



METROPOLITAN SERVICE DISTRICT
527 S.W. HALL ST., PORTLAND OR. 97201, 503/221-1646

A G E N D A SOLID WASTE POLICY ALTERNATIVES COMMITTEE

Date: October 26, 1981

Day: Monday

Time: 12:00 noon - 2:00 p.m.

Place: Metro Offices, Conference Rooms A1 and A2

- I. APPROVAL OF OCTOBER 12, 1981 MEETING MINUTES
- II. FOR INFORMATION
 - St. Johns Landfill Rate Adjustment

OCTOBER 12, 1981

SOLID WASTE POLICY ALTERNATIVES
COMMITTEE

ATTENDANCE

Members

John Trout
Michael Sievers
James Cozzetto
Dave Phillips
Shirley Coffin
Mike Sandberg
Howard Grabhorn

Staff

Dennis O'Neil
Douglas Drennen
Bev Bailey
Terilyn Anderson
Dave Sturtevant

Guests

Pete V. Viviano, Recycling SE and Hauling
Bob Brown, DEQ
Kent Meyers, Clark County

John Trout called the meeting to order.

I. SEPTEMBER 12 MEETING MINUTES

The minutes were approved as written.

II. DEFINITION OF CONVENIENCE CHARGE

Discussion commenced on the definition of the convenience charge and focused on the definition proposed by staff. Staff asked for guidance from the Committee. It was determined that labor cost would not be reduced with a transfer station. The definition should be changed to read, "Labor cost savings compared to that required for additional haul and turnaround time involved in direct haul to a disposal facility."

It was noted that the transfer station would not be a benefit to the Washington County haulers because they will not be allowed to use it. There was some discussion on how many people can use the facility. Doug said that this is still under consideration as well as the operating hours for the facility. Presently, the facility is proposed to handle 350 tons per day.

The Committee decided that a transfer station would extend the life of a vehicle but not reduce depreciation. The wording should be changed to eliminate "depreciation" and simply say "extended vehicle life."

The Committee discussed both options and decided that Option #1 should be used. The Committee suggested that it would be difficult to administer a differential rate as per Option #2. The convenience charge should be applied uniformly to all people using the facility.

These changes should be made and brought back to the Committee at the next meeting.

III. ROSSMAN'S LANDFILL NEGOTIATIONS

The rate of \$13.50 at Rossman's has been approved but has not been instituted yet. There was discussion on having a surcharge at the Clackamas Center of \$2.00 or \$2.50 instead of raising the rates at Rossman's to \$13.50 now.

Merle explained the options that Metro has 1) do nothing; that would require the implementation of the \$13.50 rate; 2) District purchase the property; the problem is that we don't have any money to buy it; and 3) the land remain in private

Solid Waste Policy Alternatives Committee
October 12, 1981
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ownership, that the District assume the trust accounts from Clackamas County, keep the rate at \$10.40, but then amortize \$1 million over a period of time as a surcharge at the Clackamas Center. This goes before the Council November 19.

The meeting was adjourned at 1:30 p.m.

DO:bb

SOLID WASTE RATE STUDY
FOR
THE METROPOLITAN SERVICE DISTRICT

By

CH2M HILL

P13784.A3

October 1981

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Chapter 1
INTRODUCTION

AUTHORIZATION

The consulting firm of CH2M HILL was authorized by METRO (the Metropolitan Service District) in September 1981 to update solid waste rates at the St. Johns Landfill. This report contains the results of the solid waste rate analysis.

PURPOSE

The purpose of this report is to provide METRO with landfill rates which, in combination with other sources of funds, will yield revenues sufficient to make the operation of the landfill financially self-sufficient through the 12-month operating period.

SCOPE

The scope of the study is summarized as follows:

- Collect and review available data on solid waste quantities, costs, and financing.
- Project the quantities of solid waste entering the landfill for calendar year 1982. Projections will be further broken down into commercial wastes, special wastes, private wastes, and vehicle tires.
- Estimate 1982 landfill costs, including METRO's cost of operating and maintaining the gatehouse and related facilities, landfill operator costs, METRO's administrative and general overhead costs, debt service payments, capital expenditures, and environmental and operating reserve funds.

- Allocate costs to the various components of solid waste.
- Calculate solid waste disposal rates for commercial wastes, special wastes, private wastes, and vehicle tires.
- Compare estimated revenues for 1982 under both existing and proposed rates.



Chapter 2

SOLID WASTE QUANTITY

The volume of solid waste entering the landfill during the 1982 operating period has been projected by integrating historical data on solid waste quantities with assumptions concerning future rates of growth and other factors impacting solid waste disposal rates. Because projections of solid waste are used to develop rates, estimated revenues are affected by these volume estimates.

HISTORICAL GROWTH RATE

Table 2-1 shows monthly and total annual solid waste quantity at the St. Johns Landfill for the period October 1980 through September 1981. Total quantity of solid waste disposed during the year was 257,918 tons, resulting in a monthly average of 21,490 tons. This quantity of solid waste, two-thirds of which was measured on the new computer weighing system, is one of the lowest years in recent history. This low quantity of solid waste received for disposal is the result of many interrelated factors, including the switch to weight-based rates resulting in a loss of some customers to other disposal sites, the slowdown in the regional and local economy, especially the wood products and related industries, and fluctuations in the quantity of special waste.

