develop a market for recycled materials. The Department is also working with the Port Authority and the Environmental Defense fund to find markets abroad for recycled materials as well as to develop infrastructure in the region to use recycled materials.

21.2.2 Responses to Advisory Board Comments.

21.2.2.1 Comments from the Bronx Solid-Waste Advisory Board.

Analysis of "A Comprehensive Solid Waste Management Plan for New York City and Draft Generic Environmental Impact Statement, March 1992," Submitted to Bronx SWAB by CBNS.

I.A.1. The plan does not consider the ...City Charter's Fair Share criteria.

Section 203 of the Charter authorizes the City Planning Commission to establish criteria for the location of City facilities. The Commission adopted the criteria on December 3, 1990.

These criteria will be used in selecting and evaluating sites for the new City facilities contemplated in the plan. The plan does not itself propose specific sites for new facilities.

The siting criteria and analyses in the draft plan, in which individual collection programs and facility components were evaluated in the context of overall, integrated systems, in order to assess their individual and overall economic and environmental impacts, are consistent with the fair-share criteria. One of the most significant components of the siting analysis, as stated in the plan, are the proposed wastesheds, which would minimize transport distances to the greatest extent feasible (thus reducing costs and environmental impacts), while maximizing the equitable distribution of waste-management facilities throughout the city in a way that will minimize adverse environmental impacts. Moreover, the SEQRA fair-share factors will be considered during the process of siting individual facilities.

I.A.2. In siting new proposed waste-management facilities, the plan fails to consider local areas of saturation...

The plan did not "site" new waste-management facilities, but simply identified areas that might potentially be suitable for facilities of the types proposed, based on appropriate land-uses, transportation access, and other relevant criteria. Site selection for specific facilities will take place through subsequent environmental analyses and applicable land-use-approval procedures. In such analyses, detailed evaluations of

specific sites will take place, which will include an examination of relative environmental, public-health, and socioeconomic impacts. The density of industrial uses -- including waste-management facilities -- in Bronx Boards 1 and 2, in such an evaluation, may indicate that other locations (such as a site in the industrial area of the northeast Bronx which was considered in the plan) may be more suitable for a major facility.

The Bronx-Lebanon Medical Center's waste-to-energy facility pre-dates this plan, and therefore was not "sited" by it. Likewise, the Department of Environmental Protection's proposed Oak Point sewage facility was "sited" through a prior planning process to meet federal consent-order deadlines.

I.A.3.a. The plan fails to examine the impact of proposed waste-management facilities on the public health problems that are specific to the Bronx: Waterways adjacent to the Bronx currently have concentrations of toxic pollutants that exceed standards. The plan will add to levels of water pollution.

No facilities proposed in the plan would have direct discharges into surface waters. Therefore, the only route for pollutants from planned facilities to reach surface waters would be by deposition of airborne compounds. Modeling of this phenomenon, which was presented in the plan, shows that the incremental contributions of these pollutants would be minimal. The source of these pollutants is primarily industrial discharge and combined sewer overflows. The DEP is taking steps (identified in the plan and in the DEP's recent environmental impact statements) to reduce pollutant concentrations due to both of these sources.

I.A.3.b. The Bronx is a non-attainment area for three criteria pollutants. The plan will worsen already unacceptable air quality....With two exceptions (mercury and particulates), the plan does not examine the geographical distribution of the many pollutants emitted by plan facilities into the air....The plan includes...a potential RDF incinerator at Barretto Point.

The Bronx is in non-attainment of federal standards for ozone, as is the entire Northeast, and presumptively with the rest of the city for carbon monoxide. The State secondary TSP standard has been replaced by a federal fine-particulate standard (PM10) which is not exceeded in the Bronx. It is shown in other responses to this commenter that the Plan will result in a net decrease of the ozone precursors, nitrogen dioxide and hydrocarbons through substantially reducing power plant emissions. This may be true for carbon monoxide as well if future plants are more similar to

data from the Bridgeport plant than the mean of the SWMP database. It is also shown that particulate emissions will significantly be reduced through implementation of the Plan.

The commenter is concerned that only the geographical distribution of particulates and mercury is reported and that the particulate isopleth maps show high concentrations in the Bronx. The geographical distributions of all pollutants were modeled for concentrations of any pollutant per 100 grams per second of any pollutant emitted from each of the 24-26 facilities. To these were applied the emission rate for each pollutant for each of the sources. Isopleth maps were prepared for particulates because they best show the influence of all types of facilities. It can be seen from the results of the prototypical modeling in Volume 6 that the particulate impacts are primarily due to waste processing facilities, not incineration plants. The locations for all of the primary pollutants (trace organics are not reported in detail) are reported for each scenario in tables in Volume 7.2. The only pollutant for which the maximum impact occurs in the South Bronx is hexavalent chromium, due primarily to the contribution of a proposed 150 TPD sludge drying facility, and that is 2.4% of the Ambient Guideline Concentration (ACG).

Incinerators are not, as the commenter contends, "the dominant source of dioxins and many toxic heavy metals." This has been conclusively demonstrated by the extensive air sampling program by the Connecticut Department of Environmental Protection in the vicinity of four large waste-to-energy plants. The hundreds of measurements before and after operation show no increase (in fact, a decrease) of dioxins after operation of the plants in the state's low background concentrations. The dominant source is judged to be fossil fuels, as shown in the following bar graph.[1]

The significant contribution of motor vehicle emissions to background concentrations of dioxins has been well documented.[2,3,4,5,6,7,8,9]

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[1] Connecticut Department of Environmental Protection, Bureau of Air Management, Report on the Ambient Air, Stack Effluent and Continuous Emissions Monitoring of Dioxins at the Bridgeport, Bristol, Mid-Connecticut and Wallingford Resource Recovery Facilities, December 2, 1991.

[2] Bacher, R. and K. Ballschmitter, "Patterns of halogenated dibenzodioxins and dibenzofurans from automobile exhaust, home heating, and metal reclaiming and in samples with a complex input," Dioxin '91.

Although there are few measurements of air toxics in the Bronx, the relative uniformity of the data from the other boroughs in Table 1-16, Volume 6, suggest that they are representative for the Bronx, as well. It has also been shown elsewhere in these responses, that the incremental effect of the maximum impact of the Plan would be a minor increase over background levels of air toxics.

The commenter is concerned with the addition of hexavalent chromium from the proposed 150 TPD sludge drying facility in the Bronx would result in a maximum impact of 30% of the Ambient Guideline Concentration (AGC), assuming that hexavalent chromium is 1% of total chromium. (The 2.4% reported cumulative maximum is not inconsistent with 30% of the AGC because the prototypical modeling shows that the maximum impact of a 500 TPD sludge dryer would occur 0.3 kilometers from the source, and a smaller facility would cause the maximum effect even closer to the source. This short distance might not have been picked up in the 1.0 kilometer grid of receptors in the cumulative modeling.)

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[3] Hunt, G. et al., Ambient Concentrations of PCDDs/PCDFs in the South Coast Air Basin, Final Report prepared for California Air Resources Board, January 1990.

[4] Stanley, J.S., et al., Midwest Research Institute, "Polychlorinated Dibenzo-p-Dioxin and Dibenzofuran Concentration Levels in Human Adipose Tissue Sampled from the Continental United States Collected from 1972 through 1987," presented at Dioxin '89, Toronto, CN, September 1989.

[5] Rappe, C. et al., "Identification and quantification of PCDDs and PCDFs in Urban Air," Chemosphere 17 (1) 1988.

[6] Marklund, S. et al., "Identification of polychlorinated dibenzofurans and dioxins in exhausts from cars run on leaded gasoline," Chemosphere 16 (1): 29, 1987.

[7] Ballschmitter, K. et al., "Automobile exhausts versus municipal waste incineration as sources of the polychlorinated dibenzodioxins (PCDD) and furans (PCDF) found in the environment." Chemosphere 15: 901, 1986.

[8] Esinreich, S.J., et al., "Response of Atmospheric Lead to Decreased Use of Lead in Gasoline," Environmental Science & Technology, 1986, 20, 171-174.

[9] Czuczwa, J. M., R. Hites, "Airborne Dioxins and Dibenzofurans: Sources and Fates," Environmental Science and Technology, 1985, 2, 195-200.

The commenter is concerned that if the contribution of background and other sources were accounted for, in addition to some uncertainty reflected in the draft GEIS about the proportion of hexavalent chromium to total chromium in incinerator emissions, the AGC would be exceeded. The commenter misunderstands the use of an AGC. AGCs are based on a negligible risk from a lifetime of continuous inhalation of the maximum concentration. For this reason, the regulatory practice is that the AGC applies only to the incremental effect of a proposed project rather than to the background.

The commenter asserts that the cumulative impact of the proposes sludge drying facility at Oak Point, a potential RDF incinerator at Barretto Point, and a constructed medical waste incinerator in the Port Morris area has not been estimated in the Plan. This is not true. The air quality modeling included all 24-26 facilities in all scenarios. The maximum results for all of the 23 major pollutants that are associated with waste-management facilities are reported in tables in Appendix 7-B. The impacts of the plan, as suggested by the isopleth maps shown (although the sites used for modeling purposes are "hypothetical," -- i.e., potentially suitable -- rather than proposed sites), would be distributed throughout the city. (The modeling performed for the plan did not assume that an RDF facility might be located at Barretto Point; as Appendix 7-B shows, the modeled site was in the Northeast Bronx.) They show that for either the no-burn System C or for either of Systems A or B, which include 10,000 TPD of waste-to-energy plants, the South Bronx would experience, at most, about one-quarter the citywide maximum impact for particulates.

I.A.4. The plan not only fails to consider the role of ULURP...but actually proposes ways of bypassing this regulation.

New City facilities contemplated in the plan will be subject to ULURP in those instances where ULURP is applicable. The plan does not propose bypassing ULURP (see Chapter 19). The plan merely suggests that establishing a public authority might produce certain efficiencies and economic benefits. As noted on p. 14-7 of the plan, certain authorities in the state have been created with the power to by-pass ULURP and certain other regulatory processes. Given the multiplicity of regulatory requirements, this can facilitate the development of new facilities. Authorities can also be created without these powers.

I.A.5. The plan does not consider how existing socioeconomic conditions in the Bronx may affect the proposed waste-management system....The plan does not analyze the

relation between household income and recycling performance, nor does it discuss its implications for the design of the waste-management system.

The objective of the plan was to maximize overall recycling citywide. The best way to do this, according to the analysis presented in the plan, is to have a uniform, simple system that is the same throughout the city. In addition to this "base" system, other techniques may be "layered" on as appropriate in relation to local conditions. Such a technique is "buy-back" centers, which provide an economic incentive for recycling; as the comment notes, the plan says that these would appropriately be targeted at areas where curbside collection participation rates are below acceptable levels.

