Agenda

SWPAC - Solid Waste Alternatives Committee

METROPOLITAN SERVICE DISTRICT 527 S.W. HALL ST., PORTLAND, OREGON 97201 503 221-1646
Providing Zoo, Transportation, Solid Waste and other Regional Services

Date: January 16, 1984

Day: Monday, January 23, 1984

Time: 12:00 to 1:30

Place: A-1-A-2 Conference Rooms at Metro

I. Roll Call

II. Approval of December 5, 1983 and December 19, 1983 Minutes of meetings

III. For Information

. Current Solid Waste Department Activities

SWPAC SPECIAL MEETING

Dec. 5, 1983

SOLID WASTE POLICY ALTERNATIVES COMMITTEE

Committee Members Present:	John Trout, Chairman; James Cozzetto, Robert Harris, Paul Johnson, Delyn Kies, Gary Newbore, Dave Phillips, Mike Sandberg, Norman Harker, Ex Officio
Committee Members Absent:	Shirley Coffin, Howard Grabhorn, John Gray, Dick Howard, Edward Sparks, Kelly Wellington Bob Brown, Ex Officio
Staff Present:	Dan Durig, Norm Wietting, Doug Drennen, Dennis Mulvihill, Pat Kubala, Evelyn Brown, Terilyn Anderson, Dennis O'Neil, Bonnie Langford
Guests:	Carl R. Miller, W. Alex Cross, Lee Kell, Pete V. Viviano Councilor Bob Oleson

The meeting was called to order at 12:12 p.m. by Chairman John Trout. Followed by Roll Call.

Agenda Item: West Side Transfer Station Implementation Alternatives.

Dan Durig, Solid Waste Director, announced the meeting that will be held by the Regional Services Committee at the Rock Creek Campus of the Community College on December 7, 1983 at 7:00 p.m. Notification had previously gone out to all committees and interested parties.

Mr. Durig called the Committee's attention to the Metro Staff Report dated November 10 which included an attachment of Section I of a study which was completed by Price Waterhouse in October 1980. He encouraged the Committee to read this Report since he would spend most of the time on the Staff Report. There are two major issues: (1) Should the facility be publicly owned? (2) Should we seek a long-term franchise arrangement or contract the operation for a shorter period of time? Mr. Durig reviewed the October options which had been before the Committee. The Regional Services Committee had asked the staff to enlarge information on options two and three. Charts contrasted the options and highlighted the differences between the two approaches. Legal authority gives Metro the ability to either franchise or contract the operation of the transfer station. There appears to be an agreement that neither public or private ownership results in a significant capital-cost advantage, assuming you build comparable buildings.

Mr. Durig said there was a substantial difference between a franchise and a contract, a difference in the relationship around three basic issues: (1) the grant of authority that is given by the agency to the private firm. (2) the tenure--the relationship tends to be much longer than under a contract, (3) a value that goes with a franchise beyond that in a contract. Holding a franchise territory has much more value to a corporation than a fixed-term contract. He said our solid waste disposal system continues to evolve and change. Experience gained with CTRC and recent statements we have received from corporations, indicate there are three, and probably more, firms interested in competing for this particular transfer station. A transfer station is an integral part of the solid waste system. When a public agency is charged to provide a public service, usually that ownership is surrendered for one of several reasons. Either the agency lacks the financial resources, legal authority, knowledge base needed to do whatever is to be done or is unwilling to assume the required level of risk. We have been essentially following the Price-Waterhouse model which says Metro will own and operate or contract for operation for all transfer stations, etc., and talks about our relationship and what it should be to other parts of the system. Price-Waterhouse tried to draw conclusions around the key issues. Conclusion 1, recognizes from the findings, that Metro can go either way--franchise or contract. It does attempt to point out there are probably legitimate reasons for franchising parts of the system. They attempt to contrast a limited purpose landfill at the transfer station by pointing out the fact that there are very few sites which can qualify to be a limited-purpose landfill and the fact that you are making an investment of time, energy and money that isn't nearly required when you build a transfer station. Numerous firms are interested in building a transfer station but there isn't as much interest in siting a landfill.

A fixed-term operation's contract provides Metro with a flexibility in both financial and operations in the future. We're attempting to weigh the impact on Metro not only today but in the years ahead. The opportunity to bid the system as a total package in a few years could be very important to Metro. Under most concepts of franchising you are dealing with a set and identifiable geographic area. That's not the way with a transfer station. The question becomes--is franchising the technique that most appropriately fits the control one needs in building a transfer station. The question is--do we really want to change the franchise law (Chapter 5) to make it fit a situation in a specific area, or can you use the waiver condition in a franchise ordinance to deal with that problem? Everything isn't waiverable without question, you have to meet certain conditions and could then be faced with changing them again.

Mr. Durig said we did have the capability on the staff to go through a siting, design and construction as is evidenced by CTRC. If we ended up getting someone to locate, design and operate a franchise station, and if that franchisee decided they could not site or it would not be economically feasible to continue, it's possible they could walk away, and Metro would be left holding the bag. A fixed-term contract with MEtro ownership is felt to be preferable to a franchise because it requires that contractor to compete with whatever is out there and lets the public see an open, competitive process.

With a franchise, once it's granted, you lose that ability to come back and force that competition on a regular recurring basis. Based upon that, the Executive Officer is recommending that we move toward a publicly bid, fixed-term operations contract with some form of Metro ownership and at the same time stressing very close cooperation with all affected parties; in this case, Washington County, meaning the collection industry, as well as local governments.

Discussion followed on the problems of ERF (Energy Recovery Facility) and Oregon City and the possibility of Metro having to back off again from solid waste plans. Mr. Durig said he didn't believe the Wildwood problem could be handled this way and they weren't backing off.

Mr. Trout asked about point seven wherein it states Metro continues in a state of evolution with constant changes in disposal, etc. so wouldn't it be to Metro's advantage not to own those facilities but have that investment in there and go along with the changes? Mr. Durig said you also lose your flexibility to go in and make those changes under a franchise. You've vested some rights and you can't walk away from it. If you don't renew the franchise you might have to go through a "contested case" hearing.

Mr. Trout felt since these things were recognized you could address these in a franchise contract. You would make provisions for new technology and other modifications. Mr. Durig answered there was no way to recognize all the problems or alterations that might be needed over the years of the contract.

Mr. Cross said if he could make his presentation it might resolve some of the comments that were being brought up for discussion. He felt they had come further in resolving the issues that have been before the Committee. The Proposal they were putting forward suggested the Washington County Collectors and Genstar would like to site, design, construct and operate the waste transfer and recycling center in Washington county. He outlined these issues, stressing the cooperation with others that would be involved in carrying out the agreement and that construction would be by public bidding since they note the worth of the public involvement with the spending of public funds. In the area of operation they suggested that the joint venture between the Washington County Collectors and Genstar be the operators of the facility. The letter of intent indicates the purpose of the joint venture and outlines the understanding between the two partners and the cooperation between them and Metro. He felt the language was fairly explicit and not subject to a lot of interpretation, since it was drawn up by the two lawyers; Mr. Batchelor for the Collectors, and Mr. Kell for Genstar.

Genstar and the haulers have drafted a franchise agreement to indicate that they are prepared to go beyond the limitations in an upward direction of that ordinance. They are prepared to grant to Metro a full level of control, and changes in the franchise can be negotiated at regular intervals. Necessary state of the art changes to the facility can be made at a timely manner rather than waiting for windows in contract periods...there is profit to be made if the transfer station is operated correctly. He asked to leave the report with them and asked the Committee and Metro to read and consider it.

Mr. Cross stated the only issue that would have to be waived would be the issue of refuse haulers being involved in the industry. Conclusion number six correctly states that Metro has developed some expertise in the area of the Clackamas Transfer Facility and that process. Mr. Cross reminded the Committee that Mr. Durig had stated that with a little additional work his staff could come up to par on any of the issues. Mr. Cross answered he hoped so because he wouldn't want the future of the Metro program to be limited by the amount of knowledge contained in the staff. Mr. Cross also said it was highly unlikely that all the contingencies could be put in the first franchise agreement. He said experience in this country has shown that public agencies and private operators share the same problem in siting solid waste facilities. He felt their proposed franchise would contain within it the indication to Washington County and to the State of Oregon, that should, for any reason, the organization that Genstar signs a franchise agreement with cease to exist, that their obligations would not cease to exist. Flexibility seems to be a key issue and that is why, Mr. Cross said, that is why they tried to build in the maximum amount of flexibility to allow the agency to maintain not only apparent control, but real control over the life period.

Mr. Sandberg asked about the franchise agreement that puts in a fee of two percent to Metro. Mr. Cross answered the attorney thought that was the appropriate amount as specified by existing legislation. If not, it would be changed.

Mr. Durig asked Mr. Wietting how many bidders there were on CTRC? He answered five. Mr. Durig said he didn't want the Committee left with the impression there was only one.

Discussion over the Genstar Proposal followed on the various points to be considered. Mr. Cross said they believed the major advantage of being in control of the facility, is to be able to be innovative and keep pace with the state of the art and to make the facility meet the communities needs because when it stops doing that we have granted, under the franchise ordinance, the right for Metro to take it away. Mr. Cross added no one was going to build a plant and then let some competitor take it away. They would do their best to satisfy everyone.

Mr. Durig stated in going back over the history and minutes of SWPAC it indicated very clearly it anticipated a publicly owned facility. He added you can go either way and you have the legal authority. The adopted solid waste management plan says publicly owned. We're discussing the pros and cons of either approach. It remains an open question.

Mr. Cross disagreed with this except for the Cornet report in 1975. He felt the documents produced by the agency had stated their preference for going to a franchise ordinance. Mr. Kell explained some of the issues according to their understanding and summarized that the government didn't need to get involved as long as private industry is following the rules. The role of government is not to own but to regulate.

Mr. Durig questioned why Metro should give away that kind of authority --what are the predominant issues that would have you give away your authority so you could battle about it later on?

Norm Wietting pointed out one thing in the history that Mr. Cross referred to. A prime factor in all those reports is that they all start out with a competitive bid process and do not refer to a sole source.

Mr. Cozzetto asked about number 12 on needed service. He understood Metro should provide the needed landfills, but he didn't see why the haulers and Genstar couldn't provide a transfer station without Metro getting involved.

Mr. Durig said he would answer him from the research he had done. Legislation created the agency and Metro was given certain responsibilities. Among these responsibilities, Metro can either own, operate, build or franchise transfer stations. It's viewed as part of the disposal system and Metro is given that authority.

Gary Newbore stated he would like to go on record as saying that the position of his firm is that they don't care whether you go contract or franchise. The only benefit of a contract over a franchise is you have a shorter time period. In a franchise you have long-term commitments. Their concern is that it become a public bidding process and that firms, such as theirs, will be given a chance to bid.

Dave Phillips asked what kind of time frame did Genstar look at for amortizing a facility such as this. Mr. Cross answered ten years, but they had indicated in the franchise agreement that that does not become a part of the liability to be held over Metro's head. They are prepared to live with the five-year limitation as specified in the ordinance although Metro could step in anytime before that and take over if they feel Genstar had missed the mark.

Discussion followed on rates, Mr. Cross agreeing, at this time, it is difficult to ascertain the question of rates and neither Metro nor Genstar could say they could do it cheaper than the other. This could come about in the future, hopefully. He felt there were some services they could offer faster than the public enterprise could.

Mr. Trout asked the Committee, since they had a quorum, if they would like to make a recommendation to the Regional Services Committee or to the Council?

Delyn Kies stated she would like to have time to read the Genstar proposal before she would feel comfortable in making a recommendation.

Mr. Trout commented the Regional Services Committee would be meeting on the 6th and 7th and he would like to have a recommendation in their hands before that time or let them know that SWPAC will have a recommendation for their Committee which will next meet on December 19th.

Mr. Trout asked that SWPAC have the minutes of the Rock Creek meeting of the Regional Services Committee for the next SWPAC meeting.

Mr. Durig stated the Regional Services Committee had narrowed the options down to #2 or #3, but stated that option #4 was always open. They were turned off Option #1 because it was non-competitive. They did not take any formal action but this was their basic viewpoint. Mr. Cross commented the proposal before them from Genstar was definitely an Option 1.

Mr. Trout said if there were no other questions or discussion the meeting would be adjourned and a recommendation would be made at their next meeting.

Adjourned at 2:06 p.m.

Written by Bonnie Langford

SWPAC REGULAR MEETING

December 19, 1983

SOLID WASTE POLICY ALTERNATIVES COMMITTEE

Committee Members Present:	Shirley Coffin, Vice Chairman Robert Harris, Paul Johnson, Gary Newbore, Dave Phillips, Mike sandberg, Edward Sparks, Bob Borwn-Ex Officio
Committee Members Absent:	James Cozzetto, Howard Grabhorn, John Gray, Dick Howard, Delyn Kies, John Trout, Kelly Wellington
Staff Present:	Dan Durig, Dennis O'Neil, Norm Wietting, Douglas Drennen, Bonnie Langford
Guests:	Alex Cross, Lee Kell

Vice Chairman, Shirley Coffin, called the meeting to order at 12:10 p.m. Roll Call was taken.

The minutes of the November 21, 1983, SWPAC meeting were approved as written.

Agenda Item: West Side Transfer Station Implementation Alternatives

Dan Durig, Director of Solid Waste, gave a review of the meeting at the Rock Creek Campus held by the Regional Services Committee and a copy of these minutes had been sent to the SWPAC Committee and other interested parties. He said the discussion generally centered around the concept of a long-term commitment that was in the best interests of Metro and the system at this time. They did vote on a 3-2 vote to recommend that ownership continues to stay with Metro but made a strong statement to continue to contract with the private sector. So they did answer the two big questions of ownership and whether they want to go with the contract or franchise arrangement. The issue they did ask Metro to do some more work on --was did we want the full-service arrangement? In effect, you would put together siting, design, construction and the first number of years of the operating contract in one package and have one firm essentially do all of these things. Alternately, Metro would stay with the approach used at CTRC where siting was done separately from design, and then issue a call for a general contractor, and a separate contract for operations.

Shirley Coffin asked what decision the Council would be making on December 20? Dan answered they would actually be voting on this resolution, and asking that we work on the above concept of separate contracts for separate functions or one bid package. Ms. Coffin asked if SWPAC would be asked for an opinion of this issue and Mr. Durig answered he believed they would since they have made a commitment to involve as many people as possible.

Mr. Durig said it would be helpful if the Committee would make a recommendation on whether they would go full service or traditionally divide the elements from siting through operation.

Mike Sandberg declared he was concerned over Metro leading the Genstar/ Haulers along the primrose path and then dropping them. He was also concerned over the rate-setting process since Metro would probably have control over all the sites in the county. How would you regulate these?

Mr. Durig stated the first thing he needed to correct in behalf of the Executive Officer, is that he did not lead anyone down the primrose path. No one was promised anything or given any guarantees beyond the fact of saying see if something can be put together with the haulers. That was acknowledged, recognized and agreed to. Beyond that, whether it would be a franchise versus contract, there was no commitment made.

Mr. Sandberg was concerned over the rates. He said at present all the Council had to do was decide it wanted a 20 percent raise in rates and it had the authority to do that. If they need more operating budget they could just take it from Solid Waste and have them raise the rates--how could you prevent that situation from occurring?

Mr. Durig said he felt they had done a good job of looking at the cost allocation plan. That's part of the budget, part of the public record. It very clearly sets certain percentages of who pays what to whom. They have a good financial system that tracks the difference between user fees and disposal fees and keeps disposal fees going for disposal purposes and user fees going for other than disposal purposes. He invited Mr. Sandberg to come sit through some of the rate review meetings and he would find it wasn't quite that simple to raise rates. Mr. Durig said it wasn't any different than any other governmental body setting fees.

Mr. Phillips said they had many times expressed concern over the number of people on the public relations staff. Did they hire someone and then raise the rates? He added he and Mr. Sandberg had seen Metro grow from 1/2 person to 37 persons and on to the current stand. Mr. Durig said he would be happy to show him the budget which is specifically spelled out by program as to the needs of the system. Mr. Phillips then declared that wasn't his major concern. He viewed franchising as a far more flexible situation than public ownership or contract. He felt they could get the facility built much faster with a franchise.

Mr. Harris called the committee's attention to the Regional Services minutes on page 10 where it says "Councilor Kirkpatrick was committed to the competitive bid process. He added she was the Councilor from the District where he lived and he agreed with her 100 percent on this issue but was concerned that she was still persuadable on the ownership issue. He would like to present some arguments in respect to this situation.

Mr. Harris said the first one went back to the resolution which Mr. Gustafson presented. The fourth "whereas" stated the firm of Price Waterhouse was retained in 1980 and recommended that Metro ownership and operation, of all transfer stations best met Metro's identified objectives, etc. The committees should take into consideration that this was advised in 1980 for the economic and government policy climate at that time. This makes the report sadly out of date with the way he perceives government policies and capabilities at the present time. As an example, one part says conditions which favor government ownership are more cost effective according to a financial feasibility study. However, under private ownership and operation they show, in the same column, that this is more cost effective. Mr. Harris added this is like having your cake and eating it too, and he didn't understand how the credibility of a report could stand up when you admit the feasibility is the same on both sides. He said he had been in public service for over 30 years and is currently an elected official and he was not aware that past history shows that contractual operation for public service was more satisfactory.

Mr. Harris said the next tiem was the public predisposition for government operation of public services. He added there may have been a time when this was true but it does not exist in local, county, state or federal government today. These were a few reasons why he felt the report was out of tune with the conditions today. He gave several other examples from the report that were not supported by today's standards and which would destroy the feasibility of the report.

> Mr. Harris recommended that the SWPAC Committee reject the resolution in favor of one that had a process for maintaining a competitive bid process for selecting the owner-operator. Also, one that would insure public health, and safety. He didn't see that in today's climate they could accept the kind of philosophy that's being expressed.

Mr. Sparks stated he agreed with Mr. Harris. Shirley Coffin said it was not so much the legal question of ownership that bothered her so much as the image of Metro. If they are involved at all it should be some type of public bid process. SWPAC should give the Council some concensus of their opinion.

Paul Johnson asked if they meant ownership and operation would be one and the same or would it be a separate bidding process? Mr. Harris said he didn't specify but he felt it was all right to have private ownership and private operation as long as they had an adequate regulatory control system. Mr. Johnson said he felt it could be a separate bidding process.

Mr. Durig added they seemed to be really down to one issue where people were either agreeing or idsagreeing. There seemed to be a consensus that it should be competitive. Private operation has been committed to, all the way through. It's the actual ownership that seems to be the issue. Franchising almost assumes that you are going to have private ownership. Franchising carries with it a long-term commitment. Mr. Durig didn't feel you could write into a franchise all of the protections and issues that might arise during that time.

Mr. Cross conceded it was very clear to the joint-venture group that the public will see a competitive bidding process and they are prepared to enter into that process whether it is a bid or RFP. In answer to the question "can we perceive all the issues that can be potential problems in a franchise?" Mr. Cross answered certainly not--but the agreement has been written in such a way that it leaves the window open for new perceptions and interpretations, and this was clear in their proposal.

Mr. Durig stated that one of the attractive things about maintaining public ownership was that in future years when Metro is operating a regional landfill and has Clackamas, Washington County and one for the City of Portland on line, they may wish to bid these as a package and it might realize cost-savings at that point. When you don't own part of the system--when you give part of it away as a franchise--you don't have that ability to bid anymore. You've given that option away. Also with a franchise ownership you are essentially doing away with a competitive process. With a franchise they have almost a guaranteed profit. The private sector would have a monopoly situation and they're guaranteed a territory. Mr. Durig wondered if that was really the kind of system we want when we are talking about creativity and competition.

Mr. Cross stated private ownership would be able to handle changes in far less time than public ownership.

Discussion followed on the issues involved. Mr. Durig said whatever was here before the Metro agency was not meeting the needs of the people and that was why Metro was formed and run by elected officials.

Gary Newbore said no one in the room could actually say what method would be cheaper than the other method. No one knows what the costs will be so from that standpoint arguments on either franchising or contracts you will still have your pros and cons. When you get down to it--it's whether Metro has the ability to put the whole thing together as a package and retain control over it, or whether you think industry might be more innovative under a franchise basis and these are really the key issues.

Committee Member Robert Harris recommended the following:

In the absence of a quorum, it is the consensus of SWPAC members present today, that the Committee recommend to the Metro Council that SWPAC should reject item # 1 under the proposal for Metro's ownership of a transfer station in Washington County and recommends that Metro proceed with a competitive process which will provide private ownership and operation of a Washington County Transfer Center with adequate regulatory controls and protection of public health, safety and interests.

The Committee agreed to the consensus. Those in attendance were Shirley Coffin, Vice Chairman; Robert Harris, Paul Johnson, Gary Newbore, Dave Phillips, Mike Sandberg, Edward Sparks.

Dennis O'Neil asked if the Committee had all received their calendars and were there any problems with the meeting dates. He announced the next regular meeting would be January 23, 1984, and the end of some membership terms would be in February.

Meeting adjourned at 1:13. Written by Bonnie Langford

Memo

METROPOLITAN SERVICE DISTRICT 527 S.W. HALL ST., PORTLAND, OREGON 97201 503 221-1646
Providing Zoo, Transportation, Solid Waste and other Regional Services

Date: December 20, 1983

To: Doug Drennen

From: Bonnie Langford

Regarding: SWPAC/Washington County Transfer Station Reports and/or discussion (since July, 1983)

July 25, 1983

August 22, 1983

September 19, 1983

(no meeting in October

November 7th special meeting

November 21, regular meeting

December 5, special meeting

December 19, regular meeting

REGIONAL SERVICES COMMITTEE

REGULAR MEETING

December 6, 1983

Committee Members Present:	Gary Hansen, Chairman; Bob Oleson, Corky Kirkpatrick, Jack Deines, Ernie Bonner, Cindy Banzer
Other Councilors present:	Bruce Etlinger
Staff Present: Solid Waste	Dan Durig, Norm Wietting, Doug Drennen Dennis Mulvihill, Pat Kubala, Karol Morgan Brown, Bonnie Langford
Staff Present: Zoo Friends of the Zoo Zoo Board Members	Warren Iliff, David Slusarenko, Carol Bailey, Robin Drews; Friends of Zoo Board Members: Bob Baker, Marlene Lawrence
Testifiers:	George Hubel, Rate Review Committee Robin Drews, Friends of the Zoo

Roll Call at 5:35 p.m.

Minutes of the October 19th work session, and the November 8, 1983 regular meeting were approved as written.

Agenda Item 1. Consideration of a Master Plan for the Washington Park Zoo.

Mr. Iliff mentioned Susan Sachitano, who in 1976 had won a contest to rename the Zoo to Washington Park Zoo from the former name of Portland Zoological gardens. She was a high school student at the time and consequently had a giraffe named after her named "Sach". Susan was a volunteer at the children's zoo. She was recently killed in an automobile accident and her family wanted to contribute something in Susan's memory. David Slusarenko developed a three foot high sculpture of a giraffe to be displayed at the access, or first opening into the sculpture garden. It will be done in marble and is set on a plaque complete with sculptured foliage. The model was shown to the Council.

Mr. Iliff said they had gone from the research and conceptual programming phase of the Master Plan to a much more detailed planning process and are working toward a document that will represent the final Master Plan, depending on discussion with the Committee. The narrative as amended and corrected will be presented to Council at the December 20th meeting. Changes include the African Plains Exhibit. It will be more of a wooded setting people will be walking through so they have decided to call it, more appropriately, the African Bush Exhibit. An underground nocturnal exhibit, down by the elephant house, as an Australian exhibit is one of the long-range ideas. Mr. Iliff then asked the Council to refer to the staff report and he outlined the changes based on their conversations with the Board of the Friends of the Washington Park Zoo, as well as with Regional Services Committee and the Executive Officer.

The Polar Bear Exhibit is being moved up in priority since being without them is not in the best interest of the public or the Zoo. If a levy passes to allow them to go into a capital improvement program they would be prepared to go right into that project with the bears that would give them a new natural habitat. Underwater viewing would also be part of the exhibit. The Sun Bears would be adjacent to it. It would be finished about 1985 which would be the quickest they could get bears born in captivity. Last year there were none available but they now have letters out to about 30 zoos asking for first priority. Cubs born now would be available about the time the new habitat is completed. They feel this would be an important move in the Master Plan. If they adopt a three-year levy plan they are basically talking about renovating all of the existing hooked-animal areas which would give them two major African exhibits; one being the hippos and rhinos and zebras, and the other being the giraffes and the antelope. The only thing remaining in the African exhibit would be, as proposed in the Master Plan, the lions, baboons, and hyenas down where the wild bird garden is at the end of the exhibit and then cross into the wild bird aviary which would not be enclosed but be an open aviary on the hillside below the administration building. The elephant center has been dropped down in priority with the exception of the elephant museum which they hope to fund privately.

The amphitheatre originally called for doing some major expansion work on the stage, and the African cafe food service would provide indoor eating space, but they are delaying part of that along with the picnic shelter, in their priorities. The present train loop also has some alternatives.

These are basically their recommendations. The projects and programs have been divided into two priority groups for public funding and also have presented the private funding of the Cascade Exhibit and the Elephant Museum. This suggests the possible psychological approach to the public of saying if we're able to raise a certain amount of money privately that it might be considered a match against public funds that could be used for a new entrance.

Councilor Oleson asked how much unutilized space there was surrounding the Zoo that they would have access to? Mr. Iliff answered the plan assumed no additional space added to the Zoo. He said they currently have 64 acres and are currently using about 30 acres, some of the land isn't useable because of hillsides and location. About 15 acres may be utilized later. These figures do not include the possibility of a downtown aquarium. Mr. Iliff stated they had scaled down their plans to fit nicely into the available acreage, and the public sees this as a nice hedge on the cost of operating the Zoo.

Councilor Etlinger indicated his interest in the downtown aquarium and asked when this might be considered since it wasn't part of the Master Plan?

Mr. Iliff answered they did not anticipate a large aquarium with dolphins and other large marineland-type fish, but they had surveyed aquariums around the country and costs that might be anticipated. They established what might be needed for exhibit space, and had in

mind an all-weather facility that would be available for educational and entertainment recreation but they would anticipate having Oregon coast and reef fish and the marine environment that one normally finds in aquariums. It could be done independently of the Master Plan, although it could be written into the Plan and come back to Council to see if this is a good expenditure and the time seems right.

Councilor Hansen asked if the construction of some of these exhibits would have an impact on attendance. If having the central part of the Zoo in a state of flux for an indefinite period would discourage people from visiting the Zoo?

David Slusarenko said they were going to have the construction done in discreet phases so that as people moved through they would not be aware of that much activity going on in remodeling the Zoo.

Robin Drews, President of the Friends of the Zoo, said they try to assist the Zoo in any way they can. He felt the Council was courageous in setting aside the amount of money they did for an excellent planning job. Mr. Drews said it would develop into an even more outstanding Zoo if they are able to implement this Master Plan. The Zoo has a number of the endangered species such as the Humboldt Penguins, the snow leopards and servals, and the sand cats from North Africa that are all endangered species. He felt Zoos like ours, intelligently run and operated by dedicated people are going to be a place where the animals are going to survive.

Mr. Etlinger said he had just turned in a memo asking that the Council now, and leading up to the levy request, begin an aggressive outreach program explaining to the Districts, and community groups, and civic groups, what the Master Plan means and what the requests will be, so that the burden carried by the Friends of the Zoo will be shared.

Mr. Iliff added they had just learned the female orangutan was expecting a baby in March and this was an extremely endangered species.

Chairman Hansen stated, at this point, he would like to make a motion.

Motion: Councilor Hansen recommended the passage of the Zoo Master Plan to the Council.

2nd Councilor Deines

Vote: Unanimous by Oleson, Kirkpatrick, Bonner, Banzer Hansen and Deines

Motion Carried.

Councilor Kirkpatrick declared she was concerned about the dollar amount. She felt appalled at the amount of money it would take to upgrade the entrance when it wasn't even animal related. Over the years, she said, the exhibits have expanded to include a lot of expensive graphics, and a lot of amenities that are not really

animal related and she felt it important to deal with each item as it came along and whether that's the direction they want to go. She felt the plan was well written and the job well done but the Council's job was not done. They could deal with the first phase of the plan and discuss the dollar figures on a one-by-one basis as they became an issue. There is a considerable escalation of cost in the past three years and the figures could come up even more before each phase is ready to be developed.

David Slusarenko said the plan would be dealt with in three years on information available at that time. Mr. Iliff said priority group one was the issue they could really address. The scope of Africa has increased and this has caused the cost increase. The design in the next phase will be to those cost figures. The Master Plan will be a document that gets them into that type of financial discussion.

Mr. Iliff stated it was difficult to solicit private funds for a public operation. It does give the Zoo a chance to get the public involved in making the Zoo into a quality place beyond their vote. They want it to be an important part of the community. A donation from a personal viewpoint is a positive decision that they don't feel compelled to do.

Councilor Hansen said he liked the Master Plan. It was good to have something concrete to look at. In reading through it he noted so many priorities that don't really come out on the priority list of specific exhibits--such as the general need for improved landscaping. He felt they should take a hard look at the budget items and pressing maintenance needs. Councilor Hansen also mentioned the traffic and parking problem--the need of better traffic flow. He hoped Metro's Transportation Department might be involved in that particular need and that the Committee would look at every means possible to help implement these needs.

Agenda II. Progress on the Solid Waste Systems Plan

Patty Kubala, Planner, distributed a copy of the outline of the Solid Waste Management Options Report to the Committee and stated the report would provide several functions. It was organized to provide information necessary for both short-term decisions and longer-term decisions. The report will summarize past studies that have been done that have led the Region into pursuing a system of the Regional Landfill and Transfer Stations. The report will also provide information for getting information in place and guidance for the decisions the Council will be making over the next few years. It will also establish a long-term direction for a solid waste management system by reviewing alternative materials and energy recovery options and state-of-the-art technology--any information we can pull together that applies to this local area. Hopefully, she told the Committee, this will be the information you will need to base your policy decisions and will provide the course Metro will take in solid waste management. Ms. Kubala stated they had completed draft sections on on Roman Numeral four on the existing system and are presently working on completing the second portion on alternative technology.

The portions on landfills and transfer station drafts are completed. They are presently working on alternative energy processing options.

Councilor Hansen asked when they anticipated a finished report? Ms. Kubala answered, being a fairly new person, she was not sure of the process for when a report is completed internally and reviewed by Executive Officer and eventually coming to Regional Services. The draft, she felt, would be done by the end of the year and be ready for review internally and refined. Councilor Hansen asked why it couldn't come to the Council for review while in draft stage? He felt a few of their notes in the margins might be of help. She answered that in October they asked her at the presentation to go back and complete the technical work before they reviewed it, but it was an open issue. Once the Committee does review the plan, they can add on. When staff gets more policy direction then can start putting together budgets and strategies for implementing those.

Discussion followed on points of clarification between Ms. Kubala and the Council. The Council felt they should have the draft of the Systems Plan by the first of the year.

Agenda Item III. Washrack at CTRC

Doug Drennen, Manager of Engineering, reported to the Committee on the results of rebidding the truckwash facility. Metro received five bids the second try which was better than the first round. The local bidder was the Michael Watt Company. Their low bid was $56,500. This is $10,000 cheaper than the previous bid, the primary reason being the fact that it was reduced to a three-bay facility. The Company submitted, with their bid, thirty percent participation from MBE. It's scheduled to go to the Coordinating Committee on the 12th of December and depending on their decision, on to the Council later this month. The roof contractor's bid was extended and the award will be made subsequent to the decision by the Council.

Agenda Item IV. Discussion of procedure to review future of the SWPAC and Rate Review Committees.

Doug Drennen said, in behalf of the committee, they had provided them with the Bylaws and grant of authority for discussion purposes.

Councilor Hansen asked to explain why this was on the agenda. In November there was a motion to appoint the members of the rate review committee and it was moved not to appoint the people. The full Council wasn't there and he would like the Regional Services Committee to help resolve the procedures they go through every year and perhaps streamline the process. He would like to know how the Bylaws relate to filling these vacancies and what action needed to be taken by the Services Committee.

Doug said the first document was the resolution establishing the Solid Waste Policy Advisory Committee in 1979 and was a continuation of the Solid Waste Advisory Committee that was formerly under the Columbia Region Association of Governments (CRAG). Behind that document is the "bible" of the Solid Waste Advisory Committee.

Mr. Drennen said the last item in the package is the current committee members. The second document he handed out was the information about the Rate Review Committee; the Bylaws and the Sections from the Metro Code establishing the Committee and what their purpose is. (Chapter 5, Metro Code) Briefly, the difference between the two groups and their functions, is that SWPAC is established by resolution and is primarily made up of the public, citizen groups and interest groups for the purpose of providing assistance to the staff, the Executive Officer and the Council on solid waste policy related issues.

The Rate Review Committee is established by ordinance and is made up of public that have an expertise in financial and economic information background. Their specific role is to review the rates charged at disposal sites by Metro. He said that in summary was the distinction and function of the groups and their purposes. He added George Hubel was ready to answer any questions on the Rate Review Committee. Mr. Drennen said the Committee currently has one member that was appointed and there are now four vacancies and the resolution, which was presented to Council at the last meeting, was to fill those vacancies.

MOTION: Councilor Banzer moved that the Regional Services Committee recommend to the Council that the people being recommended by the Executive Officer be approved to serve on the Rate Review Committee.

Discussion:*

Vote: Aye: Banzer, Hansen, Bonner
Nay: Deines, Kirkpatrick

Motion Carried.

*Discussion on the above revealed Councilor Banzer's belief that the reason the Rate Review Committee was set up was that we needed a detailed rate review structure that was technical in nature and would be an advisory group providing the Council with technical input and data for their consideration. Under"B" in the Bylaws it says no representative or affiliate of the solid waste industry and no employee of the district shall serve on the Rate Review Committee. She added there was an opportunity for SWPAC and for individual haulers and other people impacted by the rate structure to serve on other committees and comment directly to the Council but the Rate Review Committee had to provide alternatives to the staff and articulately present their reasons for their positions and consistently provide advice and it is in great part due to the leadership skills and technical knowledge of the Chairman of that Committee. She believed the continuation of the Rate Review Committee, as it is currently structured, is important, and appropriate. Councilor Banzer felt very strongly that it would be inappropriate to combine a rate review function with representatives of the solid waste industry on it.

Councilor Bonnor asked if the issue was that we shouldn't have a Rate Review Committee or that we shouldn't have the particular people proposed for membership?

Councilor Hansen said he hadn't seen any change in the ordinance to abolish the Committee, or even a process to see if we want to abolish the Committee. The issue now is whether we are going to have the Committee called for in our Bylaws and by ordinance and then circumvent that by not appointing anyone to serve on that committee.

At the last meeting we talked about two issues, not only the appointment of the committee, but a change in the ordinance to change the committee's structure. We talked of what we really wanted from our advisory committees, said Councilor Kirkpatrick. Those of us who supported the motion to not appoint the committee right now did so in hopes we could clear that up before we appointed people to the committee and not be able to tell them what we wanted them to do for us. It took us months to decide what we were going to do with rates and that is an indication we weren't getting the type of information we needed so we need to know what we want in order to get advice from these committees in our whole solid waste system.

Councilor Hansen, shared their concerns in terms of the way the current rate system works. He felt it could be improved and streamlined. However,he added at this time we have a solid waste Rate Review Committee and they had served well within the system and the charge they had been given. Councilor Hansen felt it was imperative at this point when looking at the way we set our rates, to keep this public body so they can advise the Council on rate changes but also ways we can change the system as we go through restructuring. This is why he would like to see the Services Committee go ahead, appoint the committee, then talk about the procedure we might like to follow and what help from staff we'll need in order to restructure the rate systems.

George Hubel suggested the Rate Review Committee take from 90 to 120 days to review the history and financial policy and report back to the Services Committee for its perusal, then send it back to the Rate Review Committee with direction as to what they want.

Councilor Kirkpatrick felt this was backwards--that the Services Committee should decide what they needed and then tell the Rate Review Committee since the policy decision was the Councils.

Mr. Hubel said the only time people talk about rates, up til now, is when a rate schedule has been put together and there are actual numbers to look at.

Councilor Bonner asked that the Rate Committee put down what their questions are and have the staff give a recommendation on them.

Councilor Kirkpatrick said that all the members would be new and they could better get the information from George Hubel, the Chairman of that committee.

Councilor Deines stated when they did the last rates there were things set from prior rates that were changed and policy decisions that were also basically changed and meant a lot. He felt Council should also get the report that George might turn over to the staff so they could be aware of the ways to generate the revenue and

note the basic policy changes. We need to give the Rate Committee our basic policies so they know where they are, otherwise they can come back with an infinite amount of changes or policy areas that aren't addressed.

Councilor Hansen stated he hoped the Council will reappointment a Rate Review Committee and that it will be working and functioning during the process of restructuring and reappraisal if the Council needs any review of proposed changes in rates. Also, he thought there was enough dissatisfaction from enough different sources on the Council, that if there were some changes in the flow at CTRC, they might go back with proposed amendments from the rates being used now. He said he would feel uncomfortable working on those rates if they didn't have a rate review committee in force.

Councilor Kirkpatrick felt it was a disadvantage to a number of the haulers on a franchise if we changed the rates every year.

Mr. Hubel reminded the Committee there would be three new people at least, who weren't familiar with Metro's policies or the Rate Committee. The people. He said the people up to now were of the highest calibre who served on the committee. They were dedicated, friendly, very circumspect in anticipation of problems and their ability to trade ideas was a great advantage.

Councilor Kirkpatrick didn't want to wait 120 days. She said they could only give policy direction if they knew where the voids were and she asked him to do that so they could change any Bylaws or ordinances before the next Rate Review meetings were assembled.

Councilor Hansen stated there would be action on this in Council meetings and he hoped George Hubel would remain on the Committee but if there shouldn't be a Rate Review Committee he hoped George would still give them his expertise on rate matters.

Mr. Hubel said after about six months of meetings the Committee asked itself why they were formed? Then they proceeded to enumerate about fifteen questions and asked several of the Council and staff to attend a meeting to determine policy direction for the Rate Committee. The Executive Officer and Presiding Officer attended. Mr. Hubel said before he could finish his first question he was told the Rate Review Committee was to look at all policy issues and feel fully qualified to make recommendations regarding rates to the Council. He added it was not as though they went into the policy business on their own, they were invited in.

Councilor Hansen stated the Council was free at any time during their meetings on rates to question any policies raised by the Rate Committee and any members wanting to deliberate the issues could have done so.

MOTION: A motion was made by Councilor Kirkpatrick that the Regional Services Committee recommend to the Council that they table the amendment of the November 8th meeting which would have allowed up to three public members instead of two on the Rate Review Committee, until they look at the ordinance. (Metro Code Section 5.01.170-ORD, 81-111, Section 18)

Councilor Kirkpatrick said it would be more positive for the Regional Services Committee to make that recommendation with the understanding that we are looking at the whole ordinance in our advisory capacity to the Council.

VOTE: Aye: Unanimous by members present: Hansen, Bonner Deines, Kirkpatrick.

Meeting Adjourned: 7:46 p.m.

Written by Bonnie Langford

SPECIAL MEETING - REGIONAL SERVICES COMMITTEE

DECEMBER 7, 1983

Rock Creek Campus, Portland COmmunity College

Committee Members Present:	Bob Oleson, Corky Kirkpatrick, Jack Deines, Ernie Bonner, Gary Hansen.
Other Council Members Present	Dick Waker, Bruce Etlinger
Staff Present:	Rick Gustafson, Andy Jordan, Dan LaGrande, Dan Durig, Norman Wietting, Doug Drennen, Ed Stuhr, Eric Dutson, Bonnie Langford

Meeting Called to Order at 7:10 p.m.

Agenda Item: Consideration of Options for Implementing a Transfer Station in Washington County.