Factors Affecting Solid Waste Projections

The operating period from January 1982 through January 1983 will see major changes in the regional solid waste management

Table 2-1

HISTORICAL SOLID WASTE QUANTITIES
ST. JOHNS LANDFILL

Month	Quantity (tons)			Total
	Commercial	Private	Special	
October 1980	22,297	1,314	1,068	24,679
November	17,788	941	1,027	19,756
December	19,312	776	1,060	21,148
January 1981	19,084	1,053	950	21,087
February	19,814	1,038	1,452	22,304
March	20,078	1,468	2,979	24,525
April	14,127	1,306	2,860	18,293
May	14,202	1,940	4,412	20,554
June	14,943	1,715	4,767	21,425
July	14,609	1,964	2,873	19,446
August	15,433	1,911	3,184	20,528
September 1981	<u>17,054</u>	<u>1,661</u>	<u>5,458</u>	<u>24,173</u>
Total	208,741	17,087	32,090	257,918

system which will impact the quantity of solid waste disposed at St. Johns Sanitary Landfill. These major changes will include:

- A projected rate increase of \$3.10 per ton at Rossman's Landfill in Oregon City, scheduled to occur on January 1, 1982 and the resulting diversion of solid waste from the southern portion of the METRO region to landfills located south of the METRO region to escape the long drive to the St. Johns Sanitary Landfill
- The closure of Rossman's Sanitary Landfill in Oregon City in mid- to late-1982
- Changes in the quantity of wastewater treatment plant sludge disposed at the landfill from the City of Portland's Columbia Boulevard Treatment Plant
- A shift in several major collection accounts from use of disposal sites outside the region to the St. Johns Landfill
- Opening of the Clackamas Transfer Station in Oregon City following the closure of the Rossman's Landfill

Approach To Projecting Solid Waste Quantities

The methodology used to project solid waste disposal at the St. Johns Sanitary Landfill during 1982 will establish "base rates" of solid waste disposal at both the St. Johns and Rossman's Sanitary Landfill through 1982. These base rates will be formulated using historical data.

Actions which will impact and change these "base rates" will be estimated. The rate increase at Rossman's Landfill will result in reduced inflow at Rossman's and increased inflow to St. Johns. The timing of the closure of the Rossman's Landfill and subsequent opening of the Clackamas Transfer Station will be estimated. The quantity of refuse diverted out of the region due to the rate increase at Rossman's and again at the closure of the Rossman's Landfill and opening of the Clackamas Transfer Station will be estimated. A more definitive estimate of sludge disposal rates from the City of Portland will be obtained. These factors will be quantified and the net result added to the projections for the base rate at St. Johns Landfill.

PROJECTED QUANTITIES OF SOLID WASTE

The base rate for commercial solid waste at St. Johns in 1982 is estimated to be 235,000 tons, or an increase of about 12 percent over the October 1980 to September 1981 period. The total 1982 base rate for Rossman's is estimated as 329,600 tons, or a 16 percent increase over the prior period.

A comparison of the relative shift of solid waste quantities between Rossman's and St. Johns as a result of the August 1, 1981 rate increase at Rossman's was conducted to provide a basis for projecting the shift likely to result from the anticipated January 1, 1982 increase at Rossman's to \$13.50 per ton. A proportional reaction to the anticipated January 1, 1982 rate increase at Rossman's would result in a reduction of about 3,000 tons per month at Rossman's and an increase of about 1,750 tons per month at St. Johns.

The reduction in quantities entering Rossman's after January, 1982 will slightly extend the life of Rossman's. Based on an estimate of 363,000 tons of capacity remaining at

Rossman's as of July 1, 1981, and subtracting actual and projected solid waste quantities for 1981 and 1982, results in a closure date of September 30, 1982. Solid waste quantities entering St. Johns during October, November, and December 1982 will increase by about 12,000 tons per month as a results of Rossman's closure.

These projected impacts result in a 1982 commercial base rate at St. Johns Landfill of 291,815 tons.

An annual quantity of 20,535 tons of private solid waste, or about 7 percent of projected commercial waste quantities, has been projected. Private waste (delivered to the landfill in cars, pick-ups, and vans by private individuals) represented about 8 percent of total commercial waste in the October 1980 through September 1981 period.

The monthly quantity projections of both commercial and private waste have been allocated based on historical records of seasonal fluctuations in solid waste disposal rates.

The City of Portland has provided updated estimates of the quantity of wastewater treatment plant sludge that will be delivered to the St. Johns Landfill during the 1982 operating year (see letter in Appendix). The City is committed to delivering 32 dry tons of sewage sludge per day at an average of 16 percent solids over 275 days in 1982. The month of January has historically been a low month in sludge disposal, due to inclement weather adversely impacting either sludge loading or transport operations. For this reason, the month of January has arbitrarily been allocated a total of 1,000 tons of sludge. The remaining eight months of the year received the balance of the sludge allocation, resulting in an average monthly disposal quantity of 6,750 tons. During the three months of September, October, and November 1982, the City will not dispose of

any sludge at the landfill. During this period, new dewatering equipment will be installed to improve the City's sludge drying efficiency. The solid waste quantity projections reflect this occurrence.

Table 2-2 shows the projected solid waste quantities for the 1982 operating period at the St. Johns Sanitary Landfill. Quantities of solid waste are divided into four categories:

- Commercial
- Private
- Special
- Tires

For purposes of this study, special waste is assumed to be entirely composed of sewage sludge generated by the City of Portland's wastewater treatment plant on Columbia Boulevard.

The total commercial, private, and special waste for the 12-month operating period is projected to reach 367,350 tons. Of this amount, 79 percent or 291,815 tons is commercial waste. Approximately 6 percent of this material or 20,535 tons is private waste delivered to the landfill. The remaining 15 percent of total solid waste projected to be disposed of at the landfill, or 55,000 tons, is sewage sludge from the City of Portland.

TIRES

An estimated 225 tires per month are expected to enter the landfill over the 12-month operating period. This estimate is based on actual quantities of tires disposed during the previous 12-month period. Tires will not actually be disposed of in the landfill but will be collected separately and transported to a commercial tire-grinding

Table 2-2

PROJECTED SOLID WASTE QUANTITIES
ST. JOHNS LANDFILL
1982

<u>Month</u>	<u>Quantity (tons)</u>			<u>Total</u>
	<u>Commercial</u>	<u>Public</u>	<u>Special*</u>	
January	21,050	970	1,000	23,020
February	21,010	950	6,750	28,710
March	20,365	1,425	6,750	28,540
April	19,695	1,920	6,750	28,365
May	22,195	2,185	6,750	31,130
June	22,220	2,165	6,750	31,135
July	22,770	3,020	6,750	32,540
August	21,515	2,840	6,750	31,105
September	21,125	2,355	0	23,480
October	35,705	1,140	0	36,845
November	29,420	810	0	30,230
December	<u>34,745</u>	<u>755</u>	<u>6,750</u>	<u>42,250</u>
Total	291,815	20,535	55,000	367,350

*Special = City of Portland sludge from Columbia Boulevard STP.

and resource recovery operation where final disposal will take place.



