WIE2JCECEA      IDWAVDEEEA      RGGD0J00FF      AAACBDCCDC      DEECFECECC      CDDAA
 138      SHABCAALDE        FGBCDHHAAE      WIE2JCECEA      HDWAVEFBCA      C0ZA0J00GE      CCACAACCDC      AAFADAACBA      BAAIA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
 139      CFIIAAAACA        BABCDGGGGE      WIE2JCECEA      IDWAVEB88A      BAAA0A00EE      AAACBECCDC      DEECFCCECC      CDDAA
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 140      OOJABEGAHH      BABACGGBGE      DHD1EADBDA      FDWAVEAE7F      UZSGGFOOEC      CGACBDCCCA      DEECFECECC      CDDLA
 141      LHACBOGBCA      BFBBDDFGDE      WIE2JCECED      FDWAVEB8YA      LJJLORGOEE      AABEACCCCA      DEECFECECC      CDD5A
 142      SFARAAAACA      CABCDEEEEE      WIE2JCECEA      HDWAVDB8CA      CZZAOOOOEE      FKACAECCAC      AAEADBCEAA      AADPA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 62 CONFLICT. (DPDO PROGRAM IMPLIED.)
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ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 70 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (DPDO PROGRAM IMPLIED.)
 143      NADDAIAECA      CACCOGEGGE      WIE2JCECEL      HDWAVEBBQA      MEEAOAOOCC      FKACBDCCAA      DEECFECEAC      BDDGA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 71 CONFLICT. (DPDO PROGRAM IMPLIED.)
 144      JCHIBGFCCA      BAFCAGFFFE      GGH0IDDACW      JCWAVAEC70      ZENCE000EF      FKACBECAEA      DCBADAACAA      BDC7Z
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
 145      IDCAHIAABB      AAFBDGBBGE      WIE2JCECEM      IDWDHEED77      ZZZK0A0FEF      CGACACACCB      DEECFECECC      CDD77
 146      GJBFBHGBCA      BACCDGFGGD      WIE2JCECEM      HDWAVEBE7E      SIPJ0E00CC      CCACADCCAC      DEECFBCECC      CDB77
 147      IHCABFFAHC      DBFAFGBBAD      FDB0FDCAAW      JCWAVECC77      ZZUKC000FF      CGACAEABEA      AEHABBBDAB      BAD77
 148      GFBHACGACA      BABCDGGGGE      WIE2JCECEA      IDWAVABBPA      KKNF0000CC      FKACADCCAC      DEECFECECC      CDD7C
 149      POBIBKAABA      BCBCCEFFFE      KHD1DBABAW      IDWAVEAA77      ZXXRJ000CC      CGACAECAEA      ADEABBBD88      BAC77
 150      01JFBCGACB      BAFAAGGBGE      CHD1HDDADW      JCWAVEBB6A      PZZLS000EF      CGACBDCCBC      DEECFBAACC      CDDEA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
 151      OFABBCGACA      AAEADEEEEE      CHD1AADAAA      IDWAVEBCTA      LEDGB000CF      CGACBDCBEC      BEEBADBDAA      AADUA
 152      OKABBFGBBB      AACCDGFFCD      DHD1FDDAAB      IDWAVDBB7H      XYYEEB00DD      AGACAECAEA      DBDADAAAAB      BDDIA
ANSWERS TO QUES. 58 AND QUES. 61 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
ANSWERS TO QUES. 58 AND QUES. 72 CONFLICT. (POSSIBLE NON-B.C.E. SUPPORT.)
 153      GNDEBGGBCA      BACCDGFAAE      WIE2JCECEG      GDWAVEBB7T      ZWTB0B00EE      CCACBDCBEA      CEEADBACBB      BAD77
 154      GADEBKFCBB      BABCDEFFFC      WIE2JCECES      IDWDDABB7V      ZOMI0C0ACC      BBBCACBAEA      CBCBBBACBA      BCC77
 155      ODAFBCGBBA      BACCCEFFFE      CHD1IDBAAW      JCWAVEAAPA      MPZMW000EE      CGACBDACCA      DEECFECECC      CDDPA
 156      BLFLAAGAAA      BABCDEEEEE      WIE2JCECEA      FDWAVEEBJA      GCDD0F00EE      AGCCADCCBA      DEECFECECC      CDDRA
 157      IIFGBJGCAC      AFFBDGAGGD      IHD1BACAAA      HDWAVEEC7N      WNPFEG00FF      BEDCACAAEB      AAEADAAAAB      BAC77
 158      PMABBEGBCA      AAECAAAAAE      EHD1IDDAAW      JCWAVEACXA      OOSFE000EF      BBACBDCCCA      DEEABAACAC      CDDUA
A DPDO PROGRAM HAS BEEN INDICATED FOR THIS INSTALL.
ANSWERS TO QUES. 58 AND QUES. 64 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 65 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 67 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 68 CONFLICT. (DPDO PROGRAM IMPLIED.)
ANSWERS TO QUES. 58 AND QUES. 69 CONFLICT. (DPDO PROGRAM IMPLIED.)
 159      QADDABAACC      BAFCEGBBGE      BHD1IDCAAA      IDWAVEEEJA      EFVETT00FF      FKACBECCAC      DEECFBCECC      CDD3A
 160      PIBIAAAACA      BABCCGGGGE      AHD1IDABAW      JAWAVEAADA      BIFBZ000CC      CGACBDCCCC      DEECFBCECC      CDA6A
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APPENDIX C