There are three ways of looking at the historical recycling diversion rates throughout the city, and these three ways are partly a matter of perspective. One way is to look at the overall rates and be impressed with how low they are -- and indeed the thrust of the City's plan is directing at significantly raising them. Another way is to look at them and be impressed with how high they are -- and indeed, given the problems with the current system that are identified in the plan, one can be impressed with the dedication New Yorkers have shown to their recycling programs in the face of considerable logistical difficulties. A third way to view the statistics is to be impressed with how disparate they are. There is a significant correlation between housing density and diversion rates, and high-density often (but not always) correlates in NYC with low-income. There is no direct evidence that diversion rates correlate to income levels.

Diversion rates in public housing projects -- which tend to have a low-income population -- are among the worst in the City, but this low diversion rate may result from the density of the projects and the manner in which the City manages the buildings rather than from the income-level of the tenants. (This problem is one of the reasons behind the recommendation in the plan to prioritize City attention on the areas and agencies over which it has the most direct control.)

I.A.6. The plan fails to address the potential impacts of the proposed waste-management facilities on the Hunts Point Food Distribution Center -- a major employer...that is particularly vulnerable to environmental hazards.

The Department of Sanitation, in conjunction with a prior environmental assessment for a formerly proposed Bronx waste-to-energy facility, analyzed the public-health risks that might be associated with a waste-to-energy facility on the Hunts Point

Market. This risk assessment has been added to Appendix Volume 6 of the plan. The conclusion of this analysis (see the new appendix 6-G) are that the effects of a waste-to-energy plant on the Hunts Point Market would be well below the thresholds generally considered of public-health significance.

I.A.7.a. The plan fails to examine the use of excess private sector waste processing capacity to process residential and institutional wastes.

The plan points out that there is existing private transfer station capacity that is more than adequate for current needs, and that many of these facilities are equipped for at least some degree of recyclables processing. The plan further identifies the amount of capacity, and the type of processing that would be required, to handle the City's proposed recycling program. Plans for specific facilities will be the subject of future project-specific procurement, environmental assessment, and permitting processes. It is likely that at least some of the recycling facilities proposed in this plan will be privately operated. Each such procurement will be done on an open, competitive basis. If the operator of an existing private facility proposes the use of such a facility for the City's purposes, and if such facility meets all the substantive requirements of the City's Request for Proposals, it could be selected for use by the City in lieu of a facility newly constructed for this purpose.

I.A.7.b. The plan ignores the need for remedying the adverse environmental impacts of waste-management activities in Community Districts 1 and 2.

Appropriate mitigation measures will accompany the proposal of any specific new waste-management facilities.

I.A.8. The plan fails to properly address the proposal to locate an incinerator at the Barretto Point site in Hunts Point.

As stated in the plan, no decision to proceed with the development of any new waste-to-energy facility -- other than that proposed for the Brooklyn Navy Yard -- will be made until 1997. The Department of Sanitation, however, will continue to take appropriate steps to create and/or maintain access to potentially suitable sites for all of the types of waste-management facilities proposed in the plan. At the request of the Board of Estimate, work to develop environmental impact statements for four waste-to-energy facilities was begun in 1986; these documents were never completed. Work on these environmental impact statements ended when the preparation of the current plan began. Any decision to move ahead with any of these

once-proposed projects will not take place until 1997. Any supplemental site-specific environmental review conducted pursuant to this plan will follow all applicable CEQR and SEQRA regulations, including those that concern public notice.

I.B.1. The plan fails to provide a 10-year program for implementing the selected waste-management system.

See the revised section 19.1.

I.B.2. The plan fails to meet the requirements that recycling should be maximized and that only materials technically and economically incapable of being recycled should be incinerated.

This is not the case. The plan provides a strategy for maximizing recycling and composting and minimizing the use of waste-to-energy facilities.

I.B.3. The plan fails to demonstrate that the chosen waste-management system will maximize recycling and will reach a minimum recycling rate of 40% of the trash stream by 1997.

40% by 1997 is a state recycling goal. Given the myriad variables, many of which are beyond the City's control, the plan lays out an aggressive strategy to come close to this goal by maximizing recycling to the greatest extent feasible as early as possible. The projected recycling/composting rate is expected to be approximately 40% by 2000.

I.B.4. The plan does not contain yearly recycling rate projections as required by DEC.

See the revised Chapter 19.

I.B.5. The plan fails to meet the State's waste-prevention goals of 8-10% by 1997.

The plan projects the attainment of waste-prevention achievements of 7-8%. Because of the uncertainties associated with achieving these levels, however, this projection is not tied to the year 1997.

I.B.6. The plan fails to demonstrate that a recycling rate of 25% will be attained by 1995, as required by Local Law 19.

See the response to comment I.B.3. above.

I.B.7.. The plan does not comply with DEC's September 1, 1992 source-separation requirement by allowing post-collection processing of commercial waste.

See the discussion of this issue in the revised Chapter 19.

I.B.8. The plan violates the State Environmental Quality Review Act because it fails to take into consideration ecological impacts.

These impacts -- which include geological and hydrological resources and fragile wildlife populations -- are most appropriately addressed in the site-specific environmental analyses that will be conducted when specific facilities are developed.

II.A. The plan's own data show that the No-Burn system is environmentally superior to its preferred incinerator-based Systems A and B.

SEQRA requires that, consistent with social, economic, and other essential considerations, adverse environmental impacts be minimized to the greatest extent practicable given the availability of other reasonable alternatives. This clearly requires an analysis of discrete environmental and economic impacts, since (for reasons outlined in the response to scoping comments in Appendix Volume 9-B), these impacts are not usefully "blended" together to provide some sort of overall environmental bottom-line weighted average.

The table on page 17.3-19 presents a summary comparison of the discrete quantifiable environmental and economic impacts associated with the four alternative systems and the projected baseline. It shows that the No-Burn System ranks behind proposed Systems A and B in terms of overall system cost, facility acreage required, and positive energy impacts. If jobs in manufacturing industries that use recycled materials are not included in the analysis (on the assumption that most of these jobs, in all likelihood, would take place outside New York City), the No-Burn System ranks behind A and B in job creation; it ranks ahead of A and B in terms of overall job creation only (when these jobs that are likely to be outside NYC <u>are</u> included). The No-Burn System ranks ahead of A and B in terms of lowest facility air emissions, but behind the projected baseline: both of these rank higher than A and B because they both involve significantly greater degrees of landfilling. This is because, for many of the pollutants considered, Fresh Kills is expected to emit fewer air emissions than would waste-to-energy facilities, although certain pollutants would be emitted in higher quantities. The No-Burn System also ranks higher in terms of minimum waste-transport

distances by road.

In addition, there are non-quantifiable impacts that pertain to public-policy objectives, all of which are related to the minimization of adverse environmental and economic impacts. The alternative systems are compared along these dimensions in the summary table on page 17.3-20. From these perspectives, the proposed Systems A and B are preferable to the No-Burn System.

From and engineering and technological perspective, the mixed-waste compost facilities which would be required in a no-burn system represent a substantially greater risk than do waste-to-energy facilities. No track record has been established in the United States of successful operation of large-scale mixed-waste composting facilities. In fact, facilities in Portland, Oregon and Dade County, Florida have recently been closed due to odor and other problems. In addition to the start-up operational problems of the several smaller-scale facilities just getting under way in this country (e.g., odor-control problems), the compost product itself is beginning to come under increasing regulatory scrutiny, which might eventually restrict the uses for which this product might be marketed. The Environmental Defense Fund and other environmental groups have opposed mixed-waste composting because of concerns that the compost product may be contaminated with heavy metals or other toxics. In New Jersey, the State Advisory Council on Solid Waste Management has concluded that the risk of producing unmarketable compost is high and that New Jersey should not rely heavily on mixed-waste composting. In contrast, the market for energy is assured (through the federal Public Utilities Regulatory Policy Act of 1978.)

The other major drawback of a "no-burn" system is that it would require nearly twice as much landfilling as would system alternatives that include waste-to-energy facilities. Given the clearly established policy objective of minimizing landfill usage (as required by the State waste-management hierarchy, in reflection of the relative environmental and economic costs and benefits of landfilling versus the other waste-management techniques), and the fact that the eventual depletion of the Fresh Kills landfill's finite capacity will require reliance on more costly and less-reliable out-of-city landfills, this factor argues against the use of such a no-burn system.

Contrary to CBNS's assertion, the plan's executive summary did not state that "when the environmental impacts of the No-Burn System are compared with those of the incinerator-based systems, the differences among their environmental impacts 'would be trivial.'" The word "trivial" is used in two locations in the executive summary; in both cases, its use is technically

correct. In the CBNS version, the phrase has been taken out of context. The complete context for each use is quoted below:

> "From a public-health and regulatory perspective, none of the alternative scenarios produced unacceptable environmental impacts. There are differences in facility air emissions between the scenario extremes of maximum waste-to-energy systems and no-waste-to-energy systems, and lesser differences in vehicular air emissions associated with the type of collection system proposed, but none of these differences, in comparison to background levels is very significant.
>
> "Water-pollutant impacts are negligible in all scenarios, and the differences between scenarios trivial." (p.ES-14)
>
> "As might be expected, the environmental impacts of Systems A and B are very similar; both would produce air emissions from facilities that would be slightly lower than those produced in a 'maximum-burn' scenario, and somewhat higher than those produced in a 'no-burn' scenario. Vehicular air emissions also vary very little between Systems A and B and the 'no-burn' case, and would be slightly lower in the 'maximum-burn' case. Differences between these alternatives in terms of <u>other</u> environmental impacts would be trivial." (p. ES-18, emphasis added)

II.B. The plan's data show that the advantages to the New York City economy -- for example, job creation -- of adopting the No-Burn System are significantly greater than those produced by the plan's preferred incineration-based Systems A and B.

More jobs would be created under the No-Burn System than under proposed Systems A and B, but it is likely that more jobs in "the New York City economy" would be created under Systems A and B, because many of the manufacturing jobs using recycled materials would be likely to be outside the city (for reasons addressed in the plan). For this reason, Table 17.3.2-9 presents the total secondary economic impacts in two ways: with manufacturing industries using secondary materials included, and without these industries included. If manufacturing industries are not included, the other effects of Systems A and B would also be much more beneficial than those of the No-Burn System. Total output (i.e., the amount of spending generated by the systems would be more than twice as high for System B, and almost three times as high for System A; the economic effects due to taxes associated with the alternative systems (assuming, simply for comparative/analytical purposes, that these systems were funded

through property taxes) would be significantly more positive for Systems A and B (i.e., these less-expensive systems would require less taxes, leaving more money for private-sector spending).

