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OFFICE MEMORANDUM

TO : Dean Meyer, Group Leader, H-1

DATE: 1/16/64

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FROM : John Enders, H-1

SUBJECT: 1963 ANNUAL REPORT ON DISPOSAL OF SOLID RADIOACTIVE WASTE

SYMBOL :

Introduction:

Solid radioactive waste disposal activities during 1963 are reported as well as data on disposal costs and volume of waste discarded. The fourth quarter of 1963 is reported with other data in this report.

Information for this report was furnished by Eng-4, The Zia Parks and Refuse Dept., SP-3, and LA Notebooks #11363 and 12442. As some of the data is based on estimates, this fact should be kept in mind if any conclusions are drawn from this report.

Fifteen out-of-town deliveries were made during the year. Five of these shipments contained classified material and had to be buried upon arrival at the disposal area. Because the disposal costs of this material were backcharged to the originating company, these costs are not included in this report. An A.E.C. ruling, put into effect late this year, stopped delivery of non-classified material. This will probably not affect the fill rate of the disposal pits too much; however, it may be observed that as classified material must be covered with three feet of dirt this causes considerable pit space to be used for this type of disposal.

Beta-Gamma Waste Disposal:

Most of this material is placed in disposal wells in Area C. A shielding transport cask is usually used to transport the material. One delivery involved transporting a highly active matrix lid from Omega Site to Area C. Shielding was afforded by use of a water-filled tank which held the lid during transit. A crane was used to lift the lid from the tank to the disposal well.

Disposal wells #71 through #84(14 wells) were filled during this year. An order was placed with Eng-4 requesting an additional 20 wells to be dug. Ten of these are to have a 12" diameter pipe in the center with cement (12" around the pipe). These wells are to be used for disposal of irradiated plutonium contaminated waste.

Area C:

Clean up of scrap material laying around on the ground in this area as well as removal of three buildings located in the area was started this fall.

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Area C: (continued)

All of this material was placed in pit #5 and buried. Of "historical note", the metal framework of "Clementine" was included in the material buried.

Pit #5 continues to be used as a dispository for D-38 material from the Shops Dept. Three deliveries this year, totaling 109 drums, were buried in the pit.

Area G:

Pit #2 was backfilled to ground level in July. It was filled quite rapidly during the clean up of Bayo Site with dirt and building debris. An estimated 3,335 cubic yards of material from Bayo Site was delivered to Pit #2.

Pit #3 was completed in February of this year for a total cost of 15,482 dollars. Routine deliveries to this pit started on June 20. As of the end of the year it is estimated that this pit is about one-third filled.

Data Explanation:

The following is an attempt to explain the derivation of some of the data presented on the following pages:

1. Cardboard boxes cost 19 cents each and have a volume of 0.087 cubic yards.
2. 55 gallon metal drums cost seven dollars and 20 cents each. A drum has a volume of 0.368 cubic yards.
3. Large plastic bags cost fifty-one cents each and have a volume of 0.46 cubic yards.
4. Small plastic bags cost fourteen cents each and have a volume of 0.037 cubic yards each.
5. Masking tape(2") is used to seal cardboard boxes, plastic bags, and to secure covering on scrap material. A roll costs sixty-four cents and an estimated 1600 rolls are used per year.
6. Pick up and delivery costs for scrap materials are based on estimates. If the work is done by the Zia Laborers a charge of four dollars per hour per man is used. The time needed to do the job determines the total charge.

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Data Explanation: (continued)

If the Zia Riggers perform the work a charge of forty dollars per hour or three hundred twenty dollars per day is used to estimate the total cost.

7. Dempster Dumpster transportation costs are furnished by the Zia Refuse Dept. The charge is based on a cost per mile times the total miles logged for the year.
8. The Zia Janitor Charge is based on an estimate prepared by Don Rice, Zia Tech Janitorial Dept., and Pascual Chavez, H-1. The charge includes wages and overhead for an estimated one hour per day per man for packaging waste material and placing it in Dempster Dumpster containers.
9. The H-1 Health Physics Surveyor cost is based on wages and overhead as well as time spent on the disposal operation.
10. The D-7 Bulldozer charge is based on a flat 150 dollars per month rate.
11. The rental charge for the two H-1 vehicles (#0967 and #0567) is based on 40 dollars per month rate per vehicle.
12. The fencing at Area G is being written off at a rate of 151 dollars per quarter. This is $1/4$ of $1/10$ per year retirement rate of the original cost of 6,040 dollars. The balance as of 12/31/63 = \$2,516.
13. The cost of covering exposed trash within the disposal pits depends on the time needed to do the job. This cost information is furnished by Eng-4 and includes wages, overhead, and heavy equipment charges.
14. Pit #2 excavation cost has been written off at the rate of 2,260 dollars per quarter, based on an estimated two-year pit life. This cost was retired during the first quarter of this year.
15. The cost write off for excavation of Pit #3 was started on the second quarter of this year. The rate is based on a pit life of two years, and since the pit cost a total of 15,482 dollars the quarterly rate equals 1,935 per quarter. The balance as of 12/31/63 = \$9,677.
16. The rental charge for the radio in vehicle #0567 is based on information furnished by the AEC Communications Branch.

