METROPOLITAN SERVICE DISTRICT
1220 S.W. MORRISON, ROOM 300, PORTLAND, OREGON 97205
(503) ~~222-8971~~ 248-5470

MSD BOARD OF DIRECTORS

WASHINGTON PARK ZOO
EDUCATION BUILDING
4001 SW CANYON ROAD

JULY 28, 1978
2:00 P.M.

A G E N D A

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78-1108	PUBLIC COMMUNICATIONS
ADMINISTRATIVE DIVISION	
78-1109	CASH DISBURSEMENTS
78-1110	SALARY ADJUSTMENTS - COST OF LIVING - NON-UNION EMPLOYEES
78-1111	MSD MANAGEMENT ASSOCIATION
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78-1113	UNDERWRITER SELECTION
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78-1115	ZOO DEVELOPMENT PLAN - PHASE IV
78-1116	NURSERY CAGES BID AWARD
78-1117	CONTRACT 78-142 AMENDMENT - TRAVERS & JOHNSTON
78-1118	FY 78-79 ZOO FREE DAYS APPROVAL

OTHER BUSINESS

INFORMATIONAL REPORTS

METROPOLITAN SERVICE DISTRICT
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78-1107 MINUTES

THE FOLLOWING PAGES CONTAIN THE MINUTES OF THE JULY 14, 1978, BOARD MEETING. THE STAFF RECOMMENDS APPROVAL OF THE BOARD MINUTES.

78-1108 PUBLIC COMMUNICATIONS

THIS AGENDA ITEM ALLOWS THE BOARD TO RECEIVE COMMENTS FROM THE PUBLIC ON MATTERS NOT LISTED ON THE MEETING AGENDA.

WASHINGTON PARK ZOO

To: MSD Board

Date: 7/27/78

From: Warren Iliff

Subject: Development Program Schedule and Budget Summary

To make the analysis of our recommendations on priorities, schedules and costs more understandable the following is offered:

	Completion Date	Levy Funds	Total
1978-79			
Nursery	10/1/78	$ 28,000	$ 28,000
Quarantine	1/1/79	96,000	96,000
Elephant	5/1/79	545,800	545,800
Entrance	4/1/79 - 7/1/79	192,229	242,229
Primate House	8/1/79	1,131,000	1,131,000
Train	11/1/78 & 10/1/79	50,000	150,000
Open Space	10/1/79	50,000	175,000
Feline House	10/1/79	103,000	325,000
1979-80			
Commissary/ Maintenance	5/1/80	125,000	125,000
Hippo	7/1/80	---	217,000
Food #2	7/1/80	257,900	382,900
1980-81			
Alaskan	4/1/81	472,800	822,800
Open Space	7/1/81	50,000	175,000
TOTALS		$3,101,729	$4,415,729

78-1109 CASH DISBURSEMENTS

THE ACCOUNTING DEPARTMENT HAS PREPARED CHECKS NUMBERED FROM 3053 TO 3238 FROM PAYMENT REQUESTS RECEIVED, WHICH WERE APPROVED AS WITHIN MSD BUDGET.

STAFF RECOMMENDS APPROVAL OF CHECK REGISTERS DATED JULY 21, 1978, IN THE TOTAL AMOUNT OF $42,969.31; JULY 27, 1978, IN THE TOTAL AMOUNT OF $39,940.14; AND JULY 28, 1978, IN THE TOTAL AMOUNT OF $52,955.98.

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-1109 DATE 7-28-78

	YES	NO	ABST.
BARTELS	✓		
BUCHANAN			
DURIS	✓		
McCREADY			
ROBNETT	✓		
SALQUIST			
SCHUMACHER	✓		

Jean M. Wood
Clerk of the Board

78-1110 SALARY ADJUSTMENTS - COST OF LIVING - NON-UNION EMPLOYEES

THE STAFF RECOMMENDS THAT THE EVALUATION AND APPROVAL FOR COST OF LIVING INCREASES FOR NON-UNION EMPLOYEES BE DONE INDEPENDENTLY FROM WHATEVER RESULTS FROM THE NEGOTIATIONS WITH THE UNIONS. CONSIDERING THE PRESENT STATE OF THE LOCAL 483 NEGOTIATIONS, WE SUGGEST THAT THIS IS A GOOD TIME TO INSTITUTE THIS PHILOSOPHY.

ATTACHED IS THE CLASSIFICATION AND COMPENSATION PLAN FOR NON-UNION SALARIED EMPLOYEES WITH THE RANGE AMOUNTS REFLECTING A 7% COST OF LIVING INCREASE EFFECTIVE JULY 1, 1978. BECAUSE OF THE INCREASED COST OF SOME FRINGES THIS ACTION WOULD RESULT IN A 9.1% TOTAL INCREASE WHICH IS WITHIN THE AMOUNT BUDGETED UNDER THE CONTINGENCY LINE ITEMS.

THE STAFF RECOMMENDS APPROVAL BY THE BOARD OF THIS PROPOSAL WITH THE OPTION OF A FURTHER ADJUSTMENT AT A LATER DATE.

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-1110 DATE 7-28-78

	YES	NO	ABST.
BARTELS	✓		
BUCHANAN			
DURIS	✓		
McCREADY			
ROBNETT	✓		
SALQUIST			
SCHUMACHER	✓		

Clerk of the Board

CLASSIFICATION AND COMPENSATION PLAN

NON-UNION SALARIED EMPLOYEES

July 1, 1978

POSITION	CLASS	MINIMUM	MAXUMUM
Clerk-Typist	1	$6495/yr.	$8888/yr.
Secretary I, Instructor Volunteer Asst., Receptionist	2	$7863/yr.	$10,255/yr.
Concession Supervisor Asst. Bookkeeper I, Secretary II	3	$9230/yr.	$11,623/yr.
Nutritional Technician Veterinarian Technician Photographer Bookkeeper II Assistant Public Info. Coordinator Technician/Draftsman I Graphics/Exhibits Designer Gift Shop Supervisor	4	$10,598/yr.	$13,675/yr.
Assistant Ed. Services Coord. Administrative Secretary Technician/Draftsman II Assistant Research Coordinator Electronic Technician	5	$12,307/yr.	$15,725/yr.
Food Concession Supervisor Public Relations Coordinator Educational Services Coordinator Graphics/Exhibits Section Coord. Clerk of the Board	6	$14,358/yr.	$17,777/yr.

CLASSIFICATION AND COMPENSATION PLAN CHART, Cont.

NON-UNION SALARIED EMPLOYEES

July 1, 1978

POSITION	CLASS	MINUMUM	MAXIMUM
Compliance Officer Solid Waste Engineer	7	$16,410/yr.	$20,170/yr.
Animal Keeper Foreman Maintenance Foreman Engineer II Research Director Educational Services Manager Visitor Services Manager	8	$18,803/yr.	$22,563/yr.
Veterinarian Accounting Systems Manager Engineering & Analysis Manager Implementation & Compliance Manager Construction Proj. Coordinator Curator (Animal Collection Manager) Building and Grounds Manager	9	$21,195/yr.	$25,982/yr.
Assistant Director	10	$24,614/yr.	$29,400/yr.
Division Director	11	$28,717/yr.	$34,186/yr.
Administrative Director	12	$31,000/yr.	$36,000/yr.

78-1111 MSD MANAGEMENT ASSOCIATION

(REMOVED FROM THE AGENDA)

78-1112 EVALUATION OF STATE MINIMUM STANDARDS - Cover Material

The Board has requested staff to evaluate the need for changing state minimum standards for landfill operation and the report findings and recommendations are attached.

On Monday, July 24, the Solid Waste Advisory Committee considered the report focusing their attention on the findings and recommendations. The committee voted 5 to 3 to make the following changes to the recommendations shown on Page 6 of the report, and by the same vote recommends approval of the amended report to the Board.

1. That for new landfills MSD (request DEQ approve the MSD) Landfill Operators to cover daily to prove or disapprove (criteria, which can be used to evaluate) the validity and propriety of proposed alternatives and interpretations of the State Minimum Standards.
2. That MSD seek no change in the State Minimum Standards as they address cover material and filling in flooded trenches at this time.
3. That of new landfills MSD support a requirement of landfill operators providing daily cover of at least six inches of earth material at MSD landfills or demonstrate the equivalance of an alternative the landfill operators prefer.
4. That the eight existing landfills in operation on January 1, 1978, or before be allowed to complete their operations on or before January 1, 1981, by covering daily all areas except the dumping edge and face of fill.

The staff does not completely agree with the majority of the Solid Waste Committee. The staff recommends APPROVAL of the report, and its findings and recommendations as attached.

FINDINGS AND RECOMMENDATIONS

Findings

1. "An increase in population, or increase in waste production and an increase in environmental quality control standards (air pollution and water pollution) brought unsatisfactory methods of solid waste disposal" into focus, and precipitated the need for appropriate rules and regulations.

2. Although the need for rules and regulations appears to be mainly a matter of state and local concern "early planning funds" originated with the federal government and therefore federal influence into state and local waste rules and regulations is substantial.

3. The largest amount of research documentation and analysis of damages from improper landfill management originates through the federal government.

4. In spite of significant research and analysis of damages, there appears to be a shortage of specific empirical evidence to demonstrate the effectiveness of cover material in preventing damages from landfilling solid wastes

5. The shortage of specific, empirical evidence precludes an analysis of objective cost-benefit relationships.

6. The shortage of specific, empirical evidence focuses attention on the "state of the art" of good landfill management as collectively determined by individual

experts, professional groups, solid waste associations and local, state and federal solid waste management officials.

7. "State of the art" concepts offer considerable room for debate because of real and perceived credability of various supporters of differing positions, and debate is likely to continue until substantially more evidence becomes available.

8. The value of daily cover material in landfill management is complex, but represents at least one method of obtaining a comprehensive framework of goals in good landfill management.

9. Placement of suitable earth cover to meet good landfill operational requirements is substantially more expensive than ignoring cover requirements.

10. One of the most important aspects of daily cover material is its impact on citizen acceptance of new landfills, however, it is difficult to compare the costs of daily cover at existing disposal sites against the savings achieved through locating new landfills, closer to the generation of solid wastes.

11. Existing landfill operators look at daily cover as an unnecessary, impractical and expensive task of good landfill management.

12. The State DEQ and the EPA consider daily cover in a large visible metropolitan area landfill to be an essential practice in good landfill management.

14. A well understood, specific unqualified requirement for cover material is easier to enforce, and invites less opportunity for abuse than a requirement leaving significant room for interpretation.

13. The current wording of the State minimum standards which are the basis for the MSD certificate requirements provide appropriate opportunity for consideration of site-by-site variations and exceptions.

Recommendations

1. That MSD request DEQ approve the MSD Landfill Operators Criteria, which can be used to evaluate the validity and propriety of proposed alternatives and interpretations of the State Minimum Standards.

2. That MSD seek no change in the State Minimum Standards as they address cover material and filling in flooded trenches at this time.

3. That MSD support a requirement of landfill operators providing daily cover of at least six inches of earth material at MSD landfills or demonstrate the equivalance of an alternative the landfill operators prefer.

METROPOLITAN SERVICE DISTRICT
1220 S. W. MORRISON ROOM 300 PORTLAND, OREGON 97205
(503) 248-5470

July 26, 1978

MEMO

TO: MSD Board of Directors

FROM: Solid Waste Division Staff CPK

SUBJECT: Evaluation of State Minimum Standards - Cover Material, Solid Waste Advisory Committee Recommendation

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The staff does not completely agree with the recommendations as amended by the Committee for the following reasons:

(1) The image conveyed by the existing landfills' operation substantially affects MSD efforts in siting new landfills and developing a well organized, sound solid waste management system.

(2) Handling complaints regarding the operation of existing landfill sites consumes existing staff time and effort. Since June 1977 numerous complaints from those adjoining existing sites have been directed to MSD staff.

(3) MSD staff has proposed no substantial change in the standards or permit requirements existing prior to MSD involvement. The perceived change comes from enforcement of the standards and permit requirements which have existed for some time, and which the public, MSD staff and others have been lead to believe assured good landfill operation and management in this area.

(4) The extent of cost increase estimated by the landfill operators can be debated. These estimates rely on specific assumptions made by each operator. It is now apparent that current costs of landfill do not include everything that has, in the past, been represented to be included. Given the historical misrepresentations, it is therefore difficult to rely on landfill operators' estimates.

(5) The contention by the landfill operators that there have been no problems in landfill operations prior to MSD involvement is also certainly debatable.

For instance, with regard to Rossman's Landfill, the staff has found certain inconsistencies, omissions and/or shortcomings in the monitoring well data maintained by DEQ, A check of records maintained on the testing of the Gladstone water supply indicates few, if any, checks have been made to determine if the kinds of contaminants which could result from the old and existing landfill are present.

The operator maintains that significant odor and "surface water problems" (the operator's description) occurring this past winter are not related to cover or the current method of operation; however, the permit existing at the time the problems occurred says, "leachate which breaks out on the surface of the landfill shall be controlled so as to prevent malodors, public health hazards and the escapement of surface leachate to public waters...All surface water runoff shall be diverted away from the landfill and all drainageways, natural or excavated, shall be maintained to provide free flow of surface water at all times."

Even accepting the operator's explanation of the odor and surface water problem, it appears that compliance with the operator's permit would have prevented such problems as did occur from occurring.

With regard to St. Johns Landfill, inspection of the site on April 11, 1978 by visiting EPA officials and the observation of significant leachate breakouts, odor and general appearance of the landfill increased the difficulty in gaining acceptance of a tentative expansion of the St. Johns site. This expansion is essential to the solid waste management system for this area.

A petition circulated this past year by neighbors of the Rose City Landfill received 58 signatures and complained of loose garbage along the perimeter of the site and the site's general appearance and odor emanating from the site.

Given the problems called to MSD's attention in the less than one year we have been involved and the lack of conclusive evidence to show otherwise, we have great difficulty accepting the operator's contention that all of these landfill sites have operated problem-free for long periods of time.

(6) If increases in cost resulting from compliance with existing standards is more than the public should have to pay for the safe disposal of their waste, then we should review all of MSD's current programs to provide new landfill sites and a resource recovery program. These costs are likely to exceed even the cost increases projected by the operators resulting from enforcement of current standards and should therefore be terminated.

(7) If the Board chooses to accept some lesser standards for landfill management on the rationale of saving the public's money, legal costs which could arise from even a successful defense of the citizen's suit provisions in the new federal law could eliminate the extent of any such savings.

(8) In the staff's opinion, the amount of staff time, effort, and money required to convince DEQ and EPA solid waste officials that six inches of daily cover at large metropolitan landfills is not necessary would be time, effort and money poorly spent in light of higher priorities.