The bottom line is that, when examining the likely effects on the New York City economy per se, Systems A and B are significantly more beneficial than the No-Burn System; when all new manufacturing jobs, including those that are likely to be outside the city, are included, the No-Burn System is somewhat better, with the greatest difference being in the number of jobs created (22,000 for Systems A and B vs. 30,000 for the No-Burn System).

A regional-input model was used to assess the likelihood that purchases for particular types of facilities would positively affect the New York City economy.

The use of property taxes for comparative purposes was simply a simplifying assumption. While it might be true that the use of income taxes would have shown a somewhat more "equitable distribution of the negative tax cost" than property taxes would, this is irrelevant to the analysis since the distribution of taxes was not assumed or calculated. The point is simply that the No-Burn System would cost more, that these costs would be paid for by increased taxes, and that less money would therefore be available for other types of spending.

II.C. Although the plan acknowledges that recycling saves much more energy than waste-to-energy incineration, it rejects the recycling-based No-Burn System in favor of incinerator-based Systems A and B.

Since all three systems maximize the degree of recycling to almost the same degree, the amount of waste that is processed in waste-to-energy facilities (some of which is composted in the No-Burn System) produces more beneficial energy impacts for the overall systems. See Table 17.3.2-7 for a calculation of total energy impacts.

III.A. The plan's recycling analysis contains faulty assumptions that reduce the expected participation, diversion, and recycling rates. This tends to underestimate recycling performance relative to the performance of incinerator-based systems.

III.A.1.a. The participation rates used in the models contained in Appendix 7.1-D are lower than the assumptions presented in the plan.

It is correct that the sentence on page 15-8 of the draft plan was in error (i.e., does not match the figure used in the

appendix); this has been corrected in the final draft. Under the "mid-range" assumptions, participation rates in the assumed source-separated programs ranged from 55% in high-density areas to 65% in low-density areas; higher and lower assumptions were also used. None of these participation assumptions is a "prediction" of what participation rates will be, nor are the rankings of the various scenarios evaluated changed by the use of more optimistic or conservative participation rates. Rather, these rates simply show how much recycling diversion could be achieved at the various rates, and what the costs of the overall system would be. Clearly, higher recycling rates would mean that less waste would remain for disposal by alternative methods, and the more recycling diversion that is achieved, the less expensive the overall system would be.

The mid-range recycling rates used are not "unrealistic:" they are considerably higher than current rates and at least equal to the best performance achieved in this country, in cities that are less densely populated, and therefore, with less complicated recycling logistics.

III.A.1.b. The plan's proposed collection strategy will not maximize participation according to the studies contained in the appendix.

Allowing the use of bags for recyclables (instead of providing rigid containers), is expected to increase, rather than decrease, participation, because bags will be more convenient for generators to use. They will not necessarily cost more than "free containers," since City-provided bins frequently require replacement by the generator after theft or breakage, since stores may choose to provide "recycling" bags free in place of conventional shopping bags, and since most generators already purchase plastic bags for their waste.

III.A.1.c. The participation rates in the plan are much lower than the rates already attained in the pilot intensive recycling program in Park Slope, Brooklyn.

The "intensive-recycling" experiment in Park Slope had a more cost- and labor-intensive public-education program than could be sustained citywide. Nor is the density of Park Slope comparable to the "high-rise" neighborhoods that characterize many places in the city.

III.A.2. Diversion rates (the percentage of the targeted material that is actually recovered) contained in the plan are unjustifiably low.

III.A.2.a. The future diversion rates expected in the plan's models are no higher than those experienced in NYC today.

The numbers presented by CBNS do not accurately reflect the assumptions documented in Appendix 7.1. The diversion rate for targetted materials for January, 1991 ranged from 14 to 69 percent across density categories, with a weighted average of 38 percent. The appendix table referred to (7.1, Collection: Methodology #1, Table 1) shows assumed diversion only on a per material basis. The diversion rates assumed for all materials, as shown in that appendix's Document #7, ranges from 41 to 62 percent across density categories. Overall, the weighted average diversion rate for all of the targeted recyclables is 53%. This comes from an average paraticipation rate of approximately 60% and an average capture rate of approximately 80%, along with additional "pre-processing" recovery of recyclables from mixed waste.

The plan's mid-range assumptions do not in any way limit the amount of recycling that may be achieved, but are intended simply as reasonable projections of what rates are most likely. These mid-range assumptions are based on the best rates achieved elsewhere; most of these rates are from single-family houses, which offer fewer logistical hurdles to recycling than do high-rise apartments. Many of these locations also benefit from the use of "user fees," which, as stated in the plan, may be desirable in NYC, but have not yet been shown to work in multi-family dwellings.

III.A.2.b. The plan includes faulty data and analysis about the participation and diversion rates achieved in Seattle.

CBNS claims, without documentation, that the Seattle participation rate is higher than characterized in the plan. These data are soft, and whether 60 or 80 percent is closer to reality is not directly relevant to the design of NYC's plan (for reasons noted in the preceding responses).

III.A.3. The assumptions about participation and capture rates lead to low assumptions about overall recycling rates. Another factor contributing to the plan's low assumed recycling rate is that it fails to target several potentially recyclable materials.

Mixed paper is targetted in the "high-quality recyclables" source-separation program, and, if source-separated collection/processing for food wastes is determined to be feasible (based on pilot efforts that are outlined in the plan)

residential food-waste will also be targetted along with organics from commercial and institutional kitchens. Source-separation is clearly preferable for residential recyclables, and for certain types of commercial establishments and collection routes; because of the less heterogeneous composition of waste from commercial generators relative to residential waste, however, post-collection separation, in some instances, can recover higher percentages of recyclables from commercial waste than from residential waste.

III.B. The plan overestimates the cost of recycling and underestimates the cost of incineration (facility capital and operating costs). When these errors are corrected, the net costs of the no-burn and incinerator-based systems are about the same.

III.B.1.a. The plan's low assumption of diversion rates leads to the development of a collection system that is inefficient and unnecessarily costly if higher diversion rates are achieved.

It is not the case that "in the plan the cost of recycling is overestimated in part because collection cost (which is a large part of the total cost) is based on artificially low diversion rates. This means that little material is picked up at curbside, increasing the per-ton-cost of collection." A fundamental premise of this plan is that costs can only be evaluated rationally on an overall system basis. The plan proposes a two-truck collection system, with one truck for recyclables and one truck for compostibles and the remaining refuse. Since both trucks will be making collections from each generator, it is irrelevant to overall collection system costs which truck a particular material ends up in. Furthermore, the relative length of the two collection routes is affected by the amount of material that is collected in each of the trucks, so that increases in costs for one part of the collection system are partially offset by decreases in cost for the other.

III.B.1.b. The plan's low assumed [recycling] diversion rates force the introduction of some other form of volume reduction, which considerably increases overall system costs. However, no comparison was made between the costs of building these new facilities with the alternative way of reducing landfill volume -- programs to increase the diversion rate.

Additional recycling diversions might create a less-expensive overall system. The proposed system is designed to maximize

recycling rates, and includes all of the measures that are considered most likely to be effective in increasing diversion rates. If more-than-expected recycling diversion takes place, less waste-to-energy and composting capacity would be required. The plan allows this flexibility by sequencing the implementation of these facilities on an as-needed basis in the mid- and long-term implementation phases.

III.B.2.a. The plan apportions the cost of land for solid waste facilities in a manner that underestimates the cost of existing facilities and the proposed Brooklyn Navy Yard incinerator.

Land is not "depreciated" in the WastePlan model that was used to calculate the costs of alternative systems, although land costs are annualized over the lifetime of a given project. In this way, an accurate representation of actual annualized costs is given. It is true that at the end of the lifetime of any facility, the City would own land that may very well have appreciated in value. However, that is not highly relevant for real budget expenditures that are required over the next 20 years.

Also, the fact that land is not "used up" is the case for all facilities. Since waste-to-energy facilities and recycling facilities have roughly similar land requirements (each roughly 1 acre/100-120 tpd of processing capacity), this does not bias the analysis.

Land costs were included for all existing incinerators at $1,000,000/acre. They were included for the Brooklyn Navy Yard facility as part of the overall $400,000,000 capital cost; if, however, an additional $13,000,000 were added to the cost of the Navy Yard incinerator, and this amount were inflated at 4% per year to 1995 (the year assumed for the beginning of construction in Systems A and B), the additional annualized cost would be $1,610,904, which is approximately $1.75/ton.

Land costs were not included for the existing MTS system, whose capital costs were based on the actual budget estimates in the 10-year capital budget plan. The cost of MTS land was not included in the analysis because, since the seven existing MTSs were included in every scenario, the opportunity cost of their land would not affect the ranking of any scenario.

III.B.2.b. The plan underestimates the costs of incinerator equipment.

Calculating incinerator equipment costs somewhat differently, as suggested by the SWAB's comment, would not significantly change

overall system cost rankings. A certain part of the equipment of a waste-to-energy facility, as noted in the comment, includes items (e.g., conveyors) that, in the case of MRFs, were assumed to need replacement on 10-year cycles; a larger proportion of the "equipment," (e.g., boilers, turbines), however, would not need replacement on a 10-year cycle, and it was this equipment that was the focus of the incinerator capital analysis.

If it were assumed, however, that a 2250 tpd mass-burn waste-to-energy facility required as much rolling stock and as many pieces of "10-year-replacement" equipment as would the pre-processing facility in front of it, this equipment would cost $3.4 million. If, in addition, all air-pollution-control equipment were amortized over 10 years, this would amount to another $22.7 million. Thus, out of a total of $141 million in equipment for a 2250 tpd mass-burn waste-to-energy facility, approximately 18.5% ($26.2 million worth) of the equipment would be amortized over 10 years instead of over 20. The incremental effect of this would be $2.7 million per year; divided over 700,000 tons, this would come to $3.85/ton. Inflating this to 1995 dollars (when incinerator bonds were assumed to be issued) would make the figure $4.70/ton. This would increase the costs of the waste-to-energy portion of the waste-management system by 5%, and increase the waste-to-energy capital costs alone by about 10%.

III.B.2.c. Additional odor control may be necessary for in-vessel composting facilities.

Odor control equipment beyond that used in the Portland facility was included in cost estimates for compost facilities.

III.B.2.d. The plan is inconsistent in estimating capacity utilization at recycling processing facilities.

This perceived "inconsistency" is the result of different plant designs and equipment configurations: the materials recovery facilities involve more complex operations (see Appendix Volume V for a detailed description of design assumptions). The respective availability assumptions were developed by engineers specializing in these respective facilities, and these assumptions were reviewed for consistency between engineering teams.

