HENNEPIN COUNTY RESOURCE RECOVERY PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

PART III

RESPONSE TO COMMENTS

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June 1986

METROPOLITAN COUNCIL
Suite 300 Metro Square Building, Saint Paul, Minnesota 55101
291-6359

TO: Hennepin County Waste to Energy Project Commenters

FROM: Soild Waste Division

SUBJECT: Final Environmental Impact Statement Hennepin County, Waste to Energy Project

The EIS for the Hennepin County Resource Recovery project has been revised in response to comments from many commentors. The Human Health Risk assessment in the draft EIS (part I section 4.3) has been rewritten. The Human Health risk section now includes the data from over 21 plants and provides a range of possible risk and a community health risk assessment. The response to comments (part III) has been revised to address the comments received from the public concerning the draft of the final EIS (part III, dated May 1986). The material included for committee review includes the sections of the draft final that have been altered from the draft final EIS. The material includes a revised table of contents for part III, sections 1, 2, and 3 of the final EIS (part III) and the revised Human Health Risk assessment (part I, section 4.3). Together with sections 4 and 5 of the draft final EIS (part III, sections 4, 5) it comprises the final EIS.

The EIS has been revised to accommodate the concerns expressed by commentors to the greatest extent possible. The Minnesota Department of Health and the Minnesota Pollution Control Agency have been consulted concerning the content and analysis of issues for the final EIS. The staff has not been able to derive a health risk estimate of alternate solid waste management methods. Data does not currently exist for the derivation of risk estimates from composting or landfilling of waste. Commentors have pointed out areas where additional response would be appropriate. The staff has included information on a number of topics including potential disposal of ash and nature of ash materials and additional information on potential alternatives. The alternatives discussion does not detail the potential impacts of other alternatives not included in the EIS scoping process due to a lack of data.

The Council staff has attempted to provide the most complete and objective information concerning the proposed resource recovery project. The EIS is not intended to be the definitive answer to all the technical questions surrounding the proposed project. The discussion of what constitutes an adequate EIS is covered in the Environmental Quality Board rules. The contents of the final EIS has been carefully reviewed for accuracy and completeness. If you have any questions regarding this document please call John Rafferty at 291-6459.

4.3 HUMAN HEALTH

The attached section, 4.3 Human Health Risk, is a replacement for the original text in the Draft EIS. The original version of the Human Health Risk section should be replaced with the attached section.

4.3 HUMAN HEALTH

The section regarding human health has been significantly revised in response to comments of the draft document. The section has been completely rewritten and the original health risk section should be disregarded.

4.3.1 Introduction

The combustion of municipal solid waste has been found to result in the emission of trace quantities of various heavy metals and organic materials. Because of the potential toxicity of many of these compounds, it is important that the emissions from facilities burning municipal refuse be evaluated to define the risk to public health. This section addresses the emission of such compounds, termed non criteria pollutants, from the proposed Hennepin County refuse recovery facility and the potential for associated human health effects. These compounds are identified as non-criteria pollutants since specific standards have not been established by regulatory agencies such as the U.S. EPA for emission.

A literature review was conducted to determine the compounds indentified in resource recovery facility emissions. The compounds identified as present in sufficiently high concentrations to potentially impact human health were selected for further analysis. Facilities from North America and Europe were identified as producing variable emissions results for determining the potential environmental concentrations of the target pollutants. Routes of exposure were evaluated and calculated for each compound to provide a daily dose rate. The daily dose rate was evaluated to assess the incidence of disease from exposure to pollutants. A community-based risk assessment is provided to show the excess morbidity in the affected population.

4.3.2 Pollutants Evaluated

A comprehensive review of available literature on the subject of toxic emissions from municipal refuse incinerators was conducted in an effort to develop a data base of those chemicals and chemical categories most frequently found in flue gas emissions from municipal waste incinerators. This includes data contained in the open literature such as professional journals and published reports. A bibliography of all the pertinent citations contained in the literature review is provided. These data are believed to represent the most up-to-date data set pertinent to flue gas emissions from these facilities worldwide.

4.3.2.1 Comprehensive List of Toxic Emissions

A summary listing of the chemical categories and individual components is provided in Table 4.3-1. This listing is comprised of those constituents which have appeared most frequently in the open literature as components of flue gas emissions from municipal refuse incineration systems. The section to follow will focus on the selection of data from this data base for incorporation into the project emissions inventory for use in this analysis.

4.3.2.2 Health Impact of Target Compounds

The target compound classes listed in Table 4.3-1 provide the basis for determining the compound that will be evaluated in the health risk calculations. The following are brief profiles on the toxicity of compounds which might be emitted from the facility (see Table 4.3-1). They are intended to identify which emissions should be subjected to detailed risk analysis.

TABLE 4.3-1

"TARGET" COMPOUND INVENTORY - NON-CRITERIA POLLUTANT EMISSIONS IDENTIFIED IN THE OPEN LITERATURE AS BEING CONTAINED IN FLUE GAS EMISSIONS FROM THE INCINERATION OF MUNICIPAL REFUSE

(SEE BIBLIOGRAPHY FOR LITERATURE CITED)

Chlorinated Phenols
- Dichlorophenols
- Trichlorophenols
- Tetrachlorophenols
- Pentachlorophenol (PCP)

Chlorinated Benzenes
- Pentachlorobenzene
- Hexachlorobenzene
- Dichlorobenzenes
- Trichlorobenzenes
- Tetrachlorobenzenes

Polychlorinated Biphenyls (PCBs)
- Monochlorobiphenyls
- Dichlorobiphenyls
- Trichlorobiphenyls
- Tetrachlorobiphenyls
- Pentachlorobiphenyls
- Hexachlorobiphenyls
- Heptachlorobiphenyls
- Octachlorobiphenyls
- Nonachlorbiphenyls
- Decachlorobiphenyl

Chlorinated Dibenzodioxins (Cont.)
- Tetrachlordibenzodioxins (TCDDs)
- Pentachlorodibenzodioxins
- Hexachlorodibenzodioxins
- Heptachlorodibenzodioxins
- Octachlorodibenzodioxin

Chlorinated Dibenzofurans (PCDF)
- Monochlorodibenzofurans
- Dichlorodibenzofurans
- Trichlorodibenzofurans
- Tetrachlorodibenzofurans (TCDF)
- Pentachlorodibenzofurans
- Hexachlorodibenzofurans
- Heptachlorodibenzofurans
- Octachlorodibenzofuran

Polynuclear Aromatic Hydrocarbons (PAHs)
- Chrysene
- Benzo(a)pyrene
- Benzo(2)pyrene
- Benzo(a)anthracene
- Coronene
- Fluoranthene
- Fluorene
- Anthracene
- Pyrene
- Methylnaphthalene(s)
- Biphenyl
- Naphthalene
- Acenaphthylene
- Acenapthene
- Phenanthrene
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Benzo(g,h,i)perylene

Chlorinated Dibenzodioxins (PCDDs)
- Monochlorodibenzodioxins
- Dichlorodibenzodioxins
- Trichlorodibenzodioxins

Metals
- Antimony (Sb)
- Beryllium (Be)
- Lead (Pb)
- Mercury (Hg)
- Vanadium (V)
- Manganese (Mn)
- Molybdenum (Mo)
- Tin (Sn)
- Cadmium (Cd)
- Chromium (Cr)
- Copper (Cu)
- Nickel (Ni)
- Zinc (Zn)
- Arsenic (As)
- Selenium (Se)

Arsenic: Arsenic is an irritant of the skin, mucous membranes, and GI tract. Acute toxicity for ingestion results in vomiting, diarrhea, and cardiovascular effects. Acute exposure to airborne arsenic, absorbed on particles, causes conjunctivitis and pharyngitis. Chronic inhalation of arsenic has been associated with pulmonary cancer in producers of arsenical pesticides and smelter workers. Some studies have associated increased cancer risk with high levels of arsenic in drinking water. Arsenic exists in more than one oxidation state, and it appears that trivalent arsenic is more toxic than pentavalent arsenic, while metallic arsenic is only minimally toxic. Total arsenic is generally considered in risk assessments because analytical methods for speciation are difficult and the species associated with carcinogenesis has not been determined (USEPA, 1984a). Therefore, arsenic will be subjected to a detailed risk analysis.

Beryllium: Beryllium produces toxic effects through all routes of exposure, however the major health hazard is through inhalation. Occupational exposure to beryllium produces lesions of the lungs, a chronic disease known as berylliosis. Inhalation of elemental beryllium and certain beryllium-containing compounds have been reported to cause cancer in animals. Carcinogenicity has not been demonstrated in man or animals exposed to beryllium by ingestion. Cancer risk analysis of beryllium will only address the inhalation route of exposure.

Cadmium: Cadmium is associated with both acute and chronic toxicity. Acute doses by ingestion produce severe gastrointestinal signs including nausea, vomiting, salivation and diarrhea. By the inhalation route, acute exposure is associated with pulmonary edema while longer-term exposures are associated with flu-like symptoms, and emphysema with fibrotic changes of lung tissue. By any route cadmium affects the kidneys, blood, and possibly the cardiovascular, reproductive, and skeletal system. Cadmium workers have been reported to be at risk of prostrate and lung cancer. Because of these reports, the risk assessment for cadmium will be based on carcinogenic potency. No carcinogenic response to this compound has been observed with ingested doses (EPA, 1984), so inhalation exposure alone will be analyzed.

Chlorinated benzenes: The chlorination of benzene can yield 12 different compounds. It has been found that toxicity differs at least in potency, and perhaps qualitatively, among individual members of this chemical class. Most chlorinated benzenes appear to have effects on the reticuloendothelial and hematopoetic systems, liver and kidneys. Only hexachlorobenzene has been associated with carcinogenesis. EPA documents are inconsistent in their opinion on whether sufficient data exists to analyze risk from long term exposure to chlorinated benzenes, except for hexachlorobenzene. In the cases where analysis has been performed (EPA, 1980), acceptable daily intakes (ADI) were calculated at hundreds of ug/kg/day. Only hexachlorobenzene was subjected to further analysis.

Chlorinated phenols: Toxicologic data is sufficient for detailed risk analysis of 2,4,6-trichlorophenol and pentachlorophenol only. No other chlorinated phenols will be subjected to a detailed risk analysis. The trichlorophenol is an animal carcinogen, and pentachlorophenol is suggested to be a teratogen and fetotoxic agent.

Chromium: Chromium dusts and chromic acid are extremely irritating and have produced conjunctivitis, bronchitis, and dermatitis in humans occupationally exposed. Kidney damage has been observed in experimental animals exposed to

chromium salts. Chromium exists in three oxidation states (Cr+2, Cr+3, and Cr+6), as elemental chromium metal, or alloyed with other metals. Trivalent and hexavalent chromium are predominant. It is believed that hexavalent chromium compounds are substantailly more toxic than trivalent compounds. There is a good epidemiologic evidence that inhalation of certain Cr+6 are carcinogenic. Carginogenicity has not been demonstrated in man or animals exposed to chromium by routes other than inhalation. Thus, cancer risk analysis of chromium will only address the inhalation route of exposure (USEPA, 1984).

Copper: Copper is of relatively low toxic potency. Inhalation of copper fume is associated with pulmonary effects, but the concentrations required are beyond those that would realistically be associated with the facility. Thus, further risk analysis was not performed.

Lead: Lead has toxic effects on the blood, gastrointestinal tract, central nervous system and, after prolonged exposure, the kidneys. Peripheral nerves are also affected by lead poisoning. Lead chromate is a suspect carcinogen, but the data are inadequate to make a positive determination. Lead may be absorbed via various routes so that total lead exposure must be considered in the risk assessment.

Manganese: Inhalation of manganese fume is associated with pulmonary and neurological effects, but the concentrations required are beyond those that would realistically be associated with the facility. Chronic inhalation exposure to low levels of manganese increase the prevalence of pneumonia and bronchitis without the effect on the nervous system (EPA, 1983). Ingestion exposure, except at high levels, is not associated with untoward effect, probably because the element is poorly absorbed by the gastrointestinal tract. Detailed risk analysis will focus only on inhalation exposure to manganese.

Mercury: Exposure to mercury in most forms is associated with a high degree of toxicity. Acute exposures produce irritation of the respiratory and gastrointestinal tracts. Elemental metallic mercury causes behavioral effects and other nervous system damage. Inorganic mercury salts do not cross the blood/brain barrier but will produce kidney damage. Divalent mercury is substantially more toxic in this regard than the monovalent form. Organic mercury compounds reach the central nervous system easily, producing behavioral and motor changes. Organic mercury can cross the placental barrier and cause devastating and irreversible neurologic damage to the fetus. Therefore, mercury will be subjected to a detailed risk analyses.

Nickel: Nickel toxicity is dependent on the form of nickel and its route of exposure. Contact with nickel produces dermatitis. Additionally, a small proportion of the population exhibits nickel allergy which is presumably like other allergic reactions in not being dose dependent. The toxicity of nickel by the oral route is low, partly because of intestinal absorption of nickel is low. The main effect in oral ingestion appears to be gastric irritation. Inhalation but not ingestion of certain nickel compounds is associated with cancer of the respiratory tract. Common practice is to consider only inhalation exposures in analysis of cancer risk. The inhalation pathway will be considered in this analysis as well.

Polychlorinated biphenyls: Polychlorinated biphenyls possess essentially the same toxic properties as the polychlorinated dibenzodioxins and dibenzofurans, detailed of the dibenzodioxins and dibenzofurans. Polychlorinated biphenyls will be subjected to a detailed risk analysis.

Polychlorinated dibenzodioxins and dibenzofurans: Chlorinated dibenzodioxins and dibenzofurans are considered together because they have identical toxic properties. The potency of toxic effect is highly variant among the members of the group, however. Mono through trichloro substitutions of dioxins and furans will not be considered in the risk assessment because their toxicity is minimal relative to higher chlorinated isomers in the class (EPA, 1985). The remaining dioxin and furan isomers will be subjected to detailed risk analysis. Acute human response to accidental dibenzodioxin exposure results in mucous membrane and dermal irritation if the exposure is via inhalation. Regardless of exposure route, the acute toxic signs are followed (within days to weeks) by chloracne skin eruptions, hyperpigmentation of the skin, psychopathological changes and other disorders. Equivalent signs are seen with lower-level subacute to chronic exposure. Most experimental toxicologic study has centered on 2,3,7,8-tetrachloro-p-dibenzodioxin (2,3,7,8 TCDD), which has been demonstrated to be among the most potent animal toxins known. Animal data on 2,3,7,8 TCDD and other specific isomers of polychlorinated dibenzodioxins and dibenzofurans yield results comparable to human observations, with the exception of chloracne. Other animal studies indicated that the compounds are potent teratogens, embryotoxins, and carcinogens, but these effects have not been unequivocally observed in man.

Polynuclear Aromatic Hydrocarbons (PAH): This is a large group of compounds grouped on the basis of chemical character (multiple aromatic rings). The toxic actions of the members of the class are not equivalent in either a qualitative or quantitative sense. PAH tend to have very low acute toxicity (IARC, 1983). The health effect of major concern for PAH is cancer following long-term exposure via any route, but this is a toxic property of only a portion of the chemical class. Cancer risk analysis is further complicated by variance in carcinogenic PAH will be subjected to risk analysis. These are noted in Table 4.3-1.

Selenium: Selenium dust is an irritant to mucous membranes and the lungs. Long term exposure by ingestion or inhalation in humans has been associated with lassitude, dermatitis, halitosis, poor teeth and nails, hair loss, and chronic gastrointestinal disease (Beliles, 1978). There is no compelling evidence that selenium is carcinogenic. As the doses producing toxic effect are well in excess of that realistically expected from the facility, and because selenium at low levels is an essential nutrient, further risk analysis will not be performed.

Tin: Tin is of relatively low toxic potency. Although long term inhalation exposure to the metal is associated with pulmonary effects, the toxic concentrations are well beyond those that would realistically be associated with the facility (Stokinger, 1978). Thus, further risk analysis will not be performed.

Vanadium: The toxicity of vanadium is limited to pulmonary dysfuncton upon inhalation of vanadium pentoxide in concentrations well in excess of those which might be emitted at the facility (Stokinger, 1978). The metal will not be subjected to detailed risk assessment.

Zinc: With the exception of some irritant salts ($ZnCl_2$) the metal is without toxicity unless inhaled in high doses as a fume. Because of its limited toxicity, and the fact that zinc is an essential nutrient at low levels, this element will not be subjected to detailed risk analysis.

In summary, ten compounds or compound groups have been selected for risk analysis based on carcinogenicity. They are: arsenic, beryllium, cadmium, chromium, hexachlorobenzene, nickel, polychlorinated biphenyls, polychlorinated dibenzodioxins and dibenzofurans, carcinogenic polynuclear aromatic hydrocarbons, and trichlorophenols. Four other compounds were determined to be of concern due to other toxic effects. They are: pentachlorophenol, lead, manganese, and mercury. Copper, tin, selenium, vanadium, and zinc have been eliminated as emissions of concern, as have certain members of the compound classes chlorinated benzenes, chlorinated phenols, and polynuclear aromatic hydrocarbons.

No data has been found on molydenum and antimony. Both compounds are nutrients in true qualities and do not appear to be prevalent in the waste stream.

Potency slopes have been developed for the potentially carcinogenic emissions identified above. An alternate revised home health impacts of low level exposures is defined by the Acceptable Daily Intakes (ADI's) of compounds that are not thought to be carcinogenic. The greater the potency slope for a compound the more toxic the compound is felt to be. The lower the ADI for a compound the more toxic the compound is felt to be. Table 4.3-2 provide the listing of the compounds of interest and their associated potency slopes and ADI's. More information on ADI's may be found in the U.S. EPA report "Summary of Current and Acceptable Daily Intakes for Systemic Toxicants," May 1984. The Bay Area Resource Recovery Facility Project Application for Certification, Appendix J: Supplemental Environmental Information Health Risk Assessment, 1984, provides more details on the specific hazards of toxic pollutants.

TABLE 4.3-2

Potency Slopes and ADI's*

For Target Resource Recovery

Pollutants

Pollutant	Potency Slope mg/kg/day	ADI mg/day
2,3,7,8-Tetrachlorodibenzodioxin(TCDD)	156,000	
Hexachlorobenzene	1.67	
Trichlorophenol	.0199	7.0
Total Polychlorinatedphenols (PCB's)	4.34	
Arsenic	15	
Beryllium	2.6	
Cadmium	6.1	UR
Chromium	41	0.15
Nickel	1.15	1.5
Polynuclear aromatichydrocarbons (PAH) (as benzo(a)pyrene)	11.5	
Pentachlorophenol		2.1
Antimnony		0.29
Lead		UR*
Manganese		.74
Mercury		0.020
Copper		
Tin		
Selenium		0.70
Vanadium		
Zinc		UR*

*UR - Under Review
*ADI - Acceptable Daily Intake

Source: USEPA

4.3.3 Emissions Data Base

4.3.3.1 Data Selection Criteria

The data base of emissions from municipal incinerators was refined to select data representative of potential emissions from the proposed facility. The following four criteria were used in selecting the data for inclusion in the analyses.

Municipal Waste Incineration

All facilites included in the data base burn exclusively municipal solid waste in some form. Facilities which burn other fuels such as coal, would obviously emit pollutants different from that for a waste burning facility; and would therefore not be applicable to the proposed project.

Information Regarding Facility Operations

Combustion efficiency is a useful indicator to describe the results of the burning process. Although it has not been conclusively demonstrated that there is a one-to-one correlation between combustion efficiency and emissions of dioxins and furans, it appears that "in most cases the combustion efficiency has been high and emissions low." Dioxins from Scandinavian Waste Combustion Plants, Thomas Oberg, Envrionmental Consultant as Studsvik AB, 5-611-82, NyKoping, Sweden 98s). This paper suggests that some relationship may exist between increased temperatures and reduced dioxin and furan emissions, although this has not been conclusively proven.

Some information on the facility tested is essential to determine if the reported test results are valid. If data such as the age of a facility is not available, the emissions data should be excluded. For example, test data for a facility built and designed using 1950's technology would not be expected to operate as efficiently as a modern plant or an older plant which has been significantly modified to incorporate the most recent combustion technology. Plant operating data were obtained for location, incinerator type, capacity, and technology utilized.

The study previously mentioned by Oberg indicates that "Evidently flue gas emissions of chlorinated aromatics can be reduced both through improvements of combustion, as well as by different flue gas cleaning systems. A first step to reduce high emission should always be to improve combustion conditions since, such measures are the most effective" (Oberg, Op Cit, p.3). Efficiency is related to three operational parameters: time, temperature and turbulence. Residence time and high temperatures result in a more complete burning of fuels as evidenced by reduced emissions of CO. The mixing of air exposes increased surface area thus allowing increased oxygen to react with otherwise unburnt fuels.

The emissions tests referred to by Oberg were performed at two Swedish incinerators with results indicating a reduction in CO emission from 1520 to 190 parts per million (ppm) with a consequent reduction in TCDD from 1500 nanograms per cubic meter (ng/m^3) to 26 ng/m^3). At the Avesta facility CO was reduced from 100 ppm to 20 ppm and tCDD from 130 to 0.18 ng/m^3.

Pollution Control

Facilities included in the data base must have been equipped with some form of pollution control device. Journal articles have indicated that both ESPs and scrubber/baghouse pollution control devices can be effective in removing PCDD and PCDF emissions. An article entitled "Joy/Niro Spray Dryer Absorption Flue Gas Cleaning System" (J.R. Donnelly, Joy Manufacturing Coompany, Acid Gas Dioxin Control Conference, Wash. D.C. p. 19 November, 1985), indicated that initial measurements have shown high removal efficiencies (for dry scrubbers in particular) for dioxins and furans.

In a report prepared by Floyd Hasselries, P.E., "Refuse Combustion and Effects on Trace Organic Emissions," presented at the U.S. Conference of Mayors, Fifth Annual Resource Recovery Conference, March 19-21, 1986, it is suggested that well designed and optimally functioning incinerators operate with low CO emissions and subsequently low emissions of dioxins and furans. This article suggests that dioxin and furan emissions are a function of operating characteristics including: temperature, residence time, pollution control equipment and maintenance procedures. The proposed facility will be equipped with a dry scrubber and bag hose pollution control system.

Data Quality Must be Verifiable

Each data set was examined in light of a number of quality control/quality assurance criteria in an effort to establish reliability. If the data could not be verified, they would not be utilized in the data base. The data quality criteria in general conform to those adopted by the United States Environmental Protection Agency for use with state-of-the-art flue gas monitoring concerning sample location, sample duration and collection, instrument location, and method blanks to name only a few (Harris, 1983; EPA 1985).

4.3.3.2 Facilities Included in Emissions Data Base for Dioxin and Furan Emissions

Table 4.3-3 lists the facilities which were included in the data base for development of an emissions rate for dioxins and furans from the proposed project. Twenty-one facilities located in North America and Europe met the primary selection criteria. Of that sample of acceptable data, four RDF facilities were included. Since the emissions from the RDF burning facilities varies for this small sample, but falls within the range of values for mass burn plants, they were included with all other incineration facilities. It is possible that waste composition (i.e., unprocessed MSW versus RDF) may affect dioxin and furan emissions, but there is not evidence of such an effect in the data.

Data from six Italian facilities were excluded form the data base due to a lack of information pertaining to facility operations. The information available on the results of the testing of the Italian facilities was reported in Chemosphere Vol. II., No. 9, pp. 859-856, 1982. Unfortunately, the article does not provide any information on the type of facilites tested, their age, operating temperature or pollution control devices. As a result it is not apparent that these facilities are representative of a modern resource recovery facility, and therefore, were excluded from the data base. The specific facilities excluded include: five German facilities; Italy 1 through 6; Sweden Eksjo; and two U.S. facilities.

4.3.3.3 Facilities Included in the Emissions Data Base for Metals and Select Organics

The selection criteria employed to select the facilities for inclusion in the emissions data base for metals and selected organics were identical to those employed for the dioxins and furans. The Compounds for which data was obtained are:

Chlorinated Benzenes
Chlorinated Phenols
Polynuclear aromatic hydrocarbons (PAH)
Arsenic
Beryllium
Cadmium
Chromium
Copper
Mercury
Lead
Manganese
Nickel
Selenium
Tin
Vanadium
Zinc

Table 4.4-4 lists the plants and metals emissions for six data sets from five facilities. Due to the potential effect of RDF processing on metals emissions RDF emissions results were not included on the data base. The Gallatin facility included on the data base does do limited mechanical separation of wastes. The emissions were included in the data base because the emissions rate for the metals was generally above the highest value on the data set and the facility is a mass burn facility rather than RDF. Further discussion of the data as used in the health risk assessment may be found in section 4.3-5. Tables 4.3-5, 4.3-6, 4.3-7 and 4.3-8 provide information on emissions for Polynuclear aromatic hydrocarbons, chlorinated benzene emissions, chlorinated phenol emission and polychlorinated biphenyl emissions respectively.

TABLE 4.4-3

EMISSIONS DATA BASE USED IN DEIS

COUNTRY SITE RUN	T3CDO	T4CDO	2,3,7,8 T4CDO	P5CDO	H6CDO	H7CDO	D8CDO	P4-P8 CDD	T3CDF	T4CDF	P5CDF	H6CDF	D7CDF	D8CDF	P4-P8 CDF	TOTAL PCDD PCDF
[----------PCDD EMISSIONS (ng/m^3)----------]									[----------PCDD EMISSIONS (ng/m^3)----------]							
S																
Westchester, NY		2.11	0.21	2.11	2.88	4.10	6.57	17.76		22.20	12.95	13.39	7.78	0.28	56.60	74.36
Chicago, M.W.,Ill	12.67	6.27	4.33		16.33	7.57	2.53	32.70	300.00	89.67		62.00	7.47	0.60	159.74	192.44
Hampton, VA.	46.00	309.25		980.38	659.75	493.25	128.50	2571.13	1992.40	1506.50	4308.88	886.25	534.63	37.13	7273.38	9844.50
USA, (Mayport)		3.57	1.67					3.57		21.03					21.63	24.68
Montreal, Canada		0.06		0.06	0.09	0.10	0.19	0.50		0.12	0.10	0.06	0.04	0.03	0.37	0.87
Quebec, Canada		4.06		14.65	15.46	12.23	1.70	48.10		45.87	35.55	38.97	8.38	0.64	129.41	177.51
Refuse Derived Fuel Facilities																
Swarau, Canada		768.00		713.85	686.15	298.46	229.23	2687.69		2560.77	2261.54	1063.08	193.85	53.85	6133.08	8820.77
Albany, NY		15.73	0.41	132.61	112.65	103.12	8.65	134.74		37.13	30.37	6.53	1.06	0.00	49.79	184.53
Occ. Chem, NY		93.84	2.86	99.28	224.00	225.50	115.00	757.62		199.80	339.00	168.00	67.65	13.53	787.98	1545.68
USA, (WAPFD)		38.00	9.68	0.00	0.00	0.00	0.00	30.00		312.00	0.00	0.00	0.00	0.00	312.00	0342.00
Belgium Beveren		3.6		6.5	35.0	87.5	125.0	257.6		16.00	33.0	35.0	47.5	40.0	171.5	429.1
Unknown		30.0	2.4	215.0	119.0	136.5	177.5	678.0		156.0	198.5	269.0	354.5	318.5	1296.5	1974.5
Italy Valandrara		126.9		199.1	366.0	266.3	125.9	1104.1		389.0	250.3	314.2	215.1	123.8	1212.3	2316.4
Milan I		15.3	2.0	0.0	0.0	0.0	804.3	819.7		0.0	0.0	0.0	0.0	584.3	584.3	1484.0
Milan II		0.2	0.0	0.0	0.0	0.0	113.0	113.2		0.0	0.0	0.0	0.0	90.9	90.0	284.1
Busto		0.8	0.1	0.0	0.0	0.0	33.0	33.0		0.0	0.0	0.0	0.0	44.5	44.5	78.3
Desio		0.6	0.2	0.0	0.0	0.0	75.0	75.6		0.0	0.0	0.0	0.0	67.0	67.0	142.6
Netherlands																
Zaandstad		57.1		231.3	439.9	347.1	451.8	1527.2		161.1	271.6	528.4	293.0	67.6	1321.8	2849.0
Sweden Unknown		0	0.0	0.0	40.3	234.1	366.7	641.0		0.0	0.0	0.0	0.0	0.0	0.0	641.0
Avesta		65.09	0	225.6	0	0	0	290.7		226	310.5	0	0	0	536.5	827.2
Switzerland																
Zurich		4.0	0.2	11.0	24.9	24.1	49.1	113.1		22.3	27.3	18.7	12.4	8.2	88.9	202.0

Table 4.3-5
Polynuclear Aromatic Hydrocarbons Emissions (micrograms/m^3)

Country	Site	Run	Phenan threne	Fluor anthene	Pyrene	Napthal ene	Acenaph thylene	Acenaph thene	Flourene	Chrysene	Benzo(k) fluoran thene	Benzo(a) Pyrene	Dibenza(a, h)anthr acene	Benzo(g, h,i)per ylene	TOTAL	REFERENCE
MASS BURN INCINERATORS																
USA	Chicago Northwest 1982	1	2.00E-01	3.90E-02	9.20E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.31E-01	Haile 1983
		2	1.10E-01	2.70E-02	9.10E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.28E-01	
		3	3.40E-01	5.10E-02	7.70E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.68E-01	
USA	Hampton Virginia 1984	1	1.50E+02	1.10E+02	1.20E+02	6.40E+02	2.20E+02	3.00E-01	1.30E+01	7.70E+00	9.90E+01	7.40E+00	-	4.30E+00	1.37E+03	Haile 1984
		2	2.20E+02	1.60E+02	2.30E+02	4.80E+02	2.50E+02	3.00E+00	1.40E+01	1.20E+01	1.68E+01	1.20E+01	-	-	1.48E+83	
		3	1.30E+02	7.80E+01	8.40E+01	3.80+02	1.20E+02	1.70E+00	8.80E+00	7.00E+00	8.68E+00	5.90E+00	-	1.38E+00	8.25E+02	
		4	2.50E+02	1.38E+02	1.60E+02	1.04E+83	3.30E+02	5.70E+00	2.40E+01	1.70E+01	2.30E+01	1.48E+01	-	-	1.99E+03	
		5	2.00E+02	1.38E+02	1.40E+02	5.60E+02	1.80E+02	2.40E+00	1.50E+01	2.60E+01	2.70E+01	1.90E+01	1.40E-01	2.50E+01	1.32E+03	
REFUSE DERIVED FUEL FACILITES																
USA	SHERIDAN AVE ALBANY NY (Answers)	1	NA	NA	NA	NA	NA	NA	NA	2.35E+00	NA	1.11E+00	NA	NA	3.46E+00	NYSDEC 1985
		2	NA	NA	NA	NA	NA	NA	NA	3.96E-01	NA	2.50E-02	NA	NA	4.21E-01	
		3	NA	NA	NA	NA	NA	NA	NA	1.92E-01	NA	5.80E-02	NA	NA	2.42E-01	
		4	NA	NA	NA	NA	NA	NA	NA	4.575-01	NA	1.31E-01	NA	NA	5.88E-01	
		5	NA	NA	NA	NA	NA	NA	NA	7.83E-01	NA	1.66E+00	NA	NA	2.44E+00	
		6	NA	NA	NA	NA	NA	NA	NA	2.53E_01	NA	5.86E-01	NA	NA	8.39E-01	

Table 4.4-4

METAL EMISSIONS (ug/g)

MASS BURN INCINERATORS

Country	Site	Run	Ni	Cr	Cd	Be	As	Pb	Mn	Hg	Cu	Se	Sn	V	Zn	REFERENCE	ENVIR. CONTROL DEVICE
USA	Gallatin Tenn	1	4.8E1	1.17E3	3.4E3	7.0E0	4.65E2	8.0E4	8.8E3	1.67E3	4.9E3	2.1E1	4.5E3	1.98E3	1.2E5		
USA	Alexandria VA	1	2.00E+02	4.90E+02	1.10E+03	NA	2.10E+02	9.70E+04	1.50E+03	NA	2.00E+03	2.30E+01	1.07E+04	NA	1.20E+05	Greenberg 1978	Spray Chamber
USA	SWAC #1 Wash. D.C.	1	1.78E+02	8.70E+02	1.90E+03	NA	3.10E+02	7.70E+04	4.10E+02	NA	1.50E+03	3.90E+01	1.08E+04	NA	1.38E+05	Greenberg 1978	Cyclone & ESPs
USA	Nicosia Chicago	1	7.98E+01	1.05E+02	1.50E+03	NA	2.00E+02	6.90E+04	2.70E+02	NA	1.70E+03	4.90E+01	1.29E+04	NA	1.10E+05	Greenberg	Spray Chamber & Scrubbing Tower
USA	Braintree Braintree MA	1	NA	NA	2.14E+03	NA	1.42E+02	4.27E+04	NA	1.86E+02	1.15E+03	NA	NA	NA	NA	Golembiewski 1979	ESP
		2	NA	NA	1.01E+03	NA	1.06E+02	3.68E+04	NA	1.68E+02	1.52E+03	NA	NA	NA	NA		
		3	NA	NA	1.25E+03	NA	1.86E+02	6.36E+04	NA	9.73E+01	1.58E+03	NA	NA	NA	NA		
Italy	Various	1	4.58E+02	1.10E+03	4.40E+02	NA	1.10E+02	1.00E+04	1.12E+03	3.50E+01	1.70E+03	1.20E+01	2.80E+03	7.70E+01	4.35E+04	Gallorini 1981	ESP

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Table 4.3-6

Chlorinated Benzene Emissions (micrograms/meter^3)

County	Site	Run	Di chloro benzene	Tri chloro benzene	tetra chloro benzene	penta chloro benzene	hexa chloro benzene	total chloro benzene	REFERENCE	ENVIRONMENTAL CONTROL DEVICE
MASS BURN INCINERATORS										
USA	Chicago Northwest	1	NA	8.438	0.79	NA	0.11	1.338	EPA Study (560/5-83-004) 1983	EPA's
		2	NA	8.457	0.63	NA	0.048	1.135		
		3	NA	1.17	NA	NA	0.26	1.43		
USA	Hampton Virginia 1983	3	0.0032	0.361	1.985	4.745	1.435	8.529	4	
		5	0.654	1.181	1.503	5.5	2.02	10.858		
		7	4.41	19.06	28.66	39.41	11.33	102.87		
USA	Hampton Virginia 1984	1								
		2								
		3								
		4								
		5								
CANADA	Toronto Ontario	1	NA	0.649	1.88	1.1	0.33	3.959	5	
		2	NA	0.377	0.111	0.222	0.235	0.945		
		3	NA	0.651	2.19	2.19	0.574	5.685		
REFUSE DERIVED FUEL FACILITIES										
Canada	Hamilton	1						54	Canada's Ministry of the Environment 1984	ESPs
	Ontario	4						24.3		
		5						7.7		
		6						30.7		
		7						76.5		
		8						31		
		9						52.8		
		10						22.3		
		11						47.5		
		12						34.5		
		13						102.5		
		14						42.4		
		15						26.3		

TABLE 4.3-7

Chlorinated Phenol Emissions (ug/m^3)

County	Site	Run	di chloro phenol	tri chloro phenol	tetra chloro phenol	penta chloro phenol	total chloro phenol	REFERENCE	ENRIRONMENTAL CONTROL DEVICE
MASS BURN INCINERATORS									
USA	Chicago Northwest	1	0.24	1.4	1.5	0.19	3.33	EPA Study	ESPs
		2	0.28	1.2	1.1	0.16	2.74	(568-5-83-004)	
		3	0.63	1.9	1.7	0.43	4.66		
USA	Hampton Virginia 1983	3	NA	14.1	4.2	2.6	20.9	4	
		5	NA	73.4	31.5	9.5	114.4		
		7	NA	129.3	64.5	40.6	234.4		
USA	Hampton Virginia 1984	1							
		2							
		3							
		4							
		5							
Canada	Toronto Ontario	1	NA	4.2	2.8	1.5	8.5	5	
		2	NA	1.9	1.8	1.5	5.2		
		3	NA	0.53	2.2	1.1	3.83		
REFUSE DERIVED FUEL FACILITIES									
Canada	Hamilton Wentworth Ontario	1					41.7	Canada's Ministry of the Environment 1984	ESP
		4					23		
		5					72		
		6					36.6		
		7					48		
		8					39.7		
		9					48		
		10					74.9		
		11					32.2		
		12					96.5		
		13					102.5		
		14					4.0		
		15					85.9		

Table 4.3-8

Polychlorinated Biphe Emissions

Chlorinated BiPhenyl (PCB) Emissions (ug/m^3)

Country	Site	Run	mono chloro biphenyl	di chloro biphenyl	tri chloro biphenyl	tetra chloro biphenyl	penta chloro biphenyl	hexa chloro biphenyl	total chloro biphenyl	REFERENCE	ENRIVONMENTAL CONTROL DEVICE
MASS BURN INCINERATORS											
USA	Chicago Northwest	1	NA	0.0058	0.0076	0.0092	0.0023	NA	0.0249	EPA Study (568/5-83-004) 1983	ESPs
		2	NA	0.006	0.0043	0.0015	0.001	NA	0.0128		
		3	NA	0.04	0.036	0.013	0.0045	NA	0.0935		
USA	Hampton Virginia 1983	3	NA	0.002	0.83	0.431	0.017	0.004	1.284	4	
		5	NA	0.002	0.002	0.002	0.002	0.002	0.01		
		7	NA	0.002	0.051	0.075	0.082	0.048	0.258		
USA	Hampton Virginia 1984	1	0.0005	0.071	0.0005	0.0005	0.056	0.0005	0.129	1	
		2	0.18	0.7	0.13	0.025	0.001	0.013	1.849		
		3	0.2	0.2	0.32	0.061	0.011	0.007	0.799		
		4	0.23	0.52	0.081	0.018	0.019	0.026	0.894		
		5	0.091	0.3	0.06	0.002	0.0005	0.0005	0.454		
Canada	Toronto Ontario	1							0.029	5	
		2							0.08		
		3							NA		
REFUSE DRIVED FUEL FFACILITIES											
Canada	Hamilton Wentsorth Ontario	1							0.182	Canada's Ministry of the Environment 1984	ESPs
		4							0.01		
		5							0.324		
		6							0.089		
		7							0.286		
		8							0.087		
		9							0.282		
		10							0.1		
		11							2.064		
		12							0.609		
		13							0.936		
		14							0.347		
		15							0.687		

4.3.4 Health Risk Estimation

The estimation of health risks is an emerging field. The correct assumptions for calculating health risk are the subject of considerable debate. The following section details the underlying assumptions and calculations that have produced the health risk estimates and presents the health risk estimates.

4.3.4.1 Definition of Cases

The EIS used four cases for estimating the health risk of the project the cases presented are the best case, comparable case, average case and worst case. The lack of verifiable data from a Blount facility with identical pollution control technology prevents the discussion at the facility itself. In use of actual data from Blount the EIS provides a range within which the health risk should fall and presents the comparable case to provide the likely magnitude of risk expected from the proposed Blount facility.

Average Case

The data is section 4.4.3 was used to calculate all of the cases. The data has been collected primarily by the consultant and it has been reviewed by the staff at the Minnesota Pollution Control Agency. To calculate the average case the individual data sets for each plant were used to calculate the average value of compounds for the plant for each compound of interest. The average values of compounds for each plant was used in all the cases presented. Data set from the plants with acceptable data were used to estimate average case emissions rates. In cases where data points were missing the average value was calculated using only the worst case plants reporting data and averaged accordingly.

Worst Case

The worst case estimate is based on the use of the worst, or highest emissions for classes of compounds from plants on the data base. For all classes of organic compounds the highest recorded values are those from the Hampton facility. The emissions rates from Hampton are in excess of twenty times the average emissions for dioxins and furans. A statistical analysis of the standard deviations of emissions shows that the Hampton facility is two standard deviations above the average. This places the Hampton facility outside the 95 percent confidence interval for inclusion in the data base. In a rigorous statistical treatment of the data, the plant appears to operate so differently for the rest of the plants that it should not be included on the data set. Most of the plants in the data base operate above 1500 F in the secondary combustion zone of the furnace. The Hampton facility showed readings as low as 750 F during testing for toxic organics emissions. There is a high probability that the MPCA would not tolerate such poor operating conditions and combustion control in the proposed facility. The data has been used for the worst case and it has been included in the average plant emissions to present a more conservative assessment of potential health risks.

Metals values were taken from Gallatin Tenn. data. Many people have questioned the use of Gallatin data due to the mechanical processing that is used on the waste stream. The facility is a mass burn faciltiy and the impact of mechanical separation does not appear to reduce the observed metals emission rates. The emissions rate used for each of the potentially carcinogenic metals is the highest for any facility leading to the worst case health risk.

Best Case

The best case is derived from data Montreal, Canada and Nicosia (Chicago) for dioxin equivalents and metals respectively. Other organic emissions rates are derived from Chicago North West plant data. The data for metals represents to lowest net impact from metals emissions when calculating the health risk by multiplying the potency slope by the emissions rate and summing the risks. The values for each metal, however, are not the lowest in the data set. For each element evaluated at the Nicosia plant a lower emissions rate exists at another facility in the data set. This provides a somewhat convervative assessment of the best case health risk because the metals health risks dominate the best case risk estimate. The use of the lowest emissions rate for each metal would reduce the overall best case health risk presented by 45 per cent.

Comparable Case

The comparable case has been requested by the proposer to show the most likely magnitude of risk from the proposed facility. HR Inc. consultant for Hennepin County has worked co-operatively with Blount to develop information to assess the plants in the data based on comparison to the proposed Hennepin County Resource Recovery Facility. Much of the data from facilites in the data base on the specifics of combustion control are proprietory and cannot be provided to the authors of the EIS. Accordingly, the selection of the comparable case has been made by HDR Inc. The EIS will present the comparable case but justification for the selection of the Chicago Northwest plant cannot be supported by the authors. The MPCA will need to receive proof for the comparable case if it is to be used in the permitting process.

The plant identified as providing the comparable case is the Chicago Northwest facility. Data for all organics will be used for data from the facility. Metals data is not available for the Chicago Northwest facility so average metals emissions will be used to evaluate the comparable case.

4.3.4.2 TCDD Equivalence Factors

Dioxin and furan exposure has becomes of increasing interest in assessing the health risks related to resource recovery facilities. In 1977, the discovery of PCDD absorbed on precipitated fly ash and in flue gas sample from waste combustion, was reported by Olie and Hutzinger, Recent Developments in Mass Spectrometry in Biochemistry and Medicine, Vol. 1, Plenum Publishing Company, New York, 1978). Later other individuals confirmed these findings and reported the occurrence of PCDFs.

Dioxin is a generic name given to a large number of isomers of chlorinated compounds with a similar general molecular structure. These several compounds exhibit different degrees of toxicity. Given the large number of dioxins and furans, the concept of a toxic equivalence factor (TEF) was developed to estimate the carcinogenic potential of those dioxins and furans for which no conclusive carcinogenic data exists. The majority of toxicological data currently available on dioxins and furans involves bioassays for acute lethality, enzyme induction, cell receptor binding and pathological end points. Different groups have proposed at least six methods for the determination of TEFs. Three methods have been utilized in this EIS. These include the U.S. EPA Chlorinated Dioxins Work Group method of November 1985, the Swiss EPA approach and the California method which in a general way represent the methods which would give a range of estimates of the toxic equivalency of the various congeners. Table 4.3-9 shows the factors for each of these methods.

TABLE 4.3-9

TCDD EQUIVALENCE FACTORS

	U.S. EPA 11/85	Swiss EPA	California
2,3,7,8 TCDD	1	1	1
Other TCDD	0.01	0.001	0.00
2,3,7,8 PeCDD	0.5	0.1	1.0
Other PeCDD	0.005	0.1	0
2,3,7,8 HxCDD	0.04	0.1	0.03
Other HxCDD	0.004	0.1	0
2,3,7,8 HpCDD	0.001	0.01	0.03
Other HpCDD	0.00001	0.01	0
2,3,7,8 TCDF	0.1	0.1	1.0
Other TCDF	0.001	0.1	0
2,3,7,8 PeCDF	0.1	0.1	1.0
Other PeCDF	0.001	0.1	0
2,3,7,8 HxCDF	0.01	0.1	0.03
Other HxCDF	0.001	0.1	0
2,3,7,8 HpCDF	0.001	0.01	0.03
Other HpCDF	0.00001	0.01	0
Total	1.77	2.05	4.12

Source: U.S. EPA 1985, CARB 1984 Dec.'85 - Calif.

U.S. EPA 1985 - The U.S. EPA method used the relative potencies of 2,3,7,8 tetrachloro dibenzo-p-dioxin (TCDD) and 2,3,7,8 hexachloro dibenzo-p-dioxin (HXCDD) obtained from carcinogenic studies as well as a variety of other toxicity end points for other dibenzo-dioxin and dibenzo furan isomers. The method limits the resolution in interpreting the data to generally orders of magnitude.

Swiss EPA - The Swiss EPA uses data from AHH enzyme induction studies to determine relative potencies. This method assumes equal potencies for all isomers of a given group.

California - The California Department of Health Services recently published a report outlining their criteria for determining TEFs. The method uses carcinogenic potencies of 2,3,7,8 TCDD and 2,3,7,8 HXCDD which were obtained from carcinogenic bioassays. It assumes zero potency for isomers not chlorinated in the four lateral 2,3,7,8 positions.

The EIS will rely on the U.S. EPA TEF's for the calculation of various cases. The Swiss EPA and California TEF's will be applied to the average case to demonstrate the impact on health risk that selection of a TEF may have.

4.3.4.3 Dose Response Assessment

An assessment of potential chronic effects from the emissions at the facility was undertaken. Review of the dispersion data and emission types for this facility indicated that acceptable levels for minimizing long term effects would be substantially below concentrations at which acute health effects might be expected. Thus, no detailed dose-response assessment for short term health effects was developed. Long term effects of potential emissions are placed in one of two groups: cancer risk or other chronic effects.

Carcinogen Dose Response

The U.S. EPA Cancer Assessment Group (CAG) has estimated the upper bound (95% confidence by a Chi square goodness of fit method) slope of a specialized dose response model for approximately 50 carcinogens. Implicit in the models is the assumption that there is no threshold for carcinogenic response. Only the magnitude of risk can be calculated from the so-called "potency slopes". There is no absolutely safe dose which can be compared to exposure levels.

CAG potency slopes were used to calculate risk. Cancer risk is the product of the potency slope times the calculated lifetime daily dose. Because of the small number of potency slopes available, certain allowances were made to estimate cancer risk for all potential emissions at the proposed facility:

(a) Total trichlorophenols were used with a potency slope generated specifically for 2,4,6-trichlorophenol.
(b) Total PCBs were used with a potency slope generated for a specific PCB mixture, Aroclor 1254.
(c) Of the 12 PAH judged to have potential for emission from the facility, only 4 are known or suspected carcinogens (ERT, 1984). Non-carcinogenic PAH were eliminated from assessment and the total of carcinogenic PAH was used with a potency slope generated for benzo(a)pyrene.

