REPORT TO THE CONGRESS

Need For Federal Agencies To Improve Solid Waste Management Practices

B-166506

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

OCT. 26, 1972

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the need for Federal agencies to improve solid waste management practices.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretaries of Agriculture, Defense, and the Interior; the Chairman, Council on Environmental Quality; and the Administrators of General Services and the Environmental Protection Agency.

Elmer B. Staats

Comptroller General
of the United States

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ABBREVIATIONS

AAFES	Army and Air Force Exchange Service
BLM	Bureau of Land Management
EPA	Environmental Protection Agency
FS	Forest Service
GAO	General Accounting Office
GSA	General Services Administration
NPS	National Park Service
PHS	Public Health Service

COMPTROLLER GENERAL'S
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SOLID WASTE MANAGEMENT PRACTICES
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D I G E S T

WHY THE REVIEW WAS MADE

The Federal Government owns and manages about one-third of the Nation's land and operates or controls thousands of disposal sites on this land. The public uses or views many of the sites.

Since the mid-1960s Federal legislation and Executive orders have stressed the importance of proper solid waste disposal, resource recovery, waste reduction, and the Federal agencies' responsibilities for providing leadership in the nationwide effort to protect and enhance the quality of the environment.

The General Accounting Office (GAO) wanted to know how well Federal agencies were fulfilling their solid waste management responsibilities. Accordingly, GAO reviewed

1 --disposal policies and practices of those agencies--Bureau of Land 2, 3 Management, Forest Service, National Park Service, and Department of 4 the Army--that managed the bulk of the Federal land having disposal sites and

5 --procurement, resource recovery, and recycling policies and practices of the General Services Administration (GSA) and the Army.

FINDINGS AND CONCLUSIONS

OCT. 26, 1972

The picture on the preceding page of a solid waste disposal site in Deschutes National Forest, Oregon, is typical of the many sites GAO visited that were operated, controlled, or used by the Bureau of Land Management, the Forest Service, and the National Park Service. (Additional pictures are on pp. 15, 23, 25, 27, 31, 33, and 69.)

Federal regulations generally prohibit Federal agencies from burning wastes in open fires and using open dumps. GAO found open burning and open dumping on Federal lands to be widespread.

The condition of many dumps GAO visited on land administered by the Bureau of Land Management, the Forest Service, and the National Park Service indicated that the agencies needed to improve their operation and control of the disposal sites to prevent air and water pollution and scenic blight. Also wastes taken off Federal land for disposal frequently ended up in improperly operated private dumps.

The Army generally was disposing of its unsalvageable wastes in a satisfactory manner.

At GAO's request, the four agencies classified, according to the methods of disposal, the 651 solid waste disposal sites they operated, controlled, or used in the six States included in GAO's review. The following table shows that 91 percent of the sites could not qualify as sanitary landfills under Federal standards. (See p. 17 for definition of a sanitary landfill.)

	Disposal sites operated, controlled, or used by Federal agencies					
	Bureau of Land Management	Forest Service	National Park Service	Army	Total	Percent
Sanitary landfill	8	10	30	11	59	9
Modified dump	26	105	20	3	154	24
Open dump--no burning	11	227	4	-	242	37
Open dump--burning	60	110	9	-	179	27
Incinerator	-	14	-	3	17	3
Total	105	466	63	17	651	100

GAO visited 131 of these 651 sites and found that:

--56 were burning dumps or showed evidence of burning.

--65 were open dumps that had not been covered periodically with earth.

--24 were dumps in contact with ground water, streams, lakes, or swamps.

--Seven of the eight incinerators did not meet Federal air emission standards. (See pp. 15 to 28.)

In addition, several disposal sites no longer in use had not been closed properly and solid waste was being disposed of in a number of unauthorized areas on Federal land. (See pp. 29 to 34.)

The agencies included in GAO's review generally lacked a systematic approach to identifying and solving solid waste disposal problems. GAO found that, in varying degrees and at various organizational levels, the agencies needed

--more effective responsibility centers (see pp. 35 to 38),

--improved policy guidance from headquarters and policy implementation by regional offices (see pp. 39 to 54), and

--more effective inspection procedures (see pp. 55 to 58).

GAO's review showed that both GSA and the Army could better reduce wastes and recover and recycle waste material. Although both agencies had taken some actions to reduce the amount of solid waste requiring disposal, they had different policies at the headquarters levels and practices at the field levels. A number of actions had been taken at individual locations that, in GAO's opinion, could be widely implemented.

At Fort Gordon, Georgia, for example, the post exchange sold soft drinks in returnable bottles from its 500 vending machines. In addition, the post exchange received shipments of certain items from central warehouses in returnable plastic baskets, which reduced the volume of cardboard boxes requiring disposal. Many of the Army installations GAO visited, however, used nonreturnable bottles and cardboard boxes.

Because Army installations purchase such large quantities of bottled beverages--an estimated 10,000 cases a month at one post--GAO believes that a study should be made to determine whether, on the basis of economic, convenience, and environmental considerations, the Army's procurement of beverages in returnable containers should be emphasized.

Although both the Army and GSA have been recovering some wastes for reuse or recycling, they could recover much more. Generally the Army was recovering wastes only when it was economically advantageous; little consideration was given to salvaging and recycling primarily for environmental benefits.

GSA and the Army, in their procurement activities, should be aware of, and should emphasize, the environmental benefits that could be obtained through using more reusable or recyclable materials, containers, and packaging. (See pp. 63 to 74.)

RECOMMENDATIONS

6,7 The Secretaries of Agriculture and the Interior should direct the Forest Service, Bureau of Land Management, and National Park Service to: 42, 33

--Establish, at the various organizational levels, responsibility centers for solid waste matters.

--Establish procedures so that (1) solid waste management policies are communicated effectively to all officials, (2) headquarters provides adequate policy guidance to regional personnel, and (3) regional officials carry out agency policies effectively.

--Require periodic inspections and reporting of inspection results of (1) agency-operated and lessee- and permittee-operated disposal sites on Federal land and (2) disposal sites used by the agencies on private land.

The Secretary of the Army should make a study to determine whether, on the basis of economic, convenience, and environmental considerations, the Army's procurement of beverages in returnable containers should be emphasized. The results of such a study could apply to the other military services.

The Secretary of the Army and the Administrator of General Services should each make a study to determine those wastes generated in significant quantities at Federal installations that could be salvaged for reuse or recycling. Procedures should be established to insure that such wastes are salvaged, if feasible, at all GSA and Army field locations.

The Administrator of General Services and the Secretary of the Army also should emphasize to their headquarters and regional personnel the significance of the solid waste problem and the legislative requirements that (1) Federal agencies consider environmental values, along with economic and technical factors, and (2) the Federal Government be a leader in the effort to protect and enhance the quality of the environment.

Finally the Administrator of General Services and the Secretary of the Army should consider using more reusable or recyclable materials, containers, and packaging.

AGENCY ACTIONS AND UNRESOLVED ISSUES

The agencies generally agreed with GAO's findings and conclusions. They cited several actions taken or planned to implement the recommendations. (See apps. I to V.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

About 250 million tons of residential, commercial, and industrial solid wastes--such as abandoned cars, discarded bottles and cans, and paper--accumulate in the United States each year. Although this report contains no recommendations for legislative action, it does discuss problems which Federal agencies have encountered in carrying out their solid waste management responsibilities and identifies a number of ways in which these agencies could exercise greater leadership in the nationwide effort to improve solid waste disposal practices.

CHAPTER 1

INTRODUCTION

How well have Federal agencies

--handled the disposal of their solid wastes?

--managed Federal land being used for waste disposal sites? and

--recovered resources and reduced wastes?

This report discusses these matters and the actions being taken, planned, or still needed by several Federal agencies to meet their solid waste management responsibilities.

WHAT ARE SOLID WASTES?

"Solid wastes" can be simply defined as any waste that does not go "up the stack" or "down the drain." Most commonly seen examples are the contents of the household garbage can; abandoned automobiles and appliances; and bottles, cans, and paper littering the countryside. On the national scene these types of wastes pile up at the rate of 250 million tons per year, or about 5 pounds per person per day. Although these commonly seen wastes represent less than 6 percent of the total amount of solid wastes generated--the bulk of solid wastes comes from agriculture, animals, and mineral processing--nearly $10 million a day is spent just to dispose of them.

The Nation is faced with the problem of properly managing a constantly increasing amount of solid wastes while land available for disposal sites becomes scarce. Solid wastes generally are increasing at the rate of about 4 percent a year, but the rate of increase for some items, such as beverage containers, is as high as 7.5 percent a year.

WHAT HAPPENS TO SOLID WASTES?

The two most widely used methods of solid waste disposal are landfills and incinerators. A small amount of waste is disposed of by composting, hog feeding, salvaging, and ocean

dumping. The most common method of solid waste disposal in the United States today is some sort of land disposal operation. This method accounts for the disposal of about 90 percent of all collected household, municipal, and commercial wastes. Although incinerators with appropriate air pollution control equipment are also considered acceptable, few incinerators were used by the agencies we reviewed. For the most part these agencies used land disposal.

Land disposal operations vary significantly from simple but unacceptable "over the hill" dumps to sophisticated sanitary landfills--the ultimate for land disposal of wastes. The illustrations on the next page show two methods of sanitary landfill.

WHAT IS EXPECTED OF FEDERAL AGENCIES?

Federal agencies are expected to set a good example in the enhancement and protection of the quality of the environment. The President has issued four Executive orders directing Federal agencies to provide leadership in the nationwide effort to improve the quality of air and water by preventing, controlling, and abating pollution from Federal Government activities.

In the first major legislation[1] directing a national attack on problems of solid waste management, the Congress stated that:

> "*** inefficient and improper methods of disposal of solid wastes result in scenic blights, create serious hazards to the public health, including pollution of air and water resources, accident hazards, and increase in rodent and insect vectors of disease, have an adverse effect on land values, create public nuisances, [and] otherwise interfere with community life and development."
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> "*** the failure or inability to salvage and reuse such materials economically results in the unnecessary waste and depletion of our natural resources."

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[1]Solid Waste Disposal Act (42 U.S.C. 3251).

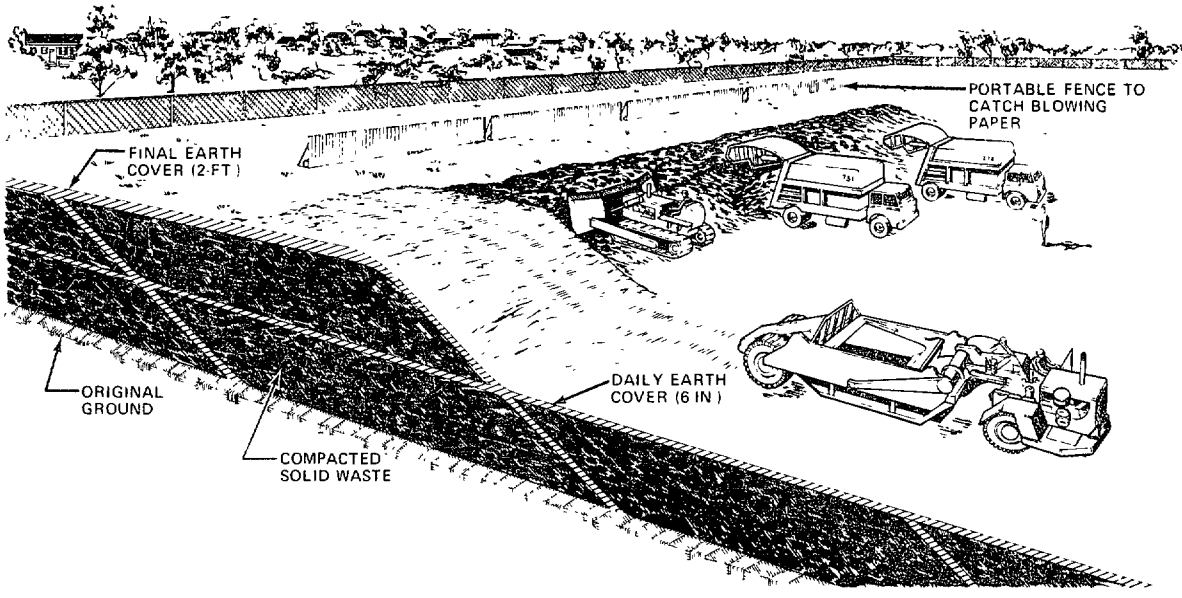

FIGURE 1. AREA METHOD. The bulldozer spreads and compacts solid wastes. The scraper (foreground) is used to haul the cover material at the end of the day's operations. Note the portable fence that catches any blowing debris. This is used with any landfill method.