Chapter 3 EXPENDITURES

Annual expenditures at the St. Johns Landfill are comprised primarily of three major items: daily landfill operations contract, METRO operating expenses, and debt service and contract obligations. This chapter estimates the cost of these items for 1982 both individually and in total. All cost estimates are rounded to the nearest hundred dollars.

LONG-TERM OPERATIONS CONTRACT

By far the largest single expenditure is for daily operation of the landfill. METRO, through a process of competitive bidding, has selected Easley and Brassy Corporation, in joint venture with Genstar Conservation Systems, Inc., for long-term operation of the St. Johns Landfill. Table 3-1 provides a detailed breakdown of costs estimated to be incurred by the contractor during 1982.

The operations contract is adjusted annually on October 1 to reflect changes in cost due to inflation. Based on the cost trend of the index used to measure these changes, an inflation rate of 9 percent was assumed. Estimated 1982 payments to the landfill operator include these expected price increases.

Solid Waste Disposal

For calendar year 1982, payments to Easley and Brassy for landfill operations are estimated to be about \$3.4 million or approximately 83 percent of total revenue requirements. This includes the costs of landfilling an estimated 291,815

Table 3-1

METRO
ST. JOHNS LANDFILL
OPERATIONS CONTRACT
1982

<u>Item</u>	<u>Annual Cost</u>
<u>Solid Waste Disposal</u>	
Commercial	\$1,926,800
Special	351,600
Private	134,300
<u>Other Contract Items</u>	
Final Cover Material	795,000
Placing Final Cover	77,400
Grass Seed	75,400
Final Access Roads	54,400
Surface Runoff Drainage Culverts	<u>7,700</u>
Total	\$3,422,600

Source: METRO and CH2M HILL estimates

tons of commercial waste, 55,000 tons of special waste, and 20,535 tons of private waste.

Other Contract Payments

In addition to remuneration for landfilling solid waste, Easley and Brassy will also be compensated for performing other tasks at the landfill. These other tasks include acquiring 121,000 cubic yards (cy) of final cover material, placing 27,000 cy of this material along with 13,500 cy of sewage sludge, and seeding 2,172,400 square feet of land at a total estimate cost of almost \$948,000. Part of this expense will be offset by funds earmarked for the purpose of procuring final cover material. This will be discussed more fully in Chapter 5.

Two additional contract items, constructing 3,200 linear feet of final access roads and installing a surface runoff drainage culvert, will also be completed during 1982. These items are expected to cost almost \$62,000.

TIRE DISPOSAL

METRO will provide a drop box at the landfill for the collection and disposal of tires. This container will be picked up twice monthly and taken to a commercial tire grinding and resource recovery operation. Table 3-2 shows the rates charged to grind up the various kinds of tires.

Because it is impossible to know the exact composition of incoming tires beforehand, some assumptions were made. For cost estimating purposes, 225 tires were projected to enter the landfill each month. Of this total, 80 percent were assumed to be passenger tires and 20 percent truck tires. Grinding costs for these two tire sizes were multiplied by the number of tires in each size category.

Table 3-2

METRO
SCHEDULE OF TIRE
GRINDING AND DISPOSAL COSTS

Type of Tire	Cost
Passenger (up to 10-ply)	\$.15
Passenger Tire on Rim	.50
20-inch Diameter or Above 10-ply or Over	1.50
Truck Tire on Rim	5.00
Grader Tires	6-10.00
Earth Mover, 4 foot and Over	50.00
Small Solid Tires (e.g., hyster)	1.00
Large Solids	6.00
Dual Tractor Duplex	6.00
Average Cost per Month for Grinding and Disposal:	
Passenger:	.80 x 225 x \$0.15 = \$27
Truck:	.20 x 225 x \$1.50 = <u>68</u>
	\$95

In addition to tire grinding costs, monthly costs of transporting the drop box from the landfill to the tire grinding facility will also be incurred. This is expected to cost \$70 per month. Combined tire grinding and drop box costs amount to approximately \$2,000 for the 12-month operating period, less than 1 percent of operating expenses.

METRO OPERATING EXPENDITURES

METRO's direct expenses for operating the St. Johns Landfill are comprised of expenditures for personnel services, materials and services, administrative expenses, and capital outlays. The sum of these individual items in 1982 is almost \$233,000, approximately 6 percent of total revenue requirements. A breakdown of these expenses is presented in Table 3-3.

Personnel Services

Although disposal of solid waste at the landfill will be handled by a private contractor, METRO will retain responsibility for staffing and operating the gatehouse. Labor costs involved with gatehouse operations include hourly wages for gatehouse operators as well as salary compensation for the head clerk. Partial salary compensation for the operations manager and assistant operations manager is also included in this total. Total direct labor costs, including fringe benefits, for the 12-month operating period are estimated to be about \$131,000. This includes an anticipated 10 percent pay increase effective July 1, 1982.

Material and Services

In addition to the labor costs incurred in operating the gatehouse, numerous expenses are incurred by METRO for materials and related services. As Table 3-3 shows, these items include laboratory expenses, armored car service,

Table 3-3

METRO
ST. JOHNS LANDFILL
OPERATING EXPENDITURES
1982

<u>Item</u>	<u>Amount</u>
<u>Personnel Services</u>	\$131,000
<u>Material and Services</u>	
Laboratory	8,400
Armored Car	3,000
Maintenance	7,300
Office Supplies	11,600
Printing	3,000
Auto Supplies	3,500
Travel & Meetings	3,500
Training	1,200
Utilities	6,800
Miscellaneous	1,400
<u>METRO Administrative Expenses</u>	50,000
<u>Capital Outlays</u>	<u>2,200</u>
Total	\$232,900

Source: METRO

maintenance, office supplies, printing, auto supplies, travel and meetings, training, utilities, and miscellaneous. Total cost for these items is expected to be \$49,700.

Administrative and Miscellaneous

During 1982, METRO expects to incur administrative expenses of \$50,000. These administrative costs are related to providing accounting and data processing services to the landfill along with general overhead expenses.

Capital Outlays

METRO has budgeted capital acquisitions of \$2,200 at the landfill for 1982. These expenditures are for the acquisition of office furniture and equipment associated with gatehouse operations at the landfill.