(9) The report as written and provided for the Board represents the staff's best effort to provide you with an objective look at not only the question of revising of State minimum standards but also the inability of anyone to provide conclusive cost benefit comparisons for the issues discussed. We feel strongly about the accuracy of our findings and the appropriateness of our recommendations. In our opinion the recommendations of the Advisory Committee's majority are not warranted by the report and cannot be justified by any material which they have provided for us.

In our opinion, the landfill operating criteria presented in the report, as reviewed and approved by the Board at the previous meeting, do allow for consideration of recommendation #4 offered by the Committee. Based on current knowledge of the existing

eight sites,

> "covering daily all areas except the dumping edge and face of fill"

may be appropriate for the six existing "demolition sites" (two of the six are only required to cover weekly) and could be considered in the context of the goals and framework provided in the report and assuming DEQ acceptance. It is doubtful, however, that the Committee's recommendation could apply to the two major landfills accepting food wastes in the context of the report presented to the Board.

cc: Landfill Operators
1.20.B.4

JULY 28, 1978

STATEMENT OF

HAROLD G. LAVELLE

M.S.D. BOARD OF DIRECTORS

PERTAINING TO

DAILY COVER REQUIREMENTS

H.G. LAVELLE LANDFILL
3000 N.E. 82 ND AVE
PORTLAND, OREGON

	Initials	Date
Prepared By	H.G.L.	7/27/78
Approved By		

(1) (2) (3) (4) (5)

RE: DAILY COVER REQUIREMENT

		A. MAX COST	B. MIN. COST
	EST. COST OF COVER (SEP 15 THRU JUL 15 LESS 4 HOLIDAYS = 299 D.		
	DUMPING EDGE		
A.	PIT-RUN SAND & GRAVEL OR CRUSHED ROCK OVER AREA 300'x25'x.5' = 138 C.Y. PER D. X 299 D. = 41,262 C.Y. @ 6.75 C.Y. DELV	278,518.-	
B.	PIT-RUN SAND & GRAVEL OR CRUSHED ROCK OVER AREA 300'x25'x.5' = 138 C.Y. PER D. X 200 D. = 27,600 C.Y. @ 6.75 DEL. =		186,300.-
	USE GROUND-WOOD WASTE OR GRAVELLY EXCAVATION OVER AREA 300'x25'x.5' = 138 C.Y. PER D. X 99 D. = 13,660 C.Y. @ .50 C.Y. =		6,831.-
A&B	BLADING & DRESSING DAILY W/D-8 DOZER OR COMPACTOR 299 D. X 2 HR PER D. = 598 HRS @ $65.	38,870.-	38,870.-
	FACE OF FILL		
A.	PIT SAND (DIRTY) OVER AREA 300'x50'x.5' = 166 C.Y. PLUS 30% LOSS DUE TO IRRIGULAR SURFACE = 216 C.Y. D. X 299 D. = 64,584 C.Y. @ 3.75 = 242,190-		
B.	PIT SAND 70% x 299 D = 209 D. X 216 C.Y. PER D. = 45,144 C.Y. @ 3.75 =		169290.-
	WOOD WASTE OR SUITABLE EARTH 30% x 299 D = 88 D. X 216 C.Y. = 19,800 C.Y. @ .50		4504.-
A&B	BLADING & DRESSING DAILY W/D-8 DOZER OR COMPACTOR 299 D. X 2 HR PER D. = 598 HRS @ $65.	38870	38870.00
	EST. COST OF COVER (JUL 16 THRU SEP. 14 LESS 1 HOLIDAY = 61 D)		
	DUMPING EDGE & FACE OF FILL		
A&B	CLEAN SOIL OVER AREA 300'x55'x.6' = 305 C.Y. PER D. PLUS COMPACTION LOSS 28% = 381 C.Y. PER D. X 61 D = 23,298 C.Y. @ .50	11649.-	11649.-
B.	CRUSHED ROCK IN EVENT OF RAIN 120 C.Y. @ 6.75	810.-	
A&C	BLADING & DRESSING W/D-8 DOZER OR COMPACTOR 61 D. X 4 HR PER D = 244 HRS @ $65.	15860.-	15860.-
	TOTAL EST. COST FOR 1-YEAR	$626,767.- HIGH	$477,174.- LOW
	ESTIMATED AVERAGE COST 1-YEAR →	$551,970.-	

H.G. LAVELLE LANDFILL

	Initials	Date
Prepared By	HGL	7/27/78
Approved By		

RE: DAILY COVER REQUIREMENT

(1) WASTE DEL. TO SITE (JUN 1, 1977 TO MAY 31, 1978)	(2) LOOSE LOADS c.y.	(2) COMPACTED LOADS c.y.	(3) PERCENTAGE OF REDUCTION	(4) IN-PLACE MEASURE c.y.
HOME & YARD WASTE	181234		75%	45308
BUILDING CONTRACTORS WASTE	131651		50%	65825
DROP-BOXES (LOOSE)	145615		66%	64070
DROP-BOXES (COMPACTED)		6341 c.y.	29%	4502
BUILDING DEMOLITION	57092		50%	28546
TOTAL FOR 1-YEAR	515592 c.y.	6341 c.y.		209251 c.y.

COMPARISON: CUBIC YARDS DAILY COVER TO DEPOSITED WASTE (1-YEAR PERIOD)

DAILY COVER FOR 1-YEAR PERIOD (IN ADDITION TO INTERMEDIATE COVER) = 129144 c.y.

WASTE RECEIVED FOR PERIOD (JUN 1, 1977 TO MAY 31, 1978) = 515592 c.y.

IN-PLACE MEASURE OF WASTE DEPOSITED (JUN 1, 1977 TO MAY 31, 1978) = 209251 c.y.

RATIO: 1 C.Y. OF WASTE DEPOSITED TO .6171 C.Y. OF COVER

COMPARISON: COST OF DAILY COVER TO CURRENT LANDFILL DISPOSAL FEES

CURRENT LANDFILL DISPOSAL FEES: (MAY 1, 1977 PRICES EXCEPT DROP BOXES FROM .60 TO 1.00)	DISPOSAL FEE	M.S.D. USER FEE	TOTAL CHARGE
PASSENGER CAR	1.65	.35¢	2.00 EA.
PICKUP, TRAILOR & LOADS UNDER ½ C.Y.	2.90	.35¢	3.25 EA.
DROP BOXES, LOOSE	1.00	.16¢	1.16 C.Y.
DROP BOXES, COMPACTED	1.09	.28¢	1.37 C.Y.
BUILDING DEMOLITION	1.09	.16¢	1.25 C.Y.
HEAVY CONCRETE, TIMBERS, AND SIMILAR HEAVY	2.50	.16	2.66 C.Y.

LANDFILL DISPOSAL RECEIPTS FOR YEAR JUN 1, 1977 THRU MAY 31, 1978

LANDFILL DISPOSAL FEES (EXCLUDING M.S.D.) 1-YEAR $536,740

ESTIMATED COST OF DAILY COVER 1-YEAR (RANGE $477,174 TO $626,767) AVGE. 551,970.

H. G. LAVELLE LANDFILL

SHEET 3 OF 3

	Initials	Date
Prepared By	H.G.L.	7/27/78
Approved By		

RE: DAILY COVER REQUIREMENT

(1) (2) (3) (4) (5)

SUMMARY: RATE INCREASE — COVER COSTS.

LEASE AGREEMENT BETWEEN ROSE CITY SAND & GRAVEL CO. (LESSOR) AND H. G. LAVELLE, INC. (LESSEE) PROVIDES FOR PAYMENT TO LESSOR 25% OF LESSEES LANDFILL RECEIPTS (EXCEPT M.S.D. USER FEE) IN EXCESS OF $350,000 PER YEAR.

IN ADDITION TO RATE INCREASE TO PAY FOR DAILY COVER COSTS, 25% MUST BE ADDED TO AMOUNT NEEDED.

IF DUMPING FEES AT THIS SITE IS SUBSTANTIALLY ABOVE OTHER SITES SUCH AS THE ST. JOHNS LANDFILL WHO CANNOT INCREASE RATES UNTIL AFTER JULY 1, 1979, WASTE WILL BE TAKEN TO SITES CHARGING LESS — AND THIS SITE WILL SUFFER LOSS OF BUSINESS, WHICH AGGRAVATES THE SITUATION TO THE POINT OF INABILITY TO DETERMINE THE FINAL OUT-COME.

ASSUMING NO SUBSTANTIAL LOSS OF BUSINESS DUMPING RATES WOULD NEED BE INCREASED $551,970 PLUS 25% ($137,992.) = $689,962. FOR THE UP-COMING YEAR WHICH IS 129% RATE INCREASE AT ONCE. — AND PROBABLY MORE THAN THE PUBLIC WILL BEAR SINCE IT HAS ONLY BEEN ABOUT TEN YEARS THAT THEY COULD BURN MOST ALL THE WASTE BEING RECEIVED AT THIS SITE.

DRAFT

EVALUATION OF

STATE MINIMUM STANDARDS

FOR COVER MATERIAL

JULY 1978

Metropolitan Service District

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INTRODUCTION

Following four years of concerted effort, the Metropolitan Service District received a user fee at area landfills for implementation of a Solid Waste Management Program in June 1977. Initiation of the user fee followed a complex consideration of legal and practical issues and required a legislative directive by the State of Oregon and finally the Metropolitan Service District.

To be consistent with all practical and legal developments, MSD legislation required certification of area landfills. To minimize the impact on existing landfill operators, the State minimum standards (same as Oregon Administrative Rules, Chapter 340) were adopted by MSD as the basis for certification of landfills. In the first quarter of 1978, MSD issued certificates to all the landfills.

After consideration of his certificate provisions, Jack Parker, of Rossman's Landfill, requested a variance on certain items in the certificate from the MSD Board. At their regular meeting of June 9, 1978, the MSD Board denied the request for variance, but directed Mr. Parker to return within 60 days with a revised operational plan to bring the landfill into compliance with the MSD permit; and to direct staff to work with DEQ and other operators to determine whether changes in State minimum standards should be made, and present this information to the Board within 45 days.

Oregon Administrative Rules Chapter 340, Section 61-040 Subsection 3(a) requires that:

> "Solid wastes other than tires, rock, dirt, brick and concrete rubble and similar non-decomposible materials shall not be deposited directly into the groundwater table or into flooded trenches or cells."

Subsection 61-040, Subsection 4(a) requires that Solid waste be:

> "covered with not less than 6 inches of compacted cover material at intervals specified in the permit. Alternative procedures to achieve equivalent results may be approved by the Department."

Subsection 61-080 provides that the Environmental Quality

> "Commission may by specific written variance or conditional permit waive certain requirements of these rules and regulations when circumstances of the solid waste disposal site location, operating procedures, and/or other considerations indicate that the purpose and intent of these regulations can be achieved without strict adherence to all of the requirements."

Focusing primarily on the cover requirement portion of these State minimum standards in accordance with the MSD Board discussion and direction, MSD staff has prepared this report to determine <u>whether changes in State minimum standards should be made</u>.

The report is organized into the following sections: presentation of findings and recommendations, the background in development of State minimum standards, the relationship of cover to landfill management, enforcement problems, and a summary of responses received from inquiries into cover requirements.

FINDINGS AND RECOMMENDATIONS

Findings

1. "An increase in population, or increase in waste production and an increase in environmental quality control standards (air pollution and water pollution) brought unsatisfactory methods of solid waste disposal" into focus, and precipitated the need for appropriate rules and regulations.

2. Although the need for rules and regulations appears to be mainly a matter of state and local concern "early planning funds" originated with the federal government and therefore federal influence into state and local waste rules and regulations is substantial.

3. The largest amount of research documentation and analysis of damages from improper landfill management originates through the federal government.

4. In spite of significant research and analysis of damages, there appears to be a shortage of specific empirical evidence to demonstrate the effectiveness of cover material in preventing damages from landfilling solid wastes

5. The shortage of specific, empirical evidence precludes an analysis of objective cost-benefit relationships.

6. The shortage of specific, empirical evidence focuses attention on the "state of the art" of good landfill management as collectively determined by individual

experts, professional groups, solid waste associations and local, state and federal solid waste management officials.

7. "State of the art" concepts offer considerable room for debate because of real and perceived credability of various supporters of differing positions, and debate is likely to continue until substantially more evidence becomes available.

8. The value of daily cover material in landfill management is complex, but represents at least one method of obtaining a comprehensive framework of goals in good landfill management.

9. Placement of suitable earth cover to meet good landfill operational requirements is substantially more expensive than ignoring cover requirements.

10. One of the most important aspects of daily cover material is its impact on citizen acceptance of new landfills, however, it is difficult to compare the costs of daily cover at existing disposal sites against the savings achieved through locating new landfills, closer to the generation of solid wastes.

11. Existing landfill operators look at daily cover as an unnecessary, impractical and expensive task of good landfill management.

12. The State DEQ and the EPA consider daily cover in a large visible metropolitan area landfill to be an essential practice in good landfill management.

14. A well understood, specific unqualified requirement for cover material is easier to enforce, and invites less opportunity for abuse than a requirement leaving significant room for interpretation.

13. The current wording of the State minimum standards which are the basis for the MSD certificate requirements provide appropriate opportunity for consideration of site-by-site variations and exceptions.

Recommendations

1. That MSD request DEQ approve the MSD Landfill Operators Criteria, which can be used to evaluate the validity and propriety of proposed alternatives and interpretations of the State Minimum Standards.

2. That MSD seek no change in the State Minimum Standards as they address cover material and filling in flooded trenches at this time.

3. That MSD support a requirement of landfill operators providing daily cover of at least six inches of earth material at MSD landfills or demonstrate the equivalance of an alternative the landfill operators prefer.

I. BACKGROUND - DEVELOPMENT OF STATE MINIMUM STANDARDS

History of Solid Waste Disposal in Oregon

The following are exerpts from Solid Waste Management Practices; Oregon; Status Report: 1969; Oregon State Board of Health.

> "The community or municipality was the first governmental agency in Oregon to face the solid waste problem. At the turn of the century, solid waste consisted primarily of food wastes and ashes. Foods were sold in bulk from the store and carried home in a waxed paper container or sack. The used container made a good starter for the fire in the cookstove or furnace and the food waste went to the chickens or pigs for food.
>
> "After the first World War, the use of the open-top sanitary can for food became universal. The 'rag man' who collected most of the salvageable materials from clothes to metals was part of the American scene. Refuse collection was either part of the 'rag man's' service or part of the animal feeder's service.
>
> "Controls for garbage on private premises were instituted in some cities in the early 1900s and were basically related to nuisance control and refuse removal. There was seldom any mention of disposal."
>
> "The first county health department in Oregon was established in 1922 in Coos County. Early involvement of the county health department with garbage was because of odors, nuisances, flies and rodents.
>
> "It was not until 1945, when the restaurant program was established in the state that counties were delegated direct control of garbage handling and storage on any premise by state law.
>
> "It was soon evident that on-premise storage was only a part of the garbage problem and it was necessary to have a suitable place to which garbage could be removed and disposed. The open-burning dumps in use only transferred the problems from the city lot to a larger problem area in the county.