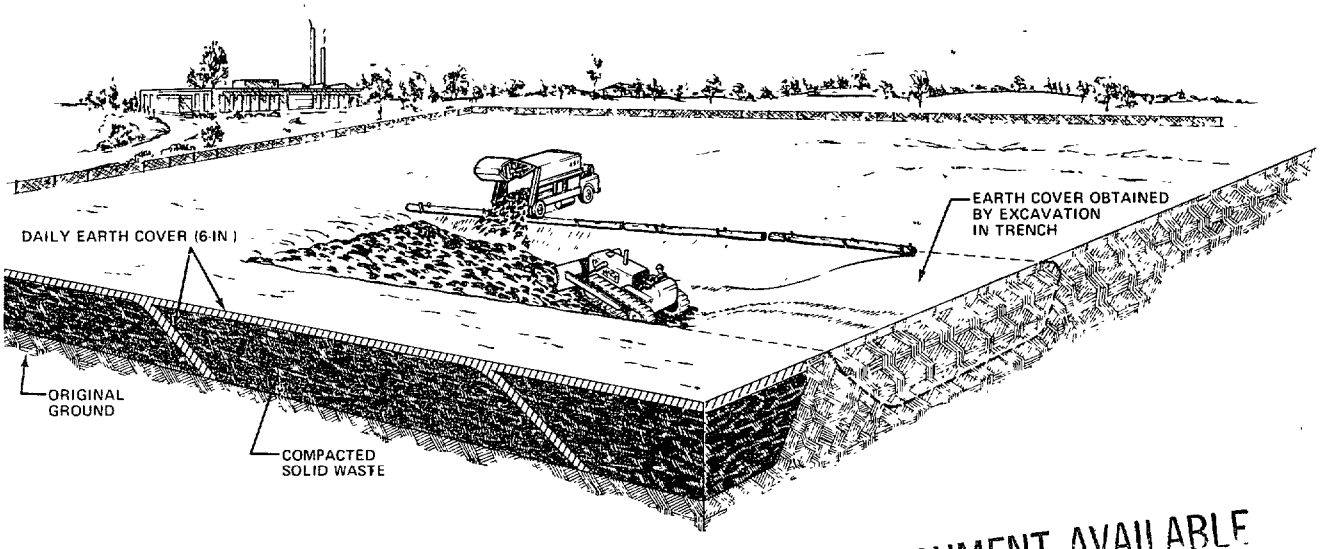

FIGURE 2. TRENCH METHOD. The waste collection truck deposits its load into the trench where the bulldozer spreads and compacts it. At the end of the day the dragline excavates soil from the future trench; this soil is used as the daily cover material. Trenches can also be excavated with a front-end loader, bulldozer, or scraper.

Source: Public Health Service publication--Sanitary Landfill Facts.

Executive Order 11282, issued in 1966, directed that refuse from Federal activities not be left in open dumps without being covered with inert matter within a reasonably short time.

The National Environmental Policy Act of 1969 (42 U.S.C. 4321) declared that:

> "*** it is the continuing policy of the Federal Government *** to use all practicable means and measures, including financial and technical assistance *** to create and maintain conditions under which man and nature can exist in productive harmony ***."
>
> "*** it is the continuing responsibility of the Federal Government to use all practicable means *** to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may *** enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

Solid waste was still considered one of our most neglected sources of environmental pollution late in 1970 when the Congress passed the Resource Recovery Act (Public Law 91-512). This act expressed the concern of the Congress that waste recovery and recycling be emphasized. The act placed a specific responsibility on Federal agencies to follow Federal solid waste management guidelines in not only their own program activities but also any activities they controlled through contracts, licenses, permits, or leases.

In reporting on section 211 of the Resource Recovery Act of 1970 related to the applicability of solid waste disposal guidelines to Federal agencies, the Senate Committee on Public Works stated that:

> "*** many Federal agencies have a very poor record of solid waste management. Federal agencies are inclined to place important environmental quality control functions in a subordinate role to their mission. This is no longer appropriate or acceptable.

"Federal agencies which generate volumes of waste have a correlative responsibility to request appropriations from Congress necessary to properly manage such waste as part of their normal operating expenses. The public will not tolerate the excuse that budget restrictions prevent compliance with waste management standards and guidelines; it is abundantly clear that the provisions of the environmental control laws do not permit the same excuse to be advanced by individuals or private organizations. Federal agencies must take the lead in overcoming the reluctance to invest funds necessary to control solid waste pollution."

* * * * *

"The Committee expects that these provisions will improve the performance of Federal agencies in solid waste disposal and management. Enforcement of such requirements is always a difficult problem but the Committee expects that the public's growing concern with, and scrutiny of Federal activities will cause Federal agencies to fully implement the provisions of this section. Federal officials are under great obligations with respect to the environment and these obligations should not be minimized. Anything less than full implementation of the provisions of Section 211 would be a malfeasance of public trust and in clear contravention of the law."

POTENTIAL FOR FEDERAL LEADERSHIP

The Federal Government owns and manages about one-third of the Nation's land and operates or controls thousands of refuse disposal sites on this land. The Bureau of Land Management (BLM), the National Park Service (NPS), the Forest Service (FS), and the Department of the Army manage most of the Federal land having disposal sites. A substantial amount of waste is generated on these lands by visitors to recreational facilities in the case of the land management agencies and by military housing and operations in the case of the Army.

In 1968 the Office of Solid Waste Management Programs, Environmental Protection Agency (EPA),[1] found that only 6 percent of all land disposal sites met accepted standards. EPA has a campaign urging State and local government agencies, organizations, and individuals to support efforts to close dumps and to replace them with sanitary landfills or other acceptable means of disposal. Many States have begun to establish comprehensive solid waste management programs in an effort to improve waste disposal, but

> "*** Unless the Federal Government appears willing to take whatever steps are necessary to provide adequate disposal for its own wastes, persuasion of local governments and industry to improve their solid waste management systems will be considerably less effective."[2]

The United States, with only 5.7 percent of the world's population, each year consumes about 30 percent of all

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[1] EPA became effective on December 2, 1970, in accordance with Reorganization Plan No. 3 of 1970. Prior to that date, the Office of Solid Waste Management Programs was known as the Bureau of Solid Waste Management in the Department of Health, Education, and Welfare.

[2] Office of Science and Technology report, May 1969.

minerals extracted from the earth and about 40 percent of other natural resources. Some experts claim that our needs for nearly everything will double in just 30 years and that, unless significant changes in our consumption or waste disposal practices occur, we will run out of some resources in the next 30 to 100 years. Therefore the Federal Government should lead the way in recovering large quantities of its own wastes for recycling. Federal agencies' efforts to salvage waste could help change disposal practices as well as slow the drain on our natural resources.

Federal procurement has a significant impact on product design, quality, and composition--the things which most influence what ends up as waste. Federal spending on packaging materials alone, which constitute a significant part of municipal-type wastes, is more than $1 billion annually. The General Services Administration (GSA) and the Department of the Army are major procurement agencies and both have significant salvage operations.

Solid waste management authorities generally agree that two of the best long-term solutions to the solid waste problem are to reduce the amount of wastes requiring disposal and to recover and recycle reusable materials. Many practices which could contribute to these goals are not being used, however, because of apathy, uncertainty about possible increased costs, or a lack of public awareness. The Federal agencies can provide the leadership in developing the necessary data to overcome some of these problems and can help stimulate the market for recycled materials needed for a successful resource recovery program.

Bureau of Land Management

Vast acreages of land remain in the public domain. BLM manages these lands (except national forests, parks, and wildlife refuges) which are located primarily in the western States and in Alaska. These lands are divided into geographical areas consisting of one or more States and are administered by BLM State offices. The lands under State office jurisdiction are further divided into districts and areas which are administered by district offices.

BLM responsibility includes managing the public domain for a full range of multiple-use purposes, including leasing or selling of certain classes of public lands for residential, recreation, business, or community site purposes (public purposes). One of the public purposes which BLM allows is the use of the land for community solid waste disposal sites under leases and permits. BLM also uses the public domain, to a limited extent, for the disposal of solid wastes from its recreational sites.

Forest Service

FS is responsible for promoting the conservation and best use of the Nation's 155 national forests and 19 grasslands. As part of its responsibilities, FS protects these lands from fire, insects, and disease; improves their accessibility; and manages their multiple resources to provide orderly and continuous service to present and future generations.

FS has nine regions directed by regional foresters who are responsible for forest and grassland management. Within these regions, each national forest is administered by a supervisor. Districts within the forests are supervised by district rangers.

FS maintains and operates disposal sites on national forest land for the disposal of wastes generated at FS camp, picnic, and other recreational areas, as well as wastes from FS administrative activities. When suitable private land is not available, FS also allows the public to use national forest land for waste disposal sites under special-use permits and cooperative agreements.

National Park Service

The primary objective of NPS is to conserve, for the benefit and enjoyment of all the people, areas of national significance that contain exceptional scenic, historical, and recreational resources. For these purposes NPS has jurisdiction over about 28 million acres of Federal land in 47 States, the District of Columbia, the Virgin Islands, and Puerto Rico. In 1970 NPS areas were visited by over 166 million people who left behind many tons of waste requiring disposal.

Department of the Army

The Army is responsible for providing support for national and international policy and is responsible for maintaining the security of the United States by organizing, training, and equipping forces for the conduct of combat operations on land. In carrying out its mission, the Army administers about 11 million acres of Federal land and generates considerable amounts of solid waste from its activities.

General Services Administration

GSA performs numerous housekeeping and administrative functions necessary to the operation of the Federal Government. Through a nationwide supply system, GSA procures and distributes common-use commodities (GSA procurement in fiscal year 1970 amounted to over $2 billion) and disposes of certain types of surplus property, as well as solid wastes from most Federal office buildings.

Office of Solid Waste Management Programs

The Office of Solid Waste Management Programs, EPA, is the focal point for solid waste matters in the Federal Government. The Office is responsible, among other things, for providing technical assistance and guidance on solid waste matters to State and local governments, as well as to Federal agencies.

SCOPE OF REVIEW

We reviewed solid waste disposal policies, procedures, and practices of BLM, FS, NPS, and the Army. We reviewed also the efforts of the Army and GSA to promote long-term solutions to solid waste disposal problems through their procurement practices and salvage operations. We did not review other related solid waste management activities, such as storage, collection, transportation, transfer, or processing of wastes.

We visited selected disposal sites in Colorado, Florida, Georgia, Oregon, Utah, and Washington and local, State, regional, and headquarters offices of each agency. We reviewed

also pertinent legislation and Executive orders and examined pertinent documents, reports, and records at headquarters, regional, and field office levels. We interviewed headquarters and regional officials and staff of the Federal agencies, representatives of the States and counties we visited, and officials of a number of private companies and industrial groups interested in resource recovery and recycling.

CHAPTER 2

NEED FOR IMPROVED WASTE DISPOSAL PRACTICES

Deschutes National Forest, Oregon.

The picture on the preceding page, taken by us, illustrates the conditions we found at many of the solid waste disposal sites on land administered by BLM, FS, and NPS. Wastes taken off Federal land for disposal frequently ended up at similar sites.

The disposal of Federal wastes has been subject to Federal regulations or "performance standards" since 1966. These standards (40 CFR 76.8) generally prohibited Federal agencies from burning wastes in open fires and using open dumps. We found, however, that open burning and open dumping was widespread.

Federal regulations provide that, if land disposal is used, the disposal site be operated in accordance with procedures described in Sanitary Landfill Facts, a Public Health Service (PHS) publication, which contains information on planning, designing, and operating a sanitary landfill and which states:

> "The Sanitary Landfill is defined by the American Society of Civil Engineers as: A method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day's operation, or at such more frequent intervals as may be necessary."

The Federal regulations also provide that all wastes in urban areas and wastes in excess of 25 pounds a day in rural areas be burned only in facilities especially designed for that purpose. They also prescribe standards for particulate emissions and density of emissions from incinerators.

Although these Federal standards clearly applied to Federal agencies, it was not clear to some agency managers whether they were responsible for what happened to solid wastes once they left Federal land. Some managers expressed the belief that they had no responsibility for solid waste

disposal once the wastes left Federal land; others indicated that their responsibility for proper solid waste disposal included those wastes from Federal activities taken off Federal land for disposal. The Resource Recovery Act of 1970, in dealing with this matter, specified Federal agencies' responsibilities for meeting Federal guidelines not only in their own operations but also in those operations in which they were involved through leases, contracts, licenses, or permits.

MANY SOLID WASTE DISPOSAL SITES DO NOT MEET FEDERAL REQUIREMENTS

At our request, BLM, FS, NPS, and the Army inventoried the disposal sites which they operated, controlled, or used in the six States we visited. Controlled sites are permittee- or lessee-operated sites on Federal land; used sites are private, community, county, or State-operated sites off Federal land. They reported on 651 sites as follows:

Operator	Number of disposal sites				
	BLM	FS	NPS	Army	Total
Federal agency	10	232	24	12	278
Lessee or permittee (note a)	73	86	-	-	159
Other (note b)	22	148	39	5	214
Total	105	466	63	17	651

[a]Includes operators under several cooperative agreements.

[b]Operators of used sites.

We asked the agencies to classify the sites according to the method of disposal. To qualify as a sanitary landfill, the site had to satisfy eight EPA requirements.[1] If wastes were compacted and covered at specified intervals but--contrary to Federal standards--not on each operating day,

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[1]These requirements are that (1) solid waste must never be burned on the site, (2) solid waste must be properly spread and compacted on a slope, (3) a uniform, compacted layer of at least 6 inches of suitable earth must be used daily for cover, (4) a minimum final cover of 2 feet of compacted, suitable earth cover must be used, (5) solid waste must be so placed that the environment is not, and will not be, adversely affected--in the opinion of competent authority, (6) blowing litter must be controlled and the site and surrounding area must be routinely policed, (7) salvaging must never be allowed at the site, and (8) provisions must be made to insure that there are all-weather access roads and, within a 24-hour period following major breakdowns to normal operating equipment, that there is equivalent equipment standing by.

the site was classified as a modified dump. All other sites were classified as open dumps. The agencies classified the sites they operated, controlled, or used in the six States we visited as follows:

	Federally operated disposal sites					
	BLM	FS	NPS	Army	Total	Percent
Sanitary landfill	1	-	11	9	21	8
Modified dump	3	26	9	2	40	14
Open dump--no burning	4	150	1	-	155	56
Open dump--burning	2	51	3	-	56	20
Incinerator	-	5	-	1	6	2
Total	10	232	24	12	278	100

	Federally controlled (lessee- or permittee-operated) disposal sites					
	BLM	FS	NPS	Army	Total	Percent
Sanitary landfill	2	1	-	-	3	2
Modified dump	15	36	-	-	51	32
Open dump--no burning	7	29	-	-	36	23
Open dump--burning	49	12	-	-	61	38
Incinerator	-	8	-	-	8	5
Total	73	86			159	100

	Disposal sites used by Federal agencies but operated by others off Federal land					
	BLM	FS	NPS	Army	Total	Percent
Sanitary landfill	5	9	19	2	35	16
Modified dump	8	43	11	1	63	30
Open dump--no burning	-	48	3	-	51	24
Open dump--burning	9	47	6	-	62	29
Incinerator	-	1	-	2	3	1
Total	22	148	39	5	214	100

To summarize, only 9 percent of the 651 sites were classified by the Federal agencies as sanitary landfills. Less than 8 percent of the 105 land disposal sites operated,

controlled, or used by BLM met the Federal standards; only 2 percent of FS's 452 land disposal sites met such requirements. Only one of the FS incinerators was reported as being in compliance with Federal air emission standards.