DEBT SERVICE AND CONTRACT OBLIGATIONS

In addition to the landfill operations contract with Easley and Brassy, METRO has other long-term debt obligations and contractual commitments that must be fulfilled. These include debt service on a State of Oregon, Department of Environmental Quality, loan and monthly landfill rental payments to the City of Portland. Aggregate debt service and contractual expenses account for almost 6 percent of total revenue requirements. Table 3-4 shows the annual cost associated with these items. Since the exact cost of these items is known they are shown rounded to the nearest dollar.

Debt service on the State of Oregon loan for 1982 consists of two payments, the first on April 1, 1982, and the second on October 1, 1982. The April payment is for \$6,615 and covers interest expenses only. The October payment is

Table 3-4

METRO
 SCHEDULE OF DEBT SERVICE
 AND CONTRACT OBLIGATIONS
 1982

<u>Item</u>	<u>Monthly Expense</u>	<u>Total Expense</u>
METRO Rental to City	\$15,330	\$183,960
Debt Service on State Loan		
• Interest Due April 1, 1982	-	6,615
• Principal and Interest Due October 1, 1982	-	<u>43,923</u>
Total	\$15,330	\$234,498

Source: METRO

for \$43,923 and covers both interest and principal. Although the proceeds of this loan were used to offset the costs of constructing the landfill expansion area, change orders to the landfill expansion construction, gatehouse, private vehicle transfer station, and related engineering fees, only those costs associated with constructing the gatehouse and private vehicle transfer station will be collected through solid waste disposal rates. Debt service costs related to construction of the expansion area will be paid from METRO's user fee.

Monthly landfill rental payments amount to \$15,330 or \$183,960 per year. These monthly rental payments to the City of Portland were part of the original agreement under which METRO assumed operation of the landfill from the City.

ENVIRONMENTAL AND OPERATING RESERVES

In addition to the preceding expense items, METRO must also establish reserve funds to cover the cost of expenditures expected to occur in the upcoming operating period as well as in future periods. Two types of reserve funds have been established: environmental quality sinking funds and operating reserve funds. Costs associated with these funds are presented in Table 3-5. Environmental and operating reserves account for over 5 percent of total revenue requirements.

Environmental Quality Sinking Funds

Environmental quality sinking funds have been established to accumulate money over the operating life of the landfill to finance expenditures subsequent to the landfill's closure. Sinking funds have been calculated for two separate projects: annual maintenance and perpetual maintenance. As a result, an annuity will be available to fund these expenditures

Table 3-5

METRO
 ST. JOHNS LANDFILL
 ENVIRONMENTAL AND OPERATING RESERVES
 1982

<u>Item</u>	<u>Cost</u>
<u>Environmental Quality Sinking Funds</u>	
Annual Maintenance	\$ 51,800
Perpetual Maintenance	59,800
 <u>Operating Reserve Funds</u>	
Bridge Maintenance	7,000
Scale Maintenance	12,500
Professional Services	58,500
Miscellaneous Change Order Expenses	<u>25,000</u>
Total	\$214,600

Source: METRO and CH2M HILL estimates

that normally would be paid for out of current revenues. Based on METRO estimates, the landfill may close late in 1986. Thus, a period of 5 years is available to accumulate the necessary funds.

Annual Maintenance

The annual maintenance sinking fund has been established to provide funds for grading, compacting, and reseeded portions of the landfill after its closure in December 1986. Costs for this item are expected to be incurred from 1987 through 1992 in accordance with METRO's contract with the City of Portland for operation of the St. Johns Landfill.

The first step in determining the sinking fund payment involves calculating the future value of the anticipated expenditures. For cost escalation purposes, a 10 percent annual inflation rate was assumed. Based on this assumption, annual maintenance will range from an estimated \$51,000 in 1987 to about \$81,000 in 1992. The future value of these annual expenditures can then be used to determine their present value in January 1987. Since it is doubtful that the current high yields on time deposits will continue for the duration of the payment period, a conservative annual rate of return of 9 percent was assumed to be earned on fund proceeds. Based on the foregoing assumptions, the discounted present value in January 1987 of future annual maintenance expenses is about \$310,000. With 5 years available to accumulate funds and a 9 percent return on sinking fund proceeds, the annual payment needed to accumulate the necessary funds is almost \$52,000.

Perpetual Maintenance

The perpetual maintenance sinking fund has been established to provide funds for the operation, maintenance, and treatment of leachate pretreatment equipment and the related

costs of sending leachate effluent to City of Portland wastewater treatment plants. Costs for this particular item are expected to be incurred from 1989-2004. However, due to the uncertainty of how this expense will be financed when regional rates are implemented, only 20 percent of the expected annual cost of this item will be funded at this time.

Once again, the method for calculating the annual sinking fund payment is similar to that described in the preceding paragraphs. Costs are escalated at 10 percent per year resulting in expenditures ranging from about \$25,000 in 1989 to \$104,000 in 2004. Discounting these cash flows at 9 percent results in a present value of approximately \$358,000 that must be collected by January 1987. The annual sinking fund payment required to accumulate this amount of money is about \$60,000.

Operating Reserve Funds

Operating reserve funds have been established to pay for expenses expected to be incurred during each year of landfill operations. These include bridge maintenance, operations change orders, scale maintenance, and professional services.

Bridge and Scale Maintenance

Primary access to the landfill is currently provided by a bridge that crosses the Columbia Slough. The age and condition of this bridge requires annual expenditures to keep it in working order. Estimated cost for annual repairs, maintenance, and inspections is \$7,000.

Annual expenditures are budgeted for maintaining the scale-house weighing system and related appurtenances. Repair and maintenance of this equipment along with annual inspection and calibration is estimated to cost \$12,500 in 1982.

Operations Change Orders

Operations change orders in 1982 are estimated to cost \$25,000. This will provide resources for anticipated changes in the landfill contract with Easley and Brassy that will enlarge their scope of work to include construction of certain landfill improvements.

Professional Services

METRO anticipates yearly expenditures for professional consulting services related to operation of the St. Johns Landfill. To meet these expenditures, \$58,500 has been budgeted to cover the costs of engineering services, including annual inspection of the landfill, rate studies, and other miscellaneous consulting services.