Mr. Hansen, Chairman of the Committee, introduced Mr. Durig for a brief overview of his report and asked that those who wished to testify fill out the yellow cards and would be called upon during the meeting.

Mr. Durig called their attention to the staff report which had been given the Committee and other parties attending, and said it was composed of two distinctive, complimentary parts. The first portion is the staff report completed by Solid Waste people and the second part of the report is a portion of a report completed in October of 1980 by Price-Waterhouse and company, which also addresses this issue of management strategy for Solid Waste. In the staff report there are the background fees, some of the previous history, and procurement strategies of the past, a detailed breakdown between two options; one being the franchise option and one the contract option. Major differences between the two were highlighted, a section on findings highlighted, and a section on conclusions --nine in number, and finally, the Executive Officer's recommendation. Mr. Durig said there were two primary issues before the Services Committee tonight. The first one being should this contract franchise to operate the Washington County Transfer Station be awarded on a competitive or non-competitive basis? Metro currently has three parties that have expressed interest in being a participant in the eventual operation of this facility. The second issue is a question of ownership by Metro versus non-Metro ownership, ownership by the private sector... That breaks down into two basic components; a franchising private ownership versus a public ownership by Metro with Contracting operations. Metro does have the option legally to franchise or contract the operation of the facility. Secondly, we currently use the private sector and use CTRC as one model to design, construct and currently have an operations contract for that facility.

Rick Gustafson, Executive Officer, stated before the Committee was a Resolution with his recommendation which covered some key points in the proposal for a Washington County Transfer Station. He indicated it was appropriate for the Council Committee to deliberate over the Recommendation. He believed the issue centered around over whether a franchise was granted or a fixed-term contract. He added there were advantages on both sides as the Committee would note from their deliberation over the past few months. There are advantages to establishing a long-term relationship with a single company to provide a disposal service, as has been demonstrated in many cases with people in the garbage business. There are also advantages demonstrated by a fixed-term contract. The decision before the Regional Services Committee then, is to make a determination between the two options. Mr. Gustafson commented that although there were advantages to both sides it was to Metro's advantage to maintain their long-term flexibility. He then recommended that the Council approve a publicly-bid fixed-term contract for the operation of the Washington County Transfer Station and that we get on with the business. He said it is appropriate, and based on Council interest, to recognise the importance of a full private sector involvement and full involvement of the industry in the design and operation of the facility. Mr. Gustafson said he supported and encouraged it and hoped that the Resolution that was before them responds to some of the issues that have been raised in the previous months.

Chairman Hansen asked for Testimony from the Public.

Alex Cross, Vice President of Genstar, introduced Lee Kell, Attorney for Genstar, and DeMar Batchelor, Attorney for Washington County Refuse Collectors. Mr. Cross stated they agreed with the presentation by Mr. Gustafson and Mr. Durig that the question of ownership is a key question, with the concern of control. We believe that Metro must maintain control, said Mr. Cross. He added that private industry involvement was not an attempt to somehow or other subvert the necessary political control. Mr. Cross wanted to remind people that they did not decide on their own to investigate the possibilities of a transfer station, it was at the request of Metro staff that they pursue this subject. It was because of the staff, he said, that they got together with the Washington County haulers. He referred to a memo of May 7 1982, from the Executive Director to the Regional Services Committee where he requests implementation options for developing a Washington County transfer station. He recommends to Council that a private firm be selected through RFP process to site, design construct and operate a transfer station and Metro should develop the RFP and a selected firm be awarded an exclusive franchise. Genstar felt this was clear direction. They delivered a proposal to Metro the first week of December. Mr. Cross highlighted the fact that they stayed in the area of design, public and Metro involvement, they stayed in the area of construction and public bidding of the actual construction of facility. They stated in the area of operation that disposal rates and user fees be set by Metro, and further cooperative measures. They hoped they had responded somewhat to Metro's plans.

Lee Kell stated one of the misconceptions is the relationship between control and ownership. Genstar feels the issue of flexibility for Metro is in the concept of control, not necessarily an ownership. He said these were not synonymous concepts within the law but are part of a larger ideal which the law calls property rights, such as possession, control, ability to use and enjoy the property, etc. It is possible to have complete control of the property without having any ownership right at all and it is also possible to have title over the property and have no control or possession. Their proposal lists many areas that would be granted to Metro where they would have control over this facility without, in fact, having any ownership of it. Mr. Kell reviewed some of the issues and options for Metro in granting their proposal, adding Metro could have all the flexibility they want in granting the franchise, and with the right kind of agreement Metro could have more than enough control to carry out their present and future solid waste management plan.

DeMar Batchelor commented the haulers and Genstar had been appearing before the staff and Committee to explain their proposal and its issues. He believed in general the effort had been cooperative, but he wasn't sure the time and money expended had been well spent. After attending various meetings with Metro he understood one of the key issues was the ultimate ownership of the facility. The Haulers had been asked to be more specific than in their conceptual proposal so the document presented was a format to identify provisions which could be included in a franchise agreement addressing the issues of concern, and that there are other conditions that could be included, such as a performance bond, which are ordinarily a part of these agreements. He reviewed his report and added these examples addressed the flexibility issue in terms of the length of franchise and renewability, and indicated it could be done. The whole fiscal administration program would be reviewed and approved and would have all the capability and qualifications of a franchise. Elements of control can be built into the franchise agreement as identified by the staff. He felt they were there responding to what they thought Metro was asking for.

Chairman Hansen said that in policy questions he wanted to clarify that in this area of franchisers and contractors, Metro Council is the policy making body. He added at this point he would like to thank Genstar and Washington County Haulers for the effort that they have made to give the Council a very good proposal on a franchise. It is the purpose of the Regional Services Committee to analize and reach the best conclusions they can. At no time is there a shut door. The members of the committee that worked with the Council, he was proud to commend for interest they've shown in this issue and the open-mindedness with which they faced the whole issue.

Mr. Batchelor thanked the Committee for the many times they had made themselves available to them to identify concerns and they appreciated that knowing they weren't paid and didn't get anything out of it but made a good-faith effort to communicate the issues to them. But what he was trying to identify was where the staff is, and if the facility would be implemented in an exclusive franchise. If there were misunderstandings he regretted them.

Councilor Bonner asked questions of the lawyers on the franchise and said his own experience with TV franchises was that there was a great deal of latitude in determining exactly what a franchise provision really says and was thunderstruck by the kind of things that a franchisee can get away with and he wondered what the value of the franchise would be, are there specific ways a franchisee can operate at less cost than a contractor? Can one give greater service for the same cost? Could there be a takeover if you failed to perform? Is this or that provision properly interpreted?

Mr. Batchelor answered the simple answer was yes, if it was written in the agreement. The difficult answer is upon what basis are you going to entice a franchisee to agree. It involves the calculation of value. The risk to the franchisee is that Metro, for any reason, can issue the order declaring its intent to take over the facility, then that has to be calculated into the value of the facility as a business risk.

Mr. Cross added it was a difficult issue to decide which would provide the least-cost facility. They believed they could provide greater service for the same cost with the flexibility of being the owner and not having the restrictions of a contract. We would take risks with our investment that you wouldn't take with public monies. We would only know the difference after-the-fact.

Councilor Oleson said we had heard the issues and sub-issues that need to be resolved and appreciated the work done so far in the joint venture. His question was --Why is ownership so important?

Mr. Cross said he had already alluded to that. To them, ownership means the right to make business decisions. They can now make internal decisions but if there is risk involved they could risk their own money without changing the rates, of they owned the company.

Mr. Batchelor said you won't find anyone to design, or construct a facility who knows they have only a three to five year chance to operate. It means you may be building a facility for a competitor at the end of the contract period since it's out for bids to anybody.

Mr. Batchelor wondered why, after two years, we have just gotten down to the sensitivity of franchises?

Mr. Deines added we have asked people to spend private dollars and are now saying we don't recommend that course of action after they have done the research and he could understand the haulers resentment in this situation.

Chairman Hansen reminded the Committee they still had more testimony to hear and he would caution them to hold their statements and comments of general nature until we have general discussion on the issues. He called on public testimony at that time.

Mr. Kell said he would like to add that this state was the forerunner of franchising and a number of men in the audience were in the business and knew it could work.

Mr. Gustafson responded to the comments that had been directed to the Committee which he felt might more appropriately have been addressed to him or the staff. A major issue of the evening was the terms of encouragement Genstar and the Haulers of Washington County felt they had been given in developing a proposal for a franchise. Mr. Gustafson said they were correct in pointing out the resemblance in the report that suggests an exclusive franchise be issued. The Council, he advised, should not be made to feel guilty for that kind of a situation, for their policies were clear from the beginning. The Council specifically requested the Committee that was formed over a year ago to evaluate the procurement strategy and it was clear, in their position that they were to look for options. The expenditures that have been spent in the past four months have been because the Committee required a review of the options. Mr. Gustafson said he assumed any other responsibility in working with the haulers and Genstar. He addressed the Committee that they should not allow any arguments to influence a decision which they need to make in the public's interest. He apologised for any misunderstanding but at the same time, he stated, there were explanations for both sides and he would be happy to talk to the Council on this if they wished. Mr. Gustafson stated the Council had a very deliberative process, and the expenditures for engineering on the part of anybody was done for their own interest without the encouragement from Metro. The Committee was formed to look at procurement options to evaluate what was in the best interest of the area for disposal issues. He cautioned the Committee to deliberate the issues and not let the various arguments cloud the question confronting them.

Questions and discussion followed from those on the Committee to The previous testifiers covering essentially the same information as had been given.

Councilor Hansen called on Wes Myllenbeck for public testimony. Mr. Myllenbeck was representing the Washington County Board of Commissioners and came to the meeting to read the motion made at their recent meeting and approved by the Board. It was moved by the Washington County Board of Commissioners (1) Endorse the immediate need of Washington County Transfer and Recycling Station. (2) Acknowledge the merits of the Genstar-Washington County Refuse Disposal Association. Inc., Joint-Venture Proposal. (3) Acknowledge the advisory Committee's recommendation of a package proposal. (4) Encourage Metro to move in the most expedient manner to secure a transfer station by either granting exclusive franchise agreement to the proposed joint venture or to let bids for proposals that include the package of siting/design, construction and operation. (Motion 83-634, Motion-Hays, Second Meek, Vote 4-1).

After brief discussion another motion was offered to clarify their indications that they would prefer private ownership without invalidating the impact of their previous motion.

The Washington County Board of Commissioners has a policy of recognizing private enterprise whenever it is possible and it is the intent of the Board to do so in this case as well, if it can be done. (Motion Warren, Second-Hays, Vote 3-2). Killpack felt one was mandatory and

the other is encouragement and could not support this. Myllenbeck felt the decision was Metro's and the Board should allow them to follow their process. The W.Co. Board of Commissioners also moved:

The motion was restated and Hays concurred: That this Board send a statement to Metro to its Advisory Committee Meeting tomorrow night, December 7, 1983, that we would prefer the use of private enterprise in their transfer station agreement which would be in line with our Commission policy of using private enterprise whenever possible.

The above was read by Commissioner Myllenbeck to the Regional Services Council during public testimony. He also stated whether the issue is private or public it will be difficult to site.

Gary Newbore, Killingsworth Disposal, testified a year and a half ago Metro started the procurement process for what was to be done in Washington County. He reviewed the May, 1983 letter which said Metro should develop an RFP process to solicit proposals. The Sept. 13, letter the clause said Metro should select criteria for the selection of a contract. Mr. Newbore said he was not there to argue the merits of a franchise versus contract and there are benefits and problems to both and either could be worked out. Since the landfill has not been sited or approved, Killingsworth would like to be involved on a competitive basis, with the other three parties now on record as wanting an RFP process and would encourage Metro to ask for the submission of a proposal and select through a public bidding process after submitting the criteria for the transfer station. We have been one of the first parties on record saying we would like to be a part of that process. He added if he had known it was a simple matter to have the ordinance changed to include haulers in the franchise, he would have been interested in this aspect at that earlier time, also. He added he had also been talking to staff over 1½ years and had been assured it woud be a public bid process.

Councilor Kirkpatrick asked Mr. Newbore if his company was interested in taking over the whole package? Mr. Newbore answered yes, and he felt the project should be advertised with the criteria so that all interested parties could bid.

Mr. Deines asked if Mr. Newbore was an advocate of public or private ownership? Mr. Newbore answered there was more flexibility with private ownership although there were advantages to both.

Councilor Bonner commented he had been involved in public bidding where no one showed up and Mr. Newbore added they could be sure of two bids. Mr. Newbore said whatever process was decided upon by Metro they would like to be involved.

Chairman Hansen asked If Metro was to finance the project with our current bonding situation, what would be the rate of interest? Doug Drennen answered about ten percent in state control bonds.

Nancy Hoover was called by Chairman Hansen. She said she needed clarification. She understood from the meeting that we seemed to have asked someone to go out and work for Metro and now it's going to open to a bidding process. Mr. Gustafson explained this is a process we have

gone through in identifying a need for a transfer station in Washington County. Two years ago a proposal was made by Metro to build a facility in Washington County and questions were raised regarding the need for that facility. In response to that we asked each of the jurisdictions in the Washington County area to participate on a committee to assist in assessing the need for a facility. In September the Washington County Haulers had approached us with a proposal for building the facility. I informed them at that time that it was a requirement, in my opinion, and my recommendation to the Council would be that it would have to be through a public bidding process. I did indicate that I was prepared to support an amendment to the Council ordinance which prohibits haulers from being involved in the disposal business, but that must be through a public bidding process. At that time we also referred Genstar to look into that situation to see if there was a possibility that we might be able to take advantage of the expertise of that company and the haulers in that area to assist in the construction and operation of a facility out there. It is incorrect to say that the option of the contract was precluded at that time by myself or the Council. In fact, the Committee was asked to assist in two questions: (1) Should a facility be built in Washington County? (2) What is the procurement procedure that should be used in seeking that facility? Option two had the most appeal, and the diagram which describes that correctly says franchise or contract is the issue. In the wording in the reportit doesn't correctly state that, which is a mistake on our part but there is some confusion about that but directly the committee was asked to make a recommendation on the procurement procedures. At the end of one year the Committee returned with its recommendation which said the facility should be built and that the Metro Council should decide how the procurement should proceed--whether it be a franchise or a contract. That is the question which is essentially before the Council this evening--should they issue a franchise or a fixed-term contract for the operation of the facility. Genstar and the Washington County Haulers have offered a proposal and I've offered a recommendation which says there are advantages in the franchise but it would appear at this time that with the uncertain nature of our business that a fixed-term contract would be more fitting. There being no further questions from Ms. Hoover, Chairman Hansen called on Dick Weitzel for testimony.

Mr. Weitzel said as a hauler he was interested in the Washington County Facility since he had watched the CTRC in Oregon City being built. He felt improvements could be made in the facility being planned for Washington County and he would like to be a part of the planning. He felt they had to be involved to make it work and transferring to a landfill makes the most sense of all. He said if they put their money in with the idea that they are going to be there as long as their collection business is there--you are talking about generations of family business.

Mr. Bonner asked that he make a list of what he felt was wrong with CTRC and they would see if some corrections could be made andit would come in handy for whoever designs the next transfer station.

Councilor Hansen asked if there were any further questions and requested John Trout, Chairman of the SWPAC Committee to report any recommendations from SWPAC.

Special Meeting - continued
Regional Services Committee
December 7, 1983

Mr. Trout stated SWPAC received basically the same information at their meeting as the Committee had tonight. The Committee wanted a little more time, but based on the importance of Regional Services Committee making a decision they didn't want the SWPAC Committee to influence them. The next meeting of Solid Waste Policy Alternatives Committee would be on the Monday, the 19th of December and they would be making a recommendation to the full Council.

Chairman Hansen asked the Regional Services Committee to refer to the proposed resolution before them and he would make the following motion:

Councilor Hansen
MOTION: Moved the Regional Services Committee adopt the Resolution presented by the Metro Staff.*

(See attached Resolution)

(Discussion below. Final vote on page 10)

Motion: Councilor Oleson made a motion the above resolution be amended to read at the end of number four:

"However, there shall be a renewal clause that allows for the extension of any existing agreement without rebidding." **

Vote: Aye: Deines, Oleson
Nay: Kirkpatrick, Hansen, Bonner

Motion Failed

*Discussion:
Chairman Hansen said the elements included in the Resolution were a vehicle that would resolve the ownership question, the contract versus franchise question, resolves the public bid process, and Councilor Hansen wanted the staff to analyze on how we provide either a one-bid, full-service contract or a package proposal for one company to do the whole job for us without following the CTRC example of splitting building and operation. That issue is a very complicated issue which the Regional Services Committee should decide when they have further studied the information.

Councilor Bonner said when the idea first came off --having a joint venture and a franchise he first thought it was a good idea, however he now feels the Council should come out with a contractual arrangement and he agreed with the resolution.

**Councilor Oleson said he thought they should pick out the best of pieces of both approaches and do what is best in the public interest. He felt both approaches had things they should put into the overall plan they advocate. He said public ownership was not the all-important issue and we should address some of the concerns of the haulers... should have a cost-effective operation. We should modify the resolution so we can achieve what we want to and address all of the concerns.

Mr. Oleson said that is why he would add his amendment to paragraph four.

Mr. Gustafson noted that there was a renewal clause in the contracts that provide legal option for the Council to use.

Mr. Bonner and Mr. Oleson wondered if the matter might be better left to a later meeting where they could see it in a more specific language.

(Votes on these issues were taken see page eight)

Counselor Hansen asked staff to prepare language which has the spirit of this amendment by Councilor Oleson to add to the options of the resolution.

Councilor Deines said we don't have a site, no operational plan or transfer station plan. The basic plan was a burner but Oregon City wouldn't go for it. He felt the CTRC was less than what it could be and we need to encourage private enterprise to put their dollars into the facility. He felt it was difficult for them to appease both Metro and the State. He said when two enterprises are publicly owned the dye was cast across the region and private enterprise won't want to get involved in ownership or development. Councilor Deines stated if we do have a solid waste disposal monopoly, we will not be constrained to hold prices down. There will be no measuring stick to measure it against. Need to view the budget in what it will do to solid waste rates. He felt Metro had spent thousands of dollars without any great results in projects or programs and he would like to see the private sector take the risk or possible reward of building and operating transfer stations, recycling facilities or landfills. He felt whether we put it out for franchise or contract Metro needed to get out of the solid waste operating business.

MOTION: Councilor Deines made a motion we table the resolution until March and between now and then look at the policy issues as to where we've been before.

Vote: Aye: Deines, Kirkpatrick

Nay: Hansen, Oleson, Bonner

Motion failed

Mr. Gustafson said we had been involved in the process a long time and the issues are known. He didn't believe the Council or Committee would benefit from several more months of wrangling. The question in front of you is a commitment to a contract versus a commitment to a franchise. He felt they would not be well served by continuing to delay a commitment.

Mr. Cross supported Councilor Deines. He thought they should table the issue and talk over the concepts and they would like to get involved in the discussion and take two-three months to wrestle the policy issues.

Councilor Kirkpatrick said she was committed to competitive bid process. She felt Metro would short-change the public if they did not do that. She felt the ownership issue should be talked over. She said she was prepared to vote for the motion and hoped the Council would talk about that issue since she was still persuadable.

Councilor Waker, attending from the Council, said he understood the matter and had given it some consideration. As he saw the issue the main question was whether we were going to franchise or contract for the operation. He felt if we were going to contract for the operation the ownership issue goes away. The group probably would not want to own the facility if they did not have a perpetual operating right to stay with it. He said he did not intend to support the franchise route because he had not been pursuaded there was any reason to franchise this type of operation or that the free enterprise system could best be served by this type of franchising, but rather incentive for having lower costs of operation is to periodically bid out the operation and not get into a mode of examining the books and saying --you spent that money so we'll give you a raise. He intended to support the contract and public bidding process of periodic renewal when it comes up for vote.

Councilor Etlinger said he took the opposite direction and felt they needed to air these issues at Council since it was a key component of solid waste management. He was concerned with some of the single purpose efforts at Metro--not just in solid waste--Johnson Creek, the garbage burner, we need to be aware of what comprehensive systems planning really means and should be trying to get the elements of the plan in place, and in agreement. He felt we could have the best transfer station under either option but he leaned toward the franchise. He felt the expertise of the private sector far exceeded Metro's ability to operate those kinds of facilities.

Councilor Bonner stated he felt we ought to decide. He didn't think we should elevate it to a discussion about a policy decision as to whether it should be public or private parties. The issue is do we have a facility with with a franchise and private operator or do we have a relatively short-term fixed contract with a private operator. He said they owed it to themselves, the people at the meeting, and to the public, to decide where we go from here. We have a clear decision between a fixed-term contract or a franchise and they should make the decision.

Chairman Hansen said he agreed with Councilor that they should make a decision. What would get them functioning the quickest? He couldn't get an honest feeling of where dollars could be saved by going the way of franchising. He felt going the contract route was paying on a dollar value for the work being done. He said he would feel uncomfortable being locked into a long-term commitment.

(as on page 8)

Motion to adopt the Resolution presented by Metro Staff was adopted.

Vote: Ayes Kirkpatrick, Hansen, Bonner
Nay: Oleson, Deines
Motion Carried.

Adjourned: 10:25 p.m.
Written by Bonnie Langford

STAFF REPORT

Agenda Item No. 1

Meeting Date Jan. 17, 1984

INFORMATIONAL PRESENTATION TO ADVISE THE REGIONAL SERVICES COMMITTEE OF CURRENT STATUS OF METHANE RECOVERY PROJECT

Date: January 10, 1984 Presented by: Buff Winn

FACTUAL BACKGROUND AND ANALYSIS

A three-phase feasibility study, to investigate the economic/engineering viability of commercial landfill gas recovery at the St. Johns Landfill, was completed in July, 1982.

The results of the feasibility study indicate that landfill gas production and the energy market place, definitely provide the basis for economically viable alternatives for commercial landfill gas recovery. The study further states that adequate recoverable gas for a project to go on stream, will coincide with the completed filling of Sub-areas 1, 2 and 3.

In keeping with these recommendations, the Metro staff has completed the attached report which quantitatively compares various landfill gas marketing/procurement options.

The findings of this report are the result of work based on numerous conversations with potential medium-BTU customers, Northwest Natural Gas Company, and the City of Portland.

In order that Metro pursue the optimum marketing/procurement option available, it is staff's intent to obtain consulting services from a firm experienced in commercial landfill gas recovery. Consulting services will be directed towards technical and financial advice, risk assessment and assistance in energy contract negotiations.

Consultant recommendations will be used to implement the design and construction phases of the project.

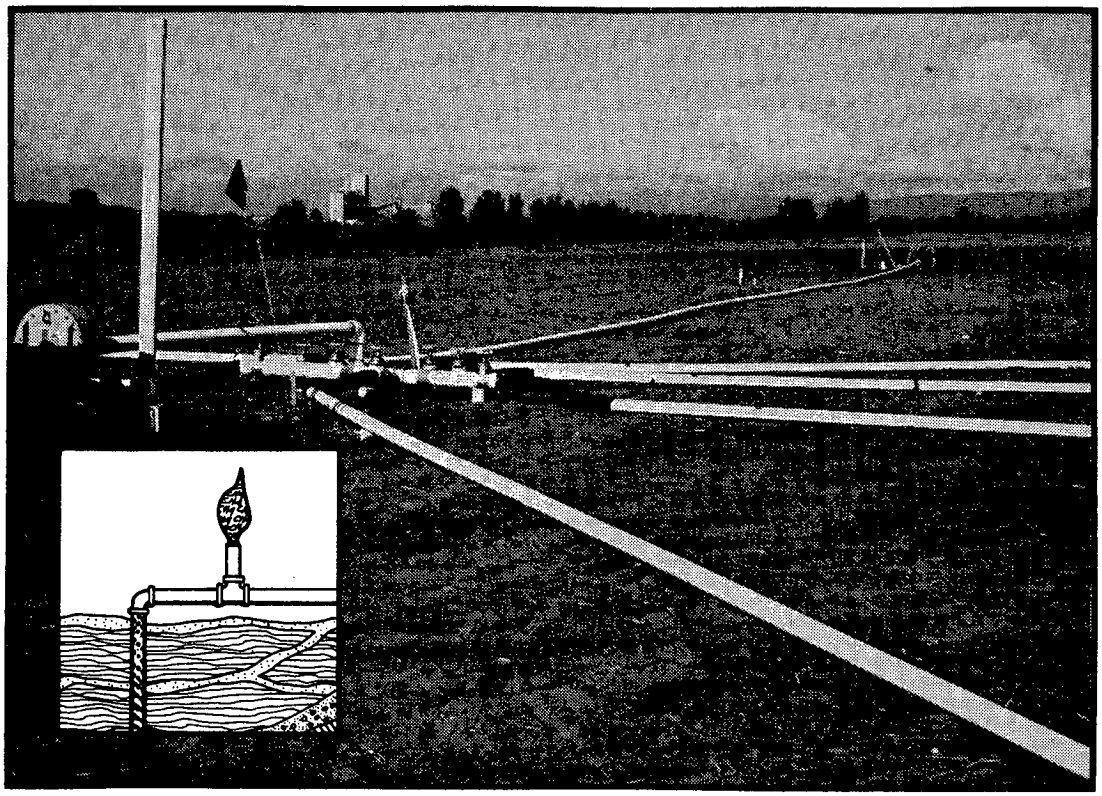
bl

Financial Analysis
& Procurement Options

METHANE RECOVERY

at the St. Johns Landfill

December 1983



METROPOLITAN SERVICE DISTRICT
Providing Zoo, Transportation, Solid Waste and other Regional Services

METRO

FINANCIAL ANALYSIS & PROCUREMENT OPTIONS

FOR

METHANE RECOVERY AT THE ST. JOHNS LANDFILL

Prepared by

METROPOLITAN SERVICE DISTRICT

SOLID WASTE DEPARTMENT

Project Manager: Buff Winn

December 1983

ACKNOWLEDGEMENTS

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FINANCIAL ANALYSIS AND PROCUREMENT OPTIONS FOR METHANE RECOVERY AT THE ST. JOHNS LANDFILL

This analysis is presented as the second phase in a five-phase program, whose goal is the recovery and marketing of methane gas produced at the St. Johns Landfill. The initial phase included the completion of an engineering/economic feasibility report, phase three being perceived as a negotiated energy contract and phases four and five being the project design and construction respectively.

The intent of this analysis is to establish and define a preferred course in terms of marketing and procurement options available to Metro.

INTRODUCTION

The production of methane gas in landfills is the result of the anaerobic digestion of organic refuse such as food wastes, garden waste, wood and paper products.

In recent years there has been increasing interest in the recovery of landfill produced methane gas. The reason for this interest is the potential for landfill gas to be utilized as a cost effective alternate to natural gas and fossil fuels.

The opportunity to develop this energy resource led Metro to contract with Gas Recovery Systems to conduct a feasibility study. This study was to determine the economic viability of commercial landfill gas recovery at the St. Johns Landfill.

The final feasibility report is in the form of three separate phases. The initial phase was of a general scope, it included short-term and long-term production tests, market research and a limited financial analysis. The scope of the report was expanded to include the testing of horizontal wells and further expanded to include a more finite market evaluation and economic analysis.

The existing landfill is divided into three separate subareas for reference purposes. The existing landfill is nearing capacity with filling operations scheduled to begin in a 55-acre expansion area (subareas 4 and 5) in late summer or fall of 1984.

The conclusions of the feasibility report show the project to be economically viable. Significant recoverable gas production is estimated to coincide with the completed filling of subareas 1, 2 and 3 of the existing landfill.

Subarea 1 is 100 percent complete, subarea 2 is approximately 90 percent complete and subarea 3 is approximately 30 percent complete. All three subareas are scheduled for completion by fall of 1984.

MARKETING OPTIONS AND IMPLEMENTATION STRATEGIES

The feasibility report identified numerous potential uses for the recovered landfill gas. Of these, three categories stand out as the most viable options. The first is the direct sale of medium-Btu (heating value) gas to industrial customers. Second is utilization of medium-Btu gas as a source of fuel for electrical generation. Third is conversion of the raw gas to pipeline quality gas for injection into nearby utility company pipelines.

Potential revenue and project costs vary for each of the three gas utilization options. The economic analysis is further complicated by the three implementation strategies available by which Metro could develop the landfill gas. The first of these is a facility for which Metro contracts with a qualified firm to design, construct and which Metro operates or contracts with a private firm for operation. The second implementation strategy involves a partnership arrangement between Metro and either a developer or end user. This alternative would allow the developer/user to take advantage of energy and capital investment tax credits. The third strategy is the lease of the recovery rights to a gas developer who would finance the project, develop its own markets and pay Metro and the City of Portland a royalty based on a percentage of gross revenue.

The first implementation option could be modified to include operation of the process facility by City of Portland personnel. The City currently operates a number of pump stations, as well as a large sewage treatment plant, in the St. Johns vicinity and the possibility of utilizing their operations and maintenance personnel is a logical option.

Landfill gas is composed of a variety of elements depending in part on composition of refuse, moisture content, environmental conditions and the duration refuse has been in place. A typical sample of landfill gas produced at the St. Johns site might include the following substances:

Methane Gas	Carbon Dioxide	Nitrogen Gas	Oxygen	Water Vapor	Other
CH_4	CO_2	N_2	O_2	H_2O	Trace Materials
52%	40%	.50%	.50%	5.0%	2.0%

The level of processing required for each of the three utilization options significantly impacts both the capital cost and risk associated with each use mode.

Processing of the landfill gas to create a medium-Btu fuel is the least costly and simply requires that the gas be filtered, dehydrated and compressed prior to transmission for use as fuel in an industrial boiler or burner.

In order to generate electricity the landfill gas must be processed to a medium-Btu fuel and then used to power a combustion engine generator.

The conversion of the landfill gas to pipeline quality is the most costly and requires the highest level of processing. In order to upgrade the landfill gas to utility standards, the removal of carbon-dioxide as well as other detrimental substances vs. required, to create a gas that is approximately 95 percent methane. This level of process technology greatly surpasses that required for a medium-Btu application.

PROJECT RISKS

There are a number of inherent risks associated with any methane recovery project regardless of the implementation strategy selected. In the case of the St. Johns Landfill, there is some additional risk due to the shallowness of the landfill and the high water table which may inhibit methane recovery. The risks involved may be categorized according to associated system components as shown in Table 1.

While none of the these risks should be considered insignificant, the majority can be minimized through good management and engineering practices.

The two factors that are of greatest importance to the economic feasibility of the project are:

1. The amount and duration of landfill gas produced.
2. The ability to effectively and efficiently collect the gas.

The feasibility study presents two mathematical models which predict the quantity and duration of methane gas which will be produced at the landfill. These two models are based on tonnage versus year of placement, refuse composition, moisture content and other factors. Both models are based on a conservative production ratio of 1.0 standard cubic feet (SCF) of methane to 1.0 pound of refuse. The two models depict different scenarios of quantity and duration of gas production.

Recent discussion with consultants in the field of landfill gas recovery indicates that Metro can expect production at St. Johns to follow the production identified in model one, rather than model two, and at a production ratio that may be as high as 1.80 SCF of methane to 1.0 pound of refuse.

The graphs in Figure 1 (page 6) are derived from the mathematical models presented in the feasibility report. They represent the delivered energy available to a medium-Btu customer. Both graphs assume a 70 percent recovery efficiency from the landfill and allow for a 10 percent loss in processing and distributing the gas. Therefore, 1,000 cubic feet of landfill gas (450 Btu/SCF) produced will result in 630 cubic feet of gas delivered to a medium-Btu customer.

TABLE I

RISK ASSESSMENT

Area of Concern	Risk Factor	Mitigation
Collection System	Air Contamination (Too Much Oxygen)	• Proper Maintenance of Final Cover
	Water Infiltration	• Horizontal Wells with Drainage System Incorporated
	Damage from Filling Operations	• Proper Pipe Embedment • Marking of Well and Header Location • Use of Flexible Pipe and Couplings
Process System	Inadequate Sizing of Equipment	• Careful Engineering • Use of Modular Design Allowing for Flexibility
	Insufficient Level of Gas Refinement	• Careful Engineering Adequate Testing • Marketing
Production	Temporary Interruption of Service	• Standby Natural Gas Service, • Backup Fuel Oil Capacity
	Over-estimation of Gas Volume or Production Life	• Adequate Field Testing

The top graph corresponds to a production ratio of 1.0 SCF of gas per pound of refuse. The lower graph corresponds to a production ratio of 1.60 SCF of gas per pound of refuse. The production ratio of 1.60 rather than 1.80 was used in order to provide a conservative estimate of higher methane yield.

The collection system is the other important risk factor in the recovery of the landfill gas. As previously mentioned, the high water table and high refuse moisture content at the St. Johns site may create difficulty in collecting the landfill gas. Some of the vertical test wells installed during the feasibility study experienced limited or total loss of production due to water infiltration.

Metro is considering the use of horizontal trench wells in place of, or in addition to, conventional vertical collection wells. Trench wells have proven to be a more effective and more economical means of collecting landfill gas at several recovery projects including the Puente Hills Landfill in Los Angeles and the Rossman's Landfill in Oregon City. Rossman's has water table conditions similar to or worse than those at St. Johns and a recent test of horizontal trench wells (by CH_2M HILL) has indicated them to be quite effective with no problems due to water infiltration.

A preliminary collection system is identified in the feasibility study. This system allows for 145 vertical gas wells and varying lengths and sizes of header pipes to carry the collected gas to a process station located at the south end of the site.

Estimated cost for the initial collection system (145 wells) is $430,000. Cost for a 45-well collection system in the expansion area is estimated at $300,000. It is anticipated that a horizontal well system will consist of a similar number of wells at the same or a lesser cost.

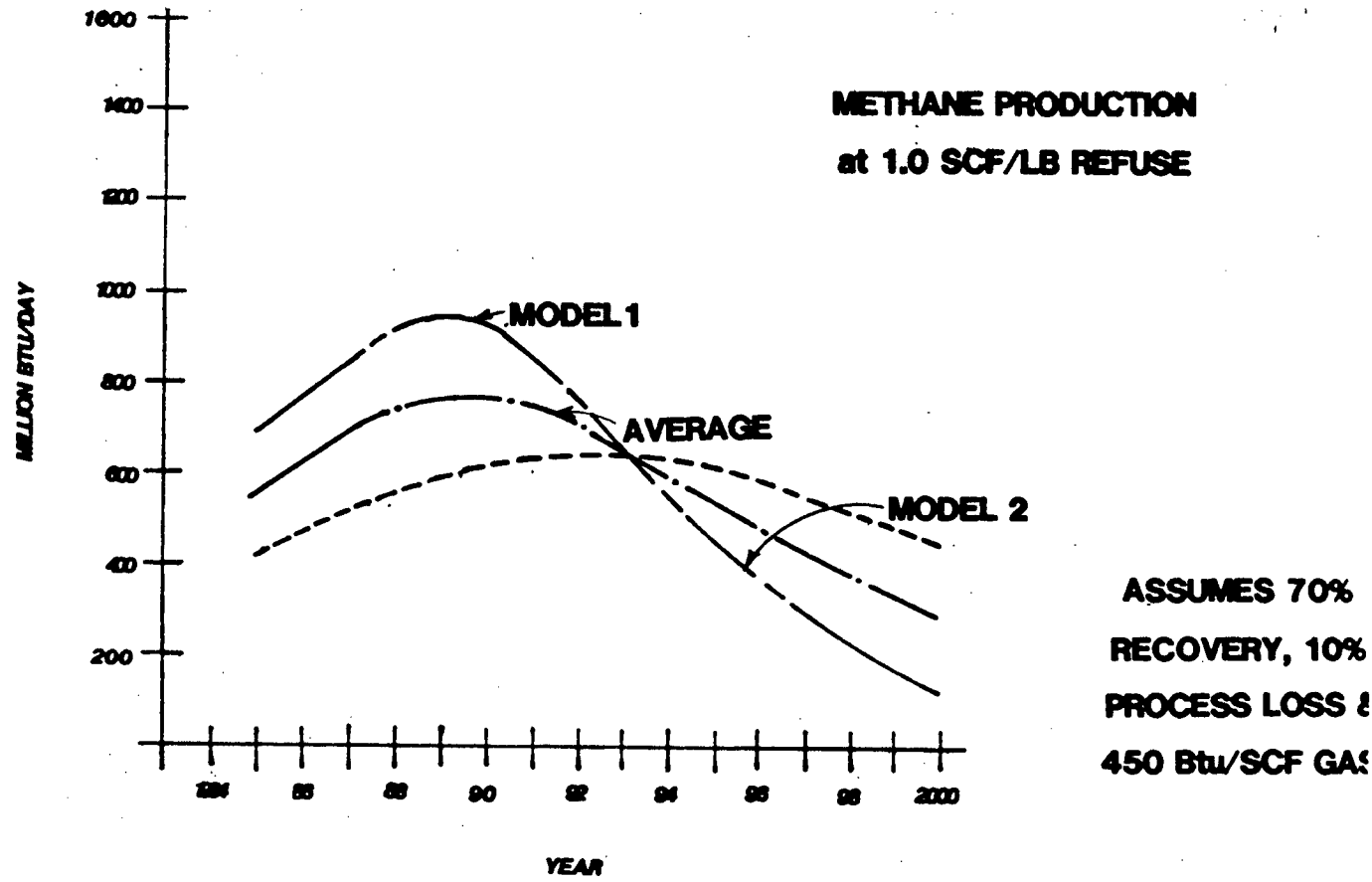
IMPACT ON SITE AND OPERATIONS

It should be noted that the construction of a methane recovery project will have some impact on current and future site operations.

The two major elements of the project that affect the site are the collection system (wells and headers) and the process plant.

The proposed site for the process station housing is adjacent to the current access road on the north side of the "incinerator road bridge." The process station will consist of piping, mechanical equipment, electrical equipment and instrumentation housed in a metal building surrounded by a chain-link fence. The total process station should encompass less than one acre. This portion of the project will have minimal impact on the site or filling operations.

The installation of the collection system will have the greatest impact at the site. Installation of wells and header pipes will have to be on a phased basis to coincide with the filling operations



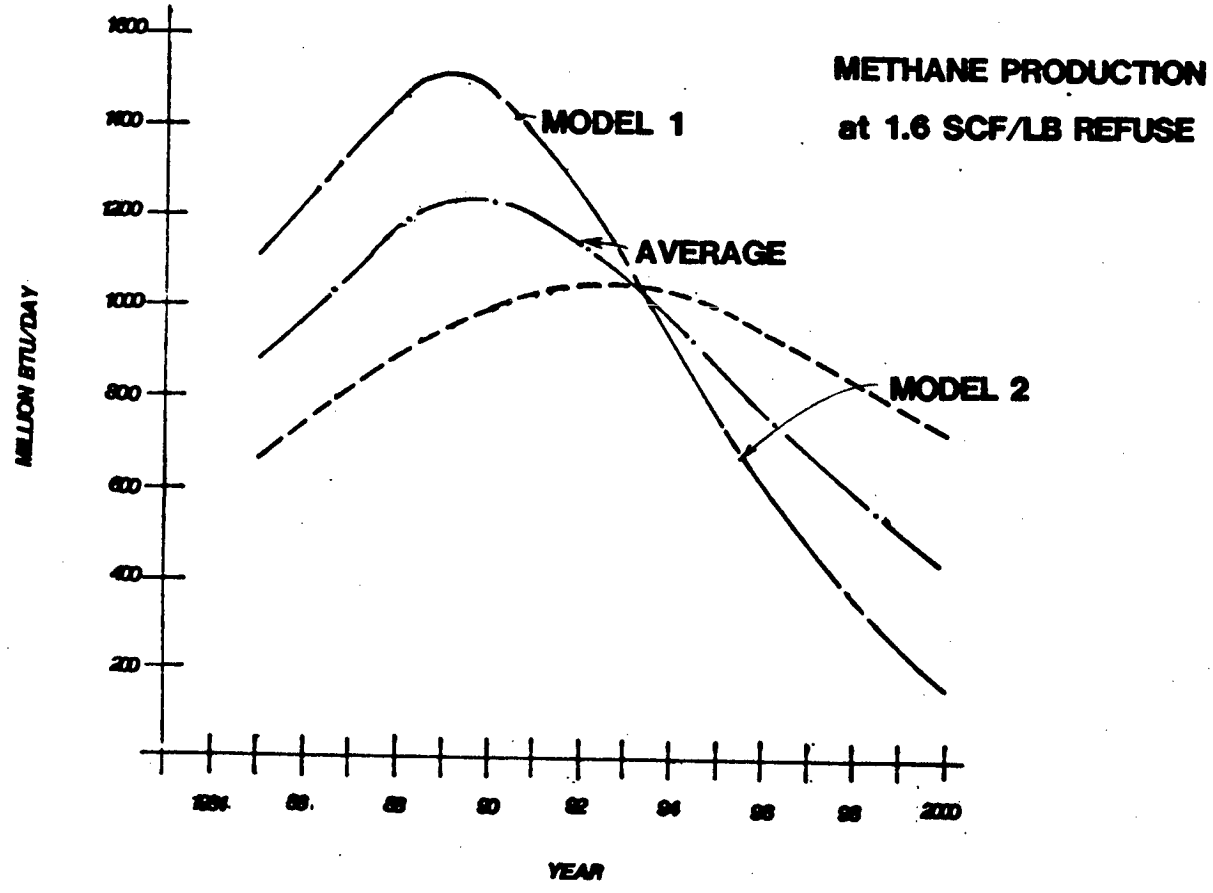


FIGURE 1 BTU's DELIVERED vs. TIME

in each subarea. Header pipes and horizontal trench wells will be buried, should vertical wells be utilized in some areas, only the well head will be visible.