AIR FORCE INSTALLATIONS' SOLID WASTE TONNAGE DATA

INSTALLATION	COUNTY/STATE	SMSA	TOTAL TONS/DAY
Air University			
Maxwell AFB	Montgomery/AL	Montgomery AL	3.7
Gunter AFB	Montgomery/AL	Montgomery AL	1.2
Tactical Air Command:			
Bergstrom AFB	Travis/TX	Austin TX	14.0
Cannon AFB	Curry/NM	None	11.9
England AFB	Rapides/LA	None	10.9
Davis Monthan AFB	Pima/AZ	Tucson AZ	15.7
George AFB	San Bernardino/CA	Riverside-San Bernardino Ontario CA	17.4
Holloman AFB	Otero/NM	None	17.9
Hurlburt Field AFB	Okaloosa/FL	None	10.4
Homestead AFB	Dade/FL	Miami FL	20.9
Langley AFB	Hampton/VA	Newport News-Hampton VA	11.6
Luke AFB	Maricopa/AZ	Phoenix AZ	13.4
MacDill AFB	Hillsborough/FL	Tampa - St Petersburg FL	20.3
Moody AFB	Lowndes/GA	None	9.4
Mt Home AFB	Elmore/ID	None	18.2
Myrtle Beach AFB	Hurry/SC	None	6.2
Nellis AFB	Clark/NV	Las Vegas NV	20.6
Seymour Johnson AFB	Wayne/NC	None	19.8
Shaw AFB	Sumpter/SC	None	16.2
Security Service:			
Goodfellow AFB	Tom Green/TX	San Angelo TX	5.7
Reserve:			
Minneapolis-St Paul (AFRES)	Hennepin/MN	Minneapolis-St Paul MN	2.2
Westover AFB	Hampden/MA	Springfield-Chicopee Holyoke MA	2.3
Chicago O'Hare IAP	Cook/IL	Chicago IL	4.1
AF Academy			
Air Force Academy	El Paso/CO	Colorado Springs CO	21.0
Strategic Air Command:			
Andersen AFB	Guam	None	23.6
Barksdale AFB	Bossier/LA	Shreveport LA	18.1
Beale AFB	Yuba/CA	None	25.9
Blytheville AFB	Mississippi/AR	None	8.8
Carswell AFB	Tarrant/TX	Dallas-Ft Worth TX	14.0
Castle AFB	Merced/CA	None	17.8
Dyess AFB	Taylor/TX	Abilene TX	13.0