Total Expenditures

Table 3-6 provides a compilation of both contractual and estimated expenditures expected to be incurred at the St. Johns Landfill during calendar year 1982. Total estimated revenue requirements are \$4,106,598.

Table 3-6

METRO
ST. JOHNS LANDFILL
ESTIMATED EXPENDITURES
1982

<u>Item</u>	<u>Annual Cost</u>
Landfill Operations Contract	
• Solid Waste Disposal	\$2,412,700
• Other Contract Items	1,009,900
METRO Operating Expenditures	232,900
Debt Service and Contract Obligations	234,498
Environmental and Operating Reserves	214,600
Tires	<u>2,000</u>
Total	\$4,106,598



Chapter 4 RATES

DEVELOPMENT OF RATES

In order to calculate solid waste disposal rates, it is necessary to allocate total revenue requirements to the various components of solid waste. These allocated revenue requirements are then adjusted for funds that may be available from sources other than rates. These adjusted costs, when divided by the estimated tons of solid waste for each waste parameter, yield per ton disposal rates for the differing types of landfill waste.

Overview of Cost Allocations

Three cost allocation methods were developed for distributing landfill costs to the individual components of total landfill waste. If specific landfill costs can be identified with a particular waste material, they are allocated directly. Both daily operating expenses and debt service on the public transfer station were directly allocated to private wastes. Tire disposal costs were directly allocated to the tires component of landfill waste.

Some costs are best allocated on the basis of total number of tons expected to enter the landfill in 1982. Contractor payments for disposal of solid waste at the landfill were distributed using this method.

Because METRO intends to use a portion of sewage sludge disposed of in the landfill as a cover material, it would be unfair to allocate landfill costs in proportion to the

total amount of special waste expected to enter the landfill in 1982. To correct this problem, tonnage projections were adjusted to net out that amount of waste expected to be used as final cover material. This tends to increase the proportionate share of other solid waste components relative to special waste. This method was used to allocate landfill costs associated with other contract items, operating expenditures, environmental and operating reserves, debt service on gatehouse, and landfill lease payments.

Allocation of Landfill Revenue Requirements

Based on the allocation methods described above, individual landfill revenue requirements can be distributed to the various components of solid waste.

Landfill Operations Contract

The two components of this cost item are apportioned to commercial, special, and private wastes using different sets of allocation factors. Because specific handling costs of \$98,550 can be identified with operating the private vehicle transfer station, these costs are allocated directly to private vehicle wastes. The remaining \$2,314,150 is then allocated to the three waste components based on their proportionate share of total solid waste. Special waste is not adjusted to recognize that amount used as a cover material because disposal costs, by contract, are based entirely on the total amount of material entering the landfill, regardless of how it is used.

Other contract items are allocated to commercial, special, and private waste using allocation factors that are adjusted to reflect the partial use of special waste as a cover material.

Operating Expenditures

This cost item is apportioned to commercial, special, and private wastes using allocation factors that reflect the partial use of special waste as a cover material.

Debt Service and Contract Obligations

The debt service portion of this cost item includes payment for the construction cost of the private vehicle transfer station and gatehouse. For 1982, debt service on the private vehicle transfer station is \$7,817. This cost is allocated directly to private vehicle waste. The remaining debt service and contract obligations, \$226,681, are then apportioned to commercial, special, and private wastes using allocation factors that reflect the partial use of special waste as a cover material.

Environmental and Operating Reserves

This cost item is apportioned to commercial, special, and private wastes, using allocation factors that reflect the partial use of special waste as a cover material.

Tire Disposal

Costs incurred in collecting and disposing of tires are allocated entirely to the tires component of landfill waste.

Summary of Cost Allocations

Based on the preceding discussion of how individual cost items were apportioned to the various components of solid waste, percentage allocation factors can be calculated.

These allocation percentages are shown in Table 4-1. Applying these allocation percentages to the estimated landfill costs developed and presented in Chapter 3 results in revenue requirements by type of solid waste: commercial, special, private, and tires. This is shown in Table 4-2.

DETERMINATION OF RATES

The allocation of total revenue requirements to the various components of landfill waste is shown in Table 4-2. Before per-ton disposal rates can be calculated, an adjustment must be made for revenues from other sources.

METRO plans to expend \$700,000 of their final cover fund on acquiring final cover material in 1982. This amount is apportioned to commercial, special, and private wastes using allocation factors that are adjusted to reflect the use of special waste as a cover material. By subtracting this revenue item from each component of landfill waste, the amount to be recovered from rates can be determined.

Dividing the amount of revenue to be recovered from each component of solid waste by the estimated tons of each respective waste material yields per ton disposal rates. The proposed schedule of disposal rates is shown in Table 4-3.

Commercial Wastes Rates

The proposed rate for commercial haulers is \$10.41 per ton. This rate is composed of the base disposal rate of \$9.08 per ton and METRO's user fee of \$1.33 per ton.

Table 4-1
 METRO
 ST. JOHNS LANDFILL
 COST ALLOCATION PERCENTAGES
 1982

<u>Item</u>	<u>Components of Solid Waste</u>				<u>Total</u>
	<u>Commercial</u>	<u>Special</u>	<u>Private</u>	<u>Tires</u>	
Landfill Operations Contract					
Solid Waste Disposal	76.20	14.36	9.44	0	100.0
Other Contract Items	82.47	11.73	5.80	0	100.0
Operating Expenditures	82.47	11.73	5.80	0	100.0
Debt Service and Contract Obligations	79.72	11.34	8.94	0	100.0
Environmental and Operating Reserves	82.47	11.73	5.80	0	100.0
Tire Disposal	0	0	0	100.0	100.0

Table 4-2

ST. JOHNS LANDFILL
COST ALLOCATIONS
1982

Item	Components of Landfill Waste				Total
	Commercial	Special	Private	Tires	
Landfill Operations Contract					
Solid Waste Disposal	\$1,838,361	\$346,428	\$227,911	\$ -	\$2,412,700
Other Contract Items	832,865	118,461	58,574	-	1,009,900
Operating Expenditures	192,073	27,319	13,508	-	232,900
Debt Service and Contract Obligations	186,944	26,590	20,964	-	234,498
Environmental and Operating Reserves	176,981	25,172	12,447	-	214,600
Tire Disposal	-	-	-	2,000	2,000
Total	\$3,227,224	\$543,970	\$333,404	\$2,000	\$4,106,598
Less: Revenue From Other Sources	(577,290)	(82,110)	(40,600)	-	(700,000)
Amount to be Recovered Through Rates	\$2,649,934	\$461,860	\$292,804	-	\$3,406,598
Estimated Tons of Solid Waste	291,815	55,000	20,535	N/A	
Rate Per Ton	\$9.08	\$8.40	\$14.26	N/A	

N/A = Not Applicable.