A possible cost savings could be achieved by installation of horizontal wells, and in some instances header pipes, while active filling operations are taking place. This would eliminate the need to trench, install and backfill once final cover is in place.

In total, the methane recovery project should have little significant impact on operations or the site after final closure.

PERMITS

There are relatively few permits and/or plans review required for the gas recovery project. Most permits are related to the construction of the gas transmission pipeline in an established right-of-way. A list which describes briefly the agencies involved in the permit process is included as Appendix 1 to this report (page 17).

FINANCIAL ANALYSIS

The financial analysis of the gas recovery project can be broken down into three main steps. The initial step is a forecast of potential gross revenue that can be expected from each of the three landfill gas utilization options. The second step is an estimate of capital and operating costs associated with each of the three use options. The final step is a comparison of potential net revenue from the use options with each of the risk/gain factor that is associated with the three implementation strategies.

The sale of the processed gas as a medium-Btu fuel is the first of three marketing options. Primary prospects in the St. Johns area include:

1. Palmco, Inc.
2. Columbia Steel Castings Co., Inc.
3. Gilmore Steel Corp.
4. Ash Grove Cement Co.

Palmco and Columbia Steel Castings are the most attractive prospects of this group.

Their combined energy requirement approximates the forecast gas production at the St. Johns site. In addition, each company operates at a fairly constant level for the majority of the year. Both companies are currently paying a relatively high rate per Btu and have shown an interest in utilizing landfill gas if a stable and economic supply can be provided. Estimated gross annual revenue from these two customers could range as high as $1.25 million.

The second utilization option involves the use of landfill gas for on-site electrical generation. This does not appear economically

viable because the current low cost and abundance of hydro-electric power in the region has greatly reduced the unit costs that northwest utilities pay. Current PGE avoided costs are in the range of $0.03 to $0.04/kwh which is comparable to the estimated cost to generate electricity from recovered landfill gas.

The third use option involves the upgrading of the raw landfill gas to pipeline quality for sale and injection into existing gas mains. Upgrading the gas requires additional processing beyond the basic dehydration and compression required for medium-Btu use.

Carbon dioxide is generated in the landfill in approximately the same percentage as methane (45 to 55 percent); therefore, one of the major efforts in upgrading the landfill gas is to separate the carbon dioxide from the methane. There are a number of process techniques currently available to accomplish this. Although these techniques are quite effective they are also quite costly and the economics of this approach need to be looked at closely.

PURPOSE AND SCOPE OF THE FINANCIAL ANALYSIS

The goal of the analysis was to examine each of several investment opportunities for Metro relating to the collection and sale of landfill gas, to describe each alternative in terms which allowed comparability on a common scale, and to provide results which could be used to rate the alternatives on an economic basis. Alternatives considered included Metro acting as sole investor and proprietor of the enterprise under several potential supply conditions, with different customers. An estimate was also made of the revenue which would accrue to Metro from a 12-1/2 percent royalty paid by a private contractor in the proprietor role.[1] Public-private cooperative ventures were not included in this analysis because of the large range of possible combinations, but some tools will be developed later to evaluate such combinations as might seem likely.

A present worth financial analysis was chosen because it acknowledged the time value of money and allowed for the various options to be compared on a common basis.

METHOD

For each combination of supply volume and customer (30 combinations in all), a revenue stream was developed for the 15-year project life. Capital investments and operating expenses were then derived for each customer (including the most likely combination of customers).

The revenue stream was calculated by using the lesser of supply or demand volume for each year, with demand modified by the number of

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[1]Based on standard royalty arrangement offered by landfill gas developers and Northwest Natural Gas.

operating days of each customer. In this manner the lesser of customer demand or gas production became the limiting factor.

In some instances some customers would have their entire demand for energy supplied by landfill gas during some years. During this condition, the customer would incur some costs to their alternative supplier (Northwest Natural Gas) in the form of standby rates. While the payment of these rates would effectively reduce somewhat the amount customers would be willing to pay for the landfill gas, initial calculations indicated an effect on the revenue stream of barely over 1 percent at worst. Effects of standby rates were, therefore, omitted from the analysis on the grounds that they were not material.

A range in rates per unit of energy that each customer would be willing to pay was assumed to be 80 percent (high), and 55 percent (low), of the rate charged by Northwest Natural Gas Company. These rates were then increased over the project life by a factor combining the Oregon Department of Energy forecast[2] projection for gas prices with an 8 percent inflation rate.

Capital costs for each alternative include process building and equipment, transmission lines, user modifications, and the site collection system. Operating expenses were inflated over the life of the project at a rate of 6 percent for the first year and 8 percent thereafter.

Another alternative was developed, wherein the landfill gas would be upgraded and sold to the local gas utility. A starting rate of $3.10 per unit of energy was assumed, which was then increased in the same way as the other revenue streams. Capital and operating expenses were treated in the same way as with other alternatives, except that there was a difference in collection system costs, which was included.

For each alternative, all cash flow streams were brought back to present value assuming an 11 percent rate. That rate is analogous to the return which could be derived from an alternative investment which contained essentially no risk (e.g., high yield bank accounts). There was, therefore, no element of risk assigned to the analysis; risk must certainly be a factor in the final decision, but it was judged too nebulous to be quantified here.

RESULTS

The results of the financial analysis are presented in the following tabular summaries. A separate table defining parameters and assumptions used in developing the present worth analysis is also included.

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[2]The ODOE 20-year energy forecast for natural gas rates are included as Appendix 2 (page 18).

The present worth value of gross and net revenue, for both the high (80 percent) and low (55 percent) discount rate, are stated in Table II and Table III. These values correspond to the average landfill gas production curves illustrated in Figure 1. The net present worth column and the present worth royalty column are the most important of the values presented.

The most significant conclusion that can be drawn from the data is that most of the alternatives appear viable at the 11 percent level of return and a discount rate equal to 80 percent of utility rate. It can further be said that the Palmco with surplus sold combination would be the "best" investment in terms of net present value. That conclusion must be considered in context with several other variables (such as available market, risk, total capital involvement and the "public interest").

It is also evident that a developer scenario would become economically attractive in a situation where a negotiated discount rate equal to 55 percent of the utility rate is the best that can be obtained from potential industrial customers.

POTENTIAL ANNUAL REVENUE

Although the present worth analysis included provides a comparison of various business options on a common basis, it does not provide interested parties with an idea of estimated costs and revenue on an annual basis. In an effort to do this the following example is provided for a medium-Btu application:

ANNUAL GROSS REVENUE	
650 million Btu/day x 80% x $5.50/million Btu x 335 days/yr	= $958,100
ANNUAL COSTS	
Operating and Maintenance	= $250,000
Cost of Financing (15 yrs, 12%, Capital Cost = $2,330,300)	= $342,100
ANNUAL NET REVENUE	$366,000

The above example is representative of a situation in which Palmco's energy demand is met, with landfill gas produced at the St. Johns site, and sold at a discounted rate equal to 80 percent of the current utility rate. The 1980 agreement between the City of Portland and Metro specifies that the net revenue generated by the methane recovery project is to be divided on a equal basis by the two concerns.

PROJECT FINANCING

A number of possibilities exist for obtaining the financing required to construct a methane recovery system at the St. Johns Landfill.

TABLE II

SUMMARY OF FINANCIAL ANALYSIS
(Discounted at 80 Percent of Utility Rate)

	Prospect	Daily Energy Requirement x 10^6 Btu	Operational Days Per Year	Current Energy Rate	Present Worth Gross Revenue Low (Ave.)***	Present Worth Gross Revenue Hi (Ave.)***	Present Worth Capital Costs	Present Worth Oper. & Maint. Costs	METRO Net Present Worth Low (Ave.) Prod.	METRO Net Present Worth Hi (Ave.) Prod.	ROYALTY Present Worth Royalty Low (Ave.) Prod.	ROYALTY Present Worth Royalty Hi (Ave.) Prod.
MEDIUM BTU	Palmco +* Surplus Sold	1,200	335	$5.50 per million Btu	$12,608,300	$20,168,600	$2,780,300	$3,476,300	$6,352,000	$13,912,300	$1,576,040	$2,521,000
MEDIUM BTU	Palmco	650	335	$5.50 per million Btu	$12,200,000	$13,881,500	$2,330,300	$3,476,300	$6,393,400	$8,074,900	$1,525,000	$1,735,190
MEDIUM BTU	Columbia Stl. Castings	550	240	$5.50 per million Btu	$7,706,300	$8,279,900	$2,407,300	$3,476,300	$1,822,700	$2,396,300	$963,288	$1,034,988
MEDIUM BTU	Ash Grove Cement	1,600+	335	$3.00 per million Btu	$6,876,700	$10,928,500	$2,400,000	$3,476,300	$1,000,400	$5,052,200	$859,600	$1,366,065
MEDIUM BTU	Gilmore Steel	1,600+	137	$5.50 per million Btu	$5,170,000	$8,302,700	$2,400,000	$3,476,300	$(-706,300)	$2,426,400	$646,265	$1,037,840
HIGH BTU	NNG Co.** (Monsanto Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$1,712,300	$2,706,200	$3,425,100	$8,131,500	$980,450	$1,568,750
HIGH BTU	NNG Co. (Conventional Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$3,160,300	$6,666,900	$(-1,983,600)	$2,722,800	$980,450	$1,568,750

*Represents a "best case" situation which assumes all gas recovered is sold according to discounted (80 percent) Northwest Natural Gas Company firm price schedule rates. Allows for $450,000 additional capital cost due to potential user modifications and installation of transmission pipes.

**The Monsanto process utilizes a gas separator prism applied to a landfill gas situation. Field tests with this type of equipment have not been extensive enough to recommend their use at this time.

***Gross revenue shown is calculated using landfill gas production values which correspond to the average curves, for both low (1.0 SCF/LB refuse) and high (1.6 SCF/LB refuse) production ratios, as shown on Figure 1.

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12/20/83

TABLE III

SUMMARY OF FINANCIAL ANALYSIS
(Discounted at 55 Percent of Utility Rate)

	Prospect	Daily Energy Requirement x 10^6 Btu	Operational Days Per Year	Current Energy Rate	Present Worth Gross Revenue Low (Ave.)***	Present Worth Gross Revenue Hi (Ave.)***	Present Worth Capital Costs	Present Worth Oper. & Maint. Costs	METRO Net Present Worth Low (Ave.) Prod.	METRO Net Present Worth Hi (Ave.) Prod.	ROYALTY Present Worth Royalty Low (Ave.) Prod.	ROYALTY Present Worth Royalty Hi (Ave.) Prod.
MEDIUM BTU	Palmco +* Surplus Sold	1,200	335	$5.50 per million Btu	$8,668,200	$13,865,900	$2,780,300	$3,476,300	$2,411,600	$7,609,300	$1,083,500	$1,733,200
	Palmco	650	335	$5.50 per million Btu	$8,387,500	$9,543,500	$2,330,300	$3,476,300	$2,580,900	$2,268,300	$1,048,000	$1,192,900
	Columbia Stl. Castings	550	240	$5.50 per million Btu	$5,298,000	$5,692,400	$2,407,300	$3,476,300	$(-585,600)	$(-191,200)	$662,200	$711,550
	Ash Grove Cement	1,600+	335	$3.00 per million Btu	$4,727,700	$7,513,300	$2,400,000	$3,476,300	$(-1,148,600)	$(-824,100)	$591,000	$939,100
	Gilmore Steel	1,600+	137	$5.50 per million Btu	$3,554,400	$5,708,100	$2,400,000	$3,476,300	$(-2,321,900)	$(-168,200)	$444,300	$713,500
HIGH BTU	NNG Co.** (Monsanto Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$1,712,300	$2,706,200	$3,425,100	$8,131,500	$980,450	$1,568,750
	NNG Co. (Conventional Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$3,160,300	$6,666,900	$(-1,983,600)	$2,722,800	$980,450	$1,568,750

*Represents a "best case" situation which assumes all gas recovered is sold according to discounted (55 percent) Northwest Natural Gas Company firm price schedule rates. Allows for $450,000 additional capital cost due to potential user modifications and installation of transmission pipes.

**The Monsanto process utilizes a gas separator prism applied to a landfill gas situation. Field tests with this type of equipment have not been extensive enough to recommend their use at this time.

***Gross revenue shown is calculated using landfill gas production values which correspond to the average curves, for both low (1.0 SCF/LB refuse) and high (1.6 SCF/LB refuse) production ratios, as shown on Figure 1.

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12/22/83

TABLE IV

PRESENT WORTH PARAMETERS AND ASSUMPTIONS

1. Methane produced at range between 1.0 and 1.6 SCF per pound refuse. (Conservative estimate, actual production may range as high as 1.8.)

2. Rate of production corresponds to model 1, model 2 and average as indicated on curves in Figure 1.

3. Landfill gas is 50 percent methane, 450 Btu/SCF. (Conservative estimate, actual testing at St. Johns indicates average methane content of close to 55 percent.)

4. Recovering efficiency is 70 percent of landfill gas produced.

5. High-Btu process efficiency is 70 percent.

6. Medium-Btu process efficiency is 90 percent. (This assumes gas compressor is powered by landfill gas.)

7. Present worth rate of return (discount rate) equals 11 percent.

8. Inflation equals 8 percent after first year, 6 percent first year.

9. Costs do not include cost of money to finance.

10. Gas rates based on the Oregon Department of Energy (ODOE) 1982, 20-Year Forecast.

11. Costs do not include repayment of DOE grant of $94,302 at 5 percent interest compounded annually.

0039C/364

The source and extent of equity participation of any one concern is dependent on the method with which the project is actually procured.

Under a developer procurement strategy the developer assumes sole financial responsibility for designing, constructing and operating the facility. In exchange for assuming this liability, the developer earns the largest share (87.5 percent for example) of the gross revenue generated from the sale of the gas. Alternately, Metro would assume no financial liability, but would receive a modest share (12.5 percent for example) of the gross revenue generated from gas sales.

A partnership procurement strategy, with either a developer or private energy customer, would allow for equity participation by both parties. This type of agreement would allow for Metro's partner to take advantage of energy and investment tax credits and result in a more even distribution of economic gains.

Should Metro opt to develop the project itself, using a conventional A & E approach, it would of course be solely responsible for the financial integrity of the project. This option offers the greatest potential for economic gains, however, it also carries a proportional element of risk.

Metro financing would most likely come from either DEQ pollution control bonds or industrial revenue bonds issued under its own authority.

PROCUREMENT STRATEGY

The financial analysis indicates the economic advantages of selling the landfill gas as a medium-Btu fuel rather than upgrading to pipeline quality. This option is not only economically attractive, but requires a relatively simple process technology that offers considerably less risk than high-Btu processing.

Several potential customers, including Northwest Natural Gas Co., have indicated a willingness to assume part or all of the financial responsibility for the project. In this manner they could take advantage of energy and investment tax credits as well as obtain an energy source less costly than natural gas. The evaluation of specific proposals will be undertaken in the energy contract negotiations phase of the project.

As regards the current procurement plan, Metro intends to proceed with the following steps in order that the project can proceed in a logical and timely manner:

1. Issue a request for proposal (RFP) for professional services from firms highly experienced in the field of landfill gas recovery. Professional services will be directed towards providing support to Metro during energy contract negotiations.

This support will be in the form of analyzing risk, identifying potential pitfalls and determining specific advantages for each of Metro's marketing options. In this manner an optimum marketing scheme can be developed. Services will also include review and recommendations concerning financial aspects and design of the project.

2. Negotiate and complete a long-term energy contract which identifies quantities of gas to be provided, gas quality, rates and duration of agreement.

   This energy contract may be between Metro and a developer, Metro and a private industrial energy consumer or include some form of joint venture depending on the results of the negotiation phase of the project.

The intent of the above procurement plan is to provide maximum flexibility while proceeding with the project on a timely basis. Should Metro choose to develop the project itself the following tasks would be required:

1. Issue an RFP for design services for the gas collection, process and distribution systems. A design services contract may be negotiated with the firm identified in step 1 above, if this is deemed a preferable alternative to issuing an RFP.

2. Coordinate project design, obtain necessary permits and implement additional testing if required.

3. Bid and coordinate construction of the project and implement any modifications to customer equipment.

4. Performance test and shakedown system prior to supplying service.

A similar sequence of events would be performed by a developer with the exception that, depending on its technical capabilities, a developer may choose to design and/or construct the project utilizing its own forces.

SCHEDULE

Figure 2 graphically illustrates the steps previously outlined for a project developed by Metro. The implementation of this plan and schedule will coincide with the production of significant levels of methane in subareas 1, 2 and 3 of the landfill. It is anticipated that should a developer format be chosen, it would not significantly alter the start up date of the project.

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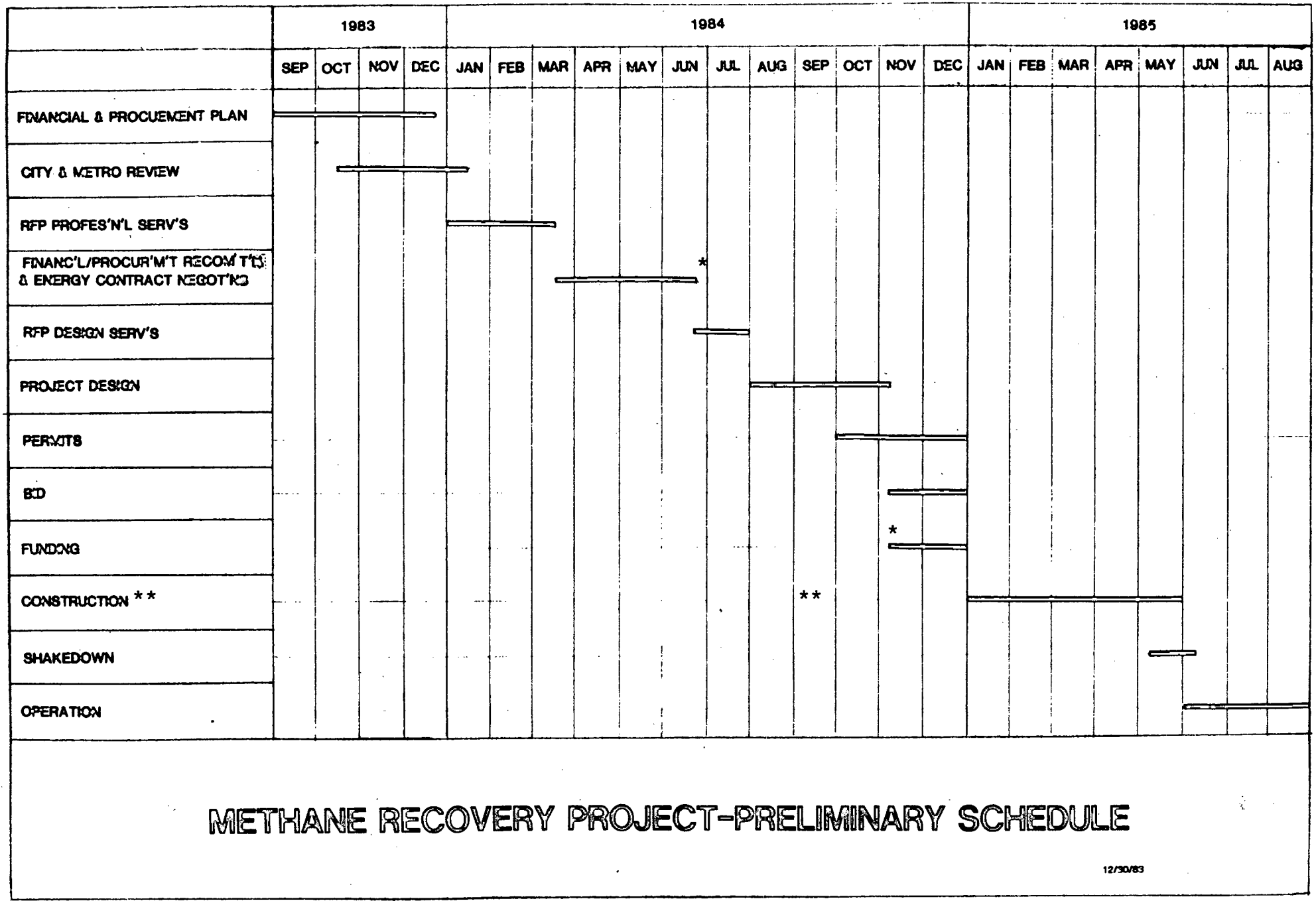


* Council or Services Committee advisory presentation

** Collection well installation may coincide with fill operations in fall months

APPENDIX 1 - REQUIRED PERMITS

City of Portland -

Land Use - The landfill is located in an M-1 zone. There is no specific reference to methane recovery in the zoning code, so an interpretation by the Bureau of Buildings is required.

Fire Marshall - No permits are required from the City Fire Marshall unless above ground storage tanks are involved. However, a copy of the project plans must be submitted for review.

Multnomah County

Land Use - City Plans and Ordinances take precedence.

Right-of-Way - One pipeline alignment alternative involves public right-of-way controlled by Multnomah County. The County reserves the north and west sides of the road for the gas company and the south and east sides for water. Telephone and electricity lines may be located on either side, two feet off the property line into the roadway. A right-of-way permit is required, no fee is involved.

State of Oregon

Department of Energy - No regulatory authority. Project may be eligible for Small Scale Energy Loan Program.

Department of Environmental Quality - If electrical generation is involved, air quality and noise permits may be required. If a case can be made that project improves air quality, Pollution Control Tax Credits may be available.

Department of Commerce - Building Codes Division - Boiler and Pressure Vessel safety - All boiler modifications, pressure valves, regulators and the gas processing plant must be approved by this agency. Design must be according to ASMA Code and installation by a licensed contractor.

Other

Port of Portland - Right-of-Way - Several potential pipeline alternatives involve public right-of-way controlled by the Port of Portland.

Bonneville Power Administration - Right-of-Way - Several pipeline alternatives involve public right-of-way controlled by BPA.

Union Pacific Railroad - Right-of-Way - One possible pipeline alignment is along the Union Pacific Railroad right-of-way.

APPENDIX 2

FORECAST NATURAL GAS PRICES
EXTRACTED FROM OREGON DEPARTMENT OF ENERGY
SEVENTH ANNUAL REPORT
January, 1983

As a result of inconclusive statistical evidence for either trend, the growth of value-added per employe-hour is forecast as the average of linear and exponential trends. For lumber, paper, and chemicals, ODOE used the Pacific Northwest Power Planning Council's productivity assumptions (September 10, 1982). For each of these industries a detailed analysis was used that reflected changing conditions. Table B-1 in the Appendix presents the forecasts of value-added for the individual SICs.

Wages are also forecasted as the average of linear and exponential trends. For wages in the lumber, paper, and chemical industries, ODOE used the growth rates of value-added that were adopted by the Northwest Power Planning Council. The rationale is that wages constitute a major component of value-added and their growth pattern in the long-term should determine that of value-added.

Personal Income

Personal income is an important variable in forecasting energy demand in the transportation sector. Total personal income is forecast as a function of total employment and productivity. As was the case last year, productivity is forecast as a linear trend. This implies that the pace of massive technological gains made in the past will be slower in the future. A linear trend proved statistically better than an exponential trend.

This results in a forecasted annual average growth of 2.9 percent for total personal income and 1.6 percent for per capita income for the period 1982 to 2002. (See Table B-1.)

Energy Prices

ODOE's commercial, manufacturing and transportation models respond explicitly to price. When the price of a fuel goes up, use goes down. Both conservation and fuel switching effects are included. The residential end-use model is not explicitly affected by prices. Prices do influence ODOE's forecasts of renewable resources, weatherization levels, and fuel choices in the residential end-use model.

Oil and Gas Prices. ODOE forecasts that in the long run, real oil and gas prices will continue to rise. The forecasted increases in oil and gas prices are less spectacular than the 1973 and 1979 jumps. Even so, over the next two decades, these increases will accumulate to a substantial amount. Another Middle East disruption could cause the price rise to occur sooner rather than later. A price jump likely would be followed by a period of relatively stable prices as market forces reasserted themselves, as has occurred since 1980.

Four key assumptions underlie ODOE's oil and gas price forecast: 1) flat crude oil costs in nominal terms for 1982 to 1983 (this implies a drop in real prices equal to the assumed 7 percent inflation rate), 2) constant real crude oil costs from 1983 to 1985, 3) an annual 3.0 percent real growth in crude oil costs after 1984, and 4) a 15 percent price premium for manufacturing natural gas over residual fuel oil.

World crude oil now is slightly overpriced given current supply and demand. Until world oil demand rises, oil prices will be flat. There is even a possibility of a drop in the listed price of OPEC oil. By 1985, it is forecasted that market equilibrium will be reestablished. This is based on the assumption of a normal recovery from the world recession, beginning in 1983. It also assumes that oil production from Iran and Iraq will be near current levels through 1985.

In equilibrium, the rate of return on oil in the ground (its real price rise) will be equal to the real return in financial markets. Otherwise, oil producers have an incentive to change the rate at which they are pumping. If oil yields a higher return than dollars, producers will curtail pumping oil from the ground. They would essentially be investing in oil as a commodity. If the return is lower, production will increase.

Over the last 40 to 50 years, the average rate of growth in real crude oil prices has ranged from 1.4 to 4.0 percent. The range depends on which years are used for the beginning and ending values. For the period 1949 to 1981, long-term Moody's "AAA" bonds had an average real yield of 2.0 percent. Common stocks listed on Standard and Poor's Composite Index had a total real yield of 6.8 percent for the same period. This difference is largely accounted for by the higher risk involved in common stocks. Real oil prices should rise at least as fast as the low risk securities--that is, 2 percent. Real oil prices likely will not rise faster than the historical high of 4.0 percent. ODOE chose 3.0 percent for the growth rate after equilibrium is reestablished in 1985 based on this range.

Because Canada supplies about half of Oregon's natural gas, the Canadian export price strongly influences the price of gas in Oregon. This effect will be even stronger as more domestic gas is deregulated. The Canadian price will serve as the upper limit market price for the most expensive domestic gas.

The apparent Canadian pricing policy is to maximize total revenue from gas exports. Canada's ability to raise prices is limited by the Northwest's ability to respond by lowering consumption. This responsiveness is measured by the elasticity of demand.

If the elasticity is greater than unity, raising the price will lower sales so much that total revenue is less. Maximum revenue is achieved by raising the price until the elasticity is equal to one.

ODOE assumes that if the industrial natural gas price is greater than the residual oil price by about 15 percent, then the elasticity for demand for Canadian gas is near one.

The ability of natural gas to sustain a premium over oil is affected by many factors. These include the mix of residential, commercial and industrial sales in the Northwest and the elasticity of each of these customer classes. These in turn are affected by several factors: environmental restrictions on oil burning; the importance of the greater supply reliability of gas over oil; the types of penalties imposed on industrial users for switching back and forth between oil and gas; and by the future importance of obtaining greater fuel efficiency by burning gas at the point of end use in industrial processes.

Currently, industrial gas prices in Oregon are about 25 percent more than residual oil. As a result, natural gas purchases from Canada are down sharply. This implies gas prices will fall relative to oil prices.

Oil retail product prices are forecast with fixed plus proportional margins over the crude oil price. After accounting for likely efficiency improvement in refinery processes, 3 cents (1982 dollars) per gallon was added to all product prices to maintain current profit margins.

Tables III-1 and III-2 present ODOE's oil and natural gas price forecasts. Residential distillate prices are forecast to maintain about a 25 percent premium over residential natural gas prices.

Table III-1

PETROLEUM PRICES
(1982 dollars per gallon)

YEAR	CRUDE ($/BBL)	GASOLINE	RESIDUAL* MANUFACTURING	DISTILLATE MANUFACTURING	DISTILLATE COMMERCIAL	DISTILLATE RESIDENTIAL
1982	31.00	1.26	.67	.85	1.02	1.07
1983	28.83	1.21	.63	.79	.96	1.01
1984	28.83	1.21	.63	.79	.96	1.01
1985	28.83	1.21	.63	.79	.96	1.01
1986	29.69	1.23	.64	.82	.98	1.03
1987	30.59	1.25	.66	.84	1.01	1.05
1990	33.42	1.33	.71	.92	1.09	1.13
1995	38.75	1.47	.81	1.07	1.23	1.28
2000	44.92	1.64	.93	1.24	1.41	1.45
2002	47.65	1.71	.98	1.32	1.48	1.53

* Residual for commercial customers is about 2 cents higher.

Table III-2

NATURAL GAS PRICES
(1982 dollars per million Btu)

YEAR	NORTHWEST PIPELINE	MANUFACTURING	COMMERCIAL	RESIDENTIAL
1982	3.78	5.43	6.61	6.42
1983	3.70	5.35	6.53	6.34
1984	3.62	5.27	6.45	6.26
1985	3.55	5.20	6.38	6.18
1986	3.53	5.18	6.36	6.17
1987	3.55	5.20	6.38	6.19
1990	3.82	5.47	6.65	6.46
1995	4.60	6.25	7.43	7.23
2000	5.50	7.15	8.33	8.13
2002	5.89	7.54	8.72	8.53

Electricity Price. Future electricity prices will depend on the cost of generation facilities under construction and the rate at which new facilities are brought on-line to meet future demand growth. ODOE has developed an electricity price model which interacts with the demand forecasting models to compute the growth rate in electricity price. Using a demand forecast from the forecasting models, a schedule for bringing plants on-line is derived. Given the schedule of plants, the price of electricity for each future year is computed and used as an input to the demand forecasting model. This process is repeated until an equilibrium price of supply and demand is achieved.

A detailed description of the model is in Appendix C. The model explicitly accounts for the provisions of the Regional Power Act including the various resource pools and associated rates. The model forecasts electricity prices for individual privately-owned utilities in the region and for publicly-owned utilities grouped by state. For the period 1978 to 2002, an annual rate of 1.7 percent increase in the real price of electricity is projected. Tables III-3 and Table III-4 show more detailed results.

Figure III-5 shows residential energy prices for heating oil and natural gas and for publicly and privately owned electric utilities from 1972 through 2000. The right hand axis gives costs in comparable units--1982 cents per equivalent end use kWh. A 65 percent efficiency factor is used for both oil and gas. Of note is the forecasted reversal. In 1972 oil was cheapest followed by gas then public electric and finally private electric. For 2000 the ranking is exactly reversed.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY — INTEROFFICE MEMO

TO: Michael J. Downs, Acting Director — DATE: January 12, 1984

FROM: Ernest A. Schmidt, Administrator
Solid Waste Division

SUBJECT: Comparison of Annual Compliance Determination Fee Schedules

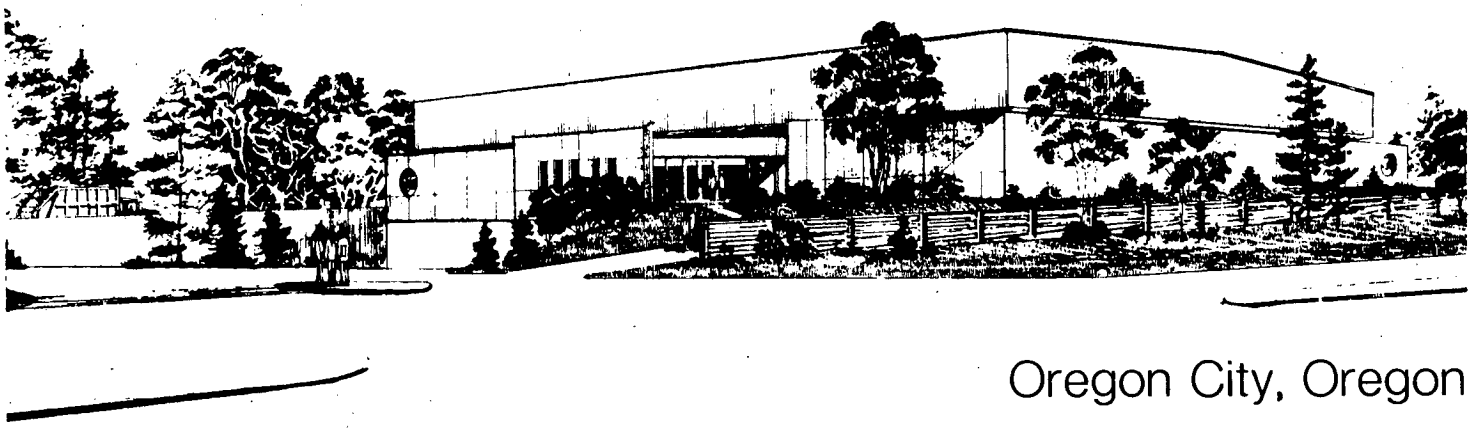
Category	No. Sites/ Permits	Director-Recommended Fee	Initial Proposed Fee	Proposed Alternative Fee
1. Domestic Waste Landfills				
A. >500,000 tons	1	$60,000	$10,000	$36,000
B. 400,000-500,000	0	48,000	10,000	28,800
C. 300,000-400,000	0	36,000	10,000	21,600
D. 200,000-300,000	0	24,000	10,000	14,400
E. 100,000-200,000	3	12,000	10,000	7,200
F. 50,000-100,000	4	6,000	7,000	3,600
G. 25,000-50,000	3	3,000	3,000	1,800
H. 10,000-25,000	15	1,200	3,000	1,000
I. 5,000-10,000	12	500	700	500
J. 1,000-5,000	19	100	150	100
K. <1,000 tons	64	50	150	50
Subtotal -	121			
2. Transfer Stations, Incinerators, etc.				
A. >10,000 tons	4	$500	$3,000	$500
B. 5,000-10,000	3	50	700	50
C. <5,000 tons	50	50	150	50
Subtotal -	57			
3. Industrial Waste Landfills				
A. >10,000 tons	8	$1,000	$3,000	$1,000
B. 5,000-10,000	1	500	700	500
C. <5,000 tons	96	100	100	100
Subtotal -	105			
4. Sludge Disposal Facility				
A. >25,000 gal/mon.	5	$100	$500	$100
B. <25,000 gal/mon.	10	50	200	50
Subtotal -	15			
TOTAL PERMITTED SITES - 298				
5. Closed Landfills				
A. >50 acres	To be determined	10% of active fee or $50 min.*	$500**	10% of active fee or $50 min.*
B. <50 acres			200**	
6. Facilities with Monitoring Wells				
A. >6 sampling pts.	6	$2,000	None	$2,000
B. <6 sampling pts.	10	1,000	None	1,000
	16			
ESTIMATED ANNUAL REVENUE =		$203,850	$203,250	$149,250 (deficit $54,600)

* Closed landfill fee applies only to landfills which close after July 1, 1984
** Closed landfill fee applies to any closed landfill

SC1362

CLACKAMAS TRANSFER & RECYCLING CENTER

Annual Report 1983

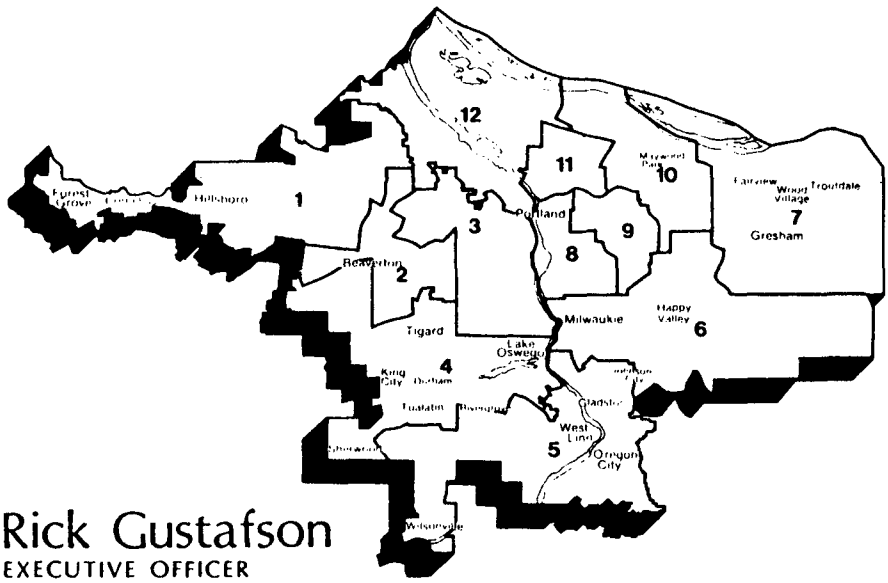


Oregon City, Oregon

METROPOLITAN SERVICE DISTRICT
Providing Zoo, Transportation, Solid Waste and other Regional Services

METRO

METROPOLITAN SERVICE DISTRICT



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EXECUTIVE OFFICER

C O U N C I L

Cindy Banzer
PRESIDING OFFICER
DISTRICT 9

Bob Oleson
VICE-PRESIDING OFFICER
DISTRICT 1

Richard Waker
DISTRICT 2

Sharron Kelley
DISTRICT 7

Charlie Williamson
DISTRICT 3

Ernie Bonner
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Corky Kirkpatrick
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DISTRICT 5

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DISTRICT 12

FIRST PRINTING

Memo

METROPOLITAN SERVICE DISTRICT 527 S.W. HALL ST., PORTLAND, OREGON 97201 503 221-1646
Providing Zoo, Transportation, Solid Waste and other Regional Services

Date: January 6, 1984

To: City of Oregon City
Oregon City Planning Commission

From: Metropolitan Service District
Solid Waste Department

Regarding: Annual Report on Clackamas Transfer and Recycling Center

Metro is pleased to submit, to the Oregon City Planning Commission, this first annual report on the operation of the Clackamas Transfer and Recycling Center. This 1983 report covers the nine-month period since operations began on April 11, 1983. Summarizing the major events of this past year, Metro has:

1. Fulfilled the requirements of the conditional use permit and subsequent permits.
2. Complied with the 800 tpd average waste flow for any 30-day period (maximum was 730 tpd in August).
3. Received no complaints about noise, and experienced no significant traffic problems.
4. Operated a full-line recycling station which received 1177 tons, as well as changing the rate schedule to increase the incentive for more recycling.
5. Passed Resolution 83-439, committing Metro to proceed with the implementation of the Washington County Transfer and Recycling Center.
6. Following a grace period, activated the penalty provision of the rate ordinance on uncovered loads brought in by either the public, or commercial haulers to minimize debris that may fall from vehicles in transit.