"Early in 1952, the Lane County Health Department embarked on a county-wide disposal program.

"In 1954, the Umatilla County Health Department sponsored the first field demonstration of a sanitary landfill operation at Milton-Freewater. The demonstration site was in a pea field owned by the city.

"In 1958, Umatilla County and the Oregon State Board of Health were recipients of a grant for 'Vector Control.' This three-year project used community survey techniques and sanitary landfill promotion as the basis for vector control. One of the first multi-city landfills in the country was developed to serve the four towns of Weston, Adams, Athena and Helix in Umatilla County as a result of this project.

"The first mention of garbage in the Annual Reports of the Oregon State Board of Health was in connection with the 1904 Heppner Flood.

"In 1925, the first rules and regulations dealing with general sanitation were adopted to up-grade 'Tourist Camps.' These rules made reference to garbage storage and removal. The Biennial Report of July 1, 1924 to June 30, 1926 mentioned visits to two garbage disposal sites. The emphasis in these early years on water supplies, sewage disposal and swimming pools kept the one engineer on the staff busy.

"In 1939, the State Sanitary Authority was formed and federal funding for this program allowed the expansion of the Sanitation and Engineering staff of the Board of Health. In the outline of staff duties for years 1940-1942, 'Garbage Disposal' was listed and about 30 disposal site investigations were made during that biennium.

"In 1960, as a result of the demonstration project conducted in Umatilla County, a staff position on the State Board of Health was given responsibility for solid waste supervision. In 1962, the State Air Pollution Authority took a vital interest in solid waste because of obvious relationships.

"Because of a lack of state laws, a first need seemed to be legislative action. To support such action, an evaluation of the total problem was needed. The Federal Law, Public Law 89-272, Title II, was passed in October, 1965, as an amendment to the Clean Air Act. This Act established funds

for state planning. Oregon applied and was awarded grant funds to evaluate this problem and plan for solid waste management. The survey was for a three-year period beginning September, 1966.

"In 1967, the Oregon Legislature passed a law establishing the Solid Waste Section of the Oregon State Board of Health. This law required establishment of state-wide rules and regulations for storage, collection, transportation and disposal of solid waste from all sources and enforcement of the regulations.

"For many years, open burning was the means and method of solid waste reduction and disposal. Some of the solid waste generated was burned at the point of origin and some was collected, transported and burned at specific locations. These specific locations were termed 'dumps' or 'garbage dumps.' Some were privately owned and operated while others were located on public land and maintained by governmental agencies. These 'dumps' were, for the most part, economically efficient. The operational cost of these sites could be measured in matches and gasoline. Fees collected for use of these sites were, therefore, nearly 100% profit. Income from fees could also be supplemented through the sale of certain salvageable materials. The open-burning dump could, therefore, be considered as a private enterprise, or, if governmentally operated, self-sustaining. Although economical in operation, the open-burning dump has some drawbacks. Certain effects to the immediate environment, e.g., odors, insects, smoke and vermin, required that a dump be located a 'tolerable' distance from any community or residence. In most instances, this 'tolerable' distance was a minimum of one mile.

"As population increased and rural areas underwent residential development (the urban sprawl), the 'tolerable distance' of even many miles did not remove the 'dumps' as a source of irritation to the public. State and local health officials were called upon to abate and eliminate the public health problems which accompany open-burning dump operations.

"Accompanying the increase in population was an increase in waste generation per capita and a significant change in the composition of solid waste. Garbage or putrescible wastes were becoming a smaller portion of the total

> volume of solid waste, while cellulose, plastic and glass materials were steadily increasing. This can be attributed to the multitude of disposable items and packaging changes which were making their appearance.
>
> "The enactment of air quality control legislation and the subsequent enforcement had an immense impact upon solid waste disposal in areas of the state by curtailing much of the on-premise burning of solid wastes. These wastes, when not burned, increased the volumes of solid wastes hauled to disposal sites or just stored on premises. The same air pollution rules and regulations in many instances also required the elimination of open burning at the disposal sites. Thus, this chain of circumstances: an increase in population, an increase in waste production and an increase in environmental quality control standards, brought the unsatisfactory methods of solid waste disposal sharply into focus."

It should be noted that since the publishing of this report, additional environmental concerns have focused on waste disposal by landfill.

State Rules and Regulations

Given the need to generate rules and regulations, the State was forced into a situation relying heavily on practical considerations and the judgement of others. The timing of the solid waste act of 1965 not only set up the mechanism for this reliance process, but provided funds for analysis of the problem. These funds were not provided, however, without federal involvement in the State program.

Therefore, it can be seen that the rules and regulations generated by the State were initially tuned to the federal perspective. The lack of significant empirical evidence from anyone facilitates this kind of program development.

Federal Level Development

Much of the work done by the federal government regarding landfill disposal of solid waste is summarized in the two reports to Congress. The January 1977 Waste Disposal Practices Report cites a number of specific cases involving damages to the community and municipalities arising from poor landfill management. Figures 1, 2 and 3 indicate the results of these case analyses. Although the text of the report provides lengthy discussions of the relationship between good landfill management, including cover material and groundwater contamination, it should be noted that no attempt is made to directly correlate damages to failure to provide cover material.

Somewhat theoretical discussions in the report are used to indicate the correlation between cover material and groundwater contamination, however, Figure 4, Status of Leachate Control Methods, demonstrates the frustration of all solid waste practitioners as far as conclusive evidence, cost and benefits are concerned. In Figure 4, under methods, "preventing leachate generation," the "degree of use" and "cost" columns represent the status of the information needed to develop specific cost benefit estimates.

Practical Considerations

Although it may appear that the state and federal government have developed rules and regulations based on somewhat limited information, the need for and the extent of potential damages arising from improper landfill management can be well documented through case histories and theoretical analysis. The effectiveness of the methods employed to prevent damages appears to be less substantiated.

This situation is similar to the solutions developed to manage municipal problems. For example, chlorine treatment of municipal water supplies was specified as a water treatment method when municipal water treatment design and empirical information was notably lacking. Nevertheless, the benefit of this practice has been substantiated as the science of water treatment has developed. Many fields of endeavor follow this pattern. Problems are identified and various solutions are suggested and tried.

The hard evidence required to show the specific benefit of cover material as a factor in landfill management does not appear to be available through either empirical evidence or universally accepted scientific explanations. The heterogenious nature of municipal waste and the variation in parameters affecting the biological, chemical and physical decomposition greatly complicate the situation. Geology, hydrology, soil mechanics and hydraulics are all disciplines which must be integrated to understand the relationship between cover material and good landfill management.

It is extremely significant to note that in the absence of universally accepted scientific explanations or substantial empirical data, the American Public Works Association, the American Society of Civil Engineers and nearly all professional groups associated with solid waste management stress the importance of daily, intermediate and final cover in landfill management.

Even so, it is likely that the issue will continue to be debated until better and more uniform landfill disposal methods and monitoring are implemented. Until that time, the judgements of various professionals offers the most support for the value of cover material.

PRELIMINARY ESTIMATE OF THE RELATIONSHIP BETWEEN DISPOSAL METHOD AND DAMAGE MECHANISM, EXPRESSED AS PERCENT OF CASES STUDIED. [a]

Disposal Method	Surface Impoundments	Landfills, dumps	Other land disposal [b]	Storage of wastes	Smeltings, slag, mine tailings	Unknown
Percentage of cases studied	21	23	44	3	4	5
Damage mechanism (percentage of cases studied)						
Ground water (61)	13	15	25	2	3	4
Surface water (39)	9	12	15	-	2	<1
Air (3)	-	1	2	-	-	<1
Fires, explosions (3)	-	2	<1	-	-	-
Direct contact poisoning (13)	<1	1	10	1	-	-
Unknown (2)	<1	<1	<1	<1	<1	<1
Wells affected [c] (34)	7	6	16	1	<1	3

a) All numbers refer to percent of 391 cases studied thus far. The total percentages in the matrix add up to more than 100, because several damage incidents involved more than one damage mechanism. All percentages have been rounded to the nearest integer.
b) Haphazard disposal on vacant properties, on farmland, spray irrigation, etc.
c) Not included as a damage mechanism.

Note: The data presented in this table have been derived solely from case studies associated with land disposal of industrial wastes.

FIG 1

Source: The Report to Congress Waste Disposal Practice and their Effects on Ground Water, 1977; Table 18

SUMMARY OF DATA ON 42 MUNICIPAL AND 18 INDUSTRIAL LANDFILL CONTAMINATION CASES.

Findings	Type of Landfill	
	Municipal	Industrial
Assessment of principal damage		
Contamination of aquifer only	9	8
Water supply well(s) affected	16	9
Contamination of surface water	17	1
Principal aquifer affected		
Unconsolidated deposits	33	11
Sedimentary rocks	7	3
Crystalline rocks	2	4
Type of pollutant observed		
General contamination	37	4
Toxic substances	5	14
Observed distance traveled by pollutant		
Less than 100 feet	6	0
100 to 1,000 feet	8	4
More than 1,000 feet	11	2
Unknown or unreported	17	12
Maximum observed depth penetrated by pollutant		
Less than 30 feet	11	3
30 to 100 feet	11	3
More than 100 feet	5	2
Unknown or unreported	15	10
Action taken regarding source of contamination		
Landfill abandoned	5	6
Landfill removed	1	2
Containment or treatment of leachate	10	2
No known action	26	8
Action taken regarding ground-water resource		
Water supply well(s) abandoned	4	5
Ground-water monitoring program established	12	2
No known action	26	11
Litigation		
Litigation involved	8	5
No known action taken	34	13

FIG 2

Source: The Report to Congress Waste Disposal Practice and Effects on Ground Water, 1977; Table 19

CASE STUDY SUMMARY.

	Site 1	Site 2	Site 3	Site 4	Site 5
Type of operation	open dump, landfill	open dump, landfill incinerator residue	landfill	open dump, landfill	open dump, landfill incinerator residual
Location	swampy area, stream	sand pit	gravel pit	on bedrock	sand pit
Years of operation	1945 - present	1933 - present	1960 - 1968	1961 - 1972	1947 - 1972
Size of operation					
Acres	8	17	56	22	40
Peak annual tonnage	2,500	?	200,000	68,000	94,000
Depth (ft.)	25	50	40	55.	55
Annual precipitation (inches/yr)	42	42	42	37	37
Damages	25 residential wells	3 residential wells home fixtures	33 residential wells 3 industry wells 8 public supply wells	7 residential wells home fixtures	4 residential wells 4 industry wells 1 public supply well
Remedial actions	wells abandoned public water supplied	filters on wells wells abandoned public water supplied fixtures replaced	resid. wells abandoned public water supplied public wells cut back counterpumping	wells abandoned public water supplied	all wells abandoned public water supplied new public supply cover soil on landfill
Litigation	No	No	No	Yes	No
Costs to date					
Value of damaged resources	31,200	3,600	39,600	7,000	94,800
Damage costs (clothes, fixtures)	0	852	?	?	0
Corrective costs a/	0	0	1,371,762	0	12,000
Avoidance costs b/	500,000	6,032	628,238	88,000	115,000
Total cost	531,200	10,484	2,039,600	95,000	221,800
Status	Costs continuing	Concluded	Costs continuing	Concluded	Concluded

a/ Costs necessary to clean up or control contamination, so that a ground-water or surface-water source may be used again.

b/ Costs necessary to avoid use of a contaminated aquifer and to develop an alternative water supply

FIG 3

Source: The Report to Congress Waste Disposal Practice and their Effects on Ground Water, 1977; Table 29

STATUS OF LEACHATE CONTROL METHODS.

Method	Effectiveness	Degree of use	Cost (examples)
NATURAL ATTENUATION			
Clay	promising research	unknown	natural
Silt	unknown	unknown	natural
Sand	unknown	unknown	natural
PREVENTING LEACHATE GENERATION	ranges from complete to partial control	limited	not available
COLLECTION AND TREATMENT			
Liners	promising research	limited	$1.50 to $4.00/sq yd
Biological treatment	promising research	very limited	not available
Physical-Chemical	promising research	very limited	not available
Recirculation	promising research	very limited	not available
Spray irrigation	promising research	very limited	not available
IMMOBILIZATION			
Chemical Stabilization	research progressing looks promising	limited but growing	$10 to $20/ton
Encapsulation	research progressing looks promising	very limited	$16/ton
Fixation and encapsulation	research progressing looks promising	not in use	$40/ton
VOLUME REDUCTION			
Dewatering	effective	widely practiced in water pollution	$5 to $20/ton
Incineration	effective for organics	moderate	$20 to $100/ton
DETOXIFICATION	varies widely by process and waste	limited to specific wastes	varies widely

FIG 4

Source: The Report to Congress Waste Disposal Practice and their Effects on Ground Water. 1977; Table 22

REFERENCES

1. The report to Congress Waste Disposal Practices and their Effects on Ground Water. January 1977. U. S. Environmental Protection Agency Office of Water Supply and Office of Solid Waste Management Program.

2. House Report 94-1491 and House Report 94-1461. Part 2 (italics) U. S. Code Congressional and Administrative News. October 20, 1976 pp. 6670 through 6786.

PRESENT TRENDS

Goals of Landfill Management

In managing a landfill, there are a number of goals or sub-goals that one strives to meet. These goals can be summarized in the following six elements.

(1) To control the transmittal of contaminated material from the site
(2) To minimize landfill gas related problems
(3) To provide a final fill that could be integrated into the community
(4) To provide a site that is functional to users
(5) To provide fire prevention management
(6) To insure aesthetic quality at the landfill site.

In Appendix A there is an outline of a management planning framework (landfill operations criteria) that relates these goals to sub-goals and sub-objectives and finally to implementable tasks. The tasks in this outline are not necessarily the ultimate tasks required, but serve to provide an understanding into how to implement these goals.

The application of cover material in achieving these goals of landfill management is apparent from an analysis of the management planning framework of Appendix A. While cover material is not the ultimate answer or the exclusive answer, its importance cannot be overemphasized.