III.B.2.e. The plan underestimates the capital and operational costs of the Brooklyn Navy Yard facility.

The best current estimate of the capital costs of the proposed Navy Yard facility is $400 million. In the past, as a "place-holder" for private funds in the "appropriations" section of the

capital budget, a larger figure was used, which erred on the conservative side. As recently as 1988, that figure was $560,000. In a different part of the budget documents, however, is a "commitment" figure. That figure for some years has been estimated as $450 million. In the latest (FY 93) capital budget, those figures continue to be carried. The $400 million figure represents a more accurate estimate, which is consistent with the capital costs used for other waste-to-energy "reference facilities" in this plan.

The per-ton operating fee for the Navy Yard facility was not derived from the computer modeling process, but was instead an input number that comes from the City's contract with Wheelabrator, Inc., the developer of the proposed facility.

III.B.3.a. The plan overestimates the operating cost of materials-recovery facilities (MRFs) by almost 50%.

Projected materials-recovery facility costs were based on factors specific to New York City, which, as with other types of facilities, makes them more expensive than existing facilities elsewhere. This cost differential, however, is irrelevant to program design: if costs turn out to be lower than projected, that will only enhance the performance of the proposed system.

III.B.3.b. The plan overestimates the per-ton operating costs of a MRF in comparison with mixed-waste processing plant costs.

See response number III.B.2.d. above: the facilities' designs, operations, and products are significantly different.

III.B.4.a. When the plan's faulty data and assumptions are corrected, there is relatively little difference in the cost of the various scenarios in the plan.

The magnitude of the cost differences between the four scenarios analyzed is only one of a number of planning factors. (It should be noted that the cost differences that remain in the CBNS version still roughly fit the scenario ranking established in the City's version -- with the no-burn system the most expensive, and System A slightly less expensive than System B.) The all-burn scenario would still be rejected because it does not conform to the State's hierarchy, and, by not maximizing recycling, would instead maximize reliance on waste-to-energy processing and the environmental impacts associated with them. The no-burn scenario would still be rejected on policy grounds, because it would maximize landfilling and the environmental impacts associated with that, as well as depleting a finite resource whose depletion

will require that the City rely on out-of-city disposal capacity. The cost differences between the City's two preferred systems, A and B, are not significant, and the City would prefer to implement a B-type system, even though it would be somewhat more expensive, if it proves feasible to do so.

III.C. The plan assumes, erroneously, that composting of food waste and other organic materials is not yet practical and must be "developed" for future use.

The plan considers composting of "food waste and other organic materials" a feasible, practicable technology. That is why the plan proposes, at a minimum, a 370-ton-per-day in-vessel composting facility for source-separated institutional and commercial organics. This plant is scheduled for construction in 1996. Mixed-waste composting, however, is likely to be more problematic.

The plan accurately points out that there are more unknowns associated with large-scale urban composting (ranging from generator participation in source-separated organics programs, collection systems, facilities, compost marketing, and compost regulations) and less of a relevant operational record than there are for established waste-to-energy technologies.

III.D.1. Emission factors for MRFs and certain other recycling facilities are erroneous. As a result, the comparison of pollution from incineration and recycling is not credible. The fact is that there are no data available for either MRFs or transfer stations at present.

When developing emission factors for a MRF and other recycling facilities, the only relevant published data were on the Groton MRF. In order to assess the validity and usefulness of this data, there was an exchange of correspondence with Dr. Commoner in which he pointed out the lack of difference between measurements taken while equipment was running and measurements taken while equipment was not running. It was presumed the interior levels were due to the residual emissions of equipment and vehicles used in the process. It was not known that organics could also have been contributed by the ambient air from the adjacent landfill. While these uncertainties lower the quality and raise questions about the validity of the data, the data were useful in giving a first-order approximation of emissions from a recycling facility and other facilities that share similar characteristics. The data serve to show much lower levels of emissions than from other processes, which is evident in Table 17.1.2-1, "Reference Facility Air Emissions as a Multiple of Standard MRF."

III.D.1.a. Emission factors (the amount of pollution produced per ton of material handled) for transfer stations are, with little justification, assumed to be identical to those of MRFs.

CBNS notes that transfer station/recycling facilities might be regarded as "...environmentally similar [to MRFs] because they neither create nor destroy pollutants, but only release pollutants already present in the material they handle." This is not entirely true because both facilities include vehicles and equipment (conveyor belts, balers, crushers) that create combustion emissions and fugitive dust, the actual source of the emissions. Even though the waste streams of transfer stations may not be as homogenous those at MRFs, it is not unreasonable that a first approximation is that such emissions are similar quantitatively in proportion to the volume of waste handled.

III.D.1.b. The emissions data for the MRF are interpreted and applied incorrectly in the Plan.

As pointed out in the CBNS report on the Groton MRF, there was little difference in pollutant emissions when the machinery was on or off. Therefore, most of the detected pollutants probably "represented material generally present in the facility and/or the ambient air., rather than material generated by the sorting operation themselves." (CBNS 1988, p. II-54).

Since there was no difference between measurements taken with the machinery on or off, the concentrations could have been attributable to residual or vehicular emissions. Thus, taking the average of the data is appropriate. The potential influence of the landfill at Groton was not known.

III.D.2.a,b. The Plan places too much confidence in the emissions estimates based on tests of other incinerators. It is not sound to rely on the mean of acceptance test data for long-term performance that is not reflective of malfunctions.

In practice, annual tests of facilities required by many states and now by federal New Source Performance Standards is demonstrating that emission levels of newer facilities during acceptance tests is representative of routine performance. In fact, later tests often show lower levels of emissions as plant managers fine-tune their operations. The Oregon Department of Environmental Quality reports that annual emission tests since the Marion County plant began operating in 1987 have shown very steady performance that is always in compliance with permit limits. The frequent transmittal of continuous emissions monitoring data on key indicator pollutants to state regulators

helps to maintain performance at acceptance-test levels. Plants are instrumented with alarms that alert the operator well in advance of any out-of-specification condition, so that modifications can be made.

Contrary to the statement, malfunctions are rare and shutdowns are nearly always for scheduled maintenance. The federal standards are minimums which are superceded by most states' more stringent requirements. The compliance engineer for the Hennepin facility reports that his CEMS operate fully more than 95% of the time. New Jersey issues heavy fines for any exceedance of the standard, even due to "acts of God" such as lightning strikes. Temporary downtime of a CEMS does not mean that emissions increase, but simply that there is a data gap. The 75% minimum rule (new federal regulations permit continuous emissions monitors to not function 25% of the time) would still provide a representative sample of long-term performance.

The references cited in an anti-incineration newsletter are not relevant to the database. The one plant that reported a blow-out of flyash from some bags in 1988 was the first in the country to employ a baghouse; it was built by a firm that was inexperienced in waste operations and which has since left the field; the bags were undersized and there was a unique bypass of the bags. The alleged violations of mercury limits cited in the newsletter for Warren County would not have affected the data base; moreover, the average of all tests was in compliance with the limit. The reported carbon monoxide exceedances were for a few short periods (1-2 hours). Fines were given if there was not a notification to the state of an exceedance within 15 minutes. The "emission of ash" was one instance of fugitive emissions from the ash room. Other fines were for bypasses of the emissions controls during three or four lightning strikes (the plant is on a hill top). As explained by the New Jersey Department of Environmental Protection's northern regional enforcement officer, under the New Jersey fine schedule, repeated violations, even if for varying and not serious reasons, cause the size of the fines to escalate dramatically. The fine schedule is being reviewed.

Plants built by the firm developing the Brooklyn Navy Yard plant are now equipped with an automatic lock-out of bypass of the emission controls, so that in the rare upset condition, such as loss of lime feed or cooling water in the scrubber, the furnace automatically shuts down and carbon monoxide may increase for about an hour. Otherwise, the flue gases continue to pass through the baghouse, which still achieves some acid-gas removal because the bags are impregnated with lime. So long as the cooling water is operating in the scrubber (which is likely since it is a simple system), condensation of metals occurs on the particulates, which are then collected by the bags. The bags are

designed to withstand the uncooled boiler-exit temperatures that may occur in the hour of an unscheduled shutdown.

Overall, there is sound reason to have confidence in the data base.

III.D. 3. The data base is arbitrary and does not include plants that have exceeded their permits: Hennepin County, MN and Warren County, NJ for mercury, and Essex County, NJ. The low data from St. Croix, WI should not have been included because it is a modular incinerator.

The emissions were based on plants that are reasonably similar to those that would be built in the future by virtue of being equipped with spray dry scrubbers and fabric filters, although not necessarily with the improvements that would be installed on newer facilities. The plants include some that are not among the lowest performers. Essex County data were not included because it is equipped with an electrostatic precipitator which cannot achieve as constant an emission rate as a baghouse. Hennepin County and Warren County, which are equipped with spray-dry scrubbers and baghouses, could have been included if this had been an effort to research and obtain every emission test report on every plant in the United States, which was beyond the scope of this effort. Although Hennepin County data are somewhat higher for particulate, NOx, and carbon monoxide, they would not change the plan data significantly. With the exception of one test of nickel and one for mercury, which is discussed below, the Hennepin database for several metals would not increase the plan database mean because the levels were either lower or the detection limits were higher than the mean of the plan data. Dioxin emissions for Hennepin County were lower than the mean of the plan database. Warren County data are lower than the SWMP emission factors for most key indicator pollutants, whereas its data on metals and dioxins would have been difficult to include since they involve detection limits that exceed the mean of the tests in the data base. The exception was mercury, which was about a third higher than the data base and has since been corrected, as discussed below, and vanadium, which is not a high-priority concern.

It has been widely publicized that mercury emissions have been high from the Hennepin County and Warren County resource recovery facilities. Mercury emissions in Hennepin exceeded extremely strict permit limits (0.002 lb/hr) in a compliance test. The exceedance occurred on one unit which also had quite high particulate emissions; mercury emissions from the second unit, which had low particulates, were an order of magnitude lower than the mean of the plan data. Since then, in quarterly tests for mercury, emissions have been less than one-half the permit limit,

according to the Minnesota Pollution Control Agency. A similar situation occurred in Warren County, which exceeded its permit limit (0.05 lb/hr) in one of its six stack tests, but the plant has been in compliance in all subsequent quarterly reports, according to the northern regional compliance officer of the New Jersey Department of Environmental Protection. The compliance has been partly attributed to the institution of battery-collection programs in a portion of the service area of the facilities.

The initial mercury exceedances at these two plants demonstrate that acceptance tests do not preclude violations and do reveal potential operating problems.