Table 4-3

METRO
 PROPOSED SCHEDULE OF RATES
 EFFECTIVE JANUARY 1, 1982

<u>Item</u>	<u>Base Rate</u>	<u>Metro User Fee</u>	<u>Total Charge</u>
Commercial Waste	\$9.08/ton	\$1.33/ton	\$10.41/ton
Special Waste	8.40/ton	1.33/ton	9.73/ton
Private Vehicles ^a			
Cars	3.55	.45	4.00
Station Wagons	3.55	.45	4.00
Vans	4.55	.45	5.00
Pickups	4.55 and up	.45 and up	5.00 and up
Trailers	4.55 and up	.45 and up	5.00 and up
Extra Yards	1.80	.20	2.00
Tires ^b			
Passenger (up to 10-ply)	.55		.55
Tire Tubes	.55		.55
Passenger Tire on Rim	1.25		1.25
Truck Tires	1.75		1.75
Small solids	1.75		1.75
Truck Tire on Rim	7.00		7.00
Dual	7.00		7.00
Tractor	7.00		7.00
Grader	7.00		7.00
Duplex	7.00		7.00
Large Solids	7.00		7.00

^aRates are calculated on a per-vehicle basis.

^bRates are calculated on a per-tire basis.

Special Waste Rates

The proposed charge for disposal of special waste material is \$9.73 per ton. This includes METRO's user fee. Special waste rates apply only to sewage sludge from the City of Portland's Columbia Boulevard wastewater treatment plant, part of which will be used as final cover material.

Private Vehicles

The calculation of private vehicle rates is based on certain assumptions of standard capacity for different kinds of vehicles. Private vehicle rates, unlike rates assessed other types of solid waste, will continue to be calculated on the basis of equivalent cubic yards. The process of weighing each individual private vehicle as it enters the landfill would be too time consuming without an appreciable increase in rate equity.

For purposes of calculating rates, cars are assumed to contribute 1.5 cubic yards (cy), station wagons 2 cy, and pickups, vans, and trailers 2.5 cy. All solid waste contributed by these sources is assumed to be uncompacted with one cubic yard equal to 250 lbs. METRO assesses a minimum charge on private vehicles at a rate equal to 2 cubic yards. As a result, this will change the rate for cars as their rated capacity is less than 2 cy.

Based on a conversion factor of eight cubic yards to the ton, and a per-ton disposal rate of \$14.26, rates for each type of private vehicle can be calculated. Added to this is METRO's user fee of \$0.45 per vehicle for those vehicles with a rated capacity of less than 1 ton. This results in the following rates:

- Cars and station wagons.....\$4.00
- Vans.....\$5.00
- Pickups.....\$5.00
- Trailers.....\$5.00

These rates have been rounded to the nearest convenient price for purposes of collection. The rates before rounding ranged from \$4.02 for cars and station wagons to \$4.91 for vans, pickups, and trailers.

For private vehicles entering the landfill with loads clearly in excess of their rated capacity, an additional charge can be made on a cubic yard basis. A charge of \$2.00 (includes both disposal costs and METRO's user fee) for each additional cubic yard is recommended.

Tires

Although some tire grinding costs have declined during the past year, tire drop-box costs have increased. The result is that on a per-tire basis, the existing rate schedule is still fairly accurate. Because tire revenues and associated expenses are such an insignificant part of total landfill operations, it is recommended that the current schedule of rates be maintained.

COMPARISON OF EXISTING AND PROPOSED RATES

The impacts of the proposed rate changes can be calculated by comparing them with rates currently in effect at the landfill. As the comparison of rates in Table 4-4 indicates, the proposed rates represent an increase ranging from 0 to 13.24 percent. Tire rates will not change. Rates for commercial waste will increase 6.99 percent. Special waste rates will remain unchanged.

Table 4-4

METRO
ST. JOHNS LANDFILL
RATE COMPARISON

Item	Total Rate ^a		Percent Increase
	Existing	Proposed	
Commercial	\$9.73/ton	\$10.41/ton	6.99%
Special	9.73/ton	9.73/ton	nc
Private Vehicles ^b			
Cars	3.60	4.00	11.11
Station Wagons	3.60	4.00	11.11
Vans	4.50	5.00	11.11
Pickups	4.50	5.00	11.11
Trailers	4.50	5.00	11.11
Extra Yards	1.76	2.00	13.64
Tires			
Passenger (up to 10-ply)	.55	.55	nc
Tire Tubes	.55	.55	nc
Passenger Tire on Rim	1.25	1.25	nc
Truck Tires	1.75	1.75	nc
Small Solids	1.75	1.75	nc
Truck Tire on Rim	7.00	7.00	nc
Dual	7.00	7.00	nc
Tractor	7.00	7.00	nc
Grader	7.00	7.00	nc
Duplex	7.00	7.00	nc
Large Solids	7.00	7.00	nc

^aIncludes the METRO user fee.

^bRates calculated on a per-vehicle basis.

nc = no change.

The proposed vehicle rates range from 5.55-11.11 percent higher than those currently in effect at the landfill. The largest increase occurs in the rate charged private vehicle loads in excess of the minimum. The proposed extra yardage rate is 13.64 percent higher than the rate currently charged.



Chapter 5 REVENUES

LANDFILL DISPOSAL REVENUE

Projected solid waste disposal revenue under the proposed rate schedule is presented in Table 5-1. Revenue estimates have been developed for four different types of solid waste: commercial, special waste, private waste, and tires. Total solid waste revenues for the 12-month period are estimated to be about \$3.40 million, exclusive of METRO's user fee.