Metro realizes the importance in working with city officials, citizens, and the solid waste collection industry to provide a facility that serves the needs and meets the standards of the community.

This first year of operation has resulted in successfully meeting these obligations through their cooperation. We look forward to continuing this effort, and working with the City of Oregon City to assure quality service.

Sincerely,

Daniel F. Durig

Daniel F. Durig
Director of Solid Waste

Norman Wietting

Norman Wietting
Operations Manager

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CLACKAMAS TRANSFER & RECYCLING CENTER

1983 ANNUAL REPORT

BACKGROUND

The Clackamas Transfer & Recycling Center (CTRC) opened for business on April 11, 1983, at 16101 S.E. 82nd Avenue in Oregon City, Oregon. The CTRC is the first of three solid waste transfer facilities planned to be constructed within the Metropolitan Service District (Metro). The CTRC was built to replace the Rossman's Landfill which is directly across Washington Street. CTRC and Rossman's were both operating during the period from April 11, 1983, through June 10, 1983. This overlap allowed Metro to start-up operations gradually while also assuring that Rossman's Landfill reached its design capacity and was properly closed.

As part of Metro's solid waste management plan, the transfer station was planned as a transition facility serving both public and commercial haulers from the southern portion of the region. Ultimately, the transfer station was scheduled to take refuse from public customers only, and act as a back-up facility to the proposed 1,500 ton per day mass incineration facility.

OREGON CITY ACTIONS

In June 1981 the Oregon City Commission approved a conditional use permit for the CTRC. That permit contained the following conditions:

1. Transfer trucks arriving and leaving the resource recovery facility will be required to use I-205 and that portion of Washington Street adjacent to the plant site. Transfer trucks will be prohibited from other Oregon City and Gladstone Streets.

2. Site plan and design review will be done by the Planning Commission. Storage capacity and duration will be reviewed by the Planning Commission when designs are completed, at which time the specifics of operation may be reviewed.

3. A construction/traffic control plan is to be submitted to the City Engineer and the Oregon Department of Transportation (ODOT), subject to their approval.

4. Operation of transfer station is approved until December 1985. At that time, if the resource recovery plant is not in operation, the transfer station permit shall be reviewed by the Planning Commission.

5. All transfer trucks will be covered enroute and returning from the resource recovery project site.

6. Any revisions to the conditions on the part of Metro are grounds for referral of the permit to the Oregon City Planning Commission.

In designing the CTRC and the operations contract, Metro assured that all of these conditions would be met and returned to the Planning Commission for design review on November 4, 1981. The Planning Commission approved the proposed plan with the following conditions:

1. Ten (10) parking spaces are to be provided as shown on the site plan.

2. The access point onto/off of Washington Street is approved as shown on the site plan. If this access point is not approved by the ODOT, Metro must return to the Planning Commission for revision.

3. The facility will be sized for a maximum of 400 tons per day (TPD).

4. The garbage "pit" must be emptied each day as part of the transfer station's operation.

5. A daily litter clean-up of the site is required as part of the transfer station's operation.

6. The drop boxes for the recycling of paper and cardboard must be covered to prevent litter.

7. A final landscaping plan is to be submitted for staff-coordinated landscape plan review at the time of building permit application. The possibility of fewer and faster growing varieties of plantings should be considered by the landscape architect. Any final disagreement regarding the landscape plan, on the part of staff or applicant, shall be grounds for referral to the Planning Commission.

8. Final color selection to be determined by staff-coordinated design review process.

9. Proposed signing to be submitted for sign permit according to City Sign Code; design of signing to be reviewed by Sign Official.

10. A minimum five feet in height wood fence is required along the Washington Street property line as shown on the site plan. A horizontal double leaf cantilevered sliding gate (non-chain link) is approved. The gate shall be painted to match the wood fence.

11. Six foot (6') minimum chain-link fencing is required along the north and west property lines. No barbed wire is permitted.

12. The requirements for curbs and sidewalks is waived at this time. The City retains the right to require curbs and/or sidewalks if the City/State determines their necessity when the Washington Street and Oregon City By-Pass intersection is constructed. The City retains the right to require these improvements when the resource recovery facility is approved for construction.

In preparing the final design of CTRC and the operations contract Metro provided that all conditions imposed by the Planning Commission were met. As required in Condition 7, Metro submitted its final landscaping plan to the Oregon City planning staff. The following comments from the planning staff were incorporated into the final design of CTRC:

1. Actual number of trees have been reduced from the previous plan.

2. The trees shown on the plan are illustrated at totally unrealistic "spread" (full physical diameter of tree as shown):

   a. The Honey Locusts are shown on the plan with a 100-foot spread.

   b. Ponderosa Pines along Washington (planted at 7-8') will never reach 60 feet in diameter as shown.

   c. Red Maple (no name variety) is shown at 50 feet in diameter. It will take 40-50 years for a maple to reach that size.

   The problem appears to be a lack of understanding of local/regional trees on the part of the designer. Since big scale trees are most important for a project of this scale, these problems need to be resolved.

3. Kentucky Blue Grass is difficult to maintain when used alone; it should be replaced with a seed blend.

4. The "Baltic" type of Hedera Helix should be used for the ivy ground cover.

5. The chain-link fences should have ivy planted at the base; the ivy will "climb" and the fence will provide more screening.

6. The shrub "Nandina" is shown at 11-foot spread; actual spread is 3-4 feet. They should be increased along Washington or will appear sparse.

7. Similarly, the shrub "Phitzer Juniper" should be planted at 3-3.5 feet on center (rather than 5 feet on center).

8. Maintenance of portions of the grass around the scalehouse needs to be considered; the narrow areas are only two feet wide.

9. More detail needs to be shown for separation of shrubbery in the lawn area; otherwise, maintenance problems are likely.

10. Irrigation of the landscaping is required.

NOVEMBER 1982 ELECTION

In November 1982 an initiative petition was passed by the voters of Oregon City to prohibit the solid waste incinerator that was planned for the north end of the property on which CTRC is located. With that decision, the future role of CTRC changed. Instead of being a long-term public and short-term commercial facility for solid waste from the southern portion of the Metro region it would now function as a long-term facility for both public and commercial haulers.

TONNAGE LIMITATION AND TRUCK WASH FACILITY

In February 1983, Metro returned to the Planning Commission to request an elimination of the 400 ton limit in Condition No. 3 of the design review approval. The Planning Commission approved the increase with the following conditions:

1. The Planning Commission will conduct a review at its January 1984 meeting. The review is to include the general parameters of the 1985 review as recommended by staff, but focus primarily on traffic impacts as related to the 800 TPD limit.

2. In the event that serious traffic problems arise before the end of the calendar year 1983--as determined by ODOT, the City Engineer, and the Police Chief--the City shall give thirty (30) days notice to Metro of immediate review by the Planning Commission.

3. If Planning Commission review at either (1) or (2) above determines that traffic mitigation measures are needed, the tonnage may be reduced to 400 TPD until such measures are completed.

4. Metro agrees to monitor tonnage to assure a maximum 800 TPD. Additional tonnage generated from Multnomah County or Washington County is to be diverted to other disposal sites.

5. The Planning Commission recognizes that minor "start-up" problems are probably unavoidable and directs staff to monitor long-term and major impacts.

6. The Planning Commission specifically reiterates its intent that the CTRC not be the only long-term regional facility, but is an element in a regional solid waste disposal system of transfer stations and landfills. Operation of the facility in excess of 400 TPD beyond March of 1985 is contingent upon a second transfer station being sited and construction started.

In June 1983 a misunderstanding over whether the 800 TPD limit imposed by the Planning Commission in February 1983 meant 800 TPD average or an absolute limit on any one day. Upon receiving a clarification that the 800 TPD applied to any one day, Metro returned in July 1983 to ask that the limit be lifted. The Planning Commission approved the increase contingent upon the Oregon City Commission approving a surcharge under which Metro would pay Oregon City $1.00 for each ton over 800 TPD up to 1,000 TPD. The Planning Commission also approved Metro's application to build a truck wash facility, but recommended only a three-stall arrangement rather than the four requested.

Metro appealed both actions to the City Commission and in October 1983 the City Commission upheld the Planning Commission decision on the truck wash facility. The City Commission did, however, approve a change in the tonnage limit to 800 TPD average during any 30-day period. Metro and Oregon City entered into an intergovernmental agreement by which Metro will pay Oregon City for any extraordinary expenses caused by CTRC. A copy of the agreement is attached as Appendix A.

CTRC TONNAGE

Table I shows the tonnages received monthly since CTRC opened in April 1983 as well as the number of vehicles which use CTRC. August 1983 was the busiest month and the average was 730 TPD. While this does not exceed the conditions set by the City Commission, Metro is currently taking steps to reduce this amount in order to achieve the optimum financial cost on a system-wide basis.

TABLE I

CTRC TONNAGE SUMMARY

Month	Tons Received	Public Vehicles	Commercial Vehicles	Transfer Truck Trips
April	7,389	5,078	1,416	288
May	9,234	7,174	1,634	390
June	17,168	7,824	3,085	707
July	19,916	8,526	3,482	823
August	22,637	8,751	4,149	939
September	21,550	7,781	3,833	915
October	18,849	6,244	3,511	787
November	19,116	4,843	3,195	808
December	17,513			730

Table II shows a breakdown for the month of August 1983 by customer class and county of waste generation. It should be noted that Clackamas County delivers 56 percent of the waste through its commercial haulers as well as the majority of the public and miscellaneous categories. It should also be noted that only 5 percent of the waste that goes through CTRC comes from Washington County. In most cases the loads from Washington County are from locations that are more accessible to CTRC than some locations in Clackamas County. This particular use clearly reflects the efficiency of a regional system which incorporates properly sited transfer stations.

TABLE II

CTRC TONNAGE BY COUNTY AND USER CLASS
AUGUST 1983

County or Class	Tonnage	Percent of Total	Average Tons/Day
Clackamas (Commercial)	12,372	56%	409
Multnomah (Commercial)	4,416	20%	142
Washington (Commercial)	1,056	5%	34
Public	3,466	14%	112
Miscellaneous (e.g., local businesses)	1,027	5%	33
	22,637	100%	730 TPD

RECYCLING AT CTRC

In addition to the solid waste handling area, CTRC has a modern recycling area. The recycling center has seven drop boxes for source separated materials. The recycling area can be used from either inside or outside of the building. Anyone bringing only recyclable materials can use the facility free of charge. In response to customer inquiries and Metro policy, beginning January 1, 1984, Metro changed its rate ordinance to allow public users bringing in at least one-half cubic yard of acceptable recyclables to pay for the actual amount of waste delivered rather than the minimum charge of two and one-half cubic yards for pickup trucks or two cubic yards for a car. For example, if someone brings in one-half cubic yard of recyclables and one cubic yard of garbage in a pickup the charge would be $3.60 instead of $8.00. Table III shows the levels of recycling achieved at CTRC since it opened in April 1983.

TABLE III

CTRC MONTHLY RECYCLING VOLUMES

(In Tons)

1983	Corrugated	Newsprint	Tires	Ferrous	Aluminum	Copper	Glass	Stainless	Oil	Total
April	2.9	-	3.0	43.9	0.9	0.1	-	-	-	50.8
May	23.5	7.8	45.9	89.5	1.0	0.1	-	-	-	167.8
June	14.9	6.9	69.0	101.1	0.6	0.0	-	-	-	192.5
July	8.7	7.2	16.6	93.6	1.5	0.1	12.1	0.03	1.2	141.3
August	7.3	7.4	21.4	97.9	2.1	0.1	9.9	-	1.1	146.9
September	10.4	6.9	14.9	112.4	1.6	0.1	5.2	-	1.5	153.0
October	7.9	5.9	12.2	90.9	1.7	0.2	-	-	0.8	119.6
November	10.5	6.7	14.4	73.6	2.2	0.1	8.4	-	0.5	116.4
December	18.9	8.6	5.0	55.0	1.3	0.03	-	-	0.34	89.17
Total Tonnage	105.0	57.4	202.1	757.9	12.9	0.83	35.6	0.03	5.44	1177.2

ENVIRONMENTAL IMPACTS

The Planning Commission was concerned about the potential for environmental impacts caused by the operation of CTRC. Specifically, the environmental areas of concern were noise, odor, dust and litter.

One of the reasons CTRC is a completely enclosed facility is to minimize environmental impacts. Two of the three potential sources of noise are inside the building. The two sources are the refuse trucks unloading and the bulldozer operating in the receiving pit. These noises are almost completely muffled inside the building and are barely audible 50 feet from the building. The third noise source is the refuse and transfer trucks outside of the building. The transfer trucks are equiped with muffler equipment designed to meet the recently published Federal criteria for trucks. Experience has shown that these noises are barely discernable due to the existing traffic noises on Washington Street, I-205 and the log handling activities in the nearby Publishers yard.

As with noise, CTRC was designed to contain odors and dust within the building structure. The four large ventilation fans on the roof keeps air moving into the building. The dust is controlled by the mist spraying system located above the pit and also by extensive cleaning inside the building on a daily and weekly basis.

Several steps are being taken to reduce the amount of litter both onsite and offsite. The operator of the facility is required to clean all areas onsite at least daily and offsite areas weekly. Currently, Genstar cleans both areas daily. Since CTRC opened in April, Metro has been handing out fliers alerting customers that we will be charging double for uncovered loads. On January 1, 1984, Metro will begin charging the uncovered load charge. In lieu of the double charge, customers will be given the option of buying a 6' x 8' tarp for $4.00. It is our intent to have those customers use the tarp for all future loads thereby helping to keep all streets and highways cleaner.

Metro has received no complaints about CTRC regarding noise, dust, odor or litter since it opened in April 1983.

TRAFFIC IMPACTS

The Planning Commission expressed concern regarding traffic impact on Washington Street as well as onsite. Table I shows the volume of traffic using CTRC. It should be noted that approximately 60 percent of vehicles entering are public customers. The primary concerns were the entrance onto Washington Street and stacking space onsite.

To date there have been very few backups into the site from vehicles exiting the site via the intersection with Washington. Typically, this backup is comprised of only three to four vehicles. The queing space built into CTRC has been more than adequate to control incoming

traffic. CTRC has two gatehouses which are used at various times during the day. The main gatehouse is used during early morning hours, late afternoon and weekends when the traffic is light. The auxillary public station is used only during mid-day and some weekend periods when heavier traffic justifies the opening of a second inbound lane.

At the time of opening several small construction details needed to be completed. Among these items were regrading and seeding the pond, installation of the irrigation system, guardrail and curb installation, and installation of the handicapped parking signs. All of these items have been completed.

In July 1983, the Planning Commission approved the construction of a three-bay truck wash facility. Metro has completed final design of this facility and has awarded the construction contracts. The construction is scheduled to start in January 1984 and should be completed by March 1984, well in advance of the warm summer season.

PROGRESS ON ADDITIONAL TRANSFER STATIONS

Throughout the CTRC land use process the Planning Commission strongly expressed their concern that another transfer station be built in the Metro area. In February 1983 the Planning Commission imposed the following condition on the CTRC:

> The Planning Commission specifically reiterates its intent that the CTRC not be the only long-term regional facility, but is an element in a regional solid waste disposal system of transfer stations and landfills. Operation of the facility in excess of 400 TPD beyond March of 1985 is contingent upon a second transfer station being sited and construction started.

Metro has taken several steps toward achieving that condition both before and after it was a condition.

In the spring of 1982 the imminent closure of the landfills serving Washington County prompted a renewed effort to begin implementation of a West Transfer Station. The procedures to implement this facility were discussed at several meetings of Metro's Regional Services Committee.

In July 1982 the Metro Council passed Resolution No. 82-336 establishing a committee to consider the alternatives for implementing a transfer station. The committee, made up of representatives of local jurisdictions, concluded their deliberations in July 1983 by recommending that Metro proceed with the building of a transfer station, and suggested that the actual procurement approach should be decided by Metro.

The recommendation of the local tranfer station committee to support a transfer facility is primarily based upon assuring the public has a place to dispose of their waste. The Hillsboro Landfill, which is the only facility in Washington County serving the general public,

is expected to close in three years. Although commercial haulers would still have access to both St. Johns and possibly CTRC, some haulers would experience increased hauling time when the Newberg and Hillsboro Landfills close. These facts, along with the likelihood that any new landfills will require waste be delivered in transfer trailers, resulted in the committee's conclusion to proceed immediately to implement this portion of Metro's plan.

The Regional Services Committee has reviewed the recommendations of the the transfer station committee and in December 1983 both the Regional Services Committee and the Metro Council passed Resolution No. 83-439 which states that:

1. Metro declares its intent to build a transfer station and recycling center in Washington County that will provide transfer and recycling services to both the public and commercial haulers.

2. Metro solid waste staff will develop a process which provides maximum involvement from the solid waste industry and local governments regarding the location and design of the transfer station.

3. Metro solid waste staff will consult with haulers in the western portion of the District to coordinate current or future site requirements of the collection industry.

4. Metro will continue to provide the opportunity for all interested and qualified private sector parties to compete on an equitable basis for design, construction, and operation contracts through a comprehensive, public bid process while maintaining public ownership of the physical facilities.

5. Metro solid waste staff will research and provide information detailing a full-service procurement strategy to the Regional Services Committee.

WILDWOOD LANDFILL UPDATE

The Planning Commission also expressed an interest in the progress of Metro's landfill siting efforts. The following is a chronology of the progress Metro has made siting a new landfill.

In June 1981 the Metro Council selected the Wildwood site as the future regional landfill and successor to the St. Johns Landfill. In August 1981, Metro began the Land Use Permit process with Multnomah County. During the summer and fall of 1981 Metro received preliminary approval of the site from DEQ and began negotiations to acquire use of the site from the primary landowner, Publishers Paper Company. Because the legal disputes about the land use permit have not yet been decided, these negotiations have not yet resulted in a commitment by either Metro or Publishers.

The review by Multnomah County lasted 16 months and was quite extensive. During this review, Metro responded to issues raised by a County consultant by proposing an alternative design. During the summer of 1982, Metro presented evidence at public hearings before a County hearings officer. After listening to presentations by Metro, other agencies, and opponents of the landfill, the hearings officer concluded in September 1982 that a strict interpretation of the County's own rules did not allow a landfill to be located at the Wildwood site. Metro appealed this decision to the County Commissioners.

The Multnomah County Commissioners reviewed the record, listened to testimony, and authorized a landfill at Wildwood in December 1982. Opponents of the Wildwood Landfill appealed this decision to the Oregon Land Use Board of Appeals (LUBA).

In June 1983, LUBA remanded the Wildwood Landfill conditional use permit to Multnomah County. The ruling stated that the permit did not comply with several standards in the County plan and zoning ordinances. Although Metro and the County argued that the standards must be interpreted in light of the nature of the facility, LUBA ruled that the standards are expressed in absolute terms allowing no deviation or mitigation. However, LUBA suggested that the County standards are inappropriate for landfill siting and invited the County to change the standards to allow for some flexibility in the landfill siting process.

In July 1983, the Metro Council voted to appeal this ruling to the Oregon Court of Appeals. The Council also asked Multnomah County to reaffirm its decision to authorize the Wildwood Landfill by changing its relevent land use standards and re-issuing the conditional use permit.

Metro has filed an appeal with the Court of Appeals and will argue the case during 1983. Multnomah County is considering modifications to its comprehensive plan which would make it possible to authorize the landfill. The Multnomah County Planning Commission is scheduled to begin reviewing their comprehensive plan and its relationship to sanitary landfills at their January 9, 1984, meeting.

CONCLUSION

After nine months of successful operation Metro is pleased to present this first annual report to the Oregon City Planning Commission. We believe that CTRC is not only a key element in the regional solid waste system, but is an asset to the city of Oregon City.

CTRC has received considerable media attention on both the local and national level. Attached are two of the articles recently published. One article in The Oregonian on December 27, 1983, gives a local perspective of CTRC, while another in the December 1983 issue of Waste Age magazine looks at CTRC from an industry view. Both articles rate CTRC very highly.

Since opening in April 1983, CTRC has been visited by many groups and individuals. Among the organizations that have toured CTRC are the Metro area city managers, the British Columbia city and provincial engineers, the combined Oregon and Washington chapters of the Government Refuse Collection and Disposal Association and the Clackamas County Recycling Task Force. Among the individuals that have toured CTRC are government and private industry representatives from Minneapolis, Minnesota; Fairfax, Virginia; Dallas, Texas, and several cities in Oregon, California, Washington and British Columbia. Visitors have typically commented favorably about not only the CTRC facility, but also the attractiveness of the general area. Finally, communication between the staff at Oregon City and Metro has been excellent when reviewing CTRC applications or working with other related matters.

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Attachments:
1. Intergovernmental Agreement
2. Monthly Volume Reports
3. The Oregonian Article
4. Waste Age Article
5. Rate Schedule

Attachment 1

INTERGOVERNMENTAL AGREEMENT

This Intergovernmental Agreement is entered into this 5th day of October, 1983, between the METROPOLITAN SERVICE DISTRICT (METRO), and the CITY OF OREGON CITY, OREGON.

WHEREAS, Metro is a regional government with statutory responsibility for solid waste disposal in portions of Clackamas, Washington and Multnomah Counties, including Oregon City; and

WHEREAS, Metro owns and operates a solid waste transfer facility known as the Clackamas Transfer & Recycling Center (CTRC) at 16101 S. E. 82nd Street in Oregon City, Oregon; and

WHEREAS, Metro as a public agency is exempt from property taxation on the above-mentioned transfer facility; and

WHEREAS, Metro or its agents pay directly for most city services to the transfer facility, e.g., sanitary sewers, water, drainage, security, litter clean up, building permits, inspection fees, etc.; and

WHEREAS, Metro has agreed to install a traffic signal device at the intersection of the CTRC entrance and sidewalks if either become necessary in the future; and

WHEREAS, The Oregon City residents currently receive the benefits of lower waste disposal rates through direct use of the CTRC and/or through local collection rates; and

WHEREAS, Metro does not wish to cause an economic hardship on the City of Oregon City resulting from the location of the CTRC within the City's boundaries; and

WHEREAS, The facility itself has been constructed and is

being operated in a manner to protect the residents of the City of Oregon City from adverse impacts resulting from the disposal of solid waste; now, therefore,

IT IS HEREBY AGREED AS FOLLOWS:

1. Metro agrees to reimburse the City of Oregon City for any extraordinary costs incurred by the City as a direct result of the operation and location of the CTRC. Such costs are not to include costs of normal city services which are generally provided to the residents and businesses of the City; rather they are intended to include unanticipated and extraordinary expenses incurred by the City for the benefit of the facility.

2. The extraordinary costs referred to in paragraph "1" include but are not limited to the following:

a. clean up of spilled debris from garbage trucks within one-half mile of the facility;

b. fire fighting efforts at the facility requiring City forces not normally on duty;

c. civil disturbances such as labor disputes which would require extra police service patrolling in the vicinity of the CTRC;

d. extraordinary remedial action by the City to required to prevent environmental damage resulting directly from the operation of the facility;

e. attorney's fees incurred by the City in defense of any suit or action against the City directly resulting from tortious acts of Metro or its

agents at the facility. Except for attorney fee's this Agreement is not intended to provide for any respective rights of indemnity by one party against the other which rights shall be determined by general legal principles.

3. It is recognized that most or all of the situations indicated in paragraph "2" may be handled and resolved by Metro or its agents. Therefore, reimbursement as provided in paragraph "1" shall be available only in the above situations in which Metro cannot or will not handle or resolve the situation or in which Metro requests the service indicated in paragraph "2." Except in emergency situations, the City will notify Metro of a situation needing remedial action and Metro shall have a reasonable time within which to resolve such situation.

4. This Agreement shall remain in effect for an indefinite period and may be terminated by either party upon ninety (90) days written notice.

WHEREFORE this Agreement has been executed as of the date first above written.

CITY OF OREGON CITY

By: _____
MAYOR

METROPOLITAN SERVICE DISTRICT

By: _____

APRIL 1983

DATE	St. Johns VEHICLES P	St. Johns VEHICLES C	St Johns COMPACT+ LOOSE	St. Johns CITY SLUDGE	ST. Johns SPECIAL	ST. Johns TOTAL COMMERCIAL	ADD: PUBLIC TRANSFER	ADD: CASH BY WEIGHT	LESS ONE TON MIN.	TOTAL: CTSC WEIGHT
1	71	196	772.53	211.47	49.91	1113.91	30.56	13.75	3.6	
2	202	42	176.57	—	5.41	121.98	71.43	6.23	1.20	
3	72	13	18.45	—	—	12.45	35.41	6.29	—	
4	121	219	879.73	263.75	14.13	1188.81	53.08	10.54	3.5[illegible]	
5	166	205	842.14	267.19	10.86	1120.19	52.49	18.02	2.30	
6	151	206	795.67	[illegible]	33.39	1057.68	67.26	17.96	[illegible]	
7	14[illegible]	221	855.23	214.77	15.25	1,085.25	59.63	22.67	4.41	
8	151	189	702.69	195.40	23.75	918.84	47.15	22.05	5.27	
9	231	56	244.01	8.78	0	232.19	14.94	3.[illegible]	1.13	
10	155	24	43.31	28.73	—	72.94	61.68	2.18	1.09	454.51
11	[illegible]	220	897.75	114.31	16.30	1,004.36	35.1[illegible]	1.95	3.35	455.72
12	[illegible]	217	[illegible]	76.27	16.78	942.[illegible]	38.10	22.75	4.10	4[illegible]5.8[illegible]
13	115	21[illegible]	826.19	14.83	53.56	594.08	[illegible]	23.11	5.26	451.24
14	112	203	812.59	80.29	37.08	929.96	32.16	6.55	4.15	466.24
15	150	2[illegible]	[illegible]	78.47	42.26	[illegible].37	37.71	17.76	4.56	317.17
16	151	7[illegible]	196.29	6.33	—	192.62	174.45	20.[illegible]7	1.46	140.07
17	2[illegible]0	28	33.49	—	—	33.49	11.54	2.68	.95	530.42
18	1[illegible]1	335	942.47	—	34.39	97[illegible].66	50.11	23.15	4.18	455.59
19	1[illegible]3	[illegible]	576.30	—	36.01	9[illegible]2.31	4[illegible].11	22.12	6.[illegible]	[illegible]
20	13[illegible]	200	817.05	—	34.08	[illegible]1.13	21.38	33.32	5.[illegible]	450.01
21	1[illegible]8	201	542.39	—	19.96	56[illegible].35	58.62	15.55	3.18	416.83
22	[illegible]	193	749.05	0	52.87	801.88	40.49	19.00	4.97	207.52
23	11[illegible]	67	221.88	0	11.84	233.72	97.41	20.03	.34	93.69
24	5[illegible]	23	40.03	0	3.27	43.40	59.78	5.85	1.11	452.05
25	1[illegible]	217	874.25	0	18.63	892.[illegible]	54.95	18.37	4.78	391.15
26	129	198	802.52	0	10.04	813.56	49.80	16.53	3.16	356.89
27	13[illegible]	193	820.32	0	36.52	856.84	54.75	14.78	1.09	364.08
28	140	205	833.93	0	35.29	869.22	54.52	13.08	4.09	292.43
29	139	175	720.05	0	32.51	752.56	54.80	14.35	2.55	271.03
30	159	63	194.16	0	0	194.16	81.30	18.45	.49	
31										
TOTAL	4995	4748	18,376.67	1937.21	637.15	20,951.03	1706.16	470.85	90.88	7388.83

9748

Attachment 2

MAY 1983

DATE	St. Johns VEHICLES P	St. Johns VEHICLES C	St. Johns COMPACT+ LOOSE	St. Johns CITY SLUDGE	St. Johns SPECIAL	St. Johns TOTAL COMMERCIAL	ADD: PUBLIC TRANSPER	ADD: CASH BY WEIGHT	LESS ONE TON MIN.	TOTAL CTRC WEIGHT
1	161	74	51.37	0	0	51.37	143.17	6.17	.66	124.38
2	149	218	897.84	[illegible]	47.61	945.45	64.67	28.33	4.91	343.94
3	89	202	817.16	[illegible]	20.85	[illegible]	[illegible]	10.62	5.81	[illegible]
4	154	201	[illegible]	[illegible]	[illegible]	924.06	55.75	31.61	[illegible]	339.57
5	150	194	779.69	0	28.33	[illegible]	53.78	41.37	2.26	724.00
6	136	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	67	[illegible]	[illegible]	27.02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	111	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	119	[illegible]	[illegible]	[illegible]	[illegible]	873.94	[illegible]	[illegible]	[illegible]	[illegible]
12	127	[illegible]	[illegible]	[illegible]	14.44	770.17	41.78	17.52	[illegible]	372.46
13	157	[illegible]	[illegible]	[illegible]	14.61	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	240	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	107	[illegible]	[illegible]	0	52.30	930.55	[illegible]	[illegible]	[illegible]	[illegible]
17	125	211	993.07	0	14.40	907.47	58.25	32.74	2.72	949.99
18	159	213	788.21	[illegible]	44.84	[illegible]	57.62	37.33	5.31	351.22
19	[illegible]	[illegible]	[illegible]	[illegible]	3.84	815.70	50.91	27.10	2.87	[illegible]
20	170	192	721.42	[illegible]	53.50	[illegible]	81.51	23.35	5.75	391.37
21	[illegible]	[illegible]	[illegible]	[illegible]	9.76	233.74	125.01	6.94	1.32	320.95
22	[illegible]	30	43.31	[illegible]	[illegible]	43.31	112.14	3.39	.47	138.00
23	[illegible]	[illegible]	[illegible]	[illegible]	21.03	[illegible]	[illegible]	12.37	[illegible]	422.12
24	165	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47.3	[illegible]	[illegible]	[illegible]
25	190	[illegible]	861.16	[illegible]	22.56	[illegible]	72.10	[illegible]	1.48	340.06
26	158	158	725.86	[illegible]	18.20	774.06	[illegible]	12.15	3.14	[illegible]
27	196	193	794.52	[illegible]	[illegible]	[illegible]	54.52	11.62	[illegible]	418.60
28	[illegible]	66	217.08	0	5.84	222.92	108.37	2.66	.77	214.55
29	168	24	47.88	0	0	47.88	48.97	0	0	70.11
30	219	176	581.19	0	0	581.19	70.44	5.52	.15	231.62
31	[illegible]	224	797.82	0	54.46	852.28	54.52	19.56	2.28	455.74
TOTAL	[illegible]	4797	18,778.84	0	739.10	19,517.94	2025.96	518.01	93.63	9233.99

Attachment 2

June 1983

MONTHLY TONNA
MONTH OF Ju

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	C	COMMERCIAL	PUBLIC	TOTAL
1	165	89	358.39	52.82	411.21
2	215	75	309.28	77.35	586.63
3	222	68	269.66	97.60	367.26
4	573	14	93.14	183.83	277.17
5	312	1	7.42	114.08	121.50
6	277	87	357.09	121.42	478.51
7	288	78	310.81	57.61	368.42
8	217	74	299.27	75.96	375.23
9	202	84	310.65	75.48	386.13
10	177	155	710.45	71.58	782.03
11	400	11	74.11	123.28	197.39
12	263	2	14.66	88.11	102.77
13	275	178	878.53	123.44	1001.97
14	243	165	798.85	97.43	896.28
15	206	158	756.17	56.04	812.21
16	253	166	833.01	83.97	916.98
17	224	166	719.60	79.29	798.89
18	403	23	102.98	123.37	226.35
19	161	2	.91	55.24	56.15
20	225	176	892.34	92.31	984.65
21	279	169	809.55	31.72	841.27
22	207	157	767.17	101.52	868.69
23	187	156	742.63	99.96	842.59
24	179	148	693.58	66.18	759.76
25	488	26	113.49	162.62	276.11
26	281	5	15.96	98.00	113.96
27	301	174	872.28	112.89	985.17
28	279	159	732.82	116.32	849.14
29	202	163	766.35	65.03	831.38
30	180	156	746.10	105.64	851.74
31					
TOTAL	7624	3085	14.356.85	2810.69	17167.54

July 83

MONTHLY TONNA
MONTH OF Ju

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	C	COMMERCIAL	PUBLIC	TOTAL
1	181	156	715.88	111.91	827.79
2	404	18	89.28	128.92	218.20
3	191	3	20.91	74.87	95.78
4	57	104	597.15	22.41	619.56
5	376	165	757.16	117.61	874.77
6	278	152	776.97	123.43	900.40
7	183	165	774.82	119.47	894.29
8	219	179	787.10	93.59	881.41
9	488	13	74.85	167.17	242.02
10	294	6	15.40	101.75	117.15
11	304	177	811.15	121.58	932.73
12	220	154	746.10	108.09	854.19
13	240	149	699.72	100.52	800.24
14	177	158	740.12	90.51	830.63
15	146	165	744.29	61.02	805.31
16	424	12	59.41	163.16	222.57
17	209	3	13.90	78.24	92.14
18	286	184	863.25	138.29	1001.54
19	204	150	726.14	86.93	813.07
20	239	160	806.89	120.51	927.40
21	258	157	790.57	130.89	921.46
22	276	183	778.79	145.59	924.38
23	575	20	84.45	188.73	273.18
24	305	2	20.47	98.27	118.74
25	292	176	826.92	151.98	978.95
26	258	167	781.65	134.01	915.66
27	158	147	694.50	98.87	793.37
28	269	164	767.71	104.21	871.92
29	381	166	677.30	108.48	785.78
30	579	35	106.66	178.18	284.84
31	293	2	9.41	87.36	96.77
TOTAL	8526	3482	16.359.69	3556.55	19916.24

Aug 83

MONTHLY TONNAG
MONTH OF Augu

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	C	COMMERCIAL	PUBLIC	TOTAL
1	235	179	824.08	132.67	956.75
2	235	189	847.45	111.85	959.30
3	268	177	812.29	115.60	927.89
4	306	169	779.49	107.40	886.89
5	289	173	729.76	119.32	849.08
6	509	23	127.56	159.85	287.41
7	289	1	4.09	98.17	102.26
8	278	168	744.41	121.69	866.10
9	308	173	771.65	137.32	908.97
10	266	176	795.85	112.06	908.40
11	208	166	775.38	100.59	875.97
12	310	170	770.11	122.04	892.15
13	484	31	164.23	153.14	317.37
14	252	9	63.44	78.65	141.99
15	235	178	866.58	103.75	970.33
16	262	167	768.83	110.48	879.41
17	242	178	862.26	111.59	973.85
18	176	179	819.76	92.68	912.44
19	244	176	804.63	103.91	908.44
20	463	410	256.71	141.73	398.44
21	284	16	146.72	68.95	215.67
22	297	176	823.79	140.36	964.15
23	263	180	787.03	107.24	894.27
24	230	166	738.52	109.29	847.81
25	229	177	776.19	100.11	876.30
26	258	183	707.13	116.39	823.52
27	454	38	136.77	152.22	288.99
28	282	1	.64	86.91	87.55
29	191	173	848.07	76.86	924.93
30	185	166	815.31	73.08	888.39
31	201	151	801.92	99.87	901.79
TOTAL	8757	4149	19,170.05	3,466.66	22,636.71

Sept 83

MONTHLY TONNAG
MONTH OF Sept

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	C	COMMERCIAL	PUBLIC	TOTAL
1	191	160	760.95	80.96	841.91
2	230	154	734.28	95.90	830.18
3	483	15	86.60	162.24	248.84
4	270	2	12.01	103.05	115.06
5	181	103	610.88	73.83	684.71
6	275	170	845.40	133.85	979.25
7	243	167	891.95	106.77	958.72
8	232	170	798.30	117.60	915.90
9	208	182	844.92	86.21	931.13
10	362	29	211.50	143.57	355.05
11	271	12	100.55	75.81	176.36
12	282	171	851.45	139.02	990.47
13	228	173	824.33	118.94	943.27
14	220	175	854.21	116.42	970.63
15	370	165	785.12	106.41	891.53
16	206	174	840.20	92.80	933.00
17	476	43	351.12	160.72	511.84
18	244	3	11.54	74.75	86.29
19	220	188	881.13	104.14	985.27
20	195	175	836.70	70.88	907.58
21	190	172	730.77	104.63	835.40
22	207	169	799.68	100.33	900.01
23	229	174	677.88	92.47	770.35
24	466	45	398.45	148.01	543.46
25	310	1	8.48	104.10	112.58
26	219	184	831.44	104.50	935.94
27	163	164	691.70	83.65	775.35
28	179	164	766.02	89.79	855.81
29	211	163	701.06	91.61	792.67
30	220	168	666.22	87.67	753.89
31					
TOTAL	7781	3883	18,379.86	3170.59	21,550.45

OCT 83

MONTHLY TONNAGE
MONTH OF

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	VEHICLES C	COMMERCIAL	PUBLIC	TOTAL
1	441	31	163.55	148.63	312.18
2	230	10	61.72	79.27	140.99
3	189	173	787.86	100.20	888.06
4	145	166	716.79	73.30	790.09
5	135	149	685.24	71.80	757.04
6	184	167	701.09	105.05	806.14
7	1106	145	615.57	69.58	685.15
8	278	34	245.88	127.18	372.76
9	277	7	52.35	84.76	137.11
10	179	163	726.91	105.74	832.65
11	171	141	619.78	90.21	709.99
12	150	156	699.60	75.25	774.85
13	152	159	729.09	90.62	819.71
14	170	157	645.80	89.90	735.70
15	341	53	381.90	105.72	487.62
16	236	39	233.50	71.41	304.91
17	147	164	786.30	47.90	834.20
18	131	153	684.38	54.51	738.89
19	130	153	666.99	71.82	738.81
20	167	157	729.01	73.76	802.77
21	144	164	666.21	80.62	741.83
22	293	36	252.07	93.23	345.30
23	211	3	11.53	86.74	98.27
24	151	155	759.60	80.86	840.40
25	152	155	693.22	81.79	773.01
26	161	147	646.20	88.56	774.76
27	160	148	664.76	64.78	729.54
28	152	150	641.16	91.21	732.37
29	402	23	907.5	122.33	213.08
30	184	3	7.62	82.02	90.64
31	178	157	744.50	96.13	840.63
TOTAL	6244	3511	16135.65	2713.82	18849.45

NOV. 83

MONTHLY TONNAGE
MONTH OF

DATE	CLACKAMAS TRANSFER & RECYCLING CENTER VEHICLES P	VEHICLES C	COMMERCIAL	PUBLIC	TOTAL
1	97	135	609.54	53.91	663.45
2	114	147	721.62	62.16	783.78
3	98	159	809.47	62.92	872.39
4	133	154	740.05	55.64	795.69
5	317	12	76.64	93.36	170.00
6	195	⊖	⊖	71.24	71.24
7	102	161	893.18	109.26	1002.44
8	150	159	765.44	79.90	845.34
9	120	168	927.85	71.85	999.70
10	114	169	827.81	76.23	904.04
11	163	164	794.41	80.74	875.15
12	300	17	80.92	123.43	204.35
13	164	⊖	⊖	48.87	48.87
14	133	154	859.51	93.53	953.04
15	122	162	763.05	55.59	818.64
16	131	139	707.83	86.30	794.13
17	119	154	732.64	87.87	820.51
18	193	144	679.38	63.39	742.77
19	269	14	92.13	86.54	178.67
20	251	3	16.29	84.11	100.40
21	152	151	814.16	88.51	902.67
22	120	152	741.49	64.05	805.54
23	141	169	802.62	70.26	872.88
24	4	59	296.98	5.07	301.95
25	255	133	593.05	112.39	705.44
26	341	12	69.26	117.44	186.70
27	1941	2	6.14	67.23	73.37
28	132	N/A	864.23	92.03	956.26
29	150	163	750.42	93.31	843.73
30	129	160	737.41	92.84	830.25
31					
TOTAL	4849	395	16,766.42	2,349.97	19,116.39

THE OREGONIAN, TUESDAY, DECEMBER 27, 1983 4M MW5

Oregon City garbage transfer station becoming a showpiece

Official calls collection site a 'Cadillac'

By STEVEN AMICK
of The Oregonian staff

OREGON CITY — It started out as little more than an item to a $262 million regional garbage burner proposed for Oregon City by the Metropolitan Service District.