The St. Croix plant was included because it is a mass-burn plant (with a two-stage furnace) that has a type of dry-scrubber/fabric-filter system which is of increasing popularity. The modular incinerator data base was developed differently from the larger mass-burn and refuse-derived-fuel data base. Since there were virtually no data on controlled emissions from modular plants, to the uncontrolled emissions reported by USEPA were applied the control efficiencies demonstrated by scrubber/baghouse controls on mass-burn and refuse-derived-fuel plants.

III.D.4. Evaluation of non-inhalation exposure and ecological effects should be included in environmental risk assessments.

The public health assessment is neither a risk-assessment nor a quantitative assessment of eco-system effects, both of which types of analyses are more appropriately the subject of site-specific impact statements. However, the influence of non-inhalation pathways for dioxins and furans is represented by the reference concentration for these pollutants. The value used is the maximum ground-level concentration, which corresponds to deposition levels used in the Brooklyn Navy Yard multi-pathway health-risk assessment that was found to result in an acceptable risk.

III.D.5. Hazards to health may occur due to incinerator emissions. The "margin of safety is inadequate."

The standard or guidelines used have built into them substantial margins of safety; for example, the Ambient Guideline Concentrations are based on a negligible risk of cancer or other effect from a lifetime of continuous breathing at the location of the maximum effect of emissions. Thus, being below the standard or guideline has always been considered adequate protection in

regulatory reviews. The problems the commenter raises with the estimated emissions due to potential, infrequent short-term variations would, if true, be less relevant to long-term averages, which are most relevant to health effects.

III.D.6. The Plan's estimates of hexavalent chromium are arbitrary and not conservative.

The rationale for the assumption that 0.007% of total chromium is hexavalent for trash incinerators is based on test results from the refuse incinerator at the Baltimore RESCO facility that showed hexavalent chromium was not found in any of the samples above the detection limit of 0.1 ug/g.[10] In the health-risk assessment performed for the DEC and NYS DOH during the course of permit hearings for the Brooklyn Navy Yard Project, the EPA detection level of 0.1 ug/g was applied to the guaranteed particulate emission rate corresponding to 0.015 gr/dscf at 12% CO_2. As a percentage of particulate, the non-detect level of 0.1 ug/g of hexavalent chromium results in a hexavalent chromium content of (0.1 ug/g (ppmw)/1500 ppmw) = 0.007%. This conclusion was accepted by the NYS DEC in the permit hearings for the Brooklyn Navy Yard facility because the DEC reported that its tests of MSW plants in NYS detected no hexavalent chromium.

The assumption that 1% of total chromium is hexavalent for medical waste incinerators is conservative in light of the rationale presented for trash incinerators. The assumption of 4.5% hexavalent chromium is appropriate for sludge in view of a wide range of hexavalent chromium emissions for these facilities.

Although the draft CSWMP (Appendix 7.2, p. H-38) stated that "worst-case risk assessments often assume that 100% of the measured chromium is hexavalent and bioavailable," it has been amended. The conservative practice where preparers have not presented supporting data is to assume 10% is hexavalent.

(See also the response to comment III.D.9., concerning sludge-facility emissions.)

III.D.7. The Plan's estimate of emissions from the incinerator ashfill are incorrect.

Estimates of total suspended particulate (TSP) emitted from ash handling are derived from coal-mining-operations equations

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[10]"Review of Plant Emissions, Transport, and Deposition as Input to Health Risk Assessment for the Brooklyn Navy Yard Resource Recovery Facility," Signal Environmental Systems, May 15, 1987 (part of the hearing record for the BNY DEC hearings).

because there are no known equations derived specifically for ashfill particulate emissions. As stated in the report, this is a conservative estimate because coal-mining operations are in all likelihood dustier than are ashfill operations due to the inherently lower moisture content of the coal materials handled compared to waste-to-energy residue.

The plan appropriately treats the fly ash and bottom ash in a combined state because it is in a combined state that the ash is received at the ash landfill. Also, since the ash is combined in the form of a slurry, particulate emissions are kept to a minimum because of that moisture content, and as the ash dries, a cement-like substance is formed that further inhibits dust formation.

The lack of fugitive emissions from an ashfill has been documented by a part of USEPA's long-term characterization of an ashfill in Marion County, OR. The study concluded: "To date, [three years of operations], the soils in the vicinity of this ash-monofill, which is not covered on a daily basis, have not been affected by airblown fugitive ash from the monofill. The soil samples did not contain metals levels beyond the levels found in the previous site background sample analyses."[11] Samples near the interstate roadway had somewhat higher levels of lead and dioxins.

III.D.8.a The estimated emissions of certain pollutants, e.g. dioxin, from existing incinerators are inadequately documented and may not be representative of all three facilities.

The emissions were based on an excerpt from a report by the Department of Sanitation submitted in March 1991 to the New York State Department of Environmental Conservation, "Present Operation and Proposed Environmental Impact of the Municipal Incinerators," which has been added to Appendix 6-B. The data, based on tests of the Southwest Brooklyn incinerator, should be representative of emissions from the other two incinerators for pollutants that are affected by the waste stream and for particulate-control efficiency, but may not be as representative for emissions that are influenced by combustion characteristics, due to the different grate design of the other two plants.

D.8.b. Emission factors of heavy metals and other emissions may be understated since they came from the Incineration 2000 study which included controlled

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[11] U.S. Environmental Protection Agency, Municipal Waste Combustion, Ash and Leachate Characterization Monofill - Third Year Study, Woodburn Monofill, Woodburn, OR, October 1990.

plants.

The emission factors used from Incineration 2000 are unlikely to be understated because they are nearly the same as, or higher than, those reported in the study for completely uncontrolled emissions. This is because the assumed baseline emission factors are "95% confidence values." The exception to this is chromium, which is about one-third the uncontrolled level.

D.8.c. The use of "95% confidence values" does not necessarily provide a conservative estimate of existing incinerator emissions.

The "95% confidence value" was applied only to data for metals and three organics from the Incinerator 2000 study. The others were based on stack-test measurements at the Southwest Brooklyn Incinerator. The conservatism of this assumption is evident in the fact that for all metals except chromium, the 95% value is of the same order of magnitude, or greater, than the uncontrolled emissions in Reference B of that study. Uncontrolled organics were not reported.

III.D.8.d. In deriving reductions of metals in proportion to the degree of improved particulate controls on City incinerators, it is faulty to begin with a database in Incinerator 2000 that includes plants with good particulate controls.

The premise for metals removal is that they will condense on particles and be removed with the particles: however, the rate will increase as the efficiency of particulate removal increases, because the smaller particles captured in the upper ranges of efficiency provide more surface area onto which particulates will be adsorbed. The degree of control of particulates at Southwest Brooklyn prior to upgrading is 79%, based on a comparison of those emissions (1.53 lb/ton) with uncontrolled particulates in Incinerator 2000 (7.35 lb/ton). The assumed pre-upgrading metals levels used are either close to uncontrolled levels in Incinerator 2000 or are controlled less (some far less) than the assumed 79% particulate control. This is because the 95% percentile data were used. Thus, the relatively high levels compared to metals data from plants with good particulate controls are appropriate to use as a baseline for the assumed added 87.5% particulate-removal effectiveness.

III.D.9. Emission estimates for the proposed Oak Point sludge-drying plant in the Bronx are not well-supported by data...the plan's supporting documents state that temperatures in the sludge-drying plant will not be high enough to volatilize mercury, so that little will

> be emitted...the pollution control strategy proposed for the sludge-drying plant -- a cyclone particle precipitator followed by a combustion unit -- leaves open the possibility of significant metals emissions in addition to mercury.

The emission factors for chromium and mercury, as well as the other compounds presented in the DEP's EIS III represent conservative estimates of the potential air emissions from the sludge thermal-drying facility. The NYS DEC permit to construct for this facility, which was issued on May 15, 1992, confirms that the emission factors used in EIS III were conservative.

The permit to construct specifies permissible emission rates for the criteria and noncriteria pollutants identified in EIS III. The permissible emission rates are much lower than the values assumed in EIS III. Thus, the maximum air-quality impacts predicted by the dispersion modeling, using the EIS III emission factors, were conservative. It should be noted that the dual-cyclone system has been replaced by wet scrubbers, to provide more effective particulate control. In order to obtain a certificate to operate, stack testing would be performed after start-up to confirm the emission rates of the pollutants specified in the permit to construct.

III.E.1. Although the plan concludes that the incineration scenarios have no adverse impact on public health, the plan's own data show that they will add to local pollution, which already exceeds standards or guidelines.

Both statements are correct. The incremental exceedances of standards or guidelines affect only a handful of pollutants, and the incremental pollutant contribution due to implementation of the plan would be relatively small.

III.E.1.a. The plan admits that mercury emissions from the proposed incinerators pose a potential public health problem.

The plan points out that, "Although relatively few New Yorkers consume locally caught fish and shellfish, some do so regularly, and for them, environmental contaminants from all sources, included added loadings of mercury from the proposed waste-management systems, is a potential health concern than needs to be monitored," and that, therefore, steps should and will "be taken to reduce mercury releases."

III.E.1.b. The plan admits that mercury levels in NYC waters are already too high and that additional emissions

from the plan's incinerators will worsen this situation.

The plan says (p.17.3-11) that "Given the already-high levels of mercury in certain reaches of the New York Harbor system, all practicable steps to reduce mercury loadings should be taken. Actual incremental mercury loadings, however, would be expected to be considerably less than the extremely conservative figure in the above table." Documentation of the reasons that this projected figure is overstated follows (on pages 17.3-11 to 12).

III.E.1.c. Although the plan tends to minimize the impact of mercury emissions, most of their arguments have little force.

Very substantial reductions in mercury emissions will occur due to legislative mandates and voluntary programs for reducing mercury levels by about 98% in batteries, which account for 88 percent of the mercury in MSW. Battery-collection and -separation programs which appear to have been effective in Warren and Hennepin Counties will further reduce mercury levels. The CBNS critique does not account for these steps which are well underway and will be fully in place before the proposed development of any new waste-to-energy facilities. Moreover, it is assumed in the costing of such facilities that they would be equipped with carbon absorption systems that have been effective on European installations in substantially reducing mercury in the flue gas. (Appendix 4-M has been revised to remove any ambiguity about use of these systems.) However, it must be stressed that emission factors and the estimates of environmental impacts did not take credit for these changes.

III.E.1.d. Concentrations of certain pollutants in the City's air and water already exceed standards or guidelines, a public health problem generally ignored by the Plan. The latest AGCs must be used.

As shown in the updated and corrected Table 1-16 of Appendix 6-A.1 (in which NYSDEC's September 1991 Air Guide-1 Ambient Guideline Concentrations are now used), there are existing exceedances of the AGCs for three pollutants, to which the contributions from the new facilities at the point of maximum impact would be relatively minor.