INSTALLATION	COUNTY/STATE	SMSA	TOTAL TONS/DAY
Ellsworth AFB	Pennington/SD	None	21.0
Fairchild AFB	Spokane/WA	Spokane, WA	22.8
F. E. Warren AFB	Laramie/WY	None	16.1
Grand Forks AFB	Grand Forks/ND	None	21.2
Griffiss AFB	Oneida/NY	Utica-Rome, NY	19.1
Grissom AFB	Miami/IN	None	14.5
Kincheloe AFB	Chippewa/MI	None	14.6
K. I. Sawyer	Marquette/MI	None	15.2
Loring AFB	Aroostook/ME	None	20.9
Malmstrom AFB	Cascade/MT	Great Falls, MT	15.8
March AFB	Riverside/CA	Riverside-San Bernardino-Ontario, CA	13.4
McConnell AFB	Sedwick/KS	Wichita,KS	18.6
Offutt AFB	Sarpy/NE	Omaha, NE	27.1
Pease AFB	Rockingham/NH	Boston, MA	14.0
Plattsburg AFB	Clinton/NY	None	18.9
Rickenbacker AFB	Franklin/OH	Columbus, OH	19.2
Vandenberg AFB	Santa Barbara/CA	Santa Barbara, CA	26.8
Whiteman AFB	Johnson/MO	None	10.8
Wurtsmith AFB	Isco/MI	None	16.0
Minot AFB	Maro/SD	None	23.2
Air Defense Command:			
Cambria AFS	San Luis Obispo/CA	None	1.0
Clear Mews	4th PCT/AK	None	6.7
Duluth AFB	St Louis/MN	Duluth-Superior, MN	3.3
Hancock AFB	Onodago/NY	Syracuse, NY	1.4
Kingsley Field	Klamath/OR	None	2.0
Lockport AFS	Niagara/NY	Rochester, NY	1.4
Makah AFS	Slallam/WA	None	1.0
Peterson AFB	El Paso CO	Colorado Springs, CO	48.2
N. Truro AFS	Barnstable/MA	None	1.0
Tyndall AFB	Bay/FL	None	42.4
AF Communications Service:			
Richards-Gebaur AFB	Jackson-Cass/MO	Kansas City, MO	10.3
AF Logistics Command:			
Hill AFB	Davis-Weber/UT	Salt Lake City, UT	39.6
Kelly AFB	Bexar/TX	San Antonio,TX	44.2
McClellan AFB	Sacramento/CA	Sacramento, CA	36.2
Robins AFB	Houston/GA	Macon, GA	49.3
Tinker AFB	Oklahoma/OK	Oklahoma City, OK	40.0
Wright-Patterson AFB	Greene-Montgomery/OH	Dayton, OH	45.0
Newark AFS	Licking/OH	None	3.0