But the burner was banned last year by Oregon City voters. And now the $3.5 million Clackamas Transfer and Recycling Center at 16101 S.E. 82nd Drive is rolling along smoothly on its own. The center is the model for centers Metro plans to build in Washington and Multnomah counties.

The center originally was to accept up to 400 tons of garbage a day until December 1985, when most of it would go directly to the garbage burner that was to be built next to it. After that, the center was to be used only by local, non-commercial haulers and as a recycling depot.

After the burner proposal was shelved, Metro expanded the purpose of the center and twice persuaded city officials — despite opposition from some local residents, the city Planning Commission and Planning Director Catherine M. Galbraith — to raise the center's permitted capacity to 1,000 tons a day.

Now Metro officials are pointing to the center as a showpiece of pleasing design and efficient operation.

"A Cadillac," is what Cindy Banzer, Metro Council presiding officer, calls it.

The estimated cost of operating the center, about $21 per ton, however, makes it more expensive than the $12-per-ton operating cost of the St. Johns Landfill in North Portland — the ultimate destination of the garbage taken to the center.

Metro has spread most of that difference throughout the region, adding part of the cost of operating the transfer center to fees at St. Johns.

But users are charged more for the convenience of using the center.

The extra charge also helps discourage haulers who could easily travel to St. Johns. The extra charge was a nod to Oregon City officials who fear their city will be become, as City Commissioner James L. Johnson Jr. put it, "the garbage capital of Oregon."

Commercial haulers pay $14.97 per ton to dump garbage at the center. That is $1.49 per ton more than at St. Johns.

Other users pay about $8.25 per pickup load, depending on the size of

The Oregonian/ TOM TREICK

PIT STOP — Garbage haulers dump trash at the recently opened Clackamas Transfer and Recycling Center in Oregon City. The refuse is then transferred to a Multnomah County landfill. The center is operating smoothly, county officials said, allaying local fears it would cause pollution and traffic problems.

ers of some such vehicles have complained that the charges are much higher than they paid for dumping similar loads at the now-closed Rossman's Landfill across the street.

But local residents and commercial haulers interviewed at the center unanimously preferred the center to the landfill. Not only is the center a mud-free, indoor place to dump garbage, but it also is a major recycling depot.

Haulers with glass, metals, paper and other reusable materials can deposit them into bins set up for that purpose. The center also accepts rubber tires for recycling for a small fee. Unmixed loads of yard debris are diverted for recycling to McFarlane's Bark Inc. in Clackamas.

Commercial haulers and anyone else with trash to dispose of can drive a 600-cubic-yard pit. The center is open from 6 a.m. to 6 p.m., Monday through Saturday, and from 8 a.m. to 4 p.m. on Sunday. It is used by haulers from

After burner idea was dropped, Metro expanded the purpose of the transfer station

Clackamas, Washington and Multnomah counties.

Pickups, station wagons and other on the east. On Sundays, when most commercial haulers are not working, the eastside spaces also are used by the general public.

The resulting din inside the building is terrific. But it is hardly noticeable outside over the rumble of traffic on nearby Interstate 205 and on 82nd Drive. There is none of the rotting-garbage smell users have long associated with Rossman's Landfill.

A bulldozer levels and partially compacts the contents of the pit. A fine mist of water periodically helps settle the rising dust.

An employee of Genstar Corp., the San Francisco-based company that operates the center for Metro under contract, uses a hydraulic scoop mounted at one end of the pit to load the trash space below the end of the pit for its 24-ton load. The transfer trucks take the garbage to St. Johns Landfill.

The pit is cleared of garbage at the end of each day.

The transfer trucks removed 19,116 tons of trash from the center in November, about 85 percent of it from commercial haulers. There are seasonal variations. In August, for example, Genstar handled 22,637 tons of garbage.

Mondays usually are busiest, with the amount of garbage handled occasionally topping 1,000 tons.

That level of use prompted Galbraith last summer to suggest that the city fine Metro if permitted use levels continued to be exceeded. The Planning Commission recommended imposing

MSD plans new station

The Oregon City Planning Commission has made it clear the Metropolitan Service District must begin construction of a Washington County transfer center by March 1985 — or face revocation of its conditional-use permit for its Clackamas center.

The planning agency is concerned that increased traffic, noise, odor and litter would result if the Clackamas Transfer and Recycling Center were expanded.

"The citizens of Clackamas County and Oregon City are having a problem with the amount of garbage that is coming here," said Gerald G. Grisham, Planning Commission chairman. "They don't want to burn it, and they don't want it delivered here."

The City Commission has rejected fining Metro, a step suggested to curb overdumping at the Clackamas center. However, Oregon City officials did put restrictions on the size of the truck wash to limit the number of commercial trucks using the center and to encourage development of a Washington County transfer center.

"That was helpful to us," said Daniel F. Durig, Metro solid waste director.

He said Metro then was able explain why a Washington County transfer center must be built. Without it, Washington County haulers could face longer, more costly trips to St. Johns.

Durig said a Washington County center — likely in an area zoned for industrial use with access to Oregon 217 or Oregon 26 — will be built within 18 to 24 months.

"It depends on what we run into in the land-use approval process," he said.

The Clackamas center's success should prove beneficial to Metro in that process and a similar approval process for a Multnomah County transfer center scheduled to be built in 1988.

Opposition to the operation of that center appears to have vanished.

City officials, Metro, the Oregon Department of Environmental Quality and the Oregon Department of Transportation have reported that the Oregon City center is causing none of the environmental or traffic problems that had been feared, except for some occasional minor traffic delays at its entrance.

Oregon City Planning Director Catherine M. Galbraith, among the most concerned about the increased use of the center, said she knew of no major

Attachment 4

Transfer Center Serves Oregon Communities

Publicly owned and privately operated, the Clackamas Transfer and Recycling Center has gained community support and praise for its efficient, clean, odor-free operations.

After only seven months of operation, the Clackamas Transfer and Recycling Center (CTRC), in Portland, Oregon, is handling 40 percent of the solid waste generated in a tri-county region. That's not bad for a facility that was originally planned as a back-up service to a proposed mass incineration plant.

For Dick Bloom, owner-operator of Oregon City Garbage Company and a daily patron of CTRC, the transfer station is a "great improvement". "It's cut travel time to the landfill and saved on tire costs for us," Bloom said.

The Metropolitan Service District (Metro), a directly-elected regional government agency, owns and manages the 800 tons per day transfer station. Genstar Waste Technology Group operates the facility under a three-and-one-half year contract with Metro.

Public, private cooperation contributes to success

Both Genstar and Metro agree that maintaining a good relationship between management and operations has been the key to success at CTRC. "At the facility, we have the best of both worlds," said Norman Wietting, Metro's solid waste operations manager. "We can take advantage of the competitive nature of private industry by bidding the design, construction, and operation of such a facility. By owning the facility, we maintain the right to rebid periodically." Monthly meetings with representatives from Metro and Genstar iron out any problems arising from transfer station operations and management.

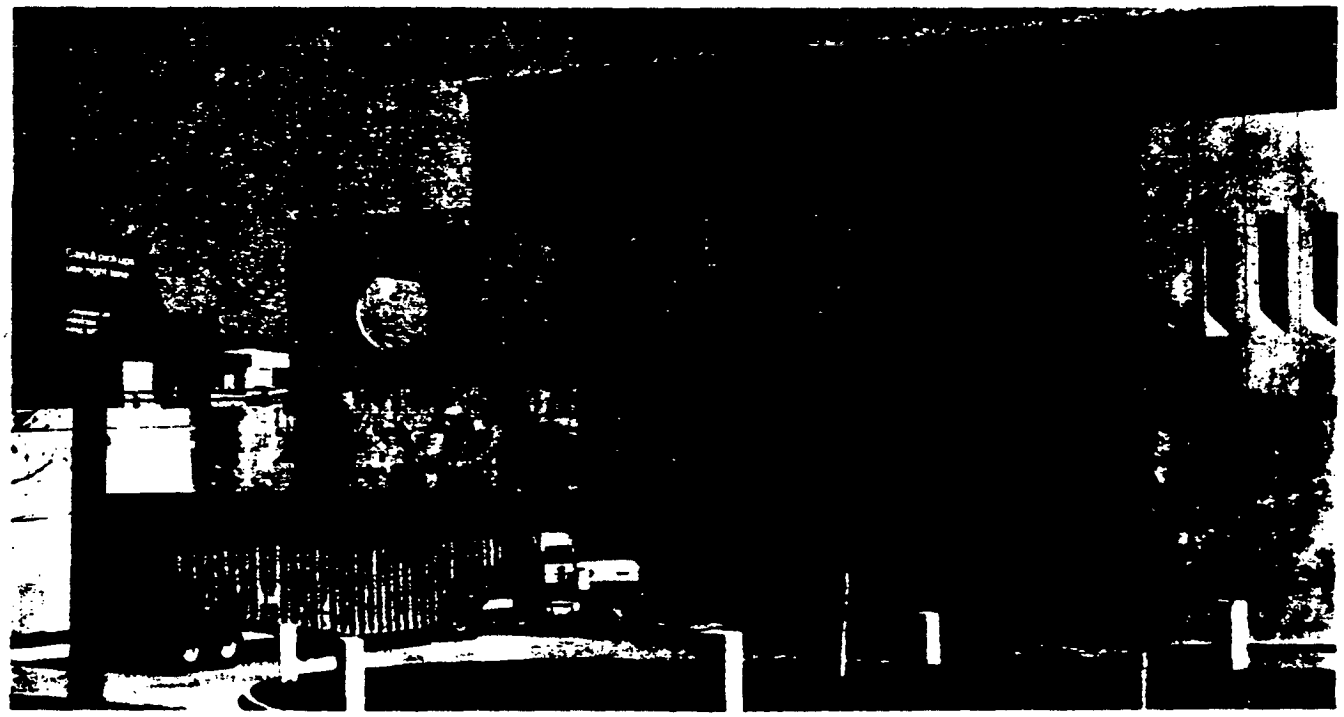
"This kind of cooperation allows the operator to minimize problems and offer good service at a reasonable cost," commented Alex Cross, vice president and regional manager of Genstar Waste Technology Group at the Portland Regional Office.

City needed interim facility

Metro has been involved with the planning and/or management of solid waste disposal in the Portland area since 1972. The transfer station was planned as an interim facility serving the southern portion of the region when the adjacent private landfill closed down. At that time the transfer station was scheduled to take refuse from municipal collection vehicles only, and act as a back up facility to a proposed 1,500 ton per day mass-burn incineration facility.

The implementation of the transfer station began in February, 1981, when a request for proposals was issued by Metro for the design of the facility. Metro selected Black & Veatch Consulting Engineers, based in Kansas City, Missouri to develop preliminary design aided by Metro staff, commercial refuse haulers, recyclers, citizens, and highway engineers. The original design criteria included environmental controls, ease and safety of operation, architecture and landscaping, proper traffic volume sizing, and compatibility with the proposed incinerator.

During the implementation of CTRC, public hearings were held on the proposed mass incinerator, and permits were obtained from local officials. After contracts were awarded and construction began on the transfer station, the local community passed an initiative petition



***The Clackamas Transfer and Recycling Center** is designed to encourage resident and hauler use of the facility.*

prohibiting the incinerator. Subsequently, the Metro Council voted to discontinue the project. This left the transfer center as the key facility for handling solid waste in the southern portion of the Portland area.

The final design of the transfer and recycling center was completed in March, 1982. The construction bid was awarded to a local firm, Parker Northwest Construction Company in June, 1982, and Black & Veatch was named the construction supervisor. Construction was completed April 1, 1983, and the facility opened for operation on April 11, a mere two months before the closing of the adjacent landfill.

Selected with the incineration plant in mind, the site is a ten-acre industrially-zoned piece of land just off a major freeway and directly across the street from the landfill due for closure. The site also includes a retention pond for seasonal rainwater run-off storage.

Private haulers and citizens are primary users

Waste collection services in the Portland, Oregon, area are provided by private hauling companies under a franchise system. Refuse collection trucks deposit wastes at the transfer station at a rate of 102 vehicle trips per hour. The facility is designed with a common entrance and exit, rather than a drive-through system for a smoother flow of traffic. Vehicles drive into the facility along the back side of the property to the gatehouse. The gatehouse is the only facility at CTRC operated by Metro, which sets rates and collects fees at the site.

All refuse collection vehicle weights are determined by two eighty-foot electronic, pit-type weigh decks which are part of the Fairbanks computerized weighing system used at the facility. The weight is automatically printed on a charge ticket, along with the company name, account number and price of the load. This information is stored in the computer memory for later transmission by telephone to the downtown Metro office for billing purposes. Citizens who dispose of wastes at the facility are charged by volume of waste. Fees are assessed at the main gatehouse or at a separate fee booth for citizen-operated vehicles.

The current fees at CTRC are

***Daily operations at CTRC** include dozing refuse from the pit into the hopper.*

$14.97 per ton for commercially-hauled waste and $8.25 for private pickup trucks with loads up to 2 ½ cubic yards. These fees pay the total cost of the landfill charges and approximately 55 percent of the cost of operating CTRC and transferring the waste. A "transfer fee" collected at all landfills in the region makes up the difference. Metro pays Genstar $7 per ton of waste delivered to the landfill. This fee covers the on-site operation of the facility, the transfer of the waste to the landfill, and the operation of the tipper at the landfill.

Separate areas inside the facility are designated for hauler and citizen use. Haulers enter the building through the far doorway and back up to a pit which divides the covered building. Refuse is unloaded into the pit and trucks leave the building by the same route. Vehicle turnaround time for commercial loads averages seven to ten minutes each.

Recycling encouraged

A closer entrance on the other side of the pit is designated for private citizen use. Citizens drive to the pit to unload refuse and then exit on the common roadway. Recycling bins are provided for public use outside the building in a covered area. Source separated materials can be deposited in the bins for recycling at no charge. Bins are labeled for glass, aluminum, tin, cardboard, newspaper, motor oil, and old appliances. Tires may be left for recycling in a separate bin for a small fee. Citizens are encouraged to take yard debris to a nearby commercial processor.

Genstar handles and markets the recyclables and is responsible for the promotion, upkeep and efficient operation of the recycling program. As an added incentive, Genstar receives 75 percent of the recycling revenues under terms of the operations contract with Metro. The transfer facility can accommodate twelve citizen vehicles and nine refuse collection trucks at one time. On weekends, both sides are available for dumping by private citizens.

Cleanliness stressed

The transfer center operations are enclosed by a modern building constructed of pre-cast concrete. Inside the building, the central pit for the collection of refuse is 150 feet long, 40 feet wide and 12 feet deep, with steel-lined walls. Daily cleaning of the pit, required by the local planning commission, helps minimize odor and sanitary problems. Any dust generated by the unloading of waste is controlled by "fog sprayers" located above the pit area.

A Fiat-Allis bulldozer, operating in the pit, pushes the deposited refuse into the hopper. A Peerless hydraulic clamshell, centered over the hopper, assists in loading and distributing the refuse into the trailer below. The clamshell operator is housed in a remote station overlooking the pit. The pit can also be viewed and monitored from the operations office.

Prior to loading, the transfer truck operator plugs the onboard scales into an electronic scale indicator, which transmits the weight of the truck to the clamshell and dozer operators above. The onboard scales, manufactured by Scientific Instruments (S.I.), assure that each trailer carries twenty-five tons of solid waste per load. Once the legal load limit of 80,000 lbs is reached, the truck backs out and the screen cover is flipped over the top to contain the refuse in transit to St. Johns Landfill fifty-two miles away. The waste is hauled in 130 cubic yard "possum belly" trailers from Columbia Trailers, Inc. mounted on White or Kenworth chassis. The trucks are leased by Genstar from owner/operators who drive them, and a total of six tractors and six trailers make up the fleet. At the

landfill an Oregon Steelcraft tipper empties the trailers.

Facility receives community praise

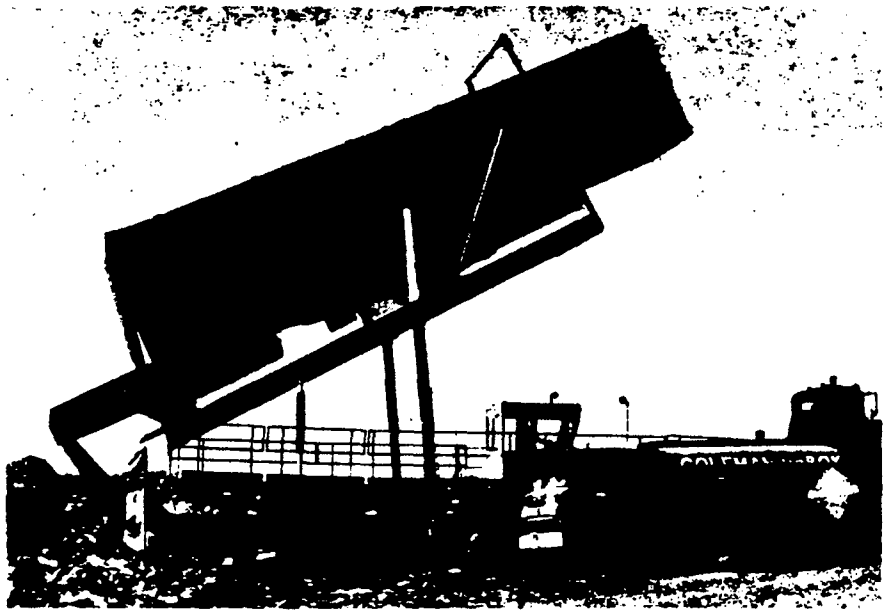
The Clackamas Transfer and Recycling Center's success in the community is measured by the volume of use and the lack of complaints. Usage has stabilized at an average of 700 tons per day, with an occasional high of 1,000 tons per day. Oregon City Council members and

"The transfer station is a great improvement."

Oregon City Mayor Ron Thom agree that the transfer station is a clean, efficient, conveniently-located facility. The facility itself is often mistaken for a new county administration building. "It is a compliment to Metro and to Genstar that we have not heard one criticism from the citizens of our community," Thom said.

With a transfer station built and operating, Metro is currently reviewing its solid waste systems plan for the management of the region's refuse for the next twenty years. In the western part of the region more private landfill closings are expected soon. Another transfer station is proposed for construction by early 1985 to serve this area. Metro anticipates a third transfer station and a new site for a regional landfill will be necessary by the time the St. Johns Landfill closes in the late 1980s.

For the present, the Clackamas Transfer and Recycling Center is a first-class example for neighboring communities of how a transfer station can mix public ownership and private operation to provide efficient, clean, and odor-free operations. WA



***Transfer trailers** are lifted by a tipper for unloading at the landfill.*

CTRC

Vehicle Category	Base Rate $/ton	Base Rate $/cy	Metro User Fee $/ton	Metro User Fee $/cy	Regional Transfer Charge $/ton	Regional Transfer Charge $/cy	Convenience Charge $/ton	Convenience Charge $/cy	Total Rate $/ton	Total Rate $/cy
COMMERCIAL										
Compacted	$9.80	$2.90	$1.68	0.43	$2.00	$0.52	$2.25	$0.57	$15.73	$4.42
Uncompacted	9.80	1.23	1.68	0.25	2.00	0.30	2.25	0.33	15.73	2.11

	Base Rate Per Trip	Metro User Fee Per Trip	Regional Transfer Charge Per Trip	Convenience Charge Per Trip	Total Rate Per Trip
PRIVATE					
Cars[1]	$4.62	$0.54	$1.34	$0.75	$7.25
Station Wagons[1]	4.62	0.54	1.34	0.75	7.25
Vans[2]	5.37	0.54	1.34	0.75	8.00
Pickups[2]	5.37	0.54	1.34	0.75	8.00
Trailers[2]	5.37	0.54	1.34	0.75	8.00
Extra Yards	2.31	0.27	0.68	0.35	3.60

	Base Rate	Metro Fee	Regional Transfer Charge	Total Rate
TIRES[3]				
Passenger (up to 10 ply)	$0.50			$0.50
Passenger Tire (on rim)	1.25			1.25
Tire Tubes	0.25			0.25
Truck Tires (20" diameter to 48" diameter on greater than 10 ply)	3.75			3.75
Small Solids	3.75			3.75
Truck Tire (on rim)	8.75			8.75
Dual	8.75			8.75
Tractor	8.75			8.75
Grader	8.75			8.75
Duplex	8.75			8.75
Large Solids	8.75			8.75

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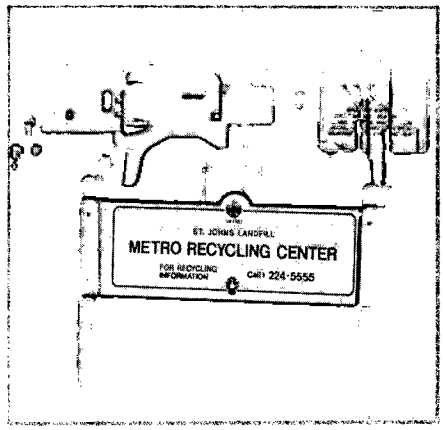
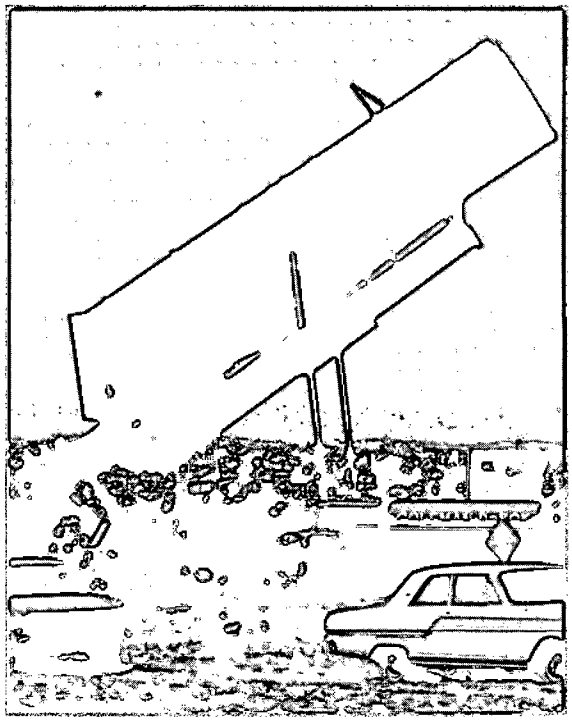
[1]Based on a minimum load of two cubic yards.
[2]Based on a minimum load of two and one-half cubic yards.
[3]Cost per tire is listed.
0014C/353-D

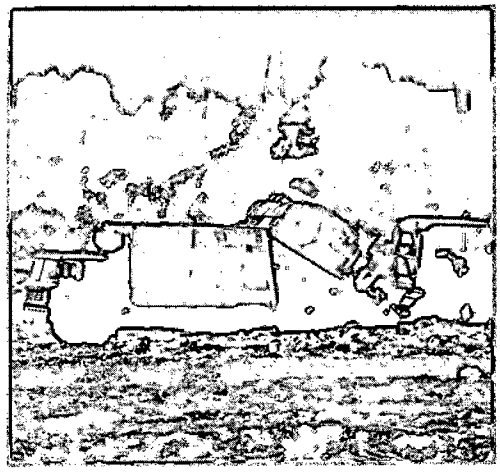
ST. JOHN'S LANDFILL

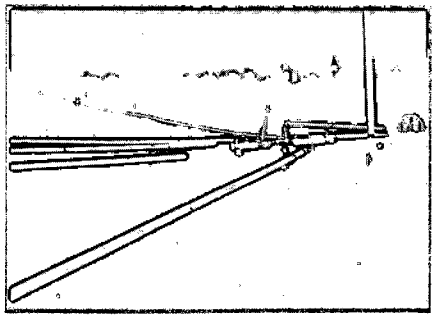
Present and Future

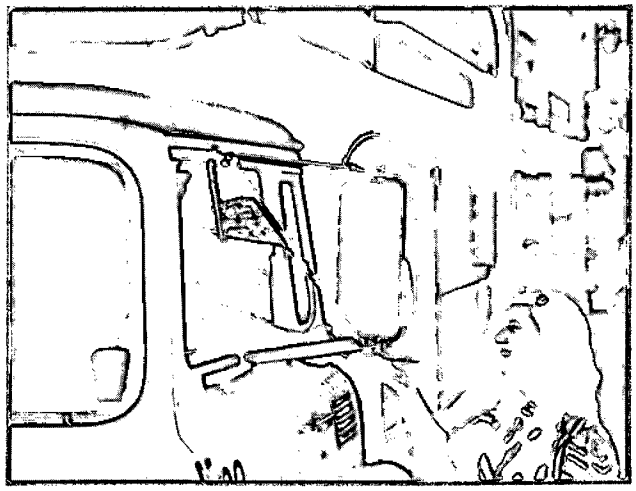
November, 1983











METROPOLITAN SERVICE DISTRICT
Providing Zoo, Transportation, Solid Waste and Other Regional Services

ST. JOHNS SANITARY LANDFILL

PRESENT AND FUTURE

Prepared by

SOLID WASTE DEPARTMENT

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NOVEMBER 1983

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I. INTRODUCTION

PURPOSE OF REPORT

The purpose of this report is to provide a brief and accurate description of the current status of the St. Johns Sanitary Landfill including past and future operations, estimated site life, and efforts to develop a successor.

HISTORY

The City of Portland owns the St. Johns Landfill. It was initially opened in 1932 as a disposal site for ash generated from the nearby City waste incinerator. The original landfill site covered an area of approximately 181 acres. The site is part of a 600-acre area owned by the City of Portland. The site was operated by the City as a solid waste landfill utilizing City employees or a contracted private operator from 1934 through mid-1980.

On June 1, 1980, the City of Portland transferred the responsibility for operation of the sanitary landfill to the Metropolitan Service District (Metro) of Portland, Oregon.[1] Metro is a regional agency responsible for managing all aspects of solid waste disposal in the Portland metropolitan area. Among powers granted to Metro by ORS 268.317 is the authority to own, operate and regulate landfills and other solid waste disposal facilities.

In December of 1975, the City of Portland applied to the Oregon Department of Environmental Quality (DEQ) to obtain a permit for a 70-acre lateral expansion of the site. The proposed site expansion was needed because of increased volumes of solid waste projected to enter the St. Johns site due to the expected closure of Rossman's Landfill in 1980, as well as increased population in the metropolitan area. The expansion was approved by all regulatory agencies with the exception of the Environmental Protection Agency (EPA). EPA opposed the expansion due to elimination of wetlands in the proposed site. After several years of negotiations the City and EPA reached a compromise. EPA granted approval for a 55-acre lateral expansion of the site. The City agreed to find another landfill site to be opened when the 55-acre expansion area was filled with solid waste. Future lateral or vertical expansion of the site is subject to constraints imposed by state law and various regulatory agencies.

SITE DESCRIPTION

The St. Johns Landfill is located in North Portland at 9363 N. Columbia Boulevard. The expanded landfill consists of a total of 254 acres, including 181 acres of active sanitary landfill and 55 acres of lateral expansion area. It also includes about 18 acres between N. Columbia Boulevard and Columbia Slough containing a transfer station for the public, a recycling center, offices and a gatehouse. The original landfill area was bounded by N. Slough to the northeast, wetlands adjoining Smith & Bybee Lakes to the east

and southeast, and Columbia Slough to the southwest and west. The 55-acre expansion area is immediately adjacent to the east boundary of the original site extending easterly toward the edges of Smith Lake. Figure 1 shows the landfill and its relationship to the surrounding area. The landfill area has been divided into subareas for ease in locating specific structures or activities. These subareas are identified on Figure 2. It should be noted that this map has a slightly different numbering system for subareas than previous maps.
The designation subarea 6 on previous maps has been eliminated.

Access to the site is from Columbia Boulevard northeast on the site access road. The site access road crosses Columbia Slough over the Incinerator Road Bridge and enters the landfill proper.

INSTITUTIONAL AND ORGANIZATIONAL FRAMEWORK

The St. Johns Landfill operates within a relatively complex institutional framework. This framework involves the City of Portland, Metro, DEQ, other regulatory agencies, and the contracted operator.

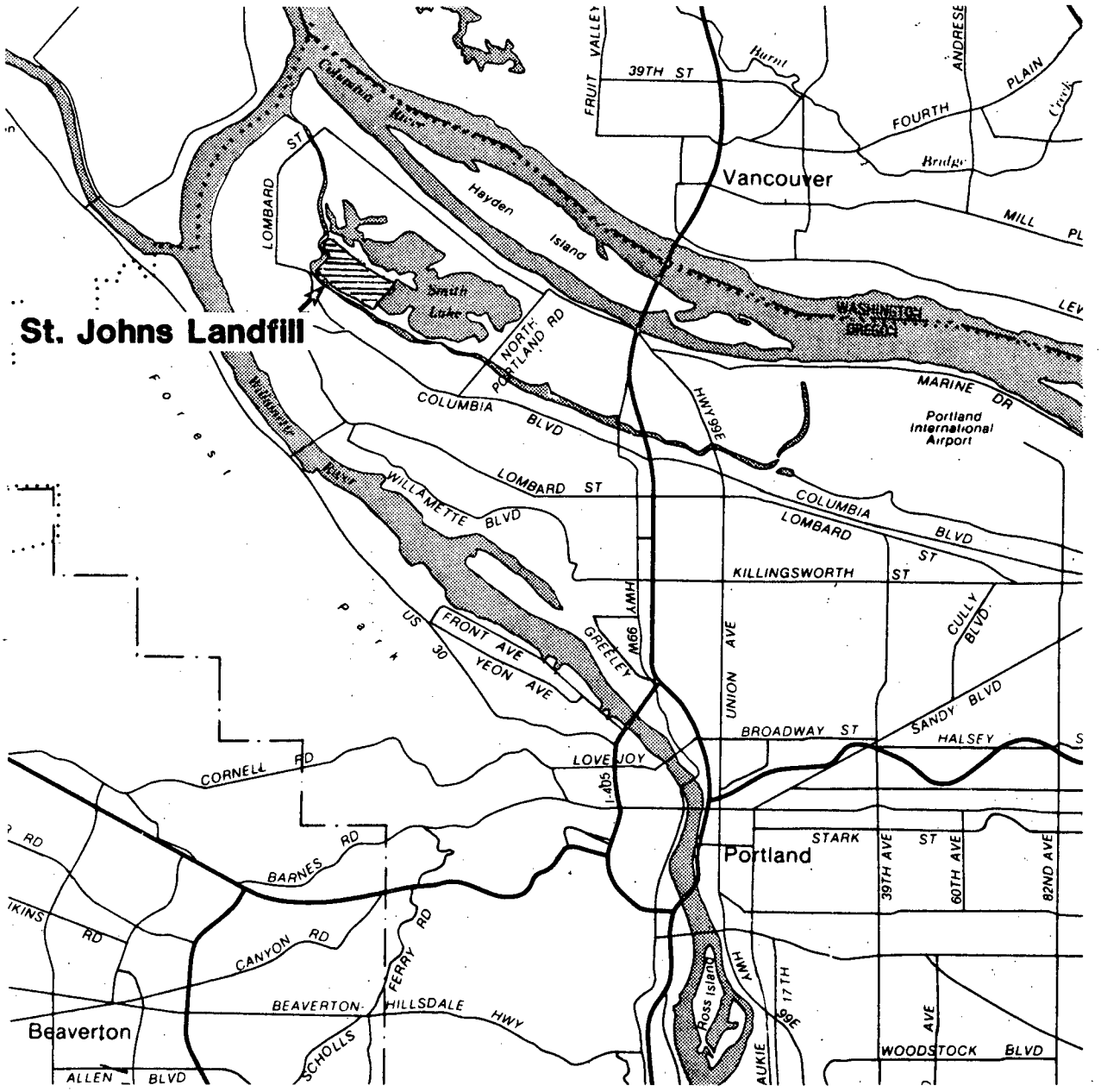
Metro is established under ORS chapter 268 and has the responsibility and authority to provide facilities for the disposal of solid waste within its region. The City of Portland transferred operational responsibility and control, rate regulation, and the authority to expand the existing 181-acre landfill to Metro on June 1, 1980. The City continues to own the landfill and from Metro receives rent.

The landfill operates under the authority of various environmental permits issued to Metro. These permits include:

- The Oregon DEQ Solid Waste Permit No. 119.
- The Oregon DEQ National Pollutant Discharge Elimination System (NPDES) Permit No. 2967-J.
- Oregon Division of State Lands Permit No. FP2222.
- U.S. Army Corps of Engineers Permit.

In recognition of the operational responsibility embodied in these permits, Metro has established an Operational Division within the Solid Waste Department. Based on a competitive bid process, Metro awarded a contract to a private firm, Easley & Brassy Corp./Genstar Conservation Systems, Inc. to operate the site, i. e., bury the solid waste within the terms and specifications of regulatory permits and the operations plan. This contract lasts until September 30, 1985.

Metro is directly responsible for operating the gatehouse, including providing the operating personnel, the billing system, accounting of income and expenses for the site, and setting rates for disposal at the landfill.



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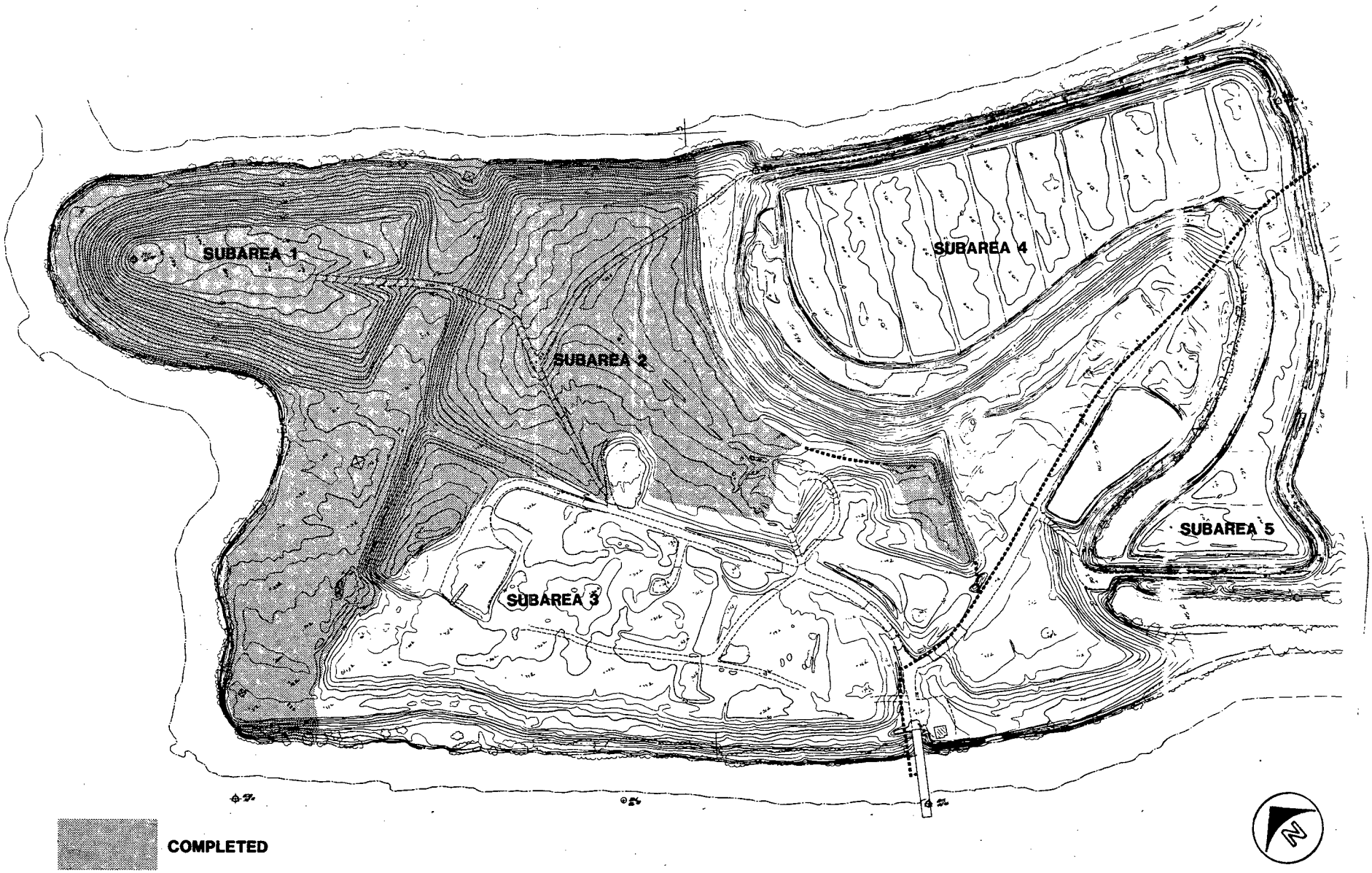
SITE LOCATION

FIG. 1



METRO

SITE MAP WITH COMPLETED AREA

FIG. 2

GENERAL OPERATIONS

The St. Johns Landfill is a full service general use sanitary landfill and currently serves nearly all of the Portland metropolitan region. It accepts solid waste from private citizens, commercial collectors, industrial sources as well as refuse transported from the Clackamas Transfer & Recycling Center (CTRC). The CTRC is a facility designed and built by Metro in order to replace Rossman's Landfill which closed on June 10, 1983. Solid waste from private citizens as well as commercial collectors is deposited at the CTRC where it is condensed and loaded into semi-trailers for transportation to the St. Johns Landfill for final disposal. Approximately 45 percent of the total daily refuse currently being deposited at the St. Johns Landfill is material transferred from CTRC.

The Operations Plan (developed in 1979 for the City of Portland and amended in 1980 by Metro) and the various environmental and regulatory permits provide the guidelines for operational activities. In general, the site is being filled sequentially by subarea. Refuse is deposited and compacted in two-foot slanted layers to depths of approximately 10 feet. When a layer or "lift" is completed each day, a six-inch layer of compacted soil is placed over the refuse. The purpose of this soil cover is to prevent rodent and fly infestation, eliminate blowing garbage and minimize odors from the freshly placed refuse.

As a final step, a two-foot layer of compacted clay and topsoil is placed over the six-inch layer of intermediate cover. This material is termed "final cover" and is seeded to prevent erosion and cracking.