(d) Assumptions outlined by the Chorinated Dioxins Work Group (1985) were used to calculate 2,3,7,8 TCDD "equivalents" from doses of other polychlorinated dibenzodioxins and dibenzofurans. A further assumption was that all positional isomers of polychlorinated compounds have equal likelihood of forming. Thus, the proportion of the total chlorinated dibenzodioxin or dibenzofuran class which is chlorinated at positions 2,3,7 and 8 can be calculated. This is necessity because the potency of 2,3,7,8 substituted compounds is is much higher than other members of each class. The Work Group equivalence factors (potency factors) and proportions of 2,3,7,8 substitution are shown in Table 4.3-6; 2,3,7,8 TCDD equivalent doses were calculated for each receptor and are shown in Table 4.3-10.

Table 4.3-10

2,3,7,8 TCDD Equivalence Factors

Compound	2,3,7,8 Isomer		Other Positional Isomers	
	Proportion	Potency Factor	Proportion	Potency Factor
TCDD	0	1	1	0.01
2,3,7,8-TCDD	1	1	0	0
PCDD	0.071	0.5	0.929	0.005
HxCDD	0.30	0.04	0.70	0.004
HpCDD	0.50	0.001	0.50	0.00001
TCDF	0.026	0.1	0.974	0.001
PCDF	0.072	0.1	0.928	0.001
HxCDF	0.252	0.01	0.748	0.0001
HpCDF	0.50	0.001	0.50	0.00001

Other Long Term Effects

Acceptable daily intakes (ADI) were calculated for pentachlorophenol, lead, manganese and mercury. The ADI is the concentration below which no adverse health effect would be expeccted.

ADIs for the four non-carcinogenic compounds which were determined are as follows:

(a) Pentachlorophenol: The U.S. EPA (1980) has reviewed animal studies indicating that ingestion of pentachlorophenol may be fetotoxic. The EPA calculated that limitation of pentachlorophenol exposure to 0.03 mg/kg/day would protect humans from this potential toxicity. This value will be used as an ADI in the present risk assessment:

Pentachlorophenol ADI = 0.03 mg/kg day.

(b) Lead: The acceptable daily intake for lead is difficult to calculate because it must be set to prevent further effects rather than prevent toxicity. The average blood lead level of an urban dweller in the U.S. is near 17 ug/dl (EPA, 1985). This blood level has been associated with subtle effects on enzymes and nervous system function. Thus, while overt clinical signs of lead poisoning are not prevalent in the population at large, little room has been left for safety. For the purpose of this risk assessment, it is proposed that a lead dose which produces no more than a 1% increase in blood lead be set as the ADI. Extensive study has been made of the relation of lead intake to increase in blood lead levels. The EPA has calculated that 1 ug/m^3 increase in air lead concentration produces a 1.7 ug/dl increase in blood lead. Similar comparisons have been made for ingestion exposures and the increases have been found to have a shallower slope. To be conservative, this risk analysis will use the air calculations. Presuming the relation is linear, one would expect 0.17 ug/dl increase in blood lead from 0.1 ug lead/m^3. This would represent an increase of 1% over the average human blood lead level. Applying standard breathing volume and weight assumptions to this concentration:

Lead ADI = 0.1 ug/m^3 x 20 m^3day x 1/70 kg body weight
= 2.8 E-2 ug/kg day = 2.8 E-5 mg/kg day.

(c) Manganese: Several reports indicate that chronic low-level inhalation exposure to manganese is associated with chronic bronchitis, increased sensitivity to infection, and other subtle pulmonary effects (see review in U.S. EPA, 1983). These appear to be the effects which occur at the lowest dose. On the basis of animal dose response experiments where the same toxic effect was observed, the U.S. EPA (1983) calculated adjusted human equivalent exposure levels (HEELs) of of 5-37 ub/m^3. These values will be used for the calculation of acceptable daily intake.

ADI = 37 ug/m^3 x 20 m^3/day x 1/70 kg x 1/1000
= 1.05 E-2 mg/kg/day.

(d) Mercury: Because mercury types (organic, inorganic, elemental) are known to intraconvert as the result of chemical and biological actions in air and soil, a conservative approach in determining dose-response is to choose the most toxic species of the element. Methylmercury appears to be that species (U.S. EPA, 1984). Extensive study has been made of the toxic effects of this compound in humans. The effect occurring at the lowest dose seems to be paresthesia. This toxic effect is noticed in approximately 8% of people receiving 3 ug methylmercury/kg body weight day. For a dose of approximately .07 ug/kg/day, the response drops to 0.3% of the population. This is for practical purposes the threshold dose. For this risk assessment, a value ten-fold lower than the practical threshold will be used as an acceptable daily intake:

Mercury ADI = 0.7 ug/kg day x 1/10 = 0.07 ug/kg day
= 7.0×10^{-4} mg/kg day.

4.3.2.3 Exposure Assessment

The purpose of exposure assessment is to determine a dose of pollutant, usually calculated as an average lifetime daily dose, which might reasonably be attained by an individual residing near the facility. This value may then be compared to an acceptable long-term daily intake for a non-carcinogenic pollutant or used in the calculation of cancer risk for a carcinogenic pollutant. The average lifetime daily dose is a function of the air and soil/dust concentration of pollutant which is, in turn, dependent on climate and distance factors (estimated by the dispersion model) and the length of time of the exposure.

Selection of Receptors of Concern

Projected emissions for the facility were subjected to dispersion modeling using EPA's RAM model, as previously described in subsection 3.2. Three receptor sites in the dispersion model were chosen for exposure assessment. Annual average ambient air concentrations of pollutants were noted at the closest areas of permanent residence:

(a) The Stevens Square area located 2.0-2.4 km south of the Greyhound site.
(b) The housing project located 0.6 to 0.7 km west of the Greyhound site. The housing project is located immediately west of Interstate 94 along Olson Memorial Highway.
(c) A neighborhood located 2.0 to 2.4 km north northwest of the Greyhound site. This neighborhood is loated immediately northwest of the intersection of W. Broadway and Interstate 94.

Ambient pollutant concentrations in these three neighborhoods form facility related emissions were modeled to be of similar magnitude even though the neighborhoods are in different directions and at different distances form the Greyhound site.

For example, ambient pollutant concentrations in the Stevens Square area to the south were predicted to be just slightly higher than in the housing project to the west. Stevens Square is farther from the site than the housing project and one might expect lower concentrations at the two locations are similar because distance and prevailing wind directions compensate for one another.

For purposes of quantifying the expected health risks, the impacts of the facility will be essentially identical at any of the three receptors. The numbers are slightly higher for the neighborhood located 2.0 to 2.4 km north northwest of the Greyhound site. The analysis was therefore based on the higher values predicted for that receptor. The public housing project to the west of the facility is closer to the proposed project, however, and the risks provided in this report are believed to be representative of anticipated risks at that receptor.

The annual average ambient air concentrations were used to calculate exposures using the methods described below. Ambient air concentrations of pollutanst at the point of maxixum concentration are equal to the emissions rate in grams per second times 3.53×10^{-8} seconds/meter^3. Table 4.3-9 provides the emission rates from the average case and the maximum average ambiet concentration for each pollutant.

Determination of Exposure

Humans may be exposed to facility emissions via three routes: inhalation of pollutants in ambient air; ingestion of soils onto which pollutants have deposited; and dermal absorption of pollutants in air or soils. Calculations indicated that the maximum average lifetime daily dose at any receptor would be attained by a person breathing air containing emissions from the entire operating life of the facility (assumed to be 30 years for purposes of this analysis) and ingesting and contacting small amounts of soil containing deposited pollutants for an entire human lifetime (assumed to be 70 years). It is highly unlikely, however, that anyone would be exposed to continuous emissions from the facility over 30 years. The following sections described methods for determining inhalation and ingestion doses given this scenario.

Exposure by Inhalation

Inhalation exposures were estimated by noting the ambient air concentrations of pollutants (in ug/m^3) and assuming a 70 kg human, breathing 20 m^3 air/day was exposed. The daily air intake of pollutant in m/kg/day was calculated from the following equation:

$$\text{Ambient air concentration (in ug/m}^3\text{)} \times 20\ \text{m}^3\text{/day} \times 1/70\ \text{kg} \times 1/1000 = \text{daily dose (air) (in mg/kg/day)} \quad (1)$$

The equation makes the conservative assumption that the entire dose is respirable. It must be noted that this is a daily dose not a lifetime daily dose, because the facility will likely operate for only 30 years out of a normal 70 year human lifespan. Individuals born during the operation of the facility would be exposed for even shorter periods.

The simple calculation of daily dose (Equation 1) was not altered for compounds being assessed for risk of non-carcinogenic chronic effects, because 30 years is a reasonable exposure period in which to expect long term effects. However, cancer risk assessment using the emthod of the EPA Carcinogen Assessment Group (CAG) requires input of a lifetime daily dose. An accurate assessment of cancer risk from exposures for a portion of a lifetime is further complicated by the observation that risk is not linearly related to either length of

TABLE 4.3-9

AMBIENT AIR CONCENTRATIONS

Average Annual Concentrations (ug/m^3)

Compound	Emission Rate (g/sec)	Maximum
Arsenic	4.3 E-4	1.52 E-5
Beryllium	1.26 E-5	4.45 E-7
Cadmium	2.96 E-3	1.04 E-4
Chromium	1.33 E-3	4.69 E-5
Nickel	3.41 E-4	1.2 E-5
Hexachlorobenzene	1.43 E-4	5.5 E-6
Trichlorophenol	2.47 E-4	8.72 E-6
Carcinogenic (PAH)	4.14 E-4	1.46 E-5
Total PCB's	3.02 E-5	1.07 E-6
2,3,7,8-TCDD Equivalents	1.25 E-6	4.41 E-8

exposure or the period in an individual's life when the exposure takes place (Crump and Howe, 1984). Doses early in life are more important than those experienced later. Thus, the worst case situation for portion-of-lifetime exposure in the case of the facility would be inhalation exposure in the first 30 years of life (this is identical to the scenario which was chosen to maximize dose).

Using Crump and Howe's model for this situation, it can be calculated that exposure to a carcinogen at same concentration, C, for the first 30 years of life yields a cancer risk equivalent to a lifetime exposure at concentration 0.95C. (Contrast this to an expected risk equivalent to exposure to 30/70 C for a lifetime, if the relation were linear over time.) The cancer risk assessment therefore used a lifetime daily dose which was equal to 0.95 times the daily dose calculated by Equation 1.

The calculation of the health risk of cancer in this section is based on the greater potency of doses early in life. The annual risk assessed for any compound is the annual risk calculated for the first 30 years of life multiplied by the expected life span (70 years). The health risk assessment presented is quite conservative based on the calculations in the section.

Soil Concentrations of Pollutants

The soil concentration of most of the organic compounds except dioxins and furans is assumed to occur with no environmental degradation. Heavy metals that accumulate in the soil are virtually insoluable. Based on the assumptions the concentration of these pollutants on soil will show a lesser increase for years 1 through 30 and remain constant after the operations at the proposed facility terminate.

Making the conservative assumption that all of a pollutant is absorbed to particles and using a deposition rate of 1.0 cm/sec (864 m/day, McMahon and Denison, 1979), pollutant accumulation may be calculated as:

deposition (864 m/day) x pollutant concentration in air (ug/m^3) =
pollutant accumulation (ug/m^2 day) (2)

Further assuming that all deposition is onto the top 1 cm of soil:
deposition x pollutant concentration x 1/depth of
deposition (1.01 m) =
pollutant accumulation (ug/m^3 day) (3)

Finally, pollutant accumulation may be converted to units of mg pollutant/kg soil day, if a soil density is known. Soil density was assumed to be 1.6 g/cm^3. Integrating the function of a soil contaminant concentration increasing linearly at the rate calculated from Equation 3 for 30 years (facility operating life) followed by constant soil concentration for 40 years (70 year human lifespan - facility operating life), and dividing this value by 70 years, a "constant" soil concentration may be calculated which would provide and equivalent cumulative dose as the actual situation.

Investigators have observed significant rates of environmental degradation of dioxins and furans. The half life figure felt reasonable by investigators for those compounds is 12 years (Kimbrough, 1984). The average soil concentration for the dioxins and furans would be equal to:

$$\frac{\sum_{i=1}^{30} X_i + \int_0^{40} e^{(X_{30}-0.0058t)}\,dt}{70}$$

$X_i=(X_{i-1})\cdot^{942}+C$
C = annual soil deposition rate of pollutant
X_{30}=Soil concentration of pollutant at year 30
t = years

The integration of this function give the value of 0.23 times the soil concentration for constant soil accumulation rate discussed above. The soil average concentration for environmental stable compounds equal 0.02097 times the emission rate. For dioxins and furans the average soil concentration equals 0.00482 times the emissions rate (grams/milogram).

Ingestion dose

The ingestion dose for soil is based on the average soil concentration and the assumptions that the average daily ingestion rate for soils is 100 mg/day and gastrointestinal absorbtion of dioxins and furans is 30 percent of the material ingested (Hart, 1982) (Kimbrough, 1984); absorption for all other pollutants is assumed to be 100 percent.

Dermal dose

The dermal dose is based on the assumptions that the average daily contact with soil is 0.27 grams per day and the absorption rate of all organics through the skin is one percent of the organics present (Kimbrough, 1984).

4.3.4.7 Exposure, Dose and Risk

The assumptions detailed in the preceeding sections provide the basis of the risk calculations. The ambient concentrations for the maximum pollutant impact are based on the RAM comptor model as described in section 4.2. The RAM model predicts ground level concentrations of pollutants. Other models exist that can predict the effect of plant emissions on elevated receptors. An example of such a model is Complex 1. The consultant responsible for modeling ambient air concentrations has had experience with Complex 2 and other models. In using the models they have found that maximum predicted impact is somewhat less conservative than that predicted by RAM and in evaluating high rise air intakes they are generally at street level or two stories above street level. The MPCA has not had experience with Complex 1 and the consultant selected the model most readily understood by the regulatory agency.

The risk for the best, average, comparable and worst cases has been presented in tabuler form. The tables all provide a listing of the compounds, their emission rates and the dose in mg 1 ng for inhalation, ingestion and dermal absorption. Table 4.3-11 provides the best case, Table 4.3-12 provides the comparable case, Table 4.3-12, provides the comparable case, Table 4.3-13 provides the average case, and Table 4.3-14 provides the worst case.

Table 4.3-11
Best Case**

	Emissions Rate g/s	Inhalation dose mg/kg/day	Ingestion dose mg/kg/day	Dermal dose mg/kg/day	Potency	Health
2,3,7,8 TCDD Equivalents	5.01 E-10	4.83 E-15	1.04 E-15	2.82 E-17	156000	9.20 E-10
Hexachloro-benzene	1.11 E-5	1.07 E-10	3.3 E-10	8.96 E-12	1.67	7.45 E-10
Carcinogen PAH (Benzo(a)pyrene	2.76 E-5	2.66 E-10	8.27 E-10	2.23 E-11	11.5	1.28 E-8
Total PCB's	3.98 E-6	3.84 E-11	1.19 E-10	3.23 E-12	4.34	6.97 E-10
Trichlorophenol	5.49 E-5	5.3 E-10	1.64 E-9	4.45 E-11	.0199	4.41 E-11
Arsenic	3.60 E-4	3.47 E-9	1.07 E-8	-	15	2.13 E-7
Beryllium	1.26 E-5	1.22 E-10	-	-	2.6	1.71 E-10
Cadmium	2.7 E-3	2.60 E-8	-	-	6.65	1.73 E-7
Chromium	1.89 E-4	1.82 E-9	-	-	41	7.46 E-8
Nickel	1.4	1.35 E-9	-	-	1.15	1.44 E-9
Total						4.77 E-7

**Nicosia (Chicago) for metals
Chicago for organics, Montreal for dioxin

TABLE 4.3-12

COMPARABLE CASE*

Compound	Emissions Rate g/s	Inhalation dose mg/kg/day	Ingestion dose mg/kg/day	Dermal dose mg/kg/day	Slope	Health
2,3,7,8-TCDD Equivalents	4.10 E-7	3.96 E-12	8.45 E-13	2.29 E-14	156000	7.45 E-7
Hexachloro-benzene	1.11 E-5	1.07 E-10	3.3 E-10	8.96 E-12	1.67	7.45 E-10
Carcinogenic PAH	2.76 E-5	2.66 E-10	8.27 E-10	2.23 E-11	11.5	1.28 E-8
Total PCB's	3.98 E-6	3.84 E-11	1.19 E-10	3.23 E-12	4.34	6.97 E-10
Trichloro-phenol	5.49 E-5	5.3 E-10	1.64 E-9	4.45 E-11	.0199	4.41 E-11
Arsenic	4.3 E-4	4.15 E-9	1.28 E-8	-	15	2.54 E-7
Beryllium	1.26 E-5	1.22 E-10	-	-	2.6	1.71 E-10
Cadmium	2.96 E-3	2.86 E-8	-	-	6.65	1.92 E-7
Chromium	1.33 E3	1.28 E-8	-	-	41	5.25 E-7
Nickel	3.41 E-4	3.29 E-9	-	-	1.15	3.78 E-9
Total						1.74 E-6

*Comparable case decision was made by HDR Inc. for the proposer. EIS authors have not reviewed data from all facilities operations to determine the comparable case.

Table 4.3-13
Average Case ***

	Emissions Rate g/s	Inhalation dose mg/kg/day	Ingestion dose mg/kg/day	Dermal dose mg/kg/day	Risk
2,3,7,8 TCDD Equivalents	1.25 E-6	1.21 E-11	2.58 E-12	6.98 E-14	2.30 E-6
Hexachlorobenzene	1.43 E-4	1.38 E-9	4.26 E-9	1.15 E-10	9.61 E-9
Carcinogenic PAH (Benzo(a)pyrene	4.14 E-4	3.96 E-9	1.22 E-8	3.27 E-10	1.90 E-7
Total PCB's	3.02 E-5	2.91 E-10	8.98 E-10	2.44 E-11	5.27 E-9
Trichlorophenol	2.47 E-4	2.38 E-9	7.34 E-9	1.99 E-10	1.97 E-10
Arsenic	4.3 E-4	4.15 E-9	1.28 E-8	-	2.54 E-7
Beryllium	1.26 E-5	1.22 E-10	-	-	1.71 E-10
Cadmium	2.96 E-3	2.86 E-8	-	-	1.92 E-7
Chromium	1.33 E-3	1.28 E-8	-	-	5.25 E-7
Nickel	3.41 E-4	3.29 E-09	-	-	3.78 E-9
Total					3.48 E-6

*** Average of 6 plants

Notes:
(1) Used 12 year 1/2 life, 100 mg/day, 30% absorption for dioxin other organics assumed to have half life and 100% absorption only arsenic has a carcinogenic impact from ingestion.

(2) Uses averages soil cover of .4 g/day 1% absorption; for organic only

(3) Based on the theory that the first 30 years account for 95% of the risk

Table 4.3-14
Worst Case*

	Emissions Rate g/s	Inhalation dose mg/kg/day	Ingestion dose mg/kg/day	Dermal dose mg/kg/day	Risk
2,3,7,8 TCDD Equivalents	7.76 E-6	7.49 E-11	1.60 E-11	4.33 E-13	1.42 E-5
Hexachloro-benzene	3.9 E-4	3.76 E-09	1.16 E-8	3.14 E-10	2.62 E-8
Carcinogen PAH (Benzo(a)pyrene	1.1 E-3	9.74 E-07	3.01 E-6	8.17 E-8	4.66 E-5
Total PCB's	9.85 E-5	4.68 E-10	1.44 E-9	3.91 E-11	8.45 E-9
Trichlorophenol	5.49 E-4	5.3 E-9	1.64 E-8	4.45 E-10	9.45 E-10
Arsenic	8.37 E-4	8.07-9	2.49 E-8	-	4.95 E-07
Beryllium	1.26 E-5	1.22 E-10	-	-	1.71 E-10
Cadmium	6.2 E-3	5.98 E-8	-	-	3.98 E-7
Chromium	2.1 E-3	2.03 E-8	-	-	8.32 E-7
Nickel	8.1 E-4	7.81 E-9	-	-	8.98 E-9
Total					6.26 E-5

*Highest metal emission rate in data base
Hampton for dioxin and organics

Notes:
(1) Use 12 year 1/2 life, 100 mg/day, 30% absorption for dioxin other organics assumed to have half life and 100% absorption. Only arsenic has a carcinogenic impact form ingestion.

(2) Uses averages soil cover of .4 g/day, 1% absorption; for organics only

(3) Based on the theory that the first 30 years account for 95% of the risk

The results of the risk estimate show a range of risk of an individual at the maximum exposure of .05 to 6.3 in 100,000. As previously explained, the worst case risk is derived from data that would not meet a statistical test for inclusion in the data base. The average case of 0.35 in 100,000 for the maximally exposed individual and 0.17 for the comparable case as suggested by Hennepin Counties consultant provide the best basis evaluating potential facility risks.

4.3.4.8 Community Based Health Risks

An analysis of community based health risk was conducted to estimate the potential excess in cancer cases in the vicinity of the proposed facility. The area of impact selected for analysis was a 10 mile radius of the facility. One million four hundred thousand people live within the 10 mile zone. Another 880,000 people work within the 10 mile zone. The community base health risk assessment accounts for exposure of the population and provides an estimate of risk. To calculate the community risk, the output of the RAM air quality model was employed to produce isopleths of pollutant ambient air concentrations. The population and employment within each concentration zone was obtained from an aggregate census data projected for the year 1990. The exposure assessment for all individuals within a zone was assumed to be the highest concentration within the zone all exposures are calculated as the maximum ambient concentration in the zone. This provides approximately 10 percent higher results than if each individual exposure were assessed. People living in the area are assumed to be subject to the entire 70 year exposure and people working in an area are assessed 1/3 the dose. This is quite conservative because it does not account for people who are adult at the time the plant begins oepration or the reduced ingestion and dermal exposure for people working in the area. The assessment is also conservative due to the estimate that people work 365 days a year and the double count of risk for people who live and work in the zone of influence. For someone who is 35 when the plant begins operation and lives and works in the area, a maximum impact will be assessed 1 and 1/3 life time risks when the actual risk would be 1/2 of a life time risk. The total life time equivalent exposures equal 226,000. This means the community based health risk is equal to 226,000 people being exposed to the maximum concentrations for 70 years.

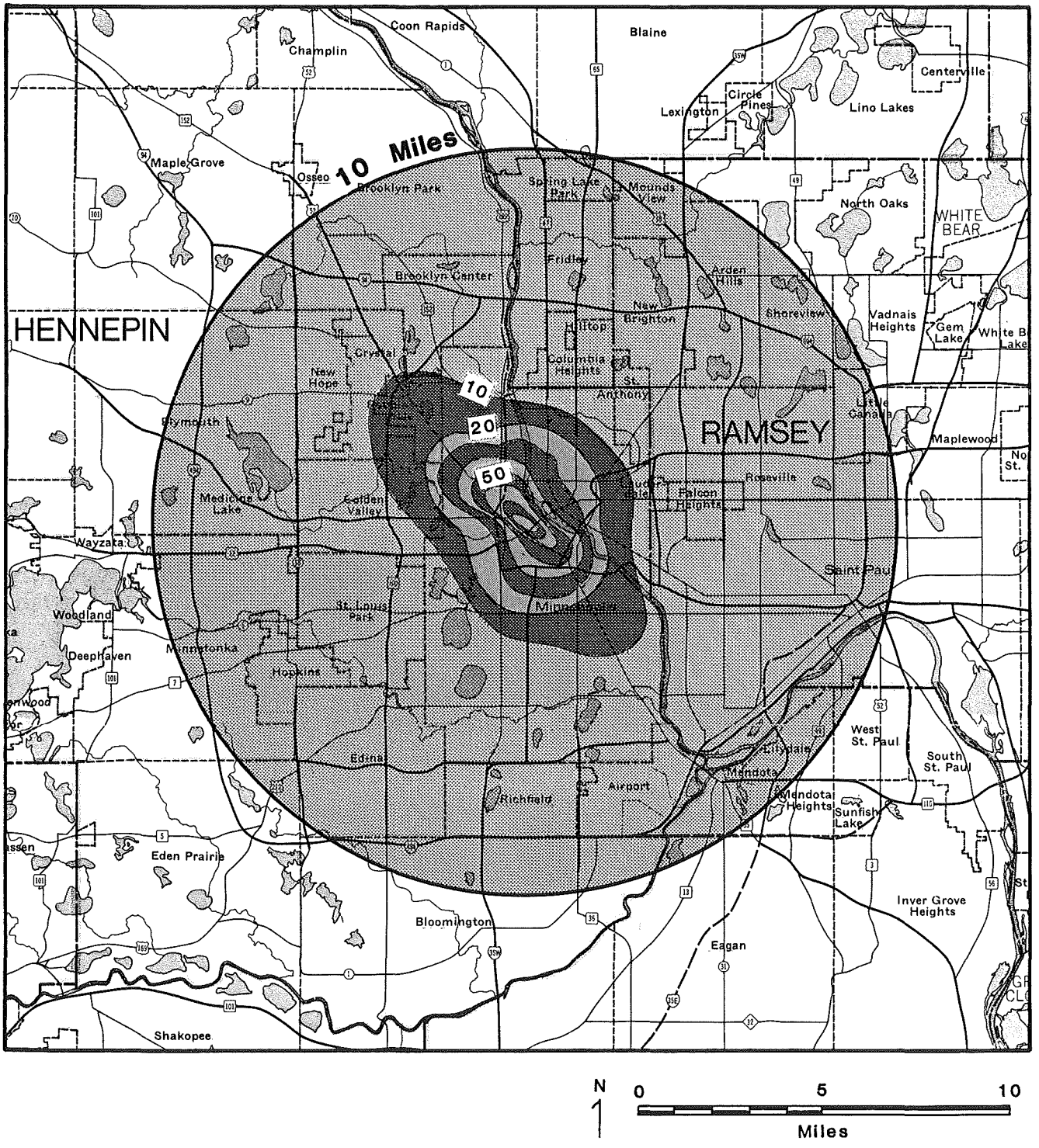
Using the average emissions case and calculating the population risk provides a total cancer case incidence of 0.8 cases in a 70 year exposure. This means that the plant is not expected to generate one additional cancer case in a population who's cancer morbidity would be expected to generate in excess of 350,000 cancer cases.

4.3.4.9 Use of Alternate Toxic Equivalency Factors (TEF's)

The use of alternate TEF's, of which there are known to be eight widely recognized, provides significant variation in the assessment of cancer risk. To allow for a comparison of potential health risks from alternate TEF's the Swiss EPA and California TEF's have been used to calculate the health risk. The TEF's have been used with the average isomers mix calculated for the average case assessment. The total risk of interacting cancer from the 2,3,7,8, TCDD equivalents is 7.45 times as high for the Swiss, EPA TEF's and 3.74 traces as high for the California TEF's. Table 4.3-15 below shows the cancer risk for 2,3,7,8 TCDD equivalents using the three TEF's and the cumulative health risk estimate using the three TCDD risk estimates.

Figure 3.4-1

HEALTH RISKS FROM PROPOSED HENNEPIN COUNTY RESOURCE RECOVERY FACILITY



Rings indicate percent of maximum emissions from proposed mass-burn facility.

Table 4.3-15
Alternate TEF Health Risks

TEF	Relative to USEPA	2,3,7,8-TCDD Risk	Total Health RISK
USEPA	1	2.3 E-6	3.48 E-6
Swiss EPA	7.45	1.71 E-5	1.8 E-5
California	3.74	8.61 E-6	1.0 E-5

The use of the alternate methods of calculating 2,3,7,8 - TCDD health risk increases the total risk estimate to or above the Minnesota Department of Health advisory level of 1 in 100,000. The impact of the revised TEF's may be applied to other cases presented in EIS by multiplying the risk of cancer from 2,3,7,8 TCDD equivalents by the ratios presented on table 4.3-15.

4.3.4.10 Allowable Daily Intakes (ADI's)

Several metals have been identified in the emissions data that are known to be toxic yet are not known to be carcinogenic. The dose calculations are equal to the doses for carcinogenic compound as a function of ambient concentration except that metals are not readily absorbed through the skin. The daily doses for the non-carcinogenic metals and the associated ADI's are presented on Table 4.3-16. The maximum impact for any substance was 15 percent of the ADI for lead. All other substances present a daily dose of less than 1/10 of one percent of the ADI.

4.3.5 Risk of Alternate Solid Waste Disposal

There are no known solutions for the disposal of solid waste that do not present risk to the public health. Landfilling may produce exposure to toxic materials through groundwater contamination with heavy metals, toxic organics and certain inorganic compounds such as nitrates and nitrites. Landfills also release volatile organics to the air through venting of the fill material and to the ground water through leachate in equal proportions. Exposure to toxic materials through groundwater can be minimized by providing alternate sources of drinking water or by removing contaminated groundwater from the site. The exposure to landfill gas and the associated organic emissions is much more difficult to control. Landfills emit small qualities of toxic organic hydrocarbons. The USEPA has spent over 1.5 years investigating health risks form these exposures. As of the time this EIS was written the U.S. EPA had not formed a conclusive health risk assessment for landfills (David Susman, Nov. 1985).

The production of compost does not destroy most volatile or toxic organics. The volatile organics are released to the atmosphere and the toxic organics remain in the compost. The rate of exposure to toxic organics remain in the compost. The rate of exposure to toxic organics from compost could be the same magnitude of concern as ingestion of soils depending on the end use of the compost. Many compost materials are provided to consumers with advisary precautions for it's use. The advisories are intended to reduce the the exposure of consumers to toxic metals and organics. The MPCA rules limit the use and exposure of the public to certain classes of compost. Long term exposure to toxics from compost has not been conducted. No studies have been found while researching the EIS that provide a health risk assessment for compost production and use.

Refuse-derived fuel combustion data has been included in the data used to evaluate the proposed project. The data for RDF facilites does not show significant variation in emissions rates of toxic materials. It is expected that comprehensive analysis of RDF emissions will show the same level of health risk as that identified for the proposed facility.

Table 4.3-16
Metals Doses and ADI's

Metal	Average Emissions rate	Daily Dose mg/day	ADI mg/day	Percentage of ADI
Copper	3.98 E-3	1.1 E-5		
Mercury	3.10 E-3	8.5 E-6	0.02	0.04
Lead	1.1 E-1	3.0 E-4	1.96 E-3	15
Manganese	4.4 E-3	1.2 E-5	.74	1.6 E-3
Selenium	5.2 E-5	1.4 E-7	0.7	2.0 E-5
Tin	1.5 E-2	4.1 E-5	-	-
Vanadium	1.9 E-3	5.2 E-6	-	-
Zinc	1.9 E-1	5.24 E-4	UR	-
Pentachloro-phenol	7.1 E-4	1.94 E-6	2.1	9.2 E-5
Antimony	No Data	-	0.29	-

4.3.6 Ash Characteristics

Several slopes have been conducted on the properties of ash from resource recovery facilities. The results of Regio and Rigio (1982) are presented in the section titled Solid Waste Section 4.1 of the draft document. The summary of the study show that the levels of lead and cadmium are the only solutes above the drinking water standards. The composite of fly ash and bottom ash typical is twice the drinking water standard for cadmium and four times the drinking water standard for lead (1/100th the EP toxicity limits) in E.P. toxicity testing. The values for lead and cadmium from EP toxicity testing range as high as 31 ng/l and 5.3 ng/l respectively which is in excess of the standards for hazardous wastes. Only one plant, Saugus, Massachusettes, has shown values of cadmium and lead above the EP toxicity limits.

Fly ash when not combined with bottom ash typically tests as hazardous for both cadmium and lead. Fly ash is usually not a separate waste stream in plant processes.

4.3.7 Quench Water

The ash from the processing of work is recovered in two ways. Fly ash is recovered in economizer and pollution control devices and bottom ash is quenched in a water tank and removed as a solid containing 10 percent moisture. Periodically the 3000 gallon quench tank must be drained for repairs. The proposer has stated that the two quench tanks will not be drained more than 6 times in any year. It is expected that the actual number of times that the quench tanks will be drained would be one or two times a year. The maximum discharge of quench water would be 36,000 gallons or 136,000 liters. Pollutant laden quench water from Toronto has shown a total concentration of dioxins and furans of 1.57 microgram/l (Ozvacic et al 1985). The equivalents of 2,3,7,8 TCDD using U.S. EPA TEF's and the average isomer mixture from the data base would yield 17.6 ng/l equivalents of 2,3,7,8 TCDD. The discharge of 136,000 liters would equal 2.4 mg per year discharged from the source. If the quench water were filtered the total 2,3,7,8 TCDD equivalents discharged would be reduced to 0.1 mg/per year. If the raw quench water is discharged to the sanitary sewer the 2,3,7,8 - TCDD equivalents concentration would be reduced by a factor of one million. As a comparison the 2,3,7,8 - TCDD equivalents released via the stack equal 39.4 grams per year.

PREFACE

The Response to Comments constitutes the third volume of the Hennepin County Resource Recovery Project Environmental Impact Statement. Its responses provide additional information for many issues discussed in the Draft EIS. In responding to comments, the Council and its consultants have re-analyzed or performed additional analysis on some issues. Nevertheless, the findings in the Response to Comments are substantially similar to those of the Draft EIS.

In Sections 1 and 2 of this volume, responses are provided to the issues raised by each individual or group during public meetings about the Draft EIS or submitted to the Council in writing during the prescribed comment period.

In Section 3, topical responses (for example: Transportation, Health Risk, Aesthetics) are provided where common issues were raised by several commentors.

Section 4 is a summary of the existing conditions, impacts and mitigating measures contained in the Draft EIS (DEIS).

Section 5 is a compilation of written comments submitted to the Council about the DEIS.

Following this Preface, there is an index for this volume, designed to provide rapid access for responses to individual comments.

CONTENTS

SECTION I

RESPONSE TO PUBLIC HEARING COMMENTS

1. RESPONSE TO PUBLIC HEARING COMMENTS

1.1 January 15, 1986, Hennepin County Government Center

1.1.1 Leslie Davis, President, Earth Protector, Inc.

Issues Raised: Mr. Davis asked about the size of particulates emitted from the mass-burn facility and about their chemical composition. He expressed concern that dioxins and furans would be created in stack gasses and that ash from the facility could be hazardous. He expressed the opinion that other methods of waste utilization are preferable since they would not generate air pollution. He commented that insufficient information exists to consider facility construction.

Responses: The nature and rate of pollutant emissions is included in the DEIS. The calculations contained in the DEIS are conservative since they do not take full credit for the effectiveness of air emission control systems. Mr. Davis is correct in noting that additional information will be available in the future from state and national studies of emissions and risks associated with resource recovery facilities. Further information on data used or excluded from the analyses is included in the revised Human Health Section of the draft EIS, section 4.3. Improvements in the information base over time may lead to refinements in pollution controls, operating practices or other mitigating measures which could be dealt with through either initial or subsequent facility permit conditions. Hypothesized formation of dioxins on post-combustion particulates has not been supported in empirical studies. Regarding alternate waste handling methods, the proposed project is part of a comprehensive county plan for waste management which includes programs for waste reduction, recycling and composting in addition to waste combustion.

Based upon the most current ash testing data from the Westchester Resource Recovery Facility in New York, it is unlikely that the ash residue from the proposed Hennepin County facility would be considered a hazardous material. The Minnesota Pollution Control Agency will require testing of the ash prior to the disposal of the ash prior to the disposal of the ash in an approved landfill.

1.1.2 Lee Allen Estrem, Citizens for a Better Environment

Issues Raised: Mr. Estrem questioned MPCA guidelines for emission monitoring. He also recommended that fly ash and bottom ash from the facility be handled as separate waste streams in order to provide better management of potentially hazardous components.

Responses: Fly ash and bottom ash are combined for many resource facilities as a function of plant design. Both emissions monitoring and ash management are areas which will be regulated by MPCA permit in accord with agency rules and guidelines. Specific permit conditions are not appropriate for the EIS; general mitigating measures are discussed which may ultimately be incorporated as conditions in state and local approvals.

1.1.3 Peter Berglund, Resident, City of Minneapolis

Issue Raised: Mr. Berglund urged investigation of alternative technologies.

Response: The Draft EIS includes discussion of both alternative combustion technologies as well as general discussion of other waste management options. The project is proposed to process only about 40 percent of the county's waste, as one element of a solid waste system which includes recycling, waste reduction and composting programs.

1.1.4 John Kline, Flying Cloud Drive-in Theater, Eden Prairie

Issue Raised: Mr. Kline asked how the proposed project would effect the Flying Cloud Sanitary Landfill.

Response: As noted in the DEIS, ash, non-processible waste and other reject materials would be landfilled. It cannot be determined at this time whether these materials would be disposed of in any particular landfill currently operating in the Twin Cities Area.

However, the volume of mixed municipal waste requiring land disposal will be reduced as a result of the County's resource recovery program.

This will extend the life of existing landfills and reduce the size and number of future landfills. In addition, aesthetic impacts to adjacent areas resulting from landfill operations such as odors, blowing paper, truck traffic, etc., will be reduced.

Other Comments

The public meeting transcript included comments and questions raised by others attending the January 15 meeting. No other comments were raised which substantively addressed issues discussed in the DEIS or included in the EIS Scoping Decision.

1.2 January 16, 1986, Edina Community Center

1.2.1 Gary Berg, City Planner, Brooklyn Park

Issue Raised: Mr. Berg referenced a resolution adopted by the Brooklyn Park City Council. The resolution is in opposition to the site and identifies specific problems associated with it.

Response: See response to written comments, 2.15 on page 2-5.

1.2.2 Phil Carlson, Dahlgren, Shardlow and Uban, Consultants

Issue Raised: Mr. Carlson expressed concern that a transfer station at the proposed Brooklyn Park site would have a negative impact on the Northland Park development, west of the site.

Response: Potential impact of proposed facilities for adjacent and nearby areas is discussed in the DEIS. Additional information has been developed on site distance and aesthetic mitigation techniques for the Final EIS (see the topical response Section 3.4).

1.2.3 James Stuebner, President, Northland Development Company

Issues Raised: Mr. Stuebner provided written materials about Hennepin County's process for identification and selection of proposed transfer station sites. He provided information on the potential job development and tax base increase from the Northland Development park.

Responses: Processes for site identification or final selection are not germane to the EIS. The DEIS does identify possible alternatives to each of the proposed facilities. Additional information, beyond that in the DEIS, on potential impact on adjacent development was developed for the Final EIS. Section 3.4 includes comments from developers in other parts of the country who have had experience with nearby transfer stations.

1.2.4 Leslie Davis, President Earth Protector, Inc.

Issues Raised: Mr. Davis reiterated concerns about human health expressed at the January 15 public meeting.

Responses: See response above (1.1.1) and response to written comments (2.16) on page 2-5.

1.2.5 Ellen Lavin, Mayor, City of Hopkins

Issues Raised: Mayor Lavin presented slides of the Minneapolis North Transfer Station, expressing concerns that litter, external waste storage and uncovered transfer vehicles would be serious problems should a transfer facility be developed at the Hopkins site. She described land uses adjacent to the site and provided a map similar to that in the DEIS. She noted that appropriate representatives of food warehouses adjacent to and near the site had not been contacted during preparation of the DEIS. She expressed concern that the DEIS had not adequately addressed the potential impact of a waste transfer station on the nearby food warehouse businesses and that in a broader sense, the economic impact of the transfer facility has not been adequately assessed. Citing several issues (noise, transportation, land use) Mayor Lavin expressed the view that different sites were treated unequally and that the DEIS conclusions were not consistent throughout, noting several times during her presentation that the DEIS sections on the Hopkins site were biased. Regarding noise, Mayor Lavin questioned the location and type of receptor evaluated. She questioned the assessment of impact of train traffic on vehicle congestion. She noted that the possible impact of light rail proposals for the Hopkins area was not addressed. She cited unequal treatment in discussions of Birch Island and Buffer Parks. And she recommended that further analysis of the transportation costs for alternate facilities be done.

Responses: The presence of refuse on a transfer station tipping floor between clean-up periods is characteristic of normal operations. Proposed tipping areas would be fully enclosed. As noted in the DEIS project description, no uncovered storage of refuse would be permitted, and no waste is to be stored on-site for more than four hours. Although employees of Hopkins food warehouse businesses were contacted during preparation of the DEIS, the additional parties suggested by Major Lavin have been contacted during development of the Final EIS. Section 3 of this document contains additional analysis of the potential impact of the transfer station sites on the hygiene of surrounding land uses in the topical section. Additional discussion on the impact of transfer facilities on development of adjacent lands is also included in Section 3.4. Section 4 of this document provides a summary of the existing

conditions, impacts and mitigations associated with all proposed and alternate facility sites, as described in the DEIS. The section illustrates the comparability of issues and treatment for each site and also provides a synopsis of the DEIS without the bulk of the original document. Noise receptors selected for the Hopkins site are located in residential areas. Since noise standards are more stringent for such landuses, residential receptors are more indicative of noise sensitivity in the vicinity of the Hopkins site than would be industrial landuses somewhat closer to the proposed facility. The topical response on transportation in Section 3 compares vehicle level of service on affected roadways, both with and without the proposed project at all alternate sites. Level of service comparisons for the proposed transfer station sites can be found in the DEIS. Section 3 also discusses impact of train traffic on vehicle congestion. At present the development of light rail transit for the Hopkins area is uncertain. Should such proposals develop further, their impact analyses would be the appropriate place for assessment of project interrelationships. Regarding comparison of recreation facilities, Birch Island Park is predominantly a wildlife area while Buffer Park is an active recreation facility with ball field and playground. The noise analysis for the Buffer Park area concluded that no increased noise levels would be noticeable, but also recognized that existing noise levels exceed standards for this type of landuse. Transportation cost comparisons are not included in either the Draft of Final EIS due to the potential number and complexity of scenarios, depending on the final mix of transfer sites selected, their respective sizes and wastesheds and on final selection of the combustion facility site.

An assessment of train traffic impacts on vehicle congestion along Fifth Avenue South is presented in Section 4 of the DEIS. The analysis was based on the most accurate available information from railroad officials regarding the frequency, duration and timing of train traffic crossing the affected intersections in the site area.

1.2.6 Dr. Charles Gray, Vice President, Economic Consulting Services

Issues Raised: Dr. Gray presented a memorandum which discusses two factors affecting land values--externalities and opportunity costs. Externalities are the impacts a project has on neighboring lands which lead to cost impacts. Common examples are noise and air pollution. Opportunity costs refer to alternative uses of resources that may be more beneficial.

Responses: Both concepts, externalities and opportunity costs, apply to all of the possible transfer station sites as they do for any development project. Factors contributing to potential detrimental effects on nearby property are noted in the DEIS. As Dr. Gray states in his memorandum, the difficulty is in trying to quantify the effect precisely. A full cost-benefit analysis comparing project costs against all other possible uses of each proposed and alternative site is well beyond the scope of this EIS. A true net opportunity cost is the value of a proposed site, less the cost of purchase and preparation of an alternate site. Site preparation includes relocation of existing uses, clearing of existing structures, and absorption of liability for potential environmental cleanups of other unique costs of developing the alternate site. Techniques used to resolve externality and opportunity costs conflicts include site swap; surcharge, royalty, payment in lieu of taxes or other financial compensation; and employment of mitigating measures such as landscaping, air pollution controls, limits on hours of operation, etc.

1.2.7 Sally Olson, State Representative, District 4A

Issues Raised: Rep. Olson stressed that the Hopkins site violates MPCA guidelines on location within 1,000 feet of residential landuse. She stated that insufficient analysis was included in the DEIS on impact for food warehouse businesses. She requested that further evaluation be done on impact of the transfer station on the Hopkins downtown redevelopment area.

Responses: The MPCA uses a discretionary guideline of 1,000 feet separation between residences and active landfill areas. The agency has no comparable guidelines for transfer facilities. Further discussion of this topic is included in Section 3.6. The findings of the registered hygienist retained to evaluate hygiene concerns on and near the transfer facilities are included in Section 3.9. Further discussion of the possible impacts for Hopkin's redevelopment area and general impacts for adjacent properties is also to be found in Section 3.4.

1.2.8 John Morse, Minneapolis State Planning Agency

Issue Raised: Mr. Morse requested analysis of the potential impact of the proposed facility of the redevelopment area in Hopkins.

Response: Further assessment of this issue can be found in Section 3.4.

1.2.9 Joe Budnick, Red Owl Food Stores

Issue Raised: Mr. Budnick expressed concerns that rodents carried in refuse trucks would have a negative impact on the operation of the Red Owl Food warehouse operation.

Response: The findings of the consultant retained to provide further evaluation of hygiene impacts is included in Section 3.9.

1.2.10 Gordon Hippen, Division President, Super Valu

Issues Raised: Mr. Hippen voices concerns that transportation impacts, rodents, dust and odor problems will have a much greater impact than the DEIS suggests.

Responses: Similar comments were made by several speakers at this meeting. Transportation impacts and consultant findings on hygiene issues represent additional work on the issues (see Section 3.9). Litter is noted as a common concern at transfer facilities currently in operation around the country. In Section 3, the topical response on Mitigation includes information on potential control measures.

1.2.11 Bruce Lieberman

Issues Raised: Mr. Lieberman expressed concern that the DEIS failed to accurately assess the existing landuse and transportation system in the area of the Hopkins site and that impacts of the proposed transfer station had not been fully addressed.

Responses: General Resource Corp. property is within an area which the DEIS recognizes as being zoned General Industrial. The traffic that has developed

in the area over time has grown, and the impacts of the current system are described in the DEIS. Further description of traffic conditions with or without the project are included in a topical response in Section 3.5, as are additional comments about development impacts.

1.2.12 John Fink, County Club Markets

Concerns expressed by Mr. Fink included transportation impacts, rodents, dust and odor problems. He felt that these factors would lead to greater impacts than those identified in the DEIS. He was concerned that facility wash-down water could contaminate the truck turning area next to the Country Club warehouse dock.

Responses: As noted with similar comments above, the topical responses in Section 3 provide further information about transportation, development and hygiene (rodents). The topical sections on Mitigation describe potential dust, litter and odor controls. Current literature indicates that off-site dust and odor is primarily from truck traffic, that is dust reintrainment from heavy truck traffic and diesel exhaust. Litter and dust control measures will be required to avoid contamination of runoff. Exterior cleanup procedures for the transfer facilities, as proposed, minimize the use of water. Runoff will be controlled on-site with storm water discharged to the local storm drainage system.

1.2.13 Gary Knott, Knox Lumber

Issues Raised: Mr. Knott expressed concern that the traffic on the section of Fifth Av. S. between Co. Rd. 3 and Third St. S. would be severely impacted by the proposed facility. He cited the area's accident level and expressed concern about impact on access to the Knox Lumber business from Fifth Av. S. He also voiced concerns about odors, litter and potential for the facility to generate combustible gases.

Responses: Impact on traffic congestion is discussed in the DEIS. Section 3 of this document provides additional information about traffic conditions both with or without the project. The congested level of service in the area could be a major contributing factor for the increase in accidents noted by Mr. Knott. Regular grounds policing is proposed for the project as part of its litter control program. Other mitigating measures are described in the DEIS. Waste is not to be stored on-site for longer that a four hour period, thus precluding the potential for decomposition resulting in generation of combustible gases or odors noticeable off-site.

1.2.14 Don Hagen, Owner, Town Terrace Apartments

Issues Raised: Mr. Hagen presented a petition signed by the 118 residents of Town Terrace Apartments. Issues expressed included noise, truck exhaust, traffic congestion and impact of waste on nearby food warehouses. Other comments made by Mr. Hagen did not deal with issues delineated in the DEIS or pertinent to the EIS scope.