INSTALLATION	COUNTY/STATE	SMSA	TOTAL TONS/DAY
Alaskan Air Command;			
Eielson AFB	Fairbanks/AK	None	15.5
Elmendorf AFB	Anchorage/AK	Anchorage, AK	52.4
Military Airlift Command:			
Charleston AFB	Charleston/SC	Charleston-North Charleston, SC	17.4
Little Rock AFB	Pulaski/AR	Little Rock, AR	14.1
Norton AFB	San Bernardino/CA	Riverside-San Bernardino-Ontario, CA	14.4
Travis AFB	Solano/CA	Vallejo-Fairfield-Napa, CA	24.7
Altus AFB	Jackson/OK	None	7.5
Scott AFB	St Clair/IL	St Louis, IL	18.3
Andrews AFB	Prince George/MD	Washington, MD	57.0
Bolling	District of Columbia/DC	Washington DC	26.3
Dover	Kent/DE	None	12.0
McGuire	Burlington/NJ	Philadelphia, PA	33.5
McChord AFB	Pierce/WA	Tacoma WA	17.1
Pope AFB	Cumberland/NC	Fayetteville NC	8.5
Air Training Command:			
Chanute AFB	Champaign/IL	Champaign-Urbana-Rantol, IL	30.5
Columbus AFB	Lowndes/MS	None	5.3
Craig AFB	Dallas/AS	None	6.4
Keesler AFB	Harrison/MS	Biloxi-Gulf Port, MS	23.0
Lackland AFB	Bexar/TX	San Antonio TX	30.2
Laughlin AFB	Valverde/TX	None	4.7
Lowry AFB	Denver/CO	Denver-Boulder, CO	13.7
Mather AFB	Sacramento/CA	Sacramento, CA	10.7
Randolph AFB	Bexar/TX	San Antonio, TX	12.4
Reese AFB	Lubbock/TX	Lubbock, TX	6.3
Sheppard AFB	Wichita/TX	Wichita Falls TX	17.2
Vance AFB	Garfield/OK	None	1.8
Webb AFB	Howard/TX	None	4.3
Williams AFB	Maricopa/AZ	Phoenix AZ	9.5
AF Systems Command:			
Arnold AFS	Coffee/TX	None	5.9
Brooks AFB	Bexar/TX	San Antonio, TX	2.8
Cape Canaveral AFS	Brevard/FL	Melbourne-Titusville-Cocoa, FL	7.4
Edwards AFB	Kern/CA	Bakersvield, CA	17.8

INSTALLATION	COUNTY/STATE	SMSA	TOTAL TONS/DAY
Eglin AFB	Okaloosa/FL	None	24.5
L G Hanscom AFB	Middlesex/MA	Boston, MA	11.6
Kirtland AFB	Bernalillo/NM	Albuquerque, NM	40.0
Los Angeles AFB	Los Angeles/CA	Los Angeles, CA	17.9
Patrick AFB	Brevard/FL	Melbourne-Titusville-Cocoa FL	4.5
Sunnyvale AFB	Santa Clara/CA	San Jose, CA	2.5
Pacific Air Forces:			
Hickam AFB	Honolulu/HI	Honolulu, HI	91.6
Wheeler AFB	Honolulu/HI	Honolulu, HI	20.8
Bellows AFS	Honolulu/HI	Honolulu, HI	3.8
National Guard:			
Ellington AFB	Harris/TX	Houston, TX	2.2
Selfridge ANG	Macomb/MI	Detroit, MI	3.2
Otis AFB	Barnstable/MA	None	2.0
McEntire ANG	Richland/SC	Columbia SC	1.5
Volk Field ANG	Juneau/WI	None	1.8

APPENDIX D

BIRD STRIKES AND GARBAGE

Capt Mike Harrison
AFCEC/DEVN

Had there been a garbage dump or sanitary landfill at Kitty Hawk where Orville and Wilbur Wright took their first flight in 1903, the course of aviation history may well have been changed. Those of us who frequent dumps and landfills recognize that they attract birds, but few operators and engineers realize that these same birds which feed on garbage also hit airplanes. The first recorded fatal encounter between an airplane and a bird in the United States occurred in San Diego in 1912, when Cal Rodgers, an aviator of some renown, hit a gull, killing the bird and himself.

During the early years of aviation history, we were not plagued with severe bird strike problems. However, the coming of the jet age, and the greater speed and problems with engine ingestions, resulted in a sudden increase in damage and loss of aircraft and lives. In the Air Force, nine aircrew members and 18 aircraft have been lost due to bird strikes over the last 11 years. Dollar losses since 1966 have exceeded 85 million dollars, not including labor costs for repairs. Worldwide, annual losses due to bird strikes may well exceed one billion dollars, based on estimates provided by the Civil Aviation Authority of the United Kingdom (Thorpe, 1976).