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Data Explanation: (continued)

17. The charge made for protective clothing is an estimate.
 18. The Road and Ruin excavation charge is for retiring the cost of building two miles of road on Mesita del Buey and excavation of Indian ruins on the mesa. The cost write-off is spread over a 20 year period, and amounts to 135 dollars per quarter. The balance as of 12/31/63= \$7,623.

<u>1963 Volumes:(Yd.³)</u>	<u>1st.Qtr.</u>	<u>2nd.Qtr.</u>	<u>3rd.Qtr.</u>	<u>4th.Qtr.</u>	<u>Total(Yd.³)</u>
1. Boxes	561	598	570	563	2,292
2. Drums(55 gal.)	220	196	192	191	799
3. Lg.Pl. Bags	380	357	358	292	1,387
4. Sm. Pl. Bags	60	55	64	61	240
5. Misc. Scrap	1008	400	1000	737	3,145
6. Drums(30 gal.)	<u>8</u>	<u>1</u>	<u> </u>	<u> </u>	<u>9</u>
Total:	2,237	1,607	2,184	1,844	7,872

Disposal Costs for 1963:

					<u>1963 total:</u>
1. Boxes	\$1,225	\$1,305	\$1,246	\$1,229	<u>\$ 5,005</u>
2. Sm. Pl. Bags	229	208	243	230	910
3. Lg. Pl. Bags	421	396	398	323	1,538
4. Drums(55 gal.)	4,774	5,169	5,090	5,061	20,094
5. Drums(30 gal.)	105	8			113
6. Masking Tape	256	256	256	256	1,024
7. Zia Janitor Charge	9,292	9,292	9,292	9,292	37,168
8. H.P.Surveyor	2,625	2,625	2,625	2,625	10,500
9. H-1 Vehicles	240	240	240	240	960

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Disposal Costs for 1963:(continued)

	1st Qtr.	2nd. Qtr.	3rd. Qtr.	4th. Qtr.	Total 1963
10. Fencing, Area G	\$ 151	\$ 151	\$ 151	\$ 151	\$ 604
11. Excavate Pit#2	2,260				2,260
12. Prot. Clothing	50	50	50	50	200
13. Road & Ruin Ex.	135	135	135	135	540
14. D-7 Dozer	450	450	450	450	1,800
15. H-1 Radio	51	51	51	51	204
16. Zia Laborers	1,920	896	25 60	2,304	7,680
17. Zia Riggers	960	480	1,440	800	3,680
18. Dempster Dumpster	2,863	3,735	3,176	3,411	13,185
19. Cover Trash	225	799	701	787	2,512
20. Excavate Pit#3		1,935	1,935	1,935	5,805
21. Backfill Pit #2			2,192		2,192
	\$28,232	\$28,180	\$32,231	\$29,330	\$117,974
<u>Cost per Yd.³ :</u>	\$13	\$17	\$15	\$16	\$15

Comparison of Volume and Costs by Year:

	<u>Volume(Yd.³)</u>	<u>Total cost</u>	<u>Cost/Yd.³</u>
1956	2,537	\$71,745	\$28
1957	3,164	75,548	24
1958	3,459	61,800	18
1959	4,838	61,801	13
1960	5,777	74,794	13
1961	7,170	94,110	13
1962	7,144	102,242	14
1963	7,872	117,974	15

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	<u>Packaging Materials:</u> (Quantity used)				
	<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>Total</u> <u>1963</u>
1. Boxes	6,448	6,872	6,559	6,469	26,348
2. Sm. Pl. Bags	1,634	1,487	1,736	1,645	6,502
3. Lg. Pl. Bags	826	775	780	634	3,015
4. Drums(55 gal.)	663	718	707	703	2,791
5. Drums(30 gal.)	54	4			58
6. Masking Tape(rolls)	400	400	400	400	1,600

	<u>Area C Charges:</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>1963</u> <u>Total</u>
1. Cleanup Area C			\$688		\$688
2. D-38 Delivery	\$144		206		350
3. Fencing (Bal. as of 12/31/63 = \$775)	97	\$97	97	\$97	<u>388</u>
					Total: \$1,426

Conclusions:

As is shown on page 5 of this report, the volume of waste discarded each year is steadily increasing. Disposal costs for 1964 may well exceed \$120,000. Another area may have to be laid out on Mesita del Buey, as there is room for one more pit in Area G. The cost per cubic yard has also increased in the past three years.