Responses: The DEIS addressed the noise and transportation impacts of concern to the petitioners. These issues were reexamined for the Final EIS, with additional discussion located in Section 3. There is no substantial change from the findings of the DEIS. Traffic on the north side of Co. Rd. 3 at the

corner of Fifth Av. S. would not appear to be affected by the proposed facility. Discussion of hygiene impacts and adjacent food warehouses can also be found in Section 3.9.

1.2.15 Douglas Denny, President, Park Valley Association

Issues Raised: Mr. Denney expressed concern about potential traffic, noise and rodent impacts for the Park Valley residential area. He was concerned that these impacts would contribute to limitation on development potential and to a decline in property values.

Responses: The DEIS describes traffic and noise impacts associated with the site. Noise receptors were selected to include residential areas in the vicinity. As noted in the DEIS, Hennepin County intends to prohibit waste vehicles from traversing the area to the south of the project site. The City of Hopkins also has a broader authority to restrict truck traffic on Fifth Av. S. The transfer facility would be visible from the Park Valley neighborhood. As a mitigating measure, the county has committed to seeking neighborhood assistance in selection of the building's exterior treatment. Difficulties in gauging potential impacts on property values have been noted in the DEIS and by several commentors. Included in Section 3 is input from developers outside the Twin Cities, describing their experiences with transfer stations. The City of Hopkins has presented an appraiser's assessment of impacts. (See response below to P. Patchin, as well as response to written comments in Section 2.) Further work on the potential for rodent impacts is included in the topical response in Section 3.9.

1.2.16 Peter Patchin, Peter J. Patchin and Associates, Inc.

Issues Raised: Mr. Patchin presented his findings on potential decline in property values due to the proposed transfer station. His conclusion was that both residential and commercial properties would decline in value, with impacts most severe for the nearby food warehouses.

Responses: Mr. Patchin's work is consistent with comments from the Hopkin's city assessor, which are included in the DEIS. Mr. Patchin's preliminary assessment of impact for residential properties is a decline in value of 10 percent or less. A 10 percent difference in appraised value from one expert to another is not uncommon. Mr. Patchin correctly notes that public perception of noise, odor or other impacts has the greatest affect on values. Mr. Patchin believes a severe decline in value, up to 50 percent, could result for light industrial properties if food warehouse businesses were forced to close. Neither the DEIS nor additional analysis for the Final EIS indicate serious impacts for the food businesses. (See Section 3 for comments on development impacts as well as on hygiene, Sections 3.4 and 3.9 respectively.)

1.2.17 David Olson, President, Twin West Chamber of Commerce

Issues Raised: Mr. Olson's comments dealt primarily with transportation impacts, noting that the proposed facility would turn Hopkins into "a maze of garbage trucks." He also expressed concern about the impact such congestion would have on development.

Responses: An additional evaluation of transportation impacts of the facility on the areas near Co. Rd. 3 and Fifth Av. S. does not show interference with

northbound traffic on Fifth Av. from Co. Rd. 3. Under normal conditions, the traffic analysis showed that during peak refuse delivery times, no more than one truck would be stopped at the intersection of Co. Rd. 3 and Fifth Av. S. during any traffic signal light cycle. Additional discussion of transportation and development impacts can be found in Section 3.5.2.

1.2.18 Ed Hanlon, President, Center City Development Corp.

Issues Raised: Mr. Hanlon voiced the concern that transportation impacts from the facility would disrupt business development in Hopkins. He noted that air pollution, odor, litter and rodents would adversely impact the area surrounding the site.

Responses: Substantial changes to conditions without the proposed project were not found for noise or transportation in either the DEIS nor on reanalysis. These concerns are common to many speakers and further discussion can be found in Section 3. The findings of the consultant on hygiene impacts and mitigating measures are also to be found in Section 3.9. Literature describing off-site dust and odor for transfer stations indicates that dust is attributable to reintrainment as is common for heavy duty vehicles; odor is predominantly the result of diesel exhaust.

1.2.19 Sandy Edwards, President, Interlachen Park Homeowners Association

Issues Raised: Mr. Edwards asked for fuller assessment of air quality, surface water, aesthetic, traffic, noise, rodent and property value impacts.

Responses: Off-site dust and odor impacts from transfer stations are generally the result of dust reintrained by heavy trucks and diesel odors. Surface water management from the site is expected to improve. The current site is virtually entirely impervious surface. Should a transfer station be developed, a storm water retention basin would be developed with controls to trap sediment and oil. In Section 3 there is additional discussion of potential mitigating controls for litter. Hennepin County has committed to seeking neighborhood input for site landscaping and exterior building design. No significant changes in noise and traffic impacts for future conditions have been found either through the DEIS or in subsequent analysis for the Final EIS (See Section 3.5.2). Hopkin's Assessor is cited in the DEIS as believing that the facility could contribute to a decline in nearby residential property values. Additional responses to this concern can be found in Section 2, in the response to written comments from P. Patchin and more generally in Section 3.4.

Rodent and hygiene impacts from the proposed transfer station are discussed in Section 3.9.

1.2.20 Rick Carlson, Westbrooke Condominiums and Townhome Association

Issue Raised: Mr. Carlson expressed concern that the area south of Seventh St. S. would receive additional traffic from the proposed facility, particularly during periods of traffic congestion.

Response: The background report prepared by HDR Inc., Environmental Technical Report 11: Transportation, estimated additional daily traffic generated by the transfer station. It shows a potential increase of 6 trucks and 8 cars in

1990 and 14 trucks and 15 cars in the year 2000. Over a 10-hour day, the additional traffic would be slightly in excess of one truck per hour. This level of additional traffic would not be significant.

1.2.21 Ann Sturgis, Citizens for a Better Environment

Issues Raised: Ms. Sturgis repeated testimony presented on January 15 by Lee Allen Estrem.

Responses: See response above to Mr. Estrem's comments.

1.2.22 Don Roesner, Vice President, Park Valley Neighborhood Association

Issues Raised: Mr. Roesner's concerns were for fuller assessment of noise impacts and food sanitation aspects of the project.

Responses: Reassessment of noise impacts did not indicate greater impact from that forecast in the DEIS. The report of the sanitarian retained to evaluate hygiene aspects of the proposed facility is included in Section 3.

1.2.23 Steve Ruder, President, Park Ridge Neighborhood Association

Issues Raised: Mr. Ruder took issue with the findings of the DEIS and with the bases for those findings.

Responses: The findings and conclusions found within the DEIS do not represent personal opinions or observations of the preparers. Noise, air quality, traffic and other issues have been evaluated based on guidelines and standards of the U.S. EPA, Dept. of Transportation and Department of Housing and Urban Development as well as those of Minnesota's state agencies. The DEIS does not make a value judgment on how good the Hopkins site may be. Rather, it utilizes the standards and guidelines of various agencies to assess the potential impacts of the proposed project and provide a professional assessment of the significance of those impacts.

1.2.24 John Keefe, Hennepin County Board

Issues Raised: Commissioner Keefe commented on the county's selection process and stressed the merits of several alternatives to the Hopkins site.

Responses: The process for selection of the proposed transfer station sites is beyond the scope of this EIS. Section 4 includes a summary of the existing conditions, impacts and mitigating measures appropriate for all proposed sites and alternatives as discussed in the DEIS.

1.2.25 Phyllis McQuaid, State Representative, District 44

Issue Raised: Representative McQuaid expressed concern that the proposed transfer station could adversely impact the food warehouse businesses and residential neighborhoods near the facility.

Response: Section 3 includes the findings of the sanitarian retained to assess hygiene impacts for the transfer station and its environs.

1.2.26 Charles Dayton, Attorney Representing the City of Hopkins

Issues Raised: Mr. Dayton highlighted his extensive submittal of written comments on the DEIS.

Responses: See response to written comments Sections 2.25 and 2.26.

1.2.27 Lee Clark, Resident, City of Hopkins

Issue Raised: Mr. Clark expressed concern that a transfer station would infect food passing through nearby food warehouse businesses.

Response: The consulting sanitarian's evaluation of rodent and hygiene concerns is included in Section 3.9.

1.2.28 Frank Snyder, Resident, City of Hopkins

Issue Raised: Mr. Snyder expressed concern that increased truck traffic would eliminate access to the SHARE health care facility.

Response: The SHARE facility is south of Seventh St. S. Hennepin Co. has stated that truck traffic would not be allowed to enter the proposed transfer station from the intersection of Co. Rd. 18 and Seventh St. S. Hence no adverse impact for SHARE should be expected.

Other Comments

The public meeting transcript includes comments and questions raised by others attending the January 16 meeting. No other comments were raised which substantively addressed issues discussed in the DEIS or included in the EIS Scoping Decision.

SECTION II

RESPONSE TO WRITTEN COMMENTS

2. RESPONSE TO WRITTEN COMMENTS

Section 5 of this document contains copies of all substantive comments received by the Council during the comment period on the DEIS. The full text of comments in Section 5 is presented in the same order as the responses below. In the responses to comments which follow, only a broad indication of the commentors' full expression of concerns is given.

2.1 Donald M. Fraser, Mayor, City of Minneapolis

Mayor Fraser's letter highlights concern that the health risk from the proposed facility may not accurately assess the true risk of a 1,000-ton-per-day waste-to-energy facility in downtown Minneapolis.

Many other commentors expressed similar concerns. The Council and its consultants have provided additional discussion and analysis of these issues in the Human Health portion of Section 3.2 and the revised Human Health risk analysis.

2.2 James F. Miller, City Manager, City of Minnetonka

Mr. Miller's comments pertained to the sections of the DEIS describing alternative transfer station sites. He expressed a number of concerns including transportation, safety, surface water quality and socioeconomics. These issues are addressed individually below.

Hennepin county intends to significantly upgrade the portion of County Rd. 67 that passes by all three of the alternate site locations in Eden Prairie. The current county plans envision a right-hand turn lane at Indian Chief Rd. The impacts on traffic from trucks entering the facility from westbound Co. Rd. 67 would be greatly diminished by the turn lane. Mitigation for the potential traffic and safety concerns is included in the Final EIS in Section 3.5. Analysis of increased traffic generated for the Greenhouse site has been included in the Reuter environmental assessment worksheet (EAW). The EAW analysis shows that the truck traffic will increase slightly along County Rds. 3, 4 and 60, assuming delivery of waste collected in Minnetonka and Eden Prairie. Since completion of the Reuter EAW in 1985, proposals have been put forward for all waste processed by Reuter to be obtained from the eastern portions of the county. Under such circumstances, a shift to waste delivery by transfer vehicles rather than direct delivery from packer trucks would be expected to lessen traffic impacts.

The location of the Eden Prairie sites would have the potential to affect overall waste transportation costs for the county solid waste system. Cost comparisons for the transportation of waste to alternative sites have not been included due to potential number and complexity of scenarios depending on the final mix of transfer sites selected, their respective sizes and wastesheds and final site selection for the waste combustion facility.

An improved transportation system in the vicinity of the sites could make the area more attractive for development. The effects of the proposed facilities on development has been investigated. The information is included in Section 3.4 as a topical response on development impacts.

The Alternatives section of the DEIS did not explore mitigating measures, although measures discussed for the proposed sites apply to most alternatives,

for example, site planning and screening. Likewise, other mitigating measure can reduce or eliminate potential problems of surface water quality degradation and public safety. The discussion of potential mitigating measures is addressed in Section 4, which summarizes the existing conditions, impacts and mitigations pertinent to all sites and alternates.

2.3 Douglas L. Denny, President, Park Valley Association

The comments received from the Park Valley Association expressed concern over the potential traffic and noise of the proposed facility, as well as the impact the proposed facility will have on the development potential and property values in the vicinity of the Hopkins transfer station site.

The Council has obtained assistance in evaluating the potential impacts on development that transfer stations may have. The views of developers contacted from other parts of the country who have experienced transfer station location nearby are included in Section 3.4. Comments from the City of Hopkins include information on the potential for decrease in property values near the transfer station site.

Traffic and noise data have been reevaluated for the Final EIS. Results of this work are included in the topical discussion on Transportation in Section 3. Noise impacts from the proposed facility have also been reexamined for the Final EIS. The DEIS findings were found to be indicative of noise levels from the facility and other existing noise sources for receptors in nearby areas.

2.4 Bruce M. Goldstein, President, The Knollwood Association

The concerns expressed involve transportation and transportation noise impacts, and the effect of the proposed transfer station in Hopkins on property values and economic activity.

Section 3 included discussion of impacts transfer station development has had for developers contacted in other parts of the country. Comments from the City of Hopkins also include estimates of the potential decline in property values near the transfer station site.

Traffic and noise data have been reevaluated for the Final EIS. Results of this work are included in the topical discussion on Transportation in Section 3. Noise impacts from the proposed facility have also been reexamined for the Final EIS. The DEIS findings were found to be indicative of the combined impact from the facility and existing noise sources for receptors in neighborhoods near the proposed transfer station.

2.5 Mrs. H. A. Hansen, Resident, Hopkins

Mrs. Hansen expressed concern that the impacts of traffic from the facility in addition to the existing traffic would make it difficult for local residents to travel in Hopkins.

Several responses in Section 1 to comments made during the January 16, 1986, public meeting address specific potential congestion points in Hopkins. The topical discussion of Transportation impacts in Section 3 provided further information on traffic conditions that could be expected if the project were built.

6 Mrs. Jane Sellner, Resident, Hopkins

Mrs. Sellner expressed concern that the proposed transfer station would be incompatible with the existing food businesses due to rodents and insects. She also expressed concern that the transportation system would suffer from the development of a transfer station in Hopkins.

Findings of the consulting sanitarian retained to evaluate vector (rodent and insect) impacts from the proposed facility are included in Section 3.9. Section 3 also includes discussion of transportation impacts at all of the transfer station sites. Some additional discussion of transportation impacts can also be found in Section 1 in responses to comments made during the January 16, 1986 public meeting.

2.7 Virginia C. Moll, Resident, Hopkins

Ms. Moll expressed concern that the EIS may not provide an accurate assessment of the potential problems at the proposed Hopkins transfer station site. Issues of particular concern were litter, noise, pests, traffic and property values adjacent to the proposed site.

Additional analysis of potential impacts for the potential transter station sites has been completed during preparation of the Final EIS.

The transportation impacts from development of the Hopkins site as a transfer station identified in the draft EIS. The Final EIS contains expanded discussion of concerns over congestion, impact of train crossings, truck traffic in residential areas and other topics in the responses in Section 1 and also in the topical Transportation portion of Section 3.

The Council has obtained expert opinion concerning the potential for rodent and insect problems to develop at the transfer sites. The work performed by the registered hygienist is included in Section 3.9.

Noise impacts from proposed facilities were again reviewed for the Final EIS. The discussion of combined noise impacts from the proposed Hopkins transfer station with that of existing noise levels for nearby sensitive receptors can be found in Section 3.12..

2.8 Virginia Butz, Resident, Hopkins

Ms. Butz expressed concern that the impacts from the facility would have a negative impact on the property value of her home.

The City of Hopkins has submitted an estimate of potential decline in property values near the transfer station site. The Council has investigated property value impacts near other sites in close proximity to similar facilities. The results of the work are included in Section 3.4.

2.9 Connie and Tim Conners, Residents, Hopkins

Mrs. Conners expressed concern that the impacts from the facility would have a negative impact on the property value of their home.

The City of Hopkins has provided an estimate of potential decline in property values near the transfer station site. Section 3 discusses experiences

developers in other parts of the country have had areas near transfer stations similar to the proposed facility.

2.10 Mrs. J. J. Keefe, Resident, Hopkins

Mrs. Keefe expressed concern that the impacts from the facility would have a negative impact on the property value of her home and would contaminate the drinking water of the city.

The City of Hopkins has presented estimates of the potential decline in value of property near the transfer station site. Findings of developers and communities contacted by the Council where similar transfer facilities have been built are included in Section 3.4. A review of transportation impacts from development of the Hopkins site as well as expanded discussion of traffic congestion, train crossings and truck traffic in residential areas has been included in Section 3.5.

The water supply wells should not be impacted by the proposed facility. The transfer station uses a minimum of water and all sanitary water is directed to sanitary sewer.

2.11 Neil N. Lapidus, Resident, Hopkins

Mr. Lapidus' concerns involve transportation and transportation noise impacts, and the effect of the proposed transfer station in Hopkins on property values and economic activity.

Comments on the effects of similar facilities on nearby development were solicited from a few communities and developers in other parts of the country. Their views are included in Section 3.4.

Additional discussion of traffic congestion and other transportation impacts has also been included in Section 3. Specific responses to possible congestion concerns are also included in Section 1 in response to comments made during the January 16, 1986 public meeting. The noise analysis completed for the EIS included both potential facility impacts as well as that from existing sources, and includes existing and future traffic.

2.12 Barbara E. Smith, Resident, Hopkins

Correspondence from Ms. Smith did not include comments specific to issues evaluated in the DEIS or based on the EIS Scoping Decision.

2.13 Mrs. Ann Pickler, Resident, Hopkins

Mrs. Pickler's comments identified concerns over the issues of public health and economic development related to the transfer station.

The Council has obtained expert opinion concerning the potential for rodent and insect problems to develop at the transfer sites. The work was completed by a registered consulting sanitarian. His findings are incorporated in Section 3 of the Final EIS.

Section 3 also includes the views of communities and developers from other communities who have experienced nearby construction of transfer stations similar to the proposed facility.

2.14 Harriet L. Long, Resident, Hopkins

Ms. Long's concerns included the issues of odor and rodents from the proposed transfer station in Hopkins. Rodent and hygiene impacts are discussed in section 3.9. Literature describing off-site dust and odors historically associated with transfer stations indicates that odors are predominantly the result of diesel exhaust from vehicles using the facility rather than from solid waste.

2.15 James Krautkremer, Mayor, Brooklyn Park

Mayor Krautkremer's letter conveys the resolution adopted by the Brooklyn Park City Council noted earlier in Section 1. The resolution addresses the adequacy of the DEIS discussions of floodplain and transportation impacts of the proposed Brooklyn Park transfer station site.

Floodplain encroachment is an unavoidable impact of development on the Brooklyn Park site. Since the floodplain area occupies the central portion of the site, avoidance of the floodplain through site design is not feasible. Partial mitigation of overall site drainage impacts may be achieved by grading unpaved areas in the western portion of the site to promote natural drainage of runoff toward the wetland flanking Shingle Creek.

Depending on site layout, floodplain encroachment could be a significant impact at the Brooklyn Park site. Possible mitigating measures include grading to re-establish floodplain capacity lost to development.

In preparation of the Final EIS, transportation impacts for the proposed transfer station sites were reanalyzed. This work did not result in any change in the forecast impacts for the Brooklyn Park site from those identified in the DEIS.

No unique or scenic features were observed in the assessment of the flora and fauna at the site which would require special protection.

2.16 Leslie Davis, President, Earth Protector, Inc.

Mr. Davis' concerns dealt with the following topics: Alternatives, Cancer Risk Assessment, Emissions Control, Ash Disposal, and Bioaccumulation.

The discussion below addresses these concerns or indicates where additional discussion of the topics can be found in the Final EIS.

2.16.1 Alternatives

The concern about alternatives has been addressed in part in EIS Scoping Decision. It is also partially covered in the solid waste management section of the DEIS. Exclusive of the transfer station component of Hennepin County's system, the project and options assessed as alternatives to the proposed project in this EIS are the use of mass burn or refuse-derived fuel processing of waste at the Greyhound site or the Pacific St. site. It is understood that these are not the only solid waste management options available to the county, nor are they the only solid waste management options under consideration by Hennepin County. The project currently under environmental review is for a facility and the ancillary transfer stations to collect Hennepin County waste and process 1,000 tons per day of that waste in a resource recovery facility which has the capability to co-generate electricity and to provide steam to

potential users in downtown Minneapolis. The project will process only 40 percent of the waste generated in the county. This project does not eliminate the need for other solid waste strategies that may include source separation, waste reduction and composting. The proposed project is one element in the County's comprehensive plan for abating the practice of land disposal of mixed municipal solid waste. The alternatives presented in the EIS are those that were determined reasonable for the project by the Council in the scoping process.

2.16.2 Cancer Risk Assessment

Mr. Davis conveyed an additional copy of the report by Commoner, et al, critiquing the Human Health analysis within the DEIS. Issues raised through this report are common to several commentors. Further analysis of human health risk has been completed for the Final EIS; this work is included in Section 3.2.

2.16.3 Emissions Control

The assumptions in the DEIS Human Health section did not include any factor for control of dioxin (PCDD) and furan (PCDF) emissions for the flue gas stream. The DEIS discussion of health impacts may be appropriately considered a worst plausible case. Two papers have been submitted by other commentors that discuss the relative efficiency of the proposed pollution control equipment for the control of the PCDD and PCDF. The papers are titled "Reduction of Dioxins by Spray Dryer Absorption from Incinerator Flue Gas" by Nielsen, et al., and the "Bay Area Resource Recovery Facility Project Application for Certification Appendix J: Supplemental Environmental Information - Health Risk Assessment." The papers indicate that the proposed type of air emissions controls for the project may achieve up to 90 control of dioxin/furan emissions. Further discussion may be found in Section 3.2 on page 3-10.

The information concerning the formation of PCDD and PCDF as the combustion gases cool has been discussed by Commoner and Konheim in information provided to the Council. The mechanism for formation of PCDD and PCDF is not clearly understood. To estimate emissions from the proposed project, the EIS has utilized monitored emissions from similar existing facilities--hence emissions found actual stack samples, emissions found to be present irrespective of hypothesized points of synthesis.

2.16.4 Ash Disposal

The Council acknowledges that some fly ashes from resource recovery facilities have been found to be hazardous by the U.S. Environmental Protection Agency's (EPA) extractable pollutant test, based on elevated levels of lead and cadmium. Like most American resource recovery plants, fly ash and bottom ash from the proposed project will be combined as a function of plant design. This forms a single ash product that, in testing from other facilities, does not constitute a hazardous waste. A discussion of ash handling and disposal is provided in the responses addressed to MPCA comments.

2.16.5 Bioaccumulation

The comments concerning bioaccumulation and the potential synergism of PCDD and other compounds are subjects that affect the potency slopes for the compounds. U.S. EPA potency slopes were employed for the DEIS and Final EIS health risk

)sessments. Further discussion of health risk and the effect of different assumptions for potency may be found in Section 3.2.

2.17 Hulic B. Ratterree, Manager, Technical Services, Blount Energy Resource Corp.

Mr. Ratterree transmitted additional information from Konheim which contains very recent data on resource recovery dioxin emissions and also includes a critique of the report from Commoner, et al. Mr. Ratterree provided greater detail on the expected operating conditions of the proposed resource recovery facility and noted that they are comparable to the Signal Westchester facility in most respects.

In addition to the DEIS assessment of worst case health risk, the Final EIS includes a reasonable case scenario for health risk which utilizes the recent findings about Westchester emissions. This analysis is described in Section 3.2.

2.18 Dr. Robert A. Kreiger, Research Scientist, Minnesota Dept. of Health

Air quality and human health comments submitted by the Department of Health are addressed in the topical responses in Section 3.

2.19 Thomas J. Kalitowski, Executive Director, Minnesota Pollution Control Agency

)19.1 Noise

The Minneapolis noise regulations have been discussed by HDR in their Environmental Technical Report 4: Noise. The following passage is directly from page 2-5 of the report.

> The original Minneapolis noise ordinance preceded the state standards, and it describes the violation criteria in a unique fashion. The limitations are presented in table 2-7 (attached from HDR's work). The ordinance prohibits noise that exceeds the ambient level by more than 60 dBA and applies Category III limitations during all hours on Sundays, and state and federal holidays.

This ordinance exempts sounds emanating from motor vehicles on traffic-ways of the city and pile drivers, jackhammers and other construction equipment from the above standards. However, it prohibits, as discussed before, the use of construction equipment between the hours of 7 p.m. and 6 a.m. on weekdays or during any hours on Saturdays, Sundays, and state and federal holidays except under permit. It further states that no such equipment shall be operated at any time if the sound level from operation exceeds 90 dBA.

The Council notes that that the agency feels that 3 dBA is perceptable where the Council's consultant did not. It is clearly marginal and subject to disagreement.

e DEIS noise forecasts are based on comparison of sustained noise levels with ate standards. The DEIS does not calculate the noise impact of the proposed facility according to the Minneapolis noise standards.

The comment that significant noise impacts would be experienced on 20th Av. S. is correct in that the truck traffic to the facility will travel 20th Av. S.

Further discussion can be found in the topical response, Noise, in Section 3.

The background noise levels at the Hopkins transfer station reflect existing traffic in the area. The traffic in the vicinity of the warehouses has been evaluated in the DEIS.

Measures to mitigate noise noted in the agency's comments are included in the topical response in Section 3, Mitigation.

2.19.2 Solid Waste and Hazardous Waste

2.19.2.1 Hazardous Wastes

Resource Conservation and Recovery Act hazardous wastes will not knowlingly be accepted at the plant as described in the DEIS. Household quantities of hazardous materials will be received at the transfer stations and the resource recovery plant. The proposer's contractor will be responsible for the operation of the plant. The company has not yet determined the measures that will be undertaken to prevent the acceptance of hazardous materials. The report titled "Management of Hazardous Wastes Generated by Households: A Report on the Problem and Recommendations for Action" provides a discussion of the materials that may be expected in a mixed municipal waste stream in the state of Minnesota. There are real occupational hazards associated with the handling of these materials in a resource recovery plant. Proper training will be required of all facility workers to comply with OSHA and Minnesota Right-to-Know regulations. The proposer has stated that the inspection of all wastes will occur at three points in the process. These inspection points are: a) the transfer station tipping floor, b) the resource recovery facility tipping floor, and c) the resource recovery facility pit area.

Since the proposed project utilizes mass burn rather that RDF technology, problems associated with the shredding of waste material will not occur at the facility. This will reduce the risk of explosion or uncontrolled combustion of the waste prior to processing.

The county has committed to the following guidelines for handling hazardous materials in the HDR report titled "Hennepin County Large-Scale Energy Recovery, Project Environmental Impact Analysis, Environmental Technical Report 2: Solid Waste." The guidelines are as follows:

- Hazardous wastes with flammable, reactive or explosive properties must be separated prior to processing;

- Collected hazardous waste must be stored in accordance with MPCA rules;

- If quantities or storage period falls within MPCA guidelines, an MPCA facility permit will be required; and

- Collected hazardous waste must be disposed of or treated at licensed hazardous waste management facilities.

The DEIS states that the combustion temperatures and residence time in the incinerator would be high enough to destroy most organic compounds. A more complete discussion of emissions may be found in the Air Quality and Human Health sections of the DEIS and under these topic headings in Section 3.

19.2.2 Solid Waste

The MPCA expressed concern that Hennepin County does not have sufficient disposal space for the ash and residuals. The Metropolitan Council is responsible for solid waste planning in the region. As part of that planning role, the Council has developed a landfill space development schedule to serve the region including Hennepin County. The landfill development schedule described in the DEIS is meant to ensure adequate land disposal capacity for mixed municipal solid waste and residuals through the year 2000.

The worst case assumption would be that the ash would be determined to be hazardous. Under this assumption, the material would need to be treated or disposed as a hazardous waste. No facilities are currently available in the state of Minnesota to dispose of hazardous wastes, so the material may require shipment out of state for disposal. Out-of-state shipment of ashes would reduce demand for existing or planned regional landfill capacity. The assumption that the ash from the proposed project is hazardous is not consistent with analyses of ash from existing resource recovery projects.

The MPCA has allowed other incinerator ashes from municipal waste to be disposed in sanitary landfills. The ashes disposed in this manner have met the MPCA codisposal permit guidelines. The ashes disposed are filled in separate cells or as a final layer on top of existing fill material. The co-disposal option could enable project ash to be disposed of at existing landfills in the region. It is possible that during the life of the proposed facility that several disposal facilities will be employed. The MPCA is expected to develop rules for the disposal of resource recovery facility ashes by the spring of 1987. The rules will likely be adopted prior to the time that the proposed facility will begin operations. The proposer has committed to handling the ash and residuals in accordance with the MPCA rules.

Hennepin County is currently in the process of developing an EIS on four candidate landfill sites, identified through a process specified by the Minnesota Waste Management Act to provide needed landfill capacity in the region. If one of these four sites is developed, it would be a viable option for ash disposal. Such a facility would likely be double-lined with leachate collection systems and extensive monitoring networks to prevent, to the greatest extent possible, groundwater contamination. The cost for development and operation of such a facility would be reflected through a tipping fee of about $28-$34 per ton of material disposed. The cost of existing sanitary landfills is expected to rise to $27 per ton by 1990. The difference in cost of the facilities appears to be modest at the time of this writing. The use of lined or unlined landfills and other potential disposal options for the ash will need to be approved by the MPCA. The cost of ash disposal will not impact the long-term economic viability of the proposed resource recovery facility. The county is contractually responsible to pay for ash and residual disposal.

The resource recovery facility will produce fly ash and bottom ash wastes or a combination waste of fly and bottom ash. If the facility produces the former, each type of ash will be tested under the direction of the MPCA to determine whether it is hazardous within the meaning of MPCA rules. MPCA rules provide that a waste is hazardous if it exhibits ignitability, corrosivity, reactivity, toxicity, extraction procedure toxicity or is an oxidizer, or if it meets the additional criteria at Minn. Rules Ch. 7045.0129 (1984). If either ash is determined to be hazardous, it would have to be treated or disposed of according to MPCA's hazardous waste rules. No facilities are currently available in the State of Minnesota to dispose of hazardous wastes.

Accordingly, the material would have to be shipped out of state for disposal. If either ash is determined to be non-hazardous, it would have to be disposed of accoridng to MPCA's solid waste rules. The two options available would be disposal in a landfill designed and operated exclusively for the disposal of ash or co-disposed with mixed municipal waste in a mixed municipal waste sanitary landfill. The former would be governed by MPCA's solid waste rules, Minn. Rules Ch. 7035 (1984). The latter would be governed by MPCA's guidelines for codisposal, implemented pursuant to Minn. Rules Ch. 7035.1700(V)(4). Under this option, ash would have to be disposed of in separate cells or as a final layer atop existing fill material.

If the facility produces a combination of fly and bottom ash, its disposal would be governed either by MPCA hazardous waste rules or solid waste rules, depending upon the results of testing for hazardous wastes.

Whether the facility proposer will be entitled to evaluate and dispose of facility ash as a combined waste stream or whether it will be obligated to test and dispose of each type of ash separately will depend upon whether, in the judgment of MPCA, the ash streams were combined as a result of facility design and waste management plans rather than as a subterfuge for avoiding the obligation to test individual wastes pursuant to Minn. Rules Ch. 7045.0215 (1984). If MPCA determines that the combined ash streams result from the former, the proposer will be entitled to evaluate only the combined ash to determine whether it is hazardous or not. If each type of ash is tested separately, and one or the other is hazardous within the meaning of MPCA rules, the facility might be eligible to be treated as a totally enclosed treatment facility, defined at Minn. Rules Ch. 7045.0020, subp. 92 (1984). In such a case, combining the bottom and fly ash to produce a non-hazardous waste would be permissible. Eligibility for status as a totally enclosed treatment facility may not be available for all types of hazardous materials.

If any ash is determined to be hazardous, it likely will be shipped out of state for disposal, until such time as a permitted hazardous waste disposal facility exists within Minnesota. Under this scenario, no existing or planned landfill capacity within the region or state would be used by this facility. Out-of-state shipment of ash would reduce demand for existing or planned regional landfill capacity. If the ash is not hazardous, its disposal will utilize either existing or planned landfill capacity within the region or state. In the Metropolitan Area the Metropolitan Council is responsible for solid waste planning. As part of that planning role, the Council has developed a landfill space development schedule to serve the region, including Hennepin County. The landfill development schedule described in the Council's Solid Waste Policy Plan and referenced in the DEIS provides adequate land disposal capacity for mixed municipal solid waste and residuals such as ash through the year 2000.

Hennepin County is currently preparing an EIS on four candidate landfill sites, identified through a process specified by the Minnesota Waste Management Act, to provide needed landfill capacity in the region. If one of these four sites is developed, it would be a viable option for ash disposal. Such a facility would likely be double-lined with leachate collection systems and extensive monitoring networks to prevent, to the greatest extent possible, groundwater contamination. The cost for development and operation of such a facility wou. be reflected through a tipping fee of about $28-$34 per ton of material disposed. The cost of existing sanitary landfills is expected to rise to $27 per ton by 1990. The difference in cost of the facilities appears to be modest at the time of this writing. The use of lined or unlined landfills and other

)tential disposal options for the ash will need to be approved by the MPCA. .he cost of ash disposal will not impact the long-term economic viability of the proposed resource recovery facility. The county is contractually responsible to pay for ash and residual disposal.

The proposer cannot determine at this time the exact characteristics of ash that may be produced at the resource recovery facility. The proposer provided a discussion of the possible composition of ash and residuals in the HDR document "Hennepin County Large-Scale Energy Recovery, Project Environmental Impact Analysis, Environmental Technical Report 2: Solid Waste" on pages 2-16 through 2-19. This information suggests that the combined bottom and fly ash is generally an acceptable material for codisposal in existing landfills. The report also notes that the MPCA has not yet finalized its new rules governing disposal of incinerator residue.

2.20 C. E. Samluk, President, Lombard Properties Inc.

Mr. Samluk's concerns identified the potential impacts of noise and odor.

The impacts for the Dataserv Building due to noise will be the result of the facility operations at the northwestern corner of the current Hennepin County, Hopkins Department of Tranportation site. The county has stated that the truck traffic from the proposed facility will not be allowed to traverse Second Av. S. The City of Hopkins also has authority to prevent truck traffic on Second Av. S. The proposed project would increase the noise level at the Dataserv building by 1 dBA. This is not a perceptible increase. The closest)te analyzed for the DEIS is approximately 400 feet closer to the proposed facility than the Dataserv building. Existing noise levels at the closer receptor are 62 dBA for L50 and 66 dBA for L10. With the proposed project, noise forecasts are 63 dBA and 67 dBA for L50 and L10 respectively. These noise levels are lower that the applicable state standards for an office building (65 dBA and 70 dBA for L50 and L10 respectively).

Odor is an issue raised by several commentors. There is additional discussion of potential impacts and mitigation in Section 3.1 on page 3-1.

2.21 Shirley Schmit, Resident, Hopkins

Ms. Schmit's comments addressed transportation, noise, litter and rodent impacts.

Responses to many common transportation issues are included in Section 3, Transportation. The noise impacts have been again reviewed for the Final EIS using Housing and Urban Development Agency standards. The conclusions originally drawn concerning noise impacts and existing conditions remain unchanged. For the Final EIS, a registered sanitarian from the University of Minnesota was retained to evaluate the potential impacts of litter and rodents in the area of the transfer station. The findings of his work are presented in Section 3.9.

2.22 Edina (Northwest) Citizens Comments

)e comments addressed transportation, noise, litter and rodent impacts, and public notice procedures.

Estimates of level of service for roadways with and without the project are included in Section 3, Transportation, as further discussion of other common

transportation issues. Noise impacts have been reviewed for the FEIS in accordance with Housing and Urban Development Agency standards. The conclusions drawn in the DEIS concerning noise impacts and existing conditions are unchanged. For the Final EIS, a registered sanitarian from the University of Minnesota was retained to evaluate the potential impacts of litter and rodents in the area of the transfer station. The findings of his work are presented in Section 3.9 on page 3-57.

The Council placed a public notice of EIS preparation in the Environmental Quality Board Monitor and the Minneapolis Star and Tribune. Notices of public meetings on the DEIS also appeared in both of those publications. The Council strives to inform the public of projects that have an impact on residents in the area. A news release on availability of the DEIS was also circulated to the local press. The Council has examined five alternatives to the proposed Hopkins transfer station site. The discussion of alternatives is contained in Part 2 of the DEIS.

2.23 James R. Alders and Pamela K. Graika, Northern States Power Co.

2.23.1 Alternatives

The alternatives identified in the scoping decision document are those deemed reasonable as options to the project. The proposed project is for a 1,000-ton-per-day facility to accept and combust, or process and combust municipal solid waste at the Greyhound site. The project is intended to co-generate electricity and to be located near potential downtown Minneapolis steam markets. The identified alternatives are reasonable to achieve these purposes.

The cost figures mentioned in the comments from NSP include only the processing plant and do not include the combustion facility. The figures used in the alternatives section of the DEIS include the cost of a dedicated boiler for refuse-derived fuel (RDF) on the project site as required by the proposer. The figures presented in NSP comments on costs for the proposed Anoka County facility include the costs of modifying boilers to accept RDF. The projected cost for processing the waste for the Anoka County project is $12 to $14 per ton higher than the projected cost of processing waste at the proposed facility. The cost estimates provided in the alternatives section do not appear unreasonable for the project.

The thermal efficiency for the mass burn technology is lower than the power plant boilers cited in NSP comments. The cost of those boilers and the maintenance and operation of those boilers is also higher. The total net cost of the system appears to be the best criteria for evaluation of total system efficiency. Blount engineers have stated that the generator would be down no more than 7 days per year and 21 days every four to five years.

NSP commented on alternate sites for the project. The sites suggested by NSP do not conform to the project concept as developed by Hennepin County, and these alternatives were not found reasonable during the course of the EIS scoping process. The proposed resource recovery facility would process only about 40 percent of the average daily waste generated in the county. Other projects will need to be developed to accommodate the remainder, approximately 1400 tons per day. Reuter, Inc. has received an exclusion to process up to 4 tons daily. The alternatives suggested by NSP could be considered among options available for the county's consideration as projects in addition to the project evaluated by this EIS.

2.23.2 Air Emissions and Noise

NSP comments about emissions from both mass burn and RDF facilities are accurate. Data can be found to support the position that either technology will have lower emissions. The comparisons of the newest facilities for either technology show much lower pollutant emissions per ton of waste processed than facilities constructed prior to 1980. There does not appear to be sufficient justification to state which technology emits lower pollution levels. This is consistent with the text of the DEIS.

The noise generated by the pollution control equipment and combustion control equipment is the major source and would be roughly the same for either RDF or mass burn facilities. Overall noise at a site is highly dependent on existing noise levels. The effect of a facility in a quiet meadow is equal to the facility impact, whereas the effect of a facility on the noise in an urban industrial area will be that of the existing noise and the facility noise. Because noise is measured in a logarithmic scale system, a doubling of noise accounts for only a three-decibel increase. The sensitivity of the human ear is such that the same three-decibel increase is just barely noticeable. Noise impacts at any given site are not directly related to the impacts of the same facility at another location.

2.23.3 Landfill Abatement

NSP has noted that RDF technology can lead to greater landfill abatement. While this can be true under certain circumstances, it is dependent on the full range of operations proposed for the facilities. The salvage of materials may be accomplished at RDF facilities, but the material value is often much less than source separated material, and markets may not be readily available for recycled materials produced at RDF plants. The ash content of RDF is lower than mass burned material, but unless substantial ancillary systems, such as co-composting, are added to the RDF processes, the reject stream is much greater so that the total material potentially landfilled from RDF facilities can besomewhat higher.

2.24 Carl M. Jullie, City Manager, City of Eden Prairie

Mr. Jullie conveyed very specific comments about passages in the DEIS. The responses below address the concerns topically in the same order as they appear in the text of the letter sent to the Council.

2.24.1 Westwood Site

2.24.1.1 Air Quality

The transfer stations observed in the warmer months of 1985 during preparation of the DEIS did not emit noticeable odor beyond site boundaries. Rapid transfer of waste proposed for the planned facilities, supports the expectation that off-site waste odors will not be noticeable. Literature on the issue indicates that off-site odors from similar transfer facilities are primarily attributable to diesel exhaust from incoming and outgoing truck traffic.

24.1.2 Land Use

The DEIS notes in the section on Permits and Reviews that the county hasstatutory authority to override local zoning with the approval of the Council.

2.24.1.3 Noise

The L_{50} and L_{10} noise standards are currently in effect. A violation of either standard is considered a violation. The MPCA proposes to use the L_{eq} measurement in draft rules. Since the existing rules may change, the Council provided this information for reference.

2.24.1.4 Socioeconomics

Evaluation of property values or need for business relocation was not undertaken for alternate transfer station sites in the DEIS. The Council reviewed existing data for the sites where it existed and provided that information in the DEIS. The Westwood site mentioned was not under construction when the DEIS was written. The document reflects the conditions that existed at that time. Agencies that use the EIS will need to do additional investigation prior to permitting decisions to ensure that information on existing conditions is updated to refect changes in local environments. All of the sites are located in rapidly developing areas and the environment near many sites is changing markedly.

Neither the DEIS nor Final EIS have included cost comparisons for transportation of waste to alternate sites due to the potential number and complexity of scenarios, depending on the final mix of sites selected, their respective sizes and wastesheds, as well as final site selection for the resource recovery facility.

2.24.2 Railroad Site

2.24.2.1 Geology and Soils

The question of cost for site cleanup at the Railroad site has been raised by the DEIS. The statement was included to alert agencies that the topic requires additional investigation. Identification of the responsible parties for a potential site cleanup would be made by the MPCA.

2.24.2.2 Land Use and Zoning

The letter attached states ". . . if a choice must be be made to pursue consideration of an alternate transfer station site in Eden Prairie." The Council notes that the city is not trying to encourage the location of a transfer station in Eden Prairie. However, the following sentence appears in the same paragraph: "A transfer station would appear to blend in well with existing land uses; in fact, the new construction would probably enhance the area." The tone of the DEIS comments do not appear to mislead the reader concerning impact of development of the Railroad site.

2.24.2.3 Transportation

The rail lines passing the Eden Prairie sites are the same as those passing the Hopkins transfer station site. The impacts from the rail traffic would be the same as those in Hopkins. (See additional discussion in Section 3.5.

2.24.3 Greenhouse Site

2.24.3.1 Surface Water

The watershed district is responsible for approving the floodplain restoration. However, a grading permit should also be obtained from the city.

2.24.3.2 Socioeconomics

The cost figures for the facility are in 1985 dollars.

2.25 Charles Dayton, Ellen Sampson, Attorneys, City of Hopkins

The commentor provided very specific comments that will be addressed topically below.

2.25.1 Assumptions Underlying the EIS Process

The Council has the responsibility of providing a complete and accurate assessment of the environmental impacts of the proposed facilities within the bounds of information that can be reasonably made available during the period prescribed for EIS preparation by EQB rules. The Council does not currently have a position related to the proposed project or any of the sites. The statements from the cities commenting on the proposed sites and their alternatives have been included in Section 5 of the Final EIS. The information existing and produced by the proposer is more voluminous for the designated sites than the alternate transfer station sites. The level of effort and analysis has been reviewed and additional analysis has been done on the alternate sites for both the DEIS and the Final EIS to provide a reasonablycomparable level of information for each site.

2.25.2 Treatment of the Transfer Station in Comparison with the Burn Plant

The proposer has provided a great deal of information about the layout and operations of the proposed resource recovery facility. Comparable detailis not yet available for the proposed transfer facilities. The Council cannot provide specifics of construction and operation that have not been provided by the proposer.

2.25.3 Response to Criticism of Earlier Drafts

The earlier drafts seen by the City of Hopkins were written by several persons. The information contained in the DEIS released for public review reflects the consensus of the authors related to the City of Hopkins' concerns. The purpose of periodic meetings with city staff and other interested parties during preparation of the draft was to enable identification issues of concern, to verify information in hand, and to articulate differences of opinion and resolve them where possible.

Neither the DEIS nor Final EIS include comparisons for cost of transportation of waste to alternate transfer station sites due to the potential number and complexity of scenarios depending on the final mix of sites selected, their respective wastesheds and on final site selection for the resource recovery facility.

Noise is the issue most frequently cited by commentors on the DEIS. Many persons believe that noise from the facility will be discernable and intrusive. MPCA comments, however, agree with the DEIS findings that the noise increase will not be noticeable. The assumption from the commentors has been

that the DEIS considers the current violation of the noise standard to be acceptable. The EIS does not evaluate the acceptability of the current noise levels nor has the Council taken any particular position with regard to this issue. The DEIS recognizes that the area is currently in violation of MPCA noise standards.

2.25.4 Public Health Concerns

Conditions at the North Minneapolis transfer station were presented by Mayor Lavin during the January 16, 1986, public meeting. See responses in Section 1.

The issue of hygiene of the food warehouse facilities adjacent to the facility has been investigated by a registered sanitarian from the University of Minnesota. His analysis of this impact is provided in Section 3.9.

Proper facility venting has been used to prevent odor and litter impacts at other facilities and are discussed as mitigating measures for the proposed facilities.

The operations at a landfill allow long-term storage of waste in an uncontrolled environment. The consultant who prepared the DEIS has also prepared a discussion of conditions inside a resource recovery facility. The document prepared by Environmental Research and Technology entitled "Potential In-plant Pollution for the Ramsey/Washington County Waste-to-Energy Facility" is hereby referenced for a description of potential in-plant airborne contaminants for a proposed mass burn facility in Lake Elmo.

Specific procedures on how unacceptable wastes will be determined have not be provided by the proposer. This is an area that will require careful attention in the future when operating procedures for the facility are defined, in interaction with waste haulers, and it is expected, also during preparation and review of the facility permit application. Further discussion of Unacceptable Waste can be found in Section 3.

2.25.5 Specific Comments

2.25.5.1 Description of the Site

Dr. Gray's comments are addressed in the responses to public hearing comments in Section 1.

2.25.5.2 Noise

The term "insignificant" is used to explain a 2 dBA increase in sound intensity. This is a standard definition in Housing and Urban Development manuals referenced in the DEIS. The commentor may wish to review the source documentation for a complete and accurate description of noise analysis.

The impact of a facility on the noise environment are directly related to the current noise levels in an area. An industrial area such as that of the food warehouse area in Hopkins produces higher levels of noise than other land uses. The transfer station will produce impacts similar to existing land uses.

2.25.5.3 Value of Property

The topical response in Section 3.4 provides parcel identification numbers and

1985 assessed properties.

2.25.5.4 Cultural Resources and Aesthetics

The transfer station will be much taller than the surrounding buildings. This does not mean that the appearance of the structure need be unpleasant. The county has not yet selected an exterior treatment for the proposed Hopkins transfer station. Landscaping will be planted to improve site aesthetics and to conceal the refuse trucks that would be at the proposed site. The county has indicated that it would work with the City and its residents to aid in the developing a suitable exterior for the facility.

The MPCA guideline for 1,000-foot separations between active landfills and residential areas is just that, a guideline. The MPCA does not have regulation prohibiting the construction of transfer stations within 1,000 feet of a residential area. Further discussion of this issue is included in Section 3.

2.25.5.5 Odor

The county has not provided the Council with specific information concerning mitigating measures to be utilized to control odor. As noted in earlier responses, rapid transfer of waste is a measure which will lessen potential for off-site odor. The waste will be diverted from the site if for some reason normal transfer operations are not maintained.

2.25.5.6 Land Use and Zoning

The precise topics of concern are property value and food sanitation. The food sanitation question is addressed above in the response to this commentor's concerns (2.25.4). The issue of property value is related to perceptions as discussed in Mr. Patchen's comments. The operations of the proposed facility and aesthetics of the facility have the greatest potential for impact on property values.

2.25.5.7 Traffic

The relative congestion in St. Louis Park is related to the length of the turn lanes to the site. The queuing room on County Rd. 3 helps to mitigate the impacts of increased traffic. The topical response to comments in Section 3, Transportation, provides additional discussion.

