

OFFICE MEMORANDUM

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TO : Dean Meyer, Group leader, H-1

DATE: 1/23/61

FROM : John Enders, H-1

SUBJECT: 1960 ANNUAL REPORT ON SOLID RADIOACTIVE WASTE DISPOSAL

SYMBOL : H-1

General:

This report is a general review of disposal activities during 1960.

The data on costs and volume of waste material is presented by calender quarter. A comparative summary is included in order to present a comparison of costs and volumes from 1956 to the present time. A separate report for the fourth quarter of 1960 is not made as the data for this period is included in this report.

Information for this report has been furnished by The Zia Refuse Dept., Eng-4, SP-3, and L.A. Notebook # 9539. Although the data is as accurate as is possible, there are several cases where estimates had to be made. This should be taken into consideration if any conclusions are to be drawn from this report.

During 1960 there have been several non-routine disposal activities. Attempts are made to estimate costs, but frequently it is not possible to obtain accurate figures. The total cost of waste disposal would be increased somewhat if all of these costs were known.

A Standard Operating Procedure covering the radiological aspects of firefighting at the Contaminated Disposal Pits has been prepared . It is anticipated that copies will be ready for distribution early in 1961.

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Packing Trash:

The use of the large 5 mil plastic bags for trash containment has been started at several sites. Additional trash dollies have been ordered and should arrive early in 1961.

A heat-sealer has been received for use in sealing odd-shaped items in plastic sheeting. This method has proven to be most useful in handling highly contaminated items during removal and transit to the disposal pit. An additional heating element for the lower jaw of the sealer is on order. The additional heating will provide a much better seal on heavier plastics.

The Waste Treatment plants are now using new 55 gallon drums which have clamp-on lids. These drums, as ordered from stock, cost \$7.60 each. Although the drums are costing more than the ones formerly used, it is believed that the improved means of sealing these drums justifies the increase in cost. Some of the new drums were subjected to intense heat during a recent fire at the disposal pit and close observation failed to show that any of the drums had ruptured although a few had become distorted.

The Zia Janitorial charge for packaging trash still remains the highest single cost item. It is subject to continued review, but probably will not decrease until more efficient use is made of equipment and manpower.

Transportation:

Hauling the 55 gallon drums from the Waste Treatment Plants by means of skip-type Dumpsters is now routine. The charges for this as well as the hauling of boxed trash in Dempster Dumpsters are determined by the Zia Refuse Department. The actual miles logged in doing this work times the cost per mile is the method used for determining this charge.

The one-ton Ford truck(#0967) is used for hauling non-routine material such as condemned property, loose scrap and bulky items too large to be placed in Dempster Dumpsters.

A two-way radio was installed in the vehicle used by the H-1 monitor who supervises the disposal operations. The radio has proven very helpful as a means of communication between the monitor and the section office. The radio is operated on the H-Division frequency and has been assigned the station identification of "Hickory 7".

Beta-Gamma Waste Disposal:

The disposal wells dug between Pits #1 and 3, Area "C", continued to be used this year for beta-gamma active waste disposal. As of the end of the year, well #16 was in use. There are a total of 55 wells which should provide for this type of disposal for the next two years.

It may be necessary in the near future to dig a narrow trench in Area "G" in order to permit disposal of items too bulky to go into the wells dug in Area "C". As more bulky items are anticipated in the near future, some thought must be given to shielding equipment needed for transporting these items in a safe manner from the several sites to the disposal area.

One special disposal operation was performed this year when a highly irradiated, large item had to be taken from Omega Site to the disposal pit. A trench was first dug in the floor of Pit #2, Area "G", to receive the item. A special shielded container was then made up to hold the item during transit to the pit. The container, with the irradiated item inside, was then loaded onto a truck and taken under escort by H-1 to the pit. The very small exposure received by personnel during the operation was due largely to the planning and preparation that preceded the work as well as the close supervision of the operation by H-1 monitors.

Disposal Areas

Area "C":

Disposal wells located between pits #1 and 3 in this area continue to be used for disposal of beta-gamma active waste material. Pit #5 is still being used for storage of scrap material from the Shops Area. The Safety Group has the southwest portion of this area for the disposal of hazardous chemicals.