III.E.1.e. Prudent public and environmental health policy argues for reducing pollution emissions into overburdened systems, not adding to them.

Levels of few pollutants in the region, if any, bear any significant relation to waste-management sources. Instead, they are the result of other activities. Regulatory steps are being taken to reduce levels of all pollutants that exceed standards or guidelines, and these steps are most appropriately directed toward the activities that generate the greatest volume of these pollutants (e.g., reduction of vehicular emissions for the reduction of nitrogen oxide/ozone levels). For the criteria pollutant that exceeds federal Clean Air Act standards -- nitrogen oxide (an ozone pre-cursor) -- new waste-management facilities cannot increase existing levels because greater-than-one-to-one offsets will be required; therefore, development of new waste-to-energy capacity can only take place if nitrogen oxide levels are reduced. On balance, the proposed plan will, in relation to available alternatives, minimize adverse effects to the region's environment and economy.

III.E.1.f. The Plan states that additional nitrogen oxides (NOx) emissions from trash incinerators would be more than offset by reductions of emissions from on-site medical waste and apartment house incineration, but the Plan's data show the opposite. Only the non-burn System C leads to reduced total NOx emissions.

The sentence of page 17.1-29 has been corrected to read: "These sources would be <u>largely</u> [replacing "more than"] offset by the reduction in emissions from ending most on-site medical waste and apartment house incinerators. If the NOx emissions from burning oil to produce energy that will be displaced by energy from waste were accounted for, the new sources will lead to a substantial net reduction of NOx in the region, a benefit that does not occur with the non-energy recovery scenario." These offsets can be seen in a revised version of the CBNS Table 7, based on the following assumptions:

- RDF tons/day incinerated for Scenarios A (with RDF) and B (with RDF) was calculated by assuming 78.9% of waste processed at an RDF facility is incinerated (see Facility Sheet 27, Appendix Volume 5).

- Total tons/day incinerated for each scenario was calculated by adding the daily existing incinerator and mass-burn (BNY) facility throughput to the RDF-incinerated throughput.

- Total tons/day incinerated for each scenario was multiplied by a NOx emission factors from Appendix 6.A.2 and 2.6 lb/ton that corresponds to the displaced Con-Ed NOx emissions. The NOx emission factor in lb/ton was calculated by assuming 1 barrel of oil has the same Btu content (6,300,000

Btu/barrel) as 1 ton of MSW at 3,150 Btu/lb. Btu content per barrel of oil was calculated assuming 150,000 Btu/gal (USEPA) and 42 gallons/barrel. At 4,700 Btu/lb, 1 ton of MSW equals 1.5 barrels of oil.

o The NOx emission factor in lb/barrel of oil was calculated by: multiplying the annual Con-Ed NOx emissions of 1,300 tons/year (from 1,000,000 barrels of oil) by 2,000 lb/ton to get 2,600,000 lb of NOx/year, then dividing the annual NOx emission rate by 1,000,000 barrels of oil to get 2.6 lb of NOx/barrel of oil.

Table 21.2.2: Effect of Reduction/Elimination of Some Existing Incineration Sources on NOx Emissions under Systems A, B, C (lbs/day).

	1990 Baseline	System A	System B	System C
Incinerators	3,310	26,040	23,880	0
Mobile Sources(1)	2,970	3,360	3,580	3,540
Other Sources	210	100	140	220
Common Sources(2)	505	505	505	505
	6,995	30,005	28,105	4,265
Apartments	1,710	0	0	0
On-Site Hospitl Incin	218	0	0	0
Open Barge Burning	ND(3)	0	0	0
TOTAL	8,923	30,005	28,105	4,265
Utility Offset(4)	0	(30,983)	(27,907)	0
NET TOTAL	8,923	(978)	198	4,265
Ratio to Baseline	1	(0.1)	0.02	0.48

(1) Solid Waste Plan using current fuels.
(2) Sources common to all DOS scenarios include medical waste incineration.
(3) Although the Plan presents no data for NOx emissions from open-barge burning of harbor debris, the relatively low amount of material burned (76 tpd) implies that emissions would not exceed 250 lb/day.
(4) Utility offset based on NOx emissions per 1,000,000 barrels of oil, taken from the Brooklyn Navy Yard FEIS.

III.E.2. Although the plan implies that air emissions from incinerators are not significant, the actual results do not provide a wide-enough margin of safety.

This is a subjective judgement that has no basis. The plan's public-health assessment, on the contrary, has been conducted with reference to established public-health guidelines and the relevant literature.

III.E.2.a. For a number of pollutants, the predicted air concentrations are too close to applicable standards or guidelines.

This is a repetition of comment III.D.5. above; see that response.

III.E.2.b. The plan's "guideline" for dioxin is not protective of public health.

The risk assessment referred to in the plan was not the early "Hart Report" (NYC DOS, 1984), but the "Smith Report" subsequently prepared by Dr. Allan Smith for purposes of the DEC permit hearings for the Brooklyn Navy Yard facility. This conservative risk assessment, which found a maximum lifetime risk of cancer from dioxin of less then 1 per million, was deemed acceptable by the DEC and the NYS Department of Health (see Interim Decision #4, November, 1989).

III.F.1., 2. The plan greatly overestimates the potential regional supply of recycled materials and underestimates the demand, thereby exaggerating the problem of marketing New York City's recyclables.

The development of the proposed plan was not constrained by estimates of market demand for marketable materials. One purpose of the market assessment was to make a realistic/conservative judgement of likely <u>revenues</u> that could be expected, so as not to unduly overestimate the cost-effectiveness of particular systems. Market prices for recyclable materials, since they clearly cannot be accurately predicted over the long term, were one of the variables subjected to sensitivity analysis. As in the case of participation assumptions noted above, higher or lower assumptions on market prices do not affect the relative cost rankings of overall systems, and therefore, were not a decision-making factor. If market demand is higher than anticipated (as may be the case due to the combustion of materials in regional waste-to-energy facilities, as noted by CBNS), that will only <u>positively</u> affect the proposed systems. A second purpose of this market analysis was to identify particular problem areas, so that the City can take appropriate aggressive steps to address these problems; for this reason as well, it was more appropriate to err on the side of conservatism than optimism.

Export markets were not ignored, but the plan does point out that these markets "are limited, unreliable, and subject to economic and other influences that are beyond local or even U.S. domestic control." Nor was the market analysis limited "by the geography of state boundaries."

III.G. The plan does not examine the minimum federal requirements outlined in the U.S. Intermodal Surface Transportation Efficiency Act of 1991 and their potential for creating large markets for recycled rubber, plastics, and glass as components of asphalt paving.

As noted in the plan, New York City's own municipal asphalt production needs will provide a market sufficient for all of the mixed-glass cullet that the City will be able to recover. The plan also notes the potential markets for shredded rubber as an asphalt ingredient. If roadway demands can absorb plastic as well, that may improve market conditions for this material. However, the absence or presence of postive revenue effects that may be associated with these roadway markets has no bearing on the design of the City's overall plan, since the proposed plan is designed to maximize the recycling of these materials to the greatest extent possible, and potential limitations on market demand in no way limited or constrained the City's plan to producing the greatest market supply possible.

III.H. Almost every feature of the plan depends on what is known about the composition of the waste stream, as developed by an analysis carried out by a plan consultant. There are at least two serious flaws in the waste-composition study, which affect the plan's estimates of the role of food-waste composting and waste prevention.

The waste composition study did not include product or use categories that would be useful for the assessment of prevention programs. As pointed out in the plan, this problem will be addressed in the next round of composition analysis (which will be necessary to monitor the progress of the City's programs and to refine their design). This product-oriented subsequent round of composition analyses will also help to refine the components included in the current data as "mixed paper." Refinement of the current "miscellaneous organics" category, however, will not advance the design of composting programs, since that category was generally defined as organic material that was too small to be otherwise identified.

III.I. The plan seriously underestimates the potential

lifetime of the Fresh Kills landfill and fails to point out that the incinerator-based Systems A and B will force the City to search for out-of-city ashfill capacity sooner than the no-burn System C.

This is merely a matter of whether optimistic or conservative assumptions are used, since landfill life is a dependent variable of those assumptions. If recycling diversion corresponds to the "mid-range" assumptions used, the plan's calculations match CBNS's calculations; if more optimistic assumptions are used, landfill life is longer. It is true that, under any system that includes waste-to-energy facilities, the proposed ashfill at Fresh Kills would fill more quickly than the landfill itself (although it may be possible to site another ashfill within the city). The advantage of waste-to-energy systems, of course, is that they would dramatically reduce the rate of filling of Fresh Kills irrespective of whether recycling rates are at the mid-range or at the optimistic level.

It is in no way accurate to claim that the plan "limits the targeting [of recyclables] to 39%": the purpose of the plan is to maximize recycling rates; the plan targets in excess of 50% of the waste stream, and does nothing to limit recycling.

III.J. The plan does not adequately consider the use of alternative fuels for waste-collection trucks, employee vehicles, or barges, which would substantially reduce the environmental emissions from waste transport.

Any such reductions would affect any alternative system relatively equally, and would not change the relative net air emissions ranking between alternatives. Any such reductions would clearly be beneficial, which is why the plan states that alternative fuels will be used to the maximum extent feasible. "Emission credits" for such fuel usage, however, are not used in the analysis for three reasons: (1) because of the paucity of data; (2) because of the difficulty of predicting how much of these fleets will be using alternative fuels at given points in the future; and (3) because it was the intent of this analysis to provide a reasonably conservative assessment, rather than unduly underestimating potential emissions without a valid basis for doing so.

III.K. The plan's proposed treatment of medical waste is based in part on seriously flawed logic [i.e., that waste-prevention and recycling measures are proposed only for non-municipal hospitals which generally export their black-bag waste, but not for municipal hospitals, which generally incinerate their black-bag waste in municipal facilities].

This is a misunderstanding: the plan proposes precisely the same recommendations for both types of facilities, which should be adapted by individual institutions to their needs. The amount of reductions that could thus be achieved could largely eliminate the need for exporting black-bag waste from the city, thus meeting one of the plan's objectives to achieve local control over waste-management to the greatest extent possible, so as to minimize the City's vulnerability to extra-local factors beyond its control.

Scenario E. A two-bag, one-truck system would be more cost-effective and environmentally benign.