The Final EIS has provided additional information as requested by the commentor about many topics. However, this additional information and analysis does not lead to significant modification of the DEIS findings.

2.26 Charles K. Dayton, Attorney, Representing the City of Hopkins

The commentor stated that the project was not described in sufficient detail. From the DEIS, the public is able to identify the purpose, size, scope, setting and geography of the proposed facility in considerable detail. The anticipated phases of development cannot be determined from the document. The DEIS states that the facility will take 9-12 months to be constructed. The impacts of construction and operation are provided. The timing of construction and potential expansion of facilities is not addressed. The timing of the project is not known to have a major impact on the environmental impacts described in

the DEIS. The EIS describes existing conditions and potential impacts at the time of its writing. Subsequent to the EIS, various public bodies will be considering actions to approve or permit the proposed or alternate projects. These reviews provide opportunity to recognize and consider additional information that may be available in the future but which was not reasonably available for this EIS. Sufficient information has been provided to assess the potential impacts of the facilities.

The commentor suggested that the Council did not give sufficient weight to the 1,000-foot MPCA guideline for separation of solid waste facilities from residential areas. This discretionary MPCA guideline relates to distance between residential landuses and active landfill areas. A discussion of the impact of close adherence to a 1,000-foot separation guideline is provided in Section 3.6. The commentor expressed concern that the DEIS did not sufficiently examine the potential impact on food businesses closely enough. The issue of hygiene of the food warehouse facilities adjacent to the facility has been investigated by a registered sanitarian from the University of Minnesota. His comments related to this issue are provided in the topical response in Section 3.9.

The commentor expressed concern that insufficient information had been developed to provide an assessment of the impact of the proposed facility on development in Hopkins. Council staff has spoken to developers that are working in areas where transfer stations have been located. The developers chosen are not currently pursuing projects in the state of Minnesota and have no apparent bias in opinion about this project. The discussion of their experience with development impacts and property value impacts is located in the topical response in Section 3.4. The level of analysis for the proposed sites is equivalent to analysis performed on the alternate sites. Differences in the extent of discussion are a result of data supplied by the proposer.

The commentor expressed concern that the analysis of alternatives was cursory in comparison to the proposed sites. The Council has made a concerted effort to give due consideration to all of the sites described in the DEIS. The information existing for the proposed sites is more extensive than for the alternate sites. See also response above in this section, 2.25.1.

Dr. Gray provided information on the question of opportunity cost. The discussion and response to his comments are provided in Section 1 and also in topical responses in Section 3.8.

2.27 Thomas Balcom, Review Coordinator, Department of Natural Resources

The Brooklyn Park East transfer station site and alternatives are located adjacent to the Shingle Creek floodplain, a protected wetland. Construction on the Brooklyn Park East site would require fill. Balcom recommends that if this site is selected, a maximum level of mitigation be implemented. Measures suggested include avoiding construction on the floodplain and routing storm water through a retention basin during and after construction.

Analysis completed by staff of the Council Parks and Natural Resources Division points to a need for reorientation of the building and access roads to avoid construction in the floodplain/wetland. The current proposal contradicts the Metropolitan Council's policy of not allowing fill in a wetland for commercial or industrial purposes.

The transfer station layout has been designed to avoid filling or other direct disturbance to the wetland plant community along the west edge of the site. Construction of the proposed facility will, however, require that the central portion of the site within the 100 year floodplain is filled; alternative site layouts which completely avoid this area are not feasible. To the extent possible, natural drainage toward the west will be maintained by final grading of the site; however, some floodplain encroachment is an unavoidable impact of the proposed project. All mitigation measures which are practicable will be employed both during and after construction to minimize this impact.

The mitigating measures discussed in the EIS process provide information for agencies to condition permits for facilities. The discussion of mitigating measures is not intended to be a gauge of the proposers intent to employ the measures.

2.28 James H. Lindau, Mayor, City of Bloomington

The commentor expressed concerns in many areas. The response to comments will follow the comments provided topically.

2.28.1 Air Quality

The DEIS discussed the potential for odors at all of the transfer station sites. The proposed facilities are not expected to be a source of odor. The draft suggests that the refuse trucks arriving at the plant may be a source of odors. The magnitude of this problem is unknown. The DEIS states that this impact may be minimized by encouraging rapid tipping of trucks at the facility and preventing on-site queuing of vehicles during operations. The county has not provided specifics of the air pollution controls, if any, that are to be used at the proposed facilities. The permitting agencies are encouraged to give this subject special attention during the permitting process. Literature reviewed on this subject indicates that for properly operated transfer facilities, off-site odors are most influenced by diesel exhaust from incoming and outgoing truck traffic.

The indirect sources of air pollution include truck-generated dust and vehicle-related emissions of carbon monoxide. The need for an indirect source analysis is predicated on the number of vehicle trips that a proposed facility will generate. The number of trips generated by the proposed facility is one-tenth the number needed to be considered in an indirect source analysis. The topic of indirect source impacts is discussed further under the Air Quality heading in Section 3.

2.28.2 Surface Water

The DEIS does not consider total volumes of runoff that will be directed to the storm sewer and, hence, to the watershed. The runoff from the Bloomington East site should actually decrease due to the net reduction of impervious surface at the facility compared to existing conditions. While initial runoff quality may be lower than the existing runoff due to the difference in the traffic on site, mitigating measures such as baffles, sedimentation basins or skimmers would lead to a net improvement. The quality of the runoff from the proposed facility has not been quantified. The county has committed to site policing to prevent the escape of litter from the facility. The site cleanup procedures should help to ensure that the watershed will be protected from solid waste contamination. The watershed volume has not been calculated in preparation of the EIS.

2.28.3 Transportation

The DEIS included the transportation system improvements that were pending in the vicinity of the proposed sites. Proposed, but unscheduled, improvements were not considered in the analysis. The impacts on the level of service of a facility would be more adversely impacted by the existing conditions than it would if the intersection around the facility were upgraded. The improvement in the intersection of W. 98th St. and James Av. S. is a mitigating measure identified in the DEIS.

2.28.4 Noise

The noise level assumed at the facility included the effect of the truck movements near the receptors. The City of Bloomington has a long history of addressing noise concerns. It is true that noise from refuse trucks in a residential area will increase the noise level significantly. The effect of the transfer station on the area in which the site exists will have the predicted impact due to the existing noise at the receptors. The Council has noted that the existing noise levels are above standards and that the noise levels will increase at the receptors in the vicinity of the proposed facility.

2.28.5 Utilities

The facility is expected to use a street sweeping type of process to clean the floors of the facility. The process is not expected to generate industrial waste water from the facility. The water use for sanitary services would generate an average flow of only one gallon per minute.

2.28.6 Socioeconomics

The commentor expressed concern that insufficient information had been developed to provide an assessment of the impact of the proposed facility on development in Bloomington. For the Final EIS, developers have been contacted that are working in areas where transfer stations have been located. The developers chosen are not currently pursuing projects in the state of Minnesota so do not hold any bias in opinions about the proposed projects. The discussion of the potential development impacts and property value impacts is located in Section 3.4. It is the Council's understanding that the former Donaldson Co. property is under commercial development with full knowledge of the proposed Bloomington transfer station. The developer has spoken to Hennepin County staff according to Mr. Warren Porter, Hennepin County.

2.28.7 Ecological Resources

The DEIS did not predict the loadings on the watershed and the Minnesota River, the ultimate receiving water body. The mitigations section identified storm water holding ponds and in-line baffles to prevent sediment and oil from traveling off-site. These measures, if employed, should improve the quality of runoff to exceed the existing site runoff quality. The total concentration of contaminants that would result from the 5 acre site is not currently known. No unique ecological resources are known at sites.

2.28.8 Solid Waste

The county has not yet determined the precise measures that will be undertaken to prevent the acceptance of hazardous materials. The report entitled

"Management of Hazardous Wastes Generated by Households: A Report on the Problem and Recommendations for Action" provides a discussion of the materials that may be expected in a mixed municipal waste stream in the state of Minnesota. There are real occupational hazards associated with the handling of these materials in a resource recovery plant. Proper training will be required of all facility workers to comply with OSHA and Minnesota Right-to-Know regulations. The county will be required in the permitting process to identify specific measures and methods to handle hazardous materials.

The commentor expressed concern that the analysis of alternatives was cursory in comparison to the proposed sites. The Council has made a concerted effort to give due consideration to all of the sites described in the DEIS. The information existing for the proposed sites is more extensive than for the alternate sites. Section 4 of this document has been incorporated to provide greater ease of comparison of existing conditions, impacts and mitigation for the various sites.

2.29 Gordon Wagner, City of Minneapolis

The commentor expressed concern about alternatives to the resource recovery facility.

The project proposer has stated that the facility will generate steam and electricity. The alternate site selected for evaluation was considered to be adaptable to steam generation for either downtown Minneapolis or the NSP Riverside power plant. The proposer has not indicated that the cogeneration aspect of the project has been dropped. Alternatives analyzed for the EIS are those identified during extensive consideration during the scoping process at those reasonably available.

The commentor suggested that the stack should be constructed such that samples of the stack gases could be taken at the top of the stack due to the possible formation of dioxins in the stack beyond the pollution control equipment.

The suggestion may not be necessary or beneficial for the following reasons:

1. The effects of wind at the top of a stack normally make it impossible to obtain a representative sample; and

2. The exit gas temperatures are well below the temperatures necessary to promote dioxin synthesis. The analysis of stack gases is typically done between 4 and 10 stack diameters above the inlet to the stack. This should be acceptable in this case. In any event, the selection of sampling points and frequency will be resolved in the permit application process.

The county has not yet determined that the ashes from the material will present any special hazards to the employees at the plant. The contractor will need to test the waste materials generated at the plant and determine the correct handling measures.

The county has not yet determined the measures that will be undertaken to prevent the acceptance of hazardous materials. The report entitled "Management of Hazardous Wastes Generated by Households: A Report on the Problem and Recommendations for Action" provides a discussion of the materials that may be expected in a mixed municipal waste stream in the state of Minnesota. There are real occupational hazards associated with the handling of these materials in a resource recovery plant. Proper training will be required of all facility

workers to comply with OSHA and Minnesota Right-to-Know regulations. The county will be required in the permitting process to identify specific measures and methods to handle hazardous materials. The identification of unacceptable waste is addressed in a topical response in Section 3.11.

The issue of litter control and site sanitation has been addressed in Section 3.9.

2.29.1 Governmental Approvals

Mr. Wagner stated that the city has review authority that was not listed in the governmental approvals section.

The DEIS includes an oversight in not noting the environmental review provision of the City of Minneapolis Zoning Ordinance.

The Council does not know how research currently being conducted at the MPCA will affect the permitting of the resource recovery facility. The time frame for completion of the study is March of 1987. This is after the projected time frame required for the EIS. The MPCA is currently revising their rules, including those for resource recovery facilities. The rules are not expected to be adopted until the summer of 1987.

2.29.2 Affected Environment

The DEIS incorrectly stated the traffic directions in downtown Minneapolis. This has been noted in the topical Transportation response in Section 3.

2.29.3 Environmental Impacts

The MPCA typically requires periodic testing for stack emissions and wastes to be disposed. The frequency varies depending on the specific material. The MPCA will apply its best judgment to the permitting process.

The issue of just how much mixed municipal solid waste would go into a landfill has concerned the Council for some time.

The issue the commentor is most interested in is that of landfill space utilization. Landfills continue to compact and decompose for up to eight years. The ultimate space occupied by refuse is much less then the initially compacted mixed refuse at the facility. Several studies have been conducted in other areas of the country. The studies by the New York Environmental Facilities Corporation and the Citizens for a Better Environment estimate a compaction ratio of 2.7 and 2.8 from material received at the gate.

Regionally, the information is somewhat more subjective. The Council looked at three landfills to see the gate yards of waste that were disposed compared to the volume filled. The landfills selected were Pine Bend, Flying Cloud and Burnsville. These landfills were selected because they are in various locations and accept varied waste streams. The compaction ratios were:

1. 3.8 for Pine Bend
2. 2.5 for Flying Cloud
3. .85 for Burnsville

The average compaction of the landfills is a ratio of 2.5. This is much lower than the data from other areas. The record-keeping for the volumes of waste

received is questionable, as is the actual space that has been filled.

Once ash is landfilled, little additional settling or compaction will occur. When mixed waste is landfilled, over time, decomposition, settling and compaction further reduce the space occupied. For example, if 1,000 tons of mixed waste were landfilled each day in a modern landfill, 565 acre feet of space would be occupied at the end of one year. At the end of 10 years, about 4,400 acre feet would be occupied. If no further activity occurred for another 20 years, settling and decomposition have a significant effect, with final capacity occupied reduced to less than 2,000 acre feet. Alternatively, if the same 1,000 tons per day of mixed waste is processed at a mass burn facility, at the end of one year, ash and other reject materials would occupy about 93 acre feet of landfill capacity. At the end of ten years operation, about 900 acre feet of capacity would be required for ash and rejects. If no further activity occurred for another 20 years, the ash and rejects would still occupy about 900 acre feet.

2.29.4 Human Health

The issues related to human health are addressed at length in the topical response in Section 3.2.

2.29.5 Transportation

Issues related to transportation impacts of the proposed facility and the transfer station are addressed in Section 3.2.

2.29.6 Aesthetics

The commentor expressed concern that the exterior treatment of the building may be inappropriate. The concerns of the city will be addressed by the zoning and building permit discussions with the city zoning commission. If the county is unable to obtain the necessary permission from the city, the county will need to request Council approval to override the city's authority.

The concern about alternatives has been addressed in part in the scoping decision document and the solid waste management section of the DEIS. The project and the alternatives under consideration as options to the proposed project are the use of mass burn or RDF processing of waste at the Greyhound site or the Pacific St. site. It is understood that these are not the only solid waste management options available to the county, nor are they the only solid waste management options under consideration by Hennepin County. The project currently under environmental review is for a facility and the accompanying transfer stations to collect Hennepin County waste and process 1,000 tons per day of that waste in a resource recovery facility which has the capability to co-generate and electricity and to provide steam to potential users in downtown Minneapolis. The project will process only 40 percent of the waste generated in the county. This project does not eliminate the need for other solid waste strategies that may include source separation, waste reduction and composting.

9.7 Alternatives

Recycling, composting (including co-composting) and RDF incineration are options which could achieve all or part of the landfill abatement objectives of the proposed resource recovery system. (RDF alternative is discussed in Part II, Section 3.0.)

With respect to low-technology alternatives of recycling and composting/co-composting, if implemented on sufficiently large scales, they could achieve all or part of the landfill abatement to be achieved by the proposed resource recovery facility. Since the proposed facility would handle only 40 percent of Hennepin County's waste, increases in levels of recycling and composting/co-composting likely could not achieve all of the landfill abatement to be achieved by the proposed facility.

Implementation of larger-scale recycling would have the following beneficial impacts: facilitation of source separation of household hazardous wastes out of the mixed waste stream; reduction in the depletion of certain natural resources; energy conservation in industries using recyclables; extension of equipment life for firms engaged in resource and/or energy recovery; impetus to the development of new or expanded markets for recovered materials through the development of reliable supplies in substantial volumes; increased public awareness of waste generator responsibility with respect to waste generation and disposal.

Recycling can be implemented through source separation by waste generators either on a curbside pickup or drop-off center basis. Recycling also can be implemented by operators of resource recovery facilities at the front end of resource recovery facility operation. Implementation of source separation recycling may result in increased collection and/or transportation costs above and beyond the collection and transportation costs of landfilling the same materials. Recycling at the front end of a resource recovery facility operation will result in certain capital and operating costs above and beyond those which the facility would incur without recycling. If recycling is implemented through the use of intermediate processing facilitites, which function to aggregate quantities of source separated material and to process such materials into marketable forms (crushing, baling, etc.), the capital and operating costs of such facilities must be added to the collection and transportation costs of recycling by source separation.

Costs incurred as a result of recycling activity are offset to the extent that the recovered materials are successfully marketed for use or reuse. Solid Waste Market Identification and Expansion Report (Metropolitan Council publication No. 522-86-030, Feb. 5, 1986) identifies local markets for recyclable materials and describes local market conditions.

Whether recycling makes economic sense depends upon a comparison of the total collection, transportation and disposal costs of recycling methods, landfilling and resource recovery (mass burn or RDF production). For one view that curbside recycling costs less per ton than landfilling or recycling done at a resource recovery facility, see letter from Thomas J. Kalitowski (MPCA) to Donald M. Fraser (City of Minneapolis), dated April 9, 1986.

Whether recycling activities should be undertaken only if they are economically self-supporting or whether they should be provided as a public service is an underlying issue. In any event, there is a finite limit to the amount of recyclable material to be extracted from the mixed waste stream. The Metropolitan Council estimates that 100 percent of the glass, metal, high-grade office paper, corrugated cardboard, yard waste and wood in the mixed waste stream amounts to 36 percent of the region's mixed waste stream.

Composting/co-composting of mixed municipal waste would have the following beneficial impacts: improved soil quality where compost is used as a soil amendment (assuming compost use is new and is not displacing current soil

amendment use); reduction in the use of chemical fertilizer (to the extent the compost contains available nitrogen); reduced costs to public agencies to maintain highway rights-of-way, public parks and grounds (assuming that the compost would be available at no charge or a charge less than equivalently used materials).

Costs of composting may be recovered by successful marketing of compost for use. Currently no market exists for solid waste compost. The usefulness of compost varies with the quality of the end product. Compost derived from mixed municipal waste may contain organic or other contaminants as well as pieces of non-degradable plastic, metal and/or glass. Compost derived exclusively from yard waste (grass clippings and leaves) does not have these drawbacks. Composting of 100 percent of the yard waste entering the region's mixed waste stream would result in a 9 percent reduction in waste generated for disposal.

Co-composting of mixed solid waste with sewage sludge is an alternative solid waste management method. The potential of large-scale sewage sludge co-composting with mixed solid waste to reduce the need for landfill disposal was analyzed in The Potential for Large-Scale Sewage Composting and Co-composting in the Metropolitan Area (Metropolitan Council publication No. 12-84-033, March 1984).

Residential backyard composting results in few, if any additional costs over landfilling. Implementation of municipal yard waste composting facilities results in certain collection, capital and operating costs. Large-scale composting results in collection, capital and operating costs, as well as land use impacts associated with large scale operations. Yard waste represents only 9 percent of the total solid waste stream.

2.30 Paul J. Mandell, West Side Citizens Organization (St. Paul)

Mr. Mandell expressed concern that the forecast health risk from the plant may not be accurate. He questioned the methods used to assess potential air pollution impacts and questioned the process through which the site was selected.

The commentor's health risk concerns were articulated by several others. The estimate of health risk and identification of how it would vary if different key assumptions were altered is included in Section 3, 3.2 Human Health.

Both the DEIS and the topical response, 3.1 Air Pollution in this document describe the ground level impacts of the proposed facility for particulates and other criteria pollutants. The basis for model selection and input data is also described.

Assessment of the process used for project selection is inappropriate for any EIS. The EIS is required to identify project impacts and to evaluate reasonable project alternatives.

SECTION III

TOPICAL SPECIFIC RESPONSE TO COMMENTS

3.1 Air Quality

3.1.1 Comments

The responses in this section address specific comments expressed by the MPCA in a letter to Mr. Paul Smith dated Jan. 30, 1986.

1. The MPCA has asked that it be indicated on pages 2-2 and 2-5 of the DEIS that the applicable MPCA air quality permit for the project is an air emission facility permit (not an air emission facility installation/operating permit as named in the DEIS). The installation and operational phases of the air quality facilities are now covered under a single permit.

   The proposed facility facility will incorporate a fabric filter device as part of the air quality control system which will be able to meet the 0.01/gr/dscf for particulate emissions; however, the present state and federal particulate emission limitations do not require this degree of control.

2. The MPCA has made the comment that although the New Brighton Waste Energy Systems proposal was given an exclusion as described in the DEIS, the proposal was denied a special use permit by the New Brighton City Council in December of 1985. (This exclusion was revoked in early 1986.)

3. The MPCA has asked for a discussion regarding the DEIS comment that state-of-the-art boiler design and operation would be used to optimally reduce the concentrations of NO_x, CO and HC.

   Although paragraph 5 of the DEIS Section 4.2.3.1, page 4-16 discusses state-of-the-art boiler design and operation, specific credit for such measures were not taken in the air quality modeling. If credit for design and operational features were taken, emissions of NO_x, CO and HC could be reduced by as much as 30 percent.

4. The MPCA has requested discussion of the redesignation of the area for SO_2 and CO from nonattainment to attainment.

   The proposed project site is within an area currently classified as nonattainment for TSP, SO_2 and CO concentrations. The EPA applies stringent barriers to construction in nonattainment areas for new sources which will emit over 100 tons per year of a criteria pollutant for which the area is designated nonattainment.

   The MPCA has applied for redesignation of the Twin Cities Metropolitan Area to attainment for SO_2 and CO. The EPA is expected to approve the provisions or timing of permitting for the facility. Redesignation for CO is expected in 1986.

5. The MPCA has requested that page 3-13 of the DEIS should have an addition to the second condition regarding waiver of the PSD program analysis. The text should read "existing air quality in the source impact area is below the de minimis levels and PSD increments and National Air Quality Standards (NAAQS) are not threatened."

6. The MPCA has requested documentation that NESHAPS do not apply to the design or operation of the resource recovery facility (page 3-19 of the DEIS).

   Emission standards have been promulgated in 40 CFR 61 for several pollutants. The NESHAP to date do not apply specifically to the proposed resource recovery facility. The NESHAP for beryllium, for instance, (40 CFR 61, Subpart C) applies only to incinerators which process "material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this subpart." The proposed facility is not scheduled to accept beryllium or any other hazardous wastes. In addition, it is not a generator of hazardous wastes. An attached memo, Figure 1, from the Director of the U.S. EPA Division of Stationary Source Enforcement, dated July 1979, confirms the conclusion that resource recovery facilities are exempt.

7. The MPCA has noted that the air quality modeling input data for certain sources is subject to change.

   It is recognized that the Real Time Air Model (RAM) air quality modeling input data for several specific sources is subject to change (page 4-16 of Section 4.2.3.2 of the DEIS). The modeling that was undertaken in the DEIS is, however, believed to be conservative and represent worst case conditions. The MPCA has indicated that the final revisions to the data base are not available, and would likely be relatively minor (telephone communication with Dennis Becker, MPCA, March, 1986). Changes (yet to be finalzed) in modeling input data for the largest sources: GAF facility, the FMC Northern Ordinance Plant and the Northern States Power Co. Riverside plant and for the numerous smaller sources modeled; if minor as anticipated, would not significantly alter the study conclusions regarding compliance with all applicable ambient standards. Further analysis will be required for facility permitting. MPCA will have an opportunity to incorporate additional information available during its permit review. The modeling inputs used when the DEIS was prepared were appropriate at the time. It is recognized that they are subject to future change. The changes, however, have not been finalized and, therefore, are not available for inclusion in the FEIS.

8. The MPCA has indicated that the monitored SO_2 concentrations (see page 4-24 and 4-26 of the DEIS) used for the PSD analysis may be not representative of the absolute worst case background SO_2 concentrations. The background concentrations are acknowledged by the MPCA, in a letter to Mr. Paul Smith dated Jan. 30, 1986, as however, appropriate for use in the DEIS air quality modeling analysis.

9. The MPCA has requested information on the auxiliary burners.

   The auxiliary burners described on page 1-6 of the DEIS will be designed at 20 percent heat input. They will be fired by either natural gas or oil.

10. The MPCA has asked for clarification regarding the SO_2 removal efficiency of about 70 percent shown in the DEIS.

The SO_2 removal efficiency of 70 percent shown in Table 4.2-1, page 4-15, is that proposed by the contractor. Although the scrubbers are designed to remove as much as 90 percent, for purposes of analysis a worst case removal efficiency of 70 percent was utilized. The impacts of the project would not be significant at the stated 70 percent removal efficiency and would be even less at the design removal efficiency. If the applicant operated the dry scrubbing system at 90 percent rather than 70 percent removal efficiency, SO_2 uncontrolled emissions would be reduced by about 66 percent to less than 100 tons per year, making it a minor source.

The MPCA has indicated that a 90 percent removal rate would result in the facility being a minor source of SO_2.

The contractor has not made a commitment to guarantee a 90 percent removal efficiency for the spray dryer scrubber. Although the scrubber's design removal efficiency is stated at 90 percent, manufacturers are generally reluctant to guarantee actual removals as high as the design specifications. Removal efficiency is a function of maintenance procedures, operating temperature and operating practice. Considerable costs could be incurred to consistently maintain operations at the 90 percent level. The DEIS discussion of SO_2 impacts is representative of the impacts from the project as proposed with the 70 percent removal efficiency.

Requiring maintenance of a spray dryer scrubber efficiency of 90 percent is a potential mitigating measure. This would result in the project being a minor, not a major, source of SO_2. Rather than expected emissions of 176 TPY of SO_2 with a 71 percent removal efficiency, SO_2 uncontrolled emissions would be expected to be reduced by 66 percent to about 60 tons per year at 90 percent removal efficiency.

11. The MPCA has commented on the use in the DEIS of a particulate matter emission rate of 0.01 gdscf.

The estimated particulate matter emission rate for the proposed project is currently being revised by the contractor (telephone communication, Blount, March, 1986) to 0.02 grains/dry standard cubic foot (dscf) corrected to 12 percent CO_2 as part of the contractual arrangement between Hennepin County and Blount. As part of the contract commitment with Hennepin County, the vendor will be responsible for meeting this emissions limitation. The contract agreement is the justification for using such an emissions rate.

The proposed facility will incorporate a fabric filter device as part of the air quality control system which will be able to meet the 0.01 gr/dscf for particulate emissions; however, the present state and federal particulate emission limitations do not require this degree of control.

12. The MPCA has requested information on the NITEP Testing Program in Ontario, Canada.

The National Incinerator Testing and Evaluation Program (NITEP) pilot project in Flakt, Ontario, uses dry scrubber and baghouse control

Minnesota Pollution Control Agency

October 24, 1985

Mr. Anthony Colella
Meteorologist
ERT
696 Virginia Road
Concord, Massachusetts 01742

Dear Mr. Colella:

In response to your letter of October 11, 1985, and subsequent telephone conversations with me, here are my comments for you and David Shea about HDR's Hennepin County Large Scale Energy Recovery project analysis to date:

Format.

1. The format chosen for presentation is unusual, but not improper. You may wish to simply summarize the background and total carbon monoxide (CO) concentrations in parts per million in one paragraph.

2. If you can obtain a list of assumptions used as input values for the modelling, please include it in your write-up. These would normally include vehicle mix, ambient temperature, stability class, wind speed, wind direction et al.

7th and Hennepin Monitor.

Conversations I've held with Hennepin County and the City of Minneapolis lead me to conclude that traffic should not increase significantly by the 7th and Hennepin monitor. Trucks from the South Minneapolis transfer station will in most cases use Trunk Highway (TH) 55, which is Hiawatha Avenue. They will exit TH 55, and take a westbound ramp onto I-94 which originates around 19th Street, continuing to the Olson Memorial Highway (TH 55) - 7th Street exit of I-94. They thus will bypass downtown 7th Street, (which is also signed as TH 55 at that point). Therefore, the previous hotspot at 7th and Hennepin is not expected to be affected, so no additional indirect source analysis by it must be done.

Phone:_____
1935 West County Road B2, Roseville, Minnesota 55113-2785
Regional Offices • Duluth/Brainerd/Detroit Lakes/Marshall/Rochester

Other Potential CO Problems.

This project is not expected to interfere with already implemented strategies in the 7-county metropolitan area's Transportation Control Plan. This project is also not expected to create any additional CO hotspots. Some minor traffic problems are in a relatively open area, and can be remedied through geometric and/or signalization changes, but should not cause a violation of CO standards in any event. Therefore, I do not expect the project to endanger in any way the U.S. EPA's potential redesignation of most of the seven-county area, nor its proposed approval of the Snelling and University signalization project.

If you have additional questions or need further guidance, please call me at 612/296-7723.

Sincerely,

Susanne M. Pelly

Susanne M. Pelly, AICP
Senior Transportation Planner
Division of Air Quality

SMP:vmm9.56

cc: John Seltz
Bradley Beckham
C. Marlene Voita
Deborah Pile
David Shea
Mike O'Brien

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

16 JUL 1979

OFFICE OF ENFORCEMENT

MEMORANDUM

SUBJECT: Beryllium Regulations

FROM: Director
Division of Stationary Source Enforcement

TO: Stephen A. Dvorkin, Chief
General Enforcement Branch
Region II

This is in response to your memo of May 10, 1979, in which you requested a determination regarding the applicability of the beryllium standard to municipal incinerators. Basically, you asked whether the term "beryllium containing waste", as defined in §61.31(g) of the regulations, includes materials such as discarded electronic calculators and scrap metals which may be burned in municipal incinerators or whether it includes only those beryllium wastes generated at ceramic plants, extraction plants, foundries, and propellant plants.

I interpret the term "beryllium containing waste", defined as:

> "material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this subpart"

to include only those wastes generated by a foundry, extraction plant, ceramic plant or propellant plant. While one might argue that incinerators are also "sources subject to this subpart" (see above definition) and that any beryllium wastes that contain beryllium which are burned in any incinerator should be subject to the standard, the control techniques and background documents do not support such an interpretation.

Section 3.6 of the document entitled "Control Techniques for Beryllium Air Pollutants" (February 1973) contains a discussion of methods for disposal of beryllium containing wastes. The document clearly indicates that it was the incineration of wastes generated by extraction plants, ceramic plants, propellant plants

and foundries that we were concerned about in developing the standard. Moreover, the Economic Impact section of the document "Background Information on Development of National Emission Standards for Hazardous Air Pollutants: Asbestos, Beryllium, and Mercury" (March 1973) discusses the impact of the standard on only four industries: ceramic plants, extraction plants, propellant plants, and foundries. An assumption is made that most of the sources in those four categories will incinerate their own wastes on site. Thus, the cost of controlling emissions from beryllium incinerators seems to be taken into account in estimating the cost of the standard to the four listed source categories. This is one further indication that the standard was only intended to apply to the incineration of wastes generated at foundries, ceramic plants, extraction plants, and propellant plants. There certainly is no indication in either the preambles to the proposed and promulgated standards or any of the background documents that the standard was intended to apply to each municipal incinerator.

While most generators of "beryllium containing waste" may incinerate their wastes on site it is possible that in some cases they may transport the wastes to another facility for disposal. Should the wastes be disposed of at a municipal incinerator, that incinerator would be subject to the beryllium regulations. The regulations apply to any incinerator which burns beryllium containing wastes generated at a foundry, ceramic plant, propellant plant or extraction plant.

If the Regional Offices are not certain where beryllium containing wastes are being incinerated and whether the incineration facilities are in compliance with the NESHAP regulations, it might be desirable to request this information from the owners of beryllium waste generators via §114 letter. In this manner, a list of incinerators subject to the beryllium standard could be assembled.

Should you wish to discuss this issue further, please contact Libby Scoping of my staff at FTS 755-2564.

Edward E. Reich

cc: Simms Roy, ESED
Stu Roth, R. II, Enf.

technology. Applicable emissions test data is not available to the public yet from the facility (telephone conversation with Mr. Finkelstein, Program Engineer, Ontario Ministry of Environment, March 17, 1986). In addition to the lack of published test data for the facility (published results expected to be available in late 1986), the NITEP dry scrubber application may not prove to be sufficiently comparable to the proposed dry scrubber system to allow for a meaningful analysis. The plant size is one-tenth the size of the proposed project and the dry scrubber is being experimented with to assess a range of operating conditions rather than optimal operation.

3.1.2 Indirect Source Air Quality Analysis

1. The MPCA has requested a discussion of the future location of the Greyhound bus storage facility.

   A discussion of the future location of the Greyhound bus storage facility and its impact on parking and traffic at its new location would be more appropriately addressed in an environmental review for that facility. As yet, a proposed site for the facility has not been identified.

2. The MPCA in its letter of Jan. 10, 1986, responding to the DEIS indicated that the carbon monoxide air quality monitor located at the 7th St. and Hennepin Av. "hot spot" has been moved to the north side of Hennepin Av. and is now serving as a background monitor (Section 4.2.7, page 4-33). The data from this new monitor location has not yet met EPA's acceptance criteria.

3. The MPCA has expressed concern regarding traffic signal timing and operating conditions at Olson Memorial Hwy. and 7th St. N.

   The transportation section of the DEIS discusses the operation at Olson Memorial Hwy. and 7th St. N. in great detail (see Section 4.7.2.3). Traffic backups were not observed at this intersection in 1985 when traffic counts were conducted. The capacity analysis undertaken for the expected future level of service, projects acceptable conditions (B/C) in 1989 upon project completion. At this operating level, significant traffic backups would not be expected to occur, particularly given the traffic signal synchronization at this intersection.

4. The MPCA has suggested that "a correction should be made in the Final EIS regarding the Hennepin Av. and 1st Av. N. one-way pair. An error was noted at page 3-92 of the DEIS. Hennepin Av. is eastbound, not westbound; 1st Av. N. is westbound."

5. The MPCA requested in its letter of Jan. 30, 1986, that traffic leaving the facilities be included in the analyses.

   The DEIS contains a roadway capacity analysis for traffic both going to and leaving the proposed facilities. Although possibly not stated clearly enough in the DEIS, traffic leaving each of the proposed facilities was included in the LOS analyses. The traffic analyses did not indicate that construction of the projects would produce significant congestion or localized hot spots.

6. The MPCA has indicated the need to discuss roadway improvements in the FEIS.

   It is recognized that planned roadway/safety improvements are a dynamic process. The City of Minneapolis is finalizing its plans for changes in 7th St. N. traffic, among other potential changes. The city of Bloomington is considering channelization improvements at Girard and Humboldt Avs. S. All of the communities involved must continuously consider the need for changes in roadway operations. The DEIS evaluated future traffic conditions on the existing roadway network. Any improvements to these roadways would improve future operations. As a result, the analyses provided in the DEIS represent worst case conservative future conditions.

   The DEIS addressed the intersection of W. 98th St. and James Av. The analysis indicated no potential major deficiencies in roadway operations (LOS C/D operations) (see Section 4.7.3.3, page 4-127 of the DEIS). MPCA staff have expressed concern about the safety of this unsignaled intersection. At present it does not appear a signal is warranted; however, further study upon project completion is advisable to determine if signalization is warranted in the future.

7. Attached as Figure 2 is a letter from the MPCA dated Oct. 24, 1985, indicating the limited effort required to address impacts on air quality from project traffic (indirect source analysis). Section 4.2.7, page 4-33 of the DEIS begins the discussion of Indirect Source Impacts.

3.2 Human Health

This section provides responses to the specific comments expressed by the MPCA, Hennepin County, the Minnesota Department of Health, and the city of Minneapolis. Where these responses also address similar issues raised by others, the individual responses to public or written comments (Sections 1 and 2) also reference the information below.

1. The City of Minneapolis has questioned the selection of the plants included or excluded in the data base used for estimating the project's expected rate of PCDD and PCDF emissions (see Section 4.3 of DEIS beginning on page 4-48).

   The data base used in the revised Human Health section includes nearly all of the plants sited in the CBNS report. The plants found in the CBNS report that were not included on the EIS data base are discussed in the Human Health Section.

2. The CBNS report prepared for the city of Minneapolis has questioned the emissions data base provided in the DEIS. It recommends the use of an emission rate of 5,775 ng/m^3 for PCDD and PCDF.

   One of the facilities in the data base of 20 used in the CBNS report, Italian 2, shows an emissions rate of 56.460 ng/m^3. Nothing is known about the operating conditions of the facility. Without this information, it is not appropriate to use the data. Excluding the single plant, the dioxin and furan emissions rate drops to 3100 ng/m^3. The use of the expanded data base in the revised Human Health Section should address the concern that an inappropriate emissions rate has been determined from limited data.

3. The City of Minneapolis has concluded that the RDF plants should have been included in the Hennepin DEIS analysis.

   RDF plants have been included in the data base for the revised Human Health Section.

4. The City of Minneapolis has asked for clarification regarding the selection of facilities equipped with ESPs for use in the emissions data base.

   The revised Human Health Section included facilities with pollution control technology employed at the facility. The data base includes a variety of pollution control devices. It is expected that the dry scrubber/baghouse proposed for the Hennepin County resource recovery facility will reduce toxic air emissions.

   A recent report for the Bay Area Resource Recovery Facility indicates that "information has demonstrated that the use of a spray dryer can lead to significant reductions in emission of PCDDs and PCDFs up to 99+ percent" (Krag-Nielson, et al., 1985). Two articles presented at the 1985 Acid Gas and Dioxin Control for Waste-to-Energy Facilities Conference discuss scrubber removal efficiencies. One article presented at the conference, "Joy/Niro Spray Dryer Absorption Flue Gas Cleaning System," by Joy Manufacturing Co., indicated high removal efficiencies for PCDD and PCDF emissions. A second article, "Reduction of Dioxins and Furans," by Nielsen, et al., shows PCDD and PCDF removal efficiencies in excess of 90 percent for scrubber-baghouse systems.

5. The City of Minneapolis is concerned about the DEIS assertion that the planned operations represent "combustion conditions which should result in more complete combustion (less emissions) than the facilities included in the data base."

   It is agreed that this assertion is yet to be proven since the facility is not operational. Data is available, however, for a comparable facility operated by Westchester Resco (New York) which was recently tested. The data shows significantly lower emissions of PCDD and PCDF for this modern facility than for other facilities tested previously (about 90 percent lower). If credit had been taken in the DEIS for the increased operating temperatures, health risks could be as much as 90 percent lower or 0.1 per 100,000 for the worst plausible case. It should be noted, however, that the DEIS analysis did not quantitatively reduce the estimated emissions rate for asserted increased temperatures. The analysis provided did not correct or adjust emissions for the proposed 1,800° F. temperatures and a secured residence time. It was only stated that the proposed 1,800° F. temperatures would likely result in reduced emissions.

6. The City of Minneapolis has questioned the inclusion of a Montreal facility in the DEIS data base. The Montreal facility's emissions are known to be significantly lower than other facilities tested.

   Data was included for a Montreal plant which showed considerably lower emissions than other facilities. The City of Minneapolis has questioned the use of data from this facility based upon their phone conversation with Mr. Raymond Klicues of the Ontario Ministry of Environment. No specific reason for rejection of the data base was provided by Mr. Klicues other than the fact that the results are lower than other facilities tested at that time. Recently, test results have become available for a Westchester Resco facility which are comparable to those for Montreal. The consultant who prepared the DEIS spoke directly to the individual responsible for the presentation of the results of the testing program at the Montreal, Quebec, plant. Ms. Lucie Boisjoly, who prepared the report documenting the results, indicated that although the emissions rates are very low she has no reason to believe there would be problems with the use of such data. Telephone discussions on Mar. 17, 1986, were made with Mr. Finkelstein (a colleague of Mr. Klicues), a program engineer with the Ontario Ministry of Environment. Mr. Finkelstein was aware of the testing carried on at the Des Carriers facility in Montreal and indicated he was familiar with the report prepared. He indicated that the results of the testing were significantly lower than those for any other comparable facility. As a result, he questioned the use of the testing data base. The ministry has reviewed the testing procedures and results and was not able to discover any deficiencies in the data. He and Mr. Klicues, however, questioned the test results because they were low, even though they had no scientific basis to discredit the testing program.

   A report entitled "Measurement of Emissions of PCDD and of PCDF from the Des Carriers Incinerator in Montreal" (December 1984) is available and was reviewed. This report documents the results of the testing at the Montreal facility. There are no disclaimers in that report recommending that the data not be used. In addition, the discussions with the Ministry of Environment did not reveal any apparent deficiencies in the testing or results other than the fact that the "numbers appear to be low." As a result, ERT has included the results in the emissions data base because the published testing met all of the selection criteria described in the DEIS.

7. The City of Minneapolis has indicated that PCDDs and PCDFs may act as cancer promoters, sharply increasing the cancer-inducing potency of other environmental agents.

   There is no conclusive scientific evidence that this is the case. The source of this assertion, the CBNS report, does not provide conclusive research to support this claim. In addition, there is not as yet any agreed-upon method for quantifying the increased risk from suspected cancer promoters such as PCDDs and PCDFs. There are several toxic equivalency factors and potency slopes recommended by various agencies to be used in risk assessments. These include methods suggested by the U.S. EPA, Swiss EPA, California, Ontario and Eadon. The possible methods result in significantly different results, as much as 32 times higher for the Ontario method.

8. The DEIS utilized a procedure for computing toxic equivalence factors (TEF's) prepared by the U.S. EPA Work Group. The City of Minneapolis has recommended use of an alternative method, such as a Swiss EPA procedure, because it would yield more conservative results.

   The revised Human Health Section presents four cases, the best case, the worst case, the average case and the comparable case. These cases are used to define the limits of the risk posed by the facility by varying the emissions data. The use of alternate TEF's has been conducted for the average case to show the relative magnitude of impact altering the TEF's would have on the determination of health risk.

9. It is agreed that exposure to PCDD and PCDF through ingestion and dermal contact is a new and speculative field as expressed by the City of Minneapolis. The City of Minneapolis has commented that only three assessments are known to have been attempted: by Hart, by CBNS and in the Hennepin DEIS. The Hennepin DEIS was cited by the city as using the least conservative assumptions of the three regarding ingestion.

   In the process of researching health risk assessments for the revised Human Health Section, numerous studies have been identified that characterize the health risk from dermal exposure and ingestion of toxic organics. The assumptions used in the revised Human Health Section reflect the consensus of current thinking on the subject. Many of the assumptions, including dermal exposure to 0.5 grams of soil per day and an average ingestion of 100 mg of soil per day are more in keeping with comments received regarding the EIS. Other assumptions used include the use of a 12 year half life in soil (Kimbrough, 1984) and 30 percent gastrointestinal absorption (Posiger and Shlatter, 1980).

10. The City of Minneapolis suggests that the DEIS inappropriately compared project risks to everyday risks. Rather, the project risks should have been compared to similar methods of trash disposal.

    Although the value of comparing mass burn risk estimate values to those for other disposal techniques is recognized to have merit, no comprehensive estimate of reliable risks was made for the other options due to lack of detailed data on full-scale operations. The alternatives considered in the DEIS were those identified in the scoping meetings prior to preparation of this report. There are risks associated with the landfilling of municipal solid waste including: the health risk associated with groundwater drinking water contamination from landfill leachate, the risk from gaseous emissions

from landfills, and the risk from direct contact with solid waste. Health risk assessments for landfill operations are difficult to estimate because of the number of variables influencing the risk determination. In addition, the risks would vary from site to site depending on geologic, soil and other conditions specific to a given location. As a result, it is difficult to compare the risks of alternative technologies due to site specific differences in environmental conditions. In addition, experts such as David Sussman, U.S. EPA, have stated that no reliable health risk assessment has yet been performed on landfills (Acid Gas and Dioxin Conference, Nov. 25, 1985). The assumption that alternate methods of solid waste disposal pose a reduced health risk is unwarranted without scientific evidence.

It should be noted that full-scale operations have been proven feasible for the mass burn technology and for RDF. Large-scale alternative methods for the processing of wastes (on the order of 1,000 TPD or more) in an amount capable of addressing Hennepin County's needs are not known to have been technically or economically proven for other technologies such as composting, total recycling, or mechanical separation and recycling.

11. The Minnesota Department of Health has questioned the use of RAM modeling and the meteorological data obtained from the airport.

    The RAM model is an appropriate model for use in the air quality and health assessment analyses. Its use was discussed with and agreed to by the MPCA. The meteorological data used is also recommended by the MPCA and is the only reliable and comprehensive data base relevant to the area. A full set of reliable meteorological data is not available for downtown Minneapolis. The use of the model, however, is appropriate in an urban setting and adjusts for conditions specific to urban environments. Conditions associated with the downtown Minneapolis environment are accounted for by the use of the urban version of RAM and the utilization of multiple years of meteorological data which incorporates differences in meteorological conditions.

12. Section 4.2 of the DEIS addresses the health effects of the criteria pollutants. The Minnesota Department of Health has requested a discussion of health effects attributed to criteria pollutants.

    The NAAQS standards are designed to provide a conservative level of protection for the public health. The NAAQS was addressed in the air quality section. Expected violations of standards were not found. Since the standards were established to provide protection for sensitive portions of the public, it can be assumed that there is not a significant risk from project emissions of criteria pollutants. For the Hennepin County facility, for SO_2 the highest facility impacts are less than 3 percent of background concentrations. Total SO_2 concentrations will be less than 90 percent of relevant standards. A report titled "The Bay Area Resource Recovery Facility" (for a 3,000 TPD RDF facility) has also demonstrated that the maximally exposed individual (at the point of maximum exposure to risk from air emissions from that resource recovery facility) is not at risk to the criteria pollutants.

13. The Minnesota Department of Health (Jan. 21, 1986, letter to John W. Rafferty, Metropolitan Council staff, from Dr. Robert A. Kreiger, Minneso Department of Health) has requested that an estimation of the toxic effects of substances such as antimony and selenium be included in the risk

assessment. The DEIS risk assessment provides an estimate of the worst plausible toxic effects associated with the project. The substances presented in the test are those addressed in similar risk assessments for which data on emissions is available. Compounds such as antimony and selenium were not included due to a lack of data on emissions from resource recovery facilities. Reliable data on such emissions was not available for the plants included in the data base and, therefore, could not be included in the DEIS. The potencies of these compounds for quantities anticipated in plant emissions presents a health risk of less than 1 percent of the PCDD and PCDF emissions.

14. The Minnesota Department of Health has commented that the DEIS did not address sensitive receptors such as schools, hospitals, etc.

    As part of the land use analysis in the DEIS, such sensitive receptors within about one mile of the site were identified. The DEIS human health assessment did mention and identify these sensitive receptors but selected receptors to be used in the health risk assessment which were closest to the plant or at the point of maximum exposure to project emissions.

    The DEIS could provide risk estimates for churches, schools, etc., in the area, but the risks would be far less than the receptor chosen, which represents maximum exposure to project emissions. Environmental Technical Report 7, Air Quality, shows that air quality impacts decrease rapidly with distance (see Figures 4-1 and 4-2).

    At the maximally exposed receptors it was assumed that sensitive receptors would be subjected to constant exposure for their entire life (that is, 24 hours per day for 70 years assuming continuous vigorous exercise).

15. The Minnesota Department of Health indicates that community-based risks and population estimates were not prepared and utilized in the DEIS.

    The revised Human Health Section provides a comprehensive estimate of community-based health risks from the proposed facility.

16. The Minnesota Department of Health requested clarification regarding dermal absorption.

    The revised Human Health Section provides clarification of the assumptions used in the calculation of the dermal dose of toxic organics.

17. The Minnesota Department of Health has indicated that "the slope for nickel should be rechecked, since CAG announced a modification of nickel risk assessment last month." The Department of Health also indicated the use of a slope of 2.6 for beryllium and 6.1 for cadmium.

    The revised Human Health Section employs the most recent potency slopes.

18. The Minnesota Department of Health questioned the use of the TCDD equivalents shown in the DEIS. The Minnesota Department of Health attached to its letter dated Jan. 21, 1986, appropriate data to be used.

    The revised Human Health Section employes the latest known TCDD equivalents as generated by the U.S. EPA.

19. The Minnesota Department of Health commented that community risk was not originally presented in the DEIS.

    The revised Human Health Section provides a comprehensive, community-based health risk assessment.