Early in 1960, 557 drums of metal turnings from the Shops Area were covered with dirt in Pit #5. Later on it was discovered that there were 22 drums that had to be removed. This work involved Zia Labor crews, Zia Riggers and H-1 monitors and took about two weeks to finish the job. All 22 drums were found and removed, but only after practically all of the drums were uncovered.

A cost write-off for the area continues in order to retire the fencing cost. The balance remaining as of December, 1960, equals \$1,939.00.

Mesita del Buey

Due to the de-activation of the guard station on Pajarito Road, early in the year, a fence and access gate were placed across the western part of the mesa access road. This was done in order to prevent unauthorized access into the disposal areas.

Early this year, a deep well was dug near the western portion of the mesa. This well is used by SP-2 for disposal of non-contaminated classified material. The well is fenced and the well itself is equipped with a locked metal cap. This area is designated as Area "H".

Area G

Pit #1:

The 8th layer of trash is now being placed in this pit. It is estimated that this pit will be filled within the next quarter. An order to completely cover the South portion of this pit has been turned into the Group office.

Contaminated classified material, originating both locally and from out of town, is buried in this pit. Due to recent restrictions imposed on the disposal of this material considerable more pit space is now used for this purpose. As this material is delivered to the pit it is immediately covered with a three foot thick layer of dirt.

Pit #2:

It is estimated that this pit will be put into use during the first part of 1961.

Explanation of cost and volume data

Boxes:

These boxes cost 19¢ each and measure 13" X 13" X 21". This gives a volume of 0.087 cubic yards per box.

Drums:

The new drums now being used cost \$7.20 each and occupy a volume of 0.368 cubic yards each.

Small plastic bags:

These bags cost 14¢ each and have an estimated volume of 0.037 cubic yards each.

Large plastic bags:

These 5 mil bags cost 51¢ each and occupy an estimated volume of 0.46 cubic yards.

Miscellaneous Material:

Only an estimate of volume can be given for this material. One full truck load of loose trash is estimated at 10 cubic yards. Other material is estimated from its physical size. Disposal costs are determined for this material, when possible, from the Zia work orders covering the pick up and delivery of this material to the pit.

Masking tape:

This tape cost 64¢ per roll. An estimated 1,600 rolls of tape was used as a sealant for plastic bags, boxes and other items being sent to the pit.

Trash pickup by Dumpster Dumpster:

The charge for this service is determined by the Zia Refuse Department. A cost per mile figure is determined by the Zia Accounting Department and this figure is multiplied by the total mileage logged in performing this job. This gives the total cost per quarter.

55 gallon Drum Pickup:

These drums, picked up from the Waste Treatment Plants, are delivered to the disposal pit by means of skip-type Dumpsters. The charges for this work are determined in the same manner as the charges for trash pickup by Dumpster.

Packaging trash-Janitor charge:

This cost is estimated as a result of time studies made of this work.

An estimated one man-hour per day per janitor is used to perform this duty at sites where contaminated trash is produced.

H-1 Monitor:

An estimated 200 man-hours per quarter is used for the purpose of supervision of disposal operations. This would include opening the gate at the pit as well as supervising the covering of exposed trash in the pit. In addition, the monitor makes non-routine pickups of contaminated material such as property items and other material which cannot be placed into the Dumpsters.

Due to the increased volume of contaminated material being sent to the disposal pit there will be an increase in the amount of time charged for this work in the future. The charge includes wages and overhead.

H-1 Vehicles:

A flat monthly charge of \$40.00 per vehicle is now being charged. A one-ton Ford stake truck(#0967) and a one-half ton Ford pickup truck(#0094) are the vehicles used in trash disposal activities.

Covering exposed trash:

This work is performed by the Zia Roads Section on a work request basis. The total costs include wages, overhead, equipment charges and wages.

D-7 Caterpillar Tractor:

A flat \$150.00 per month is charged for this tractor. As it is contaminated it is used exclusively for the contaminated trash covering operation.

Fencing(Area "G"):

The original cost(\$6,040.00) is being written off at the rate of 1/10 per year. This amounts to \$151.00 per quarter and \$608.00 per year. The balance remaining as of December, 1960, is \$4,328.00 .

Protective clothing:

This charge is based on an estimate. Protective clothing is worn by personnel involved in disposal operations and during trash covering operations.

Road and Ruin Excavation:

The original charge for construction of about two miles of roadbed and excavation of Indian Ruins on Mesita del Buey(\$10,872.00) is being retired at the rate of 1/20 per year(\$543.00). The quarterly charge is \$135.00. The balance remaining as of December, 1960, equals \$9,243.00.