Such a system was evaluated in the early phases of scenario development: it is essentially a "wet/dry" system co-collected in one one-compartment truck of the type in the existing fleet. This evaluation is presented and documented in the plan and its appendices. This approach was rejected for a variety of reasons. Although it is true that a one-truck collection system is less expensive than a two-truck system, these savings are more than offset by the increased processing costs involved in processing co-collected refuse and transporting the "wet" (or "refuse") bag from the processing facility to the waste-to-energy facility. (See the comparative table on page 15-12, which presents the summary results of the analysis of these scenarios.) As noted in Chapter 15, this system also presents marketing risks due to the potential contamination of compacted dry materials. This system would also be very land-intensive, since more than an acre of land would be required simply for sorting dry bags from wet bags for a 1500-tpd facility (see "Attachment I" at the end of Appendix 4-B, which notes that 70,000 square feet would be required for a 2,500-tpd facility [an acre is 43,560 square feet]). In addition, there is the likelihood that collection of recyclables and refuse in the same compartment of the same compactor truck would contribute to public perceptions which would reduce public participation rates.

21.2.2.2 Comments from the Manhattan Solid-Waste Advisory Board.

COMMENTS OF THE "INTER-SWAB" WASTE-PREVENTION COMMITTEE

SPECIFIC WASTE-PREVENTION RECOMMENDATIONS

See the revised Chapter 19.

SPECIFIC LEGISLATIVE AND MONEY-MAKING PROPOSALS

See the revised Chapter 19.

SPECIFIC COMMENTS ON DOS PLAN AND APPENDIX 4.1; OTHER COMMENTS

1. Part II of Appendix 4.1, "Structural Issues in Waste Prevention," is being used as an excuse by DOS to limit itself to a cautious set of initiatives and to discard most waste-prevention initiatives, programs, fee structures, and other methodologies used by other jurisdictions.

On the contrary, the intent of this "structural" analysis is to identify the most fundamental barriers to prevention, so that appropriate measures can be taken to overcome them. This approach is meant to maximize prevention achievements. This was done rather than simply compiling an off-the-shelf laundry list of techniques used elsewhere -- many of which are insignificant in terms of prevention-tonnage-reduction achievements, and for most of which the documentation of results is scanty or non-existent.

2. Recommendation 5, Appendix 4.1, "Examine expansion of deposit legislation to improve downstream processing of recycling materials" does not improve waste-prevention or reuse. It more properly belongs under "recycling." This is not just a categorization problem. Likewise, the battery program is improperly identified under "prevention."

This is "just a categorization problem." These materials are identified for diversion from the waste stream that requires disposal. Both recycling and prevention programs are designed to maximize their respective contributions to this diversion. The "7%" estimate on prevention achievements and the range of estimates used to categorize projected recycling achievements are in no way intended as constraints on program achievements, nor do they merit much significance as reliable "predictions" of actual outcomes.

3. The discussion on p. 16 of Appendix 4.1 which proposes the substitution of corrugated cardboard packaging (which is recyclable and typically recycled) with shrink wrap (which has not been recyclable) does not seem to be justifiable in terms of good overall solid-waste-management practice or maximum diversion from landfill.

Shrink wrap takes up so little landfill space as to be indetectable. Cardboard, on the other hand, is a high-volume commodity. Although much cardboard is recycled, some amount of cardboard is always too contaminated to be recycled, the analysis of corrugated markets presented in the plan shows that these markets are at or near capacity, and in practice, not all cardboard is recycled. It is likely, moreover, that shrink wrap -- along with other film plastics -- will be recyclable in the mid-to-long-term. Shrink wrap that is not recycled would be more appropriately processed in a waste-to-energy facility than

landfilled; this high-Btu petroleum-derived material burns cleanly (its final combustion products are carbon dioxide and water), and produces negligible ash. As importantly from an overall systems perspective, shrink wrap, relative to cardboard on a surface-area/use basis, is likely to be economically, energetically, and environmentally superior to cardboard from an extraction, production, transport, storage, and use perspective, for the applications for which they are both suited.

4. Targeting materials for prevention programs that are easy to recycle, contrary to what is implied in this appendix, is a good idea.

In the abstract, prevention is almost always preferable to recycling. The purpose of asking questions such as the one cited (which is just one of the issues considered) is simply to identify waste-prevention priorities, and to highlight the importance of considering the relative advantages and disadvantages of the materials that might be substituted for the prevented ones within the context of an overall waste-management system. Surely, other things being equal, it is better to prevent toxic or otherwise-nonrecyclable or low-value recyclables than to eliminate items that are easy and cost-effective to handle within an existing recycling system?

5. In this appendix, DOS' consultants divide waste-prevention opportunities into three categories: product/package design, purchase, and durable product maintenance. There is a fourth category: product disposition/resale.

This category is addressed by measures such as the proposed assistance to "Good Will"-type reuse centers.

6. The prevention-percentage assumptions in table 3 of Appendix 4.1 seem low.

These assumptions, in the professional judgement of the consultants who prepared them, are intended to represent the most likely outcomes. This is a new field with an all-but-complete lack of data, and no undue import or confidence should be placed in them. Most importantly, they do not in any way affect or constrain program design. If, in practice, they are discovered to be conservative, so much the better.

7. DOS proposes study for residential QBUFs (quantity-based user fees). EPA has issued four documents on this subject which should lessen considerably the need for extensive study prior to implementation of QBUFs.

The Sanitation Department is aware of these studies. They

clearly establish the desirability and effectiveness of QBUFs. QBUFs for single-family and institutional and commercial generators are relatively unproblematic to implement. However, no locality in the country has thus far successfully implemented a QBUF system in high-rise multiple-apartment buildings. This is NYC's problem. And in this context, "fairness" issues are also raised for single-family homes, e.g., how can user-fees be added only for them, or first for them, which might create additional or higher costs (in the absence of what would likely be a complicated tax-rebate or -exemption system). The choices for apartment buildings are several -- bags, tags, scales, scanners. More complicated is the payment method -- does the landlord/building manager pay, or the tenants? (Institutional problems with the implementation of the City's new water-metering system, which reduce its effectiveness as an incentive for individual tenants, provide an instant object lesson.) Other questions relevant to NYC concern possiblities for illegal dumping, how the new payment system would affect existing tax structures, etc. None of these issues is insurmountable; QBUFs, the Sanitation Department believes, are a good idea that should be tried in NYC. Such a system simply has never been implemented before, and there are many legitimate issues that have to be resolved through research and pilot tests.

8. Energy savings from prevention programs are even greater than those from recycling programs; this is not mentioned in the plan.

It is true that prevention energy savings are greatest. As noted in the plan (p. 17.1-21), "In brief, this analysis establishes that the most significant energy impacts are due to the energy requirements of primary materials production." Since these savings did not affect the choice between alternative systems (all systems assumed as a given the same maximal prevention programs), they are not involved in the comparison of systems which is presented in Chapter 17.3. This is also true of other "externality" costs -- e.g., pollutant emissions -- as noted in Chapter 7: the greatest savings by far are due to not producing materials in the first place.

9. The design of waste-prevention programs affects the design of other waste-management programs.

The statement referred to, which, it is alleged, implies the contrary, is taken out of context. In context (p. ES-8), it reads, "Waste-prevention, by definition, involves techniques outside of traditional waste-management systems. Although the effects of waste-prevention programs will affect the types and quantities of wastes that will remain for 'management' in the conventional sense, the design of these programs does not

directly affect the design of the remaining waste-management system in the same way that the inter-related effects of collection, processing, and disposal programs for recycling, composting, waste-to-energy, and landfilling do. Waste-prevention alternatives were therefore evaluated on the basis of their effectiveness in reducing waste quantitities (and waste toxicity), their cost-effectiveness, and the feasibility of their implementation on a local level." The **emboldened** words show that this statement was meant simply for the purpose of clarifying the relative role of waste-prevention in the creation of alternative scenarios for modeling the effects of other waste-management alternatives. Obviously, the more waste prevented, the better, and the less waste that will require management (as noted above) by other techniques. The meaning of the sentence cited was to specify <u>how alternative waste-prevention options</u> were evaluated.

10. In the plan (p. 7-5), DOS has implied that waste-prevention is likely to encourage use of a substitute resource, which may not be wise from an environmental or energy-conserving point-of-view. This is an unfair characterization.

The plan only suggests that this may happen in some instances and that consideration should be given to what substitutes will be used. The comment takes this idea out of context; the passage should be read in the original for an accurate statement of the issue.

11. In Appendix 4.1, DOS's consultants suggest that building codes would have to be revised to **require** a "lazy susan" type of revolving recyclables [sic] in order for such a system [sic] to be effective. DOS should know that building laws cannot mandate good quality in design; it can only specify how it is constructed.

Indeed the DOS does. The import of the reference to a lazy susan, in context, is clear (on p. 28, in response to the DOS project managers' directive to "think expansively and creatively about the full universe of potentially feasible alternatives," a paragraph in a multi-page discussion of various alternatives for implementing quantity-based user fees in the residential sector): "Technological developments could eventually provide a solution to the difficulty of administering QBUFs in multi-tenant buildings. Several equipment vendors are now offering adaptations to apartment-building trash chutes to facilitate source separation of recyclables. In these systems, a turn table -- essentially a 'lazy susan' -- is placed in the basement of the building below the chute. At the chute opening on each floor are buttons which residents press to indicate which material is being placed in the chute and to turn the table in the basement to the appropriate container. A QBUF system could be grafted to such an

apparatus by adding any of several pay-card or vending systems that would force the resident to pay for the use of the chute. Such a vending system could also incorporate discounts for recycling participation. Such a solution would be effective only if building codes could be revised to require this type of infrastructure."

12. Oversupply of food waste is not really addressed (only reuse and composting). (Appendix 4.1, p. 45)

The relevant portions of p. 45 read:

"Food waste is a large, and potentially reducible fraction of the waste stream. Comprising over 12% of the City's total waste stream, food waste is generated in significant quantities across all three sectors, and in many sub-sectors. The prevention of food waste entering the waste stream can be accomplished through a three-tier hierarchy of reduction of waste (over-supply), re-use, and on-site composting. The first tier consists of measures to better estimate food demand to reduce leftovers, as well as measures to reduce spoiling. The second tier involves the re-use of edible food to feed the hungry. Finally, most food wastes are readily compostable, and decentralized, on-site composting of these wastes should be encouraged, where possible.

"Although it is unclear what proportion of food waste is due to oversupply, the City should encourage restaurants, corporate cafeteria and institutional food service managers, perhaps through a Waste Audit program, to refine food-usage estimates. As stressed above, volume-based disposal rates would add another incentive for this behavior. Failing better estimating to reduce wasete, the City should explore additional means of conveying still-edible food to the hungry. Currently, the non-profit food bank City Harvest collects five tons per day of edible food from food wholesalers and retailers, restaurants, hotels, and institutional and corporate cafeterias for distribution to the hungry. City Harvest has been very successful in matching surplus food with those in need of it, and arranging the transportation to simplify the process for the donor. They are currently expanding their operations, and expressed a willingness to work with the City to include more potential donors of surplus food in their system. Other organizations and food banks could be included in similar systems.