20. The Minnesota Department of Health and the Minnesota Pollution Control Agency stated that the individual risks of various substances should be summed to present a cumulative health risk.

    The revised Human Health Section sums the risk to present a cumulative health risk.

21. The MPCA has commented that the emissions data base is representative of an average of several dissimilar facilities rather than any particular facility. The MPCA has asked for data specific to the Widmer-Ernst combustion technology.

    Comprehensive data on PCDD and PCDF emissions which meets the criteria for inclusion in the DEIS data base from facilities using the Widmer-Ernst technology is not available. One reason for this is that there are not any facilities operational in the U.S. at this time. Although it would be helpful to include Widmer-Ernst-designed facilities emissions data, such information is not available for inclusion. The Council requested such data early on in the DEIS process. Data was provided by the contractor in a report prepared by Transemantics (with accompanying data) for a Widner and Ernst boiler in Europe. That report did not provide documentation sufficient to meet the criteria established in the DEIS for data inclusion. Although the dioxin emissions were in the low range for resource recovery facilities, it was felt that the dioxin data did not hav sufficient documentation to allow its use in the DEIS. The emissions from the Widner and Ernst facility are presumably similar to those from the Chicago Northwest plant included in the DEIS data base (letter to Mr. John Rafferty, Metropolitan Council staff from Mr. Hulic Ratterree of Blount, dated Jan. 29, 1986).

    The discussion of the comparable case in the revised Human Health Section is intended to present the risk felt to be most similar to the proposed facililty by the contractor.

22. There are several operating incinerators with the combination of dry scrubber and baghouse for air pollution control equipment as indicated by the MPCA. One particular facility mentioned by the MPCA is known as NITEP.

    The data for the NITEP project would be for a pilot-level operation. The Ontario Ministry of Environment (Finkelstein, Mar. 17, 1986) was contacted regarding the availability of test data. Test data is not yet available for the Flakt, Ontario, facility (expected to be released in late 1986).

    Data from other operating plants with dry scrubber and baghouse pollution control equipment is included in the data used for the revised Human Health Section.

23. The MPCA has indicated that the variability of the emissions data base in the DEIS is large.

This is primarily due to the fact that testing of resource recovery facilities for dioxin and furan emissions has been standardized for only a few years. The data base for comprehensively tested facilities is small. This results in a small sample size which contributes to the variability in the emissions rates, as well as the variation in age, type and size of facility. The revised Human Health Section uses a much broader universe of data sets. The variation in the data base is not significantly less than the data from the three plants identified in the DEIS. A discussion of data variability and confidence limits is presented in the revised Human Health Section.

24. Commentors asked for information regarding health risks from exposure to noise or other potential project impacts.

The water quality section addresses the issue of risks from degradation of water quality. Implicit in the DEIS is the assumption that if existing rules or standards are not violated, then risks are acceptable. The noise section, for example, discusses project impacts relative to promulgated standards which are by definition those established to protect the human health. Only significant increases above standards were recognized to have a health impact.

25. Dermal absorption of hazardous substances as stated in the DEIS represents only a relatively small portion of the overall risk of contracting cancer. Risk from skin absorption has been shown in a California report (Bay Resource Recovery Facility Project) to present as much as two orders of magnitude less risk than via inhalation or ingestion. It does not represent a primary pathway.

An analysis of dermal absorption has been included in the revised Human Health Section.

26. The MPCA has indicated that there is considerable debate as to the appropriate toxic equivalency factor to use in a risk assessment and the potential risk in extrapolating from animals to humans.

It is recognized that there is an inherent risk in extrapolating carcinogenicity data for animals to humans and from high doses to low doses. It was not the purpose of the DEIS to minimize the uncertainties involved in such extrapolations. However, since controlled human testing is socially unacceptable, the scientific community has recognized the need for such extrapolations. In a strict sense, human carcinogenicity can only be determined from studies on humans. Lacking data on human populations, cancer risks are estimated based on bioassays for carcinogenicity in mammals. At least six accepted methods for the determination of toxic equivalency factors have been recommended. They differ by as much as 32 times. The DEIS analysis elected to utilize the U.S. EPA method. Subsequent discussions with the MPCA and Minnesota Department of Health staffs have acknowledged the acceptability of U.S. EPA TEFs for this type of analysis.

The revised Human Health Section demonstrates the impact of using alternate TEF's to calculate the health risk of average case. The alternate TEF's employed are the Swiss EPA and the California sets.

27. Hennepin County has commented that the use of the Hampton 1982 data for organics is inappropriate. They assert the high emissions were due to severe overloading of the furnace.

    The information available for the test measurements does not indicate serious problems with the facility during the testing summarized in Appendix D of the DEIS. It is recognized, however, that the Hampton, Va., emissions of PCDD and PCDF are higher than those for other facilities such as Chicago Northeast and that operations at the Hamption facility have been questioned by many reviewers. Some commentors have expressed the view that the data for Hampton are suspect due to operational difficulties during testing (that is, low temperatures).

28. Hennepin County has indicated that the risk from the facility should be placed in the perspective of the current background lifetime cancer risk which is approximately one in four.

29. Hennepin County generally has indicated that the risk assessment in the DEIS is overly conservative because it is based upon generic emissions data.

    The FEIS has attempted to undertake a risk assessment for a comparable facility based on available verifiable monitoring data.

    The revised Human Health Section provides the data necessary for the review of the comparable case.

3.3 Property Values Adjacent to Facility Sites

Several commentors express concern that the property values of land adjacent to the transfer stations stated on the draft EIS did not identify specific parcels. The information that follows identifies the parcels of land Cited in the DEIS and provides relevant market value and tax information.

The data was collected in July of 1985 for the land adjacent to the proposed sites and in November 1985 for land adjacent to the alternate sites. This information has been provided on tables 3.3-1 and 3.3-2 to allow for a more informed assessment of socioeconomic impacts that may be caused by the development of the sites under consideration.

TAX FIGURES

I.D. No.	Street Address	Assessed Market Value	Total Tax
Greyhound Site			
22-029-24-32-0025	501 Royalston Av. N.	$2,310,000	$107,129.08
22-029-24-31-0036	661 Fifth Av. N.	$1,150,000	$ 53,589.82 (incl. $749.05 spec. tax)
22-029-24-31-0037	401 Seventh St. N.	$ 507,000	$ 24,013.20 (incl. $285.48 spec. tax)
Bloomington East			
16-027-24-24-0024	9611 James Av. S.	$ 522,800	$ 22,747.62
16-027-24-13-0002	9601 Humboldt Av. S.	$ 394,200	$ 17,053.86 (incl. $135.14)
16-027-24-21-0007	9530 James Av. S.	$ 165,100	$ 6,534.58
Brooklyn Park East			
30-119-21-44-0006	6901 Winnetka Av. N.	$ 848,500	$ 43,274.62 (incl. $3,803.62)
29-119-21-33-0007	7040 Winnetka Av. N.	$ 75,000	$ 3,937.60 (incl. $2,962.14 spec. tax)
30-119-21-41-0005	7211 Winnetka Av. N.	$ 64,100	$ 2,942.96 (incl. $1,005.79 spec. tax)
Hopkins DOT*			
25-117-22-12-0011	250 Fifth Av. S.	$1,779,400	$ 75,132.97
25-117-22-14-0009	501 Fifth Av. S.	$ 63,300	$ 508.56
25-117-22-13-0020	501 Sixth Av. S.	$ 9,811	$ 431.98
Minneapolis South			
36-029-24-33-0032	2825 Cedar Av. S.	$ 110,000	$ 4,168.48
36-029-24-34-0020	2835 - 21st Av. S.	$ 20,000	$ 234.30 (incl. $64.04 spec. tax)
36-029-24-33-0012	2814 - 21st Av. S.	$ 15,500	$ 490.78 (incl. $18.43 spec. tax)

	Market Value	Assessed Market Value	General Tax	Specials Tax	Total Tax
WESTWOOD					
6201 Bury Dr. 03-116-22-21-0008	$126,000	$ 50,400	$ 5,392.28	$39,747.24	$45,139.52
6300 Bury Dr. 03-116-22-21-0009	$ 50,400	$ 20,160	$ 2,156.91	$ 9,043.25	$11,200.16
6250 Bury Dr. 03-116-22-21-0010	$178,000	$ 71,200	$ 7,617.68	--	$ 7,617.68
6200 Bury Dr. 03-116-22-21-0011	$ 50,400	$ 20,160	$ 2,156.90	$ 9,642.68	$11,799.58
No Address--City of Eden Prairie 03-116-22-21-0012	--	--	--	--	--
No Address--8950 Eden Prairie Rd. 03-116-22-21-0013	--	--	--	--	--
ADJACENT					
13953 - 62nd St. W. 031-116-22-21-0007	$155,100	$ 57,693	$ 6,172.57	$ 4,659.43	$10,832.00
RAILROAD SITE					
Property ID not on file 031-162-22-20-0002					
*6401 Industrial Dr. 03-116-22-22-0023	$ 200	$ 80	$ 8.53	$ 928.39	$ 936.92
*6401 Industrial Dr. 03-116-22-22-0033	$122,500	$ 43,675	$ 4,672.77	$ 8,075.67	$12,748.44
ADJACENT					
6330 Industrial Dr. 03-116-22-22-0013	$ 81,700	$ 35,131	$ 3,758.65	$ 1,771.15	$ 5,529.80
*5605 County Rd. 4 03-116-22-22-0020	$ 200	$ 80	$ 8.54	$ 796.78	$ 805.32
*18930 Lotus View Dr. 03-116-22-22-0030	$342,200	$138,146	$14,780.25	$ 4,068.81	$18,849.06

*Not all the addresses are property addresses

	Market Value	Assessed Market Value	General Tax	Specials Tax	Total Tax
I-494 AND NICOLLET					
194 - 79th St. W. 03-027-24-21-0009	$ 35,300	$ 9,884	$ 1,041.84	--	$ 1,041.84
170 - 79th St. W. 03-027-24-21-0010	$136,500	$ 58,695	$ 6,186.96	--	$ 6,186.96
7848 Nicollet Av. S. 03-027-24-21-0011	$217,800	$ 93,654	$ 9,871.94	--	$ 9,871.94
111 - 78th St. W. 03-027-24-21-0017	$625,000	$259,750	$27,379.92	$ 41.72	$27,421.64
190 - 79th St. W. 03-027-24-21-0018	$422,700	$181,761	$19,159.20	$ 54.86	$19,214.06
ADJACENT					
213 - 78th St. W. 03-027-24-21-0008	$295,300	$117,979	$12,436.00	--	$12,436.00
51 - 79th St. W. 03-027-24-21-0012	$ 95,900	$ 32,237	$ 3,398.04	--	$ 3,398.04
101 - 79th St. W. 03-027-24-21-0015	$570,500	$236,315	$24,909.66	--	$24,909.66
7900 Nicollet Av. S. 03-027-24-21-0016	$ 84,100	$ 36,163	$ 3,811.88	--	$ 3,811.88
7800 Pleasant Av. S. 03-027-24-21-0019	$897,900	$386,097	$40,698.00	--	$40,698.00
SOLIDIFICATION INC.					
7345 Winnetka Av. N. 30-119-21-41-0001	$153,000	$ 42,840	$ 4,623.84	$1,345.38	$ 5,969.22
ADJACENT					
No Address 30-119-21-41-0002	$ 11,000	$ 4,400	$ 474.90	--	$ 474.90
7225 Winnetka 30-119-21-41-0003	$538,500	$222,555	$24,076.60	$4,029.72	$28,106.32
7211 Winnetka 30-119-21-41-0005	$ 64,100	$ 17,948	$ 1,937.17	$1,005.79	$ 2,942.96

	Market Value	Assessed Market Value	General	Specials Tax	Total Tax
PYROFAX					
3755 Louisiana Av. S. 17-117-21-43-0057	$515,000	$206,000	$21,495.68	$7,438.22	$28,933.90
3700 Monitor St. 17-117-21-43-0062	$ 12,000	$ 3,360	$ 353.85	$ 102.91	$ 456.76
ADJACENT					
7201 Walker St. 17-117-21-43-0055	--	--	--	--	--
17-117-21-43-0056, 57, 58, 60, 61--Property ID not on file					
7115 W. Lake St. 17-117-21-43-0059	$813,000	$340,590	$35,871.22	$3,990.64	$39,861.86
7051 W. Lake St. 17-117-21-43-0063	$ 28,000	$ 12,040	$ 1,268.05	$ 561.13	$ 1,829.18
GOLDEN AUTO					
7003 W. Lake St. 17-117-21-43-0001	$194,000	$ 74,420	$ 7,837.97	$5,051.51	$12,889.48
ADJACENT					
7102 W. Lake St. 17-117-21-43-0002	$ 49,600	$ 21,328	$ 2,246.26	$ 498.46	$ 2,744.72
7104 W. Lake St. 17-117-21-43-0003	$ 26,000	$ 7,280	$ 766.74	$ 706.69	$ 1,473.43
AIRPORT SOUTHWEST					
6600 Mpls./St. Paul International Airport 36-028-24-33-0001	--	--	--	--	--
6600 Mpls./St. Paul International Airport 36-028-24-33-0002	--	--	--	--	--
1920 - 78th St. E. 36-028-24-33-0003	--	--	--	--	--
ADJACENT					
36-028-24-33-0000, 4, 10--Property ID not on file					

	Market Value	Assessed Market Value	General Tax	Specials Tax	Total Tax
GREENHOUSE					
13621 County Rd. 67 03-116-22-22-0005	$224,800	$ 72,086	$ 7,703.94	--	$ 7,053.94
#2825 Cedar Av. S. 03-116-22-22-0006	$ 2,200	$ 880	$ 93.48	$ 44.74	$ 138.22
ADJACENT (0004 not in file)					
14101 - 62nd St. W. 03-116-22-22-0007	$158,500	$ 59,155	$ 6,328.99	$ 5,742.97	$12,071.96
6285 Indian Chief Rd. 04-116-22-11-0003	$264,000	$ 92,670	$ 9,898.13	$ 116.91	$10,065.04
#2825 Cedar Av. S. 04-116-22-11-0005	$ 3,000	$ 1,200	$ 128.36	--	$ 128.36
ADJACENT					
04-116-22-11-0002	--	--	--	--	--
Hennepin County--Owner 04-116-22-11-0004	--	--	--	$ 222.52	$ 222.52
04-116-22-11-0006--Property ID not on file					
NATIONAL LEAD					
3717 Louisiana Av. S. 17-117-21-44-0003	$230,000	$ 89,900	$ 9,468.34	$3,099.94	$12,568.28
ADJACENT					
3639 Hampshire Av. S. 17-117-21-44-0002	--	--	--	--	--
3801 Monitor St. 17-117-21-44-0004	--	--	--	--	--

#Not all the addresses are property addresses

3.4 Development Impact of Waste Facilities

The Metropolitan Council undertook a study to assess the development impact and property value impact of landfills on surrounding land use entitled "Recommendations for Dealing with Adverse Impacts of Solid Waste Facilities, Final Report to the Legislative Commission on Waste Management, October 1983, Publication 12-83-053." The report shows that value impacts due to waste facilities cannot be well documented. The potential for waste facilities to impact property value can be mitigated. The mitigating measures may be found on page 3-61 of this FEIS section. The compatibility of the various proposed land uses with transfer stations and resource recovery facilities has been discussed with individuals in Millbury and North Andover, Mass. Both of the cities cited have an operating transfer station or resource recovery facility.

James F. Fitzpatrick agreed to discuss the development of a mixed municipal waste transfer station with Council staff. Mr. Fitzpatrick is a real estate agent and developer, and former member of the zoning commission in the city of Millbury, Mass. In an analysis of the residential neighborhood located 650 feet from the transfer station conducted by Fitzpatrick after the facility opened, the rate of increase in property values did not differ from that of the city as a whole. The property values adjacent to the transfer station are above average for the city as a whole. In addition, no discernible impact on property value had been noted by residents in the area surrounding the site. The true impact of the facility could not be accurately estimated due to the lower than average turnover of property in the affected neighborhood. Mr. Fitzpatrick echoed Mr. Patchen's concern (appraiser for Hopkins) that perceived impacts could have had a major effect on property values. The city planner, Alan J. Gordon from Millbury, stated that carefully evaluating citizen concerns and monitoring the permit conditions by the city have essentially eliminated adverse reaction to the facility. Residents did complain during the construction phase of the project. The noise impacts from construction of the facility generated numerous calls from residents during hours when construction activity was forbidden.

Mr. Fitzpatrick stated that siting of the facility increased the level of interest in an adjacent light industrial park. The improvement and extension of utilities reduced the development cost for businesses in the industrial park. The traffic improvement (addition of a turn lane for right-hand turns) eliminated the potential impacts of greatest concern to adjacent commercial establishments. The facility is located on Hwy. 20, a state highway at an unsignalized intersection.

Alan J. Gordon, planner, City of Millbury, stated that an appeal of a lawsuit by an adjacent company was still pending. The company in question is an optics manufacturer, which is very sensitive to vibration. The company claims that the transfer station activity has affected product reject rates.

Joseph W. McCarthy, Operations Manager, Signal Environmental Inc., stated that no complaints had been received from adjacent commercial or residential property owners in North Andover, Mass. The North Andover resource recovery facility is located on land abutting Bell Laboratories division of AT&T Inc. Local authorities have not notified the facility of any resident-sponsored complaints.

City of North Andover staff have examined the existing facilities and determined that potential nuisance impacts can be mitigated by rigorous enforcement of permit conditions. The lack of perceived nuisance impacts for

the existing facility has virtually eliminated development and property value impacts of the facility. No lawsuits are currently pending in North Andover, nor have any been brought against the company operating the facility.

The potential for impacts on property value and economic development does exist. The estimate by Peter A. Patchen of a 10 percent decrease in residential property value is possible if the facility's potential impacts are not addressed and mitigated. The effect on commercial property should be less severe than the impacts on residential property. The potential to displace existing businesses due to the impacts of solid waste facilities has not been realized elsewhere in similar land use settings. The specific issue of rodent and vector impacts is on page 3-57 of this section. The impacts of waste transfer stations on food warehouse businesses have not been analyzed due to the lack of a suitable example to cite.

3.5 Transportation

The Council has undertaken additional analysis of transportation levels of service on roadways adjacent to the alternate transfer station sites. Many commentors expressed concern that direct comparison of transportation impacts could not be made by examination of information in the DEIS. The attached figures show major roadways near the alternate sites identified in the DEIS and level of service for those roadways projected for 1990.

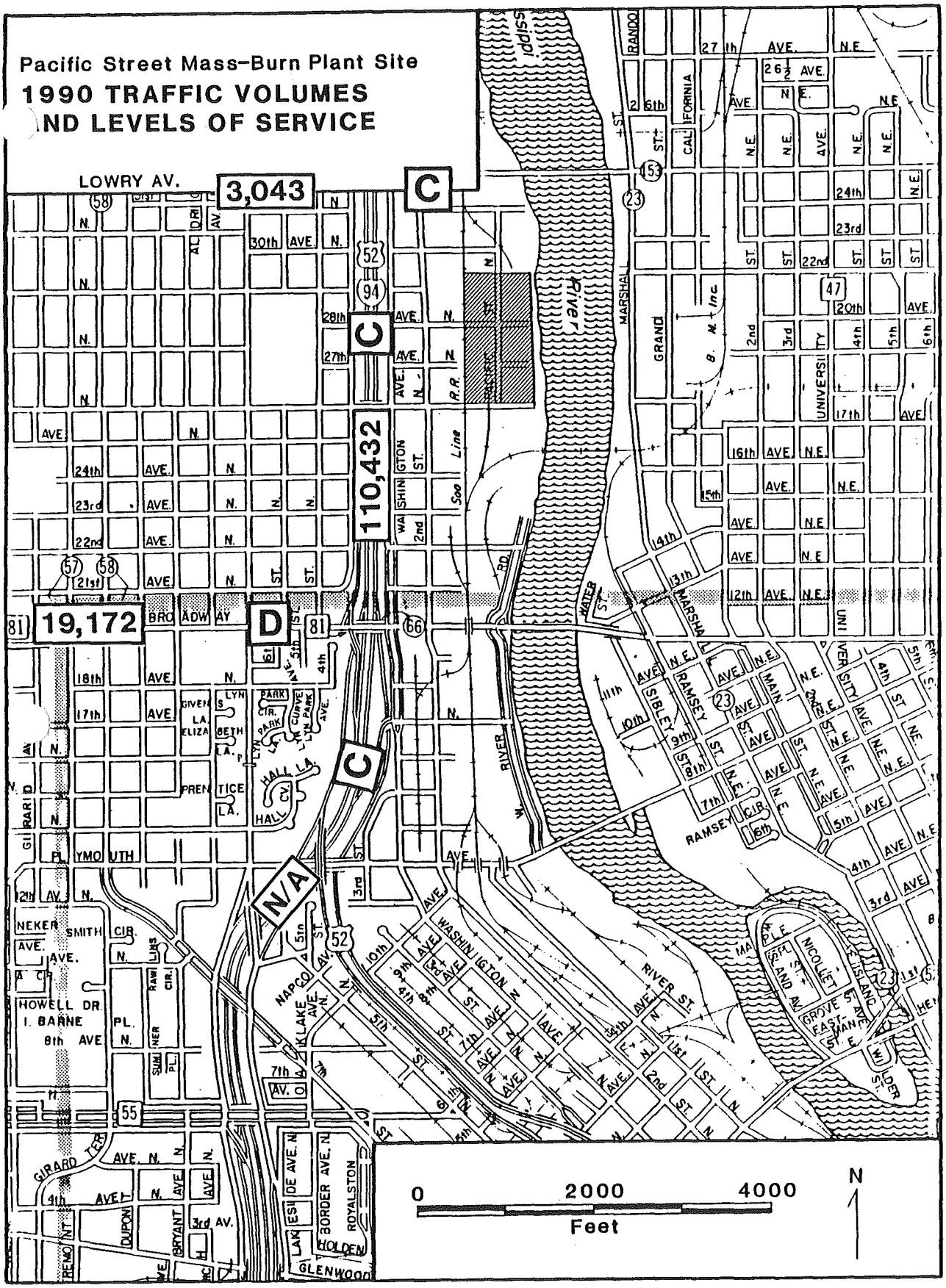
3.5.1 Level of Service

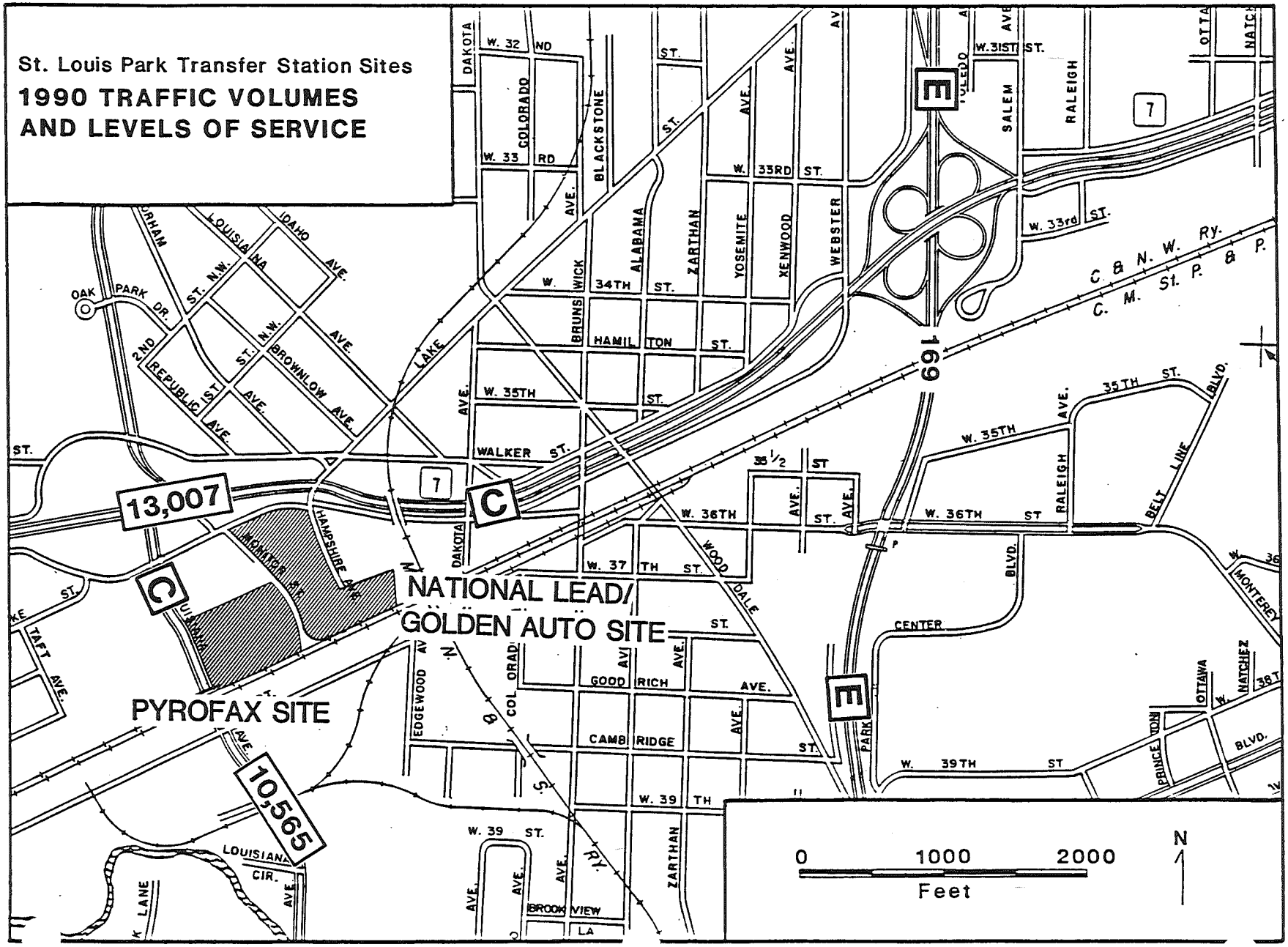
The 1990 level of service on different highways was obtained by computing the volume/capacity ratios. The 1990 traffic volumes were obtained by interpolating between 1984 and 2000 volumes. The additional traffic generated by the transfer stations was manually assigned to the adjacent highways and the revised level of service was computed as before.

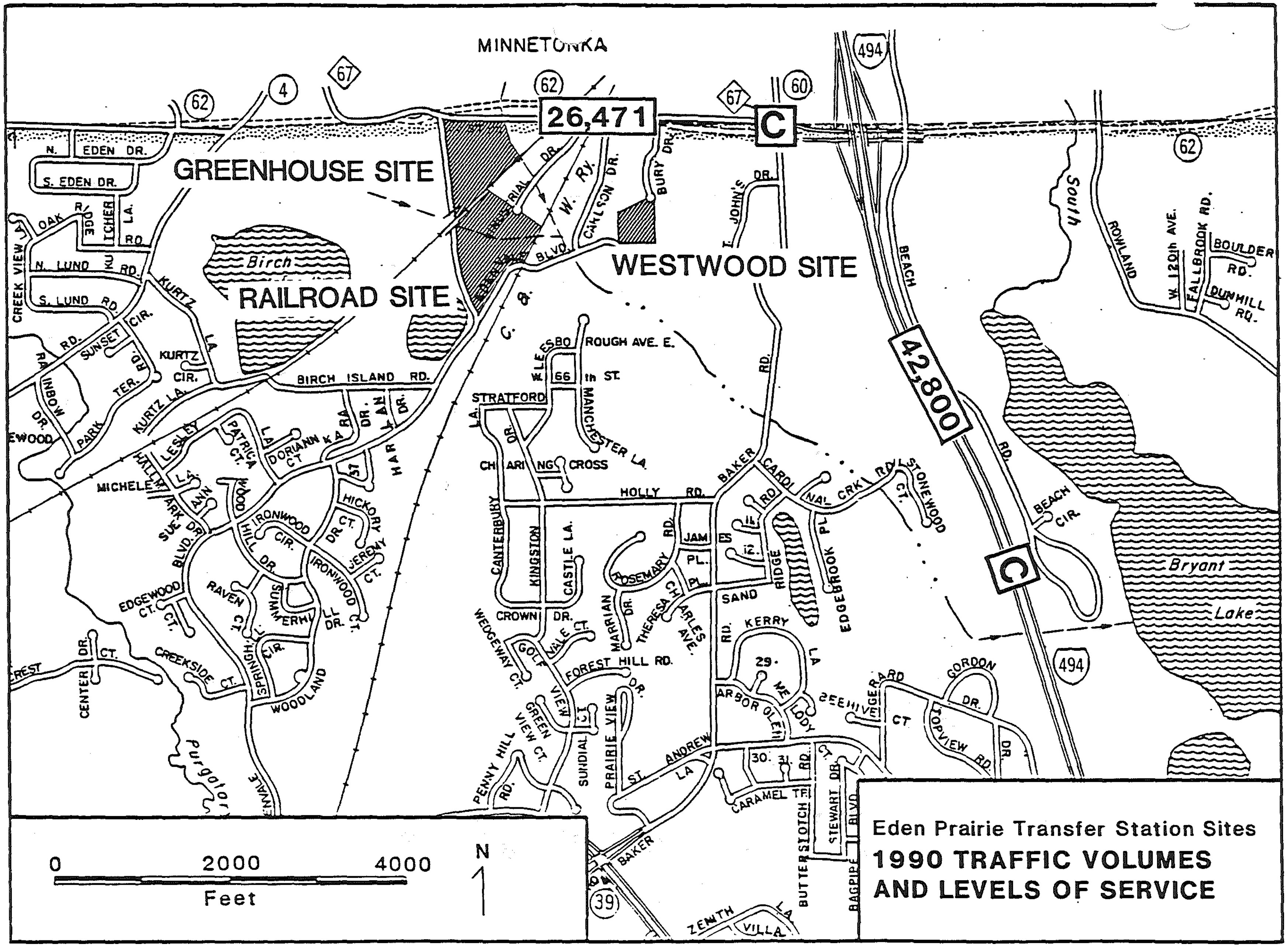
The 1990 level of service at the alternate transfer station sites does not decline at any site due to traffic generated by the addition of a transfer station (Steve Alderson, Metropolitan Council staff). The figures, attached, should provide information necessary in comparison of alternatives to the proposed sites.

Levels of service (LOS) are a measure of the quality of traffic flow based on physical conditions, vehicular volumes and existing traffic control.

They are expressed as letter values, as shown on the attached figures, ranging from level "A," stable flow, to level "F," the point at which vehicular volumes exceed the theoretical maximum amount of traffic that can pass through the intersection. Level "E" is traffic flow at maximum capacity. Level "C" is considered average flow.

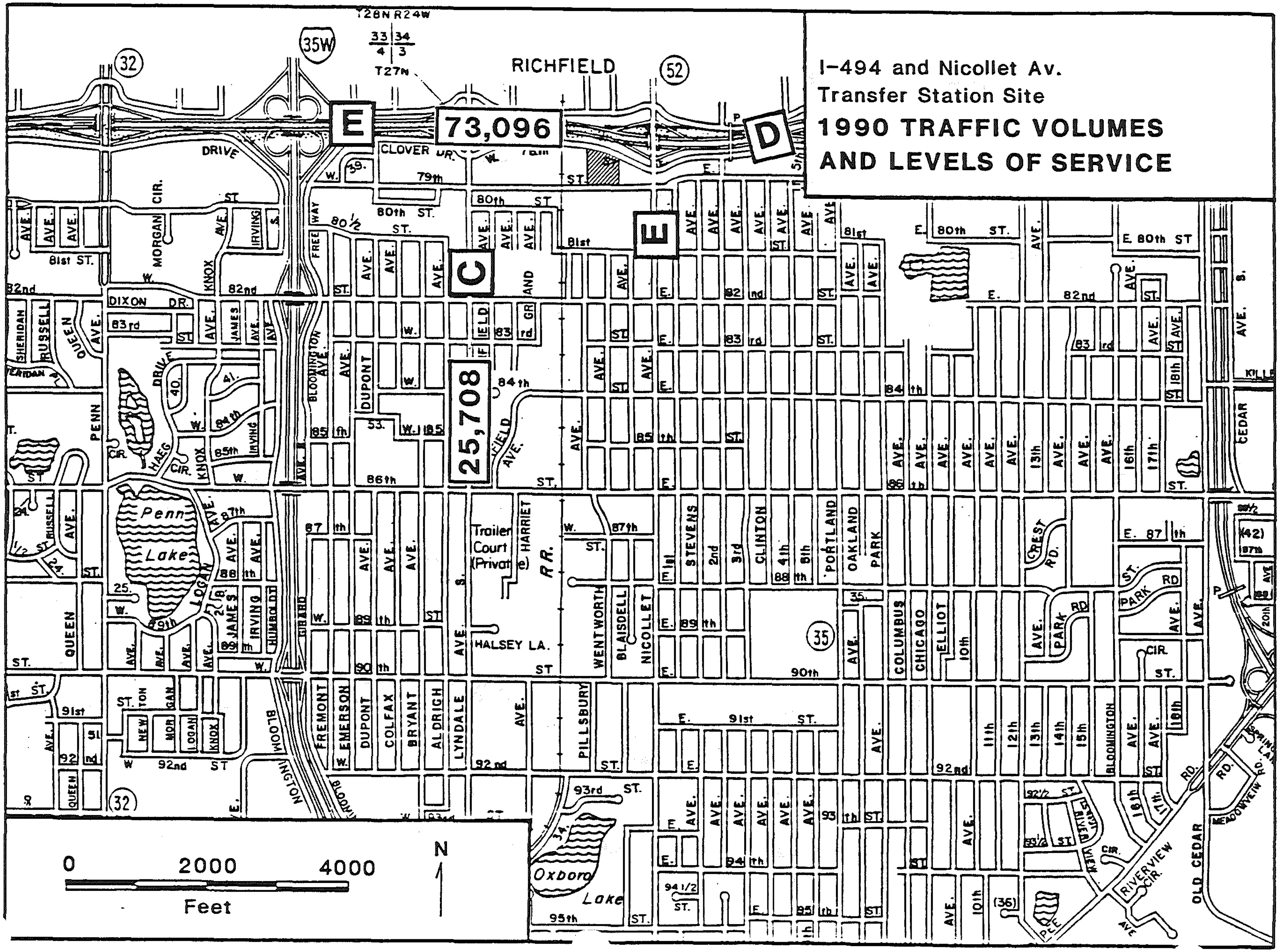

Pacific Street Mass-Burn Plant Site
1990 TRAFFIC VOLUMES
ND LEVELS OF SERVICE
LOWRY AV.
3,043
C
110,432
C
19,172
D
C
N/A
0
2000
4000
Feet
N


St. Louis Park Transfer Station Sites
1990 TRAFFIC VOLUMES
AND LEVELS OF SERVICE
NATIONAL LEAD/
GOLDEN AUTO SITE
PYROFAX SITE
13,007
10,565
C
E
7
169
0
1000
2000
Feet
N

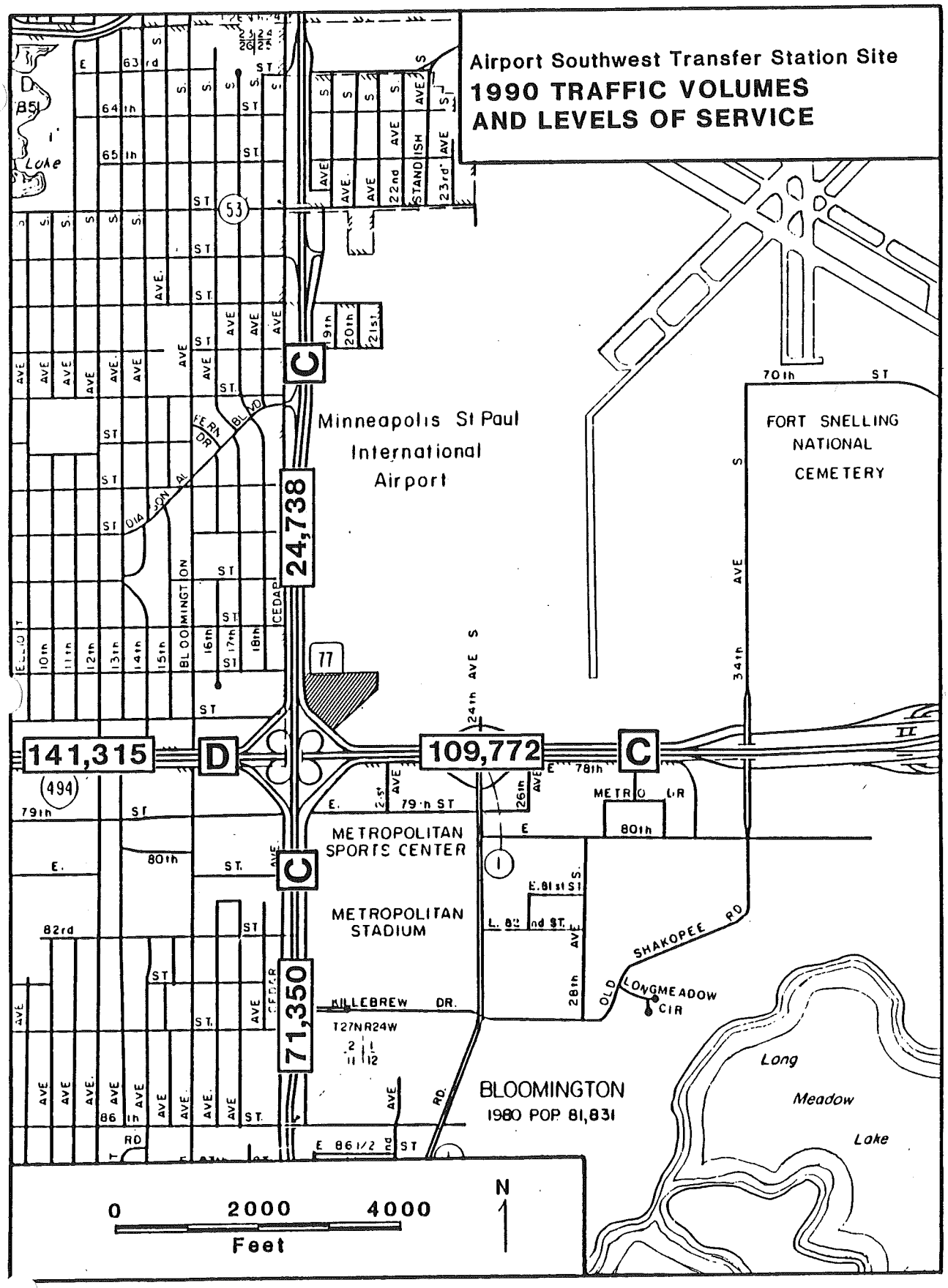


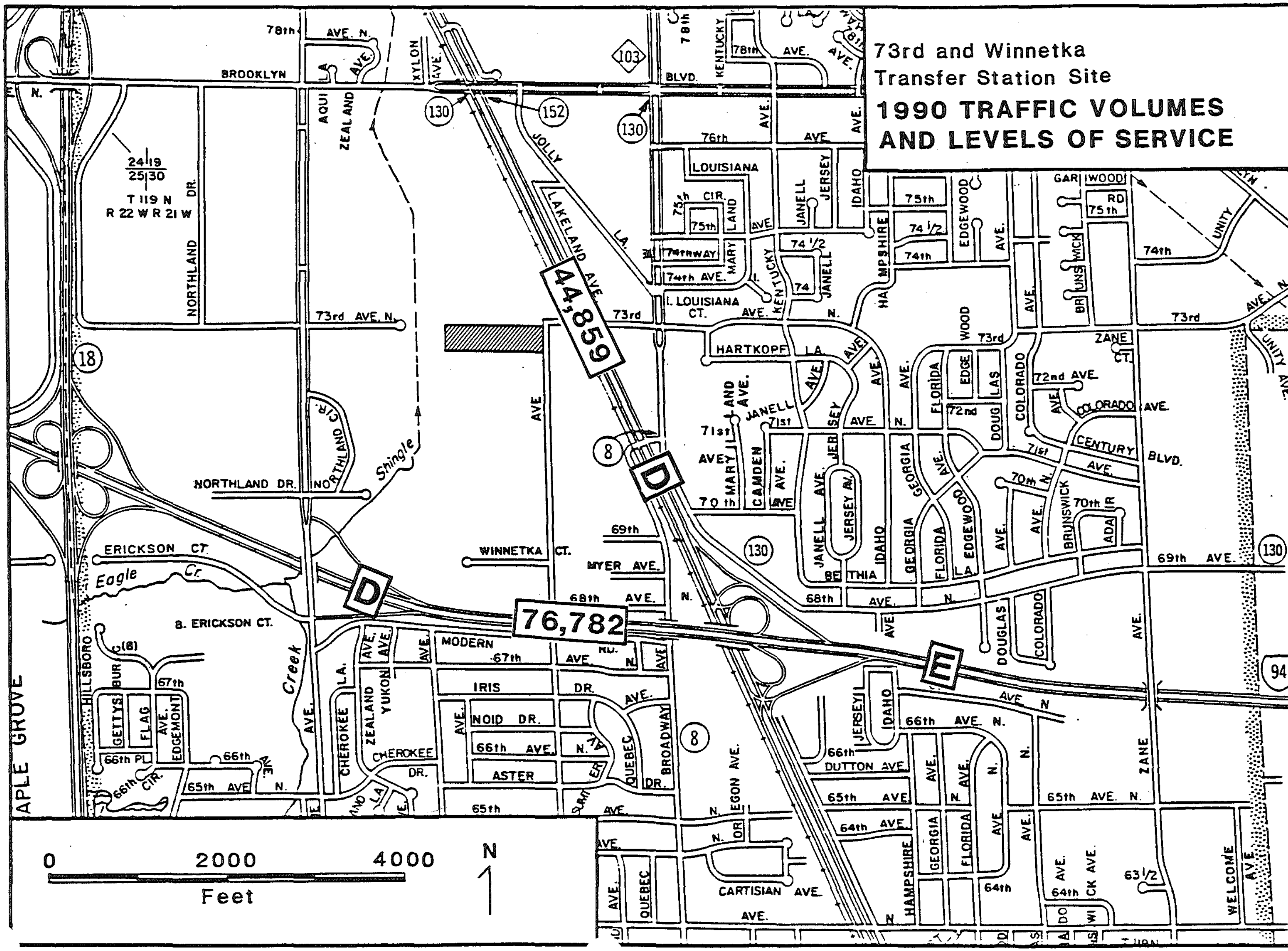
Eden Prairie Transfer Station Sites

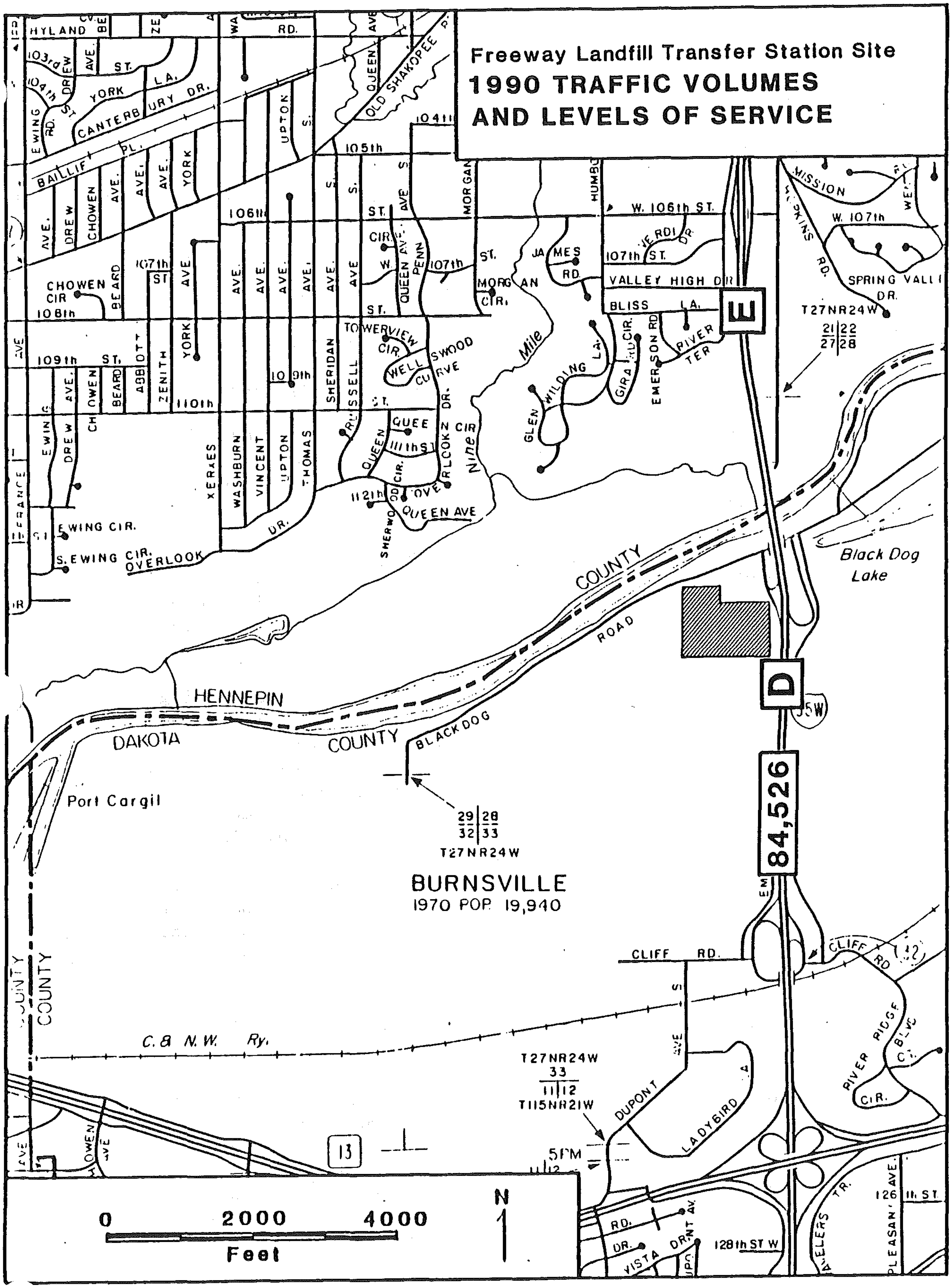
1990 TRAFFIC VOLUMES AND LEVELS OF SERVICE



I-494 and Nicollet Av.
Transfer Station Site
1990 TRAFFIC VOLUMES AND LEVELS OF SERVICE


Airport Southwest Transfer Station Site
1990 TRAFFIC VOLUMES
AND LEVELS OF SERVICE
Minneapolis St Paul
International
Airport
FORT SNELLING
NATIONAL
CEMETERY
24,738
C
141,315
D
109,772
C
71,350
C
METROPOLITAN
SPORTS CENTER
METROPOLITAN
STADIUM
BLOOMINGTON
1980 POP 81,831
Long
Meadow
Lake
0 2000 4000
Feet
N


73rd and Winnetka
Transfer Station Site
1990 TRAFFIC VOLUMES
AND LEVELS OF SERVICE
44,859
D
76,782
D
E
0
2000
4000
Feet
N


Freeway Landfill Transfer Station Site
1990 TRAFFIC VOLUMES
AND LEVELS OF SERVICE
E
D
84,526
35W
Black Dog
Lake
COUNTY
ROAD
HENNEPIN
DAKOTA
COUNTY
BLACK DOG
Port Cargil
29|28
32|33
T27NR24W
BURNSVILLE
1970 POP. 19,940
CLIFF RD.
C. & N. W. Ry.
T27NR24W
33
11|12
T115NR21W
13
0 2000 4000
Feet
N
W. 106th ST.
VALLEY HIGH DR.
BLISS LA.
RIVER TER
W. 107th
SPRING VALLEY DR.
MISSION
T27NR24W
21|22
27|28
OLD SHAKOPEE
CANTERBURY DR.
Nine Mile
GLEN WILDING LA.
DUPONT
LADYBIRD
RIVER RIDGE BLVD.
128th ST W
VISTA DR.