Commercial revenues account for almost 78 percent of this amount, special waste revenues for almost 14 percent, and private vehicle revenues almost 8 percent. Tire revenues account for considerably less than 1 percent of total revenues. Monthly revenues are expected to range from almost \$214,000 in January to about \$383,000 in December.

Commercial Revenue

Estimates of commercial revenue were developed by multiplying the projected quantity of commercial waste entering the landfill each month by the base commercial rate. The base commercial rate is \$9.08 per ton. Commercial waste disposal revenue is expected to range from nearly \$179,000 in April to about \$324,000 in October. Total commercial revenue is estimated to be almost \$2.65 million for the year.

Special Waste

Revenues generated from this source are calculated by multiplying the monthly inflow of special waste by the per-ton rate for disposal of special wastes. The base

Table 5-1

METRO
ST. JOHNS LANDFILL
PROJECTED DISPOSAL REVENUE
1982

<u>Month</u>	<u>Commercial</u>	<u>Special</u>	<u>Private</u>	<u>Tires</u>	<u>Total</u>
January	\$ 191,100	\$ 8,400	\$ 13,800	\$ 200	\$ 213,500
February	190,800	56,700	13,500	200	261,200
March	184,900	56,700	20,300	200	262,100
April	178,800	56,700	27,400	200	263,100
May	201,500	56,700	31,200	200	289,600
June	201,800	56,700	30,900	200	289,600
July	206,800	56,700	43,100	200	306,800
August	195,400	56,700	40,500	200	292,800
September	191,800	0	33,600	200	225,600
October	324,200	0	16,300	200	340,700
November	267,100	0	11,600	200	278,900
December	<u>315,500</u>	<u>56,700</u>	<u>10,800</u>	<u>200</u>	<u>383,200</u>
Total	2,649,700	\$462,000	\$293,000	\$2,400	\$3,407,100

Source: CH2M HILL estimates.

rate per ton, exclusive of the METRO user fee, is \$8.40. Special waste consists entirely of sewage sludge from the City of Portland's wastewater treatment plant. Approximately 55,000 tons of sludge are expected to enter the landfill during the 12-month period. Annual revenue is expected to be \$462,000.

Private Vehicle Waste

Revenue from private vehicles is dependent on the number and type of private vehicles entering the landfill over a specified period of time. Since it is impossible to accurately project what the composition of private vehicles visiting the landfill will be during the period, a different approach was used. Based on projections of solid waste expected to be brought to the landfill via private vehicles, revenue estimates were calculated using the per ton rate of \$14.26. Using this approach, monthly private vehicle revenue during 1982 is estimated to range from about \$11,000 in December to \$43,000 in July. Total private vehicle revenue is estimated to equal \$293,000 for the 12-month period.

Tires

Because tire disposal revenues are a function of the quantity and type of tires actually entering the landfill, it is necessary to develop some assumptions concerning tire composition in order to arrive at estimated revenues from tire disposal. A monthly inflow of 225 tires was assumed. Of this amount, about 80 percent may be passenger tires and about 20 percent truck tires. Given this assumption, estimated revenues are calculated by multiplying the quantities of each type of tire by its respective rate. This results in an estimated monthly revenue of almost \$200.

Total tire disposal revenue for the operating period is expected to be about \$2,400.

REVENUE FROM OTHER SOURCES

When METRO assumed operation of the St. Johns Landfill in June 1980 from the City of Portland, they became responsible for both landfill operations and the distribution of funds previously collected by the City and earmarked for special landfill uses. The largest of these funds is the final cover fund. METRO plans on using \$700,000 from this fund to help offset the cost of acquiring final cover material in 1982.



Chapter 6
FINANCIAL ANALYSIS

The following discussion summarizes the sources and uses of funds involved in operation of the St. Johns Landfill in 1982. Table 6-1 shows the sources and uses of funds by category.

SOURCES OF FUNDS

Sources of funds include two categories: revenue from landfill disposal rates (including commercial, special waste, private vehicles, and tires) and revenues from other sources. Chapter 5 of this report contains an analysis of landfill revenues expected to be generated under the proposed rate schedule and further augmented by revenues from other sources. Total landfill disposal revenue generated from rates is expected to account for over \$3.4 million, or approximately 83 percent of total revenue accruing to the landfill over the 12-month operating period. The additional funds will be obtained by a transfer of \$700,000 from METRO's final cover fund.

USES OF FUNDS

Uses of funds are composed of six major subcategories: solid waste disposal, other contract items, operating expenditures, debt service and contract obligations, environmental and operating reserves, and tire disposal. The total cost of these items for the 12-month operating period is expected to be about \$4.1 million (Table 6-1). Of this amount, solid waste disposal and other contract items account for almost 83 percent of total estimated expenditures.

Table 6-1

METRO
ST. JOHNS LANDFILL
SOURCES AND USES OF FUNDS
1982

Sources

Revenues from Landfill Disposal Rates

Commercial	\$2,649,700
Special	462,000
Private	293,000
Tires	<u>2,400</u>

Total Landfill Disposal Revenues \$3,407,100

Revenues from Other Sources

Final Cover Fund 700,000

Total Sources of Funds \$4,107,100^a

Uses

Solid Waste Disposal	\$2,412,700
Other Contract Items	1,009,900
Operating Expenditures	232,900
Debt Service and Contract Obligations	234,498
Environmental and Operating Reserves	214,600
Tire Disposal	<u>2,000</u>

Total Uses of Funds \$4,106,598

^aNumbers may not compare due to rounding.

COMPARISON OF REVENUES UNDER EXISTING AND PROPOSED RATES

Table 6-2 shows projected revenues under both existing and proposed rates. Total revenue under proposed rates is estimated to be about \$4.1 million. Using the same projection of solid waste quantities, landfill revenues were calculated using the schedule of rates currently in use at St. Johns. Projected revenues under existing rates total about \$3.87 million. The difference in projected revenues accruing under the two rate schedules is about \$235,000.

Projected revenues to be recovered through rates for 1982 total about \$3.4 million (Table 6-1). Revenues recovered through existing rates at the landfill would provide about \$3.17 million. In order to ensure that sufficient revenues are generated to meet 1982 landfill expenditures, total revenue from disposal rates should be increased approximately 7.4 percent.