How important is garbage, and what role does a dump or landfill play in the bird strike problem? Garbage attracts large numbers of birds which are potentially hazardous to aircraft. These birds will scavenge for food and use the open areas of the garbage disposal site for resting areas between feedings. Omnivorous birds such as gulls are especially attracted to refuse collection sites. These large birds are often found soaring over the refuse sites between feedings, increasing the risk of bird strikes. Other birds which are frequently found feeding on garbage include crows, starlings, grackles and several species of blackbirds.

Dumps and landfills have been the indirect cause of several major accidents involving bird strikes. A crash of an Eastern Airlines Lockheed Electra in 1960 killed 62 people while trying to land at Logan International Airport. The aircraft ingested birds which frequently fed at a landfill near the airport, lost power and crashed (Thorpe, 1973). A Learjet crashed in 1973, killing eight people at Peachtree-DeKalb Airport near Atlanta GA. In this accident, brown-headed cowbirds, flying from a landfill on the airfield were blamed for the accident (NTSB, 1973).

A bird strike occurred on 12 November 1975 at J. F. Kennedy Airport, New York, when an Overseas National DC-10 was totally destroyed on takeoff. The New York Port Authority operates two large landfill operations near the airport. One landfill, the Dunsmere site, attracts large numbers of gulls which, after feeding, fly to the airport and loaf on the runways, taxiways and on the grass adjacent to the runways. On takeoff the DC-10 ingested gulls into its number three engine, the engine disintegrated and the aircraft caught fire. The takeoff was aborted, and the aircraft was totally destroyed. Thirteen dead gulls were found on the runway. The cost of the accident will exceed $25 million (NTSB, 1976).

The problem of refuse collection sites, birds and bird strikes is one of proximity to the airport. Historically, landfills and dumps have been located near airports because airports were located away from the community and usually had good roads connecting the community with the airport. The land around the airport was owned by the community, so remoteness, good access and land ownership logically dictated that the community refuse site be located on or near the airport. The same logic has been used on military airfields. Landfills are traditionally located on perimeter roads on the opposite side of the runway from the main base, often very close to the runway.

When refuse sites are located close to runways, the risk from bird strikes increases sharply. In 1971, the Environmental Protection Agency surveyed 32 airfields with serious bird strike problems and 105 refuse sites near these airports. Seventy-three percent of the landfills surveyed could be classified as open dumps and were operated improperly. In every case where the landfills or dumps were closed, a significant decrease in bird strikes was noted (Davidson, 1971). At most disposal sites, improper refuse disposal operations and lack of awareness of the bird/aircraft hazard were noted.

Awareness of the problem by state and local officials and sanitary engineers is necessary. Without an understanding of the bird strike hazard, considerable difficulties are encountered when a disposal site must be closed or modified to reduce the risk from bird strikes. Locating new disposal sites creates similar problems unless engineers are aware that their planning may result in an air tragedy. How close to an airport should a landfill be located, and what parameters must be considered when selecting a site? These questions, in many cases, can only be answered by a competent biologist who is familiar with the birds and the bird strike problem.

However, guidelines do exist which can assist in locating a new land disposal site or in identifying the need to phase out and close an existing site. The International Civil Aviation Organization (ICAO) identified the following criterion:

> "Garbage disposal dumps should not be located within 13 km (8 miles) of the airport reference point." (ICAO, 1975)

The Federal Aviation Administration (FAA) has published Order 5200.5 which states:

> ". . . all landfills within 10,000 feet of any runway used or planned to be used by a turbojet aircraft, or within 5,000 feet by piston type aircraft, to be incompatible with airport operations, and therefore must be closed or prohibited." (FAA, 1974).