3.5.2 General Transportation Comments

The responses in this section address specific comments expressed by the City of Minneapolis in a memo dated Janluary 14, 1986 and Hennepin County as dated January 30, 1986.

1. The City of Minneapolis traffic engineer states that the capacity calculations provided in the DEIS in general are correct. The City Traffic Engineer, however, considers the intersection of Olson Memorial Highway and 7th St. N. to be operating at Level of Service "C" not "B" as stated in the Draft EIS (see page 4-112 of the Draft EIS).

   The capacity calculations provided in the Draft EIS indicate an overall Level of Service B operation at this intersection in the PM with a Level of Service B/C in the AM. There may be certain instances as noted by the City Traffic Engineer during peak hours of the year when the intersection operates at LOS "C" operations. LOS "C" operations, however, are considered acceptable for urban signalized intersections (Highway Capacity Manual, Special Report 209, Transportation Research Board, 1985). Sections 3.6.1.1 and 4.7.2.3 of the DEIS provide detailed discussions of roadway operating conditions with and without the proposed resource recovery facility at the Greyhound site.

2. The City of Minneapolis has indicated that specific attention must be directed towards analysis of the intersection of E. 28th St. and Hiawatha Av. Concerns were expressed about right turning vehicles on Hiawatha southbound and left turning vehicles on Hiawatha northbound (see discussion in Section 4.7.6 of the DEIS which begins on page 4-169).

   It is recognized that preliminary engineering changes are being developed for the upgrading of Hiawatha Avenue. The applicant will need to continue to follow up on discussions regarding proposed improvements. The analysis provided in the Draft EIS indicated an expected Level of Service B/C operation with the transfer station (unchanged from existing conditions). This is an acceptable operation. The specific improvements mentioned by the City could significantly enhance operations at this intersection thereby improving the level of service. If the additional right and left turn capacity on Hiawatha Avenue were provided per the preliminary engineering upgrading plans, Level of Service would be better than that predicted in the DEIS with the transfer station. Sections 3.6.5 and 4.7.6 of the Draft provide further details regarding traffic operations at the Minneapolis transfer station site.

3. Hennepin County has requested information on truck traffic flows if particular transfer stations are reduced in size (page 2-2).

   In the event that a transfer station were reduced in size, say by 50 percent, transfer and packer trucks would need to utilize the nearest alternate transfer station. Associated with the use of an alternative transfer station would be a resultant increase in truck traffic at that location. For example, if the Hopkins transfer station were reduced in size, much of the incoming truck traffic would likely shift to the proposed Bloomington transfer station. A reduction in traffic at the Hopkins site would therefore result in a consequent similar increase at the Bloomington transfer station.

The transfer stations as proposed are significantly larger than necessary to handle the expected tonnage. The facilities were oversized in order to minimize traffic impacts to the surrounding neighborhood by more efficiently handling the peak truck volumes. The impact of reducing size (capacity), if vehicles continued to go the closest facility, would be longer queuing lines and increased traffic congestion on access roads leading to the facility. Associated impacts would include increased noise and vehicle air emissions in the immediate vicinity of the site.

4. Hennepin County has indicated that known improvement projects identified in municipality's transportation comprehensive plan should be included in the analysis.

   Known projects such as the construction of a future interchange at Boone Av. and the extension of 73rd Av. near the Brooklyn Park East Transfer Station were discussed in Section 5.6 (page 5-8) of the DEIS. Each of the communities analyzed has specific plans for roadways within its boundaries. The projects are in various stages of consideration, approval or rejection. The transportation analysis was primarily based on known existing roadway conditions. This results in a conservative analysis which provides worst case transportation impacts. Proposed improvements which might be constructed by the time the facilities are operational would be designed to reduce congestion at the intersections analyzed thus resulting in less impacts than expected under existing conditions.

   The DEIS discusses proposed roadway improvements such as the Boone Av. interchange. Additional improvements such as those anticipated for Hiawatha Avenue in Minneapolis would further minimize any potential traffic concerns from the project. The DEIS as presented therefore provides an indication of the maximum expected project impacts.

5. Hennepin County has requested traffic data for the intersection of W. 98th St. and Old Shakopee Rd.

   The DEIS provides traffic data for the intersection of W. 98th, Old Shakopee and Humboldt Av. in Appendix E. The traffic volumes for all of the intersections described in Section 4.7.3 (beginning on page 4-115), Bloomington East transfer section are provided in Appendix E to Part I. The worksheets in Appendix E should be referred to for details of the capacity analyses undertaken.

6. It was requested by Hennepin County that the FEIS discuss the consideration of total vehicular delay as the criterion for signalization of intersections.

   Comments from ERT, Inc. note that the Manual on Uniform Traffic Control Devices should be considered in determining if a traffic signal is required at an intersection. Total vehicular delay is not, however, the sole criterion for determining the merits of traffic signalization. There are several warrants which should be considered in any analysis. These include, but are not limited to, minimum vehicular volumes and accident experience. Consideration should be given to signalizing any intersection experiencing an unusual amount of accidents, delay, or traffic demand, to name only several considerations. The DEIS utilized the Manual on Uniform Traffic Control Devices in the analysis where appropriate. Section 5.6 of the DEIS (page 5-8) reiterates that signalization could be considered (but is not necessarily required) for several intersections, based on a

preliminary review of operating conditions. The purpose of the DEIS was to identify potential problem areas and reasonably available mitigating measures--not to suggest final design solutions.

7. Hennepin County has commented on the extent of delay from train operations in Hopkins.

   The DEIS states that the coal trains could include as many as 125 cars (7500 feet long). At an assumed average speed of 20 miles per hour (Teske, 1985), a 125 foot coal train would take about 4 1/2 minutes to cross 5th Av. In addition, time must be allocated to the activation and deactivation of crossing protection on 5th Av. Assuming a minute for actuation of the at-grade crossing protection results in delays of at least 6 1/2 minutes (4 1/2 minutes for the train, 1 minute to activate the signal before train arrival, 1 minute to deactivate after train passing). Additional time would be required for the diminishing of the automobile queue on 5th Av. this could result in an additional 1/2 to one minute delay to certain vehicles. Based on the analysis, it is not unreasonable to expect delays of between 5 to 10 minutes per train (see Section 4.7.5.3, page 4-158).

   The DEIS states that it is possible that three trains could block the crossing for up to 10 minutes each during peak periods. Although it is unlikely that this would occur, since the coal trains operate on an unscheduled basis, such a situation is possible (Teske, 1985). The DEIS is not indicating that this would happen on a daily basis. The DEIS merely acknowledges the potential for such an event to occur and its likely impacts.

8. Concern has been expressed by the City of Minneapolis regarding the potential for refuse trucks to back up onto 6th Av. N. at the Greyhound site.

   The design of the proposed facility allows for the queuing of seven refuse vehicles (350 feet) before the scales. In addition, space is available beyond the scales for an additional ten refuse vehicles. Further, approximately 20 refuse vehicles could be accommodated on site while still maintaining one direction of travel on the site access road.

   If necessary, an additional 25 to 30 vehicles could be accommodated in the truck turning and tipping hall area. It is not expected that more than 30 refuse vehicles would arrive during any given hour and be delayed at the facility. In the event refuse vehicles were unable to utilize the facility, the guard positioned at the guard house turn turn away individual drivers. As a result of the available storage capacity for refuse vehicles and the ability of the guard house to meter traffic flow, vehicle queuing onto 6th Av. N. would not occur.

3.6 MPCA 1,000-Foot Separation Guideline

During the DEIS comment period, concern was expressed that the MPCA guidelines were not being followed with respect to a 1,000-foot separation between waste facilities and residential land uses.

The specific language that addresses the 1,000-foot separation is found in Minn. Stat. 116.07, subd. 4.

> 7035.1600 PROHIBITED AREAS FOR LANDFILL SITES
>
> The fill and trench areas of sanitary landfill sites are prohibited within the following areas, as existing at the time of receipt of the permit application by the agency:
>
> A. 1,000 feet from the normal high water mark of a lake, pond, or flowage.
> B. 300 feet from a stream.
> C. A regional floodplain (100-year flood).
> D. Wetlands.
> E. Within 1,000 feet of the nearest edge of the right-of-way of any state, federal, or interstate highway or of the boundary of a public park or of an occupied dwelling. Permission may be granted under this subsection, without these distance requirements, at the discretion of the director, taking into consideration such factors as noise, dust, litter, and other aesthetic and environmental considerations.
> F. Locations considered hazardous because of the proximity of airports.
> G. An area which is unsuitable because of reasons of topography, geology, hydrology, or soils.

The statute above applies to sanitary landfill sites, and not to intermediate processing facilities or transfer stations. Additionally, the 1,000-foot separation is a guideline that is administered at the discretion of the director. Further, the guideline includes this 1,000-foot separation not only from occupied dwellings, but also from the right-of-way of any state, federal or interstate highways, or of the boundary of a public park.

If this guideline was strictly applied to the facilities proposed in the Hennepin County EIS, none of the transfer stations, the mass burn facility itself, nor any of the alternative sites would be acceptable. If the guideline was applied only with respect to occupied dwellings within 1,000 feet of a facility, 11 of the 15 designated or alternate sites would be unacceptable.

The following table illustrates which sites are within 1,000 feet of occupied dwellings, state, federal or interestate highways, and public parks.

HENNEPIN COUNTY PROJECT

Designated and Alternative Sites Within 1,000 Feet of:

Site	Occupied Dwelling	State, Federal or Interstate Hwy.	Public Park
Greyhound	No	Yes	No
Bloomington East	Yes	Yes	No
Brooklyn Park East	Yes	Yes	Yes
Hopkins	Yes	No	Yes
Minneapolis South	Yes	Yes	No
73rd and Winnetka	Yes	Yes	Yes
Westwood	Yes	No	No
Railroad	Yes	No	No
Greenhouse	Yes	No	No
National Lead	Yes	Yes	No
Pyrofax	No	Yes	No
Airport Southwest	Yes	Yes	No
I-494 and Nicollet	Yes	Yes	No
Freeway Landfill	No	Yes	No
Pacific St.	No	Yes	No

If the MPCA landfill guideline were strictly adhered to in siting decisions for Hennepin County's proposed transfer stations and the Greyhound facility, all proposed sites would be unacceptable.

The current draft of the proposed MPCA solid waste rules do not specify a mandatory separation distance for resource recovery facilities to surrounding land uses.

3.7 Wastesheds

In order to provide an estimate of the actual waste volumes (and resultant traffic) to the facility and transfer stations, wastesheds were delineated for each proposed site designated by Hennepin County.

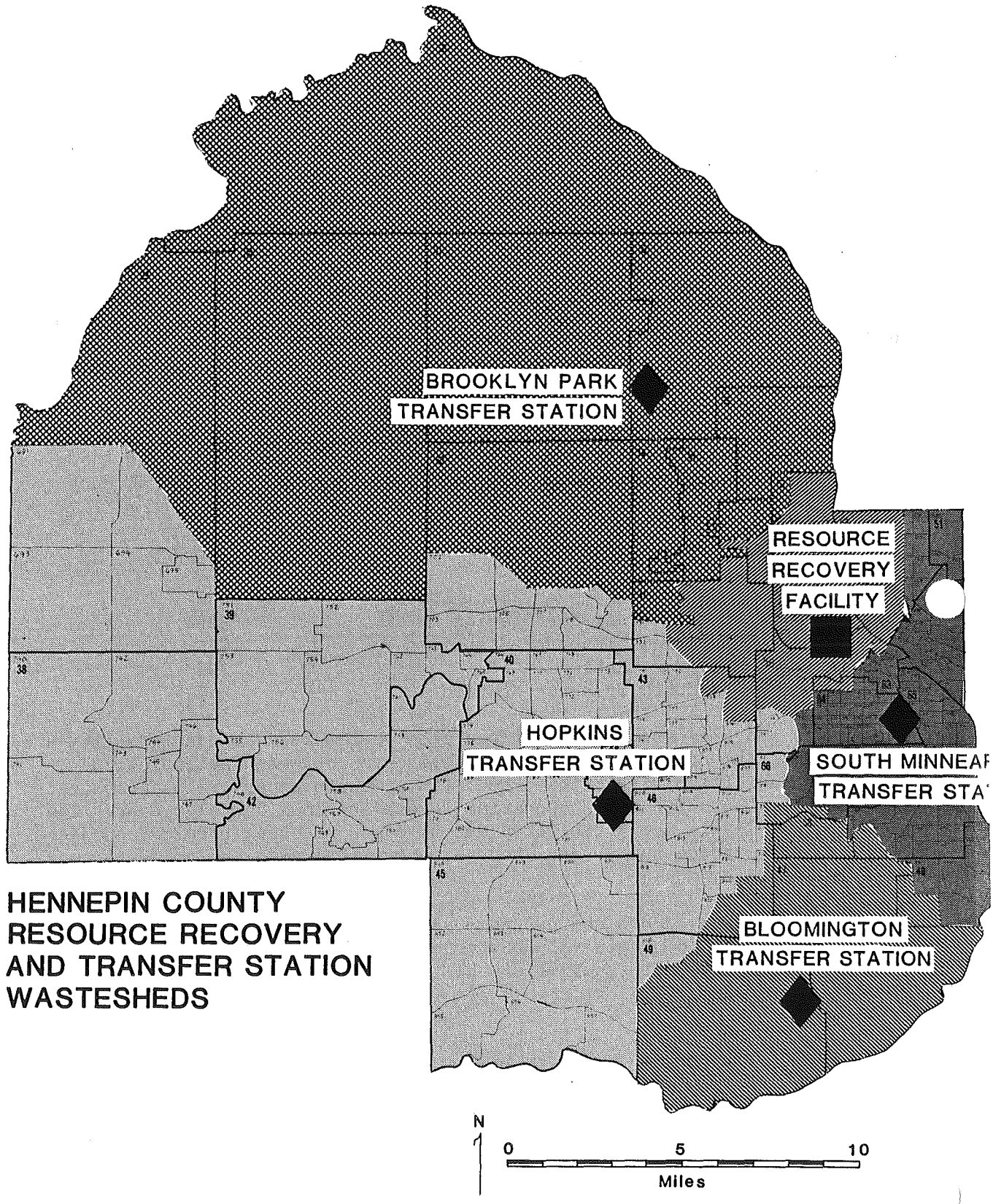
The method for determining these wastesheds consisted of using Metropolitan Council computer models of travel times from traffic analysis zones. This model provides the projected travel in 1990 (including road improvements scheduled for completion) from any one zone to all other zones. After plotting the travel times from each zone, generalized lines were then drawn along zone boundaries. The resulting wastesheds show which zones' waste would be expected to go to each facility (based on travel time). See Map.

The total volume of waste projected to be received by each facility was then calculated. (These figures are based on total waste generated within Hennepin County and do not include other waste exclusions or exemptions.) The 1990 estimated population, households, and commercial and industrial employment data was available by zone. By applying waste generation rates for each type of generator, a total estimate of waste generated was developed for each zone. These figures were then aggregated to determine total waste amounts that will be received by each of the transfer stations and by the facility. The table below shows the estimated annual average daily waste to be received at each facility.

Facility	Tons per Day
Greyhound Resource Recovery Facility	690
Bloomington East Transfer Station	540
Brooklyn Park East Transfer Station	525
Hopkins Transfer Station	745
Minneapolis South Transfer Station	545

The estimates above of the amounts of waste to be received at each facility are based on all of the county's waste being delivered to these facilities. Although the facilities will be designed with adequate capacity to accommodate these volulmes, the anticipated operating levels are considerably lower. The lower operating levels are anticipated due to other resource recovery projects, both within and outside the county, source separation/recycling projects and composting programs.

Because these other projects and programs are still in the developmental stage, precise determination of waste volumes to be delivered from the generator to a particular facility is not feasible at this time.



Base map shows Traffic Analysis Zones (light lines) and Urban Activity Analysis Districts (heavy lines).

3.8 Opportunity Cost

Dr. Gray's memorandum discusses two factors affecting land values: externalities and opportunity costs. Externalities are the costs generated by the project that affect neighboring properties. Common examples are noise and air pollution. Opportunity costs refer to alternative uses of resources that may be more beneficial.

Both concepts apply to the transfer stations as to any development project. The DEIS acknowledges the potential for some detrimental effects on the value of nearby property on page 4-226. As Dr. Gray states in his memo, the difficulty is trying to quantify this effect precisely.

Ideally, opportunity costs should also be considered in a thorough cost-benefit analysis. Conceptually this includes an evaluation of all alternative uses of the project site. Again the difficulty of this analysis precluded its being included for the Hopkins site or any of the other sites in the EIS.

A city can artificially adjust the value of property by changes in zoning or by issuance of variances for development inconsistent with zoning. The true opportunity cost of the parcel to the city would be the value of the parcel less the cost of purchase and site preparation of an alternate site for the proposed facility. Site preparation would include relocation of existing uses, clearing the property and absorption of liability for any potential environmental clean-ups or other unique costs of developing an alternate site. Techniques used to resolve externality or opportunity cost conflicts include site swap, payment in lieu of taxes, use of mitigating measures, restriction on ours or type of operation, amoung other choices.

3.9 Rodent and Vector Control at Transfer Stations

The Council retained Mr. Kent A Rees, a registered sanitarian, to examine the potential impacts of rats, litter, and insects in the vicinity. His report, which is attached, concludes that with proper controls, the transfer stations would not contribute to rodent populations.

In order to support a vector population, an area must provide a suitable habitat containing the essential elements of food, water and harborage. Unless all of these vital factors are present, a rodent population cannot be sustained. The transfer station facilities will be designed and operated so that they will not provide a suitable habitat for rodents.

Solid waste will not be stored at the facility, but will instead be continuously cycyled through and removed; thus preventing a usable food supply or haborage area. All spilled debris inside or outside the building will be removed on a daily basis. The grounds of the facility will be landscaped with vegetation that does not offer concealment or potential burrowing areas, and will be maintained regularly.

Rodents which enter the facility in loads of rubbish will be transferred directly to transfer trailers and removed to the resource recovery facility or landfill along with the waste. A system of tamperproof rodenticide bait stations will be installed on the premises to control any individuals that escape into the facility during transfer of waste loads.

March 13, 1986

John Rafferty
Senior Environmental Planner
Metropolitan Council
300 Metro Square Building
St. Paul, MN 55101

Dear Mr. Rafferty:

Concerning the Hennepin County Resource Recovery Project, you indicated that citizens have concern that such a facility would be a source of vermin (rats) for the neighborhood. At any given time each city block has a certain capacity to support rats. This capacity is related to the availability to food, harborage, living space and other vital rodent requirements. Permanent control of the vital factors (food, water or harborage) will result in control of a rodent population.

In the draft environmental impact statement on page 1-11, is the only reference I noted regarding vector control. In this section it states, odor and vector control will be incorporated into the design of the tipping area and the combustion system and various operational controls. As I did not note any other reference throughout the draft environment impact statement relating to environmental factors that will control vermin, the following items are recommended for incorporation into this Resource Recovery Project.

One of the principle means of preventing a vermin problem is to provide an environment that controls the vital factors (food, water or harborage). In the area of harborage control, the design and maintenance of the grounds is very important. Landscaping materials around the grounds should be of the type which can be easily maintained on a regular basis. There should be no opportunity or location where weeds or heavy brush could provide concealment of rodent burrows. All grass areas should be mowed at regular intervals so as to control the growth of vegetation.

Conifer type shrubbery or trees and brushy vegetation are types of landscaping materials that can provide concealment for a rodent population. It is suggested that for landscaping materials, use deciduous trees of the non-flowering and fruit bearing type in planning the esthetics of the transfer stations.

A perimeter fence should be installed around the entire transfer station. The fence should be of the type that not only provides security but will also collect and hold any windblown debris. One of the principle problems with all fences is controlling the vegetation at the very base of the fence. Vegetation can be controlled by one of two means. An area, one foot on both sides of the fence can be treated on an annual basis with a herbicide which will prevent the growth of all noxious weeds and grasses. Applications of these chemicals would need to be applied on an annual basis and possibly more frequently. An alternative would be to provide a concrete or asphalt strip one foot on both sides of the fence which would exconclude all vegetative growth. This would allow lawn care (mowing) up to the edge of the fencing.

All driveway and parking areas should be hard surfaced and sloped to areas catch basins. The proper drainage and removal of all water from the premise will eliminate this factor that could aid in supporting a vermin population. The catch basins and drains should if possible be designed so that rodents may not use them for harborage areas or for a source of water. There are instances where sewers have a resident population of vermin. If such a condition presently exists then control flaps can be placed in discharge lines before connection to the muncipal sewer system Such a control device can control rats from migrating into a building or onto a property from the muncipal sewer.

The sanitation of the parking and drive areas should be maintained on a regular basis. These areas should be swept at regular intervals to remove all dirt, debris and other materials that may be deposited on the paved surfaces by the transportation vehicles. This can be facilitated by the use of a self-propelled or portable type street sweeper. The frequency for cleaning the hard surfaced areas will depend upon the amount of debris that may accumulate. It may be necessary to conduct a cleaning operation on a daily basis or maybe even more frequently. During periods of snow accumulation the snow should be removed from the premise. Large piles of snow tend not only to accumulate debris but can also provide an insulated winter harborage area for rodents.

To facilitate the sanitation and maintenance of the grounds on a year round basis it will be necessary to have adequate lighting in all areas of the premise.

On page 3-21 reference is made to the prevailing winds. The building placement should take into accounts these winds so as not to create a wind tunnel effect around and through the transfer station which would increase the wind blown materials which could serve as an attractant for rodents. The wind blown materials will also increase the time for maintaining the grounds in an acceptable sanitary condition.

Inside the transfer station all spilled debris should be removed on a daily basis. By providing daily sanitation, both inside and outside of the building, the vital factor of food can be controlled.

By controlling the potential harborage areas along with the food and water availability for the rodents, the transfer station should not attract, provide or be a source of rodents to the community. One of the important features in controlling the environmental factors is the impact that people may have when not adequately performing their prescribed duties and functions.

In the event that a rodent should be collected with the rubbish from some other location in the metro area, a continuous ongoing program of strategically place bait stations should be placed on the premise. Bait stations could be placed on the interior of the building in an area that would not be subject to damage by movement of vehicles. Bait stations should also be placed immediately outside the building and around the perimeter of the property. All bait stations for the placement of rodenticides must be of the type that is childproof and are securely positioned so that they can not be moved or tampered with by anybody except a contracted licensed pest control operator. The bait stations should be monitored on a monthly basis and a written report filed noting activity or lack of activity. The placement of rodenticides should be viewed as only a suppliment to the basic environmental factors and should not be viewed as the principle controlled procedure.

As I stated at the beginning, each city block has a certain capacity to support rats. With the proper application of environmental controls and a conscientious attention to the daily sanitation, the transfer station should not contribute to a rodent population.

Sincerely,

Kent A Rees

Kent A. Rees
Environmental Health
Consultant

3.10 Mitigations

Commentors expressed concern that the mitigation measures identified in the DEIS were insufficient to guide decision makers to a full range of measures reducing the impacts of the proposed facilities. The topics identified by commentors were measures to mitigate noise, aesthetics, litter, traffic and sulfur dioxide emissions.

The comments addressed to the traffic issue relate to the proposed Hopkins facility in particular. Mitigating measures for the proposed Hopkins site are described on pages 5-9 of the DEIS. The measures include posting the route, designing the entrance to prevent access from the south and fining haulers for traversing the route south of the site. The City of Hopkins also has authority to prevent vehicles from using 5th St. So. Noise in the neighborhood adjacent is greatly influenced by the current level of truck traffic on 5th St. So. The effect of limiting truck traffic on 5th St. So. would reduce the existing noise levels to the point that the area south of 5th St. So. and east of 6th Av. would attain MPCA noise standards.

Traffic-related concerns for the Bloomington East and Minneapolis South sites are discussed in the transportation section of the topical response to comments of this section.

Noise, aesthetics and litter concerns are part of a larger issue on site layout and construction. The proposed sites do not have finalized site layouts. The placement of the facility on the site as well as the architectural treatment can have a significant impact to alleviate noise, aesthetics and litter problems. The following is a list of design considerations for mitigating adverse impacts. The mitigating measures are addressed by adverse impact altered.

Noise impacts can be mitigated for transfer stations by:

1. Placement of the truck opening away from the sensitive noise receptors.

2. Attaching a noise baffle to the opening of the tipping floor to absorb noise energy.

3. Placement of a berm between the tipping floor door and sensitive noise receptors.

4. Soundproofing the building to reduce noise transmission.

Each of the measures cited will reduce the facility noise impact by approximately 50 percent. Impact of any combination of these measures can be evaluated for any site based on the methodology employed in the DEIS.

Aesthetic impacts can be mitigated for transfer station facilities by:

1. The choice of a compatible exterior treatment for the building and buildings that support operations, i.e. scale house.

2. The use of berms and/or vegetation to screen on-site operations from sensitive views.

3. Screening the truck opening from the public view.

The last two mitigating measures are also effective for noise control. The screening of doors can also help to alleviate the nuisance of wind-blown debris or litter.

Litter impact can be mitigated for transfer stations by the following means:

1. Regular policing of the grounds during operations.

2. Installation of fencing near areas where wind blown debris will be generated. To remain effective, the fencing must be cleaned daily and maintained.

3. Screen doors from prevailing winds to eliminate wind on the tipping floor.

4. Remove any refuse on the floor of the transfer trailer pit after each trailer is removed.

The waste-to-energy facility will not violate air quality standards for any of the criteria pollutants. The facility would be considered a major new source for sulfur dioxide and carbon monoxide. The pollutant of greatest concern from a permitting standpoint is sulfur dioxide. No major new sources of SO_2 can be constructed in accordance with a USEPA ban because no State Implementation Plan is currently in force in a designated nonattainment area. The Minnesota Pollution Control Agency is currently in the process of obtaining a redesignation to attainment for the majority of the Twin Cities area, including the proposed Greyhound site. Prior to the approval of the redesignation by USEPA, the MPCA cannot issue a permit for a major new source. The MPCA commented that if emissions from the facility can be reduced to less than 100 tons per year of SO_2, then the facility could be permitted as a minor source. The mitigation measures that may be applied to this situation are:

1. Improving the maintenance on the dry scrubber to achieve an 83 percent efficiency; or,

2. Reduce the amount of refuse combusted at the facility to 560 tons per day.

Either of these measures would make the proposed facility a minor source for SO_2. MPCA commented that USEPA uses a lower SO_2 generation rate for combustion of mixed municiple waste and that this factor should be used when calculating SO_2 emissions. The proposed contractor, Blount Energy Resources Corp., has had experience with refuse combustion and provided the SO_2 emissions factor used in the DEIS. Due to the lack of firm available data concerning a SO_2 emissions rate, it seems most appropriate to use the conservative estimate supplied by Blount for the EIS.

3.11 Acceptable and Unacceptable Wastes

The plants operated by the Signal-Resco Co. have had experience in determini wastes deemed to be unacceptable to the facilities. Major concerns lie with processing of infectious wastes, handling of hazardous materials or explosive wastes, and worker exposure to radioactive materials. Joseph W. McCarthy of Signal Environmental Systems, Inc., has provided a list of wastes found to be both acceptable and unacceptable at the North Andover, Mass., facility. The list is attached for reference. The list of acceptable and unacceptable wastes for Hennepin County will need to be developed by the county and its contractors. Specific mechanisms for screening wastes will also be developed by the resourec recovery facility operator. Special attention can be given to this topic in permitting and approval decisions.

The Solid Waste Designation Ordinance for Hennepin County outlines the responsibilities of the County, the Operator and the Haulers with respect to the delivery of Unacceptable Wastes at the resource recovery facility and transfer stations. "Unacceptable Waste" is defined in Subsection 17 of the Ordinance as follows:

(a) Unacceptable Waste at Transfer Stations: Unacceptable Waste at the transfer stations includes, but is not limited to, hazardous waste as definied in Minnesota Statutes, Section 116.06, subd. 13 (1984), as amended, and the Resource Conservation and Recovery Act, 42 U.S.C. 6903 (5); hazardous waste of any kind or nature, such as explosives, radioactive materials, cleaning fluids, crankcase oils, cutting oils, paints, acids, caustics, poisons, drugs, or other material that would be likely to pose a threat to health or public safety, or cause injury to or adversely affect the operation of the transfer stations; pathological and biological wastes; ashes, foundry sand; sanitary sewage and other highly diluted water-carried materials or substances; all sludges, including sewage sludge and septic and cesspool pumpouts; human and animal remains; auto hulks and other motor vehicles, including such major motor vehicle parts as transmissions, rear-ends, springs and fenders; agricultural and farm machinery and equipment; liquid wastes; large quantities of non-burnable demolition debris; street sweepings; mining waste; construction debris, trees, agricultural waste and tires in excess of the quantities allowed as Acceptable Waste; and waste which was generated outside of the County unless accepted by the County pursuant to Section IV, Subsection 8.

(b) Unacceptable Waste at the Greyhound Facility: Unacceptable Waste at the Greyhound Facility includes Unacceptable Waste at Transfer Stations, and in addition thereto, the following: incinerator residue, human waste, automobile and small vehicle tires to the extent the air emission criteria applicable to the Greyhound Facility are violated by their combustion, marine vessels and major parts thereof, transformers, trees and lumber more than six feet long or one foot in diameter, nonburnable construction material, demolition or other construction debris, any materials which if processed at the Greyhound Facility would cause the bottom ash produced at the Greyhound Facility to be classified as hazardous waste, and waste which was generated outside of the County unless accepted by the County pursuant to Section IV, Subsection 8.

As established in the Designation Ordinance, the County has the right to inspect all vehicles delivering waste to the facilities and to reject any loads containing unacceptable substances. Haulers are prohibited from delivering

unacceptable wastes to either transfer stations or resource recovery facilities and are liable for all costs of removal and disposal of such wastes if delivered.

Screening waste for any toxic or hazardous substances will be done at two locations in the waste delivery system. The transfer stations will provide an initial inspection of waste delivered by haulers. As waste is dumped at the transfer station, employees of the station will be inspecting the waste and removing white goods and other waste or metals that cannot be processed at the resource recovery facility. If any toxic or hazardous waste is found, the hauler delivering the waste will be responsible for the proper handling and disposal of waste. If the hauler cannot be identified, the station operators will remove the waste to an isolated storage area until a licensed hauler picks up and disposes of the waste in the prescribed manner.

If toxic or hazardous materials are delivered to the resource recovery facility, the above procedures would also take place. The RDF facility will have a tipping floor where all waste will be dumped for inspection and handling. There are also other inspection points along the various conveyors with the process. The mass burn facility will utilize a pit to receive wastes and the crane operator will have inspection responsibilities for unacceptable wastes.

The following general guidelines will be followed as were outlined in the Ramsey/Washington Waste-to-Energy Project, Draft Environmental Impact Statement (Metropolitan Council of the Twin Cities Area, March 1985):

- Hazardous wastes with flammable, reactive or explosive properties must be separated prior to processing.
- Collected hazardous waste must be stored in accordance with MPCA rules;
- If quantities or storage period fall within MPCA guidelines, an MPCA facility permit will be required; and
- Collected hazardous waste must be disposed of or treated at licensed hazardous waste management facilities.

Acceptable Waste:

Household garbage, trash, rubbish, refuse

Includes: beds, mattresses, sofas, refrigerators, washing machines, bicycles, leaves, twigs, branches (only 1 ft. diameter bundles or individual branches 6 feet long), tree trunk sections (6 feet long and 1 foot diameter), baby carriages, occasional auto tires.

Commercial and light industrial waste.

Unacceptable Waste:

Pathological and biological waste, oil sludge, large concentrations of plastics, tires, wire and cable, cesspool or other human waste, human and animal remains, large automobile and vehicular parts (transmissions, rear ends, springs, fenders, motorcycles, snowmobiles), trailers, agricultural equipment, marine vessels, farm and other large machinery, tree logs and wood greater than six (6) feet in length and six (6) inches in diameter, tree stumps greater than twelve (12) inches in diameter, liquid wastes, non-burnable construction material and/or demolition debris, wallboard, sheetrock, asbestos or asbestos products, explosives (including ammunition and firearms), chemicals (including empty containers thereof), radioactive materials, hazardous refuse of any kind (includes empty containers), cleaning fluids, flammables, petroleum products (including drained oil), cutting oils, paints, acids, caustics, pesticides, insecticides, poisons, drugs.

Any materials that would be likely to cause the facility to violate an air or water quality effluent standard or to pose a threat to health or safety or which may cause damage to or adversely affect the operation of the facility.

3.12 Noise Comments

1. The MPCA has requested an explanation of the derivation of the City of Minneapolis Noise Standards.

   Table 3.7-6, page 3-129 of the DEIS provides a listing of the City of Minneapolis noise limitation standards. The noise standards shown in Table 4.8-3, page 4-193 of the DEIS are merely excerpted from the City Noise Ordinance. There was not any calculation for the EIS of new or revised noise standards.

2. The MPCA has noted that significant noise impacts will occur on 20th Av.

   It is recognized that an increase in noise levels of 5 dBA will occur on 20th Av. S. from truck traffic accessing the Minneapolis transfer station. A correction should be made to page 4-211 of the Draft EIS noting this increase in noise levels.

3. Truck traffic in Hopkins is not expected to result in significant increases in noise levels. The MPCA has expressed concern as to whether or not truck traffic from food distribution warehouses was included in the noise assessment.

The noise assessment was prepared based on actual traffic counts taken in Hopkins in 1985. These traffic counts include all truck traffic from food distribution warehouses and any other sources in the area on the days the counts were taken. The analyses in DEIS Section 4.8 for all locations were based on actual counts taken in 1985. These traffic counts specifically classified vehicles by truck and automobile. Thus truck data is available for the hours when counts were taken and was utilized in the noise assessment. In general, truck traffic represented less than 5 percent of total vehicular volumes through the intersections counted. Food warehouse truck traffic was included in both the noise and traffic analyses for Hopkins (Sections 4.8 and 4.7).

4. The MPCA has requested information about mitigating measures from the induced draft fans at the facility.

   Fans can be of two types; these are variable speed fans or fan banks that allow individual units to be shut-off when not in use. Either arrangement will reduce the noise impact of the equipment when not operating at maximum capacity. Other plant site mitigations may be found in the mitigations discussion, Section 3.10.

SECTION IV

SUMMARY OF ISSUES

4. SUMMARY OF ISSUES

4.1 Introduction

The purpose of this summary is to provide ease of comparison of issues for the proposed project and its alternatives. For a detailed discussion of pertinent information with respect to a specific topic, the reader should consult the appropriate sections of the EIS.

4.2 Air Quality

4.2.1 Greyhound Facility

4.2.1.1 Existing Conditions

Currently the Greyhound site is located in an urban area classified by the U.S. Environmental Protection Agency (EPA) as a nonattainment area for sulfur dioxide (SO_2), CO and TSP. Based on several years' monitored compliance with standards, the Minnesota Pollution Control Agency (MPCA) has requested that the Metropolitan Area be redesignated to attainment for SO_2 (except for the Pine Bend area) and CO (except for the intersection of Snelling and University in St. Paul). This action is now under review by the EPA.

4.2.1.2 Impacts

Total construction time at the Greyhound site will be about 34 months. The majority of mobile source and fugitive particulate emissions will be durin he two to three months of earth-moving activities.

The results of modeling for the facility indicate that operations will not have a significant impact on ambient concentrations of carbon monoxide and particulates. The projected facility emissions for carbon monoxide exceed 100 tons per year. The facility will be considered a major new source of CO. Major new sources can only be constructed in nonattainment areas where offsets have been provided. A redesignation to attainment by the EPA will allow for the construction of the facility under prevention of significant deterioration rules.

SO_2 emissions projected for the proposed facility exceed 100 tons per year. The Twin Cities Metropolitan Area is currently designated nonattainment for SO_2. The state does not have an approved state implementation plan for SO_2, so offset trading does not apply. As stated earlier, the MPCA is in the process of requesting redesignation to attainment for SO_2 in an area that includes the facility site. A major new source permit may be granted after the EPA approves the redesignation request.

Modeling of CO impacts from vehicle traffic to and from the site indicate that no "hot spot" will be created and that CO concentrations will be below Minnesota and federal standards.

The human health aspects of the proposed waste-to-energy facility have been assessed in the draft EIS. Due to a lack of reliable data on a facility substantially similar to the proposed facility, alternate data to evaluat health risks was developed. The list of compounds evaluated from a health risk standpoint is provided in Table 4.3-1 of the DEIS and includes dioxins, furans

and heavy metals. The results of modeling predict the ground level concentrations of the toxic materials. Routes of exposure were evaluated for each compound of interest to predict a dose rate for the toxics. The dose rate was multiplied by the EPA potency slopes to provide a hazard characterization risk. Table 4.3-9 presents the risk of cancer and other health impacts for the toxics present in waste to energy emissions. The health risk projected for the plant is 0.9 in 100,000. The MPCA guideline for acceptable environmental risks is 1 in 100,000. This topic is addressed in detail in the topical responses to comments on page 3-10.

4.2.1.3 Mitigative Measures

Control of fugitive dust during construction can be accomplished by measures such as occasional watering and minimizing the length of time bare earth is exposed. The MPCA conventionally requires appropriate dust controls as part of its permit for facility construction.

The minimal potential for ice buildup on Sixth Av. N. could be mitigated by the application of sand or, at a higher cost, the installation of a wet/dry cooling tower.

4.2.2 Pacific St. Site

4.2.2.1 Existing Conditions

This site is approximately 1.5 miles north of the proposed Greyhound site, thus altering the location of maximum plant impacts. The basic contextual discussion of the facility's impacts and local air quality is described in Section 4.2 of the DEIS.

Use of the alternate Pacific St. site for the facility would shift the maximum SO_2 impact away from the downtown hot spot to the GAF hot spot in North Minneapolis. The maximum one-hour impact of the proposed facility in the GAF hot spot would be 25 ug/m^3. This would be an increase of 4 percent from 620 ug/m^3 to 645 ug/m^3 in the impacted area. Although this does represent a degradation of air quality in the vicinity of the site, it represents a very small incremental increase toward the 1,300 ug/m^3 standard. Results of the 24-hour and annual modeling analysis show similar levels of impact on air quality in the vicinity of the site. In all cases, the analysis shows ambient air quality effects well below Minnesota and federal standards.

A Pacific St. facility would generate 150 refuse truck arrivals in excess of the 50 currently traveling to the site. The additional truck traffic to the site would further congest traffic at Broadway and Washington Avs. It is anticipated that the carbon monoxide levels generated by the traffic on Broadway and Washington Avs. would not exceed the levels identified in Table 4.2-14.

The background CO concentrations used for the Greyhound site are very conservative if applied to the Pacific St. site due to the strong influence of other central business district emission sources at Greyhound.

Since there would be no difference in pollutant emissions, the human health impact of emissions from a Pacific St. site would not differ from those identified for the Greyhound site.

4.2.3 Transfer Stations

4.2.3.1 Designated and Alternative Sites

4.2.3.1.1 Existing Conditions

MPCA monitoring and/or modeling shows that all transfer station sites attain primary ambient air quality standards. Given lower urban densities at the transfer station sites, predicted concentrations of primary air quality pollutants are believed to be well below those in the Minneapolis central business district.

4.2.3.1.2 Impacts

Transfer station construction is anticipated to take 7-12 months, with the first 2-3 months being primarily earth-moving activities. During this period, fugitive particulates as well as mobile source emissions will occur.

Emissions from facility operations will not significantly contribute to ambient concentrations of carbon monoxide and particulates. In the transfer facility and elsewhere on site near truck queing areas, odors may be noticeable

4.2.3.1.3 Mitigations

Control of fugitive dust during construction can be accomplished by measures such as occasional watering and minimizing the length of time bare earth is exposed. The MPCA conventionally requires appropriate dust controls as part of its permit for facility construction. To control possible odors at the transfer stations, reoderant should be applied. In addition, fans and filters could be installed to create negative air pressure and force odiferous air through these filters.

4.3 Geology and Soils

4.3.1 Greyhound Site

4.3.1.1 Existing Conditions

Soil borings and laboratory analysis show soils on the site are contaminated in the vicinity of petroleum product storage tanks at the southeast end of the bus garage. The contamination extends underneath much of the southern portion of the building and eastward into the neighboring Insty-Print parking lot. Diesel fuel is present in a soil zone at or near the water table. Braun Engineering estimates that slightly over 5,000 cubic yards of contaminated soil exists on the site.

Since soil on site is contaminated, it is likely that groundwater in the area has been affected. Groundwater samples have not been collected and analyzed. Depth to groundwater is 4 to 15 feet below ground level.

Active faults, steep slopes and floodways do not exist on or adjacent to the site, and no other geologic hazards have been identified.

4.3.1.2 Impacts

Site preparation would require demolition and removal of an existing bus garage and railroad spur.

The excavation and removal of the contaminated on-site soils may be necessary before construction of the proposed facility. Soil removal and replacement would have a positive impact on the soil and water quality in the site area.

Excavation, grading and filling of the surficial soils would occur in areas where structures and paved surfaces will be placed. Uncontaminated soil excavated during construction would be reused on site to the greatest extent practical. Demolition debris would require disposal at MPCA-permitted facilities.

Dewatering may be necessary during construction due to shallow groundwater depths on the site. It is most likely that the water will be discharged to the sewer system. A Minnesota Department of Natural Resources (DNR) permit would be required. Dewatering would temporarily depress the local water table.

4.3.1.3 Mitigations

During construction a variety of measures could be employed to minimize temporary changes in rates of erosion and runoff caused by disruption of naturally compacted soils and vegetation. These measures include:

- Periodic wetting and mulching of unvegetated and uncompacted areas to reduce blowing dust, soil erosion and runoff;

- Prompt revegetation of disturbed areas; and

- Construction of temporary detention ponds to interrupt runoff.

Conventionally, MPCA permits for construction specify appropriate contols.

4.3.2 Pacific St. Site

4.3.2.1 Existing Conditions

The site is characterized by clay-loam soils that are poorly drained. Depth to groundwater is typically 10 feet in areas with this soil type. During the wet season, the groundwater may be 1 to 3 feet below surface for a period of up to 90 days. Depth to bedrock is not known for this site.

4.3.2.2 Impacts

Some excavation, grading and filling of the surficial soils would occur in areas where structures and paved surfaces will be placed. The near-surface native soils have already been disturbed by previous development of the site, so the impact of construction of the new facility would be minimal. Soils excavated during construction would be reused on site to the greatest extent practical.

Due to shallow groundwater depths, dewatering may be necessary during construction. It is most likely that the water will be discharged to the sewer system. A DNR permit would be required. Dewatering would temporarily depress the local water table.

4.3.2.3 Mitigations

During construction a variety of measures could be employed to minimize temporary changes in rates of erosion and runoff caused by disruption of naturally compacted soils and vegetation. These measures include:

- Periodic wetting and mulching of unvegetated and uncompacted areas to reduce blowing dust, soil erosion and runoff;
- Prompt revegetation of disturbed areas; and
- Construction of temporary detention ponds to interrupt runoff.

Conventionally, MPCA permits for construction specify appropriate controls.

4.3.3 Transfer Stations

4.3.3.1 Existing Conditions

4.3.3.1.1 Bloomington East

Bloomington East is a previously disturbed site with about 40 percent of the site now covered by buildings or pavement. The remainder is a gravel vehicle storage yard. Groundwater is 30 to 38 feet below grade. No geologic hazards are known to exist on this site.

4.3.3.1.2 Brooklyn Park East

The northwest and southwest portions of the site are occupied by DNR-protected wetlands. A two-story house is located in the southeast corner of the sit The remaining site area is vacant and covered with grasses and trees.

Groundwater was encountered during soil borings at depths ranging from 6 to 14.5 feet below ground surface. Water table elevations, based on data from the boring logs are irregular; no clear pattern of groundwater flow is evident.

This site is located just east of Shingle Creek and overlaps the Shingle Creek floodway and flood fringe. The northwest and southwest corners of the site, as well as the elliptical depression extending east-west across the center of the site, lie within the 100-year and 500-year floodplain of the creek. Approximately 25 percent of the proposed site is in the floodway.

No other geologic hazards, such as active faults, sinkholes or steep slopes, are known to exist on or adjacent to the site.

4.3.3.1.3 Hopkins

The site is currently used for the storage of Hennepin County Department of Transportation equipment and highway construction materials. Portions of a nonoperating bituminous batch plant facility still exist on the site.

A perched water table may exist along the western edge of the site in a coarse-grained alluvial sand which overlies a relatively impervious layer of glacial till. Evidence for this is from observed abrupt changes in water table elevations on the site. Water was encountered in three of the western-most soil borings at a depth of 11-20 feet. The only other boring to intersect the water table was the deepest one drilled, located in the center of the site. This boring encountered groundwater at a depth of 34 feet.

No active faults, sinkholes, steep slopes, floodways or other geologic hazards are known to exist on or adjacent to the site.

4.3.3.1.4 Minneapolis South

The site is occupied by an existing solid waste transfer station. Nearly all of the ground surface is covered with buildings or pavement.

The water table was penetrated by one soil boring on the site at a depth of 34.5 feet. The groundwater encountered lies just above relatively impervious glacial till, and therefore might be indicative of perched conditions.

No geologic hazards, such as active faults, steep slopes or floodplains, are known to exist on the site.

4.3.3.1.5 73rd and Winnetka Av.

Most of the site is developed as a vehicle salvage yard, with the westerly 2.5 acres vacant grassland. West of the site is the floodplain of Shingle Creek.

No geologic hazards, such as active faults, sinkholes or steep slopes, are known to exist on the site.

4.3.3.1.6 Westwood

The site is covered predominantly by coarse, sandy loam soils. A portion of the southern edge of the proposed site is marshy soil and wetland. The entire site has been cleared, graded and prepared for construction. The soils on site are adequate to support low-profile industrial development including a transfer

station. The depth to bedrock averages 180 feet on the site. Groundwater has a minimum depth of 20 feet below grade and averages 30 feet below grade. There are no known wells or other geological hazards known to be on the site.

4.3.3.1.7 Railroad

All of the site has been disturbed by the existing land use. The site is covered by cut and fill soils that currently support very little vegetation. The on-site soils will support the construction of a transfer station. Depth to groundwater is a minimum of 20 feet below the surface and averages 30 feet over much of the area.

The site is used for an asphalt manufacturing plant and so involving the extensive handling of petroleum distillates. No soil contamination from production processes was observed on site; however, more extensive site investigation could lead to different findings. Contamination would not preclude the use of this site as a transfer station, although the development costs could be affected.