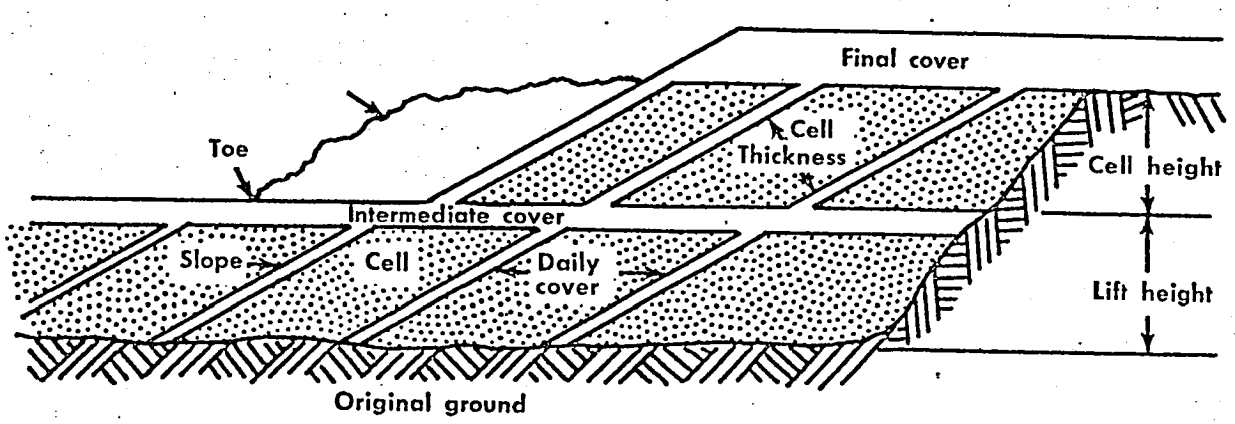
What is covered?

There are three types of cover: daily cover, intermediate cover and final cover. Daily cover is placed at the end of

each operating day. It is generally placed in a six inch compacted layer. An earthen soil is most commonly required for this purpose.

The intermediate cover is a layer of soil placed over the top of cells that are not in the final layer. This cover serves as a temporary upper surface of the fill and could serve in this function for a number of months. Generally intermediate cover is a 12 inch compacted layer of soil.

Final cover is a layer of soil that is put down once the level of waste has reached the final grade. Generally final cover is at least a 24 inch compacted layer of soil. These cover applications are shown in the following sketch.



Source: BRUNNER, D. R. & KELLER, D. J.; Sanitary Landfill Design and Operation; EPA; 1972

The Benefit of Daily Cover

The benefit of daily cover is complex, as shown in Appendix A. It is integrated into all the various aspects of landfill management. It serves to make the site more natural looking, resulting in a more aesthetic appearance. It controls the flow of gases, forcing them to go to a designed vent or to break out slowly in a more dispersed form.

Spreading of contaminated material, which is a prime concern of public health, is effectively controlled or greatly reduced by cover. It serves to separate the food source from vectors and to reduce infiltrated water.

The amount of non-decomposible material in a fill does have an impact on the structural integrity of the fill. Cover serves to increase the ratio of non-decomposible material versus decomposible material in the fill.

Cost and Availability of Cover Material

Daily cover of all the waste in the Portland metropolitan area requires over 260,000 cubic yards of soil. The material could come from any one of five sources. An on-site source, a borrow source, excavation waste, dredge material spoils or selected wastes.

Most of the sites in the Portland area do not have a supply of on site cover material and must rely on one of the other sources. The reliance on a borrowed source for cover could lead to problems. A recent attempt by Rossman's, Inc., to acquire a site for borrow resulted in a number of complaints and litigations. It would seem that future siting of a source for borrow would be doubtful due to environmental and community

reaction. Estimated costs of borrowed material could run as high as $6.00 per cubic yard.

Excavation waste is a more desirable means of getting cover. The landfill operators allow excavators to dump their surplus earth free of charge and then use it for cover. The supply of excavation wastes is related to the amount of construction activity in the area, which is seasonal and varies from year to year. This summer the amount of excavated waste is relatively high.

Dredged material soil is another possible source. This material is a sandy silt. The Port of Portland dredges on an average of 500,000 cubic yards of this type of material each year. It has, in the past, been used for filling low areas near the source, but these areas are becoming fewer and fewer. The cost of dredge material would be negotiable, but would likely be free of charge at some designated pickup point. This would mean that the user of this material would have to pay the cost for loading and hauling it to their sites. It is estimated that the costs are between 35¢ to 50¢ per cubic yard for loading and 10¢ to 20¢ per cubic yard per mile for hauling or approximately $2.00 to $5.30 per cubic yard delivered to the landfill.

Selected wastes used for cover is a possibility. In the past wood wastes have been used for cover under certain conditions. This type of waste would have to be considered on a case by case basis unless its characteristics were very similar to earth.

SUMMARY OF RESPONSES RECEIVED FROM REQUESTS FOR INFORMATION ON COVER REQUIREMENTS

At the beginning of this study we sent requests to EPA, DEQ and the local landfill operators (See Appendix B), to provide us with their views on daily cover.

The responses received are contained in Appendix C.

Both EPA and DEQ pointed out the essential need for daily cover. EPA brought out a very relevant point which they stated as follows:

> "It is very important to consider the impact of daily cover on citizen acceptance of new landfills. Citizen opposition to new sanitary landfills often results because the public equates the term sanitary landfill with disposal operations which do not actually 'measure up'. Often disposal sites which do not utilize daily cover and many times do not control gas and leachate production are referred to by both the site operators and local government officials as sanitary landfills. In order to gain citizen support for siting of new sanitary landfills, it becomes necessary to prove that a sanitary landfill can be operated with all the waste being covered by the end of each day and gas and leachate production controlled. It is quite difficult to compare the costs of daily cover at existing disposal sites against citizen support or opposition for a new sanitary landfill."

Public acceptance for new sites located near or in their neighborhood will be a key factor in the direction our solid waste program will take in the future. There are a number of potential landfill sites that will need public acceptance. If the acceptance is not obtained, a more remote site will have to be developed. This will increase the cost of haul as high as 100%.

Only Jack Parker of Rossman's Inc. and H. G. LaVelle provided written responses from the eight landfill operators contacted. Parker's response was very similar to his public testimony of June 9. LaVelle's response is comprehensive and excellently represents the perspective of the existing landfill operators.

APPENDIX A

MSD Landfill Operations Criteria

MSD LANDFILL OPERATIONS CRITERIA

Part of the problem of understanding why a particular condition is required is that it is hard to follow the logic from a general mission like "to protect the public" to a specific requirement like "six inches of cover material is required daily." This framework is an attempt to fill this gap.

The staff has developed six major goals for landfill management that can be inferred from MSD's mission "to protect the health, safety and welfare of people in the district." These goals are as follows:

(1) To control the transmittal of contaminated material from the site
(2) To minimize landfill gas related problems
(3) To provide a final fill that could be integrated into the community
(4) To provide a site that is functional to users
(5) To provide fire prevention management
(6) To insure esthetic quality at the landfill site

Public health is related to both goals 1 and 2. Mismanagement of contaminant or explosive gases can produce serious problems for the public. The problems can take the form of polluted drinking water, explosions of buildings filled with gas associated with waste decomposition, and spreading of diseases.

Public safety is related to goals 2, 4 and 5, each of which can have an impact to those living in the surrounding area and/or using the site. Public welfare would be contained in goals 2, 3 and 6. These goals provide for the welfare of the

surrounding community by reducing nuisances such as visual impacts, odor and litter. In addition, they will provide a final fill that will fit into the community.

Each goal is supported by objectives and tasks in outline form, showing how the goals can be reached. They are presented so that one could easily interpret a particular task that would have to be accomplished to meet the goals. The specific tasks listed here are not necessarily our standards or required conditions. They are management or operational tasks which could satisfy the objectives in order to reach a primary goal. One should also keep in mind that each site has specific conditions and characteristics that would dictate which tasks would be necessary. The tasks in this report are general in nature and could be modified for a specific site. Other alternatives can be found for each task that would satisfy its parent objective.

I. TO CONTROL THE TRANSMITTAL OF CONTAMINATED MATERIAL FROM SITE BY:

A. Minimizing vector movement on and off of site by:

1. Providing controls for such large animals as dogs by:

a. Reducing access to food with the use of daily non-cohesive cover (References 1, 3)

b. Minimizing access to food with the use of daily compaction of waste (3)

2. Providing controls for such small animals as rats by:

a. Minimizing access to food source and harborage in waste by:

(1) Covering waste daily with a non-cohesive cover daily.

(2) Compaction of waste daily (3,6)

b. Providing an effective poisoning program

3. Providing controls for such vectors as birds by:

a. Minimizing access to food source by:

(1) Compacting of wastes as they come into site and (1)

(2) Covering wastes (1,6)

4. Providing controls for such vectors as flies by:

a. Reducing access to food sources and harborage by:

(1) Daily cover (1,2,3,4,5,6)

(2) Daily compaction (3,6)

b. Minimizing harborage by providing good drainage around site to reduce standing water

B. Minimizing spreading of contaminates by groundwater by:

1. Reducing surface water infiltration into fill by:

a. Increasing surface water runoff by:

(1) Providing impermeable material on surface of waste (2,5,6)

(2) Providing adequate surface drainage at site (2)

b. Increasing transpiration rate and cover layer moisture retensionable storage of the final cover (6)

2. Minimizing movement of water in fill

a. Providing an impermeable separation between cells in fill.

3. Minimizing ground water flow into fill

a. Providing an impermeable separation between fill and ground water table (2,6)

4. Minimizing off site surface water flow into fill

5. Providing a leachate collection system at the site (6)

C. Minimizing spreading of contaminates by surface water

1. Provide an effective separation between waste and surface runoff (2)

2. Provide special handling for waste water from truck washing facility

D. Minimizing spreading of contaminates by wind by:

1. Providing adequate compaction

2. Providing adequate cover

3. Providing catch fences down wind of working face with policing of area daily

II. TO MINIMIZE GAS RELATED PROBLEMS BY:

A. Minimizing malodor around site by:

1. Covering wastes with adequate material at a frequency to constrain odors before they are produced (aerobic) (1,3,6)

2. Minimizing rate of decomposition by limiting the amount of water into fill by providing a water impermeable cover (anerobic) (1,2)

3. Providing cover to restrain gas movement to: (2,4,5,6)

a. Breaking out of the fill slowly and evenly dispersed or to

b. Flow to a designed vent, which facilitates gas movement out of the fill and disperses it into the atmosphere

B. Prevent an explosive gas condition from occurring by:

1. Containing gas from leaving site through the adjacent ground structure by:

a. Providing an effective gas movement barrier around the outside of the fill in area where the adjacent ground is susceptible to gas migration.

b. Provide gas vent dike around site

2. Providing a method of dispersion for gas

a. Provide a gas treatment system for vents to either burn or disperse gas

3. Minimizing possibilities of gas from concentration on surface by:

a. Providing cover to restrain gas movement to: (2,4,5)

(1) Breaking out of the fill slowly and evenly dispersed, or

(2) Flow to a desired vent, which facilitates gas movement out of the fill and disperses it into the atmosphere

III. PROVIDING A FINAL FILL THAT COULD BE INTEGRATED INTO THE COMMUNITY"S LAND USE PLAN BY:

A. Providing a satisfying final grade by:

1. Perparing a final grade plan before starting operation at the site.

2. Constructing fill according to the approved final grade plan.

B. Providing a fill that has structural integrity by:

1. Providing a reasonable non-decomposible waste to decomposible waste ratio by:

a. Applying a soil cover (2,3)

2. Providing high density compaction by:

a. Using an adequate size compactor

b. Providing compaction of waste in minimum depth layers (2)

IV. PROVIDING A SITE THAT IS FUNCTIONAL TO USERS BY:

A. Providing good access to and from the dumping face by:

1. Providing driving surface that is structurally adequate for hauling vehicles

2. Providing driving surface free of material that would damage tires or vehicles

B. Providing dumping space for a maximum number of trucks to lessen waiting to dump time

C. Provide traffic and dumping management to provide for user safety by:

1. Separating commercial truck dumping from public dumping

V. PROVIDING GOOD FIRE PREVENTION MANAGEMENT BY:

A. Minimizing air access to waste by:

1. Compaction of waste

2. Providing non-combustible cover

B. Reducing voids in fill by

1. Compaction of waste

C. Increasing combustible waste in cells by

1. Providing non-combustible cover

D. Providing water and fire suppression equipment ready for immediate use.

VI. TO ENSURE AESTHETIC QUALITY AT A LANDFILL BY:

A. Providing less visual impact to the landfill users by:

1. Reducing the harsh appearance of the exposed solid waste

a. Covering harsh appearing solid waste with more natural looking material throughout the day (1,2,4,5,6)

b. Compaction of the waste throughout the day

2. Reducing the visual impact of sorted recovered material by:

a. Providing for adequate storage facilities

b. Providing adequate screening.

B. Increasing visual quality from the surrounding area by:

1. Reducing outside viewing of working face by:

a. Covering working faces in visible areas with more natural looking material. So that during non-working hours the site has a more natural look (1,4,5,6)

b. Providing an operational plan that minimizes work faces in view of a high visibility direction.

c. Minimizing work face (6)

d. Providing for screening (3)

2. Establishing vegetation on inactive areas as soon as possible by:

a. Providing soil structure on surface of fill to support plant life (1, 2)

b. Spreading seed, fertilizer and mulch to facilitate grass growth (1)

3. Constraining blowing material by:

a. Providing cover over blowable material with a material that would restrain its movement (1,2,4,5)

b. Providing catch fences down wind of working face with policing of area daily (2,3,6)

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3. Institute for Solid Wastes of American Public Works Association; Municipal Refuse Disposal; Public Administration Service, 1970

4. The National Solid Waste Management Association and Federal Solid Waste Management Program; Recommended Standards for Sanitary Landfill Design, Construction, and Evaluation & Model Sanitary Landfill Operation Agreement; U. S. Environmental Protection Agency; 1971

5. Jorgensen, R. S. Letter to Charles C. Kemper. E.P.A. June 22, 1978.

6. The ASCE Solid Waste Management Committee of the Environmental Engineering Division; Sanitary Landfill; ASCE; 1976.

APPENDIX B

Solicitations of Opinions on Cover Material Requirements

App. B

June 12, 1978

Tony Hegdahl, Chief
Solid Waste Management Program
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

During a recent variance requested by Rossman's Landfill, Inc. from several sections of their MSD certificate, the MSD Board requested additional information concerning the necessity for daily cover of garbage at solid waste landfills. Mr. Parker, of Rossman's Landfill, indicated that the costs of cover material are excessive compared to public benefits received. The purpose of this letter is to seek information on this matter.

In order to prepare a reasonable analysis on this subject, I would appreciate the answers to the following questions by June 28, 1978.