The Environmental Protection Agency (EPA) provides for a broad interpretation requiring identification of the hazards:

> "The site should not be located in an area where the attraction of birds would pose a hazard to low-flying aircraft." (EPA, 1974)

In a 7 Feb 75 letter from the Office of Solid Waste Management Programs (EPA/OSWMP) the EPA clarified their position in support of the FAA Order:

> "1. In cases where disposal operations are in existence and do not meet EPA/OSWMP standards. . . OSWMP will support FAA in closing down of those operations. Conversely, in cases where disposal operations do meet OSWMP guidelines and scrutiny, OSWMP will support continuance of operations that minimize bird attractions and recommend to the FAA that a waiver be granted.
>
> 2. In cases where disposal operations are only in the planning stage and no commitments of resources have yet been made, OSWMP is inclined to support the FAA position, and will advise that all potential problems be avoided and that other disposal sites outside of the 10,000 and 5,000 feet area be found.
>
> 3. However, in cases where disposal operations are in a planning or site-acquisition phase and where some irretrievable investment has already been made, OSWMP will examine every aspect of the proposed operations and make a determination as to whether or not it will support the continuance of the planning and recommend to the FAA that a waiver be granted." (EPA, 1975)

These policy statements can assist in reducing the bird/aircraft strike hazard caused by waste disposal operations. If the solid waste manager is aware of the potential problems when garbage, birds and airplanes are brought together in close proximity, he can use effective planning and management.

The solid waste manager, engineer or regulatory agency can assist in reducing the risk of bird strikes by utilizing the following guidelines:

1. Insure that strict standards for land disposal of waste are enforced.

2. Monitor contract operations to insure compliance with contract requirements for waste disposal.

3. Where landfills are creating a definite bird strike hazard, examine alternate locations or means of solid waste disposal, working toward closing the landfill as soon as possible.

4. Consider bird strike hazards in reviewing existing and new operations prior to expansion or new site selection.

5. Increase operator awareness of the bird strike hazard to insure effective and efficient operation of the landfill.

6. Develop necessary plans for immediate closure of a site, should a serious risk develop, or plan for initiation of an interim bird control program.

Remember that garbage, birds and airplanes combine to form a potentially disastrous situation. Adequate planning and solid waste management by design and supervisory personnel can insure that this risk is minimized when disposal sites are located near airfields.

APPENDIX E

STANDARD METROPOLITAN STATISTICAL AREA (SMSA)

A) 59.4% OF THE TOTAL INSTALLATIONS ARE NOT LOCATED IN THIS TYPE AREA

B) 40.6% OF THE TOTAL INSTALLATIONS ARE LOCATED IN THIS TYPE AREA AND ARE LISTED BELOW:

MAXWELL AFB
TRAVIS
LANGLEY
PETERSON FIELD
ROBINS
MCGUIRE
KIRTLAND
SHEPPARD
ELMENDORF
OFFUTT
LACKLAND AFB
GEN. MITCHELL FIELD
LUKE
GREATER PITTS. FLD.
REESE
DULUTH IAP
LOCKPORT

GUNTER AFB
HICKAM
CHICAGO/O'HARE IAP
AFA
BROOKS
POPE
CHEYENNE MOUNTAIN
VANCE
LOWRY AFB
MATHER
NORTON
L G HANSCOM
SCOTT
MCCLELLAN
NELLIS
WRIGHT-PATTERSON
MILL VALLEY

ANDREWS
WHEELER
ALMADEN
WILLIAMS
LITTLE ROCK
MACDILL
MALSTROM
GRIFFISS
CARSWELL
RICHARDS-GEBAUR
MCCONNELL
VANDENBERG
NIAGRA FALLS IAP
RANDOLPH
FAIRCHILD
NORTH CHARLESTON

BOLLING
BERGSTROM
HANCOCK
HILL
MCCHORD
DOBBINS
RICKENBACKER
BARKSDALE
MARCH
KELLY
LOS ANGELES AFS
YOUNGSTOWN MPT
CHARLESTON AFB
TINKER
CHANUTE

TOTAL INSTALLATIONS LISTED = 65

INSTALLATIONS IN STANDARD METROPOLITAN STATISTICAL AREAS (SMSAs)

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USAFE/DEM	1	90CSG/DE	1
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509CSG/DE	1		
OLAC 1100ABW/DE	1		
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