Nearly 48 percent of the NPS sites were reported to be sanitary landfills. However, six of the 20 modified dumps were reported to burn periodically and therefore should have been classified as open dumps.

The Army reported over 78 percent of its land disposal sites as being sanitary landfills. Although we believe that some sites were misclassified, the Army was generally doing a good job of operating its land disposal sites. However, neither the Army's incinerator nor the other two incinerators the Army used met Federal air emission standards.

We visited 131 of the 651 disposal sites (31 federally operated, 62 operated by others on Federal land, and 38 off Federal land). Agency representatives accompanied us on most of our visits. The agencies reported that 19 (14 percent) of these sites were sanitary landfills, 48 (37 percent) were modified dumps, and 56 (43 percent) were open dumps. The remaining 6 percent were incinerators. We found that:

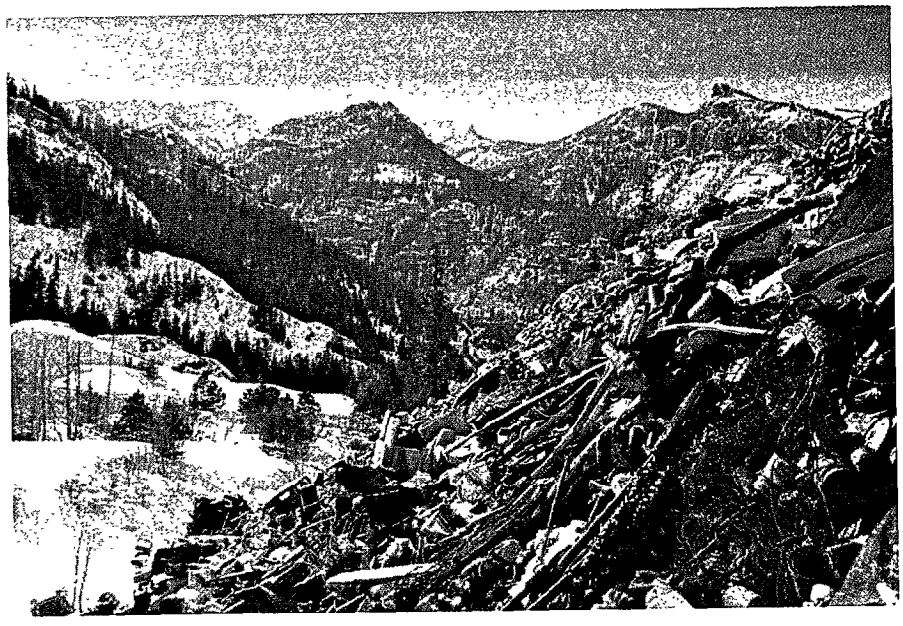
--56 were burning dumps or showed evidence of burning.

--65 were open dumps that had not been periodically covered with earth.

--24 were dumps in contact with ground water, streams, lakes, or swamps.

--Seven of the eight incinerators did not meet Federal air emission standards.

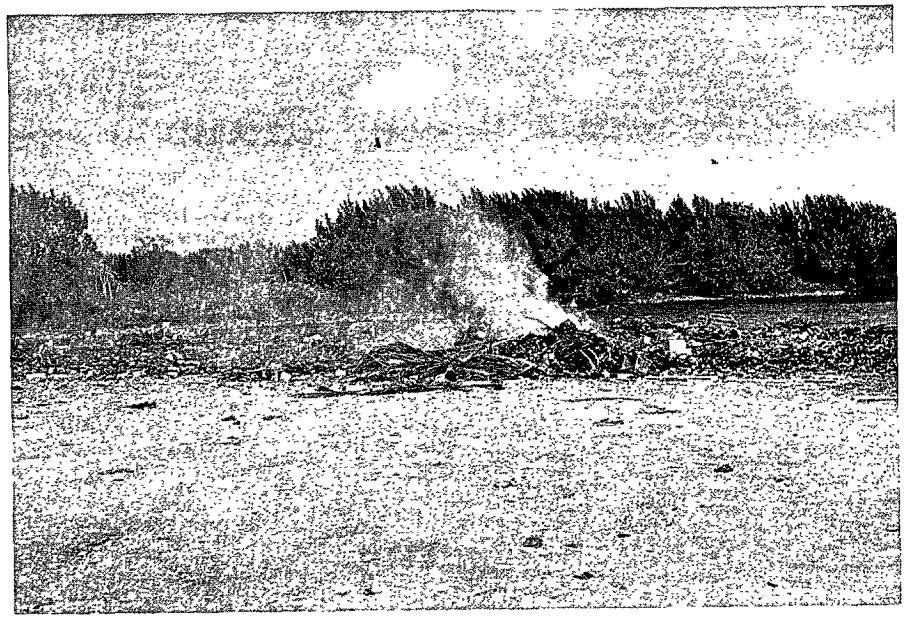
The pictures on the following pages, taken by us during our visits to the sites, show the conditions which caused scenic blight and which contributed to air pollution and water pollution (through contact with rivers, lakes, or ground water supplies or location in natural drainage areas).



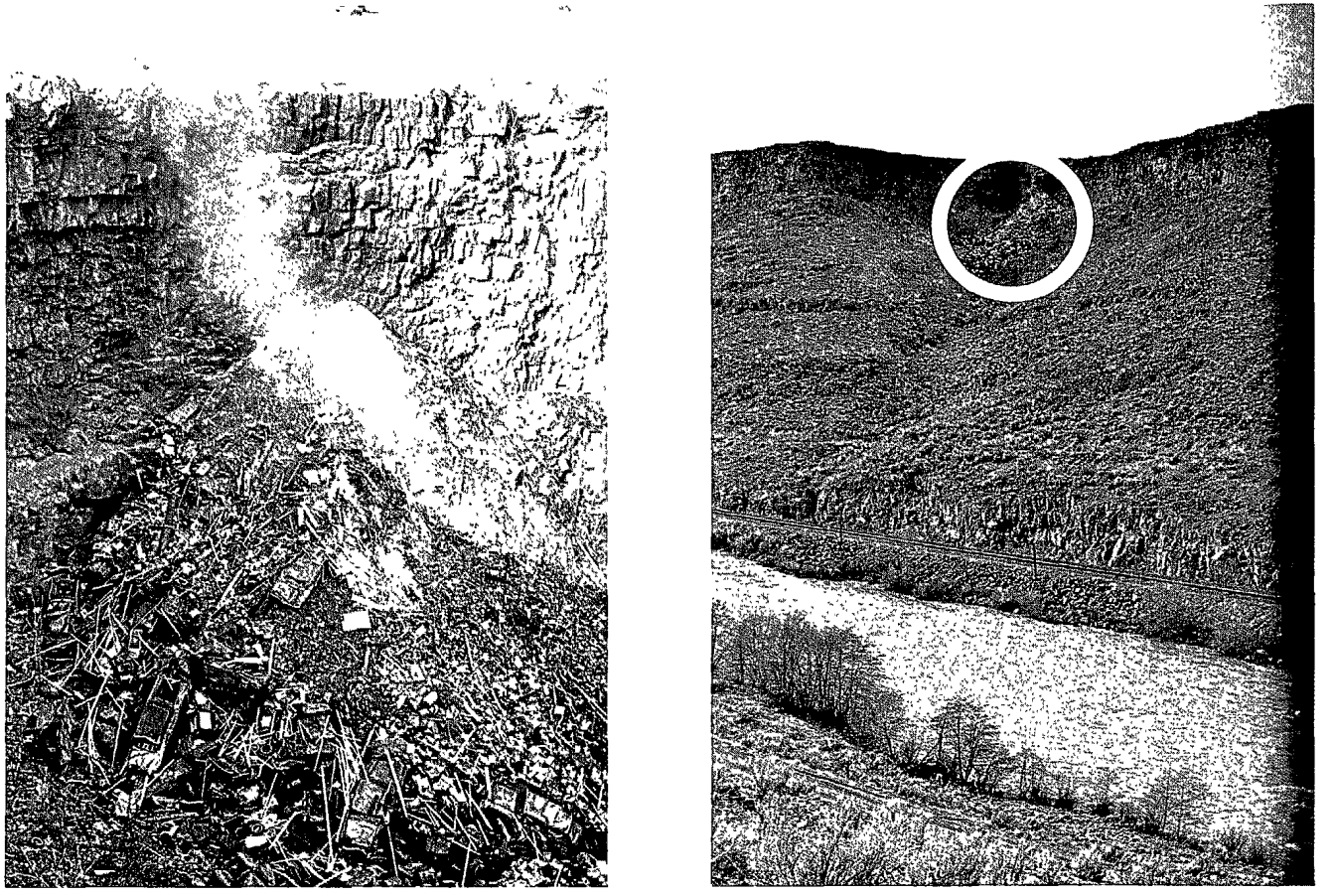
Scenic blight. View of picturesque mountains in Colorado is marred by open dump. The dump, which is used by the Forest Service and which is located on private land, can be seen from a major highway.

Burning at permittee-operated disposal site on Bureau of Land Management land in Oregon.

Permittee-operated site in Deschutes National Forest, Oregon. The site is in area of high ground water. Refuse is covered only when trench becomes full. Burning is taking place.



Disposal and burning of wastes in lake at site operated by the National Park Service in the Everglades National Park, Florida.



Disposal site in Oregon used by the Forest Service is located on private land in a natural drainage area. The picture on the left is a blowup of the circled area in the picture on the right.

Improperly closed and unauthorized sites

In addition to visiting 131 solid waste disposal sites that were being used, we visited 24 sites that were no longer being used. One FS region reported having at least 36 inactive open dumps.

When a disposal site is no longer used, care must be taken to insure that it is properly closed, because, like an open dump, an improperly closed disposal site

--can be a health hazard because of biological and chemical contaminants which air, water, birds, insects, and rodents can carry to man and his domestic animals;

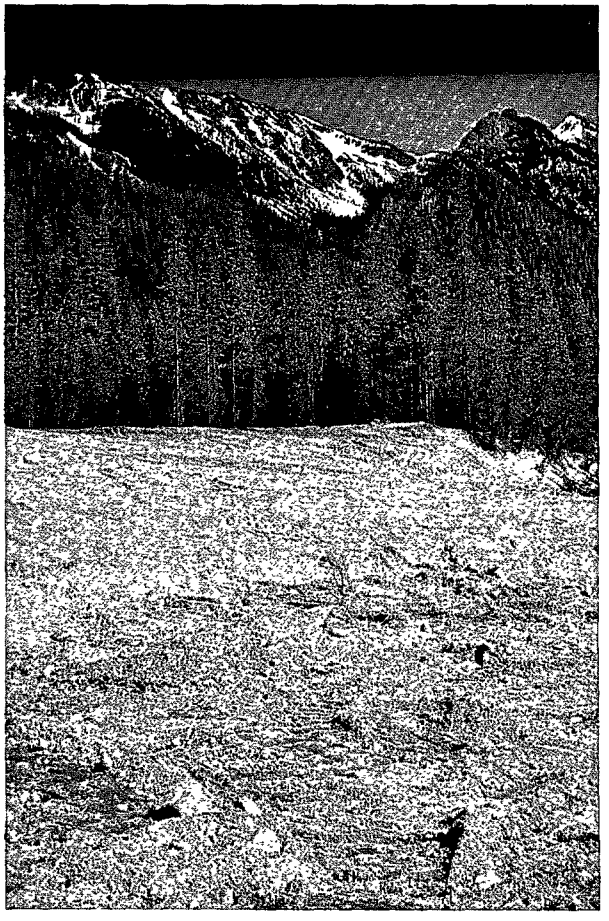
--can pollute both surface and ground water;

--can provide food and shelter for vermin or noxious insects; and

--can be an accident hazard because of the presence of sharp fragments, such as glass, metal, and other objects.

According to EPA guidelines contained in its publication entitled "Closing Open Dumps," proper closing of a dump requires covering with at least 2 feet of compacted earth, as well as exterminating rodents; blocking access to the site; posting of signs directing users to an alternative site; and other actions.

Of the 24 sites we visited, two did not have any earth cover, 10 were inadequately covered, and 12 appeared to be in satisfactory condition. Some of the sites had debris, including broken glass, on the surface and had litter in the surrounding areas. The two photographs on the following page illustrate the conditions we found at some of these inactive disposal sites--one shows a properly closed site and the other shows an improperly closed site.

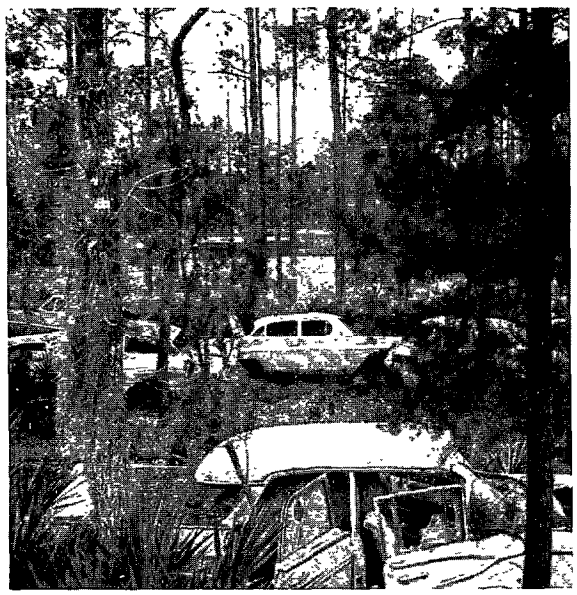


The picture on the left shows a properly closed disposal site in Snoqualmie National Forest, Washington.