1. What is the rationale for requiring a sanitary landfill to be covered daily with 6 inches of material?
2. What are the exceptions to this requirement?
3. Do the benefits of this requirement justify the costs?
4. What are possible alternatives to this requirement?
5. What kinds of materials are suitable for cover material?

If you have any questions on this matter, please contact me.

Charles C. Kemper
Director of Solid Waste Division

CCK:alb

cc: Stan Jorgensen

APP. B

June 12, 1978

Bill Young, Director
Department of Environmental Quality
P. O. Box 1760
Portland, Oregon 97207

At our last MSD Board meeting during a variance requested by Rossman's Landfill, Inc. on several sections of the MSD certificate, the MSD Board requested additional information be presented regarding the need for daily cover of garbage at solid waste landfills. Rossman's Landfill (Mr. Parker) presented testimony that the costs of cover material are excessive compared to public benefits received. The purpose of this letter is to seek information and justification on this matter.

In order to prepare a reasonable analysis on this subject, I would appreciate the answers to the following questions by June 28, 1978.

1. What is the rationale for requiring a sanitary landfill to be covered daily with 6 inches of material?
2. What are the exceptions to this requirement?
3. Do the benefits of this requirement justify the costs?
4. What are possible alternatives to this requirement?
5. What kinds of materials are suitable for cover material?

If you have any questions on this matter, please contact me.

Charles C. Kemper
Director Solid Waste Division

CCK:alb

cc: Bob Gilbert, DEQ
Ernie Schmidt, DEQ

1.20.13.40 2(A)
Chron

June 13, 1978

Jack Parker
Rossman's Landfill, Inc.
1101 17th Street
Oregon City, Oregon 97045

As a result of the MSD Board action of June 9, 1978, the staff has started analyzing the existing State standard of daily cover of garbage at a sanitary landfill. We have asked both DEQ and EPA to respond to specific questions on the subject (see attachments). In order to receive input from yourself and other landfill operators, the following information is requested. (You may respond with any additional information you see necessary.)

1. In your opinion, is the present daily cover material requirement in your permit cost effective compared to the public benefit? If not, why?
2. Could your landfill place daily cover year-round? If not, how many days per year can daily cover be placed? Economically?
3. If this standard is sustained by the State, what kind of cover material would you recommend?
4. In your opinion, does the public want landfills to be covered? If so, what are the major reasons for cover?
5. What are the possible alternatives to this requirement?
6. How much does it cost to comply with this standard?

If you have any questions, please contact me. We would appreciate having your response by June 28, 1978.

Charles C. Kemper
Director Solid Waste Division

CCK:alb

cc: Landfill Operators
MSD Board
DEQ, Bill Young, Bob Gilbert
EPA, Toby Hegdahl

1.20.B.4.02(a)

APPENDIX C

Responses to Solicitations of Opinions on Cover Material Requirements

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 530

JUN 22 1978

Mr. Charles C. Kemper
Director of Solid Waste Division
Metropolitan Service District
1220 S.W. Morrison, Room 300
Portland, Oregon 97205

Dear Mr. Kemper:

I was asked to respond to your letter dated June 12, 1978. This letter along with the enclosed material are to address the questions you presented concerning use of daily cover on sanitary landfills. Each of the five questions is addressed separately.

1. What is the rationale for requiring a sanitary landfill to be covered daily with six inches of material?

The striking visual difference between a dump and a sanitary landfill is the use of soil cover at the latter. Its compacted solid waste is fully enclosed within a earth layer at the end of each operating day or more often if necessary.

Cover material controls the ingress and egress of flies, discourages the entrance of rodents seeking food, and prevents scavenging birds from feeding on the wastes. Tests have demonstrated that six inches of compacted, sandy loam will prevent fly emergence (see Black, R.J. and A.M. Barnes, "Effects of Earth Cover on Fly Emergence from Sanitary Landfills," Public Works, 89(2):91-94, February 1958). This was condensed and reprinted as "Fly Emergence Control in Sanitary Landfills," Refuse Removal Journal, 1(5):13, 25, May 1958. Daily or more frequent application of soil cover greatly reduces the attraction of birds to the waste and also discourages rodents from burrowing to get food. Cover material is essential for maintaining a proper appearance of a sanitary landfill.

Enclosing solid waste within a compacted earth cell offers some protection against the spread of fire. Almost all soils

are noncombustible, thus the earth side walls and floor help to confine a fire within a cell. Also, to maintain a clean and sightly operation, blowing litter must be controlled and almost any workable soil satisfies this requirement when placed over the waste as cover.

A more detailed discussion of soil cover can be found in the enclosed report "Sanitary Landfill Design and Operation."

2. What are the exceptions to this requirement (six inches daily cover)?

In the case of operating a sanitary landfill to dispose of shredded or milled waste, landfilling without cover does not seem to result in vector problems. If you are interested in more information concerning landfilling of shredded waste, let us know. The decision to be made is whether the total benefits realized by shredding outweigh the costs of shredding.

3. Do the benefits of this requirement justify the costs?

It is very difficult to compare the cost of daily cover with "potential" problems from rats, flies, or birds, or the complications faced from any accidental fires, or potential problems caused by increased production of leachate or uncontrolled gas.

It is very important to consider the impact of daily cover on citizen acceptance of new landfills. Citizen opposition to new sanitary landfills often results because the public equates the term sanitary landfill with disposal operations which do not actually "measure up." Often disposal sites which do not utilize daily cover and many times do not control gas and leachate production are referred to by both the site operators and local government officials as sanitary landfills. In order to gain citizen support for siting of new sanitary landfills, it becomes necessary to prove that a sanitary landfill can be operated with all the waste being covered by the end of each day and gas and leachate production controlled. It is quite difficult to compare the costs of daily cover at existing disposal sites against citizen support or opposition for a new sanitary landfill.

4. What are the possible alternatives to this requirement?

Even when full scale resource recovery programs are implemented, a residue remains which needs to be disposed of properly.

In addition, many waste materials cannot be processed through a resource recovery system. The practice of sanitary landfilling has been developed as an environmentally sound answer to open dumping of solid waste.

5. What kinds of materials are suitable for cover material?

Enclosed is a copy of an interim report "Selection and Design of Cover for Solid Waste." The report is a result of work performed by the U.S. Army Engineer Waterways Experiment Station for EPA. A major objective of the report is to provide information for waste disposal planners, designers, and permit writers to evaluate the suitability of cover materials to be used as cover for municipal waste landfills. This interim report (June 1978) should provide very specific answers to any questions concerning types of cover materials. Please keep in mind that this report has not yet been finalized, but drastic changes are not expected.

If you have any questions or we can be of any further assistance, feel free to contact us.

Sincerely,

Stan Jorgensen

R. Stan Jorgensen, Sanitary Engineer
Solid Waste Management Program

Enclosures

cc: Ernie Schmidt, DEQ
Oregon Operations Office, EPA

ROBERT W. STRAUB
GOVERNOR

Department of Environmental Quality

1234 S.W. MORRISON STREET, PORTLAND. OREGON 97205 Telephone (503) 229- 5913

July 6, 1978

Mr. Charles C. Kemper, Director
Solid Waste Division
Metropolitan Service District
1220 SW Morrison
Room 300
Portland, Oregon 97205

Dear Chuck:

The following is in response to your letter requesting answers to your questions on daily cover of wastes at sanitary landfills.

3. Question: What is the rationale for requiring a sanitary landfill to be covered daily with 6 inches of material?

   The application of compacted daily cover material minimizes the effect of landfills on the environment. The function of daily cover material includes the following:

   1. It minimizes fly population by preventing flies from entering the waste to lay eggs and inhibits emergence of newly hatched flies.

   2. It deters rodents from burrowing for food and harborage.

   3. Because less garbage (food) is exposed, the attraction to birds is reduced.

   4. Infiltration of rain water is reduced on a properly sloped and compacted covered cell. Minimizing infiltration minimizes leachate generation.

   5. Gas movement can be controlled.

   6. Fire hazard is minimized because the non-combustible cover material provides a barrier around each cell and it controls the movement of oxygen needed to support combustion.

   7. Litter is minimized.

   8. It controls noxious odors.

   9. It provides sightly appearance.

10. It provides some attenuation of cations (Fe, Mn, Mg, Na, Ca, NH_3^+) leached from overlying layers of solid waste by cation exchange reactions on adsorptive surfaces of soil particles.

11. It provides a certain amount of stability and minimize settlement of the fill.

2. Question: What are the exceptions to this requirement?

OAR 340-61-010(11) and (21) define a "sanitary landfill" as one where all wastes are compacted and covered "with earth or other approved cover material at least once each operating day". At a "modified landfill", wastes are compacted and covered at "specific designated intervals, but not each operating day".

OAR 340-61-040(2) states:

(a) Sanitary Landfill. Disposal of solid waste by landfilling shall be by the sanitary landfill method unless a modified landfill is specifically authorized by written permit.

(b) Modified Landfill. Modified landfills may be permitted if it is determined by the Department that special circumstances such as climate, geographic area, site location, nature or quantity of the material to be landfilled, or population density justifies less than daily compaction and cover.

The Department must determine on a case by case basis whether the above circumstances lessen the need for daily cover to achieve the desired results listed under the first question.

For instance, a disposal site serving a town of 75 people in Eastern Oregon that is located 3 miles from the nearest residence probably would not require daily cover because:

1. Evapotranspiration exceeds rainfall so that no leachate should be produced if surface water is diverted around the site and waste is not placed in groundwater. Therefore, there is no need for daily cover to shed rainwater and attenuate leachate.

2. The long distance to the nearest residence minimizes the need for daily cover to deter flies, birds, and rodents, and control gases and odors. (rats may not be indigenous and fly breeding season may be short)

3. Daily cover at the site would retard flies but when the low volume is considered, weekly or even monthly application of cover material would encapsulate the same volume of garbage as produced in one day at a larger landfill thus giving the same fire protection on a cell by cell basis.

4. That leaves only litter control and sight appearances as reasons for daily cover. Litter may be controlled to a certain extent with a litter collection fence. In this case, sight appearance probably does not justify the cost of daily cover.

However, a large metropolitan western Oregon site serving 150,000 people located inside of a city and highly visible from residential areas as well as passing motorists requires daily cover in order to operate in a sanitary, nuisance-free manner because:

1. In western Oregon, rainfall exceeds evapotranspiration. This results in a surplus of water which infiltrates the garbage and produces leachate. The use of adequate daily cover will not reduce the amount of rainfall, but it does reduce the amount of the excess water that infiltrates into the garbage, thereby reducing the amount of leachate generated. The daily cover material also provides some attenuation of cations leached from overlying layers of solid waste, thereby somewhat reducing the concentration of certain elements in the leachate.

2. It is necessary to minimize the fly, rodent and bird populations because these can cause a nuisance or carry disease organisms to the nearby residents.

3. Gas, odor, litter, and unsightliness resulting from an uncovered dump affect nearby property owners and residents. Livability and market value of adjacent and nearby properties may be effected.

4. Often fires in landfills are difficult to control and extinguish. The smaller the volume of waste contained within each adequately constructed cell, the easier it is to control fires. Smoke from dump fires presents a greater nuisance and health hazard when people live closer to the dump.

3. Question: Do the benefits of this requirement justify the costs?

This is a very difficult question to answer quantatively on a general basis because each site is somewhat unique. As shown above, for some smaller sites the benefits may not warrent the cost of daily cover, however, major landfills can have such a large impact on the surrounding area that generally the overall benefits outweigh costs. You may want to consider:

1. Uncovered dumps are more prone to fires - - - what is the cost of fire control? (Operators own time and equipment, public fire district costs, possibly higher insurance rates due to greater number and size of fires, risk of spreading to adjacent properties, area fire insurance rating, etc.)

2. Costs of additional leachate generated causing degredation of groundwater and surface water.

3. Social and personal costs associated with having to live near an odorous, unsightly dump.

4. Nuisance and health hazard potential from birds, rats and flies, gases, and odors. Economic damage to adjacent properties due to these.

5. Effect on market value of adjacent properties.

6. Cost of future solid waste disposal associated with public reluctance to siting landfills near populated areas. Often this results in time ($) consuming efforts to gain acceptance for new landfills which usually result in greater (and more expensive) haul distances.

7. Cost of future use of the site - - - greater settling, gas production, etc.

8. There will often be other costs involved depending on the specifics of each site.

4. Question: What are possible alternatives to this requirement?

Alternatives include but are not limited to:

1. Less frequent covering of waste where desired results can be maintained.

2. Landfilling shredded wastes-see attached report prepared by MSD staff.

3. Use of alternatives of cover material when appropriate and when desired results can be maintained.

5. Question: What kinds of materials are suitable for cover material?

An interim report Selection and Design of Cover for Solid Waste prepared for EPA by the U.S. Army Engineer Waterway Experiment Station has an excellent discussion of various cover materials. A copy can be obtained from EPA. A suitable cover material is one that can achieve the results you are trying to accomplish.

For instance, hog fuel or chipped wood may be acceptable if you are trying to allow workability during wet weather and provide litter, bird, and fly control and maintain a slightly appearance. It may even mask some of the odors, but it does not prevent infiltration (actually adds to the strength of the leachate), control gases, stop rodents or retard spread of fire. Paper mill sludge would bring similar results.

If you need clarification or need additional information, please contact the Solid Waste Division at 229-5913.

Sincerely,

Ernie A. Schmidt
Administrator
Solid Waste Division

JFS:mb
Enclosure
cc: Portland Region

SOLID WASTE SHREDDING
AS PRETREATMENT PRIOR TO LANDFILLING

August, 1976

INTRODUCTION

Shredding of solid wastes prior to landfilling as an environmental pretreatment has been proven at Madison, Wisconsin in 1967. Since that time, the use of shredding has increased both as a pretreatment method prior to landfilling, and as preprocessing prior to resource recovery. Operating compliance during winter months, reducing environmental hazards and the need for improving the public's concept of landfills may warrant considering the implementation of a shredding requirement in certain areas of the State of Oregon. This discussion was prepared to summarize advantages and disadvangates of landfilling shredded solid wastes. In addition, criteria that could be used in establishing the requirements for shredding prior to landfilling are included.

ADVANTAGES OF SHREDDING SOLID WASTES

The following is a summary of the advantages of shredding solid waste prior to landfilling.

1. The shredding process mixes solid wastes into a homogeneous product. That is, food wastes are thoroughly mixed with paper products, plastics, etc.

2. Shredded refuse has a general appearance of oversized confetti making it more visually acceptable to the public.

3. The increased surface area of shredded solid waste causes accelerated chemical and biological decomposition. This provides for earlier landfill stabilization.

4. Shredded refuse is much easier to handle than raw refuse. Shredded waste is easily spread into place and compacted.

5. Because compacted shredded solid waste has about 20-30 percent higher density than unprocessed solid waste, the life of a given landfill site can be extended.