Excavation of Pit #1, Area "G":

The original cost(\$12,571.00) is being written off at the rate of 1/8 per quarter. This amounts to \$393.00 per quarter or \$1,572.00 per year. The balance remaining as of December, 1960, is \$389.00.

Area "C"

The fencing charge is being written off at the rate of 1/10 per year. This amounts to \$97.00 per quarter or \$388.00 per year. The balance left as of December, 1960 equals \$ 1,939.00.

Radio Installation and rental:

The installation cost to place a two-way radio in the 1/2 ton Ford pickup truck(#0097) amounted to \$27.50. There is a monthly "rental" charge of \$15.66. This figure will be revised effective July 1, 1961.

Addendum :

During the fourth quarter of 1960 the method used to determine the cost for pick up and delivery of contaminated material to the disposal pit by either Zia Labor Crews or the Zia Riggers was as follows:

For Zia Riggers: A flat \$40 per hour figure was used. For work that was performed in one day this would amount to \$320.00.

For Zia Labor Crew: A figure of \$4.00 per hour per man was used. For one day's work using a crew of four men this would amount to \$128.00.

It should be kept in mind that the amount shown for the fourth quarter is at best an estimate for this work and in many cases the work was done on a job order that covered not only this work but other activities as well.

<u>Packaging Material:</u>	<u>1st.</u> <u>qtr.</u>	<u>2nd.</u> <u>qtr.</u>	<u>3rd.</u> <u>qtr.</u>	<u>4th</u> <u>qtr.</u>	<u>1960</u> <u>Total</u>
1. # Boxes	7,109	5,942	4,609	6,925	24,585
2. # Drums	331	424	259	316	1,330
3. # Sm. Pl. Bags	1,086	955	938	1,431	4,410
4. # Lg. Pl. Bags	815	644	493	644	2,596
5. Rolls Masking Tape	400	400	400	400	1,600

Trash Volume(cubic yards):

1. Boxes	619	517	400	603	2,139
2. Drums	121	155	95	116	487
3. Sm. Pl. Bags	40	35	35	53	163
4. Lg. Pl. Bags	383	303	232	303	1,221
5. Misc. Material	450	350	300	667	1,767
Totals:	<u>1,613</u>	<u>1,360</u>	<u>1,062</u>	<u>1,742</u>	<u>5,777</u>
<u>Cost per cubic yard:</u>	\$12.00	\$14.00	\$14.00	\$12.00	\$13.00

<u>Comparative Data:</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Trash Volume(Yd. ³)	2,537	3,164	3,459	4,838	5,777
Total Cost	\$71,745	\$75,548	\$61,800	\$61,801	\$74,794
Cost per Yd. ³	\$28.00	\$24.00	\$18.00	\$13.00	\$13.00

<u>Costs:</u>	Trash Disposal Costs for 1960					<u>1960 Total</u>
	<u>1st qtr.</u>	<u>2nd. qtr.</u>	<u>3rd. qtr.</u>	<u>4th qtr.</u>		
1. Boxes	\$1,350	\$1,129	\$ 876	\$1,315	\$ 4,760	
2. Drums	2,512	3,231	1,973	2,408	10,124	
3. Lg.Pl.Bags	415	328	251	328	1,322	
4. Sm.Pl. Bags	152	134	131	200	617	
5. Masking Tape	256	256	256	256	1,024	
6. Zia Trash pick up	370	514	78	3,700	4,662	
7. Dempster Dumpster	2,273	1,967	550	1,815	6,605	
8. Zia Janitor	7,535	7,535	7,535	7,535	30,140	
9. H-1 Monitor	1,200	1,200	1,200	1,200	4,800	
10. Vehicles,H-1	240	240	240	240	960	
11. Covering Trash	838	584	844	765	3,031	
12. D-7 Tractor	450	450	450	450	1,800	
13. Fencing,Area"G"	151	151	151	151	604	
14. Excavate Pit 1	393	393	393	393	1,572	
15. Pro. Clothing	50	50	50	50	200	
16. Road & Ruin Excavation	134	134	134	134	536	
17. Drum pickup	733	647	235	379	1,994	
18. Radio, Inst. and "Rental"				43	43	
Totals:	\$19,052	\$18,943	\$15,347	\$21,362	\$74,794	