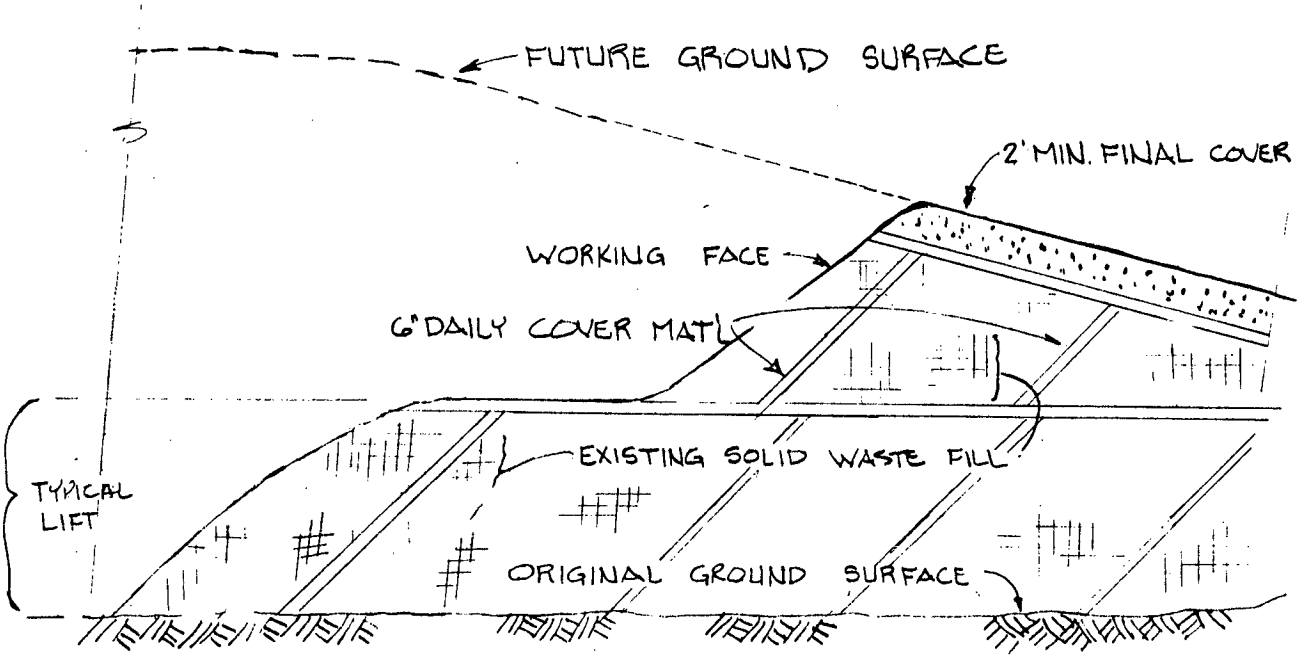
Final cover material is placed over the solid waste fill only during the fair weather months. Final cover is placed, compacted and seeded over the maximum completed solid waste fill area. Figure 3 indicates a typical cross-section through the landfill.

The St. Johns Landfill is not permitted to accept hazardous wastes. To guard against accidentally accepting hazardous wastes, Metro's gatehouse personnel accept no special wastes such as sludges, chemicals, liquids, dusts, etc. unless these are accompanied by a written permit issued by Metro and approved by DEQ.

ENVIRONMENTAL PROTECTION AND MONITORING

Operating permits from the regulatory agencies require regular environmental monitoring to observe significant changes in the natural environment surrounding the site.

Metro contracts with the City of Portland Water Pollution Control Laboratory for the analysis of water samples taken from both the groundwater and surface water sampling network surrounding the landfill. There are a total of 11 groundwater sampling wells and 10 surface water sampling points.



METRO

TYPICAL LANDFILL CROSS SECTION — **FIG. 3**

Samples are collected by Metro personnel following a time schedule and methods agreed to by DEQ and delivered to the laboratory for testing and analysis. The laboratory mails results directly to both Metro and DEQ.

The results are analyzed by DEQ to determine whether water quality standards are being met, and entered into the file for the sanitary landfill. Periodic inspections are also made by DEQ personnel. DEQ has not found any areas of permit noncompliance since Metro has taken over operation of the landfill.

In addition, the contract between Metro and the City of Portland calls for periodic inspections by an independent, registered, professional engineer. These inspections are intended to determine compliance with the Operations Plan, operations contract and environmental/regulatory permits. All of the inspector's recommedations have been addressed. Since Metro assumed operation of the landfill, no significant areas of non-compliance have been found.

II. EFFECT ON GROUND AND SURFACE WATER

Recently Metro retained a consulting hydrogeology firm Sweet, Edwards and Associates to review available groundwater and surface water monitoring data collected since 1971. The firm was to analyze the data to determine whether the St. Johns Landfill has any measurable impact on the quality of surrounding groundwater and surface water.

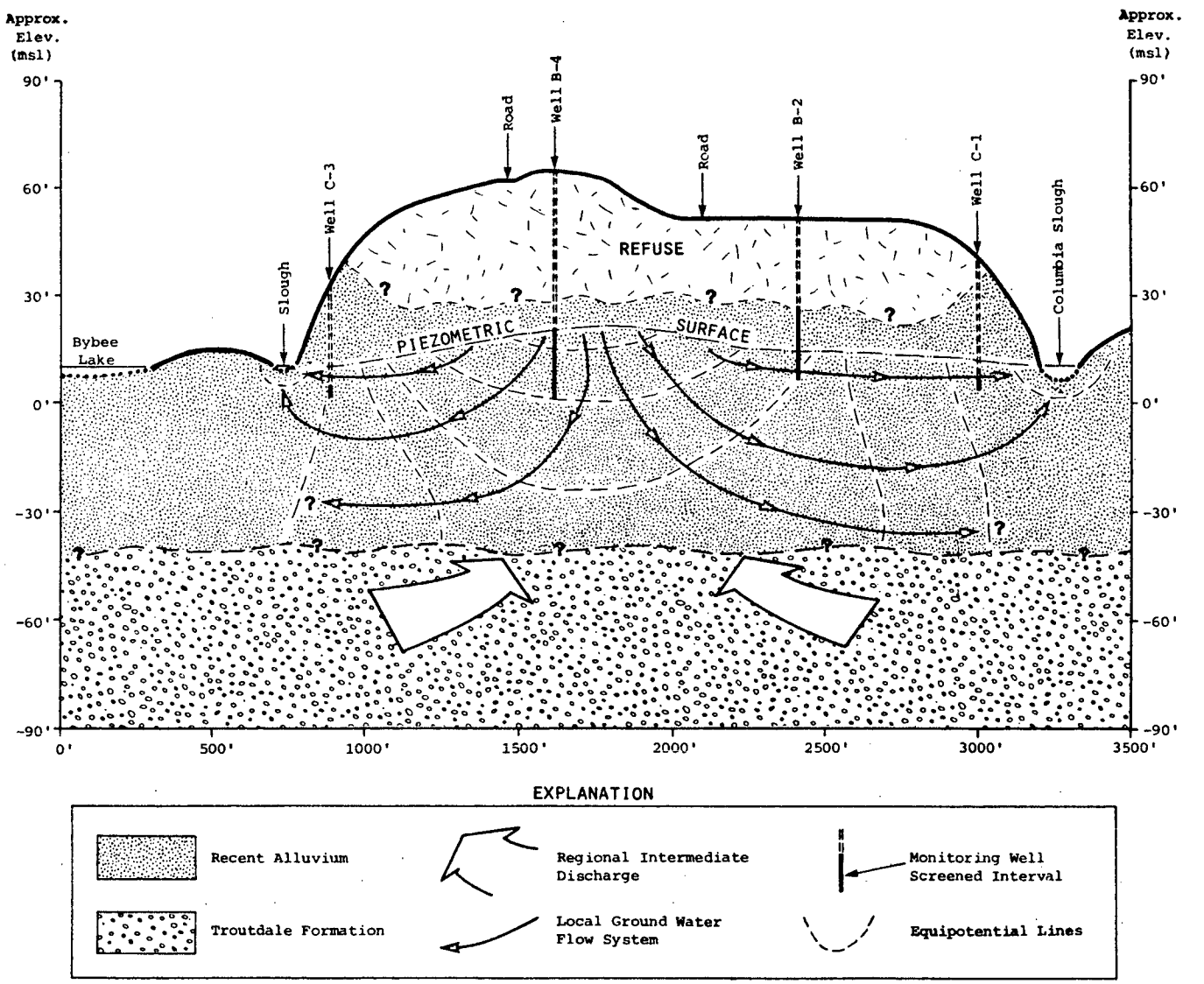
The report by Sweet, Edwards and Associates concluded that subsurface conditions and the local groundwater flow direction appear to provide some control of the extent of any groundwater contamination at the site[2]. As shown in Figure 4, the direction of deeper groundwater flow is toward the surface so there is a tendency to buoy up the shallow groundwater system. This results in confining contaminants from leachate to the shallow aquifier. Downward migration of groundwater is also limited by the lower premeability of the shallow silts and clays underlying the landfill. On the other hand, the shallow or local groundwater flow directs contaminants to the adjacent surface water in the sloughs.

Although groundwater within the solid waste boundary is contaminated there appears to be no direct impact to the beneficial uses of groundwater. Shallow groundwater within the site boundary and within the area bounded by the adjacent surface waters is not a developable resource.

A statistical analysis of the surface water quality data indicated that there has been no significant degradation of surface water near the site for most constituents tested. Nitrate levels have increased but the number of other possible pollution sources preclude identifying the landfill as the principal source of this increase.

Because the site has an NPDES permit and is subject to the limits set by Oregon Administrative Rule 340, division 41, it would seem to be in compliance with applicable water quality standards even though a certain groundwater contaminant (nitrate) exceeds planning guidelines associated with the Oregon Groundwater Protection Policy and standards based on the Resource Conseravation and Recovery Act. However, it is difficult to exactly measure NPDES permit compliance because, as noted for nitrate, the adjacent surface water receives pollutants from storm runoff, groundwater seepage from cesspools, agricultural runoff and other industrial discharges.

In addition, the report pointed out that the analysis of the data was limited by the fact that continual systematic data collection had not been carried out every year since 1971. Also, many federally mandated constituents had not been included in the monitoring data.



SUBSURFACE STRUCTURE & GROUNDWATER FLOW PATTERNS

FIG. 4

The consultant recommended that all existing monitoring wells be repaired and/or redeveloped as necessary to provide representative information about groundwater conditions. The consultant suggested that some tests be added and deleted. Finally, the consultant recommended that interior groundwater wells be included in the current monitoring program as well as the perimeter wells. These recommendations will be reviewed in consultation with DEQ.

III. PROPOSED OPERATIONS PLAN REVISIONS

SUMMARY OF CURRENT OPERATION PLAN

The operations plan for the St. Johns Landfill was developed by CH_2M HILL, the City of Portland, Metro and DEQ in 1980. The plan was the basis for the operating contract which was publicly bid in May 1980 and was awarded to Genstar Conservation Systems, Inc. in July 1980. The only major revision to the 1980 operations plan thus far was a change in the filling sequence which was approved by the City and DEQ in the fall of 1980. This revision allowed Metro's contractor to fill areas 1, 2 and 3 in one layer of refuse to final grade rather than cover all three subareas with a shallow layer and then fill to final grade with a second layer. This revision increased efficiency and avoided some increased costs.

The 1980 operations plan calls for the expansion area to be filled in five layers, each approximately 12 feet in height. Each layer would cover the entire expansion area before the next layer would be started.

There are several disadvantages to filling by the method described in the current operations plan:

1. When the 55-acre expansion area was constructed in 1980 a storm sewer system was installed. This system includes a series of drainage ditches approximately 2.4 miles long and two 6-inch stormwater pumps with their associated power lines, catchbasins and inlet structures. Most of this stormwater system would have to be relocated with each lift.

2. Each of the layers would require a top layer of a minimum of six inches of daily cover as is required for sanitary landfills.

3. No final cover would be placed until the last year of filling in this area. This creates several problems.

    a. water is allowed to infiltrate the refuse causing considerable leachate generation;

    b. final cover costs would be high in the final year of filling; and

    c. the installation of a methane gas collection system would have to take place after the expansion area is completed.

4. The rock dumping pads which are used for wet weather operation would have to be replaced in layers 1, 3 and 5.

PROPOSED REVISIONS

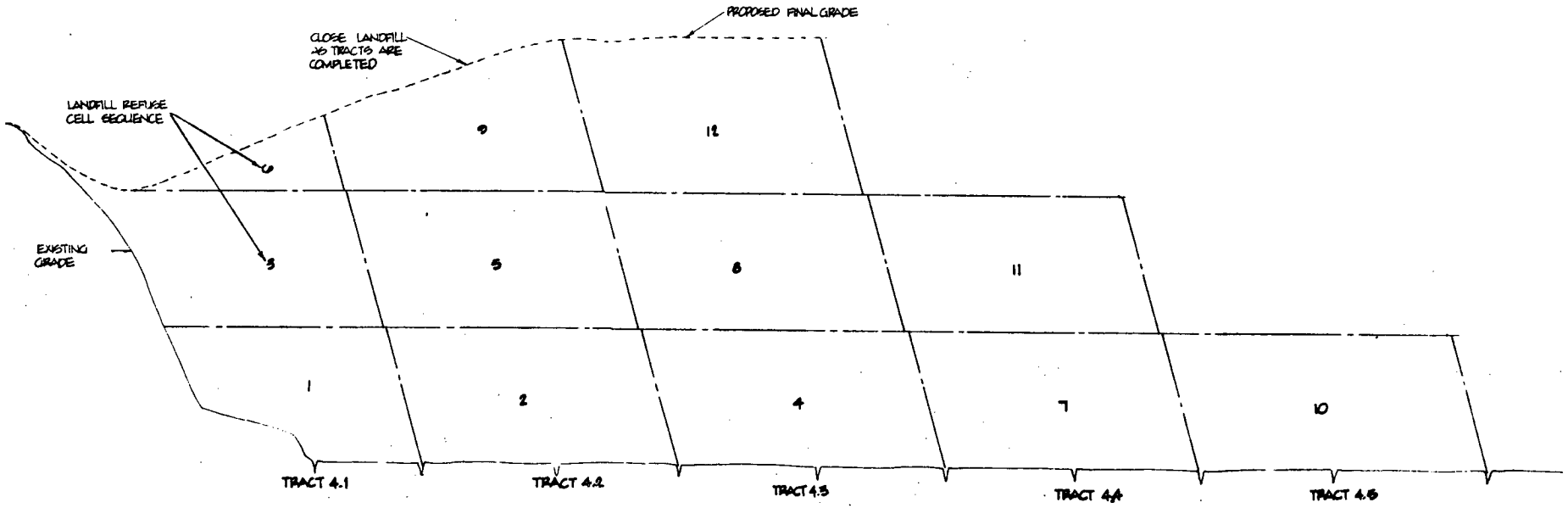
Metro and its contractor are proposing to change the filling sequence for the expansion area. Under the proposed plan the filling would occur in strips 400-feet wide starting on the west end of the expansion area identified as subarea 4 and proceeding in a stairstep pattern of lifts that are 20-feet deep (see Figure 5). This will allow the entire area to be filled in three lifts while assuring timely closure of completed areas. This change would allow Metro to retain the use of the existing storm drainage system for the entire useful life of the expansion area, minimize the amount of space lost to daily cover, allow the uniform application of final cover over the life of the site, allow the timely installation of the methane gas collection system, and minimize the number of wet weather rock pads needed to complete the expansion area.

During the period from 1980 to 1983, Metro has performed an evaluation of the need for a surface water diversion system required in the final plans for the landfill area in conjunction with the independent engineer who semi-annually inspects the site. This evaluation determined if the system was actually necessary to effectively prevent erosion. Based on these results, Metro staff and the engineer concluded that the system is not only unnecessary but that it makes final grading difficult and may interfere with future development of the site. In the May 1983 report by the independent engineer it was recommended that the suface water diversion system be deleted from the final grading plan.

The construction of the 55-acre expansion of the St. Johns Landfill consisted primarily of two main sections. These sections included a 5000-foot dike around the outside perimeter and a leachate collection and discharge system which empties into the City of Portland sanitary sewer system at Columbia Boulevard. The dike encloses the entire east edge of the original landfill area with the exeception of a 300-foot section southwest of the label subarea 5 in Figure 2. This section adjoins Columbia Slough and a short finger of the slough. This section contains the last major remaining surface leak in the entire landfill. While other areas with leaks have been eliminated by various methods this section continues to be a problem.

The final grading plan calls for the problem in subarea 5 to be covered with refuse and capped with a final cover. This method has proved successful in most other areas, but it is the opinion of Metro staff and its contractor that the leak is too close to the water's edge and that the slope is too steep to be filled in the normal manner. Instead, it is proposed that the south end of the perimeter dike be modified to emcompass the problem area in subarea 5 and that the leachate collection and discharge system be modified accordingly. This will eliminate a source of contamination as well as minimize the collection of debris in the stagnant, dead end finger which currently exists.

SUB AREA 4



PROPOSED FILL SEQUENCE

FIG. 5

IV. STATUS OF METHANE GAS RECOVERY PROJECT

INTRODUCTION

The production of methane gas in landfills is the result of the anaerobic digestion of organic refuse such as food wastes, garden waste, wood and paper products. In recent years there has been increasing interest in the recovery of landfill produced methane gas. The reason for this interest is the potential that landfill gas could be utilized as a cost-effective alternate to natural gas and fossil fuels.

This chapter provides an overview of Metro's past, current and future efforts regarding the recovery of methane gas from the St. Johns Landfill. The 1980 agreement between the City of Portland and Metro stipulates that Metro is responsible for the preparation of an economic/engineering feasibility study to determine the viability of recovering methane gas at the St. Johns site. The agreement further states that Metro is solely responsible for the development of such a project and that the net profit from the project shall be divided on a fifty-fifty basis with the City of Portland.

Metro contracted with Gas Recovery Systems to conduct the feasibility study.[3] The final feasibility report is in the form of several separate studies. The initial study included short-term production tests, market research and a limited financial analysis. The scope of the report was expanded to include long-term testing and a more finite market evaluation and economic analysis. The conclusions of the feasibility report show the project to be economically viable with adequate recoverable gas production which coincides with the completed filling of subareas 1, 2 and 3. Metro is currently involved in the financial analysis of potential marketing and business strategies for developing the project.

MARKETING OPTIONS AND DEVELOPMENT STRATEGIES

The feasibility report identified numerous potential uses for the recovered landfill gas. Three marketing options stand out as the most viable.

1. Direct sale of medium Btu (heating value) gas to industrial customers.

2. Utilization of medium Btu gas as a source of fuel for electrical generation.

3. Conversion of the raw gas to pipeline standard gas for injection into nearby utility company pipelines.

Potential revenue and project costs vary for each of the three gas utilization options.

The economic analysis is further complicated by the three development strategies available by which Metro could develop the landfill gas. The first of these is a facility designed, constructed and operated by Metro. The second strategy involves a partnership arrangement between Metro and either a developer or end user. This alternative would allow the developer/user to take advantage of energy and capital investment tax credits. The third strategy is the lease of the recovery rights to a gas developer who would finance the project, develop its own markets and pay Metro and the City a royalty based on a percentage of gross profits.

PROJECT RISKS

There are a number of inherent risks associated with any methane recovery project regardless of the development implementation strategy selected. In the case of the St. Johns Landfill, there is some additional risk due to the shallow depth of the landfill and the high water table which may inhibit methane recovery. The risks involved are categorized in Table 1. While none of the above risks should be considered insignificant, the majority can be minimized through good management and engineering practices.

The two factors that are of greatest importance to the economic feasibility of the project are:

A. The amount and lifespan of landfill gas produced.

B. The ability to efficiently collect gas.

The feasibility study presents two mathematical models which predict the quantity and lifespan of methane gas which will be produced at the landfill. These two models are based on tonnage, year of placement, refuse composition, moisture content and other factors. Both models are based on a conservative production ratio of 1.0 standard cubic foot (SCF) of methane to 1.0 pound of refuse. The two models depict different scenarios of quantity and duration of gas production. These models are shown in Figure 6.

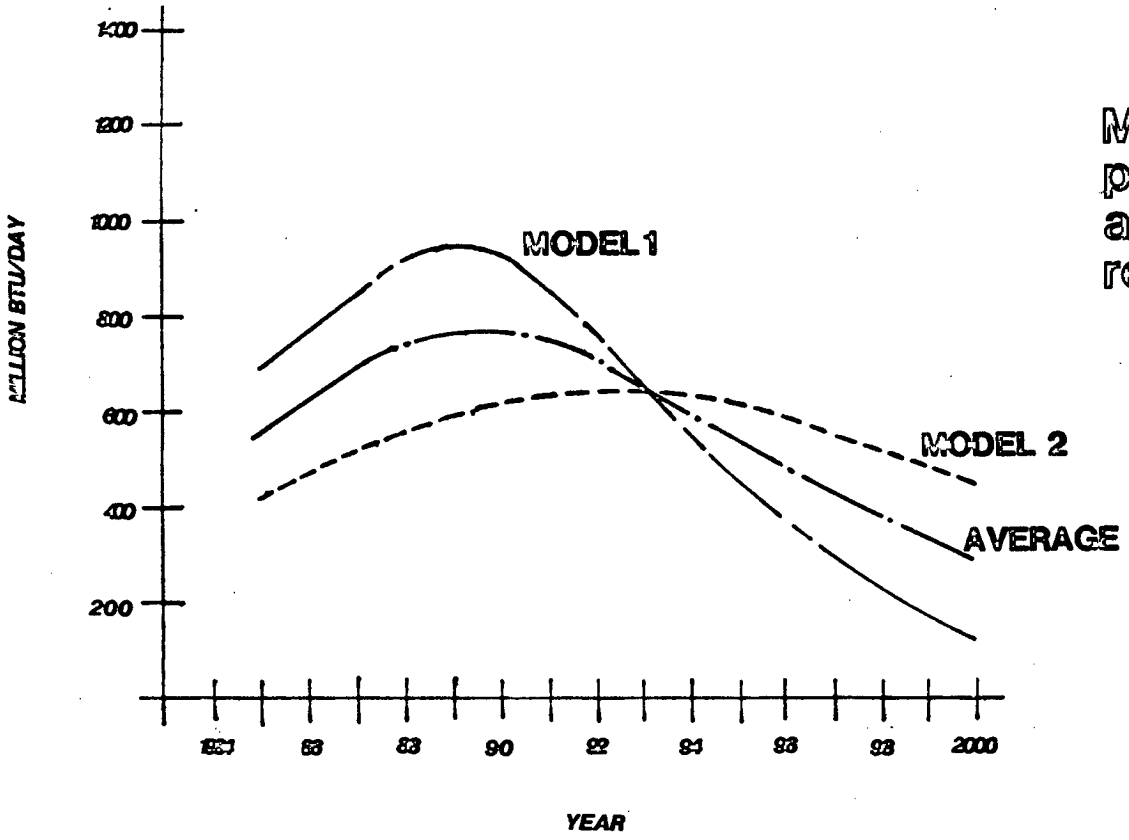
Recent data from some gas recovery projects indicate that Metro can expect production at St. Johns to follow the production curve identified in model one, rather than model two. Also, the production ratio may be as high as 1.6 SCF methane to 1.0 pound of refuse. The lower graph of Figure 6 predicts that production should peak in 1988-89 and drop one-half by 1994-1995, according to model one. The upper graph shows similar results for the more conservative production ratio.

The collection system is the other important factor influencing the economic feasibility of recovering the landfill gas. As previously mentioned, the high water table and high refuse moisture content at the St. Johns site may create difficulty in collecting the landfill gas. Some of the vertical test wells installed during the feasibility study experienced limited or total loss of production due to water infiltration.

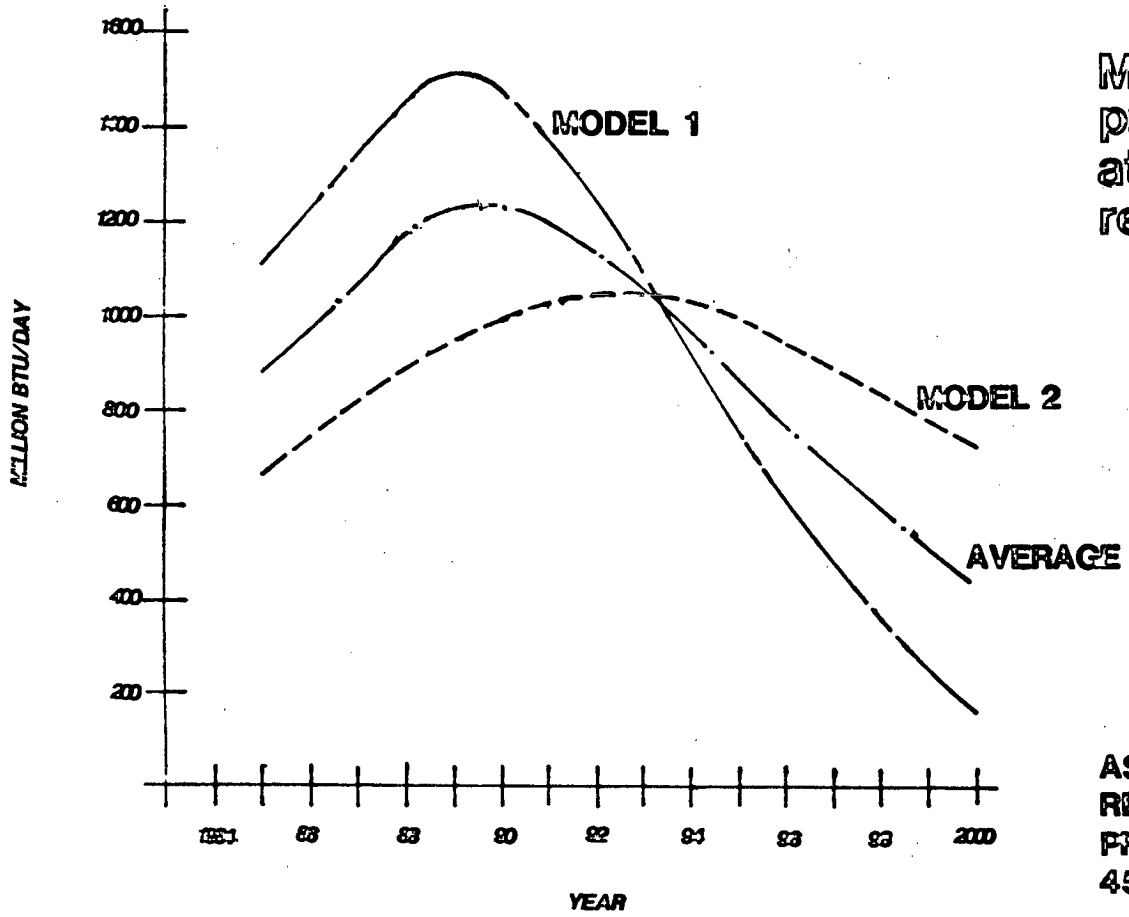
TABLE 1

RISK ASSESSMENT

Area of Concern	Risk Factor	Mitigation
Collection System	Air Contamination (Too Much Oxygen)	• Proper Maintenance of Final Cover
	Water Infiltration	• Horizontal Wells with Drainage System Incorporated
	Damage from Filling Operations	• Proper Pipe Embedment • Marking of Well and Header Location • Use of Flexible Pipe and Couplings
Process System	Inadequate Sizing of Equipment	• Careful Engineering • Use of Modular Design Allowing for Flexibility
	Insufficient Level of Gas Refinement	• Careful Engineering Adequate Testing • Marketing
Production	Temporary Interruption of Service	• Standby Natural Gas Service, • Backup Fuel Oil Capacity
	Underestimation of Gas Volume or Production Life	• Adequate Field Testing



Methane production at 1.0 SCF/lb. refuse



Methane production at 1.6 SCF/lb. refuse

ASSUMES 70% RECOVERY, 10% PROCESS LOSS & 450 Btu/SCF GAS

METRO

METHANE PRODUCTION AT VARIOUS TIMES

FIG. 6

A preliminary collection system is identified in the feasibility study. This system allows for 145 vertical gas wells and varying lengths and sizes of header pipes to carry the collected gas to a process station located at the south end of the site. (See Figure 7).

Metro is considering the use of horizontal trench wells in place of, or in addition to, conventional vertical collection wells. Trench wells have proven to be a more effective and more economical means of collecting landfill gas at several recovery projects including the Rossman's Landfill in Oregon City. Rossman's has water table conditions similar or worse than those at St. Johns. A recent test of horizontal test wells (by CH_2M HILL) has indicated them to be quite effective with no problems due to water infiltration.

Estimated cost for the collection system (145 vertical wells) is $430,000. It is anticipated a horizontal well system will consist of a similar number of wells at the same or a lesser cost.

IMPACT ON SITE AND OPERATIONS

It should be noted that the construction of a methane recovery project will have some impact on current and future site operations.

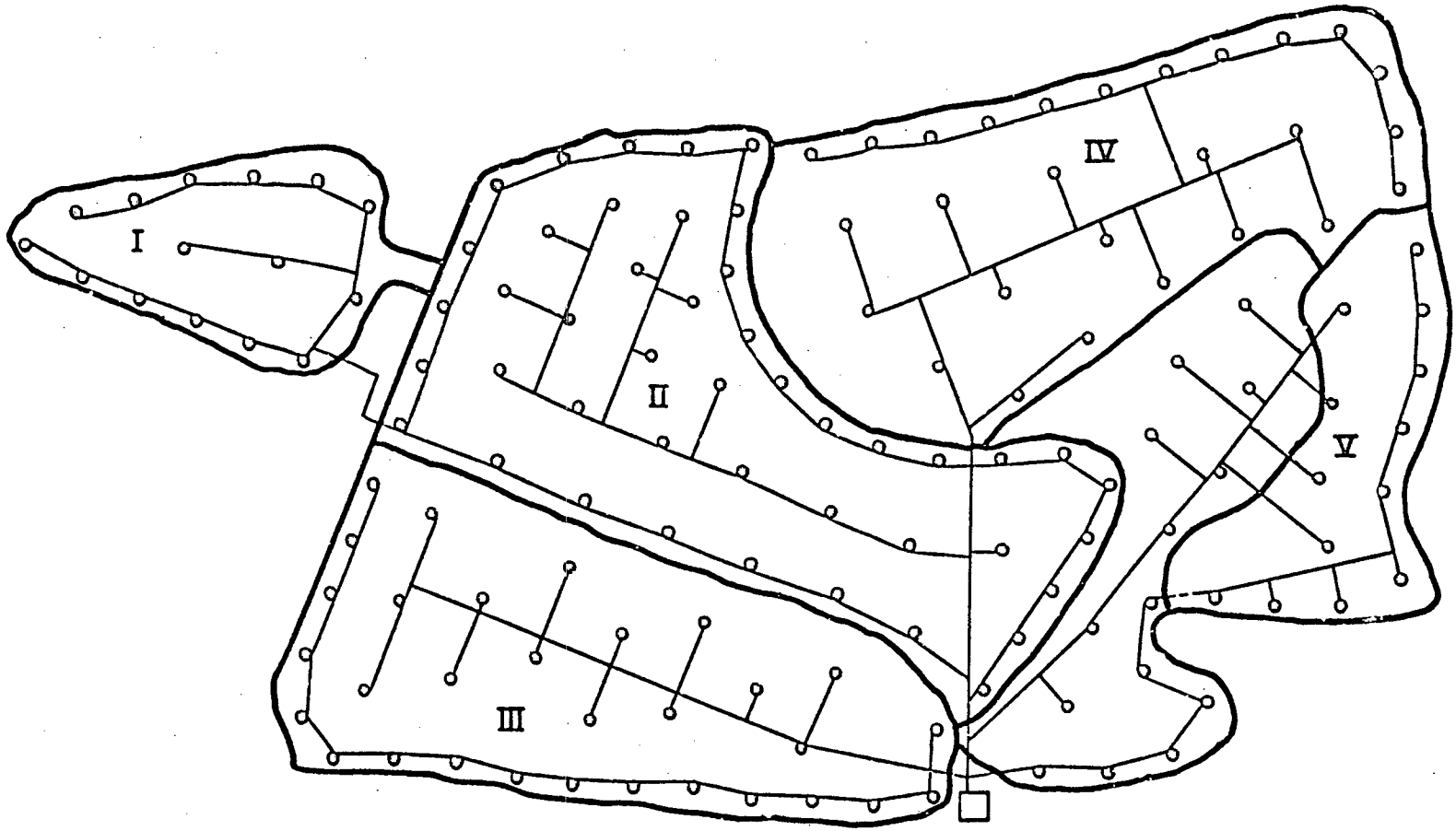
The two major elements of the project that affect the site are the collection system (wells and collection pipes) and the process station.

The proposed site for the process station is adjacent to the current access road on the north side of the "Incinerator Road Bridge." The process station will consist of piping, mechanical equipment, electrical equipment and instrumentation housed in a metal building surrounded by a chain-link fence. This portion of the project will have minimal impact on the site or filling operations.

The installation of the collection system will have the greatest impact at the site. Installation of wells and collection pipes will have to be on a phased basis to coincide with the filling operations in each subarea. Collection pipes and horizontal trench wells could be buried. If vertical wells are utilized in some areas, only the well head would be visible.

A possible cost savings could be achieved by installation of horizontal wells, and in some instances collection pipes, while active filling operations are taking place. This would eliminate the need to dig trenches, install pipes, and backfill after final cover is in place.

In summary, the methane recovery project can be designated to minimize significant impact on operations or on use of the site after final closure.



LEGEND

□ PROCESS STATION

○ GAS RECOVERY WELL

METRO

PROPOSED METHANE COLLECTION SYSTEM

FIG. 7

FINANCIAL ANALYSIS

The financial analysis of the gas recovery project can be broken down into three main steps.

1. A forecast of potential revenue that can be expected from each of the three landfill gas marketing options discussed earlier.

2. An estimate of capital and operating costs associated with each of the three marketing options.

3. A comparison of potential net revenue from the marketing options with the risk that is associated with the three development strategies discussed earlier.

The sale of the processed gas as a medium Btu fuel is the first of three marketing options. Primary prospects in the St. Johns area include:

1. Palmco, Inc.

2. Columbia Steel Castings Co., Inc.

3. Gilmore Steel Corp.

4. Ash Grove Cement Co.

Palmco and Columbia Steel Castings are the most attractive prospects of this group.

Their combined energy requirement is about equal to the aniticipated gas production at the St. Johns site. In addition, each company operates at a fairly constant level for the majority of the year. Both companies are currently paying a relatively high rate per Btu and have shown an interest in utilizing landfill gas if a stable and economic supply can be provided. Estimated gross annual revenue from these two customers could range as high as $1.25 million.

The second marketing option involves the use of landfill gas for on-site electrical generation. This does not appear economically viable because of the current low cost and abundance of hydro-electric power in the region which has greatly reduced the unit costs that northwest utilities are paying. Utilities may pay a rate which approximates their avoided costs. Avoided cost means the amount a utility pays to produce one additional unit of power or gas. Current PGE avoided costs are in the range of $0.03 to $0.04/kwh which is comparable to the estimated cost to generate electricity from recovered landfill gas.

The third marketing option involves the upgrading of the raw landfill gas to pipeline quality for sale and injection into existing gas mains. Upgrading the gas requires additional processing beyond the basic dehydration and compression required

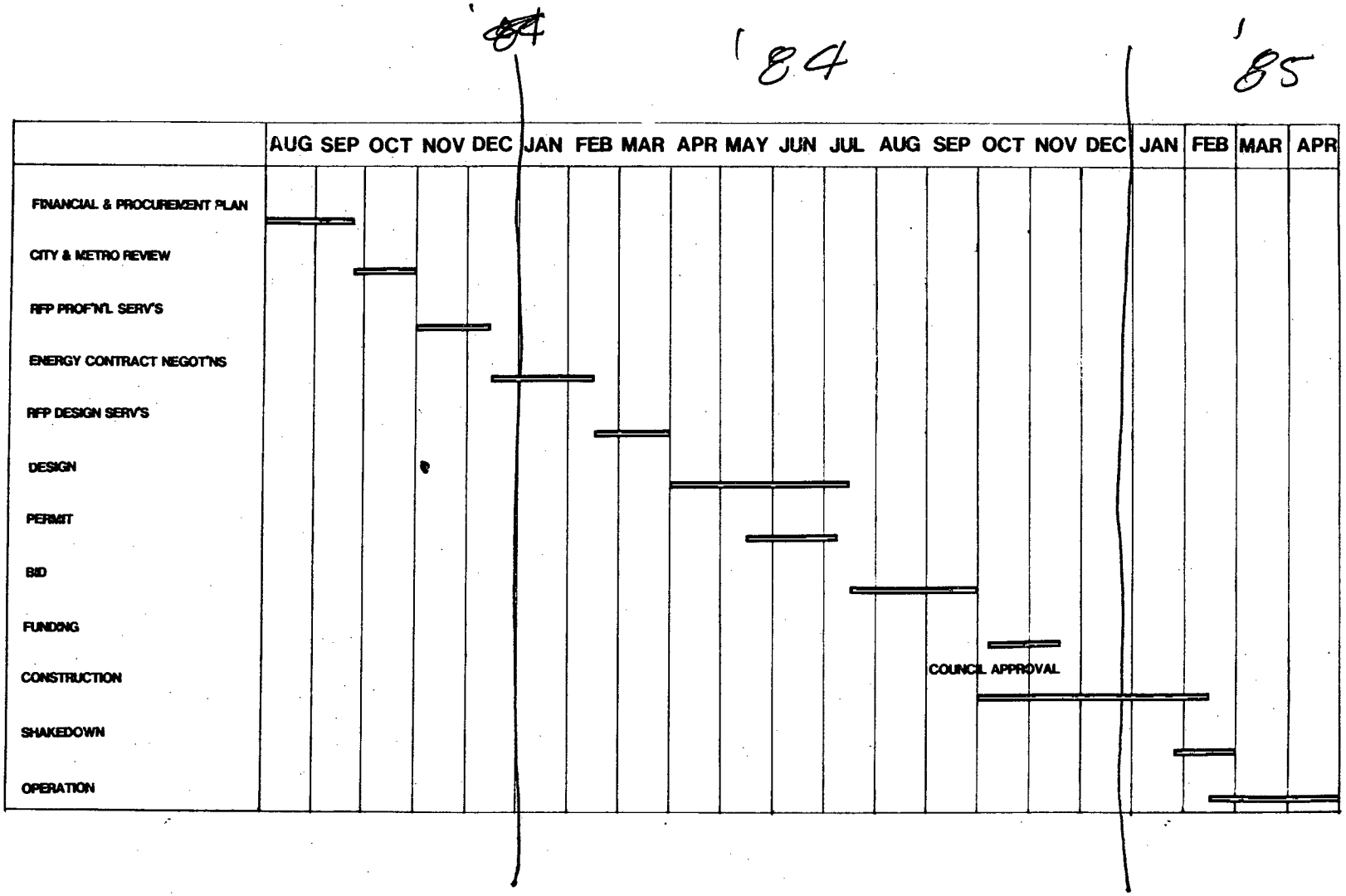
for medium Btu use. This is because carbon dioxide is generated in the landfill in approximately the same percentage as methane (45 to 55 percent). Therefore, one of the major efforts in upgrading the landfill gas is to separate the carbon dioxide from the methane. There are a number of process techniques currently available to accomplish this. Although these techniques are effective they are also costly. The economics of this approach need to be looked at closely.

It is Metro's intent use a present worth analysis to evaluate all three marketing options. This analysis will take into account forecasted energy costs, inflation, projections of gas production and estimated capital and operating costs.

Based upon the results of this analysis, Metro will develop a preferred course in terms of best use and implementation strategy.

SCHEDULING

Figure 8 identifies the schedule for implementing the gas recovery project. It establishes key tasks and target dates which must be completed in order to make large scale gas recovery coincide with the completion of subarea 3.



METRO

METHANE RECOVERY PROJECT DEVELOPMENT SCHEDULE

FIG. 8

V. SCHEDULE OF OPERATIONS, COMPLETION AND CLOSURE

REMAINING VOLUME AND ESTIMATED SITE LIFE

The St. Johns Landfill is being filled according to the contours defined in the operations plan developed by the City of Portland in April 1980 following criteria approved by the City of Portland Planning Commission in 1975. It is Metro's responsibility to construct the landfill to the approved elevations, plus or minus one foot.

Metro has determined the amount of space used for landfill operations in the past year and capacity available for future years by using aerial photography and mapping. The site was flown on June 7, 1983, by Spencer B. Gross, Consulting Engineer. The remaining volume as of that date was 6.337 million cubic yards. Volume would allow landfilling with 3.3 million tons of solid waste assuming compaction to a density of 1,200 pounds per cubic yard in place and one cubic yard daily cover per five yards of in-place compacted waste.

Because different areas of the landfill will react differently, i.e., areas that have already been partially filled compared to the new expansion area, the remaining space has been divided into three separate areas. These areas are shown in Figure 2 in Chapter I.