The picture below shows a disposal site at Fort Lewis, Washington, that is no longer used. The site was not properly closed.

Also there were numerous unauthorized solid waste disposal sites on Federal lands. BLM officials estimated that there were about 330 such sites on BLM lands in Colorado and Utah alone.

BLM was not the only agency plagued with unauthorized solid waste disposal on its land, however. FS had similar problems, although to a lesser extent. For example, during a visit to Ocala National Forest in Florida we saw a number of abandoned automobiles. (See picture below.) More than 1 million automobiles are abandoned each year, many of them on city streets or on Federal land.



Abandoned automobiles in Ocala National Forest, Florida.

Although agency officials generally were aware that solid waste was being left illegally on Federal land, they told us that there was little they could do to prevent the illegal dumping because they did not have sufficient funds and manpower to adequately police the areas. There was little or no control over most of the unauthorized disposal sites, and they generally were unsightly open dumps. There

is a need, in our opinion, for the Federal agencies to give greater attention to resolving the problem of unauthorized disposal of waste on Federal land.

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In general, many solid waste disposal sites operated, controlled, or used by the Federal agencies did not meet Federal requirements. In addition, some sites no longer in use had not been properly closed and solid waste was being disposed of in a number of unauthorized areas. We believe that a principal reason for the generally unsatisfactory conditions was the lack of a systematic approach to identifying and solving solid waste disposal problems.

LACK OF A SYSTEMATIC APPROACH TO GOOD SOLID WASTE MANAGEMENT

The agencies we reviewed generally lacked systematic management approaches to insure that solid wastes were being handled in such a way as to protect the environment and set a leadership example. We believe that, to effectively and efficiently achieve good solid waste management, each agency needs to identify and analyze its problems, plan and implement corrective actions, and periodically review the results of its actions.

The National Environmental Policy Act of 1969 required that all Federal agencies use systematic approaches in their planning and decisionmaking activities which may have an impact on man's environment.

At the agencies we reviewed, we found that there was a need, to varying degrees and at various organization levels, for (1) more effective responsibility centers, (2) improved policy guidance from headquarters and policy implementation by regional offices, and (3) more effective inspection procedures.

Need for more effective responsibility centers

Inherent in a systematic approach to management of an activity is the need for responsibility centers. One person should be assigned direct responsibility for all matters relating to solid waste management, to insure that solid waste problems are being identified and that corrective actions are being taken on a coordinated, rather than a piecemeal, basis.

We found that in some cases there was a complete lack of assignment of responsibilities for solid waste matters; in other cases responsibilities were so divided between organizational groups that no one person, office, or interdisciplinary team was taking a broad overview of the entire situation. In a few cases where responsibility centers did exist, they were not effective in dealing with solid waste management problems.

For example, no centralized responsibility for solid waste matters existed at BLM headquarters. Similarly, at

two of the three BLM State offices we visited, no one person, division, or interdisciplinary team had the overall responsibility for solid waste matters. The lack of centralized responsibility was, in our opinion, the main reason that BLM State offices and headquarters were not fully aware of the extent of solid waste problems on BLM land.

We were informed by BLM headquarters officials that, instead of establishing responsibility centers, they were trying to instill in all of BLM's personnel an environmental consciousness so that environmental factors would be considered for all BLM activities.

We were unable to find anyone at NPS headquarters who had been assigned overall responsibility for solid waste matters. NPS headquarters officials told us that solid waste management responsibility had been delegated to the regional offices.

NPS regional office officials told us that the park superintendents were primarily responsible for the protection and preservation of the field areas (such as parks and monuments) to which they were assigned and that the regional offices assisted the superintendents in discharging those responsibilities by providing guidance, direction, and technical expertise.

Both the NPS regions and field areas generally relied on PHS, under the terms of a 1955 memorandum of agreement, for technical advice and consulting sanitary-engineering services.

Several of the NPS regions had responsibility centers for solid waste management, but, in our opinion, they were not effective in dealing with the problem. For example, in April 1970 the director of one NPS region designated the superintendent of a national monument as the regional solid waste disposal coordinator. The coordinator was to be responsible for insuring that the region complied with applicable Executive orders, and all correspondence on solid waste matters was to be sent to him.

Regional NPS officials stated that the coordinator had not effectively carried out his solid waste disposal

responsibilities because (1) his duties and responsibilities as a park superintendent did not allow sufficient time to function as a regional coordinator, (2) his geographic location was too isolated in relation to other field areas, and (3) the field area budget was insufficient to allow adequate travel and communication with other field areas and with the regional office. A regional NPS official stated that the superintendent had been designated as the coordinator because he was knowledgeable on solid waste matters and because the region wanted to utilize his expertise. He further stated that it was not practicable or reasonable to assign a coordinator who was at a remote location and that it probably would have been more appropriate to assign someone from the regional NPS office.

Although responsibility centers for solid waste management generally existed throughout FS, the responsibility was fragmented among several divisions. For example, in one FS region, one division was responsible for issuing special-use permits for disposal sites and for insuring that waste generated at recreational sites was collected and disposed of properly. Another division formulated regional environmental-engineering policies and standards and provided technical advice on waste disposal site operations. A third division, whose main function involved soil, watershed, water use, and mineral management, became involved in solid waste through its water pollution abatement activities. Other divisions were also involved with certain aspects of solid waste disposal.

Each division dealt with solid waste problems only when the problems affected that division's functions. There was little coordination between divisions, and no one person or division was responsible for all aspects of solid waste management. As a result, the FS solid waste management program, in our opinion, was not as effective as it could have been had responsibility centers been established with authority to (1) cut across organizational lines and (2) administer the entire solid waste management program.

At the installation level the Army divided solid waste management functions into two areas--facilities engineering and property disposal. The facilities engineer was responsible for operating the collection and disposal system, except

for salvageable materials and certain classes of wastes, for which the property disposal officer was responsible.

This division of responsibility appears to have worked satisfactorily where there was a clear distinction between salvageable and unsalvageable material. Where the distinction was not clear, each problem was resolved as it occurred; little effort had been made to systematically study overall solid waste activities.

Need for improved policy guidance from headquarters and policy implementation by regional offices

Overall policy direction for solid waste management generally was provided by the headquarters offices of the agencies. Dissemination of such policies to regional officials usually was by directives, memorandums, manual instructions, and the several Executive orders relating to the environment. The adequacy of the policy direction and guidance from headquarters to the regions varied among agencies; two of the agencies provided little technical guidance to regional personnel.

The field offices could do considerably more to implement their agencies' solid waste policies. Some operating groups were not aware of their agencies' policies. Other operating groups, although aware of the policies, were not implementing them or were implementing them on a piecemeal basis. We believe that the inconsistent action on the part of the field offices resulted in part from inadequate direction on how to implement the policies and in part from the lack of responsibility centers that we discussed above.

As noted previously, BLM and FS allowed others to operate disposal sites on their lands under leases and permits. Conditions at these sites often were unacceptable. We believe that site selection procedures and the sanitation provisions of the leases and permits need strengthening.

Bureau of Land Management

BLM headquarters established policies and provided guidance to regional personnel on solid waste matters both before and after the issuance of Executive Order 11282. As early as 1959 BLM issued a directive which authorized the approval of leases for disposal sites only if the sites met standards established to protect water supplies and the health and safety of the public.

After 1959 BLM headquarters issued numerous policy statements that related to solid waste management for the protection of the environment. These statements (1) assigned the responsibility for environmental protection to BLM

State directors, (2) emphasized the leadership responsibility of Federal agencies, (3) emphasized the use of a systematic, interdisciplinary approach in solving environmental problems, (4) directed that the lands be managed so as to achieve a quality land environment, and (5) directed continual monitoring, evaluation, and control of the environmental impact of BLM activities.

Although BLM clearly defined the need for a concentrated, systematic effort in the solid waste area, we found that BLM State offices had not effectively implemented BLM policy statements. Disposal sites under BLM jurisdiction rarely met Federal standards, and many excellent opportunities for BLM to provide a leadership example to surrounding communities were lost.

Officials in two BLM State offices told us that limited funding prohibited the development and implementation of effective solid waste management programs. The State offices, however, had not specifically requested from BLM headquarters the funds necessary to devise and implement effective solid waste management programs.

Officials in one BLM State office expressed the opinion that the headquarters policy statements did not provide the necessary impetus because they were not in sufficient detail. Officials in another BLM State office told us that they were not even aware of the policy statements. Although BLM headquarters had issued numerous policy statements on protection of the environment, it had not specifically emphasized solid waste disposal as a problem; consequently the State offices gave solid waste matters low priority.

We found that BLM district offices' solid waste efforts generally had been limited to processing lease applications for new sites and to cleaning up unsightly disposal areas and relocating them out of public view. Officials at the BLM district offices cited the lack of funds specifically allocated for solid waste management as the reason for the offices' limited solid waste activity. But these officials, like their counterparts in the BLM State offices, had not requested the necessary funds.

Some of BLM's actions to eliminate unauthorized dumping and to promote proper solid waste disposal practices were the result of complaints from the public. For example, BLM took no corrective action on an unauthorized open dump in Ridgeway, Colorado, until a local property owner complained to the President of the United States. The complainant stated that the federally owned dumpsite, which was on a hill along a heavily traveled highway, was detrimental to the area's natural beauty as it did not comply with Federal standards for landfills.

Another disposal site, which was an authorized open-burning dump, was adjacent to the unauthorized open dump. As a result of the complaint, BLM required the lessee of the authorized dump to (1) begin using a sanitary landfill method of disposal and (2) clean up the unauthorized open dump.

Most of the disposal sites under BLM leases were operated by small communities which had limited financial resources. According to BLM officials, citizens had traditionally used uncontrolled open dumping. The financial difficulties and traditional practices of the citizens present BLM with a unique problem requiring a concentrated effort in public relations, persuasion, involvement, and education to develop a mutual concern over environmental quality as a basis for solving the problem of open and burning dumps on public lands. As stated in its directives on environmental quality and natural beauty, BLM must maintain effective communications within its own organization, with other governmental agencies, with sectors of private business, and with the general public to achieve sound decisions involving environmental quality.

We visited two sites operated by BLM in one district. Both of the sites had been established and operated without technical guidance from the BLM State office. Both sites were being operated at standards below those required of lessees in that district. One of the sites had been established to avoid using the site pictured on page 27. BLM has made no effort to coordinate with either the FS or the city which also used that site to see if an acceptable solution could be found.

BLM was also using unacceptable dumps operated by others off Federal land. We reviewed some of BLM's contracts for garbage collection service and found no mention of the method of disposal required or of the disposal site to be used.

BLM officials in two States told us that they had been allotted insufficient man-months and funds to carry out all aspects of proper solid waste management practices and their other required activities. These BLM State officials, however, had not specifically requested from BLM headquarters the funds necessary to implement an effective solid waste management program.

BLM district personnel needed additional guidance to help them process lease applications. One of the most important considerations in establishing a solid waste disposal facility is site selection. From an environmental standpoint, engineering studies of potential sites should be made to identify such problems as high water tables, inadequate drainage, shortages of cover material, and limited access. BLM districts generally have not required such studies, and consequently we found a number of disposal sites where actual or potential water pollution problems existed that could have been avoided had other, more appropriate sites been selected. In May 1971 one BLM State office developed operating procedures which required geological and engineering reports, but the procedures had not been formally adopted at the time of our field visit.

BLM manuals did not provide adequate guidance or standards for selecting or operating lease sites on public land. Although the manuals stated that "All waste disposal on public lands is to conform to local, State, and Federal standards," it did not describe the Federal standards or refer to the acceptable waste disposal practices recommended by PHS.

In the absence of adequate guidance from either BLM headquarters or State offices, district offices have relied on the States and counties, and even on the lessees, to establish the conditions for operation of leased disposal sites. This resulted in lessees' operating their sites in a number of different ways, including open burning. BLM gave the lessee of a disposal site in Lapine, Oregon, the

option of burning the waste once a week or of covering it with dirt. This particular site has had a history of fires spreading out of the disposal area and into the surrounding forest. A number of other open-burning sites have had the same problem.

Although many of the leases we reviewed called for compliance with State standards, we found that this was merely a formality. One lease stipulated that:

> "*** the dump will be constructed and operated in accord with the requirements of State laws and in accord with the requirements of the State Department of Health and State Pollution Control Commission."

When BLM officials tried to rely on this stipulation to get a lessee to take corrective action at one site, they found that the State had no laws or regulations on disposal site operations.

Other leases had copies of State regulations attached to them but did not identify the specific applicable standards. As one BLM official told us, it is inappropriate to attach a copy of a law to a lease without extracting and incorporating specific operational requirements into the lease stipulations. In his opinion, this method assumes that the lessee will read and understand the law--a risky assumption if effective solid waste management practices are desired.

It seems to us that certain provisions were inserted in leases as a formality with little thought given to what the provisions meant. District personnel generally were not cognizant of the State standards, and in most cases State standards were less stringent than Federal requirements.

BLM's manual also required that lease applications be submitted to the Department of Health, Education, and Welfare for approval. We found that in two States this had not been done for lease applications; in another State the BLM Director advised his districts that, although the Department had consistently recommended that written assurances of

compliance with Federal and State regulations be obtained from lessees, the inclusion in leases of stipulations which were too severe might be self-defeating.

Forest Service

FS was the only agency included in our review that had developed plans to identify solid waste management problems. In August 1969 FS headquarters issued instructions stating that its general policy was to bring all disposal sites under FS jurisdiction into compliance with the requirements of Executive Order 11282 which prohibited open burning and open dumping. Basically the instruction provided that both new and existing sites on FS land meet standards as soon as possible and that new facilities on private land used by FS meet applicable requirements. The instructions directed that, where facilities on private land were being used and the practices did not conform with Federal, State, or local standards, all reasonable efforts be made to assist and encourage the operators to meet the necessary requirements before considering using other sites.