4.3.3.1.8 Greenhouse

All of the site has been disturbed by earlier construction. The subsoils are sandy clay and glacial till. The site supports structures and equipment similar to that needed for a transfer station. Depth to groundwater averages 30 feet. Seasonal variations of flow in Nine-Mile Creek will cause the groundwater elevation to rise in the spring. There are two known wells on the site. One served an abandoned single-family house and the other served the western set of greenhouses while they were in operation. Site development require closure of the existing wells in accordance with Department of Health regulations.

4.3.3.1.9 National Lead/Golden Auto

This site contains significant contamination of soils and groundwater from a lead smelting facility previously located on site. The site is on the federal and state list of permanent priorities (Superfund). Remedial work is currently under way. In the future, the MPCA may place limitations on types of construction allowed on this site, although the consent order entered into by National Lead states it is not intended to preclude new construction and development.

4.3.3.1.10 Pyrofax

This site is west of and adjacent to the National Lead/Golden Auto site (above). The potential exists for lead-contaminated dust to be present on the Pyrofax site. The near-surface native soils on the site have been disturbed by previous development.

Pyrofax manufactured acetylene and buried containers of a byproduct (calcium hydroxide) on this site. Although this action was approved by the state in 1960, it is possible that these containers will have to be removed before new construction is allowed.

4.3.3.1.11 Airport Southwest

This is an undisturbed site that has been part of the airport's property since about 1920. The site is well drained, nearly level and contains no known geologic hazards.

4.3.3.1.12 I-494 and Nicollet

This site has been disturbed and is mostly covered by existing buildings and pavement. Demolition of these buildings would be necessary prior to construction of a transfer station. No geologic hazards are known to exist on this site.

4.3.3.1.13 Freeway Landfill

The Freeway Landfill site is a five-acre portion located on the northeast corner of the existing landfill. The site contains refuse and fill from previous landfill operations. Special considerations for engineering and permitting the site would be required.

Leachate from the existing landfill may contaminate groundwater and surface water.

4.3.4 Impacts

No potential negative impacts on geology or groundwater are identified for the following sites: Bloomington East, Hopkins, Minneapolis South, Westwood, Railroad, Greenhouse, Airport Southwest, or I-494 and Nicollet.

The discussion below summarizes the nature of possible impacts on geology or groundwater for the remaining six sites.

4.3.4.1 Brooklyn Park East

Approximately 25 percent of the land surface within the site planned for development is within the Shingle Creek 100-year floodplain. Some construction in the floodplain would occur requiring approvals from the city of Brooklyn Park and the state of Minnesota DNR.

4.3.4.2 73rd and Winnetka

Some native soils and vegetation would be disturbed.

4.3.4.3 National Lead/Golden Auto

Lead contamination exists on this site and current conditions pose a health risk from ingestion and groundwater contamination.

4.3.4.4 Pyrofax

This site is adjacent to National Lead (above) and may contain lead dust and silt fraction. Health risks from ingestion and groundwater contamination may be present. Calcium hydroxide buried on this site may affect groundwater quality.

4.3.4.5 Freeway Landfill

Its use as a landfill presents construction problems. Groundwater monitoring shows evidence of contamination from landfill leachate.

4.3.5 Mitigative Measures

Development of the resource recovery facility and transfer stations is not expected to result in significant long-term impacts to geologic or hydrologic resources. Potential impacts identified are the removal of contaminated soils at the Greyhound site and a potential need for site dewatering during construction. Eventual removal of contaminated soils at the Greyhound site would represent an improvement over existing conditions.

Construction practices could be employed to minimize temporary changes in rates of erosion and runoff caused by disruption of naturally compacted soils and vegetation. These practices include:

- Periodic wetting and mulching of unvegetated and uncompacted areas to reduce blowing dust, soil erosion and runoff;
- Prompt revegetation of disturbed areas; and
- Construction of temporary detention ponds to interrupt runoff.

4.4 Surface Water

4.4.1 Greyhound Site

4.4.1.1 Existing Conditions

There are no designated wetlands or surface water bodies (lakes, ponds, streams or other flowages) on or adjacent to the site.

The site has runoff characteristics representative of impervious surfaces, as most of the site is either developed (parking, service roads and buildings) or consists of soils which are poorly drained. Various catch basins located at or near the site collect rainfall runoff from the area and convey it through a 36-inch concrete storm sewer which flows westerly along Sixth Av.

Vehicular activity generated by the Insty-Print and Greyhound facilities contributes particulate and organic materials that degrade surface runoff quality.

4.4.1.2 Impacts

The facility would replace existing industrial developments. The amount of impervious surface would decline with redevelopment of the site. All solid waste on site will be in enclosed vehicles or contained within the facility. Litter will be collected and the facility swept daily.

Storm water runoff from paved portions of the site will be directed to a retention pond to trap oil and sediment, then released to the municipal storm sewer system.

4.4.1.3 Mitigation Measures

The utilization of in-line baffled concrete drop box structures to contain contaminated liquids would reduce the likelihood of petroleum contamination during operations.

4.4.2 Pacific St. Site

4.4.2.1 Existing Conditions

The site is adjacent to the Mississippi River. Runoff from the facility will be directed to a storm sewer and would not directly impact the river. The site is currently covered by a very high level of impervious surface. Demolition of existing structures, and construction and landscaping of the facility would reduce the amount of impervious surface and mitigate runoff currently generated on site. Site operation and maintenance conditions preventing release of waste material to the environment are summarized in the previous discussions regarding the Greyhound site.

4.4.3 Transfer Stations

4.4.3.1 Existing Conditions

4.4.3.1.1 Bloomington East

Approximately 40 percent of the site consists of impervious surfaces (buildings and pavement). Drainage from the site is served by an 18-inch reinforced concrete storm sewer located on W. 96th St.

4.4.3.1.2 Brooklyn Park East

The proposed facility would be situated along the east side of the Shingle Creek conservancy district which is mostly Type 3 wetland. This marsh area contains the floodway and flood fringe of the Shingle Creek 100-year floodplain.

Although the majority of this floodplain area is located on the western part of the site, there is a portion of floodplain that encroaches and projects eastward toward the center of the site. This flood area represents approximately 25 percent of land surface within the site proposed for development. Storm water runoff from the existing site drains overland toward the lowland in the central portion of the site, then drains west to discharge to Shingle Creek.

A 78-inch concrete storm sewer runs underground along the northern edge of the site and drains Winnetka Av. and parts of U.S. Hwy. 169 east of the site. Flow is conveyed about 850 feet, from Winnetka Av. to an outfall and drainage d[illegible]n that continues for another 550 feet to discharge into Shingle Creek.

4.4.3.1.3 Hopkins

Storm water for the Hopkins DOT site is presently collected and handled by a settling/holding pond, located in the southwest corner of the DOT property and south of the proposed transfer station site.

Overland runoff from the site travels westerly and southerly to enter the holding/settling pond. Part of the site was once utilized for bituminous batch plant facilities, portions of which still exist. The purpose of the holding/settling pond is to contain storm water runoff to separate potential contaminants. Oil or grease are removed by skimming the pond surface, and sediments settle out during the retention process.

4.4.3.1.4 Minneapolis South

This is the site of an existing transfer station with typically urban drainage characteristics. Nearly 100 percent of this site is impervious area which drains rainfall runoff easterly onto 20th Av. S.

Storm water runoff quality at this site can be affected by activities taking place both on and off the site boundaries, primarily vehicular-related pollution as well as common litter.

4.4.3.1.5 73rd and Winnetka Av.

The site is adjacent to the Shingle Creek conservancy district, which is mostly Type 3 wetland. There is no floodplain or flood fringe on the site. Runoff from the site drains to Shingle Creek.

4.4.3.1.6 Westwood

The southern edges of the site are in the floodplain of the northern branch of Nine-Mile Creek which flows through a residential area into Bryant Lake Regional Park less than one mile away.

4.4.3.1.7 Railroad

Site soils are compacted and the site has a high percentage of impervious surface. Runoff from the site flows toward the Nine-Mile Creek floodplain area south of the site.

4.4.3.1.8 Greenhouse

A small portion of the site falls within the shoreline setback of Birch Island Lake to the southwest of the site. The eastern boundary of the site is the center line of the north fork of Nine-Mile Creek. At some time since 1954, the floodplain associated with Nine-Mile Creek had been illegally filled to a present one-to-one slope.

4.4.3.1.9 National Lead/Golden Auto

Marshy areas exist approximately 1,000 feet to the south and southwest of the site. A pond is located approximately 500 feet to the northwest of the site.

Storm water runoff from the site would be directed toward the southwest to a municipal storm sewer located under Monitor Av. From the collection point(s) along Monitor Av., storm water flows northwest and joins other storm sewer lines at W. Lake St.

4.4.3.1.10 Pyrofax

Marshy areas exist approximately 700 feet to the south and southwest of the site. A pond is located approximately 800 feet to the northwest of the site.

The site is located within the Minnehaha Creek Watershed District. It is also within the boundaries of a secondary floodway district (100-year flood zone) as defined in St. Louis Park ordinances. In areas such as this, the city has several construction criteria and conditions that must be met before issuing permits allowing construction.

Runoff is collected by municipal storm sewers located beneath Monitor Av. and/or Louisiana Av. Storm water flows northward to connect with storm sewer lines beneath W. Lake St.

4.4.3.1.11 Airport Southwest

Surface water drainage for the Airport Southwest site is toward the south and southeast. A high-capacity storm sewer, 10 feet wide by 7.5 feet high, was constructed in 1968 to convey storm water from this area to the Minnesota River. It flows parallel to I-494 until it crosses beneath the freeway and eventually discharges into the Minnesota River.

4.4.3.1.12 I-494 and Nicollet

The I-494 and Nicollet Av. site is primarily buildings and pavement, although some unpaved areas serve as roads and vehicle parking. The site is nearly level. Storm sewers located in the immediate vicinity of the site carry surface water runoff to natural and manmade ponding areas.

4.4.3.1.13 Freeway Landfill

The existing landfill has been designed to facilitate storm water flow off site.

4.4.3.2 Impacts

4.4.3.2.1 Bloomington East

Development of the site would result in an increase in sodded and landscaped areas in conjunction with a reduction in building roof area. This would offset the runoff impact of any increased paved impervious areas. As a result, the proposed site development would yield runoff volumes which are slightly lower than existing runoff volumes.

Storm runoff from the site will be collected by a 10-inch storm sewer and discharged into the municipal storm sewer on 96th St. W. Sanitary waste will be conveyed by a 4-inch sanitary sewer to discharge to a 48-inch municipal sanitary sewer on 96th St.

4.4.3.2.2 Brooklyn Park East

Construction and operation of the proposed transfer station would increase runoff volumes and alter drainage patterns on the site. Approximately 30 percent of the site would be occupied by impervious surfaces such as buildings and pavement. It is anticipated that runoff will be collected by catch basins and either diverted to the existing municipal storm sewer north of the site, or discharged directly to Shingle Creek.

Approximately 25 percent of the land surface within the site planned for development is within the Shingle Creek 100-year floodplain. Some construction in the floodplain will occur. It would be necessary to obtain approval from the city of Brooklyn Park and the state of Minnesota DNR for this activity.

4.4.3.2.3 Hopkins

Construction at this site would occur in a previously developed area. Replacement of the existing highly compacted, poorly drained gravel-filled area with structures would result in only a slight increase in site runoff.

During operation, surface runoff will be routed through the existing holding/settling pond, then to the existing municipal storm sewer system. Surface water impacts from contact with stored waste materials are not expected to occur since the tipping and storage areas will be fully enclosed. Although the probability of oil and contaminated liquid spillage from trucks is slight, this can occur.

4.4.3.2.4 Minneapolis South

The existing transfer station site is virtually 100 percent occupied by impervious surfaces such as buildings and pavement. Any landscaping for the proposed transfer station would result in a reduction in site runoff.

Drainage from the 1.5-acre site will continue to be collected by the catch basin north of the site on 20th Av. S. and enter the municipal storm sewer system.

4.4.3.2.5 73rd and Winnetka

Because of the permeability of the soil west of the site, coupled with the filtration characteristics of the natural vegetation present, minimal impact on the volume and quality of stormwater runoff from this site is anticipated.

Runoff from the developed portion of the site will be collected and diverted by a storm sewer that will discharge directly into Shingle Creek. Surface water impacts related to contact with stored waste materials would not occur because the tipping and storage areas will be fully enclosed. Wastewater generated by the facility (approximately 100 gallons per day) will be discharged to the municipal sanitary sewer for treatment.

4.4.3.2.6 Westwood

Construction of a facility on this previously undeveloped site would increase the amount of impervious surface, and increase the volume of runoff from the site. In addition, with a reduction in the national vegetation to slow and filter site runoff, the potential exists for negative impacts on water quality entering Nine-Mile Creek.

4.4.3.2.7 Railroad

The construction of a transfer station at this site would reduce the amount of impervious surface from the existing conditions. With the landscaping anticipated, both the quantity and quality of surface water runoff should improve. Negative impacts on water quality at this site are not anticipated.

4.4.3.2.8 Greenhouse

Construction of a transfer station may reduce the amount of impervious surface currently at this site. As a result, there may be a net decrease in surface water runoff. No negative impacts on surface water are anticipated.

4.4.3.2.9 National Lead/Golden Auto

Development of a transfer station at this site will result in less impervious surface than now exists. With the rehabilitation of this site together with anticipated landscaping, the surface water runoff is expected to be of better quality and lower volume than at present. No negative impacts from runoff are anticipated.

4.4.3.2.10 Pyrofax

Construction of a transfer station would result in an increase in impervious surface compared to existing conditions. There is potential for increased runoff to the marsh area south and southwest of the site. Given the existing storm water facilities in the area of the site, no negative impacts are anticipated.

4.4.3.2.11 Airport Southwest

Construction of a transfer station at this site would increase the impervious surface area and increase runoff. This increased runoff would be directed to an existing high-capacity storm sewer that parallels I-494 and eventually discharges into the Minnesota River. Although surface runoff volumes would increase, adverse impacts attributable to the quality of this runoff are not expected.

4.4.3.2.12 I-494 and Nicollet

The construction of a transfer station on this site may reduce the amount of impervious surface from the present conditions. The volume of runoff from this site may be somewhat less than currently emanate from this site, and the quality of runoff is not anticipated to have a negative impact on surface water quality.

4.4.3.2.13 Freeway Landfill

This site is currently well drained. Construction of a transfer station would not alter drainage patterns, quantities or surface water runoff quality. No negative impacts are anticipated.

4.4.3.3 Mitigation Measures

Development of some of the sites would result in increased runoff. All sites have the potential to degrade runoff quality.

During construction, immediate revegetation of the sites would minimize erosion and temporary impacts on water quality. At the Brooklyn Park and 73rd and Winnetka sites in particular, runoff patterns to the west should be maintained. A detention pond during construction would minimize project impacts. Site layouts which minimize encroachment on the flood fringe or the 100-year floodplain could significantly lessen project impacts.

For sites where detention basins are feasible, in-line baffled concrete drop box structures could be employed to reduce contaminants in storm water runoff.

Construction of the facilities on other sites or the decision not to construct at all could eliminate potential impacts.

4.5 Land Use

4.5.1 Greyhound Site

4.5.1.1 Existing Conditions

The site covers approximately 14.6 acres. A Greyhound bus garage, an Insty-Print commercial building, a railroad spur, a large parking area and a small abandoned storage building occupy the site.

On the east, the site is bounded by Fifth St. N. and the 10-story Hillcrest Development Bldg. The first block south of the site is used primarily for parking. Railroad tracks and Trucking, Inc., a large transportation facility, are to the southeast. Further south (approximately one-half mile) are commercial and business activities that make up the Minneapolis Downtown District.

The site is bounded on the west by a number of light industrial and commercial land uses including Northwest Automatic Products Corp., the Paper Depot, Columbia Venetian Blind Co., Firestone Tire Service and Gamble Robinson Co.

In general, the area north of the site (within one-half mile) contains office space, warehouses, metal scrap yards, some commercial renovations and some older, deteriorating buildings. The Blaine School, two churches and some residential apartments and units are located about one-half mile north. The site is separated generally from downtown and residential areas of the city by I-94, Olson Memorial Hwy., Burlington Northern rail line and U.S. Hwy. 52 transportation corridors.

The proposed facility site is zoned M2-4, limited manufacturing. M2-4 permitted land uses include those uses permitted in M1-1 to M1-4 districts which are delineated in Table 4.5-1. In addition, motor freight terminals, rail freight not including switching and classification yards, repair shops and roundhouses, and municipal animal pounds are permitted in M2-4 district. Conditional industrial uses which are permitted include those conditional uses permitted in M-1, as well as areas for dumping or disposal of refuse or trash. M-1 conditional uses include, but are not limited to (City of Minneapolis, 1984):

- Airports;
- Air, railroad and water freight terminals;
- Automobile testing ground;
- Municipal sewage treatment plants;
- Planned manufacturing developments.

4.5.1.2 Impacts

The facility would not be consistent with the light industrial classification assigned to the site area in the city's comprehensive plan. It is not small in size nor contained within a single structure; would require major transportation facilities; and would generate truck traffic.

The proposed facility, nevertheless, would be consistent with the more general goals and policies of the comprehensive plan. This policy plan supports efforts to use solid waste as a fuel to provide heat to large areas downtown via a hot-water grid system. Facility-generated proposed steam could be used to supplement the city's district heating system.

The facility is allowed under the city's zoning ordinance, and as a conditional use it is permitted in the M-2 limited manufacturing district in which the site is located. Conditional uses within the M-2 district include areas for dumping or disposal of refuse or trash.

4.5.1.3 Mitigation Measures

Each city's zoning ordinance generally fails to specifically address resource recovery or transfer station facilities. In some respects, this is a direct result of the fact that the resource recovery technology is relatively new in this region.

A resource recovery facility at the Greyhound site is not expressly permitted in the Minneapolis zoning ordinance. Minn. Stat. 473.823, subd. 5, provides for county override of local zoning subject to Metropolitan Council approval for such a use under its special use provisions.

Change in location eliminates impacts at the site but shifts the same and/or different impacts elsewhere.

4.5.2 Pacific St.

4.5.2.1 Existing Conditions

The site is currently zoned M3-2 by the city of Minneapolis. The zoning and Minneapolis land use plan designate the future use of the site as light industrial. The area to the west and north of the site is used predominantly for warehouse operations. The nearest occupied residence is over 1,600 feet west on the west side of I-94.

4.5.2.2 Impacts

The presence of a noise barrier wall would prevent any adverse and visual effects from the site. Adjacent businesses would be buffered by the Soo rail line and 28th Av. N. The zoning and land use is not fully compatible with the surrounding land use; however, the facility would not be expected to have an adverse impact on the surrounding land use.

4.5.2.3 Mitigation Measures

Mitigative measures for the Greyhound site (above) are also applicable to the Pacific St. site.

4.5.3 Transfer Stations

4.5.3.1 Existing Conditions

4.5.3.1.1 Bloomington East

The site is located in an area of warehouses, commercial development and light manufacturing that is the central industrial area of the James Av. municipal development district. The Bloomington Comprehensive Plan indicates that continued development in the industrial area bounded by 92nd St., I-35W, 98th St., and Penn Av. is expected. This area encompasses the proposed site and its environs.

The site is a five-acre parcel of land, presently occupied by two private businesses: Jose Inc. and Conveyor Inc., which are held under common ownership. The site also abuts private lands owned by the Donaldson Co. Donaldson Co. structures adjacent to the proposed site include almost 50,000 square feet of office and research and development facilities. These house an acoustical facility where mufflers, air filters and air intake devices for heavy-duty trucks are tested. Donaldson Co. plans for future growth north of its existing facilities.

Additional land uses north of the site include Polytech D & W Plastics that is 200 feet from the proposed site boundaries, and Holiday Inn that is to the northest. John Deere is an industrially oriented business located in the center of a large parcel of land across the street from the proposed site. Other businesses in the city include Larson Truck Industries, ITT Grinnel, Printed Circuits, Inc., Strout Plastics and Delden. There are two private residences in this industrial area on 94th St. and James Av. S. (less than one-half mile northwest of the proposed site). The I-35 freeway is one block to the east.

The proposed site is zoned I-2, special limited industry, as are surrounding properties less than one-half mile from the facility to the north and west. A small area south of the site is zoned I-3, general industrial.

Lands on the other side of the interstate are zoned commercial business. This is a zone in which orderly development in an older business area is encouraged. Across the railway, 1,500 feet south of the site, are residential zoned lands.

4.5.3.1.2 Brooklyn Park East

The Brooklyn Park East transfer station site is in the southwest corner of the city in one of its larger industrial areas. The site is undeveloped except for one residence located in the southeast corner of the parcel. One-fourth of the parcel is within the Shingle Creek flood fringe. This 13-acre site is bounded by Shingle Creek and the Shingle Creek conservancy district to the northwest; Winnetka Av. and U.S. 169 to the east; and a small industrial zone and I-94 to the south. A substantial amount of land around the site is vacant, but new industrial and commercial expansion is occurring throughout the area.

The city's zoning ordinance (City of Brooklyn Park, 1974) is consistent with the comprehensive plan. The proposed site is zoned I-1.

Outside storage and all operations in the I-1 zone must be enclosed within ar appropriate structure. Conditional uses in this zone include airports, concrete block plants and wash plants. This I-1 zone encompasses not only the proposed site but also lands 200 to 300 feet to the north and south. Lands to the north of the I-1 district are zoned I-2, general industrial.

4.5.3.1.3 Hopkins

The Hopkins transfer station site is in the northwest corner of a 41-acre parcel currently used by the Hennepin County Dept. of Transportation (DOT) for storage and maintenance of vehicles, equipment and construction materials. The actual site area is five acres.

The transfer station site contains a former asphalt plant, aggregate stockpiles and culvert storage area. The 1990 comprehensive plan for the city (City of Hopkins, 1980) identifies future land use for the site as industrial.

The five-acre transfer station site is bordered by industrial land. Whereas existing and proposed industrial land uses extend beyond the DOT parcel to the west and north, residential single-family areas border the DOT parcel to the south and east. These lands include the Park Valley residential neighborhood about 600 feet south of the site and residential neighborhoods in Edina east of County Rd. 18. There is also a small community park, Buffer Park, on Fifth Av. S. less than 700 feet from the proposed facility.

The parcel of land west of the site is slated for industrial growth in the city's master plan. Developable vacant land comprises less than 10 percent the area of the city. Vacant lands are being developed at a rapid pace and are deemed significant for the increase in employment base which they bring.

Areas northeast and west and a small area north of the site contain industrial warehouses and businesses, including lumberyards, building suppliers, general contractors, mill working, trucking terminals and maintenance shops. Additionally, the Super Valu food chain warehouses are 750 feet and 1,000 feet from the site. The Red Owl and Country Club distributors are 2,400 and 100 feet, respectively, from the site boundary. Further north of this small industrial area are railroad tracks and County Rd. 4. Beyond there are high-density residential neighborhoods. Finally, the Hopkins downtown redevelopment district extends to County Rd. 3, approximately three-fourths mile from the proposed site.

The proposed site is zoned I-2, general industrial district (City of Hopkins, 1977). Lands west of the site are zoned I-1, industrial.

The area south of the DOT parcel, across Fifth St. S., is zoned single-family, high-density residential (R-1-B) and limited business (B-1).

4.5.3.1.4 Minneapolis South

The 1.5-acre Minneapolis South transfer station site is west of Hiawatha Av., east of Cedar Av. S., and north of Lake St. on 20th Av. S. and E. 29th Sts. At present, the site is occupied by a solid waste transfer station that has be modified from an old incinerator.

The site is located in the southwest corner of an area designated as heavy industrial in the Minneapolis Plan for the 1980's (City of Minneapolis, 1982). Heavy industrial areas are those which typically require large sites; open storage; close proximity to major transportation corridors; a large work force; and which generate substantial traffic. This heavy industrial zone includes lands to the north and east.

The site is bordered on the west and south by Pioneers and Soldiers Cemetery On the block east of the site, there is a mix of residential, business and manufacturing uses. There are about eight occupied residences on Lyman Av., approximately one-eighth mile from the proposed site. Businesses located in this area and in the area north and northeast of the site include Stewart Chemical Inc., American Aluminum Foundry, Master Sandblasting, Dalsin and Son, Inc., Bituminous Roadway, and South Foundry Co.

The site is zoned M-3, general manufacturing (City of Minneapolis, 1984). Uses permitted in this zone include any uses permitted in M-1 and M-2 zones, as well as any production, processing, cleaning, servicing, testing, repair and storage of materials, goods or products which conform to performance standards enumerated in the city zoning code. Lands east and north of the site are zoned manufacturing and business. The cemetery to the south of the site is zoned R-6, a general residential district. Within one-half mile of the proposed site are the Corcoran School, the Irving School and approximately eight churches. Approximately one-half mile northwest of the site are Deaconess Hospital, Phillips Junior High School, a church and an additional school.

4.5.3.1.5 73rd and Winnetka

The 73rd Av. N. and Winnetka Av. site is located in one of the larger industrial areas of Brooklyn Park. Approximately 5 acres of the 7.5-acre site are developed as a vehicle salvage operation with a house used as an office. Across Winnetka from the site is the Minneapolis Independent Epistolic Lutheran Church. A substantial amount of land surrounding the site is vacant; however, new industrial and commercial development is occurring throughout this area of the city.

Adjacent on the west of the site is the Shingle Creek conservancy district designated for future use as parkland. Adjacent northwest of the site is Shingle Creek Park.

The city's comprehensive plan shows the western one-half of the site as planned for public/quasipublic use while the eastern one-half is planned for industrial use. The zoning for the area, from the conservancy district (park) zone on the west to Hwy. 169 on the east and for about three-eighths of a mile north and south of the site, is I-2 general industrial. Permitted uses in this zone include builder and contractor yards, sand and gravel sales, and bus or truck storage and maintenance. Conditional uses include junkyards, steam or diesel power plants, and truck terminals.

There are several residences within the industrial and business zoned districts along Winnetka Av. near the site, as well as a church on industrially zoned land across from the site. The facility would be consistent with the city's comprehensive plan, zoning, and other existing industrial land uses in the vicinity. Residential lands to the southeast would be buffered from the facility.

The site is located within a general industrial-zoned district I-2. Conditional land uses allowed within the I-2 district are far more encompass[illegible] than other commercial or industrial zoning in Brooklyn Park. They include u[illegible] with characteristics similar to a transfer station. Based on the city planning office's interpretation of the zoning ordinance, the proposed facility is suitable in a heavy industrial zone (Gary Berg, 1985).

3.5.3.1.6 Westwood

The site is zoned I-2 PRK. This zoning signifies that the area is an industrial park with lot sizes of two acres minimum. The city of Eden Prairie land use regulations state the purpose of the industrial park designation is:

1. To establish and maintain high standards of site planning, architecture, and landscape design that will create an environment attractive to the most discriminating industries and research and development establishments seeking sites in the Metropolitan Area.

2. To provide and ensure the continuity of locations for industries that can operate on small sites with minimum mutual adverse impact.

The site is bounded to the west and north by other parcels that are largely undeveloped. To the south the adjoining zoning is for multifamily residential. Land use 400 feet to the east is multifamily residential.

A two-story office/warehouse structure is currently under construction on the site.

4.5.3.1.7 Railroad

The site is a 7.5-acre parcel currently being used by Midwest Asphalt, Inc. The site is bounded on the east and west by elevated bed rail lines. A general industrial area is to the north and a floodplain area borders to the south across Edenvale Blvd.

The site is zoned I-GEN by the city of Eden Prairie.

The special purpose of the I-general industrial district is to provide locations where industries that desire larger sites and outside storage can operate with minimum restriction and without adverse effect on other uses.

The use of the site for a transfer station is fully compatible with the zoning classification. A land use on a parcel 500 feet to the north along Industrial Dr. is being used as a refuse company's office, which includes repair facilities and outside storage of refuse trucks. Other facilities between the site and County Rd. 67 have outside storage of trucks and equipment. The city of Eden Prairie has stated:

> The railroad yard is superior from a zoning standpoint: its I-general classification is the type suited for a transfer station. A transfer station may be a more optimal use for this site compared with the existing land uses. Current land uses do not reflect an efficient use of this land. These uses include towed auto storage, roofing, natural gas storage and asphalt production. A transfer station would appear to blend well with the existing uses; in fact, the new construction

would probably enhance the area. This area is relatively isolated and well screened from nearby lands and roadways. A transfer station in the railroad yard is more consistent with the goals and objectives of the city for land use and economic development.

4.5.3.1.8 Greenhouse

The site is comprised of three parcels of land totaling 11.5 acres. The site is bounded on the east by the north branch of Nine-Mile Creek. To the south lies an elevated bed rail line. To the north and west lie property owned by Hennepin County. A school building lies on the property to the west. The school building is currently occupied by Christian Day Elementary School. Property to the southwest of the site is wetland and public land used for recreational purposes. The site is currently proposed for redevelopment from the existing greenhouse operations to a refuse-derived fuel processing plant by Reuter, Inc.

The site is zoned I-2 PRK. This zoning signifies that the area is an industrial park with lot sizes of two acres minimum. The city of Eden Prairie land use regulations state the purpose of the industrial park designation is:

1. To establish and maintain high standards of site planning, architecture and landscape design that will create an environment attractive to the most discriminating industries and research and development establishments seeking sites in the Metropolitan Area.

2. To provide and ensure the continuity of locations for industries that can operate on small sites with minimal mutual adverse impact.

3.5.3.1.9 National Lead/Golden Auto

The National Lead/Golden Auto Parts site is located in an industrial area of St. Louis Park. Existing land uses in the area include Quality Auto Body, which leases the Golden Auto portion of the site. Adjacent land uses are: a Northern States Power Co. substation, Strand Manufacturing Co. and Sports Wheels. North of the site across Hwy. 7 are an automobile service station, advertising agency, animal hospital and welding supply company. West of the site is vacant industrial land formerly used by a bottle gas company. On the far northwest corner of this vacant seven-acre parcel is the Cardinal Glass Co.

The St. Louis Park comprehensive plan, adopted by the city in March 1985, shows this area as planned for general industrial use. According to the plan, general industrial uses cover a wide range of manufacturing, warehousing and general business operations. This includes industrial uses which are characterized by substantial nuisance characteristics such as noise, odor, vibrations and traffic.

Zoning of this property is I-1 industrial. This is the heaviest of three industrial zoning districts in the city. This I-1 district allows a wide variety of industrial and business uses, including those with potential nuisance impacts. These nuisance uses are regulated by requiring a special permit. This district also has the least restrictive regulations governing lot coverage and setbacks (St. Louis Park Comprehensive Plan, 1982).

Although the city has planned and zoned this area for industrial use, the city's Hwy. 7 corridor development plan anticipates industrial uses will generally be of an industrial office complex type (Thibault, 1985).

4.5.3.1.10 Pyrofax

The Pyrofax site is located in St. Louis Park, south of Hwy. 7 between Monitor Av. and Louisiana Av. This seven-acre site was previously used for manufacture and distribution of bottle gases. According to available information, Pyrofax ceased production in 1959. All buildings were removed in the mid-1960s. Remnants of the foundation are still in evidence. North of this site is the Cardinal Glass Co.

The St. Louis Park Comprehensive Plan, adopted by the city in March 1985, shows this area as planned for general industrial use. According to the plan, general industrial uses cover a wide range of manufacturing, warehousing and general business operations. This includes industrial uses which are characterized by substantial nuisance characteristics such as noise, odor, vibrations and traffic.

Zoning of this property is I-1 industrial. This is the heaviest of three industrial zoning districts in the city. This I-1 district allows a wide variety of industrial and business uses, including those with potential nuisance impacts. These nuisance uses are regulated by requiring a special permit. This district also has the least restrictive regulations governing lot coverage and setbacks (St. Louis Park Comprehensive Plan, 1982).

In August 1985, the city adopted a redevelopment plan for a corridor along Hwy. 7. This redevelopment plan will use tax increment financing to encourage the location of new businesses in this older part of the city. The Pyrofax site is located within this redevelopment corridor. Although still planned for industrial use, the redevelopment plan states that: "The plan does not include uses such as, but not limited to, automotive service station, auto repair, billboards, outdoor sales, adult uses, car wash, drive-in restaurants, automobile repair, contractor's yards or heavy industrial use."

4.5.3.1.11 Airport Southwest

The Airport Southwest site has been located within the airport property since 1920. Although the airport has undergone major changes in the last 65 years, the subject site has changed very little. East of the site is an MTC bus garage. This facility was built about 1978. North of the site is Rich Acres golf course. Northeast of the site is vacant airport, or Metropolitan Airports Commission property.

West of Cedar Av. (Hwy. 77) existing land uses in the vicinity of this site along Cedar are apartments, and some commercial uses along the intersection of I-494 and Cedar Av. The area south of I-494 from the site is mixed service commercial, primarily motels and restaurants. Also in this area is the Metropolitan Sports Center used for professional hockey and other events. Adjacent to the sports center is the former Metropolitan Stadium site. Previously used for professional baseball, football and concerts, the area is currently planned for extensive commercial/office development. The propos development has included approximately 10.5 million square feet of space for 800 commercial shops; 1 million square feet of indoor recreation; a 0.5 million square foot convention center; 2 million square feet of hotel space; 2 million square feet of office space.

4.5.3.1.12 I-494 and Nicollet

The I-494 and Nicollet Av. site is located in the city of Bloomington west of Nicollet Av., between 78th St. W. and 79th St. W. (see Figure 4.9-1). It is approximately seven acres in size and is an active industrial area of the city. Presently, the site encompasses approximately 10 existing businesses consolidated within six structures, and includes a vacant 1.6-acre parcel. The surrounding land uses in the area are all industrial and are shown in the Bloomington comprehensive plan as remaining in industrial uses.

This area is zoned I-3 general industrial. This is the heaviest industrial zone in the city. Uses in this district include:

- Manufacturing
- Public and public utility uses
- Warehousing
- Repairing, rebuilding and painting of vehicles, machinery and equipment
- Retail sales or heavy equipment
- Junk yard disposal business
- Truck and/or trailer rental

Transfer stations are not specifically listed, but conditional uses have been granted by the city for similar uses (that is, aluminum recycling business). A transfer station would be a public use as indicated in the zoning ordinance.

4.5.3.1.13 Freeway Landfill

The proposed Freeway Landfill site is an alternate site for the proposed Bloomington transfer station. The site is approximately two miles south of the Bloomington site and is located in Burnsville in Dakota County. The site is a 200-acre parcel that has been used as a sanitary landfill by R. B. McGowan and Inc. The site is bounded on the north by the Minnesota River and an approximately 5-acre general industrial parcel. The site is bounded on the south by a low marshy area. Further to the south and adjacent to the west lie active gravel pits. The east side of the site has a drainage swale about 100 feet wide, and I-35W lies beyond the swale.

The site and most adjacent land is zoned for general industrial use. The zoning of the site is compatible with the construction of a transfer station. The land surrounding the site is vacant or used for mining and general industrial uses. The construction of a transfer station on the site would be compatible with existing land uses. The nearest sensitive land use is a residential area over one mile from the site. The owner of the site has expressed a willingness to allow the development of a transfer station.

4.5.3.2 Impacts

4.5.3.2.1 Bloomington East

The proposed site is occupied by a low-profile building which would have to be removed, displacing its two occupants, Hose Inc. and Conveyor Inc. The entire five-acre site would be dedicated to the proposed transfer station and access roads. This would preclude development of other industrial and commercial properties on the site.

The existing nature of the site and adjacent lands is commercial and light manufacturing. The proposed transfer station has been perceived by the city Bloomington and some selected industries (Sharlin, 1985) as having the potential to adversely affect abutting and nearby land uses. The city (City of Bloomington, May 1984) has indicated that a great deal of industrial land being held in reserve for corporate expansion would be negatively impacted by the proposed facility. Further, the Donaldson Co. facility adjacent to the site, which functions as a research facility for acoustical testing of mufflers, air filters and air intake devices, has objected to the proposed facility on the grounds that expansion of company facilities would be hindered, and that an increase in ambient noise levels brought on by the increase in truck traffic could cause difficult problems (Jim Martin, Donaldson Co., May 1984).

With the exception of Donaldson Company's expansion on facility-dedicated lands, these land use conflicts may be only perceived as problems. Increased truck volumes would not significantly impact roadways. Noise generated by facility operations would exceed ambient standards but, given existing noise levels, the increases will be barely perceptible and not significant.

Other existing land uses in the area would be buffered from the facility. John Deere, across the street, is centered on a large parcel of land and is set back from the proposed facility. Physical distance, about 600 feet, and other industrial uses including rail activity, would separate the facility from the Holiday Inn and residential properties. These land uses exist in an industrial area which is already representative of a noisy urban setting.

The site of the proposed transfer station is zoned I-2. Permitted uses include compounding, processing and packaging of products and materials, as well as public utility uses. Transfer station facilities are not expressly listed, but conditional uses have been granted by the city for similar uses (that is, an aluminum recycling business). The transfer station would be a public use as indicated in the zoning ordinance.

4.5.3.2.2 Brooklyn Park East

The site is at present largely undeveloped. The site's land use would be altered once the facility is constructed. Construction of the facility would also result in the displacement of one home on the southeast corner of the parcel.

There are several residences within the industrial and business zoned districts along Winnetka Av. near the site, as well as a residence on industrially zoned land across from the site. The residences are not fully compatible with the industrial uses in the area. The facility would, however, be consistent with other industrial land uses in the vicinity. Residential lands to the southeast would be separated from the facility; however, increased traffic on nearby roadways would result.

The Northland Industrial Park is located one-half mile west of the site. This development will be separated from the site by the Shingle Creek conservancy district. Nonetheless, some potential perceived land use conflicts have been identified by the owners of the industrial park (Stuebner, December 1983). Northland has contended that the location of the facility on any of the ma access roads, adjacent to or in the proximity of the park, would constitute a devaluation of valuable commercial land. Further, the transfer station facility would be visible from Northland.

The proposed land use is not a permitted or conditional use under the city of Brooklyn Park's present zoning ordinance. The site is located within a limited industrial-zoned district I-1. A transfer station would not be a permitted use, as indicated in Section 4.5.3. Moreover, conditional land uses within I-1 are limited and do not include facilities of the nature proposed. In contrast, conditional land uses allowed within the I-2 district are far more encompassing. They include uses with characteristics similar to a transfer station. Based on the City Planning Office's interpretation of the zoning ordinance, the proposed facility is more suitable in a heavy industrial zone than it is for the light industrial zone in which it is proposed to be located (Gary Berg, 1985).

A portion of the site is located within the floodway fringe of Shingle Creek. Floodway fringe is defined as that portion of the floodplain outside of the floodway. A solid waste transfer station and associated entrance and exit roads are not expressly permitted or conditional uses in a flood fringe.

4.5.3.2.3 Hopkins

The total project area would encompass five acres in the northwest corner of a parcel currently used by Hennepin County DOT for storage and maintenance of vehicles. The current DOT activities and other nearby industrial land uses create substantial truck traffic.

The immediate borders of the site are occupied by industrial and vacant lands comprising an industrial corridor running northeast-southwest through the center of Hopkins. The Country Club Food Warehouse and Super Valu Perishables Warehouses are within about 100 and 750 feet, respectively, west of the proposed facility. A proposed multi-housing development would be 750 feet southwest of the site. Single- and multifamily residences are about 800 feet north of the proposed site. Although food warehouses are within close vicinity of the site, there is no current evidence of municipal waste from transfer stations affecting food handling at food warehouses. The proposed use, like the warehousing activities, would also generate considerable truck traffic. The community has expressed concern regarding the impact of the facility on these land uses including residences to the south of the site (Pepin, Dayton, Herman, Graham & Getts, 1985).

Additional land use concerns expressed by the community are:

- The proposed site is adjacent to the Hopkins Downtown Redevelopment area. The city contends redevelopment efforts in the area could be impacted.

- The site is in close proximity to residential properties and violates the 1,000-foot separation from residential uses (MPCA guidelines).

The guideline referred to by the city is the 1,000-foot separation found in MPCA rules adopted pursuant to authority established at Minn. Stat. 116.07, subd. 4: Minn. Rules Ch. 7035.1600, Prohibited Areas for Landfill Sites.

The rule above applies to sanitary landfill sites, and not to intermediate processing facilities or transfer stations.

For a more complete discussion of this issue, see Section 3.11 of this summary.

There are intervening land uses between the downtown redevelopment area and the proposed site. These include County Rd. 3 which is heavily trafficked and railroad tracks. There is a physical separation of approximately 1,000 feet between these potentially incompatible land uses. Further, the proposed transfer station would not encroach upon CBD lands. There are, however, plans to potentially expand the CBD development district across County Rd. 3 (Rapp, 1985). These factors suggest that, due to separation distances of 1,000 feet or more, the project would not impact adjacent land uses.

The transfer station site is about 800 feet from a high-density residential area to the north, and within about 700 feet of a residential area to the south. There are additional plans to develop office and residential uses to the west and southwest (Rapp, 1985). Adverse land use impacts to these residential areas due to implementation of the transfer station may be more perceived than real. Both residential areas are separated from the proposed site by intervening land uses including the already developed county DOT site. The city of Hopkins has, however, indicated concern about future development potential of nearby property if a transfer station is located in Hopkins (Rapp, 1985).

Further, there is no evidence of existing transfer facilities generating impacts due to odors, rodents or litter on the nearby neighborhoods. These factors would mitigate against significant adverse impacts to residential neighborhoods.

The site's I-2 industrial zoning classification provides for junk yards and public utility structures as conditional uses, but has no mention of trans' stations. The proposed transfer station has a public use purpose (will be owned and operated by a public entity, the county). As a public use, the project appears to be consistent with other conditional uses. An interpretation of whether the site would be an allowed conditional use, however, has not yet been made by the city of Hopkins (Carrigan, 1985).

The proposed site would be a public industrial use and is slated for industrial development in the city's comprehensive plan. The designation does not distinguish between heavy and light industrial use. The proposed project is both a governmental (public use) and industrial use. One relevant industrial policy of the plan is that:

> Standards for new industrial development will be upgraded and existing industrial developments will be encouraged to upgrade the existing image through removal or screening of unsightly outside storage, improved building maintenance and screening of major parking lots from neighboring areas, etc.

The transfer station's compatibility with the Hopkins land use plan is contingent upon buffering and screening from nearby residential areas. The transfer station activities would not include outside open air storage of refuse. The city of Hopkins will ultimately review the proposed transfer station and determine its consistency with the comprehensive plan and zoning ordinance.

4.5.3.2.4 Minneapolis South

The site is currently used as a 200-300 ton per day solid waste transfer station by the city. The existing facility would have to be demolished and a new transfer facility built. The proposed land use would be consistent with the existing usage of the site. Although greater traffic volumes would be associated with an expanded facility, these volumes would not create traffic problems which would significantly affect surrounding land uses.

A solid waste transfer station is consistent with the heavy industrial designation of the site in the Minneapolis Comprehensive Plan for the 80's. Similarly, a transfer station is consistent with the site's zoning classification of M-3, general manufacturing.

4.5.3.2.5 73rd and Winnetka

Most of the site is at present used as a vehicle salvage business. The site's land use will be altered once the facility is constructed. Construction of the facility will result in the displacement of the existing salvage business.

There are several residences within the industrial and business zoned districts along Winnetka Av. near the site, as well as a church on industrially zoned land across from the site. The facility would be consistent with the city's comprehensive plan, zoning and other existing industrial land uses in the vicinity. Residential lands to the southeast would be buffered from the facility.

New industrial and commercial expansion is occurring on undeveloped lands. These lands are slated for industrial growth in the city's comprehensive plan update. The proposed industrial land use would be consistent with the comprehensive plan, insofar as an industrial use is proposed.

The site is located within a general industrial-zoned district I-2. Conditional land uses allowed within the I-2 district are far more encompassing than other commercial or industrial zoning in Brooklyn Park. They include uses with characteristics similar to a transfer station. Based on the city planning office's interpretation of the zoning ordinance, the proposed facility is suitable in a heavy industrial zone (Gary Berg, 1985).

4.5.3.2.6 Westwood

The volume of truck traffic coupled with transfer station equipment operation do not correspond to the standards set forth by the city for the zoning classification of industrial park.

The city of Eden Prairie has stated that use of the site as a transfer station is incompatible with zoning. The city believes the inconsistent land use may inhibit development of the adjoining parcels as detailed in the city's master plan.

The site is currently under construction of a two-story office/warehouse structure. The development of the site as a transfer station would require the removal of the structure.

4.5.3.2.7 Railroad

The use of this site for a transfer station appears to be consistent with the city's land use plan and zoning regulations. However, the use of the site as a transfer station would involve relocating existing business. This relocation would involve locating a site that would be acceptable to both the displaced business and the community in which it would be located.

4.5.3.2.8 Greenhouse

The city of Eden Prairie feels that the Greenhouse site is inconsistent with zoning regulations.

The site is located only 200 feet away from an elementary school. Four hundred feet to the southwest lies Birch Island Park, a passive recreation area which has a large expanse of wetland habitat. Camp Indian Chief has been established adjacent to the site on the southwest. The traffic and noise generated by a transfer station would be incompatible with adjacent land use.

4.5.3.2.9 National Lead/Golden Auto

In August 1985, the city adopted a redevelopment plan for a corridor along Hwy. 7. This redevelopment plan will use tax increment financing to encourage the location of new businesses in this older part of the city. The National Lead/Golden Auto site is located within this redevelopment corridor. Although still planned for industrial use, the redevelopment plan states that: "The plan does not include uses such as, but not limited to, automotive service stati auto repair, billboards, outdoor sales, adult uses, car wash, drive-in restaurants, automobile repair, contractor's yards or heavy industrial use."

Major components of the proposed transfer station are an entrance/exit road, external scale facility with incoming and outgoing scales, a tipping area, an office, a parking area and truck storage area. This site currently has several structures associated with the former National Lead operation. In addition, the existing Quality Auto Body business may have to be relocated and the existing structures removed, depending on site configuration. County staff have indicated that a transfer station could not be designed to operate correctly on the National Lead property alone (Porter, 1985).

4.5.3.2.10 Pyrofax

With the exception of the permanent foundations on the property, the site is vacant industrial land.

Although the city has planned and zoned this area for industrial use, the Hwy. 7 corridor redevelopment plan anticipates industrial development to be industrial office space (Thibault, 1985).

4.5.3.2.11 Airport Southwest

A transfer station at this site may impact airport operations of runway 4-22 which is planned to be extended toward the southwest. This extension would bring the clear-zone (an area in which all structures are prohibited) to adjacent to the transfer station itself. The transfer station may also have a slight impact on multifamily residences approximately 300 feet west of the site across Cedar Av.

Acquisition of this property for use as a transfer station may not be possible. A metropolitan county does not have explicit authority to condemn public property for transfer station purposes; it has only general condemnation authority for such purposes.

The Metropolitan Airports Commission has gone on record as stating that adequate space is not available on Minneapolis-St. Paul International Airport for development of a solid waste transfer station by Hennepin County.

4.5.3.2.12 Freeway Landfill

A transfer station at the Freeway site would be compatible with local planning and zoning. The location of this site in a county other than the proposer's (Hennepin) may pose problems. A metropolitan county may designate a transfer station outside the county. Although there is authority to support the conclusion that metropolitan counties may condemn property for solid waste purposes outside county boundaries, such authority is not absolutely clear. If a metropolitan county does acquire the land outside the county for a transfer station site, it would have to be constructed and operated consistent with applicable local regulations. Implementation of a transfer station and a designation ordinance outside the county may pose practical difficulties (Metropolitan Council Legal Dept., 1985).