Table 6-2

METRO
 ST. JOHNS LANDFILL
 COMPARISON OF REVENUES
 UNDER EXISTING AND PROPOSED RATES
 1982

Revenues Under Proposed Rates

Solid Waste Disposal Revenues

Commercial	\$2,649,700
Special	462,000
Private	293,000
Tires	2,400

Revenues from Other Sources 700,000

Total \$4,107,100

Revenues Under Existing Rates

Solid Waste Disposal Revenues

Commercial	\$2,451,200
Special	462,000
Private	256,300
Tires	2,400

Revenues from Other Sources 700,000

Total \$3,871,900

Projected Revenue Shortfall
 Under Existing Rates

\$ 235,200



Chapter 7

SUMMARY AND RECOMMENDATIONS

The preceding chapters of this report have discussed estimated revenue requirements for the St. Johns Landfill during 1982, shown projected quantities of solid waste, and presented landfill disposal rates to be implemented during this period. An estimated 367,350 tons of solid waste may enter the landfill during the 12-month period. Of this amount, about 79 percent is expected to be commercial waste material. Total revenue requirements are expected to be about \$4.1 million. Under the proposed rate schedule, along with additional revenues, landfill revenue requirements should be met with no shortfall of funds.

The proposed rate schedule represents an improvement over existing rates in that it more closely conforms to cost-of-service rate making principles. This results in improved rate equity because users are charged a rate that more accurately reflects the demands and costs they place on the landfill. This explains the difference in rates between commercial, special, and private wastes.

The year 1982 should result in significant changes in the composition of solid waste disposal facilities in METRO's service area. Closure of Rossman's Landfill, along with construction of the Clackamas Transfer Station, will increase the importance of the St. Johns Landfill as a regional solid waste facility. The proposed rates developed in the foregoing analysis will help to ensure that METRO will be able to successfully finance its landfill operation.



October 22, 1981

P13784.A3

City of Portland
Department of Public Works
621 S.W. Alder Street
Portland, Oregon 97205

Attention: Mr. Joe Niehuser, Chief Civil Engineer

Gentlemen:

Subject: Disposal of Sewage Sludge at the St. Johns
Sanitary Landfill during 1982

This letter serves to formalize the City of Portland's plans for sludge disposal during calendar year 1982. As discussed in our meeting of October 12 with Mr. Dale Nunnemaker and Mr. Bob Rieck of your staff, certain conditions will impact the quantity of sludge disposal at the St. Johns Sanitary Landfill. CH2M HILL intends to incorporate the estimated sludge quantities detailed in this letter into the 1982 rate study for the St. Johns Sanitary Landfill. Because the impact of varying sludge quantities on METRO's annual costs is significant, we request that the City review and respond to the accuracy of these estimates.

During 1982, it is our understanding that the City expects to dispose of an average of 32 dry tons of wastewater treatment plant sludge per day from the Columbia Boulevard Plant. This is the equivalent of 200 wet tons per day at 16 percent solids content. This projected disposal rate may vary, based on at least two factors:

1. Winter weather conditions may restrict sludge loading or transport operations at the City's treatment plant. Recognizing this potential problem, it is assumed that during January 1982 an average of 1,000 tons of sludge will be transported to the landfill. The difference between this amount and that which would have been disposed of under normal operating conditions will be recovered over the remaining months of the year.

Mr. Joe Niehuser
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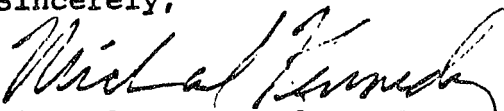
2. Construction of new dewatering facilities will require total suspension of sludge disposal at the landfill for a period of approximately ninety days. This is assumed to occur during the months of September, October, and November.


Because the moisture content of sludge is subject to some variation, it is not possible to predict the exact quantity of sludge that will be sent to the landfill in any given month. In recognition of this problem, monthly quantities for disposal other than for the month of January, will be estimated within a range of plus twenty-five or minus twenty-two percent from the average month. The attached table shows the proposed sludge disposal schedule for calendar year 1982. Actual quantities of sludge will fall somewhere within the range of monthly values. In order to enable METRO to better plan daily operations at the landfill, the City will keep METRO informed of any developments or problems that could significantly affect the amount of sludge brought to the landfill.

In consideration of the City's agreement to deliver the estimated quantities of sludge to St. Johns during 1982, METRO will consider the possibility of providing a reduced rate for sewage sludge from the City. At the end of June 1982, METRO will review the City's record of sludge quantities delivered. Should METRO determine that the actual quantities delivered to the landfill fall below the lower estimates of quantity, it is understood that any reduced rate enjoyed by the City for sludge disposal may be revoked at that time.

We would appreciate your timely written response to this proposal. If you have questions or desire additional information, please call us at 224-9190.

Sincerely,


Michael D. Kennedy, P.E.


Kenneth L. Rust
Economist

MDK:KLR:dgm:1214

cc: Mr. Dale Nunnamaker, City of Portland
Mr. Robert Rieck, City of Portland
Mr. Merle Irvine, METRO

SLUDGE DISPOSAL SCHEDULE
1982

<u>Month</u>	<u>Sludge Quantity (tons)</u>		
	<u>Low^a</u>	<u>Average^b</u>	<u>High^c</u>
January	1,000	1,000	1,250
February	5,250	6,750	8,450
March	5,250	6,750	8,450
April	5,250	6,750	8,450
May	5,250	6,750	8,450
June	5,250	6,750	8,450
July	5,250	6,750	8,450
August	5,250	6,750	8,450
September ^d	0	0	0
October ^d	0	0	0
November ^d	0	0	0
December	<u>5,250</u>	<u>6,750</u>	<u>8,450</u>
	43,000	55,000	68,850

^a 1.00-.78 of the average month.

^b For months other than January:

$$\frac{55,000 - 1,000}{8} = 6,750 \text{ tons per month.}$$

^c 1.25 of the average month.

^d Actual start of construction at Columbia Blvd. STP will determine exact date of drop in sludge quantities. City will inform METRO of exact dates prior to start of construction. For forecasting purposes, it is assumed no sludge will be delivered during the construction period, however, it is expected that negligible quantities might be delivered as existing equipment is dismantled and cleaned, etc.

1214/3