At the beginning of our review in January 1971, FS regions generally did not have formal plans to meet these requirements. In February 1971, however, FS headquarters officials informed the regions that FS was initiating a comprehensive study of the waste disposal problem. The objectives of the study were:

> "*** to develop collection and disposal systems which will minimize the number of disposal sites, assure that sanitary landfills conform with sound land management practices including environmental and esthetic objectives, and do so with a minimum total cost consistent with requirements and available resources."

Regional officials told us that an overall plan to deal with the solid waste problems would result from the study. Officials in one region initially said that they would await the results of the study before upgrading their sites, because they wanted to make sure that the improvements would be consistent with those recommended in the study. After we discussed the results of our review with the Deputy Regional Forester in April 1971, however, he advised us that actions to improve that region's solid waste disposal practices would begin immediately.

We found generally that FS regions or FS personnel at the individual forests were not effectively implementing FS policy. For example, in October 1968, at a public hearing concerning a State's plans to establish a regulation prohibiting open burning, one FS region presented to the Utah State Air Conservation Committee a formal statement which read:

> "The Forest Service has been and is currently working to ensure that its activities do not lead to a reduction in the quality of the environment, which includes, as a major consideration, the quality of the air. We are eliminating open burning of refuse at Forest Service administrative sites and campgrounds as rapidly as practical. In addition, open burning at refuse dumps located on National Forest lands operated by cities, counties, and others is being eliminated as quickly as we can work out satisfactory alternate disposal methods with these groups."

On March 5, 1969, regulations prohibiting open burning went into effect in the State. FS reported 2 years later that 26 of the 56 open dumps operated by the FS in that State still allowed burning. When asked what had been done to eliminate burning at FS sites, a regional official said that Executive Order 11282 had been forwarded to FS officials at each forest. The Executive order specified that refuse in rural areas be disposed of in such a manner as to reasonably minimize pollution. Thus many FS dumps in that State were in violation of not only State but also Federal standards.

We found also that greater cooperation and consultation was needed between FS and other Federal agencies. We identified several improperly operated private disposal sites used by FS and BLM that were on BLM land but it appeared that neither agency knew of the other's involvement.

For example, a privately operated disposal site used by FS in Utah was an open-burning, unregulated dump. An FS official told us that FS (1) had always used the site, (2) had never paid any dumping fee for its use, and (3) had never encouraged community officials to upgrade disposal

operations or volunteered any FS help. He stated that the site was not being operated properly and that he was considering using another private site. The FS official did not know who had inspected either site or who owned the land. We subsequently determined that both sites were on BLM land and had been classified by BLM as unauthorized dumps.

A general FS policy is to use disposal sites on private land, if possible, in lieu of establishing sites on FS land. At several locations we reviewed, FS planned to close the disposal sites on FS land and to use private sites located near FS land.

Many FS officials expressed the general opinion that once refuse left FS land it was no longer FS responsibility. For example, an FS district planned to close several sites on FS land and to use a nearby county disposal site. Initially FS classified the site as a sanitary landfill; however, a FS representative stated that his inspection had been limited to viewing the site from the highway. He further stated that he had thought that FS, by paying dumping fees, would satisfy its responsibility and that the county would be better able to take care of the refuse than would FS. Our review of the site showed that:

--The disposal site was in a ravine visible from the highway.

--Refuse--consisting of garbage, car bodies, trees, dead animals, and tires, among other things--was being dumped into the ravine and then covered.

--A small, swift-moving stream ran directly through the filled area, into uncovered refuse, and then into the portions of the ravine which had not yet been used. FS representatives stated the stream eventually fed into a major river.

--Two rock dams had been built at the end of the disposal area in the ravine to prevent the refuse and garbage from washing downstream, as the area was subject to flash floods and torrential rains.

--Several days' accumulation of garbage and refuse was piled in the disposal area of the ravine. The caretaker of the disposal site stated that the compacting and covering equipment was needed elsewhere and had not operated at the site for 4 days.

--There was a bad odor throughout the area, and blowing trash and litter was scattered over a wide area.

An EPA representative who accompanied us stated that the site was in the worst possible location; there was definite water pollution; and, overall, it was one of the most unacceptable operations he had seen.

After viewing the site, FS officials who accompanied us on our visit stated that they thought FS would not use it.

Although regional policy required the regional office to review and approve new disposal sites established on FS land, the region had not issued guidelines for the use of private sites off FS land.

Contracts for collecting and hauling wastes from FS land to private sites in several regions did not provide that sites used by the contractors comply with Federal standards. In fact, one contract we reviewed directed that the wastes be disposed of at a site which was an open-burning dump.

We reviewed several collection and disposal contracts which directed the contractors to dispose of the solid wastes off FS land. The contracts generally required the contractors to make their own disposal arrangements and to comply with applicable State, county, and local ordinances. However, FS officials in many cases did not know whether the sites used by contractors met applicable standards. Regional office officials did not know which disposal sites were being used by FS contractors.

Some forests and districts took more active roles in improving disposal sites. For example, officials at San Isabel National Forest, Colorado, had inventoried their disposal sites and were formulating solutions to their solid waste problems. Officials at other forests were closing

some of their smaller disposal sites, although, in our opinion, better guidance on the proper way to close a site was needed.

At Pike National Forest, Colorado, district officials were studying plans to consolidate several sites and had formulated plans to improve another site to meet sanitary landfill standards. Officials at Dixie National Forest, Utah, were planning to develop a joint disposal site in cooperation with local counties. Officials at one FS district were working with the Army to solve disposal problems. These actions being taken at individual FS facilities illustrate the practices that could be implemented FS-wide to improve solid waste management.

FS personnel had not paid sufficient attention to special-use permits for disposal sites. They had not updated permits to include either specific Federal standards or the pertinent clauses required by the FS manual.

We reviewed nine special-use permits issued by FS for disposal sites and found that, with two exceptions, they contained only general provisions which required the permittees to adequately protect public safety, health, and welfare and to fence the disposal sites. Four of the permits either permitted or required that refuse be burned. The most recent permits contained some specific requirements on disposal methods, such as frequency and depth of cover, but one allowed burning of refuse on written approval of the district ranger, if such burning was not contrary to air pollution laws and regulations.

The FS manual contained the following clauses which were to be included in all special-use permits for disposal sites.

> "The disposal area covered by this permit shall be operated as a sanitary landfill. No burning and no salvage operations will be permitted at the site.
>
> "Refuse shall be spread, compacted, and covered on the day it is deposited at the site."

The nine special-use permits we reviewed, however, did not contain these clauses.

FS officials told us that they had not updated the special-use permits to include applicable Federal standards clauses required by the manual for the following reasons.

--The requirements and emphasis on solid waste disposal were fairly recent, and there had not been enough time to update all permits.

--FS lacked funds and manpower to revise the permits and to insure compliance.

--The overall practice was to remove disposal sites from FS land rather than to require permittees to upgrade sites.

--Most permittees operating disposal sites on FS land could not comply with the latest standards, and enforcement would lead to indiscriminate dumping elsewhere in the forests.

Although there are certain problems inherent in imposing new requirements on permittees, FS personnel did little to overcome these problems so as to comply with required FS and other Federal standards and regulations.

National Park Service

NPS policy and guidance to its regions and parks was limited. Basic NPS solid waste management policy was contained in several "Administrative Policies" compilations revised in 1968. This policy stated:

> "Wastes generated within a recreation area may be disposed of within or outside the area so long as disposal does not (1) pollute water or air, (2) result in the defacement of public recreation areas, or (3) result in destruction or impairment of important natural or cultural resources. [Same policy applies to historical areas.]
>
> "Refuse generated from operations within a natural area shall be disposed of by approved methods outside the area, where practicable and feasible. Refuse disposal within the area, where necessary, shall be accomplished by incineration, sanitary landfill, or modification of these methods as appropriate."

In addition, in June 1968 NPS issued a memorandum to all regional directors emphasizing NPS responsibilities as follows:

> "Superintendents should not sit back and relax simply because he has [sic] negotiated an off-site refuse disposal contract. They should be familiar with how the contractor disposes of the refuse and the degree of the problem, if any, that has been transferred."

NPS's policy of using proper disposal sites applied equally to sites both on and off Federal land.

Generally we found adherence to NPS policy at the national park areas we visited. There were, however, a few exceptions. Officials at Mesa Verde National Park, Colorado, for example, discontinued the use of a modified dump operated by one community in favor of an open-burning dump operated by another community. NPS officials told us that the latter dump was used because it was more economical and more

convenient. The park official responsible for solid waste disposal said that he was not aware of Executive Order 11507, February 4, 1970, which permitted the use of municipal disposal sites only when they were operated in accordance with satisfactory solid waste disposal practices.

At Rocky Mountain National Park, Colorado, two disposal sites were on private property and did not comply with Federal standards. Park officials told us that they did not plan to stop using these sites.

Officials in two regions generally felt that once the refuse was removed from park land it was no longer NPS responsibility. In another region an official stated that there was nothing NPS could do, or was required to do, with disposal sites off NPS land. However, in a fourth region all park officials that we interviewed were aware that disposal sites used by NPS off Federal land should meet the same standards as those on NPS land.

In view of the confusion of NPS regional officials concerning their responsibilities for disposal sites used by NPS off Federal land, we believe that NPS headquarters officials need to reemphasize NPS's solid waste policy to all regional personnel.

Department of the Army

Policy and guidance from Army headquarters to Army installations generally was adequate. Army regulations in effect since 1967 specifically prohibited open burning of refuse at all Army installations and required that sanitary landfills be used whenever practicable. Army technical manuals in effect since 1958 provided details on how to select disposal sites, operate sanitary landfills, and close unregulated dumps.

The larger Army installations we visited generally were complying with these policies and were disposing of their wastes in a satisfactory manner. Some isolated problems existed, but in general the Army was a leader in the use of the sanitary landfill method of disposal. The Army has recognized the need for proper waste management practices for many years, because of the size and population of its

installations and the attendant health hazards posed by the improper management of their wastes.

We noted a few areas, however, where there were opportunities for the Army to improve its solid waste disposal practices. Inadequate control of blowing litter, for example, was evident at most of the installations we visited. An Army technical manual cited the importance of operating a sanitary landfill without scattering paper and described several methods of controlling this nuisance.

At Fort Stewart, Georgia, the solid waste was not being spread or compacted prior to being covered, contrary to the recommendations in the technical manual. The Post Engineer had directed that the bulldozer not be used at the disposal site so that the dozer would remain clean for inspection. Also the solid waste was not being covered with earth at the end of each day, contrary to the requirements in the manual.

The landfill operation at Hunter Army Air Base, Georgia, was adjacent to a flowing stream. Although the Post Engineer assured us that a testing station downstream indicated that the water was not being polluted, we saw a great deal of solid waste in the stream as well as along both banks of the stream.

At Fort Benning, Georgia, two landfill sites which had been closed for several years had deteriorated. At one site a significant amount of settlement had occurred that resulted in long, deep furrows which would lend themselves to erosion. Erosion was well underway at a second site, and previously buried waste was being washed free by rain waters and carried about a quarter of a mile downhill to a stream. An Army technical manual states that:

> "*** a maintenance program will be established for the first several years to periodically inspect the completed sanitary fill and make corrections where indicated."

Installation officials admitted that they had not been adequately inspecting completed fills and promised to correct the deficiencies noted above and to establish a periodic inspection program.

Some Army installations were little concerned about solid waste once it left the installations. Confusion existed regarding Federal responsibility even though Executive Order 11507 provided that the use of municipal or regional disposal systems was preferred only when such systems were "appropriate," and Army Regulations 11-21 stated that:

> "In arrangements for disposal of refuse from Army installations through municipal or private facilities, care should be exercised to assure that this method of disposal does not become controversial as to the Government's contribution to local environmental pollution."

We found that solid waste generated off post as a result of Army operations was not considered an Army responsibility. One Deputy Post Commander told us that the Army was concerned only with refuse generated on post.

Need for more effective inspection procedures

Periodic inspections are an important management tool for monitoring, evaluating, and controlling adverse conditions that may otherwise prevail. We found that (1) BLM and FS had inspection systems but they needed to be more effective, (2) NPS relied on PHS to inspect NPS disposal sites but needed better follow-up procedures, and (3) the Army had inspection procedures that were generally effective.

Bureau of Land Management

BLM's inspection system does not provide management with information on the status of disposal sites. We found no formal program at the BLM State offices for inspecting either BLM- or lessee-operated disposal sites to determine whether they complied with waste management policies and lease requirements.

Informal inspections of leased sites were made occasionally in one State by various BLM district staff members when they happened to be in the area of the sites. We were told that these inspections were primarily concerned with the general appearance of the sites and that the inspectors usually did not know the terms of the leases.

One BLM State office required that lease compliance examinations be made at 5-year intervals, but we were told that these received such a low priority that they were made only when a problem was reported. We found that only three of 16 sites had been inspected by that State office since 1964. These inspections were made not as part of a systematic inspection but because of adverse publicity concerning two of the sites. The third site was inspected because its lease was due for renewal. The inspection reports identified a number of problems previously unknown to BLM management. For example, one report described the site as an "open face dump" with "burning going on almost all the time."

BLM personnel at both the State and the district levels said that they relied on the counties to inspect lease sites and enforce local and State codes. However, only one of the three counties we contacted had a regular inspection program, and that county did not provide any feedback to BLM.

Sites operated by BLM districts were not inspected by BLM State office personnel. In fact, BLM personnel in one State office were not even aware that BLM districts operated their own disposal sites. By the completion of our review, one State office had developed, but had not implemented, an inspection program. That office had not developed procedures for obtaining compliance with the appropriate standards or lease stipulations.

We have been advised by BLM officials that little can be done to remedy noncompliance by lessees, because BLM lacks enforcement authority (to arrest and/or fine). The only recourse available to BLM against violators is canceling the lease, but, according to BLM officials, that does not necessarily solve the problem because the public will continue to dump at the site.