6. Shredded waste properly placed and compacted has a low incidence of fire danger.

7. Lack of objectionable odors may allow shredded solid waste landfills to be placed nearer commercial or residential areas.

8. Due to mixing of solid wastes during shredding, vectors cannot survive on shredded solid waste landfills.

9. Shredded solid waste characteristics in a landfill restrict blowing litter.

10. It is estimated that 20-30 percent of the cover material required for an unprocessed landfill is required for shredded solid waste landfills, simplifying landfill operation in winter months.

11. Shredding is the first processing step toward achieving resource recovery.

12. Landfilling operations are simplified in that the public is kept out of the landfills.

DISADVANTAGES OF SHREDDING SOLID WASTES

The following are a summary of the disadvantages of shredding solid wastes prior to landfilling.

1. Strict environmental controls are required for shredder installations. For example, dust controls and noise abatement equipment must be utilized.

2. Strict shredder maintenance must be utilized including "tipping" hammers.

3. Increased costs due to installing and operating shredders of $5.00 to $7.00 per ton compared to present landfilling costs of from $3.00 to $4.00 per ton.

4. Energy requirements will increase as compared to unprocessed landfilling.

CRITERIA FOR REQUIRING SHREDDING OF SOLID WASTES PRIOR TO LANDFILLING

The DEQ through the landfill permit system can, by assuring proper compliance, require that all solid waste be shredded prior to landfilling. In order to implement this regulation, firm justification and need must be shown. Furthermore, public or private landfill operators should be contacted to determine problems, if any, that could be encountered in implementing this policy.

The following criteria may be utilized in implementing this policy.

1. The size of shredder should be such that allows for growth of solid waste quantities.

2. New landfills should be required to install shredders.

3. A shredding/landfill program should be funded to study the amount of cover material that would be required.

4. Minimum shredder installation requirements should be developed. For example, some small landfills in the state should not be required to install shredders.

5. The DEQ should determine the geographical areas of compliance and establish an allowable time schedule before compliance must be met.

6. State and local land use regulations must be inventoried and coordinated to allow implementation of shredding.

7. Shredder installation design should allow for expansion into resource recovery.

8. Milled refuse should be placed and spread in a manner to provide smooth surfaces. It is essential to avoid steep inclines on milled refuse. Maximum slopes of four feet horizontal to one foot vertical should be maintained.

9. Daily and final soil cover is not necessary except for aesthetic reasons. Final cover is desirable for all but a few remote locations.

10. The site should have a low fence or some other barrier to stop blowing debris and to keep the public out.

11. No refuse, whether milled or not, should be dumped in bodies of surface water.

12. A supply of cover dirt, or an alternative site, should be available in case of milling equipment failure.

13. Diversion of runoff away from the site should be routinely practiced by proper contouring of the refuse and the surrounding area. Depressions in the refuse should be avoided.

14. The same planning and engineering design used on conventional sanitary landfills should be applied to milled refuse sites.

ROSSMAN'S LANDFILL, INC.
1101 17TH STREET
OREGON CITY, OREGON 97045
(503) 656-0636

June 23, 1978

Metropolitan Service District
1220 S. W. Morrison
Room 300
Portland, OR 97205

Attn: Mr. Charles C. Kemper

Dear Chuck:

In response to the questions posed in your letter of June 13, 1978, we have the following comments:

Each landfill poses different problems. The cost benefit ratio for daily cover varies at each site, depending upon a number of conditions. All of the following have an impact upon this ratio:

(1) Total number of yards received per day;

(2) Depth at which this material is placed;

(3) Total area requiring daily cover (this is related to Items (1) and (2) above);

(4) Availability of cover material on site;
(a) How workable is the material in wet weather?
(b) Soil characteristics (sandy? gravelly? Silts? clays?) all present different degrees of problems;

(5) Proximity of cover material to the area to be covered;

(6) Proximity of landfill site to developed areas and density of same;

(7) Visibility of the landfill to the public;

(8) Availability of "free dirt".

Certainly, no one is suggesting that garbage be allowed to stand uncovered for any length of time. It is our contention that under the right circumstances, most of the benefits of interim daily cover can be accomplished by placing a "fresh" lift of garbage (minimum depth of three feet) over the previous day's deposit.

To be specifically responsive to your questions:

QUESTION 1. In your opinion, is the present daily cover material requirement in your permit cost effective compared to the public benefit? If not, why?

We believe our testimony at the recent variance hearing confirmed that we do not believe that the benefits to the public are justified by the expense.

QUESTION 2. Could your landfill place daily cover year-round? If not, how many days per year can daily cover be placed? Economically?

Again, we state anything can be done. If we use wood wastes instead of dirt, cover could be effected daily with dirt or with wood waste. Economically, we deal with the factors outlined above. In our case, we projected a cost of 35¢ per cubic yard increase over our present prices if we rigidly adhered to the cover requirement.

QUESTION 3. If this standard is sustained by the State, what kind of cover material would you recommend?

We feel that covering with fresh garbage, as mentioned above, accomplished most of the benefits that a daily cover of dirt does, with the following exceptions:

(1) It isn't as pretty;

(2) It is possible that during an extremely windy period that some papers might be dislodged from the compacted surface, thereby creating litter that would not take place if dirt had been placed. However, we feel this is a minor consideration since most litter problems are created while attempting to place the material, not after it has been compacted in place. In any event, rarely does any litter leave the landfill premises.

(3) Dirt (however, not sawdust) would help in preventing "surface" fires. They do happen periodically, however most often take place during the working day and are promptly extinguished. Fires within the landfill itself are associated with landfills taking demolition and a high degree of trash and brush. At our landfill and presumably others, internal fires are not a realistic problem and in any event the dirt cover would not prevent them.

We think some consideration might be given to polyvinyl tarps as an interim cover. You will find enclosed a memo from CH_2M Hill pointing out that this material would effect many of the same benefits attributed to dirt cover. We are the first to admit we are not sure just how practical this might be as we have not totally researched the problem of how to place and remove these on a daily basis. However, if the respective agencies felt that this might be a satisfactory alternative to dirt cover, we feel confident that a system could be devised for this purpose and could be much less expensive than the present requirements. In any event, we feel this is an area that should be further explored. This is only one idea that we have had and perhaps there are many others.

QUESTION 4. In your opinion, does the public want landfills to be covered? If so, what are the major reasons for cover?

Generally, the public wants anything that sounds good. If it looks pretty, it must necessarily be better. We think the agencies that protect our environment have a duty to weigh the cost-benefit ratio on these matters and they need to be well-informed and not just quoting others' words.

QUESTION 5 & 6. What are the possible alternatives to this requirement? How much does it cost to comply with this standard?

We think we have already responded to Questions 5 & 6. We would point out again, however, that it is difficult to fit all landfills into neat "pigeon holes". We realize that from an administrative standpoint this imposes some difficulties, but we believe landfills are as individual as are people, and certainly landfills in the Willamette Valley have different problems than those in Arizona, California or Nevada.

The arguments given by us to the MSD Board on our request for a Variance, set forth in more detail our position. You might refer to a transcript of this for further input.

Yours truly,

ROSSMAN'S LANDFILL, INC.

Jack W. Parker
President

JWP:jw
Enc.

MEMORANDUM

CH2M HILL

TO: Jack Parker, Rossman's Landfill

FROM: Mike Kennedy

SUBJECT: Daily Cover Requirements

DATE: 2 June 1978

PROJECT: P11709.A0

This memorandum summarizes a brief analysis of possible artificial materials for use as a daily landfill cover as an alternative to earth.

The proposed MSD certificate for Rossman's Landfill requires that the operator:

> "Cover all wastes deposited with not less than six (6) inches of compacted earth or other approved cover material daily."

MSD's reasons for this requirement are not listed, however, the U.S.E.P.A. promotes a similar requirement, for the following reasons:[1]

- Minimize moisture entering the fill
- Control the ingress and egress of flies
- Discourage the entrance of rodents seeking food
- Prevent birds from feeding on waste
- Provide pleasing appearance and minimize blowing paper
- Depending on landfill design, either be permeable to or impermeable to landfill decomposition gases.

Table 1 below summarizes the suitability of certain soil types in performing the required functions.

---

[1] "Sanitary Landfill; One Part Earth to Four Parts Refuse," USEPA, 1972.

Table 1

SUITABILITY OF GENERAL SOIL TYPES AS COVER MATERIAL[2]

Function	Clean Gravel	Clayey-silty Gravel	Clean Sand	Clayey-silty Sand	Silt	Clay
Prevent rodents from burrowing or tunneling	G	F-G	G	P	P	P
Keep flies from emerging	P	F	P	G	G	E[1]
Minimize moisture entering fill	P	F-G	P	G-E	G-E	E[1]
Minimize landfill gas venting through cover	P	F-G	P	G-E	G-E	E[1]
Provide pleasing appearance and control blowing paper	E	E	E	E	E	E
Be permeable for venting decom position gas[2]	E	P	G	P	P	P

E = Excellent; G = Good; F = Fair; P = Poor.

[1]Except when cracks extend through the entire cover.

[2]Only if well drained.

ALTERNATIVES

We have investigated alternative methods of covering a 50 foot by 300 foot sanitary landfill face on a daily basis

[2]"Sanitary Landfill, Design and Operation," USEPA, 1972.

during non-operating hours. The following criteria were considered important:

- Able to remove/replace over landfill in 20 to 30 minutes.
- Should be very durable, especially to tearing.
- Must be moveable as landfill progresses.
- Must be resistant to blowing wind.
- Must be waterproof and should not become waterlogged.
- Should be economical in comparison to imported earth cover.
- Safety.

Ideas generated for the covering included chain-link fence, nets, tarpaulins, rigid panels of I-beams with plastic, wood, or metal covering, styrofoam panels and spray-on coatings.

Since a major requirement for the covering is water proofness, all but the I-beam supported panels and some sort of tarpaulins appear infeasible.

The rigid panels idea would use four panels approximately 50 feet deep by 75 feet wide. The panels would be supported by steel I-beams with skids to slide on. The covering could be sheet metal, aluminum or plastic supported on a series of girders. This method would have a high initial cost and a relatively long design life, however, the remaining life of the landfill is relatively short, hence this method appears uneconomical. Daily use of this scheme would also require a rather elaborate placement, removal and storage scheme.

The most practical idea appears to be some type of tarpaulin. The materials could include canvas, polyethelene, nylon, vinyl, neoprene, and visqueen. Visqueen and polyethelene materials are too flimsy to be used, and the latter also is subject to degradation when exposed to sunlight. Canvas is not practical due to the weight, moisture absorption, and decomposition when subjected to weather. Nylon also is subject to degradation when exposed to ultraviolet rays.

VINYL/NEOPRENE

The two materials most suitable for daily use as an alternative cover are vinyl and neoprene. Both can be readily repaired by use of rubber cement. A neoprene tarp would be manufactured with sewn seams and could also be repaired by sewing. Vinyl weighs about 14 ounces/square yard and neoprene weighs about 16 ounces/square yard. If two 150 foot by 50 foot tarps were used, vinyl would weigh approximately 750 pounds and neoprene 850 pounds per tarp. Vinyl costs about 45 cents per square foot and neoprene costs about 50 cents per square foot. The total cost for two tarps would be about $6,500 to $7,500.

Final selection of the material would need to be based on additional information regarding tearing strengths of the materials and the individual resistance to weather deterioration. Neoprene appears to be slightly more advantageous due to slightly greater thickness and strength.

If there is a rodent population, there would be a problem with rodents chewing holes in the tarpaulins, according to the manufacturers.

APPLICATION

The face of the landfill would need to be checked for objects which would cause punctures or tears in the tarps, prior to daily application. Several methods of placing and removing the tarps were considered. One method is to roll the tarps on a 10-inch diameter section of aluminum culvert pipe. A 40-foot length of this pipe weighs about 90 pounds. The weight of one rolled tarp would then be approximately 900 pounds. The rolled tarps may have to be left on the edges of the landfill as this may be too much weight to be handled by the attendants. Four tarps of 450 pounds each might be a better solution for handling.

Another method that might work is to fold the tarps at the bottom of the landfill each morning by hand, remove the folded tarps out of the way of the compactor, and then use a pickup winch at the top to drag the tarps up the slope at night. The slope would need to be relatively free of sharp objects for this method.

One problem anticipated with the tarpaulins is blowing by wind. Weights on the tarps, such as beams, or timbers, may have to be placed to prevent sailing. This is a problem which is probably best researched in the field. It is a solvable problem.

SUMMARY

In summary, a neoprene or vinyl covering could be purchased for $6,500 to $7,500. Two tarps of 50 feet by 150 feet would weigh about 900 pounds each when rolled on a metal culvert pipe. Four tarps of 50 feet by 75 feet each would weigh about 450 pounds each and may provide advantages in placement.

Table 2 summarizes the suitability of using either a vinyl or neoprene tarp for daily cover in comparison to various types of soil.

Table 2

SUITABILITY OF GENERAL SOIL TYPES AS COVER MATERIAL

Function	Clean Gravel	Clayey-silty Gravel	Clean Sand	Clayey-silty Sand	Silt	Clay	Neo-prene/ Vinyl
Prevent rodents from burrowing or tunneling	G	F-G	G	P	P	P	F
Keep flies from emerging	P	F	P	G	G	E[1]	P
Minimize moisture entering fill	P	F-G	P	G-E	G-E	E[1]	E
Minimize landfill gas venting through cover	P	F-G	P	G-E	G-E	E[1]	P
Provide pleasing appearance and control blowing paper	E	E	E	E	E	E	E
Be permeable for venting decom-position gas[2]	E	P	G	P	P	P	E

E = Excellent; G = Good; F = Fair; P = Poor.

[1]Except when cracks extend through the entire cover.

[2]Only if well drained.

CONCLUSION

Because an artificial cover would provide excellent protection against water entering the face of the landfill, and acceptable performance for other parameters, the idea deserves more serious consideration. The method of placement appears to present the most problems. The general idea of folding the tarps to the bottom in the morning and winching up the slope at night appears to offer the best prospect for long-term success. If an application method consistent with Rossman's method operation and number of personnel can be determined, preliminary discussions with MSD staff may be desirable.

H.G. LaVelle Landfill
3000 N.E. 82nd
Portland, Oregon 97220
252-3302

July 7, 1978

Mr. Charles C. Kemper, Director
Solid Waste Division
METROPOLITAN SERVICE DISTRICT
1220 S.W. Morrison St.
Portland, Oregon 97205

Re: Daily Cover Requirement

Dear Mr. Kemper:

In response to your letter of June 3, 1977 requesting input from landfill operators and comments on specific questions pertaining to the requirement of daily cover of garbage at sanitary landfills, comments are as follows:

Preliminary Statement

M.S.D. minimum standard for landfills require that all solid waste be spread and compacted daily. In addition, all waste deposited must be covered daily with not less than six (6) inches of compacted earth or other approved cover material. Wood waste is presently approved as temporary daily cover and shall only be used when climatic conditions prohibit the use of dirt.