In determining the capacity of a landfill, three parameters need to be identified:

1. The actual volume that remains to be filled;

2. The rate at which the waste will enter the site; and

3. The methods by which the waste will be handled as it is compacted into the site.

The following assumptions were made to determine the life of this site:

- No waste will be added to completed portions of the landfill once final cover has been applied;
- Refuse will be compacted to a density of 1,200 pounds per cubic yard in-place;
- Daily cover will be applied at a ratio of one cubic yard of cover to five cubic yards of refuse;
- There will be final cover of 18 inches of dense clay and 6 inches of topsoil;
- There will be 25 percent settlement of the refuse on Area 3;
- The current method of operation at the landfill will continue until closure;
- No new general purpose landfill will be opened until the St. Johns Landfill is completed;

- Another limited use landfill will be opened when Killingsworth Fast Disposal Landfill closes;
- Hillsboro Landfill closure in December 1983 would contribute three percent of regional flow;
- Newberg Landfill closure in October 1984 would contribute seven percent of regional flow.

Four alternative waste flow projections were considered:

1. Population projection "A." The disposal rate per capita is assumed to continue decreasing as has been the recent trend. Population projections for the interim years 1983 to 1999 have been revised, using 1982 regional population estimates by the Center for Population Research and Census (CPRC) and the year 2000 forecast accepted at Metro-sponsored Growth Allocation Workships, March-April 1981. This projection results in a closure date of January 1989.

2. Population Projection "B." Per capita rate of disposal is assumed to remain constant with the same revised population forecasts as Alternative "A". This projection results in a closure date of August 1988.

3. Population Projection "C." Regional waste flows are assumed to remain constant at fiscal year 1983 level. This projection results in a closure date of December 1988.

4. Population Projection "D." An increase in per capita generation of waste to reflect the pre-recession refuse quantities. This projection also assumed achievement to the short-term goal of the Metro Waste Reduction Plan. This projection yields a closure date of September 1988.

Table 2 summarizes the site capacity calculations used for evaluation purposes.

The five-month variation in closing dates shows how sensitive are predictions to the assumptions used. Because it is essential to have landfill space available on a continuous basis and at the same time not to have facilities ready too soon, projections must be conservative. For this reason, for the purpose of projecting the life of the St. Johns Landfill, Projection "B" has been used to predict key dates for planning purposes.

Based on these assumptions, subarea 3 would reach substantial completion approximately May 1984. Final cover would then be placed on the slopes of subarea 3. The final cover would not be placed on the top of subarea 3 until later, in anticipation of additional settlement caused by the surcharge of landfilled waste.

Subarea 4 (see Figure 2) would be filled in stages with the entire area being filled to capacity in June 1987. Subarea 5, which would

be the final area, will take 11 months to fill and would last until approximately August 1988. Table 2 shows the schedule of operations past, present and future.

TABLE 2

SCHEDULE OF OPERATIONS

June 1980	Metro assumed operation of the St. Johns Landfill. Genstar began actual filling operation for Metro. Continued filling subarea 2 (see Figure 2) while preparing to complete subarea 1.
June 1980	Began work on 55-acre expansion area.
November 1980	Began filling subarea 1. Completed public transfer station. Public waste transported to filling area; commercial collectors continued to dump directly in filling area.
November 1980	Substantially completed gatehouse modifications including computer billing and weighing system.
March 1981	City of Portland began delivering sewage sludge to holding/drying areas located on subareas 4 and 5. Part of sludge used with topsoil as final cover soil amendment.
July 1981	Began filling top of subarea 1 with additional waste.
July 1981	Completed Phase I of methane gas test program.
September 1981	Completed filling subarea 1. Added 171,000 tons of solid waste to subarea 1 since Metro began operations.
April 1981	Set up a drop center for recycled material at the St. Johns Landfill.
November 1981	Substantially completed preparation of 55-acre expansion area to receive solid waste.
January 1982	Completed Phase II methane gas test program in subarea 1.
July 1982	Completed final feasibility report for gas program including market analysis.
October 1982	Added about 130,000 cubic yards of final cover to subareas 1 and 2 since Metro began operation.
April 1983	Completed filling about 80 percent of subarea 2 to final design grades with 511,000 tons of solid waste.
May 1984	Projected substantial completion of filling subarea 3 with solid waste.

June 1987	Projected substantial completion of filling subarea 4 with solid waste.
August 1988	Projected substantial completion of filling subarea 5 with solid waste.

VI. FURTHER EXPANSION OF ST. JOHNS LANDFILL

As discussed in Chapter I, a 1978 agreement between the City of Portland and the EPA allowed the St. Johns Landfill to be expanded outward 55 acres in the adjoining wetlands. This expansion is currently estimated to allow the landfill to accept solid waste until mid-1988. The information below lists the permits that would be required for further expansion and also estimates increased site life if the landfill were expanded in various ways.

REQUIRED PERMITS

Upward or outward expansion would require a new or modified Solid Waste Disposal Permit and/or NPDES Waste Discharge Permit from the Oregon DEQ. Both permits currently state that the St. Johns Landfill is an interim facility to be used only until an alternative facility is available.

Outward expansion of the landfill into the adjacent wetlands would require a new or modified removal-fill permit from the Oregon Division of State Lands. ORS 541.622 prohibits the Division of State Lands from issuing a permit to fill Smith or Bybee Lakes below the 11 foot mean sea level (MSL) contour. The base of the dike bounding the present 55-acre expansion area is at the 11 foot MSL contour. This law would have to be repealed before further outward expansion into the Lakes could occur.

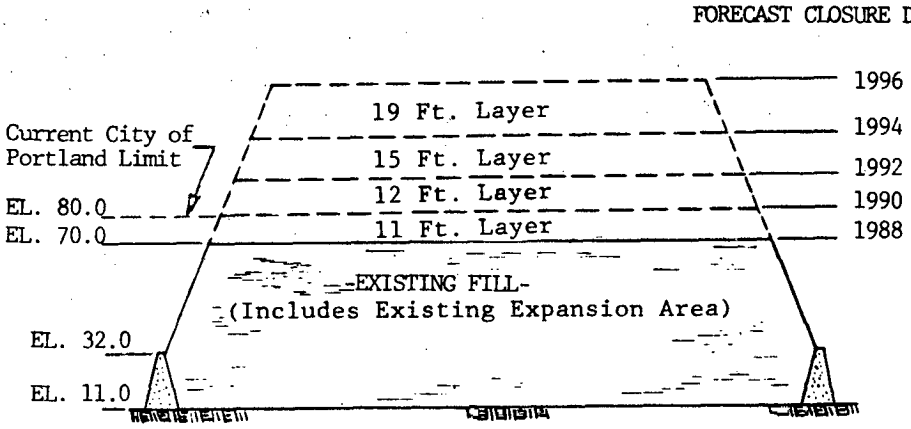
Outward expansion would require a permit from the Army Corps of Engineers to construct the necessary dikes. A Corps permit was issued for the 55-acre expansion and prohibits fill into Smith and Bybee Lakes below 11 feet MSL.

Either upward or outward expansion of the landfill would require approval by the City of Portland. In April 1975, the Portland Planning Commission recommended that the landfill be permitted to reach a height of 80 feet MSL. City Ordinance No. 140592 permits the landfill to reach 80 feet MSL. Currently the landfill is being filled to 74 feet MSL including final cover before settlement. The June 1983 City of Portland Comprehensive Plan designates the landfill as heavy manufacturing. This plan designates the surrounding Smith and Bybee Lakes as open space. Any outward expansion would have to take place in the area designated open space.

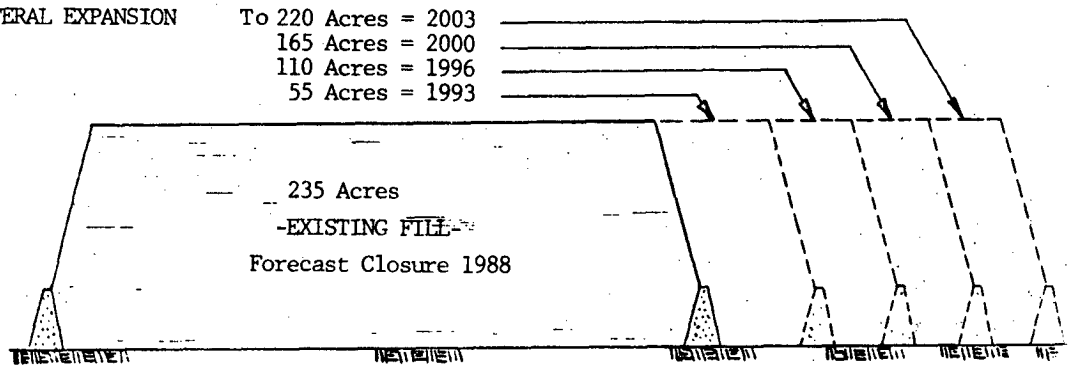
FURTHER EXPANSION AND SITE LIFE

Figure 9 shows how many years various further expansions would delay the closure of the St. Johns Landfill. The major assumptions behind these estimates are that the St. Johns Landfill will be the only general purpose landfill serving the Portland metropolitan area through in 1988 and that each 55-acre expansion contains 3.1 million tons of solid waste.

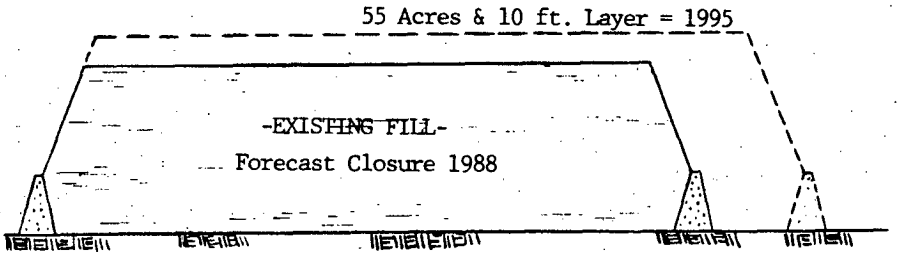
VERTICAL EXPANSION



LATERAL EXPANSION



VERTICAL AND LATERAL EXPANSION



NOTE: Vertical Scale = 10 x Horizontal Scale

ASSUMPTIONS

Forecast of waste flow based on population projections B on page 24 of this report; each additional 55 acre lateral expansion holds 3.1 million tons of solid waste based on a conceptual plan; in place density of 1200 lb. per cubic yard; 4 to 1 side-slopes on fill, 2 to 1 side-slopes on dike; no allowance for settlement in lateral or vertical expansion areas; ratio of 5 parts solid waste and 1 part cover; final cover estimated as 2 foot layer; a base elevation of 11 ft. mean sea level (MSL) and a filled elevation of 75 feet MSL used in lateral expansion areas.

METRO

FURTHER EXPANSION OF ST. JOHNS LANDFILL

Fig. 9

VII. DEVELOPMENT OF A SUCCESSOR TO THE ST. JOHNS LANDFILL

On June 19, 1980, the Oregon DEQ issued to Metro a NPDES permit covering the St. Johns Landfill. This permit was the result of a compromise reached between the City of Portland and the EPA in 1978. The NPDES permit was issued first to the City by DEQ which has the authority from the EPA to issue such permits. DEQ issued the NPDES permit to Metro when Metro assumed operation of the landfill in June 1980. Item #5, Schedule C, states:

> "The landfill is an interim facility. The permitee shall implement a long-term solid waste disposal site and/or resource recovery program. Such a program shall be designed to handle the solid waste presently going to St. Johns. The use of the landfill will be terminated and all solid waste directed to an approved alternative disposal facility in accordance with the following:
>
> | Date | Required Action |
> |---|---|
> | 01/01/81 | Identification of feasible alternative sites. |
> | 06/01/81 | Ranking or ordering of sites from environmental and economic standpoint. |
> | 01/01/82 | Selection of site(s). |
> | 01/01/83 | Purchase, lease and/or option to purchase or lease site. |
> | 01/01/84 | Obtain necessary land use and environmental permits." |

Metro's predecessor organization began an effort to develop an ERF option and a landfill option in the mid-1970s. This effort arose from a perceived need for new disposal facilities to replace those which would soon close. Since its formation in 1979, Metro actively pursued the task of developing the ERF option and the landfill option.

The ERF was to be a long-term facility and be located on a site in Oregon City, Oregon, across from Rossman's Landfill. This site had been purchased by Metro's predecessor in 1977. In 1980, Metro concluded an agreement to sell energy to Publishers Paper Company, proceeded with negotiations with Wheelabrator-Frye Inc. to build and operate the site, and sought local and state permits to develop the facility. By 1982, Metro had received a local land use permit from Oregon City and draft environmental permits from DEQ. However, in late 1982 a majority of the voters in Oregon City approved a Charter

amendment which blocked operation of the ERF. Responding to this vote, the Metro Council in November 23, 1982, stopped all further work on the facility in Oregon City.

Metro's predecessor organization began active efforts to locate another landfill in 1977. In 1979, Metro began studies of three potential sites. These studies uncovered technical problems which caused Metro to stop further work on all three sites. In 1980, Metro identified over 46 alternative sites for study including those previously considered during the 1970s.[4] These were analysed and ranked by an interagency task force and then by a citizens' Regional Landfill Siting Advisory Committee.[5] In June 1980 this committee advised Metro to limit further consideration to only one site--the Jeep Trail (later called Wildwood) site in northwest Multnomah County.[6] The committee further recommended that this site be carefully studied to determine feasibility. Metro commissioned CH_2M HILL to perform a feasibility study which looked at the Wildwood site from both the environmental and economic standpoint.

In June 1981 the Metro Council selected the Wildwood site as the future regional landfill and successor to the St. Johns Landfill.[7] This action was taken after the Council had reviewed the feasibility study results[8] and listened to extensive public comment including a favorable final recommendation by the Regional Landfill Siting Advisory Committee. The Metro Council also directed staff to apply to Multnomah County for a land use permit to operate a landfill at the Wildwood site.

In August 1981, Metro began the application review process with Multnomah County. During the summer and fall of 1981, Metro received preliminary approval of the site from DEQ and began negotiations to acquire use of the site from the primary landowner, Publishers Paper Company. Because the legal disputes about the land use permit have not yet been decided these negotiations have not yet resulted in any commitment by either Metro or Publishers.

The review by Multnomah County lasted 16 months and was quite extensive. During this review, Metro responded to issues raised by a County consultant by proposing an alternative design.[9] During the summer of 1982, Metro presented evidence at public hearings before a County hearings officer. After listening to presentations by Metro, other agencies, and opponents of the landfill, the hearings officer concluded in September 1982 that a strict interpretation of the County's own rules did not allow a landfill to be located at the Wildwood site. Metro appealed this decision to the County Commissioners.

The Multnomah County Commissioners reviewed the record, listened to testimony, and authorized a landfill at Wildwood in December 1982. Opponents of the Wildwood Landfill appealed this decision to the Oregon Land Use Board of Appeals (LUBA).

In June 1983, LUBA returned the Wildwood Landfill conditional use permit to Multnomah County. The ruling stated that the permit did not comply with several standards in the County plan and zoning ordinances. Although Metro and the County argued that the standards must be interpreted in light of the nature of the facility, LUBA ruled that the standards are expressed in absolute terms allowing no deviation or mitigation. However, LUBA suggested that the County standards are inappropriate for landfill siting and invited the County to change the standards to allow for some flexibility in the landfill siting process.

In July 1983, the Metro Council voted to appeal this ruling to the Oregon Court of Appeals. The Council also asked Multnomah County to reaffirm its decision to authorize the Wildwood Landfill by changing its relevent land use standards and reissuing the conditional use permit.

Metro has filed an appeal with the Court of Appeals and will argue the case during 1983. Multnomah County is considering modifications to its ordinance which would make it possible to authorize the landfill.

The following is an updated schedule for moving forward with the Wildwood siting process:

July 1983 - July 1985	Clarification of Multnomah County land use approval issue. Further site investigations for preliminary design.
July 1985	Begin Wildwood Landfill final design.
Spring 1986	Begin initial site construction.
August 1988	Begin Wildwood Landfill operation.

It is always possible that the development of the Wildwood Landfill could be stopped or delayed enough so it would not be ready to receive solid waste when the St. Johns Landfill reaches capacity. If this occurred one or more of the following alternatives could be chosen:

1. Expand the St. Johns Landfill as much as necessary.

2. Require all solid waste except food waste and residential garbage to go to limited use landfills. This would conserve existing space at the St. Johns Landfill and delay its closure.

3. Divert solid waste to landfills outside the District such as those located in Yamhill County, Marion County, or Clark County, Washington.

4. Request that DEQ site a landfill under its emergency siting authority.

5. Develop a landfill at another location.

A time schedule for implementating these alternatives will be submitted to the City of Portland by July 1984.

VIII. SUMMARY

Metro has operated the St. Johns Sanitary Landfill since June 1980. Since then Metro has performed its operating responsibilities to the general satisfaction of the City of Portland, the Oregon Department of Environmental Quality, and several other auditors. According to water quality monitoring data accumulated over the last 12 years the landfill appears to be in compliance with directly applicable water quality standards.

It is proposed that the current operation plan be modified somewhat when Metro begins to fill the 55-acre expansion area in 1984. The entire bottom of the expansion area would not be filled before adding additional layers of solid waste. Instead, consecutive sections of the expansion area would be filled to final grade (including final cover) in a stair-step sequence. Also, the perimeter dike at the landfill's southeast corner would be modified to enclose a portion of a dead end arm of Columbia Slough in order to cure a leachate outbreak.

It is also proposed that energy be recovered from the landfill in the form of methane gas. Landfill gas containing methane can be collected by a network of vertical wells and/or horizontal trenches in the solid waste. The mediun Btu gas could be collected and sold directly to nearby industrial customers or used as a fuel for electrical generation. Alternatively, the methane could be purified from the landfill gas and sold to Northwest Natural Gas Company for injection into its pipeline.

The gas project could be carried out in several ways. The project could be designed, constructed and operated by Metro alone. The project could be carried out by a partnership between Metro and a developer or user. The project could be carried out by a developer under a lease from Metro. Models of gas quantity and lifespan predict that gas production will rise to a peak in the late 1980s and decline thereafter. Metro staff is currently analyzing the financial aspects of methane gas development.

Based on a determination that the remaining landfill capacity is 6.4 million cubic yards, it is estimated that the landfill will hold 3.3 million tons of solid waste. Based on three alternative predictions of future solid waste flow it is estimated that the landfill will reach capacity between mid-1988 and early 1989. Further upward and outward expansion of the St. Johns Landfill is technically possible, but would require changes in existing laws and permits.

Metro is developing the Wildwood site as a successor to the St. Johns Landfill. Currently the land use authorization granted by Multnomah County is being contested. Assuming that construction of a landfill at the Wildwood site begins in 1986 the landfill would be

available to accept solid waste when the St. Johns Landfill closes in 1988. If development of the Wildwood site is stopped, or seriously delayed, there are several disposal options available.

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9247B/340

REFERENCES

1. Metro/City of Portland agreement approved by City Ordinance No. 149360 dated April 3, 1980.

2. Sweet, Edwards, and Associates, Metro/St. Johns Sanitary Landfill Water Quality Report, September 1983.

3. Gas Recovery Systems, Inc., Feasibility of Methane Gas Recovery at the St. Johns Landfill, July 1982.

4. CH_2M HILL and Metro, Sanitary Landfill Site Screening Study, April 1980.

5. CH_2M HILL and Metro, Five Potential Sanitary Landfill Sites, February 1981.

6. Landfill Siting, Public Involvement Report, June 1981.

7. Resolution No. 81-252.

8. CH_2M HILL, Wildwood Sanitary Landfill Feasibility Study, Vols. I and II, May 1981.

9. CH_2M HILL, Wildwood Sanitary Landfill Feasibility Study, Vol. III, May 1982.

Setting up an Account

You may obtain a credit application from the gate-house attendant or by calling Metro at 221-1646. Once you have submitted your application, it will take about two weeks for approval.

Metro bills once a month, by the 10th for the previous month's charges. Terms are 30 days. Past due accounts are charged an annual interest rate of 18 percent.

Facts about St. Johns Landfill

- refuse transferred daily from CTRC to St. Johns in North Portland
- volume increased at St. Johns Landfill to 2000 tons per day since Rossman's closed 4/83
- aggressive dust and litter control program
- expected to reach capacity in the late 1980's
- Metro is working to site a new landfill at Wildwood

Questions? Comments?

If you have suggestions or comments about CTRC, call Metro's Solid Waste Department, 221-1646.

CLACKAMAS TRANSFER AND RECYCLING CENTER
16101 SE 82nd Avenue
Oregon City, Oregon

Metro

METROPOLITAN SERVICE DISTRICT
Providing Zoo, Transportation, Solid Waste and other Regional Services

527 S.W. Hall St., Portland, OR 97201 • 503/221-1646

Printed on recyclable paper

Welcome to the Clackamas Transfer & Recycling Center...

HOURS:

CTRC is open seven days a week for your convenience.

6 am to 6 pm Monday-Saturday
8 am to 4 pm Sunday

Closed Christmas and New Year's Day

RATES:

$15.73 per ton (one ton minimum)

Charges are doubled for uncovered loads to reduce litter.

Use of the recycling facility is free. No charge for appliances if you leave them in the recycling bin marked for that use.

Rates at CTRC reflect the service and convenience provided by this new facility. They were increased on 1/1/84 due to higher than estimated use by commercial haulers, resulting in higher transfer costs. If you have questions about the new rates, call Ed Stuhr at Metro, 221-1646.

Recycling

If you are carrying recyclables you wish to take with you, you may weigh in and out so that you will not be charged for them. If you want to leave your recyclables at CTRC, please use the outside ramps to the recycling containers. This will avoid congestion inside the public recycling area.

Use of the Facility

To unload, back into one of the nine stalls until your truck touches the bumper guard at the edge of the pit. **Be sure your hopper or drop box is in the down position before leaving the building. If not, and the alarm horn activates, stop immediately.** The height of the doorway will not allow you to pass.

As you leave the building, please watch for vehicles coming out of the public use area.

Truck Wash Facility

By May, a three-truck covered wash rack will be built for your convenience. Trucks leaving the main building will drive to the area located on the northwest side of the CTRC lot. Please take precautions that you do not run over the hoses and break them. When finished, place the hose back on the island and shovel any garbage off the bay into the barrels provided. Please report any damage immediately to the gatehouse.

Rate Structure

The $15.73 per ton rate at CTRC includes:

- A *$9.80* per ton base rate to cover the operating costs at St. Johns Landfill.
- A *$1.68* per ton user fee charged at all disposal sites accepting garbage from the Portland metropolitan area. The user fee pays a portion of the debt service at Metro-operated facilities, and for administration of Metro's regional solid waste program.
- A *$2.00* per ton transfer charge, which is levied at all disposal sites accepting Metro-area garbage. This charge offsets the cost of operating CTRC and hauling the waste to St. Johns Landfill. It is applied regionally, so that the entire region bears the cost of the transfer system which will eventually serve the region.
- A *$2.25* per ton convenience charge levied at CTRC only. The idea of the convenience charge is that by having a modern, local facility, customers of CTRC avoid the time, fuel and vehicle wear that would be involved in using a landfill.

Welcome to the Clackamas Transfer & Recycling Center...

HOURS:

CTRC is open seven days a week for your convenience.

6 am to 6 pm Monday-Saturday
8 am to 4 pm Sunday
Closed Christmas and New Year's

RATES:

$7.25 per car or station wagon
$8.00 per pick-up, van or trailer (first 2½ cubic yards)
$3.60 for each additional cubic yard

Rates are doubled for uncovered loads (see below).

Cash only. Sorry, checks or credit cards are not accepted.

Recyclables: If you have at least ½ cubic yard of acceptable recyclables, you will be charged only for your garbage at the $3.60 per cubic yard rate rather than the minimum charge listed above.

Be a Good Neighbor... Cover Your Load

To be a good neighbor, the facility wants to keep litter out of the surrounding community. You can help by covering your load of refuse. This will keep litter from blowing off your vehicle into someone else's neighborhood.

over please...

Double Fee for Uncovered Loads

Since we are serious about keeping the environment clean, we charge double for uncovered loads. However, tarps can be purchased from the gatehouse attendant for $4, or you can pay the double charge. You are requested to cover all future loads regardless of which option you choose.

Free Recycling at CTRC

You can recycle for free at Clackamas Transfer and Recycling Center. Containers are provided for the following:

newspaper
glass (separated by color)
aluminum
tin cans
cardboard
appliances
copper
ferrous metal
motor oil
tires (small fee)

Please take loads of yard debris (leaves, branches, grass and hedge clippings) for recycling to:

McFarlane's Bark Inc.
13345 SE Johnson Road (Hwy 224 off I-205)
Clackamas, OR 659-4240

8 am-5 pm Monday-Saturday
10 am-5 pm Sunday

Please, no rocks, metal, glass or garbage mixed with the yard debris.

Questions? Comments?

Call Metro's Solid Waste Department, 221-1646.
Recycling Information Center, 224-5555.

CLACKAMAS TRANSFER AND RECYCLING CENTER
16101 SE 82nd Avenue Oregon City, Oregon

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Welcome to the St. Johns Landfill & Recycling Center...

HOURS:

St. Johns is open seven days a week for your convenience:

8 am to 5 pm daily
Closed Christmas and New Year's

RATES:

$6.50 per car or station wagon
$7.25 per pick-up, van or trailer (first 2½ cubic yards)
$3.25 for each additional cubic yard

Rates are doubled for uncovered loads (see below).

Cash only. Sorry, no checks or credit cards accepted.

Recyclables: If you have at least ½ cubic yard of acceptable recyclables, you will be charged only for your garbage at the $3.25 per cubic yard rate rather than the minimum charges listed above.

Be a Good Neighbor... Cover Your Load

To be a good neighbor, the St. John's Landfill wants to keep litter out of the surrounding community. You can help by covering your load of refuse. This will keep litter from blowing off your vehicle into someone else's neighborhood.

over please.

Double Fee for Uncovered Load

Since we are serious about keeping the environment clean, we charge double for uncovered loads. However, tarps can be purchased from the gatehouse attendant for $4, or you can pay the double charge. You are requested to cover all future loads regardless of which option you choose.

Recycling at St. Johns

You can recycle for free at St. Johns Landfill. Containers are provided for the following:

newspaper
glass (separated by color)
aluminum
tin cans
cardboard
appliances
copper
ferrous metal
tires (small fee)

Pull up to the recycling area located on the right, just beyond the railroad tracks. Place your recyclables in the appropriate bin. Clean fill material (dirt, rocks, concrete, sand) is also accepted and reused as final cover for the landfill.

Loads of separated yard debris (leaves, branches, grass and hedge clippings) are accepted for recycling at St. Johns Landfill. Regular landfill rates apply. The yard debris is taken to a processing site, which grinds the vegetation into garden mulch or industrial fuel.

Questions? Comments?

Call Metro's Solid Waste Department, 221-1646.
Recycling Information Center, 224-5555.

ST. JOHNS LANDFILL
9363 N. Columbia Blvd. Portland, Oregon

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over please...

Facts about St. Johns Landfill

- the region's primary general purpose refuse disposal site
- volume increased to 2000 tons per day since Rossman's closed 4/83
- aggressive dust and litter control program
- expected to reach capacity in the late 1980's
- Metro is working to site a new landfill at Wildwood

Questions? Comments?

Suggestions, comments or questions...call Metro's Solid Waste Department, 221-1646.

ST. JOHNS LANDFILL
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Welcome to the St. Johns Landfill & Recycling Center...

HOURS:

St. Johns is open 24 hours a day, seven days a week, for your convenience.
Closed Christmas and New Year's Day.

RATES:

$13.48 per ton (one ton minimum)

Charges are doubled for uncovered loads to reduce litter.

Use of the recycling facility is free.
No charge for appliances if you leave them in the recycling bin marked for that use.

The commercial rates at St. Johns Landfill have remained unchanged since January 1, 1983.

Recycling

If you are carrying recyclables you wish to take with you, you may weigh in and out so that you will not be charged for them. If you wish to leave your recyclables at St. Johns, please use the area set aside for the recycling bins. Containers are provided for the following items:

newspaper
glass (separated by color)
aluminum
tin cans
cardboard
appliances
copper
ferrous metal
tires (small fee)

Pull up to the recycling area located on the right, just beyond the railroad tracks. Place your recyclables in the appropriate bin. No hazardous materials are accepted.

Clean fill materials are accepted free: rocks, sand, dirt, concrete, and brick, for use in the landfill cover.

Setting up an Account

You may obtain a credit application from the gatehouse attendant or by calling Metro at 221-1646. Once you have submitted your application, it will take about two weeks for approval.

Metro bills once a month, by the 10th, for the previous month's charges. Terms are 30 days. Past due accounts are charged an annual interest rate of 18 percent.

Truck Wash Facility

Truck washing equipment is available for your convenience. Please take precautions that you do not run over the hoses and break them. When finished, place the hose back on the island, and shovel any garbage off the bay into the barrels provided. Please report any damage immediately to the gatehouse.

Rate Structure

The $13.48 per ton rate at St. Johns includes:

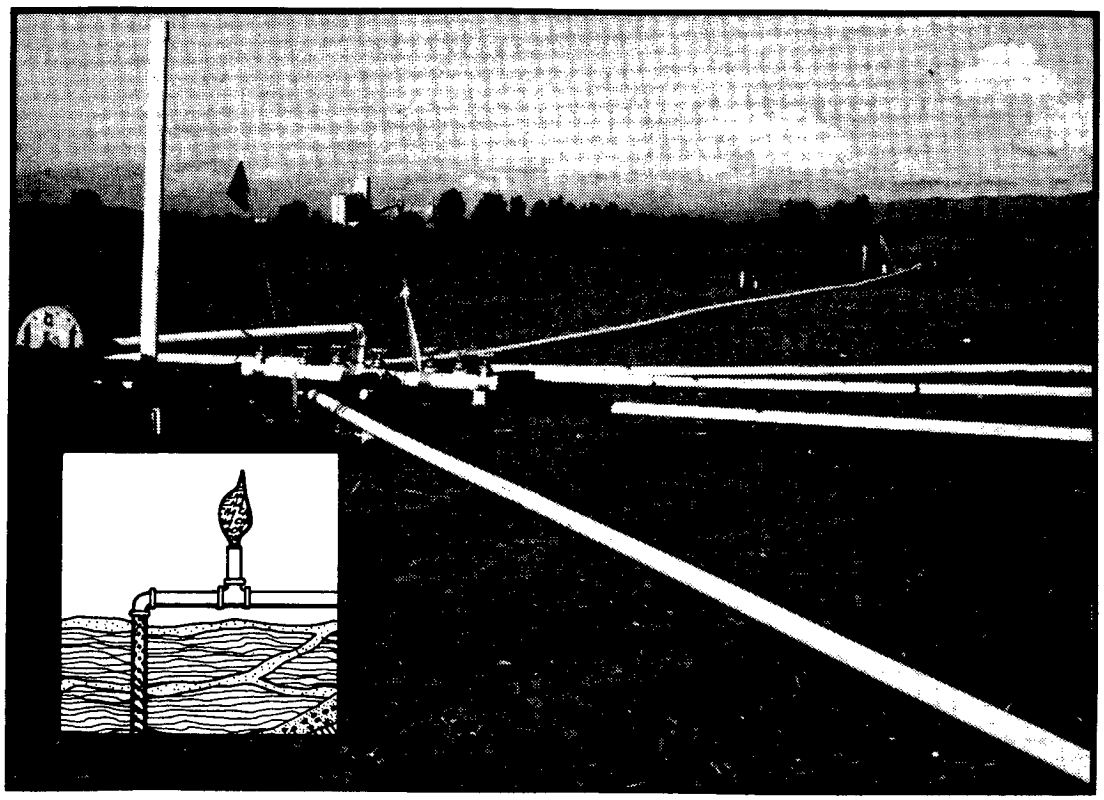
- A *$9.80* per ton base rate to cover the operating costs at St. Johns Landfill.
- A *$1.68* per ton user fee charged at all disposal sites accepting garbage from the Portland metropolitan area. The user fee pays a portion of the debt service at Metro-operated facilities, and for administration of Metro's regional solid waste program.
- A *$2.00* per ton transfer charge, which is levied at all disposal sites accepting Metro-area garbage. This charge offsets the cost of operating CTRC and hauling the waste to St. Johns Landfill. It is applied regionally, so that everyone in the region bears the cost of the transfer system which will eventually serve the entire region.

Financial Analysis
& Procurement Options

METHANE RECOVERY

at the St. Johns Landfill

December 1983



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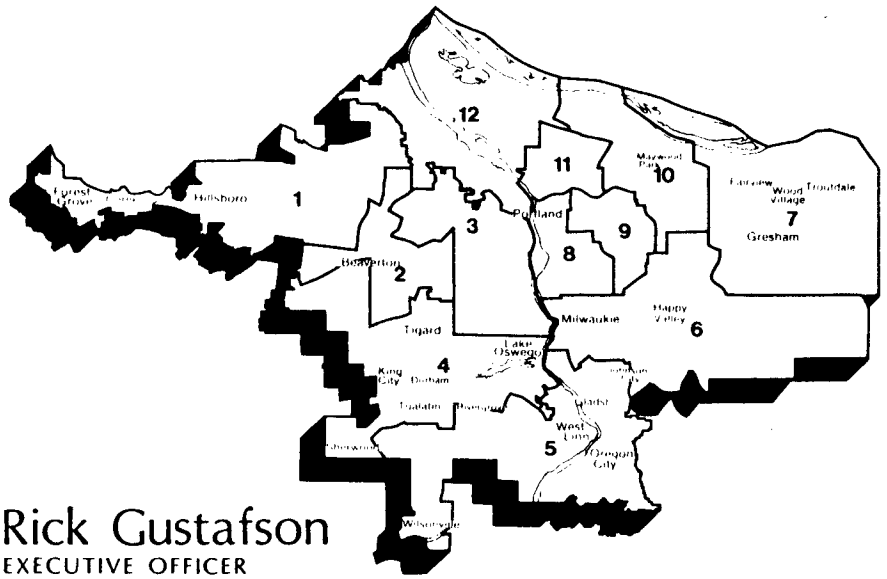

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FINANCIAL ANALYSIS & PROCUREMENT OPTIONS

FOR

METHANE RECOVERY AT THE ST. JOHNS LANDFILL

Prepared by

METROPOLITAN SERVICE DISTRICT

SOLID WASTE DEPARTMENT

Project Manager: Buff Winn

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FINANCIAL ANALYSIS AND PROCUREMENT OPTIONS FOR METHANE RECOVERY AT THE ST. JOHNS LANDFILL

This analysis is presented as the second phase in a five-phase program, whose goal is the recovery and marketing of methane gas produced at the St. Johns Landfill. The initial phase included the completion of an engineering/economic feasibility report, phase three being perceived as a negotiated energy contract and phases four and five being the project design and construction respectively.

The intent of this analysis is to establish and define a preferred course in terms of marketing and procurement options available to Metro.

INTRODUCTION

The production of methane gas in landfills is the result of the anaerobic digestion of organic refuse such as food wastes, garden waste, wood and paper products.

In recent years there has been increasing interest in the recovery of landfill produced methane gas. The reason for this interest is the potential for landfill gas to be utilized as a cost effective alternate to natural gas and fossil fuels.

The opportunity to develop this energy resource led Metro to contract with Gas Recovery Systems to conduct a feasibility study. This study was to determine the economic viability of commercial landfill gas recovery at the St. Johns Landfill.

The final feasibility report is in the form of three separate phases. The initial phase was of a general scope, it included short-term and long-term production tests, market research and a limited financial analysis. The scope of the report was expanded to include the testing of horizontal wells and further expanded to include a more finite market evaluation and economic analysis.

The existing landfill is divided into three separate subareas for reference purposes. The existing landfill is nearing capacity with filling operations scheduled to begin in a 55-acre expansion area (subareas 4 and 5) in late summer or fall of 1984.

The conclusions of the feasibility report show the project to be economically viable. Significant recoverable gas production is estimated to coincide with the completed filling of subareas 1, 2 and 3 of the existing landfill.

Subarea 1 is 100 percent complete, subarea 2 is approximately 90 percent complete and subarea 3 is approximately 30 percent complete. All three subareas are scheduled for completion by fall of 1984.

MARKETING OPTIONS AND IMPLEMENTATION STRATEGIES

The feasibility report identified numerous potential uses for the recovered landfill gas. Of these, three categories stand out as the most viable options. The first is the direct sale of medium-Btu (heating value) gas to industrial customers. Second is utilization of medium-Btu gas as a source of fuel for electrical generation. Third is conversion of the raw gas to pipeline quality gas for injection into nearby utility company pipelines.

Potential revenue and project costs vary for each of the three gas utilization options. The economic analysis is further complicated by the three implementation strategies available by which Metro could develop the landfill gas. The first of these is a facility for which Metro contracts with a qualified firm to design, construct and which Metro operates or contracts with a private firm for operation. The second implementation strategy involves a partnership arrangement between Metro and either a developer or end user. This alternative would allow the developer/user to take advantage of energy and capital investment tax credits. The third strategy is the lease of the recovery rights to a gas developer who would finance the project, develop its own markets and pay Metro and the City of Portland a royalty based on a percentage of gross revenue.

The first implementation option could be modified to include operation of the process facility by City of Portland personnel. The City currently operates a number of pump stations, as well as a large sewage treatment plant, in the St. Johns vicinity and the possibility of utilizing their operations and maintenance personnel is a logical option.

Landfill gas is composed of a variety of elements depending in part on composition of refuse, moisture content, environmental conditions and the duration refuse has been in place. A typical sample of landfill gas produced at the St. Johns site might include the following substances:

Methane Gas	Carbon Dioxide	Nitrogen Gas	Oxygen	Water Vapor	Other
CH_4	CO_2	N_2	O_2	H_2O	Trace Materials
52%	40%	.50%	.50%	5.0%	2.0%

The level of processing required for each of the three utilization options significantly impacts both the capital cost and risk associated with each use mode.

Processing of the landfill gas to create a medium-Btu fuel is the least costly and simply requires that the gas be filtered, dehydrated and compressed prior to transmission for use as fuel in an industrial boiler or burner.

In order to generate electricity the landfill gas must be processed to a medium-Btu fuel and then used to power a combustion engine generator.

The conversion of the landfill gas to pipeline quality is the most costly and requires the highest level of processing. In order to upgrade the landfill gas to utility standards, the removal of carbon-dioxide as well as other detrimental substances is required to create a gas that is approximately 95 percent methane. This level of process technology greatly surpasses that required for a medium-Btu application.

PROJECT RISKS

There are a number of inherent risks associated with any methane recovery project regardless of the implementation strategy selected. In the case of the St. Johns Landfill, there is some additional risk due to the shallowness of the landfill and the high water table which may inhibit methane recovery. The risks involved may be categorized according to associated system components as shown in Table 1.

While none of the these risks should be considered insignificant, the majority can be minimized through good management and engineering practices.

The two factors that are of greatest importance to the economic feasibility of the project are:

1. The amount and duration of landfill gas produced.
2. The ability to effectively and efficiently collect the gas.

The feasibility study presents two mathematical models which predict the quantity and duration of methane gas which will be produced at the landfill. These two models are based on tonnage versus year of placement, refuse composition, moisture content and other factors. Both models are based on a conservative production ratio of 1.0 standard cubic feet (SCF) of methane to 1.0 pound of refuse. The two models depict different scenarios of quantity and duration of gas production.

Recent discussion with consultants in the field of landfill gas recovery indicates that Metro can expect production at St. Johns to follow the production identified in model one, rather than model two, and at a production ratio that may be as high as 1.80 SCF of methane to 1.0 pound of refuse.

The graphs in Figure 1 (page 6) are derived from the mathematical models presented in the feasibility report. They represent the delivered energy available to a medium-Btu customer. Both graphs assume a 70 percent recovery efficiency from the landfill and allow for a 10 percent loss in processing and distributing the gas. Therefore, 1,000 cubic feet of landfill gas (450 Btu/SCF) produced will result in 630 cubic feet of gas delivered to a medium-Btu customer.