BLM headquarters has provided guidance to its State offices personnel on how to accomplish protection of the environment, as follows:

> "In many instances BLM lacks authority and/or administrative capability to remedy *** problems. Results are obtained by a concentrated effort in public relations and education. Public knowledge of resource values and the mutual concern over environmental quality provide a basis for cooperation.
>
> "Achievement of objectives will be sought through consultation and persuasion as well as enforcement of laws and regulations."

Forest Service

FS inspections of sites varied according to the type of site and the FS organizational level making the inspection. Generally inspection coverage was better at the district levels than at the forest and regional levels; however, the frequency of inspections varied among districts.

FS regulations require that district personnel inspect permittee disposal sites at least once a year. The inspections are required to ascertain compliance with the

provisions of special-use permits. Some districts were making these inspections regularly. In one district, however, the sites were inspected, on the average, about once every 3 years. District personnel told us that they did not have the manpower and funds to make annual formal site inspections but that they informally viewed the sites from time to time but did not file inspection reports.

In addition to the districts' personnel making site inspections, personnel at the forest level made supervisory inspections of the districts, and personnel at the regional level made supervisory inspections of the forests. FS headquarters personnel also made inspections which were of a broader nature and which were directed toward all FS functions and performance. Our review of 82 of these supervisory inspections made from 1965 to 1970 showed that only 14 inspection reports contained references to solid waste disposal activities. Of the 14 reports, nine dealt specifically with solid waste disposal sites, Federal standards, or permit provisions.

National Park Service

NPS regions relied on PHS, under the terms of a memorandum of agreement between the two agencies, to inspect solid waste disposal sites. In some cases the PHS inspection reports were too sketchy to provide NPS regions with adequate knowledge of site conditions. For example, many reports stated only that the "refuse from this area is disposed of at the county dump." Nonetheless the inspections, in many cases, had resulted in PHS's (1) furnishing NPS with information about NPS's solid waste problems and (2) suggesting potential solutions to those problems. Two NPS regions, however, did not have follow-up procedures to insure that action was taken to correct the deficiencies identified by PHS.

Some of the individual parks also relied heavily on PHS, county, and State officials to inspect sites used by NPS off NPS land.

Department of the Army

Army regulations provided for periodic inspections of solid waste disposal sites. Army Medical Corps, Inspector General, Property Disposal Office, and Facilities Engineer personnel inspected disposal sites for various reasons. These inspections included monitoring the operations, test digging to determine the adequacy of cover, trapping and examining rodents, and determining whether salvageable materials were being thrown away rather than sent to the property disposal officer. Although these inspections were not always performed on a scheduled or consistent basis, we believe that they contributed to the generally satisfactory operation of Army disposal sites.

CONCLUSIONS

Solid waste disposal practices at Federal agencies, as well as solid waste disposal on the national scene, only recently have begun to receive significant attention. Federal policy in recent years has clearly stated that environmental degradation from Federal facilities and related activities will no longer be tolerated and that Federal agencies should provide leadership in the effort to protect and enhance the environment.

We found that solid waste disposal practices of the three land management agencies we reviewed seldom met minimum Federal standards and often contributed to air and water pollution and scenic blight. The Army generally was disposing of its unsalvageable wastes in a satisfactory manner.

Although the agencies made some improvement in their solid waste disposal practices, these improvements generally resulted from the personal interest, effort, and commitment of environmentally concerned individuals, rather than from effective agencywide programs. We believe that the agencies could use a more systematic approach for identifying solid waste disposal problems and solutions and for planning corrective action. Although conditions varied among the agencies, States, and regions, a number of problems were common.

--Responsibility was not centralized. No individual or organizational unit was responsible for solid waste matters across organizational and functional lines to insure that solid waste problems were being identified and corrected on a coordinated basis.

--Policy guidance from headquarters and policy implementation by field personnel were inadequate. Agency field personnel generally were not sufficiently aware of or concerned about solid waste management problems. Some personnel did not even know that Federal standards for proper solid waste disposal existed.

--Planning to deal with solid waste problems generally was inadequate. Only one agency had developed formal plans for identifying and correcting its solid waste problems.

--Two of the agencies needed more effective inspection procedures to insure that all solid waste disposal sites on Federal land were being operated in accordance with State and Federal regulations.

The Federal agencies need to improve their solid waste management practices if they are to avoid contributing to environmental degradation and provide the necessary leadership in protecting and enhancing the environment.

RECOMMENDATIONS TO THE SECRETARIES OF AGRICULTURE AND THE INTERIOR

We recommend that the Secretaries direct FS, BLM, and NPS to:

--Establish, at the various organizational levels, responsibility centers for solid waste matters.

--Establish procedures so that (1) solid waste management policies are effectively communicated to all officials, (2) headquarters provides adequate policy guidance to regional personnel, and (3) regional officials carry out agency policies effectively.

--Require periodic inspections and reporting of inspection results of (1) agency-operated and lessee- and permittee-operated disposal sites on Federal land and (2) disposal sites used by the agencies on private land.

AGENCY COMMENTS AND ACTIONS TAKEN

In commenting on our draft report by letter dated June 7, 1972 (see app. I), EPA stated that it was actively involved in focusing program attention on the manner in which Federal agencies were fulfilling their environmental responsibilities and on the effectiveness of their efforts. EPA stated also that it planned to make extensive efforts to furnish guidance and to review agency procedures and that our report presented graphic and well-documented samples of the problems that remain to be solved.

In commenting on our draft report by letter dated June 16, 1972 (see app. II), the Department of the Interior

stated that it was in general agreement with our findings and that it would adopt the recommendations or suggestions directed to NPS and BLM. The Department of the Interior stated also that it was remedying the deficiencies identified in the report.

Specifically the Department of the Interior stated that it had:

--Issued instructions assigning solid waste management responsibilities at the Washington office level and was preparing instructions requiring such assignments at the State and district office levels.

--Issued instructions requiring that applicable Federal standards relating to proper disposal be incorporated in leases for disposal sites.

--Requested its field offices to inspect all sites during fiscal year 1973 and to prepare reports concerning their compliance with Federal standards.

With regard to the complexity of the solid waste disposal problems, the Department of the Interior commented as follows on the practical difficulties involved in administering public lands, especially with respect to indiscriminate dumping.

"*** The Bureau of Land Management, in an effort to halt indiscriminate dumping on public lands, solicited cooperation from a number of rural communities and counties. These efforts resulted in the establishment of a series of solid waste disposal sites throughout the Western States under the Recreation and Public Purposes (R&PP) Act. Many of these sites of necessity, were established with a minimum of investment as the tax base was limited and funds were not available for operation of more sophisticated sanitary land fills. Local zoning, health and safety standards were observed, and the comments of local public health officials were solicited. Simultaneously Federal legislation and standards were evolving, but in the absence of Federal standards we relied on local

requirements. As a result, few of these operations meet present Federal standards established in 1966 for disposal of waste from Federal activities.

"The Bureau program has been quite successful in reversing, over a relatively short period of time, long-standing practices which had prevailed since settlement of the areas. Dumping was becoming centralized even though the disposal site operations may leave something to be desired."

Although these successful attempts by BLM to centralize dumping, instead of allowing indiscriminate dumping throughout the land, are noteworthy, we believe that BLM should emphasize the proper operation of the disposal sites.

In a letter dated June 23, 1972 (see app. III), FS stated that our proposed report was factual and would help FS do a better job in the field of solid waste management. With regard to the recommendations, FS said that:

--It would assign permanent responsibility for continuous and complete solid waste management.

--Its current program included procedures, policy, and deadlines for closing open dumps and for implementing sanitary landfill operations. FS stated also that this program would be fully implemented by June 30, 1974.

--It would insure periodic inspection of agency-operated and lessee- and permittee-operated disposal sites.

CHAPTER 3

FEDERAL EFFORTS TO ENCOURAGE WASTE REDUCTION AND RESOURCE RECOVERY AND RECYCLING

Solid waste authorities generally agree that there is a need to reduce wastes and to recover and reuse or recycle as much of our salvageable resources as possible. Present methods of disposal not only result in an unnecessary waste of natural resources but also are unsatisfactory from a long-range standpoint for the following reasons.

--Compacting wastes in a sanitary landfill reduces the volume by only 50 percent, and many municipalities are running out of available landfill space.

--Incinerating wastes can reduce the volume by as much as 90 percent, but there is still a problem of preventing air pollution and disposing of the residue.

--Composting, although actually a form of recycling, cannot accommodate inorganic materials and has not yet been proven economically feasible in the United States.

--Improperly operated disposal sites contribute to environmental degradation.

This chapter discusses the efforts being made and some of the problems being encountered by GSA and the Army in their efforts to encourage (1) waste reduction and (2) resource recovery and recycling.

In October 1970 GSA established the Office of Environmental Affairs to serve in a staff function as a focal point for directing and coordinating GSA activities impacting on the quality of the environment. In the field of solid waste, the activities included (1) the use in GSA procurement contracts of clauses requiring suppliers to furnish products, such as paper, having specified percentages of recycled material and (2) the expansion of a solid waste reclamation program for paper, metal, and glass at selected Federal buildings.

In May 1971 the Army established the Environmental Office which operated as a staff function and which had full responsibility for protecting and enhancing environmental quality. Its major responsibilities included reviewing the Army's statutory authority, administrative regulations, policies, and procedures--including those related to loans, grants, contracts, leases, licenses, or permits--to insure compliance with the National Environmental Policy Act.

USE OF FEDERAL PURCHASING POWER TO REDUCE WASTES

GSA and the Army, in their purchasing activities, have taken several actions to reduce the amount of wastes requiring disposal. Additional opportunities exist, however, and there is a need for individual installations to implement procurement practices contributing to waste reduction.

In 1970 GSA revised a number of Federal specifications for federally procured paper products. As of July 1972 the revised specifications provided for the products to contain a minimum of 3 to 100 percent of recycled material. GSA estimated that these specifications covered the purchase of about $65 million worth of such paper products as towels, toilet tissue, napkins, and packaging and packing material annually. In December 1971 GSA informed us that it had initiated a review of the specifications for other products, to identify those that might include requirements for recycled rubber, glass, and plastic. GSA stated that during 1972 several specifications might be changed to require and/or permit the use of recycled materials in such products as plastic pipe and thermal insulation.

GSA has initiated other actions to reduce the amount of solid waste requiring disposal. For example, the National Archives and Records Service analyzed Federal agencies' paperwork to identify ways of reducing the amount of paper generated. The Federal Supply Service initiated a program to reuse dunnage; other incoming packaging materials; and other items, such as data processing printout paper, in its repacking and other warehouse operations.

We inquired at three GSA regions as to their plans or efforts to buy materials and supplies in containers and

packaging materials which were reusable or appropriate for recycling. We were informed that specifications for such containers and packaging materials were established by GSA headquarters. Officials in two of the regions told us that they had no responsibility for identifying and implementing opportunities to help reduce solid wastes.

In contrast, officials in the third region told us that they had implemented policies and procedures related to improving the quality of the environment. For example, they had advised all operators and managers of GSA-controlled cafeterias in the region of the importance of specific actions to improve and preserve the Nation's environment. A letter had been sent to each cafeteria and snackbar operator and custodial contractor concerning actions to be taken that would contribute to preserving the quality of the environment. The letter requested cafeteria operators:

> "*** to take all possible actions that will contribute to [preserving the nation's ecology] accomplishing this worthwhile goal. Such actions would include, but not be restricted to, the purchase of supplies in returnable or biodegradable containers; the use of phosphate-free cleaning products; the disposing of salvageable items to businesses that will recycle such items; doing business with companies who are also taking active steps to preserve the ecology; and bringing to the attention of your employees the importance of this program and how they may do their part in implementing your program."

Regional officials told us that they planned to incorporate a similar clause in future contracts with cafeteria and snackbar operators and custodial contractors.

At the Army installations we visited, there were some programs in operation to reduce the amount of waste for disposal. At Fort Gordon, for example, the post exchange sold soft drinks in returnable bottles from its 500 vending machines located throughout the installation. In addition, the post exchange received shipments of certain items from central warehouses in returnable plastic baskets, which reduced the volume of cardboard boxes requiring disposal.

The Procurement Officer at Fort Gordon informed us that the fort purchased replacement tires having a four-ply rating or better so that they could be recapped and reused. At Tooele Army Depot, Utah, the Army purchased gloves and coveralls of a better quality than available from GSA because those purchased from GSA would not withstand repeated laundering.

Such actions to reduce the amount of waste for disposal, however, were isolated cases initiated by individuals because of economic considerations or a concern for the environment. They were not part of any formal Army-wide program to reduce wastes through its purchasing activities.

We discussed purchasing practices with Army contracting officers, commissary officers, post exchange officers, and custodians of officers clubs, to ascertain whether reducing solid waste was a consideration in the Army's procurement activities. We found generally they had given little consideration to reducing wastes through using reusable or recyclable materials and containers.

Commissary officials informed us that they had gone almost exclusively to throw-away, nonreturnable beverage bottles. Various club officers told us that, because of rising labor costs, the trend was toward portion-control packaging, that is, food individually wrapped or packaged in the proper size and/or quantity to serve one person. Food packaged in this manner ranged from filet mignon to coffee cream. Additionally, many items formerly packaged in glass containers were packaged in plastic, nondegradable containers.

With regard to customer preference, the Chief, Army and Air Force Exchange Service (AAFES), in a December 1, 1970 memorandum, stated that:

> "*** In keeping with free choice by the public, of which the military community is a part, AAFES should not be made the instrument of social reform. AAFES position is simply if the military community wants convenience packaging they should be carried by the exchanges and if they want returnable bottles they should likewise be provided ***."

Post exchange personnel were almost unanimous in their contention that they merely served the public and thus had to offer for sale what the customer wanted. They felt that demand experience had shown that the customer wanted convenience packaging and that the post exchange was supplying what was wanted, including nonreturnable bottles.