Earth cover must be placed before the lapse of a 24 hour period after waste is deposited. Which means, if not covered during night hours, the working face of the fill may be left uncovered over night and covered on the day following.

This landfill, commonly referred to as a "demolition landfill" is permitted to receive and dispose of demolition and construction wastes, brush, appliances, furniture, paper products, glass, plastics, rock, soil, concrete rubble and similar non-putrescible materials.

We are not allowed to accept food wastes, garbage, car bodies, dead animals, manure, sewage sludges, septic tank pumpings, hospital waste, chemicals, oils, liquids, explosives or other materials which may be hazardous or difficult to manage.

Operating hours are from 8:00 a.m. to 5:00 p.m. daily except Sunday from 9:00 a.m. to 5:00 p.m. March thru October, and 10:00 a.m. to 4:00 November through February.

The total area being landfill is approximately 27 acres.

Waste is deposited of by burying in 8 foot thick debris cells covered over with a minimum 1 foot thick intermediate cover.

Haulers delivering waste to the site are routed over a gravel surfaced road to the debris cell being constructed where they leave the road and travel over the top of the debris cell on a temporary all-weather surfacing of a ground wood residue toward the dumping edge where they turn the vehicle around, back up to the dumping edge and unload their waste.

The length of the dumping edge is maintained at whatever length is required to accommodate the normal lineup of haulers dumping at that time of year. During winter months the dumping edge is at minimum length of approximately 250 feet and during peak spring period up to 600 linear feet.

Waste is removed from the dumping edge by a landfill compactor, spread and compacted in thin layers @ 3 to 1 down-slope from top of debris cell, under construction, to top of preceeding debris cell below previously covered over with not less than 1 foot thick compacted layer of intermediate earth cover.

This down-slope area which is the width of the dumping edge is referred to as the working face of the fill.

The working face of the fill progresses outward daily as debris is deposited. The ground wood surfacing, placed on top of the debris lift and used by vehicles for movement and turning, referred to as the running surface, is placed periodically as required to extend the dumping edge out as the working face moves out.

The intermediate earth cover over the completed debris cell is placed progressively as the dumping edge and working face moves out except for the minimum space needed for vehicles to turn around and back up to the dumping edge.

The principal pieces of landfill equipment used at this site is a:

Caterpillar D-8K equipped with dozer blade and canopy weighing approximately 37½ tons.

Caterpillar 988 wheel loader equipped with combination bucket-dozer blade, landfill demolition wheels and canopy weighing approximately 50 tons.

1. (question) In your opinion, is the present daily cover material requirement in your permit cost effective compared to the public benefit? If not, why?

It is my honest opinion that the public would be benefited only insignificantly by full compliance, to the letter, of this requirement which would be extremly expensive and, the cost of which, they must bear.

During previous years past, landfills have been covered regularly year-round with earth, including during the rainy season when brief periods of clearing occur and more frequent in fair weather. The landfill has never been covered with dirt in that area used for movement and turning of landfill traffic at the dumping edge; however, this area has been kept surfaced with a clean ground-wood residue which has proved to be very satisfactory and most inexpensive. Covering has never been used in that area that is used constantly throughout the day for spreading and compacting waste into final placement. This area is adjacent to the dumping edge.

The two above mentioned areas are most critical in that they must be kept clean and free of mud at all times. The cover requirement interpreted necessitates placement of earth cover daily over the surface of these areas which will drastically increase disposal fees.

The substitution of wood waste as a temporary cover is indeed helpfull in holding cover costs down but supply of wood waste is inadequate to cover, in addition to the running surface, the working face of the fill. This leaves the landfill operator no choice but to turn to the use of gravel or crushed rock as cover material.

Since no adverse conditions to the public are created by allowing the working face of the fill to remain open to the atmosphere, I see no reason why it should be covered at such cost.

Esthetically, the appearance of the landfill site is improved by earth cover, which it already is and has been, but the earth should be kept away from the dumping edge, the running surface and the working face of the fill to prevent dust and mud conditions which would be inevitable.

2. (question) Could your landfill place daily earth cover year-round? If not, how many days per year can daily cover be placed? Economically?

Earth cover can be placed daily year-round by using a granular earth material which is clean, will compact and remain stable in all weather conditions without pumping and which will not create mud conditions.

This material would need to be something on the order of gravel mixed with sand or crushed rock which would be very expensive.

A temporary cover of a ground-wood residue can be placed year-round and is most economical with minimum problems of dust or mud as would also be if granular earth or crushed rock are used. Building demolition debris, ground into small particles which will compact and bind into place forms the best temporary wood-waste cover, but the supply is inadequate.

Other wood-waste such as sawdust, hog fuel, chipped brush and wood planing chips placed more than 2 inches thick is unsatisfactory when used for covering the running surface as it will float up in rainy weather and cause vehicles to become mired.

Daily earth cover material which cannot be placed year-round and satisfy the requirement, but could be used during fair weather, is clay, silt, loam, dirt or other earthy material which, when moistened above optimum moisture content, will not compact but turn to mud. These, however, would not meet the requirement from the standpoint of either compaction or minimum thickness since earth-mover equipment used for spreading would leave ruts in the cover placed as deep as the thickness spread.

The number of days per year when daily earth covered can be placed and the requirements met, using earthy materials mentioned above which in turn will turn to mud in heavy rains, is approximately a 60 day period from mid July to mid September.

3. (question) If this standard is sustained by the State, what kind of earth cover would you recommend?

I would recommend using pit-run sand and gravel or crushed rock to insure uninterrupted disposal service to the public year-round. Any earth cover material placed would need to be clean, compactible and firm in all kinds of weather since there can be no tracking of mud onto the streets nor can the disposal site be turned into a quagmire where vehicles become mired down.

If it were possible to cover only the vehicle running surface with sand and gravel and to successfully cover only the working face of the fill with soil which turns to mud when wet, without contaminating the sand and gravel surfacing, this would be a substantial saving of cover costs.

I question the availability of pit-run sand and gravel in the Portland area inasmuch as those who do have this material consider their supply very limited and choose not to sell to others. To the best of my knowledge, no landfill operator in the Portland area owns his own source of pit-run sand and gravel.

4. (question) In your opinion, does the public want landfills covered? If so, what are the major reasons for cover?

In my opinion, the majority of the public want landfills covered, including myself but the landfills are not all covered all the time.

The question should have been worded "does the public want landfills covered daily including over all waste deposited? If so, what are the major reasons for cover?"

The question reworded - I honestly do not believe the public cares if the running surface is of a ground wood surfacing or graveled provided it is smooth and easy to drive over. For those who would prefer to see the working face of the fill covered with earth will not under this requirement as long as the disposal site is open for disposal of waste daily.

Landfills open daily for disposal of waste must provide to haulers an area in length sufficient to accommodate the usual lineup of haulers unloading at a given period that day. This area, referred to as the dumping edge, is adjacent and parallel to the face of the fill where waste is continually, throughout the day, being removed from the dumping edge and compacted in the fill.

If, assuming 300 linear feet of dumping edge was required yesterday to accomodate the lineup of haulers unloading and that waste must be covered today, then, in order to avoid mixing cover material with waste material being dumped today, an alternate space for dumping must be provided apart from the cover operation which means a total of 600 linear feet of dumping edge and face is required and one-half remains open to the atmosphere at night. Consequently, no gain is made to reduce open fill area by covering daily, including all waste, within a twenty-four hour period. The major reasons are:

Diversion of surface and storm water.
Control of blowing litter.
Containment of landfill surface fires.
General landfill appearance.
Emission of fill gas.

Diversion of surface and storm water at this site is controlled by placement of the one foot thick intermediate earth cover placed progressively over the completed debris cell. As the dumping edge and face of the fill moves out, more intermediate earth cover is placed.

Control of wind-blown paper and litter is done by positioning portable blow fences as needed to catch paper and other wind-blown material. In the event of increased winds, all refuse haulers who may be carrying paper in their loads, such as drop-box firms, are called by phone and advised against dumping that day or until the wind abates. Private loads are inspected at the landfill entrance gate for paper or other waste which could blow and, if found, are turned away with their loads.

Containment of landfill surface fires is controlled by placement of intermediate earth cover or by densely compacted ground-wood temporary cover, or in the event a fire occurs on the face of the fill, hoses with high pressure water are kept a various points and are readily available at all times.

The appearance of the landfill, to the viewer, is improved by earth cover as opposed to temporary ground-wood residue.

Emmission of fill gas is controlled by means other than earth cover, such as by piping, and is released above house tops to the atmosphere. Earth cover will not hold back landfill gas being generated as it would build-up pressure sufficient to develop cracks in the earth cover and escape.

5. (question) What are the possible alternatives to this requirement?

One alternative to this requirement, which would substantially hold down cover costs, would be to eliminate the necessity of daily cover of those

critical areas mentioned, where waste is being deposited daily on the face of the fill and that minimum space required at the dumping edge used for movement and turning of landfill traffic. All other fill areas would be covered with earth at all times except as approved by in writing by D.E.Q. and M.S.D.

The landfill operator would, at all times, including daily if necessary, provide all-weather surfacing of landfill haul-roads and areas used by waste haulers, graded and smooth to insure free, unassisted movement from the public street to the dumping edge and back to the street.

This all-weather surfacing may be of gravel, a ground-wood residue, a waste wood, or any satisfactory material which will provide for free movement of vehicles without mud conditions.

6. (question) How much does it cost to comply with this standard?

A fair estimate of cost to comply with this standard at this site, using pit-run sand and gravel or crushed rock to cover the vehicle running surface, and pit-run (dirty) sand to cover the face of the fill for the period September 15 thru July 15, would be approximately $2,000 per day. To cover with dry or moist earth for the period July 16 thru September 14, the cost would be approximately $500.00 per day.

Respectfully submitted,

Harold G. LaVelle

Harold G. LaVelle, President

HARDY, MCEWEN, NEWMAN, FAUST & HANNA
(FOUNDED AS CAKE & CAKE-1886)
ATTORNEYS AT LAW
1408 STANDARD PLAZA
PORTLAND, OREGON 97204

TELEPHONE 226-7321
AREA CODE 503

HERBERT C. HARDY
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ROBERT A. STOUT
JANICE M. STEWART
ROBERT G. BOEHMER

RALPH H. CAKE
(1891-1973)
NICHOLAS JAUREGUY
(1896-1974)

June 27, 1978

Mr. Charles C. Kemper
Metropolitan Service District
1220 S.W. Morrison, Room 300
Portland, Oregon 97205

Re: LCCM SW-013

Dear Chuck:

You have asked for our opinion defining the Department of Environmental Quality's (DEQ) minimum solid waste standards with regard to daily cover of solid waste and disposal of solid wastes into open flooded trenches.

DEQ's authority regarding solid waste management arises under ORS Chapter 459. ORS 459.015(6) specifically declares that the policy of the State of Oregon is to provide for the adoption and enforcement of minimum performance standards necessary for safe, economic and proper solid waste management. DEQ is given the power to adopt reasonable and necessary solid waste management rules governing minimum standards of design, management and operation of disposal sites. ORS 459.045(1)(b).

Pursuant to this authority, DEQ has adopted special administrative rules pertaining to landfills. Concerning daily cover of solid waste, OAR 340-61-040(3)(g) provides that:

> Adequate quantities of cover material shall be available to provide for periodic covering of deposited solid waste in accordance with the approved operational plan and permit conditions. Final cover material must be available which will permit minimal percolation of surface water and minimum cracking of the completed fill.

With regard to disposal of solid wastes into open flooded trenches, OAR 340-61-040(3)(c) provides that:

> Areas having high groundwater tables may be restricted to landfill operations which will maintain a safe vertical distance between deposited solid waste and the maximum water table elevation.

> Solid wastes other than tires, rock, dirt, brick and concrete rubble and similar non-decomposible materials shall not be deposited directly into the groundwater table or in flooded trenches or cells.

These regulations constitute the minimum performance standards for landfills. MSD also has regulatory authority over landfills, ORS 268.310(2), provided that MSD regulations do not conflict with DEQ regulations. ORS 459.095(1). The statutes do not express any intent for DEQ to displace MSD regulations regarding landfills, and in our opinion, do not prohibit MSD from providing safeguards in addition to DEQ regulations for landfills within its jurisdiction.

This view is supported by the recent Oregon Supreme Court decision of State v City of Troutdale, 281 Or 203, 576 P2d 1238 (1978), in which the state attempted to enjoin the city from enforcing a provision of the city building code ordinance which was more stringent than a corresponding provision of regulations promulgated by the State Director of Commerce. The state regulations permitted "single wall" construction, whereas the city required "double wall" construction in all new homes. The Court held that until the Legislature clearly expressed an intention that its minimum regulations in this area should displace stricter local regulations, local requirements compatible with the state standards were enforceable. Based on this decision and the relevant statutes, in our opinion, MSD has the authority to promulgate and enforce regulations similar to or stricter than DEQ regulations.

Very truly yours,

Dean Gisvold

Dean P. Gisvold

DPG:ndo

78-1113 UNDERWRITER SELECTION

(REMOVED FROM THE AGENDA)

78-1114 TRAVEL REQUEST

THIS TRAVEL REQUEST IS FOR MR. KEMPER TO TRAVEL TO WASHINGTON D.C. FOR THREE DAYS AND TWO NIGHTS. THE ENVIRONMENTAL PROTECTION AGENCY IS PRESENTLY PROVIDING TECHNICAL ASSISTANCE WHICH INCLUDES A CONSULTANT IN THE WASHINGTON D.C. AREA THAT WILL HELP THE MSD BOARD AND STAFF EVALUATE THE PUBLISHERS RESOURCE RECOVERY FINANCIAL INFORMATION. THE PURPOSE OF THIS TRIP WILL BE TO COORDINATE AND EVALUATE THE PROGRESS OF EPA'S CONSULTANT SOMETIME IN THE FIRST TWO WEEKS OF AUGUST. THE STAFF SCHEDULE FOR COMPLETION OF THIS WORK IS TO RETURN TO THE MSD BOARD AT THE LAST MEETING IN AUGUST 1978.