TABLE I

RISK ASSESSMENT

Area of Concern	Risk Factor	Mitigation
Collection System	Air Contamination (Too Much Oxygen)	• Proper Maintenance of Final Cover
	Water Infiltration	• Horizontal Wells with Drainage System Incorporated
	Damage from Filling Operations	• Proper Pipe Embedment • Marking of Well and Header Location • Use of Flexible Pipe and Couplings
Process System	Inadequate Sizing of Equipment	• Careful Engineering • Use of Modular Design Allowing for Flexibility
	Insufficient Level of Gas Refinement	• Careful Engineering Adequate Testing • Marketing
Production	Temporary Interruption of Service	• Standby Natural Gas Service, • Backup Fuel Oil Capacity
	Over-estimation of Gas Volume or Production Life	• Adequate Field Testing

The top graph corresponds to a production ratio of 1.0 SCF of gas per pound of refuse. The lower graph corresponds to a production ratio of 1.60 SCF of gas per pound of refuse. The production ratio of 1.60 rather than 1.80 was used in order to provide a conservative estimate of higher methane yield.

The collection system is the other important risk factor in the recovery of the landfill gas. As previously mentioned, the high water table and high refuse moisture content at the St. Johns site may create difficulty in collecting the landfill gas. Some of the vertical test wells installed during the feasibility study experienced limited or total loss of production due to water infiltration.

Metro is considering the use of horizontal trench wells in place of, or in addition to, conventional vertical collection wells. Trench wells have proven to be a more effective and more economical means of collecting landfill gas at several recovery projects including the Puente Hills Landfill in Los Angeles and the Rossman's Landfill in Oregon City. Rossman's has water table conditions similar to or worse than those at St. Johns and a recent test of horizontal trench wells (by CH_2M HILL) has indicated them to be quite effective with no problems due to water infiltration.

A preliminary collection system is identified in the feasibility study. This system allows for 145 vertical gas wells and varying lengths and sizes of header pipes to carry the collected gas to a process station located at the south end of the site.

Estimated cost for the initial collection system (145 wells) is $430,000. Cost for a 45-well collection system in the expansion area is estimated at $300,000. It is anticipated that a horizontal well system will consist of a similar number of wells at the same or a lesser cost.

IMPACT ON SITE AND OPERATIONS

It should be noted that the construction of a methane recovery project will have some impact on current and future site operations.

The two major elements of the project that affect the site are the collection system (wells and headers) and the process plant.

The proposed site for the process station housing is adjacent to the current access road on the north side of the "incinerator road bridge." The process station will consist of piping, mechanical equipment, electrical equipment and instrumentation housed in a metal building surrounded by a chain-link fence. The total process station should encompass less than one acre. This portion of the project will have minimal impact on the site or filling operations.

The installation of the collection system will have the greatest impact at the site. Installation of wells and header pipes will have to be on a phased basis to coincide with the filling operations

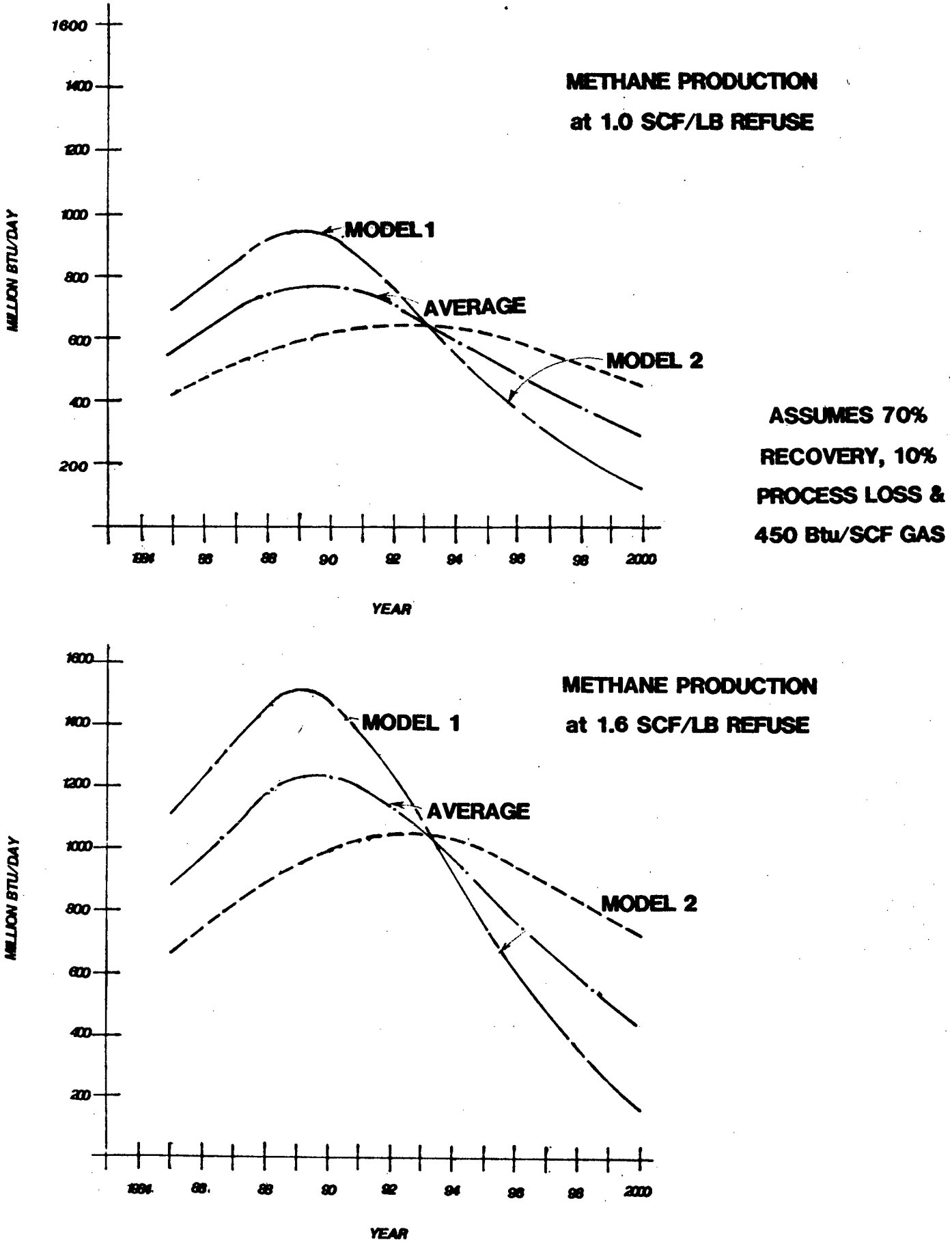

FIGURE 1 **BTU's DELIVERED vs. TIME**

in each subarea. Header pipes and horizontal trench wells will be buried, should vertical wells be utilized in some areas, only the well head will be visible.

A possible cost savings could be achieved by installation of horizontal wells, and in some instances header pipes, while active filling operations are taking place. This would eliminate the need to trench, install and backfill once final cover is in place.

In total, the methane recovery project should have little significant impact on operations or the site after final closure.

PERMITS

There are relatively few permits and/or plans review required for the gas recovery project. Most permits are related to the construction of the gas transmission pipeline in an established right-of-way. A list which describes briefly the agencies involved in the permit process is included as Appendix 1 to this report (page 17).

FINANCIAL ANALYSIS

The financial analysis of the gas recovery project can be broken down into three main steps. The initial step is a forecast of potential gross revenue that can be expected from each of the three landfill gas utilization options. The second step is an estimate of capital and operating costs associated with each of the three use options. The final step is a comparison of potential net revenue from the use options with each of the risk/gain factor that is associated with the three implementation strategies.

The sale of the processed gas as a medium-Btu fuel is the first of three marketing options. Primary prospects in the St. Johns area include:

1. Palmco, Inc.
2. Columbia Steel Castings Co., Inc.
3. Gilmore Steel Corp.
4. Ash Grove Cement Co.

Palmco and Columbia Steel Castings are the most attractive prospects of this group.

Their combined energy requirement approximates the forecast gas production at the St. Johns site. In addition, each company operates at a fairly constant level for the majority of the year. Both companies are currently paying a relatively high rate per Btu and have shown an interest in utilizing landfill gas if a stable and economic supply can be provided. Estimated gross annual revenue from these two customers could range as high as $1.25 million.

The second utilization option involves the use of landfill gas for on-site electrical generation. This does not appear economically

viable because the current low cost and abundance of hydro-electric power in the region has greatly reduced the unit costs that northwest utilities pay. Current PGE avoided costs are in the range of $0.03 to $0.04/kwh which is comparable to the estimated cost to generate electricity from recovered landfill gas.

The third use option involves the upgrading of the raw landfill gas to pipeline quality for sale and injection into existing gas mains. Upgrading the gas requires additional processing beyond the basic dehydration and compression required for medium-Btu use.

Carbon dioxide is generated in the landfill in approximately the same percentage as methane (45 to 55 percent); therefore, one of the major efforts in upgrading the landfill gas is to separate the carbon dioxide from the methane. There are a number of process techniques currently available to accomplish this. Although these techniques are quite effective they are also quite costly and the economics of this approach need to be looked at closely.

PURPOSE AND SCOPE OF THE FINANCIAL ANALYSIS

The goal of the analysis was to examine each of several investment opportunities for Metro relating to the collection and sale of landfill gas, to describe each alternative in terms which allowed comparability on a common scale, and to provide results which could be used to rate the alternatives on an economic basis. Alternatives considered included Metro acting as sole investor and proprietor of the enterprise under several potential supply conditions, with different customers. An estimate was also made of the revenue which would accrue to Metro from a 12-1/2 percent royalty paid by a private contractor in the proprietor role.[1] Public-private cooperative ventures were not included in this analysis because of the large range of possible combinations, but some tools will be developed later to evaluate such combinations as might seem likely.

A present worth financial analysis was chosen because it acknowledged the time value of money and allowed for the various options to be compared on a common basis.

METHOD

For each combination of supply volume and customer (30 combinations in all), a revenue stream was developed for the 15-year project life. Capital investments and operating expenses were then derived for each customer (including the most likely combination of customers).

The revenue stream was calculated by using the lesser of supply or demand volume for each year, with demand modified by the number of

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[1]Based on standard royalty arrangement offered by landfill gas developers and Northwest Natural Gas.

operating days of each customer. In this manner the lesser of customer demand or gas production became the limiting factor.

In some instances some customers would have their entire demand for energy supplied by landfill gas during some years. During this condition, the customer would incur some costs to their alternative supplier (Northwest Natural Gas) in the form of standby rates. While the payment of these rates would effectively reduce somewhat the amount customers would be willing to pay for the landfill gas, initial calculations indicated an effect on the revenue stream of barely over 1 percent at worst. Effects of standby rates were, therefore, omitted from the analysis on the grounds that they were not material.

A range in rates per unit of energy that each customer would be willing to pay was assumed to be 80 percent (high), and 55 percent (low), of the rate charged by Northwest Natural Gas Company. These rates were then increased over the project life by a factor combining the Oregon Department of Energy forecast[2] projection for gas prices with an 8 percent inflation rate.

Capital costs for each alternative include process building and equipment, transmission lines, user modifications, and the site collection system. Operating expenses were inflated over the life of the project at a rate of 6 percent for the first year and 8 percent thereafter.

Another alternative was developed, wherein the landfill gas would be upgraded and sold to the local gas utility. A starting rate of $3.10 per unit of energy was assumed, which was then increased in the same way as the other revenue streams. Capital and operating expenses were treated in the same way as with other alternatives, except that there was a difference in collection system costs, which was included.

For each alternative, all cash flow streams were brought back to present value assuming an 11 percent rate. That rate is analogous to the return which could be derived from an alternative investment which contained essentially no risk (e.g., high yield bank accounts). There was, therefore, no element of risk assigned to the analysis; risk must certainly be a factor in the final decision, but it was judged too nebulous to be quantified here.

RESULTS

The results of the financial analysis are presented in the following tabular summaries. A separate table defining parameters and assumptions used in developing the present worth analysis is also included.

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[2]The ODOE 20-year energy forecast for natural gas rates are included as Appendix 2 (page 18).

The present worth value of gross and net revenue, for both the high (80 percent) and low (55 percent) discount rate, are stated in Table II and Table III. These values correspond to the average landfill gas production curves illustrated in Figure 1. The net present worth column and the present worth royalty column are the most important of the values presented.

The most significant conclusion that can be drawn from the data is that most of the alternatives appear viable at the 11 percent level of return and a discount rate equal to 80 percent of utility rate. It can further be said that the Palmco with surplus sold combination would be the "best" investment in terms of net present value. That conclusion must be considered in context with several other variables (such as available market, risk, total capital involvement and the "public interest").

It is also evident that a developer scenario would become economically attractive in a situation where a negotiated discount rate equal to 55 percent of the utility rate is the best that can be obtained from potential industrial customers.

POTENTIAL ANNUAL REVENUE

Although the present worth analysis included provides a comparison of various business options on a common basis, it does not provide interested parties with an idea of estimated costs and revenue on an annual basis. In an effort to do this the following example is provided for a medium-Btu application:

ANNUAL GROSS REVENUE	
650 million Btu/day x 80% x $5.50/million Btu x 335 days/yr	= $958,100
ANNUAL COSTS	
Operating and Maintenance	= $250,000
Cost of Financing (15 yrs, 12%, Capital Cost = $2,330,300)	= $342,100
ANNUAL NET REVENUE	$366,000

The above example is representative of a situation in which Palmco's energy demand is met, with landfill gas produced at the St. Johns site, and sold at a discounted rate equal to 80 percent of the current utility rate. The 1980 agreement between the City of Portland and Metro specifies that the net revenue generated by the methane recovery project is to be divided on a equal basis by the two concerns.

PROJECT FINANCING

A number of possibilities exist for obtaining the financing required to construct a methane recovery system at the St. Johns Landfill.

TABLE II

SUMMARY OF FINANCIAL ANALYSIS
(Discounted at 80 Percent of Utility Rate)

	Prospect	Daily Energy Requirement x 10^6 Btu	Operational Days Per Year	Current Energy Rate	Present Worth Gross Revenue Low (Ave.)***	Present Worth Gross Revenue Hi (Ave.)***	Present Worth Capital Costs	Present Worth Oper. & Maint. Costs	METRO Net Present Worth Low (Ave.) Prod.	METRO Net Present Worth Hi (Ave.) Prod.	ROYALTY Present Worth Royalty Low (Ave.) Prod.	ROYALTY Present Worth Royalty Hi (Ave.) Prod.
MEDIUM BTU USE	Palmco +** Surplus Sold	1,200	335	$5.50 per million Btu	$12,608,300	$20,168,600	$2,780,300	$3,476,300	$6,352,000	$13,912,300	$1,576,040	$2,521,000
	Palmco	650	335	$5.50 per million Btu	$12,200,000	$13,881,500	$2,330,300	$3,476,300	$6,393,400	$8,074,900	$1,525,000	$1,735,190
	Columbia Stl. Castings	550	240	$5.50 per million Btu	$7,706,300	$8,279,900	$2,407,300	$3,476,300	$1,822,700	$2,396,300	$963,288	$1,034,988
	Ash Grove Cement	1,600+	335	$3.00 per million Btu	$6,876,700	$10,928,500	$2,400,000	$3,476,300	$1,000,400	$5,052,200	$859,600	$1,366,065
	Gilmore Steel	1,600+	137	$5.50 per million Btu	$5,170,000	$8,302,700	$2,400,000	$3,476,300	$(-706,300)	$2,426,400	$646,265	$1,037,840
HIGH BTU USE	NNG Co.** (Monsanto Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$1,712,300	$2,706,200	$3,425,100	$8,131,500	$980,450	$1,568,750
	NNG Co. (Conventional Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$3,160,300	$6,666,900	$(-1,983,600)	$2,722,800	$980,450	$1,568,750

*Represents a "best case" situation which assumes all gas recovered is sold according to discounted (80 percent) Northwest Natural Gas Company firm price schedule rates. Allows for $450,000 additional capital cost due to potential user modifications and installation of transmission pipes.

**The Monsanto process utilizes a gas separator prism applied to a landfill gas situation. Field tests with this type of equipment have not been extensive enough to recommend their use at this time.

***Gross revenue shown is calculated using landfill gas production values which correspond to the average curves, for both low (1.0 SCF/LB refuse) and high (1.6 SCF/LB refuse) production ratios, as shown on Figure 1.

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TABLE III

SUMMARY OF FINANCIAL ANALYSIS
(Discounted at 55 Percent of Utility Rate)

	Prospect	Daily Energy Requirement x 10^6 Btu	Operational Days Per Year	Current Energy Rate	Present Worth Gross Revenue Low (Ave.)***	Present Worth Gross Revenue Hi (Ave.)***	Present Worth Capital Costs	Present Worth Oper. & Maint. Costs	METRO Net Present Worth Low (Ave.) Prod.	METRO Net Present Worth Hi (Ave.) Prod.	ROYALTY Present Worth Royalty Low (Ave.) Prod.	ROYALTY Present Worth Royalty Hi (Ave.) Prod.
MEDIUM BTU USE	Palmco +** Surplus Sold	1,200	335	$5.50 per million Btu	$8,668,200	$13,865,900	$2,780,300	$3,476,300	$2,411,600	$7,609,300	$1,083,500	$1,733,200
	Palmco	650	335	$5.50 per million Btu	$8,387,500	$9,543,500	$2,330,300	$3,476,300	$2,580,900	$2,268,300	$1,048,000	$1,192,900
	Columbia Stl. Castings	550	240	$5.50 per million Btu	$5,298,000	$5,692,400	$2,407,300	$3,476,300	$(-585,600)	$(-191,200)	$662,200	$711,550
	Ash Grove Cement	1,600+	335	$3.00 per million Btu	$4,727,700	$7,513,300	$2,400,000	$3,476,300	$(-1,148,600)	$(-824,100)	$591,000	$939,100
	Gilmore Steel	1,600+	137	$5.50 per million Btu	$3,554,400	$5,708,100	$2,400,000	$3,476,300	$(-2,321,900)	$(-168,200)	$444,300	$713,500
HIGH BTU USE	KNG Co.** (Monsanto Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$1,712,300	$2,706,200	$3,425,100	$8,131,500	$980,450	$1,568,750
	KNG Co. (Conventional Process)	Limited by Production	335	$3.10 per million Btu	$7,843,600	$12,550,000	$3,160,300	$6,666,900	$(-1,983,600)	$2,722,800	$980,450	$1,568,750

*Represents a "best case" situation which assumes all gas recovered is sold according to discounted (55 percent) Northwest Natural Gas Company firm price schedule rates. Allows for $450,000 additional capital cost due to potential user modifications and installation of transmission pipes.

**The Monsanto process utilizes a gas separator prism applied to a landfill gas situation. Field tests with this type of equipment have not been extensive enough to recommend their use at this time.

***Gross revenue shown is calculated using landfill gas production values which correspond to the average curves, for both low (1.0 SCF/LB refuse) and high (1.6 SCF/LB refuse) production ratios, as shown on Figure 1.

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TABLE IV

PRESENT WORTH PARAMETERS AND ASSUMPTIONS

1. Methane produced at range between 1.0 and 1.6 SCF per pound refuse. (Conservative estimate, actual production may range as high as 1.8.)

2. Rate of production corresponds to model 1, model 2 and average as indicated on curves in Figure 1.

3. Landfill gas is 50 percent methane, 450 Btu/SCF. (Conservative estimate, actual testing at St. Johns indicates average methane content of close to 55 percent.)

4. Recovering efficiency is 70 percent of landfill gas produced.

5. High-Btu process efficiency is 70 percent.

6. Medium-Btu process efficiency is 90 percent. (This assumes gas compressor is powered by landfill gas.)

7. Present worth rate of return (discount rate) equals 11 percent.

8. Inflation equals 8 percent after first year, 6 percent first year.

9. Costs do not include cost of money to finance.

10. Gas rates based on the Oregon Department of Energy (ODOE) 1982, 20-Year Forecast.

11. Costs do not include repayment of DOE grant of $94,302 at 5 percent interest compounded annually.

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The source and extent of equity participation of any one concern is dependent on the method with which the project is actually procured.

Under a developer procurement strategy the developer assumes sole financial responsibility for designing, constructing and operating the facility. In exchange for assuming this liability, the developer earns the largest share (87.5 percent for example) of the gross revenue generated from the sale of the gas. Alternately, Metro would assume no financial liability, but would receive a modest share (12.5 percent for example) of the gross revenue generated from gas sales.

A partnership procurement strategy, with either a developer or private energy customer, would allow for equity participation by both parties. This type of agreement would allow for Metro's partner to take advantage of energy and investment tax credits and result in a more even distribution of economic gains.

Should Metro opt to develop the project itself, using a conventional A & E approach, it would of course be solely responsible for the financial integrity of the project. This option offers the greatest potential for economic gains, however, it also carries a proportional element of risk.

Metro financing would most likely come from either DEQ pollution control bonds or industrial revenue bonds issued under its own authority.

PROCUREMENT STRATEGY

The financial analysis indicates the economic advantages of selling the landfill gas as a medium-Btu fuel rather than upgrading to pipeline quality. This option is not only economically attractive, but requires a relatively simple process technology that offers considerably less risk than high-Btu processing.

Several potential customers, including Northwest Natural Gas Co., have indicated a willingness to assume part or all of the financial responsibility for the project. In this manner they could take advantage of energy and investment tax credits as well as obtain an energy source less costly than natural gas. The evaluation of specific proposals will be undertaken in the energy contract negotiations phase of the project.

As regards the current procurement plan, Metro intends to proceed with the following steps in order that the project can proceed in a logical and timely manner:

1. Issue a request for proposal (RFP) for professional services from firms highly experienced in the field of landfill gas recovery. Professional services will be directed towards providing support to Metro during energy contract negotiations.

This support will be in the form of analyzing risk, identifying potential pitfalls and determining specific advantages for each of Metro's marketing options. In this manner an optimum marketing scheme can be developed. Services will also include review and recommendations concerning financial aspects and design of the project.

2. Negotiate and complete a long-term energy contract which identifies quantities of gas to be provided, gas quality, rates and duration of agreement.

   This energy contract may be between Metro and a developer, Metro and a private industrial energy consumer or include some form of joint venture depending on the results of the negotiation phase of the project.

The intent of the above procurement plan is to provide maximum flexibility while proceeding with the project on a timely basis. Should Metro choose to develop the project itself the following tasks would be required:

1. Issue an RFP for design services for the gas collection, process and distribution systems. A design services contract may be negotiated with the firm identified in step 1 above, if this is deemed a preferable alternative to issuing an RFP.

2. Coordinate project design, obtain necessary permits and implement additional testing if required.

3. Bid and coordinate construction of the project and implement any modifications to customer equipment.

4. Performance test and shakedown system prior to supplying service.

A similar sequence of events would be performed by a developer with the exception that, depending on its technical capabilities, a developer may choose to design and/or construct the project utilizing its own forces.

SCHEDULE

Figure 2 graphically illustrates the steps previously outlined for a project developed by Metro. The implementation of this plan and schedule will coincide with the production of significant levels of methane in subareas 1, 2 and 3 of the landfill. It is anticipated that should a developer format be chosen, it would not significantly alter the start up date of the project.

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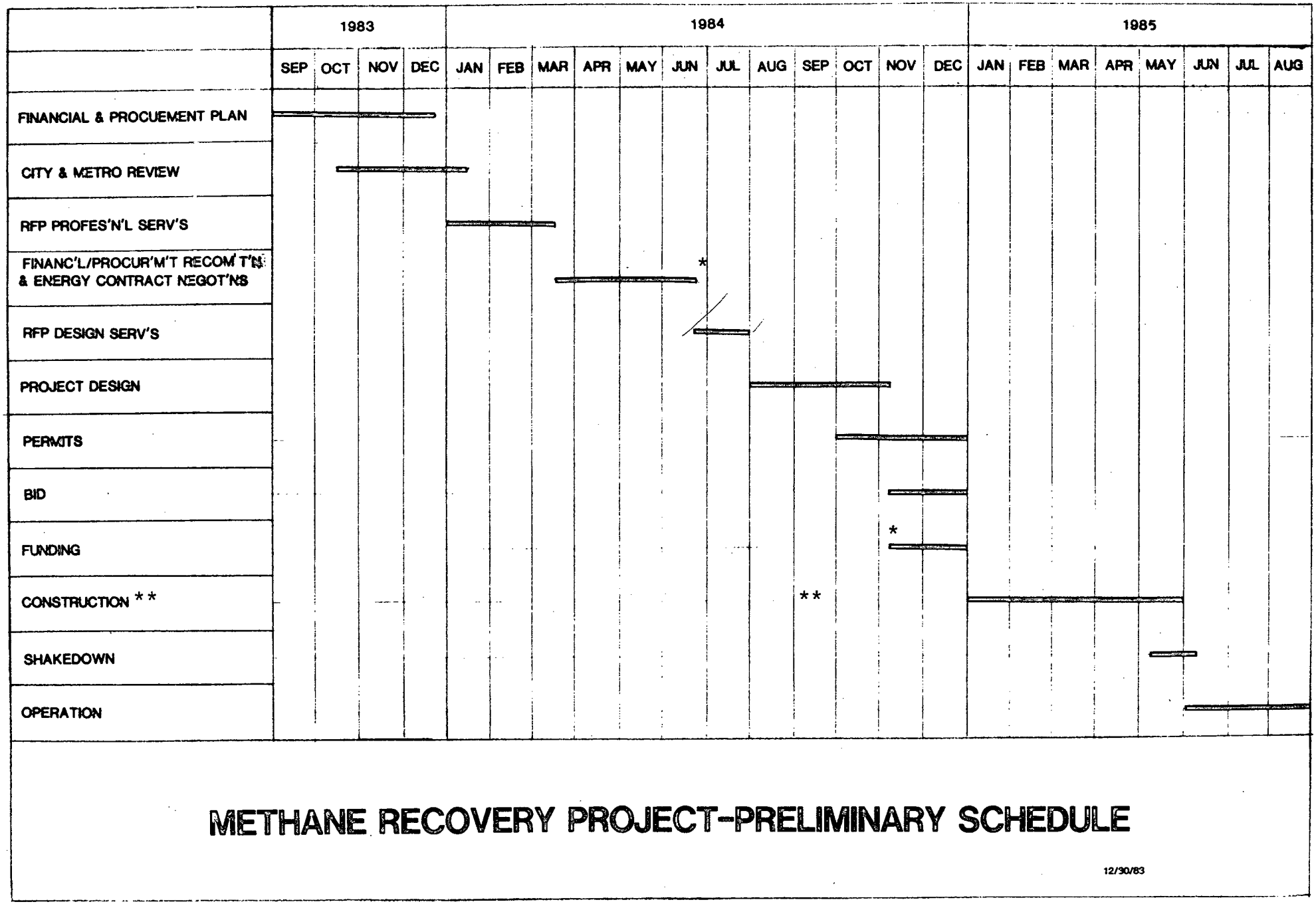

* Council or Services Committee advisory presentation

** Collection well installation may coincide with fill operations in fall months

APPENDIX 1 - REQUIRED PERMITS

City of Portland -

Land Use - The landfill is located in an M-1 zone. There is no specific reference to methane recovery in the zoning code, so an interpretation by the Bureau of Buildings is required.

Fire Marshall - No permits are required from the City Fire Marshall unless above ground storage tanks are involved. However, a copy of the project plans must be submitted for review.

Multnomah County

Land Use - City Plans and Ordinances take precedence.

Right-of-Way - One pipeline alignment alternative involves public right-of-way controlled by Multnomah County. The County reserves the north and west sides of the road for the gas company and the south and east sides for water. Telephone and electricity lines may be located on either side, two feet off the property line into the roadway. A right-of-way permit is required, no fee is involved.

State of Oregon

Department of Energy - No regulatory authority. Project may be eligible for Small Scale Energy Loan Program.

Department of Environmental Quality - If electrical generation is involved, air quality and noise permits may be required. If a case can be made that project improves air quality, Pollution Control Tax Credits may be available.

Department of Commerce - Building Codes Division - Boiler and Pressure Vessel safety - All boiler modifications, pressure valves, regulators and the gas processing plant must be approved by this agency. Design must be according to ASMA Code and installation by a licensed contractor.

Other

Port of Portland - Right-of-Way - Several potential pipeline alternatives involve public right-of-way controlled by the Port of Portland.

Bonneville Power Administration - Right-of-Way - Several pipeline alternatives involve public right-of-way controlled by BPA.

Union Pacific Railroad - Right-of-Way - One possible pipeline alignment is along the Union Pacific Railroad right-of-way.

APPENDIX 2

FORECAST NATURAL GAS PRICES
EXTRACTED FROM OREGON DEPARTMENT OF ENERGY
SEVENTH ANNUAL REPORT
January, 1983

As a result of inconclusive statistical evidence for either trend, the growth of value-added per employe-hour is forecast as the average of linear and exponential trends. For lumber, paper, and chemicals, ODOE used the Pacific Northwest Power Planning Council's productivity assumptions (September 10, 1982). For each of these industries a detailed analysis was used that reflected changing conditions. Table B-1 in the Appendix presents the forecasts of value-added for the individual SICs.

Wages are also forecasted as the average of linear and exponential trends. For wages in the lumber, paper, and chemical industries, ODOE used the growth rates of value-added that were adopted by the Northwest Power Planning Council. The rationale is that wages constitute a major component of value-added and their growth pattern in the long-term should determine that of value-added.

Personal Income

Personal income is an important variable in forecasting energy demand in the transportation sector. Total personal income is forecast as a function of total employment and productivity. As was the case last year, productivity is forecast as a linear trend. This implies that the pace of massive technological gains made in the past will be slower in the future. A linear trend proved statistically better than an exponential trend.

This results in a forecasted annual average growth of 2.9 percent for total personal income and 1.6 percent for per capita income for the period 1982 to 2002. (See Table B-1.)

Energy Prices

ODOE's commercial, manufacturing and transportation models respond explicitly to price. When the price of a fuel goes up, use goes down. Both conservation and fuel switching effects are included. The residential end-use model is not explicitly affected by prices. Prices do influence ODOE's forecasts of renewable resources, weatherization levels, and fuel choices in the residential end-use model.

Oil and Gas Prices. ODOE forecasts that in the long run, real oil and gas prices will continue to rise. The forecasted increases in oil and gas prices are less spectacular than the 1973 and 1979 jumps. Even so, over the next two decades, these increases will accumulate to a substantial amount. Another Middle East disruption could cause the price rise to occur sooner rather than later. A price jump likely would be followed by a period of relatively stable prices as market forces reasserted themselves, as has occurred since 1980.

Four key assumptions underlie ODOE's oil and gas price forecast: 1) flat crude oil costs in nominal terms for 1982 to 1983 (this implies a drop in real prices equal to the assumed 7 percent inflation rate), 2) constant real crude oil costs from 1983 to 1985, 3) an annual 3.0 percent real growth in crude oil costs after 1984, and 4) a 15 percent price premium for manufacturing natural gas over residual fuel oil.

World crude oil now is slightly overpriced given current supply and demand. Until world oil demand rises, oil prices will be flat. There is even a possibility of a drop in the listed price of OPEC oil. By 1985, it is forecasted that market equilibrium will be reestablished. This is based on the assumption of a normal recovery from the world recession, beginning in 1983. It also assumes that oil production from Iran and Iraq will be near current levels through 1985.

In equilibrium, the rate of return on oil in the ground (its real price rise) will be equal to the real return in financial markets. Otherwise, oil producers have an incentive to change the rate at which they are pumping. If oil yields a higher return than dollars, producers will curtail pumping oil from the ground. They would essentially be investing in oil as a commodity. If the return is lower, production will increase.

Over the last 40 to 50 years, the average rate of growth in real crude oil prices has ranged from 1.4 to 4.0 percent. The range depends on which years are used for the beginning and ending values. For the period 1949 to 1981, long-term Moody's "AAA" bonds had an average real yield of 2.0 percent. Common stocks listed on Standard and Poor's Composite Index had a total real yield of 6.8 percent for the same period. This difference is largely accounted for by the higher risk involved in common stocks. Real oil prices should rise at least as fast as the low risk securities--that is, 2 percent. Real oil prices likely will not rise faster than the historical high of 4.0 percent. ODOE chose 3.0 percent for the growth rate after equilibrium is reestablished in 1985 based on this range.

Because Canada supplies about half of Oregon's natural gas, the Canadian export price strongly influences the price of gas in Oregon. This effect will be even stronger as more domestic gas is deregulated. The Canadian price will serve as the upper limit market price for the most expensive domestic gas.

The apparent Canadian pricing policy is to maximize total revenue from gas exports. Canada's ability to raise prices is limited by the Northwest's ability to respond by lowering consumption. This responsiveness is measured by the elasticity of demand.

If the elasticity is greater than unity, raising the price will lower sales so much that total revenue is less. Maximum revenue is achieved by raising the price until the elasticity is equal to one.

ODOE assumes that if the industrial natural gas price is greater than the residual oil price by about 15 percent, then the elasticity for demand for Canadian gas is near one.

The ability of natural gas to sustain a premium over oil is affected by many factors. These include the mix of residential, commercial and industrial sales in the Northwest and the elasticity of each of these customer classes. These in turn are affected by several factors: environmental restrictions on oil burning; the importance of the greater supply reliability of gas over oil; the types of penalties imposed on industrial users for switching back and forth between oil and gas; and by the future importance of obtaining greater fuel efficiency by burning gas at the point of end use in industrial processes.

Currently, industrial gas prices in Oregon are about 25 percent more than residual oil. As a result, natural gas purchases from Canada are down sharply. This implies gas prices will fall relative to oil prices.

Oil retail product prices are forecast with fixed plus proportional margins over the crude oil price. After accounting for likely efficiency improvement in refinery processes, 3 cents (1982 dollars) per gallon was added to all product prices to maintain current profit margins.

Tables III-1 and III-2 present ODOE's oil and natural gas price forecasts. Residential distillate prices are forecast to maintain about a 25 percent premium over residential natural gas prices.

Table III-1

PETROLEUM PRICES
(1982 dollars per gallon)

YEAR	CRUDE ($/BBL)	GASOLINE	RESIDUAL* MANUFACTURING	DISTILLATE MANUFACTURING	DISTILLATE COMMERCIAL	DISTILLATE RESIDENTIAL
1982	31.00	1.26	.67	.85	1.02	1.07
1983	28.83	1.21	.63	.79	.96	1.01
1984	28.83	1.21	.63	.79	.96	1.01
1985	28.83	1.21	.63	.79	.96	1.01
1986	29.69	1.23	.64	.82	.98	1.03
1987	30.59	1.25	.66	.84	1.01	1.05
1990	33.42	1.33	.71	.92	1.09	1.13
1995	38.75	1.47	.81	1.07	1.23	1.28
2000	44.92	1.64	.93	1.24	1.41	1.45
2002	47.65	1.71	.98	1.32	1.48	1.53

* Residual for commercial customers is about 2 cents higher.

Table III-2

NATURAL GAS PRICES
(1982 dollars per million Btu)

YEAR	NORTHWEST PIPELINE	MANUFACTURING	COMMERCIAL	RESIDENTIAL
1982	3.78	5.43	6.61	6.42
1983	3.70	5.35	6.53	6.34
1984	3.62	5.27	6.45	6.26
1985	3.55	5.20	6.38	6.18
1986	3.53	5.18	6.36	6.17
1987	3.55	5.20	6.38	6.19
1990	3.82	5.47	6.65	6.46
1995	4.60	6.25	7.43	7.23
2000	5.50	7.15	8.33	8.13
2002	5.89	7.54	8.72	8.53

Electricity Price. Future electricity prices will depend on the cost of generation facilities under construction and the rate at which new facilities are brought on-line to meet future demand growth. ODOE has developed an electricity price model which interacts with the demand forecasting models to compute the growth rate in electricity price. Using a demand forecast from the forecasting models, a schedule for bringing plants on-line is derived. Given the schedule of plants, the price of electricity for each future year is computed and used as an input to the demand forecasting model. This process is repeated until an equilibrium price of supply and demand is achieved.

A detailed description of the model is in Appendix C. The model explicitly accounts for the provisions of the Regional Power Act including the various resource pools and associated rates. The model forecasts electricity prices for individual privately-owned utilities in the region and for publicly-owned utilities grouped by state. For the period 1978 to 2002, an annual rate of 1.7 percent increase in the real price of electricity is projected. Tables III-3 and Table III-4 show more detailed results.

Figure III-5 shows residential energy prices for heating oil and natural gas and for publicly and privately owned electric utilities from 1972 through 2000. The right hand axis gives costs in comparable units--1982 cents per equivalent end use kWh. A 65 percent efficiency factor is used for both oil and gas. Of note is the forecasted reversal. In 1972 oil was cheapest followed by gas then public electric and finally private electric. For 2000 the ranking is exactly reversed.

April 1982

1-23-84

SOLID WASTE POLICY ALTERNATIVES COMMITTEE

NAME	REPRESENTING	ADDRESS	PHONE	TERM OF OFFICE
James Cozzetto	Collection Industry	P.O. Box 11457 Portland, OR 97211	285-0576	Feb. 1982-84
Shirley Coffin Vice Chairman	Public, Washington County	65 SW 93rd Portland, OR 97225	292-9338	Feb. 1982-84
Howard Grabhorn	Landfill Operators	Route 1, Box 849 Beaverton, OR 97402	628-1866	Feb. 1982-84
John Gray	Public, Multnomah County	3918 SE 116th Portland, OR 97266	288-7086	Feb. 1982-84
Robert Harris	Public, Clackamas County	32660 Lake Point Ct. Wilsonville, OR 97070	794-2370	Feb. 1982-84
Dick Howard	Multnomah County	Dept. of Public Works 2115 SE Morrison Portland, OR 97214	248-3623	Feb. 1982-84
Paul Johnson	Construction Industry	Copenhagen Utilities and Construction P.O. Box 429 Clackamas, OR 97015	654-3104	Feb. 1982-84
Gary Newbore	Landfill Operators	c/o Reidel Internat'l P.O. Box 3320 Portland, OR 97208	222-4210	Feb. 1982-84
Dave Phillips	Clackamas County	Dept. of Env. Services 902 Abernethy Rd. Oregon City, OR 97045	655-8521	No Limit
Mike Sandberg	Washington County	Dept. of Public Health 150 N. First St. Hillsboro, OR 97123	648-8609	No Limit
~~Mike Sievers~~	City of Portland	Office of Public Works 621 SW Alder St. Portland, OR 97205	248-4390	No Limit
Edward Sparks	Recycling Industry	Publishers Paper Co. 4000 Kruse Way Pl. Lake Oswego, OR 97034	635-9741	Feb. 1982-84
John Trout Chairman	Collection Industry	Teamsters Local 281 1020 NE Third Ave. Portland, OR 97232	236-8171	Feb. 1982-84
Kelly Wellington	Public, City of Portland	1513 SE Ash, #2 Portland, OR 97214	239-5083	Feb. 1982-84
Bob Brown Ex Officio — Member, doesn't vote	DEQ	P.O. Box 1760 Portland, OR 97207	229-5157	No Limit
~~Norman Harker~~ Ex Officio	~~Clark County~~	~~Clark Co. Public Works~~ P.O. Box 5000 Vancouver, WA 98668	~~(206)~~ 699-2451	~~No Limit~~

Guest now - [illegible]

SOLID WASTE ADVISORY COMMITTEE

GUESTS AND ADVISORS IN ATTENDANCE

DATE 1-23-84

GUEST OR ADVISOR	AFFILIATION
David G. Phillips	Clackamas County DES
Shirley Griffin	Wash. Co Public
James F. Lozzello	M.D.C.
Mike Sandberg	Washington Cty / Metro
DANIEL DUNIC	Metro
DENNIS O'NEIL	Metro
Ray Barker	Forkfill Wash. Co.
Howard Grabhorn	Metro
Dennis G. Mulvihill	LANDFILLS
GARY NEWBORE	Clark County, WA.
Norman Harker	