Furthermore, Army regulations require that commissaries stock nonalcoholic beverages in nonreturnable, no-deposit containers. Army officials stated also that, because of the increased costs in handling returnable bottles, it was more economical to stock beverages in nonreturnable containers.

Purchasing officers at the Army installations we visited cited two main reasons for not implementing revised procurement practices which emphasized environmental considerations. First, they had not been ordered to do so and they believed that they did not have the authority to take such actions on their own. Secondly, since most of their purchases were made through GSA or the Defense Supply Agency, they were limited to buying whatever was stocked by those agencies.

Officials of GSA and the Defense Supply Agency, told us that the major using agencies, in many cases the Army, set the specifications for many stocked items. Thus these officials believed that they were supplying the items the agencies wanted.

RECOVERY OF WASTES FOR REUSE OR RECYCLING

Both GSA and the Army have been recovering some salvageable materials for a number of years, but they could recover much more. Greater waste recovery and recycling could help stem the drain on our natural resources and stimulate similar recovery by local communities, industry, and private citizens.

GSA sells scrap paper and cardboard, metals, used tires and batteries, and other materials. The Army sells ferrous and nonferrous scrap metal, used engine oil, contaminated gasoline, rags, nonrecapable tires, scrap lumber, ammunition boxes, used batteries, used electronic equipment, and worn out tank tracks. Some installations sell garbage from mess halls.

Generally recovery of wastes by the Army was undertaken when it was economically advantageous. Recovery was limited to those items for which the estimated sales value exceeded estimated collection, segregation, processing, and other costs, unless it could be shown that the estimated cost of disposal by abandonment or destruction would exceed the net sales value. The Army did not consider the environmental benefits to be derived by salvaging and recycling various wastes.

Department of Defense officials told us that military agencies would continue salvage operations on the basis of economics. The officials believed that EPA and task groups studying solid waste disposal problems were responsible for providing a comprehensive, nationwide program that would deal effectively with the problem; Army officials agreed.

The National Environmental Policy Act of 1969 directed that all Federal agencies identify and develop methods and procedures which would insure that environmental, as well as economic and technical, values be appropriately considered. We found a number of situations where it appeared that environmental values had not been sufficiently considered. We found also that resource recovery and recycling was not consistently used throughout Federal agencies.

For example, officials at Fort Benning appeared to be trying to recover and recycle wastes wherever possible. One such waste that had been salvaged and sold for a number of years was cardboard. Officials at Fort Gordon, however, told us that it was not economically feasible to salvage cardboard. Through discussions with a nearby commercial firm, we learned that there was a market for waste cardboard. We told 3d Army officials about the market for cardboard, and they later told us that Fort Gordon officials were initiating action to salvage and sell waste cardboard.

Officials at Fort Lewis had discontinued salvaging cardboard because they had found that it was cheaper to bury it in the post landfill. They had not, however, considered such factors as the loss of the resource and the landfill space required for disposal.

Large quantities of cardboard are buried in sanitary landfills at some Army posts. The above picture shows cardboards being buried in an Army sanitary landfill.

Several Army posts we visited were salvaging waste oil for recycling. At Fort Lewis, however, such was not the case. The maintenance shop and various motor pools at this post regularly drained over 14,000 gallons of motor oil a month from Government-owned vehicles. A small amount of this

oil was turned over to the property disposal officer, and some was used for dust control on roads and parking lots. Large amounts of the oil, however, were dumped in two sumps on post. Some oil was being dumped in unauthorized locations and thus contributed to environmental degradation. No effort had been made to determine whether this oil had any effect on the ground water or on nearby streams.

Although Army regulations required that unneeded waste oil be turned over to the property disposal officer, the property disposal officer at this post told us that he would not accept large quantities of waste oil because it had no sales value. Furthermore he had not provided instructions or guidance to the various post units as to proper disposal of the oil. We found that, even though it was not economically advantageous to salvage the oil, a market existed in that area for recycled oil.

In October 1971 post officials told us that the practice of dumping waste oil onto the ground had been discontinued and that they were arranging for a contract to have the waste oil taken from the post. As of March 1972, however, no contract had been awarded and the oil was being burned in an open pit.

As previously noted, the responsibility for solid waste matters in the Army was divided. Property disposal officers were responsible for collecting and selling all profitable, salvageable materials, while facilities engineers were responsible for disposing of all other wastes. Only one Army post we visited--Fort Carson, Colorado--had centralized responsibility. At that post an advisor for ecology position was established in August 1970. The advisor was to investigate environmental problems and provide advice on potential solutions.

A procedure was established on the post for collecting newspapers and aluminum. In addition, problems were identified and proposals were made for starting or improving recycling programs. For example, prior to October 1970 cardboard from the commissary and post exchange was either incinerated or disposed of in the post landfill even though there was a contract for the sale of cardboard from other post activities. At the suggestion of the Advisor for

Ecology, cardboard from the post exchange and commissary was included in the contract, and the amount salvaged increased more than 170 percent in 5 months--from about 32,000 pounds in October 1970 to more than 87,000 pounds in March 1971.

Only one of the GSA regions included in our review had initiated a project to recover and recycle wastes. In June 1971 a pilot demonstration project was initiated at the Denver Federal Center to show that the quantity of waste-paper recovered for recycling could be increased by separating it from other wastes. Pairs of separately marked containers, one for paper and one for other wastes, were placed at various locations in the regional office building. More than 204,000 pounds of paper were recovered and sold during the first 6 months of the project.

In July 1972 GSA informed us that three additional programs of office-waste segregation were underway in region 3--at the Crystal Mall No. 4 building, the National Aeronautics and Space Administration building, and the Civil Service Commission building. GSA also informed us that an alternative method of improving office-waste segregation involving increased separation at the baler was being tested at several Government agency locations.

In addition to there being differences in resource recovery and recycling practices at the various Army installations and GSA regional offices, there were differences in policy between the Army and GSA at the headquarters level. For example, the Army had an active tire-rebuilding program with a goal of meeting 75 percent of its replacement-tire requirements through recapping. In contrast, in fiscal year 1971 GSA motor pools replaced about 3.5 percent of 120,000 tires with recaps.

Increased recapping of used tires could help reduce a particularly difficult disposal problem. If tires are burned, they pollute the air; if they are buried in sanitary landfills, they tend to gravitate to the surface. Abandoned tires also collect rainwater which serves as a breeding place for mosquitoes and other noxious insects.

Over the years GSA, which is responsible for the maintenance of more than 51,000 vehicles, has replaced nearly all used passenger vehicle tires with new ones on the basis that it did not have sufficient assurance that recapped tires were as safe as new tires for expressway and highway driving. At the same time, however, GSA had contracts with private firms to recap tires for other Government agencies, including the Army.

In June 1971 we brought this matter to the attention of GSA's Director of Environmental Affairs and he informed us that GSA would study the problem. In December 1971 GSA officials told us that, as a result of the study, they would increase the use of retreaded tires during fiscal year 1972 to 50 percent, or about 60,000 of its total annual tire replacements.

A salvage activity carried out by GSA's National Archives and Records Service in Denver, Colorado, is an example of something Army installations could do to a greater extent. Federal records eligible for disposal at Federal Records Centers are sold to contractors. All Federal agencies may make direct sales to the contractors. The contractors buy such paper products as data processing cards and printouts, cardboard, books, manuals, catalogs, printing scraps, and financial and legal records. GSA reported sales of scrap paper exceeding $233,000 for the first 9 months of fiscal year 1971. Only $1,400 came from Department of Defense wastes. Cardboard and data processing cards were the only type of paper being sold by any of the Army installations we visited.

Policies at Army and GSA headquarters differed with respect to recovery and recycling of resources. In addition, practices at the field locations of each agency differed. Although the Army and GSA had been successful, to some extent, in recovering and recycling resources, these agencies could recycle much more wastepaper, cardboard, glass, oil, and tires.

CONCLUSIONS

In view of the (1) ever-increasing volume of solid wastes, (2) rising costs of solid waste disposal, (3) reduced land areas available for sanitary landfills, and (4) drain on our natural resources, resource recovery and recycling has been cited by many as the only long-term solution to the solid waste disposal problem.

Our review showed that both GSA and the Army could better reduce wastes and recover and recycle waste materials. Although both agencies had taken some actions to reduce the amount of solid wastes requiring disposal, they had different policies at the headquarters level and different practices at the field level. A number of actions had been taken at individual locations that, in our opinion, could be widely implemented.

In procurement, for example, GSA has revised a number of specifications for federally procured paper products to require that such products contain specified amounts of recycled material. In addition, GSA has initiated a review of specifications to identify other federally procured products that showed include requirements for recycled rubber, glass, and plastic. And in 1972 GSA intends to change several specifications to require and/or permit the use of recycled materials in such products as plastic pipe and thermal insulation.

These actions by GSA should increase Federal procurement of products containing recycled materials and could help stimulate the market for many recycled materials, which is limited because raw materials are abundant, less expensive, and easier to process.

Procurement practices at certain Army installations also contributed to reducing solid wastes. At one installation, for example, the post exchange sold soft drinks in returnable bottles from its 500 vending machines located throughout the installation. The trend at most Army installations, however, was toward throw-away nonreturnable beverage containers.

Because Army installations purchase such large quantities of bottled beverages--an estimated 10,000 cases a month at one post--we believe that a study should be made to determine whether, on the basis of economic, convenience, and environmental considerations, the Army's procurement of beverages in returnable containers should be emphasized.

We believe also that GSA and the Army, in their procurement activities, should be aware of, and should emphasize, the environmental benefits that could be obtained through the greater use of reusable or recyclable materials, containers, and packaging.

Although both the Army and GSA have been recovering wastes for reuse or recycling, they could recover much more. Generally the Army recovered wastes when it was economically advantageous; little consideration was given to salvaging and recycling waste for primarily environmental benefits. Resource recovery and recycling practices varied among Army installations. For example, cardboard and waste oil were recycled at some installations but not at others.

We believe that there are a number of waste materials generated in large quantities in Government agencies that could be recovered for reuse. We believe also that the Army and GSA should identify such waste materials and should evaluate the feasibility of recovering and recycling the wastes on a Government-wide basis.

RECOMMENDATIONS TO THE SECRETARY OF THE ARMY AND THE ADMINISTRATOR OF GENERAL SERVICES

We recommend that the Secretary of the Army make a study to determine whether, on the basis of economic, convenience, and environmental considerations, the Army's procurement of beverages in returnable containers should be emphasized. The results of such a study could apply to the other military services.

We recommend also that the Secretary of its Army and the Administrator of General Services each make a study to determine those wastes generated in significant quantities at Federal installations that could be salvaged for reuse or recycling. Procedures should be established to insure

that such wastes be salvaged, if feasible, at all GSA and Army field locations.

We recommend also that the Administrator of General Services and the Secretary of the Army emphasize to their headquarters and regional personnel the significance of the solid waste problem and the legislative requirements that (1) Federal agencies consider environmental values, along with economic and technical factors, and (2) the Federal Government be a leader in the effort to protect and enhance the quality of the environment.

We recommend further that the Administrator of General Services and the Secretary of the Army consider using more reusable or recyclable materials, containers, and packaging.

AGENCY COMMENTS AND ACTIONS TAKEN

In commenting on our draft report by letter dated July 19, 1972 (see app. IV), the Department of Defense stated that it concurred with the purpose of each of our recommendations. It stated also that (1) it was initiating a review of its policies to determine whether further studies would be expected to be of value and (2) it would increase its efforts to disseminate information on the importance of the solid waste disposal problem to all commands and subordinate commands in each of the military departments.

In commenting on our draft report by letter dated July 18, 1972 (see app. V), GSA stated that on May 1, 1972, it had published an order which addressed the problem of salvage and recycling as well as environmentally acceptable disposal of nonrecyclable solid wastes. GSA also stated that, as it obtained and analyzed the results of its ongoing pilot reclamation projects, such as those discussed on page 71, it would attempt to implement the more successful ones where feasible on a nationwide basis.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

7 JUN 1972

Mr. Edward A. Densmore, Jr.
Assistant Director
Resources Economic Development Division
General Accounting Office
Room 1689, Parklawn Building
Rockville, Maryland 20852

Dear Mr. Densmore:

We have reviewed your Draft Report to Congress, "Need for Federal Agencies to Improve Solid Waste Management Activities."

The Environmental Protection Agency is actively involved in focussing program attention on the manner in which Federal agencies are fulfilling their environmental responsibilities and the effectiveness of their efforts.

Our plans include extensive efforts in furnishing guidance and reviewing agencies' procedures along with a multi-media inventory of Federal facilities in FY 73. Your report is a graphic and well documented sample of the problems that remain to be solved.

Sincerely yours,

Thomas E. Carroll
Assistant Administrator for
Planning and Management

APPENDIX II

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUN 16 1972

Mr. Max Hirschhorn
Deputy Director
Resources and Economic
Redevelopment Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Hirschhorn:

We have reviewed and are in general agreement with your draft report, "Need for Federal Agencies to Improve Solid Waste Management Practices." Its "recommendations or suggestions" directed to the National Park Service (NPS) and the Bureau of Land Management (BLM) will be adopted.

However, we would hope that the final draft will give more credit to NPS and BLM for their efforts to abate pollution and will give greater recognition to the magnitude and complexity of the solid waste disposal problems with which these two agencies are confronted in discharging their responsibilities for administering vast and varied areas of land.

Below are comments prepared by BLM that give some indication of the practical difficulties involved.

Background

While the present status of solid waste disposal programs on public lands is certainly significant, it is equally significant to consider the accomplishments to date and the direction we are moving.

Only in recent years have the public lands come under any degree of intensive management. During the settlement of the West these lands were under virtually no control. This situation spawned a western philosophy that the public lands were available for whatever use the local people wished to make of them. To a certain extent this philosophy continues today, particularly in the more remote, sparsely populated areas of the West.

Among the uses made of the public lands was disposal of wastes from the ranches and communities. Initially the volume was very limited and, anyway, there was no one around to notice.