"The majority of food wastes are not edible leftovers, but rather trimmings, scraps, and spoiled food...."

13. In addition to "support of taxes to encourage waste prevention," subsidies for virgin-material users should

equally be discouraged. (Appendix 4.1, p. 55)

Agreed. This particular discussion, however, focusses on issues most pertinent to "prevention." As in the "categorization" issue noted above, virgin-materials issues are dealt with in the "recycling" sections of the plan; there, the issue is generally framed in terms of providing subsidies/incentives to users of secondary materials.

14.-21. See the revised Chapter 19.

COMMENTS OF THE RESIDENTIAL RECYCLING COMMITTEE

OUTREACH AND ENFORCEMENT

P.3-12, para. 1: Public information on recycling should be easy for building managers and tenants to understand.

Agreed. Making the program easier to understand was one of the primary objectives behind the design of the high-quality recycling plan.

P.3-14, para. 3: See the revised Chapter 19.

P.16-10, para. 5: See the revised Chapter 19.

COLLECTION SYSTEMS

P.3-12, para. 3; p. 8-6, bottom; p. 8-7, top: Given the relative cost-effectiveness of containerized collections of recyclables, the use of containers should be maximized.

Agreed. That is the City's intent.

P.8-5, para. 4: Manhattan buildings have experienced significant problems with theft of blue recycling containers and with the contamination of these containers when they are stored on the street. We endorse the concept of using blue bags as an option as long as these bags are of sufficient strength and they will be reused or recycled.

(No response necessary.)

P.8-6, para. 3... The concept of two-compartment compactor trucks seems interesting, but its viability in areas of varying population density and

varying recycling diversion rates should be closely watched. Potential problems include: (1) paper compartments filling at faster rates than compartments for metal, glass, and plastic; (2) the logistics of where materials go later.

When modeling the cost of these trucks relative to other alternatives, the conservative assumption was made that only 75% of the trucks' capacity was used; the analysis shows that the use of these trucks would still be significantly less expensive than the use of a second truck for recyclables, or other alternative systems. The high-quality recycling program that would use these trucks is designed to have MRFs that would process the recyclables in both compartments in separate lines: it would clearly not be desirable to shuttle the two-compartment trucks between two processing facilities.

USER FEES

P. 16-4, para. 3: While these fees may prove to be a good waste-prevention strategy in areas with single-family dwellings, it would be difficult to identify which resident was responsible for what quantity of waste in high-rise apartment buildings or even brownstones where bags are often dropped in wells or in garbage cans by unknown sources. The Department of Sanitation should only investigate this concept after comprehensive input from building owners and management in order to avoid implementation problems.

Agreed, as noted in the plan.

PUBLIC SPACES

P. 16-11, para. 5: We fully support the concept of igloo-type containers for public spaces and believe that they would receive widespread public support.

(No response necessary.)

DOS OPERATIONS AND RECYCLING

P. 19-12, para. 3: We agree that the Bureau of Cleaning and Collection (BCC) collection operations must be better coordinated with the Recycling Office.

(No response necessary.)

P. ES-2, bottom: Bike-powered carts that emanate from and fill a truck that stays off the side streets have potential.

For reasons of labor productivity and worker satisfaction, the Sanitation Department's direction is toward more, rather than less, automation of collection services.

INCINERATION COMMENTS

An alternative already chosen by the Sanitation Department -- retrofit of the existing incinerators -- was not evaluated.

> It is true that the Sanitation Department has had long-standing plans to upgrade its existing incinerators to comply with new emissions standards, and that steps to upgrade these facilities have been underway for some time. However, it is not true that the alternative of closing these incinerators (and either replacing them with new waste-to-energy capacity, or not replacing them with waste-to-energy capacity) was not examined. In the WastePlan modeling, the economic and logistical impacts of closing and replacing or not-replacing these facilities was compared to the costs and logistical impacts of not closing them (see the comparative tables in Chapter 15 and in Appendix 7.1). The air emissions of these facilities are documented in Appendix 6-B; these can be compared to the emissions from new facilities in Appendix Volume 5.

DOS's implementation plan calls for 6,000 tons per day of incineration capacity within the next four years, while Table 17.2.4-1 shows that the waste-to-energy program will only require a capacity of 3,091 tpd (System B) or 3,527 tpd (System A). Thus, DOS is already committing resources to incineration capacity which will not be needed, at the expense of waste prevention, recycling, and composting.

> This comment is based on a mis-reading of Table 17.2.4-1. The caption reads "(Year 2000)" and "(000s of Tons)," and the relevant line is the "total tons delivered," rather than the tons "incinerated" (which excludes ash and pre-processed recyclables). So, rather than a figure showing tons per <u>day</u>, the chart shows tons per <u>year</u>. System B, which would require less waste-to-energy capacity than System A, would require capacity for 3,723,000 tons per year, or 10,200 tons per day.

The existing incinerators have emitted relatively high levels of

pollutants. That they will be allowed to continue to emit very large quantities of pollutants is very unwise from an environmental point of view.

> The plan proposes to close down two of the three existing incinerators by the end of 1995. The purpose of upgrading ~~these~~ the Southwest Brooklyn incinerators is to significantly improve ~~their~~ its operations. After upgrading, ~~they~~ it will meet all applicable air-emissions regulations -- which are considerably more stringent than the regulations that ~~they were~~ it was originally designed to meet -- or ~~they~~ it will not be permitted to operate.

The plan calls for retrofitting the existing incinerators over a four-to-nine-year period. This is longer than it takes to build a new facility, which would certainly have a superior environmental performance, but might not cost more.

> The plan calls for retrofitting only one of the three existing incinerators. It is scheduled to be completed by 1995. The plan also calls for construction of a new 3,000-ton-per-day waste-to-energy facility at the Brooklyn Navy Yard to replace (and supplement) the capacity of the two old incinerators that will be closed at the end of 1995. These two facilities will provide more waste-disposal capacity with lower environmental impacts than the three existing incinerators. ~~These facilities could be retrofitted more quickly: the primary constraint is budgetary, rather than technical. (Note that all three plants would be retrofitted sequentially over this 4-9-year period; each single plant would only take a fraction of this time.) Retrofitting these plants is more cost effective than building a new facility, as the economic analysis in the plan shows.~~

Both mass burn and RDF are presented as viable options, and that trade-offs between them, in terms of costs and environmental performance, are considered to be more or less equal. If the other benefits to be gained from choosing RDF over mass burn (increased recycling/increased energy conservation and decreased ash management) were taken into account, then RDF would be preferable. Yet this does not seem to be the conclusion drawn, at least for the Brooklyn Navy Yard plant.

> The plan proposes either RDF or mass-burn plants that are equipped with pre-processing equipment to recover recyclables. Thus, there are no appreciable differences in recycling rates, energy conservation, or ash-residue rates. The exception to this is the Brooklyn Navy Yard proposal, which is for a mass-burn facility without pre-processing equipment, since there is no space available for such

equipment on the site. A developer with a mass-burn technology was selected for that project because none of the proposals submitted in response to the City's RFP were for RDF technology. The recycling rates, energy impacts, and ash residue rates of alternative systems that included the Navy Yard and did not include the Navy Yard were compared during the scenario-evaluation process, as documented in the plan and its appendices, and these factors were not significantly different. Overall system costs without the Navy Yard, however, were increased, due to a variety of factors (including efficient site-size, barge unloading, and steam revenues).

Though on page 10-16 of the plan DOS admits that the higher emissions listed in its tables for RDF vs. mass-burn plants is an artifact of measuring "per ton" emissions based on tons fed to the combustor and not to the plant itself, DOS nevertheless uses this crafty measurement device in subsequent tables to imply that RDF is more environmentally damaging than mass burn. DOS should have measured the environmental costs and benefits of the tonnage of waste going into the facility as a whole, and in this way would present a more honest comparison of the technologies.

This comment is incorrect: the RDF emission factors are based on the ratio of tons of waste burned to tons of waste fed into the processing system, not on the "tons fed to the combustor." This ratioing made the basis for the emission factors for both RDF and mass burn the same (lb/ton of MSW). Even with the assumed factor of 1,775 tons of waste burned per 2,250 tons of waste processed at an RDF facility, the emission factors per ton of waste processed for some pollutants were higher than for the mass-burn technology. The respective emission factors were based on data from 11 mass-burn and 3 RDF plants.

It is suspected that the higher RDF emission factors were caused by the suspension-firing system used in RDF furnaces, which may be more prone to creating turbulence that lifts more particulate into the flue-gas stream than does the type of grate system used in mass-burn plants.

COMMENTS OF THE INTER-SWAB COMMITTEE ON ECONOMIC DEVELOPMENT

GENERAL COMMENTS:

1.a. The plan is an important accomplishment in many ways: it includes vast amounts of important and unique information which will be useful for planning purposes beyond the present discussions; it focuses public discussion...; and, it represents a new standard in public involvement in the

planning process.

Agreed.

1.b. However, the plan disappoints in many ways, such as: by failing to provide sufficient detail in its implementation section (Chapter 19); by presentation flaws; by failing to state effectively and convincingly how the City will address the challenge of implementing a successful, comprehensive recycling program.

Chapter 19 has been revised to address these concerns.

DETAILED COMMENTS:

[What follows is a more detailed list of "contributions" of the plan and "failures" of the plan, which enumerates the items referred to in the general comments above, and which does not require a response.]

COMMENTS FROM THE BROOKLYN, QUEENS, AND STATEN ISLAND SOLID-WASTE ADVISORY BOARDS are largely duplicative of comments provided by the Bronx and Manhattan SWABS (which included the reports of the "inter-SWAB" committees) and other oral and written comments.

COMMENTS FROM THE CITYWIDE RECYCLING ADVISORY BOARD are also duplicative of comments provided by the Bronx and Manhattan SWABS (which included the reports of the "inter-SWAB" committees).

21.2.3 Responses to Reports by the Comptroller and NYPIRG.

21.2.3.1 "Smokescreen."

Smoke Screen: How the Department of Sanitation's Solid Waste Plan and Environmental Impact Statement cover up the poisonous health effects of burning garbage, Elizabeth Holtzman, Comptroller, June, 1992

[I. SUMMARY]

II.A. DOS tries to minimize differences in toxic air emissions under different scenarios.

This interpretation is not justified. For purposes of a "bottom-line" comparison of alternative scenarios, the GEIS does indeed present calculations of "net loadings" to the environment. However, these loadings are also presented on a facility-specific basis in a variety of places, so that all of the assumptions and calculations are well-documented.