THE STAFF RECOMMENDS APPROVAL OF THE TRAVEL REQUEST AT A COST UP TO $600 AS FOLLOWS:

AIRFARE	$424.00
MEALS	45.00
HOTEL	80.00
TRAVEL	20.00
MISCELLANEOUS	31.00

METROPOLITAN SERVICE DISTRICT
BOARD ACTION
NO. 78-1114 DATE 7-28-78

	YES	NO	ABST.
BARTELS			
BUCHANAN			
DURIS			
McCREADY			
ROBNETT			
SALQUIST			
SCHUMACHER			

Clerk of the Board

78-1115 ZOO DEVELOPMENT PLAN - PHASE IV

THE FIRM OF WARNER, WALKER AND MACY, ALONG WITH THE ZOO DIVISION DIRECTOR AND SEVERAL STAFF MEMBERS, WILL MAKE A PRESENTATION COVERING THE SCHEMATIC DESIGNS AND PROGRAMS FOR ELEVEN PROJECTS THAT WERE DESIGNATED DURING PHASE III.

THESE DESIGNS AND PROGRAMS WILL BE SUFFICIENT DOCUMENTATION FOR THE ACQUISITION OF FINAL DESIGN SERVICES ON EACH PROJECT WHICH IN TURN WILL ALLOW THE CONSTRUCTION OF EACH PROJECT.

IN CONJUNCTION WITH THE PROGRAMMING, DETAILED BUDGETS HAVE BEEN DEVELOPED, AS A RESULT OF THIS WORK, ALONG WITH THE FURTHER COST REFINEMENTS ON THE SPIN-OFF PROJECTS FOR THE NURSERY, QUARANTINE FACILITY AND THE ELEPHANT EXPANSION, A MORE FULLY DEVELOPED BUDGET PROGRAM AND "IMPLEMENTATION PROGRAM SCHEDULE" HAS BEEN FORMULATED.

THE STAFF RECOMMENDS THAT THE BOARD APPROVE THE SCHEMATIC DESIGNS AND PROGRAMS AS DEVELOPED ALONG WITH THE REVISED "IMPLEMENTATION PROGRAM SCHEDULE" AND AUTHORIZE THE STAFF TO PUT OUT "REQUESTS FOR PROPOSALS" FOR FINAL DESIGN SERVICES ON THE TWO HIGHEST PRIORITY PROJECTS, THE PRIMATE HOUSE AND THE RENOVATIONS TO THE ENTRY PLAZA AREA.

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-115 DATE 2-28-78

	YES	NO	ABST.
BARTELS	/		
BUCHANAN			
DURIS	/		
McCREADY			
ROBNETT	/		
SALQUIST			
SCHUMACHER	/		

Clerk of the Board

WASHINGTON PARK ZOO

To: MSD Board

Date: 7/27/78

From: Warren Iliff

Subject: Development Program Schedule and Budget Summary

To make the analysis of our recommendations on priorities, schedules and costs more understandable the following is offered:

	Completion Date	Levy Funds	Total
1978-79			
Nursery	10/1/78	$ 28,000	$ 28,000
Quarantine	1/1/79	96,000	96,000
Elephant	5/1/79	545,800	545,800
Entrance	4/1/79 - 7/1/79	192,229	242,229
Primate House	8/1/79	1,131,000	1,131,000
Train	11/1/78 & 10/1/79	50,000	150,000
Open Space	10/1/79	50,000	175,000
Feline House	10/1/79	103,000	325,000
1979-80			
Commissary/ Maintenance	5/1/80	125,000	125,000
Hippo	7/1/80	---	217,000
Food #2	7/1/80	257,900	382,900
1980-81			
Alaskan	4/1/81	472,800	822,800
Open Space	7/1/81	50,000	175,000
TOTALS		$3,101,729	$4,415,729

ENTRANCE PLAZA

CORRECTIONS & ADDENDA

ADD:

1A.	SOUVENIR SHOP Frame in existing stroller storage space and frame interior, complete with shelving and casework to display souvenirs and collectible items for sale	$ 12,500.00
		$ 197,900.00

CORRECTIONS:

13.	Architectural, Engineering % Construction fees @20%	39,580.00
		$ 237,480.00
14.	Zoo overhead, handling & support costs @ 2%	4,749.00
	TOTAL CONSTRUCTION COST	$ 242,229.00

78-1116 NURSERY CAGES BID AWARD

(REMOVED FROM THE AGENDA)

78-1117 CONTRACT 78-142 AMENDMENT - TRAVERS & JOHNSTON

After following procedures set out in MAP 7 the above firm was selected to do the design on the Quarantine Facilities for a fee of $4,000. As noted in the preceding discussion on Phase IV of the Development Plan the materials requirements for the facilities were modified as a result of discussions with zoo staff and the project coordinator. The design firm has agreed to complete the design for the modified facilities for an additional $2,000.

The staff recommends that the Board APPROVE increasing the maximum allowed in the design contract from $4,000 to $6,000.

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-1117 DATE 2-28-78

	YES	NO	ABST.
BARTELS	✓		
BUCHANAN			
DURIS	✓		
McCREADY			
ROBNETT	✓		
SALQUIST			
SCHUMACHER	✓		

Clerk of the Board

78-1118 FY 78-79 ZOO FREE DAYS APPROVAL

In compliance with the new ordinance staff requests the following free days for fiscal year 1978-79:

Children's Free Day, Thursday, December 28, 1978. This will be the only day in the fiscal year when children six and over will have an opportunity to visit the zoo without an admission fee. This will allow many children to come to the zoo who might not otherwise because of cost. Budget for this day is $900.

Handicapped Free Day, Monday, May 14, 1979. This is the second day of People's Awareness Week for 1979 and this will allow us to coordinate zoo activities with this annual event and kick off the week. (Formerly we have held Handicapped Free Day in the Fall.) The zoo staff has worked closely with handicapped organizations to make the zoo more accessible, and having this free day helps to publicize the zoo's efforts and to make people more aware of problems of accessibility for handicapped persons. This is also a day when institutions for the handicapped can arrange transportation to bring groups to the zoo for a special day of fun and activities. Budget for this day is $1,075.

In addition to providing this public service we still generate revenue since visitors purchase food, gift items, ride the train, etc. Please see the comparative sheet of figures for free days versus regular admission days of same date for other years.

Staff recommends <u>APPROVAL</u> of this request.

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-1118 DATE 7-28-78

	YES	NO	ABST.
BARTELS			
BUCHANAN			
DURIS			
McCREADY			
ROBNETT			
SALQUIST			
SCHUMACHER			

Clerk of the Board

FREE DAY ATTENDANCE ANALYSIS

Comparative attendance and income figures for 1975 (no free days) with figures for the corresponding dates (free days) in 1976, 1977 and 1978.

		Attendance	Total Income*
December			
1975	December 22	928	$ 664.87
	December 28	255	339.03
1976	December 22 (free day)	2,757	1,356.22
1977	December 28 (free day)	2,660	1,636.97
March			
1975	March 21	333	486.35
	March 22	726	884.80
	March 23	261	306.61
1976	March 22 (free day)	8,325	3,368.19
1977	March 22 " "	15,123	7,565.16
1977	March 23 " "	5,913	2,942.66
1978	March 21 " "	8,634	8,818.00
1978	March 22 " "	7,288	7,652.75

*Total income includes admissions, concessions, railroad, gift shop

OTHER BUSINESS

78-1119 MSD/FRIENDS OF THE ZOO AGREEMENT

THE ATTACHED CONTRACT HAS BEEN REVIEWED BY OUR LEGAL COUNSEL, MR. DEAN GISVOLD, AND HAS BEEN REVIEWED AND SIGNED BY OFFICERS OF A NEW ORGANIZATION, FRIENDS OF THE WASHINGTON PARK ZOO. THE PURPOSE OF THIS AGENDA ITEM IS TO SUBMIT THE AGREEMENT FOR YOUR REVIEW. IT IS SUGGESTED THAT THE BOARD CONSIDER THIS ITEM AT THEIR AUGUST 11, 1978, BOARD MEETING.

HARDY, MCEWEN, NEWMAN, FAUST & HANNA
(FOUNDED AS CAKE & CAKE-1886)
ATTORNEYS AT LAW
1408 STANDARD PLAZA
PORTLAND, OREGON 97204
TELEPHONE 226-7321
AREA CODE 503

HERBERT C. HARDY
DONALD W. McEWEN
JONATHAN U. NEWMAN
JOHN R. FAUST, JR.
JOSEPH J. HANNA, JR.
DEAN P. GISVOLD
ROBERT D. RANKIN
VICTOR W. VanKOTEN
ROBERT A. STOUT
JANICE M. STEWART
ROBERT G. BOEHMER

RALPH H. CAKE
(1891-1973)
NICHOLAS JAUREGUY
(1896-1974)

July 20, 1978

Mr. Warren Iliff, Director
Washington Park Zoo
4001 S.W. Canyon Road
Portland, Oregon 97221

Dear Warren:

Enclosed is the Agreement between MSD and the Friends of the Washington Park Zoo. The Agreement has already been signed by Al Hampson and Robert Peterson on behalf of the non-profit corporation.

I am enclosing a copy of Al Hampson's letter which indicates that the Zoo Advisory Committee has approved this arrangement.

From a legal standpoint, I find the Agreement to be acceptable and have indicated my approval in the usual manner.

If you have any questions, please call.

Very truly yours,

Dean P. Gisvold

DPG:ndo
Enclosures
cc: Mr. Kay Rich
Mr. Chuck Kemper
Al Hampson, Esquire

HAMPSON & BAYLESS
ATTORNEYS AT LAW
505 PACIFIC BUILDING
520 S. W. YAMHILL ST.
PORTLAND, OREGON 97204

ALFRED A. HAMPSON
RICHARD V. BAYLESS

TELEPHONE
(503) 223-1332

July 19, 1978

A.M. P.M.
7 8 9 10 11 12 1 2 3 4 5 6

Dean Gisvold, Esq.
1408 Standard Plaza
Portland, Oregon 97204

Dear Dean:

I am returning the Agreement which was signed by me and Robert Peterson as President and Secretary of Friends of the Washington Park Zoo.

I call to your attention that it is dated June 19th, rather than July 19th.

The Zoo Advisory Committee passed a motion suggesting that the Metropolitan Service District enter into this Agreement. If, in fact, they do, I would appreciate it if you could advise me at your convenience.

Thank you very much.

Very truly yours,

Alfred A. Hampson

AAH/dw
enclosure

COPY

AGREEMENT

This agreement is between the Metropolitan Service District, a municipal corporation (MSD) and the Friends of the Washington Park Zoo, an Oregon nonprofit corporation (Corporation), and is dated July 19, 1978.

RECITALS

1. Pursuant to Oregon law, MSD maintains and operates the Washington Park Zoo (Zoo).

2. Corporation is a tax-exempt, nonprofit corporation organized for the purpose of providing citizen support for the Zoo.

3. To facilitate the implementation of this purpose, MSD and Corporation hereby enter into an agreement defining the relationship between them.

AGREEMENT

4. The Corporation will:

a) Recruit a broad-based membership in the Corporation from throughout the MSD;

b) Develop general community support for the Zoo;

c) Encourage volunteer participation at the Zoo;

d) Publicize information about the Zoo and activities of the Corporation through a newsletter or other means of communication;

e) Promote the Zoo's capital development program by conducting fund-raising campaigns, obtaining

grant funds with the prior approval of MSD, encouraging bequests to the Corporation for the use and benefit of the Zoo and other similar activities;

f) Report at least annually to the MSD Board of Directors on the Corporation's progress in the above-described areas;

g) Pursue these activities through its own staff and facilities, and at its own expense;

h) At the request of the MSD Board of Directors, perform other services that will benefit the Zoo and are acceptable to the Corporation.

5. MSD will:

a) Provide a reduced admission rate for Corporation members;

b) Provide meeting space on a space available basis for the Corporation's Board of Directors and Committees;

c) Sponsor two annual events for the Corporation's membership at no charge to the Corporation.

6. The agreement will be reviewed annually on or about July 1 of each year. Either party may terminate the agreement at any time for any reason upon 30 days written notice.

FRIENDS OF THE WASHINGTON PARK ZOO

By: Alfred A. Nampson Pres

By: Robert E. Peterson - Sec

METROPOLITAN SERVICE DISTRICT

By: _____
Chairman

APPROVED AS TO FORM:

_____
MSD ATTORNEY DEAN P. GISVOLD

78-1120 CONTRACT APPROVAL PROCEDURE REVISION (MAP 51)

UNDER EXISTING MSD PROCEDURES, THE CONTRACT APPROVAL LIMIT WITHOUT BOARD APPROVAL IS $5,000. WE ARE REQUESTING THE FOLLOWING CHANGES TO THE PROCEDURE:

SECTION 2 OF MAP 51 BE AMENDED TO READ: "ALL CONTRACTS WITH AN EXPENDABLE AMOUNT OF UP TO $15,000, UNLESS OF A CONTROVERSIAL NATURE, BE EXEMPT FROM BOARD REVIEW AND APPROVAL."

SECTION 5 DELETE.

SECTION 6 OF MAP 51 BE AMENDED TO READ: "DIVISION DIRECTORS ARE AUTHORIZED TO EXECUTE CONTRACTS WITH AN EXPENDABLE AMOUNT OF UP TO $15,000 ON BEHALF OF MSD WITHOUT BOARD APPROVAL, PROVIDED, HOWEVER, THAT SUCH CONTRACTS MUST BE SIGNED BY THE MSD ATTORNEY AS TO FORM, THE CONTRACTOR, THE INITIATING DIVISION DIRECTOR, AND THE ADMINISTRATIVE DIVISION DIRECTOR."

SECTION 8 OF MAP 51 BE AMENDED TO READ: "ALL CONTRACTS OF $15,000 AND OVER MUST BE SUBMITTED TO THE MSD BOARD FOR APPROVAL."

METROPOLITAN SERVICE DISTRICT
BOARD ACTION

NO. 78-1120 DATE 7-28-78

	YES	NO	ABST.
BARTELS			
BUCHANAN			
DURIS			
McCREADY			
ROBNETT			
SALQUIST			
SCHUMACHER			

Clerk of the Board

78-1121 DIRECTORS' SALARIES

METROPOLITAN SERVICE DISTRICT

BOARD OF DIRECTORS

GUEST ATTENDANCE LIST

DATE: 7-28-78

NAME	REPRESENTATION
ROBERT GOWMAN	SHELDON EGGLESTON SOX ARCHITECTS
~~ROBERT KEECH~~	STAFF
JOHN HANKEE	MULTNOMAH COUNTY
Mike Schmidt	Zoo staff
Steve McCuskon	Zoo staff
Jim Riccio	RIC CONSULTING CO.
Wes Peterson	Zoo staff
Donald Hatton	Land Reclamation Inc.
Jack M Partin	Rossman's Landfill
Charlie Gray	DEQ -
Bob Brown	DEQ
Carla Thompson	Oregon Journal