With passage of the Taylor Grazing Act and formation of the Grazing Service and its successor, the Bureau of Land Management, the public lands came under more intensive management. It is difficult, however, to change or eliminate practices which had been traditional for 70 to 80 years.

The Bureau of Land Management, in an effort to halt indiscriminate dumping on public lands, solicited cooperation from a number of rural communities and counties. These efforts resulted in the establishment of a series of solid waste disposal sites throughout the Western States under the Recreation and Public Purposes (R&PP) Act. Many of these sites of necessity, were established with a minimum of investment as the tax base was limited and funds were not available for operation of more sophisticated sanitary land fills. Local zoning, health and safety standards were observed, and the comments of local public health officials were solicited. Simultaneously Federal legislation and standards were evolving, but in the absence of Federal standards we relied on local requirements. As a result, few of these operations meet present Federal standards established in 1966 for disposal of waste from Federal activities.

The Bureau program has been quite successful in reversing, over a relatively short period of time, long-standing practices which had prevailed since settlement of the areas. Dumping was becoming centralized even though the disposal site operations may leave something to be desired.

The first major legislation, The Solid Waste Disposal Act of 1965, established rather broad policies. Even this legislation recognized that "the collection and disposal of solid wastes should continue to be primarily the function of State, regional, and local agencies."

Executive Order 11282 was issued in 1966 in furtherance of the purpose and policy of the Clean Air Act. It dealt with emissions to the atmosphere from "Federal facilities and buildings." This order provides for standards which are found in 42 CFR 476. These regulations do not specify that the standards apply to leases or permits on public land.

The National Environmental Policy Act of 1969 again established rather broad policies. In 1970 the first really specific legislation directed at the solid waste disposal practices of Federal agencies was passed, the Resource Recovery Act. This was an amendment of the 1965 Solid Waste Disposal Act. Section 211 of the act defines the applicability of the act to Executive agencies. Section 209 directed the Secretary of HEW (now EPA) to recommend and publish guidelines for solid waste recovery, collection, separation and disposal systems. These guidelines have not yet been published, although we have reviewed them in draft form. Publication is expected in June of this year.

We have reviewed this background to demonstrate that the applicability of some of the earlier legislation and Executive orders to our programs was not well defined.

The audit found a need, to varying degrees common to all agencies studied, for:

(1) more effective responsibility centers,

(2) improved policy guidance from headquarters and implementation by regional offices, and

(3) more effective inspection procedures.

We will discuss these recommendations individually.

Need for more effective responsibility centers

We recognize this need. The various phases of our solid waste disposal program involve, directly or indirectly, several divisions within our organization. Our realty people handle the R&PP leases while our engineers are primarily involved with BLM-operated sites and disposal of BLM-generated wastes.

As a result of the audit findings we have issued an instruction memo that assigns responsibilities associated with our solid waste disposal program at the Washington Office level. We are preparing a memo requiring that our State Directors and District Managers make specific assignments of responsibility at their levels.

Improved policy guidance

The report recognizes that we have as early as 1959 issued policy statements relating to solid waste matters. The problem seems to be that our statements have not been specific enough. Many relate to protection of the environment and are not directed specifically at solid waste disposal. We have had no instructions dealing with Federal standards as we have relied upon State and local requirements. Many of our manual releases are in need of rewrite.

To remedy this situation we have taken several steps and propose others:

We have issued an instruction memo that defines Federal standards to be incorporated as stipulations in R&PP leases for disposal sites.

A new manual release on the subject of R&PP leases is in the final stages of preparation.

While we agree in principle with EPA's guidelines and recognize a need to upgrade the standards on our sites, we are concerned with the probable impact of implementation of strict standards. EPA does not differentiate between a solid waste disposal operation in Los Angeles County and one in Mohave County, Arizona. The same standard cannot realistically be met by smaller communities and sparsely populated counties.

Our concern is that by requiring "too much - too soon" in the way of operational standards we may lose all of the ground we have gained in centralizing dumping. If the lessee is not complying with the stipulations of his lease, which will contain the Federal standards, all we can do is close the dump. Obviously this will not remedy the situation as refuse will continue to be dumped, if not at a central site, indiscriminately.

More effective inspection procedures

Our manual has contained a requirement that R&PP leases and patents be inspected at least at five-year intervals for compliance with terms and conditions of the patent or lease. We recognize that this is not adequate for a disposal site and are now considering inspection alternatives.

The proposed EPA guidelines contain a requirement for a 30-day inspection interval the first year and annually thereafter. The contents of the inspection report is also defined - a very detailed and technical report. We may have to require the lessee to make or have these inspections made as we lack the manpower or expertise to conduct inspections of this type.

We have requested in our FY 1973 work plan advices to field offices that all sites be inspected during the year and that reports be prepared showing compliance with Federal standards.

Conclusions

We generally agree with the findings and recommendations of this audit report and are in the process of remedying the deficiencies identified.

As stated earlier, we fear the possible effects of imposing EPA's guidelines on our R&PP leases. The concern is shared by the organizations holding these leases. This is reflected in resolutions recently passed by the National Association of County Officials and the National Association of Public Land Counties which recommended that standards be relaxed for small communities and that a two-year phase-in period be allowed. A similar resolution was passed by our National Advisory Board Council.

While the content of these guidelines might be considered a side issue as far as the audit report is concerned, we thought this to be an appropriate time to make known our concern. It will become a real issue when they are published.

We feel modified standards should be established for rural areas. EPA regulations (42 CFR 476.8) do set two standards as far as open fires are concerned. Open fires are not permitted in urban areas. In nonurban areas a limited amount of open burning is permissible. A similar approach should be taken in defining sanitary landfill standards.

No attempt has been made to estimate the added costs to the operators which will be required to bring these sites up to standard and maintain them at that level. Studies have shown that disposal costs per ton of waste increase rapidly as population served by a site drops below 100,000. The financial impact on local government will be considerable.

Additional Bureau costs in administering our solid waste disposal program can be expected. Time required for processing lease applications and inspecting leases will increase as will costs of operating BLM sites. Contract costs of disposal will also likely increase.

Sincerely yours,

F. J. Wheeler, Jr.

Director of Survey and Review

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Washington, D. C. 20250

JUN 23 1972

1420

Mr. Max Hirschhorn, Deputy Director
Resources and Economic Development Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Hirschhorn:

Thank you for the opportunity of reviewing your draft report on "Need for Federal Agencies to Improve Solid Waste Management Practices."

In general, we feel that the proposed report is factual and that it will help us do a better job in the field of solid waste management.

We offer the following comments on the three specific recommendations contained in the report:

---Establish at the various organizational levels, responsibility centers for solid waste matters.

In July, 1971, we introduced to our Regional and Forest organizational levels a Service-wide formal plan and program for identifying and correcting our solid waste problems. Responsibility assignments were made to accomplish this program. We recognize that assignments made to accomplish a specific program are viewed as temporary and do not satisfy the need for permanent responsibility assignments to achieve continuous and complete solid waste management. Action, consistent with our organizational policies, will be taken to implement this recommendation.

---Establish procedures to ensure that (1) solid waste management policy is effectively communicated to all officials, (2) adequate policy guidance is provided by headquarters to Regional personnel, and (3) Regional officials effectively implement agency policy.

Our current program has introduced procedures, policy and deadlines on the closure of open dumps and the implementation of sanitary landfill operations. By June 30, 1974, this program will have been fully implemented. Action will be taken to ensure continuous and complete solid waste management through the full implementation of this recommendation.

---Require periodic inspections of all agency-operated and lessee- and permittee-operated disposal sites on Federal land for compliance with Federal and State laws and regulations and agency policies.

We recognize this area requires much more effort and attention than it has received. Our current solid waste program has not provided for needs in this area. Action will be taken to ensure adequate periodic inspection of these disposal sites.

[See GAO note.]

Sincerely,

John R. McGuire

JOHN R. McGUIRE
Chief, Forest Service

GAO note: Deleted comments not pertinent to matters discussed in this report.

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

HEALTH AND
ENVIRONMENT

19 JUL 1972

Mr. R. G. Rothwell
Associate Director
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Rothwell:

This is in response to your letter of 9 May 1972 to the Secretary of Defense which forwarded copies of your draft report on "Need for Federal Agencies to Improve Solid Waste Management Practices" (OSD Case #3457).

There were three recommendations directed to the Department of the Army:

1. That the Secretary of the Army conduct a study to determine on the basis of economic, convenience and environmental considerations, how greater emphasis could be placed on the Army's procurement of beverages in returnable containers;

2. That a study be conducted to determine those wastes generated in significant quantities at Army installations that should be recovered for recycling and that procedures should be established to insure that such wastes be recovered if feasible at all Army field locations; and

3. That the Secretary of the Army emphasize to headquarters and regional personnel the significance of the solid waste problem and the legislative requirements that (a) Federal agencies give appropriate consideration to environmental values along with economic and technical factors, and (b) the Federal Government be a leader in the effort to protect and enhance the quality of the environment.

We concur with the purpose of each recommendation. The practices at which recommendations (1) and (2) are directed result from Department of Defense policies that significantly affect other than environmental factors. We are initiating a review of these policies to determine whether further studies would be expected to be of value.

APPENDIX IV

With regard to recommendation (3), we will increase our efforts to disseminate information on the importance of the solid waste disposal problem to all commands and subordinate commands in each of the Military Departments.

We appreciate having the opportunity to review the draft report.

Sincerely,

George J. Hayes
Brigadier General, MC USA
Principal Deputy

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION
WASHINGTON, D.C. 20405

JUL 18 1972

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

We appreciate the opportunity to review and comment on your proposed report to the Congress entitled "Need for Federal Agencies to Improve Solid Waste Management Practices."

[See GAO note.]

With respect to the recommendations found in the last two paragraphs on page 1e, it should be noted that GSA published an order (P 5800.18A) on May 1, 1972, which addresses the problem of salvage and recycling as well as that of environmentally acceptable disposal of nonrecyclable solid wastes. The Order places these considerations among the established objectives for solid waste management in the Office of Buildings Management.

Two editorial comments should be noted on page 57. The first is that the Office of Environmental Affairs serves a staff function, and the second is that the last word of the seventh line should read "reclamation" rather than "recycling."

On page 58, the second two sentences should be changed to read, "To date, revised specifications provide for minimum of 3 to 100 percent of recycled material. GSA estimates that these specifications represent over $65 million per/year in the purchase of such paper products as towels, toilet tissue, napkins, and packaging materials."

GAO note: Deleted comment not pertinent to matters discussed in this report.

The discussion of paper reclamation found on page 66 does not include two large scale programs of office waste segregation now underway in Region 3 (Crystal Mall No. 4 and NASA). A plan of the same aim is also scheduled to commence in the Civil Service Commission building on June 26, 1972. Simultaneously, an alternative method of improving office waste segregation (involving increased separation at the baler) is being tested at several Government locations. As GSA obtains and is able to analyze the results of these and other pilot projects efforts will be made to implement the more successful ones where feasible on a nationwide basis.

If I can be of further assistance please feel free to call upon me.

Sincerely,

Rod Kreger

Rod Kreger
Acting Administrator

PRINCIPAL OFFICIALS

RESPONSIBLE FOR ADMINISTRATION OF THE ACTIVITIES

DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
DEPARTMENT OF AGRICULTURE		
SECRETARY OF AGRICULTURE:		
Earl L. Butz	Dec. 1971	Present
Clifford M. Hardin	Jan. 1969	Nov. 1971
CHIEF, FOREST SERVICE:		
Edward P. Cliff	Mar. 1962	Present
DEPARTMENT OF DEFENSE		
SECRETARY OF DEFENSE:		
Melvin R. Laird	Jan. 1969	Present
SECRETARY OF THE ARMY:		
Robert F. Froehlke	July 1971	Present
Stanley R. Resor	July 1965	June 1971
ASSISTANT SECRETARY OF THE ARMY (Installations and Logistics):		
Dudley C. Mecum	Oct. 1971	Present
J. Ronald Fox	June 1969	Sept. 1971
DEPARTMENT OF THE INTERIOR		
SECRETARY OF THE INTERIOR:		
Rogers C. B. Morton	Jan. 1971	Present
Fred J. Russell (acting)	Nov. 1970	Jan. 1971
Walter J. Hickel	Jan. 1969	Nov. 1970

	Tenure of office	
	From	To
DEPARTMENT OF THE INTERIOR (continued)		
DIRECTOR, BUREAU OF LAND MANAGEMENT:		
Burton W. Silcock	July 1971	Present
Boyd L. Rasmussen	July 1966	July 1971
DIRECTOR, NATIONAL PARK SERVICE:		
George B. Hartzog, Jr.	Jan. 1964	Present
GENERAL SERVICES ADMINISTRATION		
ADMINISTRATOR OF GENERAL SERVICES:		
Arthur F. Sampson (acting)	June 1972	Present
Rod Kreger (acting)	Jan. 1972	June 1972
Robert L. Kunzig	Mar. 1969	Jan. 1972
ENVIRONMENTAL PROTECTION AGENCY		
ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY (note a):		
William D. Ruckelshaus	Dec. 1970	Present
ASSISTANT ADMINISTRATOR FOR CATEGORICAL PROGRAMS:		
David Dominick	June 1971	Present
DEPUTY ASSISTANT ADMINISTRATOR FOR SOLID WASTE MANAGEMENT PROGRAMS:		
Samuel Hale, Jr.	Oct. 1971	Present
Hugh Connolly (acting)	Sept. 1971	Oct. 1971
Richard D. Vaughan (note b)	Aug. 1967	Aug. 1971

[a]The Environmental Protection Agency, which became operative on December 2, 1970, was created by Presidential Reorganization Plan No. 3 of 1970. EPA assumed responsibility for a number of environmental protection programs of other agencies, including the Bureau of Solid Waste management, Department of Health, Education, and Welfare.

[b]Formerly Director, Bureau of Solid Waste Management, Department of Health, Education, and Welfare.