4.5.3.3 Mitigation Measures

Resource recovery transfer station facilities are not expressly listed as conditional uses in the Bloomington, Brooklyn Park or Hopkins zoning ordinances. Uses similar in nature are, however, allowed as conditional uses. The zoning ordinances could be modified to expressly allow such facilities as conditional uses or permitted uses in industrial zones.

Construction of the facilities would be generally consistent with land use and comprehensive plans. Each municipal plan shows a future industrial use recommended for the various sites. Mitigation measures such as amendments to the plans would not be necessary or appropriate.

Incompatibility with other land uses (whether perceived or real) is sometimes attributable to the visual impact of one land use on another. Potential visual impacts and mitigation measures are discussed more fully in the aesthethics and cultural resources sections of this summary, and the DEIS.

4.6 Transportation

4.6.1 Greyhound Site

4.6.1.1 Existing Conditions

Access to the site is via I-94, Hwy. 55 (Olson memorial Hwy.) and Seventh St. N. (Figure 4.6-2). Primary access from the north and south is by I-94 to Olson Memorial Hwy. to the site.

Access from the west is primarily via Olson Memorial Hwy. to Sixth Av. N. to the site. From the east access is generally from Hennepin Av. to either Fifth St. N. or Seventh St. N., then to Sixth Av. N. Seventh St. N. is a major arterial providing a connection to the south and east and downtown Minneapolis.

Using procedures defined in the Highway Capacity Manual, 1965, and Transportation Research Board Circular 212, capacity analyses were performed for the intersections previously described. Although traffic volumes through several of the key intersections (particularly Seventh St. N. at Olson Memorial Hwy.) are large, all of the intersections operate at LOS B or better during both peak hour periods. This corresponds to very good operations with some short delays.

4.6.1.2 Impacts

Shown below is the projected level of service for 1989, with and without the project.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
Olson Memorial Hwy. at Seventh St. N.	B	B/C
MTC Garage Access at Olson Memorial Hwy./Sixth Av. N.	B	B
Sixth Av. N. at Fifth St. N.	B/C	B/C
Hennepin Av. at Seventh St.	B	B

4.6.1.3 Mitigation

The transportation analysis indicated no significant degradation in traffic operations from the Greyhound site. There could be a potential for conflict between site traffic and buses when both have green lights to enter Sixth Av. N. This conflict would be mitigated by using separate signal phasing to allow traffic to leave the MTC garage.

4.6.2 Pacific St.

4.6.2.1 Existing Conditions

Access to the site would be either 26th Av. N. or 28th Av. N. Local deliveries from the north or south would use Washington Av. or Second St. N. Trucks arriving from longer distances would probably use I-94 and exit at Broadway (20th) Av. N. An exit from I-94 to Dowling Av. (38th) could serve as an alternate route.

Generally, these roadways operate at a level of service (LOS) C. The exception is Broadway Av. at Washington Av., which currently operates at LOS D.

All roadbeds in the area of this site appear to be of adequate design to accommodate anticipated truck traffic. There are no substantial grades in the vicinity of this site that would interfere with traffic to the facility.

4.6.2.2 Impacts

Most of the traffic generated by development of the Pacific St. site would be concentrated in the Broadway-Washington Av. area. This is one of the most congested intersections in that part of Minneapolis.

Shown below is the projected LOS for 1989, both with and without development at the Pacific St. site.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
Lowry Av. N. at Washington Av. N.	C	C
Broadway Av. N. at Washington Av. N.	D	D
I-94 at Broadway Av. N.	C	C
I-94 at Lowry Av. N.	C	C

4.6.2.3 Mitigations

Mitigation is not called for due to project impact since no changes in LOS are forecast. Planned roadway improvements such as reopening of the Lowry Bridge may improve LOS in the future.

4.6.3 Transfer Stations

4.6.3.1 Existing Conditions

4.6.3.1.1 Bloomington East

Access to the site is via interchanges from I-35W to W. 94th St. or, alternatively W. 98th St. Access from W. 94th St. is primarily via James Av. to W. 96th St. Access from W. 98th St. is via Humboldt or James to W. 96th St. These intersections currently operate at LOS B or better.

4.6.3.1.2 Brooklyn Park East

Access to this site is from Hwy. 169 to 73rd Av. N. Intersections analyzed were Hwy. 169 and 73rd Av. N.; W. Broadway and 68th Av. N.; and Hwy 169 and W. Broadway. The intersection of W. Broadway and 68th Av. N. currently operates at LOS B; the intersection of Hwy 169 and 73rd Av. N. operates at LOS C; and the intersection of Hwy 169 and Broadway operates at LOS D.

4.6.3.1.3 Hopkins

Access to this site from the north and south is County Rd. 18 to County Rd. 3 to Fifth Av. S. to Third St. Access from the east and west is County Rd. 3 to Fifth Av. S.

The intersection of Fifth Av. S. and County Rd. 3 currently operates at LOS B/C. The intersection of Fifth Av. S. at Third St. currently operates at LOS A/B. Finally, the intersection of Sixth Av. and Fifth St. (southwest of the site) currently operates at LOS B.

4.6.3.1.4 Minneapolis South

Access to the site is from Hiawatha Av. to E. 28th St., Cedar Av. to E. 28th St., and E. 28th St. to 20th Av. S. The intersection of Hiawatha Av. at E. 28th St. currently operates at LOS B; the intersection of Cedar Av. and E. 28th St. currently operates at LOS B/C; and the intersection of E. 28th St. and 20th Av. S. operates at LOS A.

4.6.3.1.5 73rd and Winnetka

Access to the 73rd Av. N. and Winnetka Av. site will be primarily from Hwy. 169 to 73rd Av. N. Once 73rd Av. N. is extended to Boone Av. N. (planned for completion in 1986), some traffic would be expected on 73rd from Boone Av.

The intersection of Hwy. 169 and 73rd Av. N. functions at LOS "C" operations during both the morning and evening peak hours. This represents acceptable operating conditions with average delay to traffic.

4.6.3.1.6 Westwood

Access to the site is via Hwy. 67 with the majority of traffic originating to the east of the site. Prior to project completion, improvements to the section of County Rd. 62 between County Rd. 18 and I-494 adjoining County Rd. 66 will be completed. Existing LOS along Hwy. 67 is LOS C.

4.6.3.1.7 Railroad

Transportation access to the site will also benefit from roadway improvements of County Rd. 67 as detailed in the discussion above for the Westwood site. The transportation efficiency will be similar for the Railroad site as described for the Westwood site.

4.6.3.1.8 Greenhouse

The transportation access to the facility would be predominantly from the east, and the general level of vehicle traffic on major access routes would be the same as those described in the Westwood discussion (above). The completion of the upgraded four-lane divided highway on County Rd. 67 will necessitate the development of left-turn lanes on the current County Rd. 67 which will be frontage road for westbound traffic. Hwy. 67 currently operates at LOS C. The sight distance Hwy. 67 and Indian Chief Rd. is only 200 feet, about half that deemed safe with 45 mph traffic.

4.6.3.1.9 National Lead/Golden Auto

Primary access to this site will be from Hwy. 7 to Hampshire Av. for the majority of traffic. Access from the north and south would be provided by Hwy. 100. A full cloverleaf interchange with Hwy. 100 and Hwy. 7 is approximately one mile east of the site. Additional access from the south would be from Louisiana Av. to W. Lake St., then easterly to Hampshire Av. A second alternate route from the south would be from Louisiana Av. to an extension of Hampshire Av. intersecting with Louisiana Av. This extension is proposed in the city's Hwy. 7 corridor redevelopment plan, and no date for completion of the Hampshire Av. extension is given. Hwy. 7 currently operates at LOS C, while Hwy. 100 to the east operates at LOS E and experiences major delays.

4.6.3.1.10 Pyrofax

Access to this site will be from Hwy. 7 via Lake St. to Monitor Av. In all other respects, existing conditions are the same as those described above for National Lead.

4.6.3.1.11 Airport Southwest

Access to the Airport Southwest site would be provided almost exclusively by 24th Av. S. to a frontage road parallel to I-494 and Cedar Av. (Hwy. 77). An additional access is possible by traffic exiting from northbound Cedar Av. at 68th St., and then negotiating a hairpin turn onto the frontage road southbound to the site. Traffic from the north could come down Cedar Av.; exit at 63rd St.; drive southbound on the frontage road named Cedar Av.; turn left onto 66th St.; turn right onto the frontage road on the airport side of Cedar Av.; and proceed to the site. The indirect nature of this route coupled with the number of turns to be negotiated make use of this route improbable. The existing LOS along Cedar Av. is LOS C. I-494 has existing LOS C east of Cedar Av. and LOS D west of Cedar Av.

4.6.3.1.12 I-494 and Nicollet

Access to the I-494 and Nicollet Av. site would either be provided by an interchange with I-494 and Nicollet Av., or by the interchange of Lyndale Av. and I-494.
The current LOS along Lyndale Av. is LOS C. I-494 operates at LOS E west of Lyndale Av., and LOS D east of Nicollet. Nicollet Av. has an existing LOS E and experiences major delays.

4.6.3.1.13 Freeway Landfill

Transportation access to the site will be via I-35W to the exit at Black Dog Rd. The site and roadways currently serve the operation of a landfill that receives approximately 20 packer trucks per day. I-35W has an existing LOS D south of the Minnesota River (near the site), and a LOS E north of the river.

4.6.3.2 Impacts

4.6.3.2.1 Bloomington East

Generally, the level of service anticipated in the vicinity of the transfer station is expected to decline slightly from projected LOS without this facility, as shown by the table below. Only at 98th and Girard would decline in service be markedly noticeable.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
W. 94th at James	B	B
W. 96th at James	A/B	A/B
W. 98th at James	B	B/C
Freeway at 94th	B	B/C
98th at Girard	C	C/D

4.6.3.2.2 Brooklyn Park East

Of the three intersections proximate to the proposed transfer station, two will not change in LOS condition from the 1989 baseline condition. Only W. Broadway at 68th Av. N. is expected to experience a slight decline in LOS. However, a projected LOS of B/C represents an acceptable level of service.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
W. Broadway at 68th Av. N.	B	B/C
Hwy. 169 at 73rd Av. N.	D	D
Hwy. 169 at Broadway	E	E

4.6.3.2.3 Hopkins

Of the three intersections proximate to the proposed transfer station, two will not significantly change in LOS condition from the 1989 baseline scenario. Only at Fifth Av. and Third St. will a slight decrease in level of service occur.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
Fifth Av. at County Rd. 3	C	C
Fifth Av. at Third St.	A/B	B
Sixth Av. at Fifth St.	B	B

During the train blockage, the intersections of County Rd. 3 and Fifth St. and Sixth Av. would operate at LOS E conditions. As previously mentioned, delays of as much as 10 minutes per vehicle could be experienced by commuters and others.

4.6.3.2.4 Minneapolis South

Of the three intersections proximate to the proposed transfer station, two will not change in LOS condition from the 1989 baseline condition. Only at E. 28th St. and Cedar Av. will a slight decrease in capacity occur. While the LOS condition B/C in the morning peak hour will remain unchanged, the evening peak hour will change from a LOS B/C condition to LOS C condition, which represents acceptable operating conditions with average traffic delays. Train operations in the area are not expected to impact level of service.

Intersection	1989 Levels of Service Without Project	1989 Levels of Service With Project
E. 28th St. at 20th Av. S.	A	A
E. 28th St. at Hiawatha Av.	B/C	B/C
E. 28th St. at Cedar Av.	B	C

4.6.3.2.5 73rd and Winnetka

Shown below is the projected LOS for 1989, both without the project and with the project. No change in LOS is shown.

Roadway	1989 Levels of Service Without Project	1989 Levels of Service With Project
Hwy. 169 at 73rd Av. N.	D	D
I-94 West of Hwy. 169	D	D
I-94 east of Hwy. 169	E	E

4.6.3.2.6 Westwood

Hwy. 67 is scheduled to be upgraded to a four-lane divided highway with right-hand turn lanes in 1990, the first year of resource recovery facility operation. Traffic is expected to nearly double from 4,750 vehicle trips in 1980 to 9,800 vehicle trips in 1990. The current section of County Rd. 67 will be retained to serve as a frontage road for the industrial area in which the site lies. The effects of construction of the roadway may induce very heavy congestion during the first year the resource recovery facility is open.

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-494	C	C
County Rd. 67	C	C

4.6.3.2.7 Railroad

Access to the site may be adversely impacted by the presence of two at-grade railroad crossings to the east and west of Industrial Dr. on the current County Rd. 67. Traffic delays to the facility may occur in response to the at-grade rail lines.

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-494	C	C
County Rd. 67	C	C

4.6.3.2.8 Greenhouse

The site plan shows that Indian Chief Rd. will be the location of the right-hand turn lane. The truck traffic will pass the northeast corner of a private elementary school. Peak truck traffic will correspond to the peak trip generation periods for the elementary school.

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-494	C	C
County Rd. 67	C	C

4.6.3.2.9 National Lead/Golden Auto

Shown below is the projected LOS for 1990, both without the project and with the project. No change in LOS is shown except for Louisiana south of Hwy. 7.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
Hwy. 100 south of Hwy. 7	E	E
Hwy. 100 north of Hwy. 7	E	E
Hwy. 7 at Louisiana Av.	C	C
Louisiana Av. south of Hwy. 7	C	C

4.6.3.2.10 Pyrofax

Since no right-turn lane is planned for northbound Louisiana Av. onto the Hampshire Av. extension, and because both existing and projected LOS is poor, some delays and potential accident hazards may occur.

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
Hwy. 100 south of Hwy. 7	E	E
Hwy. 100 north of Hwy. 7	E	E
Hwy. 7 at Louisiana Av.	C	C
Louisiana Av. south of Hwy. 7	C	C

4.6.3.2.11 Airport Southwest

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-494 west of Cedar Av.	D	D
I-494 east of Cedar Av.	C	C
Cedar Av. north of I-494	C	C
Cedar Av. south of I-494	C	C

4.6.3.2.12 I-494 and Nicollet

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-494 east of Nicollet Av.	D	D
I-494 west of Lyndale Av.	E	E
Nicollet Av. south of I-494	E	E
Lyndale Av. south of I-494	C	C

4.6.3.2.13 Freeway Landfill

Shown below is the projected LOS for 1990, both without the project and with the project.

Roadway	1990 Levels of Service Without Project	1990 Levels of Service With Project
I-35W north of Minnesota River	E	E
I-35W south of Minnesota River	D	D

4.6.3.3 Mitigations

The transportation analysis indicated no significant degradation in traffic operations at the Greyhound site. Potential conflict between site traffic and buses when both have green lights to enter Sixth Av. N. could be mitigated by using separate signal phasing to allow traffic to leave the MTC garage.

The intersections in the immediate vicinity of the Bloomington East site are of concern. Even without development of the transfer station, delays will occur at the intersections of W. 98th St. and Jones Av.; W. 98th St. and Girard Av.; and W. 98th St. and Old Shakopee Rd. Upgrading signalization and changes in signal cycle phasing can be considered to improve level of service.

Two intersections at the Brooklyn Park East transfer station are projected to operate below desirable standards in 1989 even without development of the project facilities. These intersections are the stop sign-controlled intersection of Hwy. 169 and 73rd Av. and the signal-controlled intersection of W. Broadway and Hwy. 169. Signalization of Hwy. 169 at 73rd and change in the signal phasing at W. Broadway and Hwy. 169 may mitigate future potential capacity problems. In addition, the construction of a future interchange at Boone Av. and the extension of 73rd Av. (slated to design construction within the year) will serve to reduce traffic. It is expected that traffic will be reduced at the intersection of W. Broadway and Hwy. 169, thereby improving operating conditions. Removal of vegetation at this intersection and proper signing on the northbound leg of W. Broadway would provide additional safety improvements at this intersection.

Traffic operations at all intersections analyzed near the Hopkins site would be acceptable in 1989. Storage for refuse vehicles on site could be provided for trucks delayed by trains blocking Fifth Av. The Hennepin County designation ordinance prohibits access to the facility via Second Av. S. Measures to prevent access could be:

1. Posting of the route by city of Hopkins to prohibit truck traffic;

2. Prohibition and fining of haulers using the route by the county;

4. Design of entrance to prohibit access from the south; and

4. Spot-checking by county to insure the route is not utilized.

4.7 Noise

4.7.1 Greyhound Site

4.7.1.1 Existing Conditions

The proposed location for the resource recovery facility is on the northern edge of downtown Minneapolis and within an area of industrial, commercial and institutional land uses.

The most sensitive noise receptors in the area of the site are the Metropolitan Transit Commission (MTC) building and the Insty-Print building. Other potentially impacted facilities include the commercial buildings west of Seventh St. N., the Hillcrest Development Bldg. (formerly Honeywell) east of Fifth St. N., and the Butler Square Bldg.

Noise measurements were conducted at the locations described in Table 4.7-7 and illustrated in Figure 4.7-1 of the EIS.

The lowest noise levels were obtained on Sunday morning (L_{50} = 50 dBA and L_{10} = 56 dBA) and the highest (L_{50} = 65 dBA and L_{10} = 75 dBA) during a weekday morning. These noise levels are representative of a high traffic volume urban area.

Noise measurements performed at the commercial and industrial receptors (classification NAC-2) were near, but not in exceedance of, MPCA standards.

The intersection of 10th Av. N. and Fifth St. N. could be classified as NAC-1 due to its residential character (apartment building). The daytime standards for NAC-1 are 60 and 65 dBA for the L_{50} and L_{10}, respectively, and 50 and 55 dBA for the L_{50} and L_{10} nighttime values. The highest monitored daytime levels are 62 and 67 dBA for the L_{50} and L_{10} metrics, which clearly exceed standards. Similarly, the nighttime monitored values of 57 and 61 dBA for the L_{50} and L_{10} also exceed standards. This area would be classified as a noisy urban setting.

Table 4.7-8 (p. 3-133 of the EIS) shows that noise levels in the project area are relatively high. They are consistent with noise levels observed in highly developed urban areas. Noise standards are currently being exceeded at the residential receptor GH2. The most likely reason for this is the proximity of the receptor to heavy industrial and manufacturing activities. The result is a considerable amount of noise in the project area from many industrial, commercial and institutional sources.

4.7.1.2 Impacts

Existing measured noise levels at the closest receptors (which are generally office and manufacturing land uses), do not exceed MPCA standards. At the closest residence, existing daytime and nighttime standards are currently exceeded by up to 7 dBA (L_{50}) nighttime. The facility would not increase noise levels at this receptor. Noise level increases from the facility at most other receptors would be less than 3 dBA, which is an imperceptible increase. Predicted noise levels will be below standards. At the MTC building, noise levels in the evening would increase by as much as 10 dBA and would be perceptible.

Existing and predicted future traffic noise levels are within appropriate proposed MPCA standards (78 dBA for L_{eq}). Increases in noise levels from truck traffic would be 4 dBA or less. Increases in noise levels at Sixth Av. N. would be 4 dBA, barely perceptible. At all other receptors the increases would be less than 3 dBA and are considered to be imperceptible.

4.7.1.3 Mitigations

The primary impact during construction of the proposed resource recovery facility would occur from additional traffic caused by commuting workers, trucks and the operation of construction equipment. The impacts of construction operations could be lessened by restricting the hours of construction activities, for example, the hours of 7 a.m. to 7 p.m. Construction equipment could also be required to employ mufflers and sound reducing devices. Vibratory pile drivers if employed would reduce noise levels.

Mitigation measures designed to reduce noise impacts during facility operations include:

- Application of acoustic materials to stationary equipment.
- Use of variable speed ID fans.
- Silencers on all steam and air vents.
- Use of air intake filters/mufflers for compressors.
- Application of mufflers in vehicles and other motorized equipment.

4.7.2 Pacific St. Site

4.7.2.1 Existing Conditions

The existing daytime noise on site is 64 dBA for L_{50}, 67 dBA for L_{10}, and 65 dBA for L_{eq}. The site is located entirely in an area that would be considered commercial in nature. The applicable noise standards in the vicinity of the site are 65 dBA for L_{50}, 70 dBA for L_{10}, and 68 dBA for L_{eq}. The site is currently within the existing and proposed MPCA noise standards for the commercial area that abuts the site.

4.7.2.2 Impacts

For a residential area west of the site, the facility will have little impact. Noise after development of the facility will be 53 dBA for L_{50}, 56 dBA for L_{10}, and 54 dBA for L_{eq}. The background noise levels generated by the freeway adjacent to the residential area are near or exceed the noise standards. The impact of the project would not be measurable at the nearest residential receptor.

The transportation impacts of the noise generated at the facility along Second St. N. may be as great as 5 dBA. With background levels, the noise adjacent to the roadway will be very close but should not exceed noise standards.

4.7.2.3 Mitigations

Techniques used to mitigate, or minimize adverse impacts at the Greyhound site (see above) would also be applicable to the Pacific St. site.

4.7.3 Transfer Stations

4.7.3.1 Existing Conditions

4.7.3.1.1 Bloomington East

The closest sensitive receptors to this site are the Donaldson Co. test track just west of the proposed site (where new vehicle mufflers are tested) and residences on the west side of Penn Av. There are also two houses on the corner of 94th St. and James Av. that are owned by Donaldson Co., and there is a Holiday Inn within view to the east-northeast (at approximately 800 feet from the center of the site).

Noise measurements conducted in the vicinity of the site show this area to be generally above MPCA standards for NAC-1 classifications. Of the five locations in this classification monitored, four exceed daytime standards and three exceed nighttime standards. Only the area near 96th and Humboldt Av. S. is in compliance with both daytime and nighttime standards. Monitoring done at the Donaldson Co. (NAC-2) shows the area to be below standards for this classification.

4.7.3.1.2 Brooklyn Park East

The closest noise-sensitive receptors to this site are a home north of the site, and a home and two churches across Winnetka Av. There is also an office complex under construction west of the site across Shingle Creek.

The site and the new office complex are separated by a large expanse (about 1,000 feet) of lightly wooded, grassy floodplain. The area between the site and the home to the north is lightly wooded.

Five areas near this site were monitored for current noise levels. Four of the areas correspond to NAC-1 classification. Of these four areas, only the residential area along 68th Av. N. (near I-94 and Hwy. 169) had measurements that exceed both the daytime and nighttime standards. The other three areas are within daytime standards, but the nighttime standards are exceeded at all three locations. The fifth area monitored was on the northeast corner of the site and corresponds to the NAC-3 (industrial) classification. This location showed noise levels to be well within MPCA standards.

4.7.3.1.3 Hopkins

The closest noise-sensitive receptors to this site are residences and a park south of Fifth St. S. (about 700 feet from the site), and apartment buildings north of County Rd. 3 (the closest being 800 feet from the site).

The site is separated from the residences on the north side of County Rd. 3 by vacant land, a railroad track, Third St. S. and County Rd. 3 itself; and from the residences and park south of Fifth St. S. by DOT property.

Noise monitoring was done at four locations near the site. All of these locations are classified NAC-1. Three are residential land uses, and the fourth location is a ball field south of Fifth St. S.

In general, existing noise levels at all receptors in the area exceed both existing and proposed MPCA standards. The monitored values are representative of a very noisy urban environment. The primary sources of noise are County Rd. 18, an abundance of industrial activities in the area, and truck traffic associated with these industrial land uses.

4.7.3.1.4 Minneapolis South

The closest noise-sensitive receptors to this site are the residences located one block east of the site on 21st Av. S. and the Pioneers and Soldiers Cemetery south and west of the site.

Three noise monitoring locations, corresponding to NAC-1 (residential) classification, were used to determine existing noise levels in the area of the site. Two locations currently exceed nighttime standards. Daytime noise at all locations equals, or exceeds, both current and proposed MPCA standards. The primary sources of noise are traffic and industrial activity.

4.7.3.1.5 73rd and Winnetka

The closest noise-sensitive receptors in the area are a home south of the site, and a home and two churches across Winnetka Av. There is also an office complex under construction west of the site across Shingle Creek.

Tests show that MPCA noise standards of 60 dBA for L_{50} and 65 dBA for L_{10} (both daytime standards) were met with readings of 58 dBA and 61 dBA, respectively. The proposed MPCA standard of 63 L_{eq} was also met with an average reading of 60 dBA.

4.7.3.1.6 Westwood

The Westwood industrial site is located 500 feet from the closest sensitive (residential) receptor to the east of the site. The applicable noise standards are those corresponding to residential areas. The current state daytime standards and the proposed standard for the receptor are 60 dBA for L_{50}, 65 dBA for L_{10} and 63 dBA for L_{eq}. Currently, the noise level at the site is 50 dBA for L_{50}, 60 dBA for L_{10} and 55 dBA for L_{eq} as determined by screening level monitoring.

4.7.3.1.7 Railroad

Background noise generation for the Railroad site was measured at the Christian Day School facility approximately 1,400 feet to the northwest of the site. The background noise levels include industrial activity as well as transportation noise along County Rd. 67. The monitoring site was the closest used in the screening level monitoring. The closest sensitive receptor is 800 feet southeast of the site. The noise generated by the existing facility on the site cannot be factored out of the monitoring data. This will provide a conservative estimate of noise existing at the residential receptor. The background levels at the site during peak traffic periods are estimated to be 57 for L_{50}, 61 for L_{10}, and 59 for L_{eq}. The applicable daytime standards for the residential area are 60 for L_{50}, 65 for L_{10}, and 63 for L_{eq}. From the information above, it is clear that the area is currently meeting daytime noise standards.

4.7.3.1.8 Greenhouse

The Greenhouse site is located 200 feet from the closest sensitive receptor to the west of the site. The applicable noise standards are those corresponding to residential areas. The current state daytime standards and the proposed standard for the receptor are 60 dBA for L_{50}, 65 dBA for L_{10}, and 63 dBA for L_{eq}. Currently, the noise level at the site from screening level noise monitoring is 46 dBA for L_{50}, 56 dBA for L_{10}, and 53 dBA for L_{eq}. Existing noise levels are well within both existing and proposed MPCA standards

4.7.3.1.9 National Lead/Golden Auto

The first location of the test for this site was a residential house near the intersection of Colorado Av. and Oxford St. This residence is approximately 1,000 feet southeast of the site. This area is consistent with a NAC-1 classification. Monitoring results at this test location show that the MPCA daytime standards of 60 dBA for L_{50} and 65 dBA for L_{10} were met by readings of 53 dBA and 61 dBA, respectively. In addition, the MPCA proposed standard for L_{eq} during daytime of 63 dBA was met with readings of 60 dBA in midmorning and 59 dBA during the 5 p.m. rush hour.

A second monitoring site was located approximately 1,800 feet west of the site using a residential house as the noise-sensitive receptor. Results show that the MPCA daytime standard was met for L_{50} and L_{10}. Readings were 55 dBA and 59 dBA, respectively. The proposed MPCA standard of 63 dBA for daytime L_{eq} was also met by reading averaging 57 dBA.

4.7.3.1.10 Pyrofax

The first location of the test for this site was a residential house near the intersection of Colorado Av. and Oxford St. This residence is approximately 1,500 feet southeast of the site. This area is consistent with a NAC-1 classification. Monitoring results at this test location show that the MPCA daytime and nighttime standards of 60 dBA for L_{50} and 65 dBA for L_{10} were met by readings of 53 dBA and 61 dBA, respectively. In addition, the MPCA proposed standard for L_{eq} during daytime of 63 dBA was met with readings of 60 dBA in midmorning and 59 dBA during the 5 p.m. rush hour.

A second monitoring site was located approximately 1,300 feet west of the site using a residential house as the noise-sensitive receptor. Results show that the MPCA daytime and nighttime standard was met for L_{50} and L_{10}. Readings were 55 dBA and 59 dBA, respectively. The proposed MPCA standard of 63 dBA fo daytime L_{eq} was also met by reading averaging 57 dBA.

4.7.3.1.11 Airport Southwest

The test location was an apartment building across Cedar Av. from the site nea the intersection of 18th Av. S. and 76th St. This area is a NAC-1 classification with MPCA standards of 65 dBA for L_{50}, 60 dBA for L_{50}, and 63 dBA for L_{eq} for daytime noise. The test site is approximately 300 feet west of the Airport Southwest site. Readings show that vehicle traffic on Hwy. 77 coupled with jet aircraft noise exceed all of these standards. In addition, the L_{90} reading (used to determine "background" noise since it represents the le) o

noise exceeded 90 percent of the time) was 66 dBA. Although not part of the regulations, this background noise level provides an indication of the quietest sound levels at a given location.

Existing noise levels exceed the MPCA residential daytime (NAC-1) standards.

4.7.3.1.12 I-494 and Nicollet

The location of the test for this site was a local park near the intersection of 80th Av. E. and First Av. S. This park is approximately 1,000 feet southeast of the site. This area is consistent with a NAC-2 classification. Monitoring results at this test location show that the MPCA daytime standards of 65 dBA for L_{50} and 70 dBA for L_{10} were met by readings of 57 dBA and 62 dBA, respectively. In addition, the MPCA proposed standard for L_{eq} during daytime of 68 dBA was met with readings of 60 dBA in the morning rush hour.

4.7.3.1.13 Freeway Landfill

The site is located in an industrial area. The closest sensitive receptors for noise are located in excess of one mile from the site. No noise monitoring was conducted on site.

4.7.3.2 Impacts

Noise Generation

In analyzing the potential noise impacts of a transfer station, the noise generated at such a facility was obtained. The noise generation used was for a 1,100-ton-per-day transfer station and RDF facility near Baltimore, Md. Since the figures used include noise from shredders, conveyor belts and other equipment not used in facilities that are only transfer stations, the figures provide a conservative (worst case) estimate.

4.7.3.2.1 Bloomington East

MPCA and city of Bloomington noise criteria are presented in Table 4.8-6. Predicted project noise levels from the transfer station alone (excluding existing noise levels) are in compliance with these regulations. At all receptors, future combined noise levels would equal or exceed MPCA standards. The increases due to the project would be 5 dBA or less. These increases would be barely perceptible and would occur during daylight hours. Increases in noise levels of 3 dBA or less are considered to be imperceptible.

The primary truck access routes to the transfer station generally avoid residential areas. Traffic noise levels including facility traffic would exceed commercial zone noise standards (L_{eq} = 68 dBA) at certain receptors. At these receptors the increase due to facility truck noise would be 5 dBA or less, which is barely perceptible.

4.7.3.2.2 Brooklyn Park East

Operational noise level increases would be in the range of 0 to 5 dBA maximum. Operation of the facility would result in a barely perceptible noise increase at the closest receptors. Nighttime noise levels would not be increased.

Increased traffic noise (of 4 dBA to 5 dBA) may be perceptible. The increases will only occur during daylight hours. Construction impacts would be short term in nature.

4.7.3.2.3 Hopkins

Existing noise levels exceed the MPCA residential daytime (NAC-1) standard at every monitoring location. The project increases at all receptors are 3 dBA o less. A 3 dBA or less increase would be imperceptible.

Projected operational and traffic noise increases result in generally small increases above existing levels (on the order of 3 dBA or less). The resultin noise environment is not expected to be perceived as different from the existing noise environment. Noise standards are currently exceeded at all receptors. No perceptible increase in noise levels would occur.

The city of Hopkins has indicated it believes that truck traffic might access the facility by Second Av. S. even if that road were posted to prohibit truck traffic (Rapp, 1985). Assuming that trucks would access from Second Av. S., noise levels would be increased by an additional 3 dBA at receptors HDA, HDC and HD4 (Section 3.7, DEIS). Under these conditions, noise levels at these receptors would exceed standards and would increase over baseline levels by as much as 7 dBA, a perceptible increase.

4.7.3.2.4 Minneapolis South

Existing noise levels at all receptors monitored in the vicinity of the Minneapolis South transfer station site equal or exceed MPCA daytime, residential (NAC-1) standards. Addition of the facility would increase noise levels by 5 dBA or less. These increases would be barely perceptible. Noise levels would continue to exceed standards.

Projected noise level increases at the residential area east of the site, as well as at the boundary of Pioneer and Soldiers Cemetery, would be 5 dBA or less. This increase would be barely perceptible. At the residential area along Cedar Av. to the west, noise levels will not increase due to the project

4.7.3.2.5 73rd and Winnetka

Although some additional noise at the transfer station is expected, it is anticipated that noise levels would remain below MPCA limits. Operational noise level increases would be in the range of 0 to 5 dBA. Operation of the facility may result in a perceptible noise increase.

4.7.3.2.6 Westwood

Facility operations alone would produce the following noise impacts at the mos sensitive receptors: 62 dBA for L_{50}, 64 dBA for L_{10} and 65 dBA for L_{eq}. The impact of the facility alone would exceed the proposed MPCA noise standard (63 dBA for L_{eq}). The cumulative impact of the development of the site as a transfer station would be 62 dBA for L_{50}, 65.5 dBA for L_{10}, and 65 dBA for L_{eq}. The impact of operating the facility on the Westwood site would be to exceed the current L_{10} noise standard, and it would also exceed the proposed L_{eq} noise standard. Given the undeveloped nature of this industrial park area, the impact on the residential area would be perceived as a doubling of the noise at the residential area to the east of the site.

The transportation impacts of the noise generated at the facility along County Rd. 67 may be as great as 5 dBA. With background levels, the noise adjacent to the roadway will be very close but should not exceed noise standards.

4.7.3.2.7 Railroad

The facility will slightly increase noise levels in the residential area. The calculated noise generation for the facility at a distance of 800 feet including the effect of the raised bed rail line is 59 for L_{50}, 56 for L_{10}, and 57 for L_{eq}. Adding these noise levels to the background yields 60 for L_{50}, 57 for L_{10}, and 61 for L_{eq}. The elevation of noise level does not exceed noise standards for the site. The 2 dBA rise in noise level is below the threshold of perception.

The transportation impacts of the noise generated at the facility along County Rd. 67 may be as great as 5 dBA. With background levels, the noise adjacent to the roadway will be very close but should not exceed noise standards.

4.7.3.2.8 Greenhouse

The impact of facility operations alone would produce the following noise impacts: 65 dBA for L_{50}, 67 dBA for L_{10}, and 68 dBA for L_{eq}. The impact of the facility alone would exceed both the current and proposed noise standards. The cumulative impact of the development of the site as a transfer station would be 65 dBA for L_{50}, 67 dBA for L_{10} and 68 dBA for L_{eq}. Due to the quiet nature of the surrounding area (existing levels of about 52 dBA), the impact on the elementary school would be perceived as two-and-one-half times the noise currently at the site.

The transportation impacts of the noise generated at the facility along County Rd. 67 may be as great as 5 dBA. With background levels the noise adjacent to the roadway will be very close but should not exceed noise standards.

4.7.3.2.9 National Lead/Golden Auto

Due to the distance to sensitive receptors and buffering aspects of existing conditions near the site, increases in noise levels at these receptors would be imperceptible (less than 3 dBA).

4.7.3.2.10 Pyrofax

Due to the distance to sensitive receptors and buffering aspects of existing conditions near the site, increases in noise levels at these receptors would be imperceptible (less than 3 dBA).

4.7.3.2.11 Airport Southwest

Readings near the site show that vehicle traffic on Hwy. 77 coupled with jet aircraft noise exceed all existing and proposed MPCA standards. In addition, the L_{90} reading (used to determine "background" noise since it represents the level of noise exceeded 90 percent of the time) was 66 dBA. Although not part of the regulations, this background noise level provides an indication of the lowest sound levels at a given location.

Since the existing noise levels at this location are so high, any additional noise from a transfer station at this site would be imperceptible.

4.7.3.2.12 I-494 and Nicollet

Due to the distance to sensitive receptors and buffering aspects of existing conditions near the site, increases in noise levels at these receptors would be imperceptible.

4.7.3.2.13 Freeway Landfill

The closest sensitive receptors for noise are located in excess of one mile from the site. The attenuation of on-site noise from the site would reduce th facility impact from approximately 70 dBA for L_{50} and L_{eq} to less than 35 dBA at the receptor. Thirty-five dBA is much lower than the average urban residential noise level of 55 dBA in the region. The site would not have a measurable impact on noise at sensitive receptors.

4.7.3.3 Mitigations

Several mitigation measures could be employed to reduce noise generated by the transfer stations. All vehicles accessing the facilities could be required to have adequate mufflers. Plant equipment should incorporate mufflers and insulating material to reduce noise levels to a minimum. In addition, designated truck routes should be specified to avoid residential neighborhoods. For example, truck traffic could be restricted from the use of Second Av. S. in Hopkins. Additional mitigative measures are discussed in the specific response to comments.

4.8 Utilities

4.8.1 Greyhound Site

4.8.1.1 Existing Conditions

Near the site, there is a 12-inch municipal water main that is buried along Sixth Av. N., and an 8-inch main is located on Fifth St. N. An 8-inch water line enters the existing Greyhound building.

Fire protection is provided by seven fire hydrants that are on three sides of the site. There are no fire hydrants to the southeast of the site along the railroad tracks. There are two hydrants along the northeast side of the site near the intersection of Fifth Av. N.; two to the north along Sixth Av. N.; one at Hoag and Sixth Av. S.; and two to the southwest along Seventh St. N. (HDR, 1985).

Originally, the city's sewer system was built to carry both storm water runoff and sewage; now, more than 50 percent of the city has separated sewers. A 15-inch sanitary sewer is located on Fifth Av. N. A 36-inch concrete storm drain bisects the site.

The electric utility serving the site area, NSP, has an existing 13.8-kV, three-phase overhead line on Sixth Av. N. The line is on the south side of the street from Seventh to Sixth St. and on the north side of the street from Sixth to Fifth St. There is customer service to one building on the site (HDR, 1985). There are natural gas lines buried on Sixth Av. N. and Seventh Av. N. bordering the site. The site is not served by the Minneapolis Energy Center District heating system. The closest steam line to this site is located in Sixth St. S. between Hennepin Av. and Nicollet Mall. The telephone utility, Northwestern Bell, has a buried customer service line entering the site from Sixth Av. N.

4.8.1.2 Impacts

The facility will require water for the following purposes: cooling water, boiler makeup, plant water, domestic use and fire protection. Circulation water will be needed to offset cooling tower blowdown, cooling tower drift and evaporation losses. Plant water is used for washdown and other auxiliary purposes. Boiler makeup would be required for boiler blowdown.

On the average, approximately 864,000 gallons per day (gpd) of water will be required. Peak water demand will not vary significantly.

A 1,400-linear foot, 10-inch main would be installed to loop the facility with the existing city water mains buried along Sixth Av. N. and Fifth St. N. Six-inch and 8-inch mains to connect the residue storage and processing buildings would also be installed.

Fire protection water requirements will be established by insurance carriers of the facility and by the city of Minneapolis. Based on Blount's proposal, fire protection requirements would be 1,000 gallons per minute (gpm). Fire flow would be supplied from the city system. A 10-inch loop design will provide 1,000 gpm flow for a period of three hours, or 180,000 gallons for fire protection.

Wastewater will result from boiler blowdown, plant use, domestic waste and cooling tower blowdown. All of this wastewater will be discharged to the sanitary sewer. Average and peak flow to the sanitary sewer will be 80 gpm an 200 gpm, respectively. Peak flows would occur only a small percentage of the time. The average facility wastewater flows of 117,250 gpd would equal approximately 3 percent of the remaining capacity allocated to the city of Minneapolis by the Metropolitan Waste Control Commission.

A 36-inch diameter storm sewer that serves the existing site will be rerouted to Sixth Av. N. and Fifth St. N. and increased to a 42-inch diameter. The rerouted storm sewer will tie into the existing manhole at Sixth St. N. and Sixth Av. N. Flow from the site would be discharged into a proposed storm drainage tunnel located south of the existing railroad tracks. This tunnel is in the preliminary planning stages.

The waste-to-energy facility will require electric service to supply a reliabl source of power to plant auxiliaries. The service will be approximately 3,000 KVa. The resource recovery facility will produce 40 MW of electric power for sale to NSP through a 13.8-KV underground interconnection to the utility's Alrich substation. Electric conductors will be installed underground to prevent any adverse visual impact. The facility will thus result in a net increase in electrical production. NSP has available capacity to provide the needed electrical requirements.

The facility will generate 200,000 pounds per hour of steam at a pressure of 300 psig, which would be available for export. A 12-inch steam line would be required. Although a market for steam has not been negotiated, the prefer d alternative is a steam line connection to the MEC steam line on the north de of Seventh St. S. between Hennepin Av. and Nicollet Mall.

4.8.1.3 Mitigations

No significant impacts requiring mitigation were identified.

4.8.2 Pacific St.

4.8.2.1 Existing Conditions

The utility requirements for the facility are described for the Greyhound site (above). The facility will require a 10-inch water main to service the water needs. The necessary facilities are available on Second St. and may be extended to the facility. The facility will require an 8-inch service line connected to the sewer system at 26th Av. N.

The runoff from the site is currently going to storm sewers on site. The project would decrease demand on the existing storm sewer service.

4.8.2.2 Impacts

The waste-to-energy facility will require electric service to supply a reliab source of power to plant auxiliaries. The service will be approximately 3,00(KVa. The resource recovery facility will produce 40 MW of electric power for sale to NSP through a 13.8-KV underground interconnection. Electric con to will be installed underground to prevent any adverse visual impact.

The facility would generate 200,000 pounds per hour of steam at a pressure of 300 psig, which would be available for export. A 12-inch steam line would be required. Although a market for steam has not been negotiated, the preferred alternative is a steam line connection to the MEC steam line on the north side of Seventh St. S. between Hennepin Av. and Nicollet Mall. The cost for construction of the steam line would be approximately $15,777,000.

4.8.2.3 Mitigations

No significant impacts requiring mitigation were identified.

4.8.3 Transfer Stations

4.8.3.1 Existing Conditions

4.8.3.1.1 Bloomington East

An 8-inch cast iron water main is located on W. 96th St. There is also a 6-inch water line at the property line of the proposed site at the intersection of Girard Av. S. and W. 96th St. The static pressure is 65 psi and the residual pressure is 41 psi at a flow of 7,090 gpm, measured at W. 94th St. and Pennsylvania Av. S. (HDR, 1985).

A 24-inch ductile main serves existing fire hydrants along W. 96th between Girard Av. S. and the west frontage road. The fire hydrant at Freemont Av. S., north of W. 96th St., is connected to this line. Other fire hydrants are located at Irving Av. S., Humboldt Av. S. and Girard Av. S.

A 48-inch reinforced concrete sanitary sewer is located 30 feet south of the north right-of-way for W. 96th St. There is also a 6-inch sewer service stubbed to the property line of the proposed site at Humboldt Av. N. and W. 96th St.

Bloomington's storm and sanitary sewers are separated. Bloomington's storm water drainage system consists of ponding or holding areas and manmade and natural drainage ways (Bloomington Comprehensive Plan, 1980). An existing 18-inch reinforced concrete storm sewer is located on W. 96th St. The storm sewer flows to the east and ties into a manhole in the west frontage road of I-35W.

Electrical service in Bloomington is provided by NSP. NSP maintains a grounded midpoint delta transformer bank on the property, with a 50/100-kVA pole-mounted cluster. A 13.9-kV overhead line is adjacent to the property on W. 96th St.

Northwestern Bell maintains a buried underground cable at the northwest corner of W. 96th St. and Humboldt Av. S., adjacent to the site with a service line into the site proper. A 2-inch, 60-psi natural gas line is also buried on W. 96th St.

4.8.3.1.2 Brooklyn Park East

An 8-inch ductile iron municipal water main is buried in the right-of-way of Winnetka Av. N., and a 12-inch water main is located in a 20-foot easement immediately south of the proposed site.

The two closest fire hydrants to the site are located at the southern property line and Winnetka Circle, 120 feet from Winnetka Av. N., and 150 feet north of the southern site boundary at Winnetka Av. N. (HDR, 1985).

An existing 8-inch sanitary sewer is located in Winnetka Av. N., 10 feet ea of the 8-inch water line. A 10-inch sanitary sewer is located in the same 20- foot easement as the 12-inch water main. The 8-inch sewer ties into the 10-inch sewer at a manhole 2 feet west of the center line of the Winnetka Av. N. right-of-way (HDR, 1985).

A system of storm sewer laterals, subtrunks and trunk lines serves this portio of Brooklyn Park. An 18-inch storm sewer begins approximately 600 feet south of the southern site boundary and flows north towards the site. The line ties into a 48-inch storm sewer which, in turn, ties into a 78-inch storm sewer.

There are two gas mains in Winnetka Av. N.: a 12-inch, 175-psi line located 19 feet west of the east right-of-way, and a 2-inch, 60-psi line located 13 feet east of the 12-inch line (HDR, 1985).

NSP maintains a 13.8-kV, three-phase overhead line on the west side of Winnetk Av. N. adjacent to the east side of the site, but there are no customer servic lines into the property. Northwestern Bell has a partial overhead cable syste on the west side of Winnetka Av. N., changing to an underground system adjacen to the east side of the project site; however, there is no customer phone service on the site property (HDR, 1985).

4.8.3.1.3 Hopkins

A 16-inch ductile water main is located north of the site in Third St. S., and a 6-inch cast iron water main is buried in Sixth Av. S. west of the site. There is one fire hydrant along Sixth Av. S., approximately 140 feet nort f the southern site boundary. The static pressure is 70 psi, and the residual pressure is 69 psi at a flow at 4,475 gpm measured at a fire hydrant at the northeast corner of the site. At the southwest corner of the site, the static pressure is 75 psi and the residual pressure is 70 psi, at a flow of 2,306 gpm (HDR, 1985).

Storm and sanitary sewers in Hopkins are separated. Storm sewers discharge into Minnehaha Creek and Nine-Mile Creek. A sanitary sewer manhole, connected to an 8-inch sanitary sewer line, is located approximately 25 feet south of th southern boundary of the Hopkins DOT site.

There is an existing NSP 13.8-kV, three-phase overhead line on the north side of Third St. S. from Fifth Av. and a tapped single-phase line south on the eas side of Sixth Av. These lines are adjacent, but not within, the property bounds. There is a 13.8-kV, three-phase overhead service into the property, a pole-mounted cluster transformer bank adjacent to an existing building on th site (HDR, 1985).

4.8.3.1.4 Minneapolis South

The municipal water supply system presently serves the existing transfer station building.

Water is provided through a 6-inch line on 20th Av. S. There are fire hydran at the corner of 20th Av. S. and E. 29th St., and approximately 80 feet ;th of the northern property line on 20th Av. S. There is no fire protectio system at the existing solid waste transfer facility (HDR, 1985).

A 12-inch clay sanitary sewer pipe serves the site from the corner of E. 29th Av. and 20th Av. S. Storm water runoff from the site is collected by the catch basins in 20th Av. S., approximately 180 feet to the north of the northern property line (HDR, 1985).

NSP has an existing overhead three-phase, 13.8-kV primary line on the east side of 19th Av., adjacent to the site. There is customer service into the property in the northwest quadrant of the site. The 1-1/4-inch gas building service is tied into the 8-inch, 175-psi steel main in E. 29th St. (HDR, 1985).

The telephone utility, Northwestern Bell, has a buried underground cable on the west side of 20th Av. S. which ties into the property at the southeast quadrant (HDR, 1985).

4.8.3.1.5 73rd and Winnetka

An 8-inch ductile iron municipal water main is buried in the right-of-way of Winnetka Av. N.

An existing 8-inch sanitary sewer is located in Winnetka Av. N. This sewer line flows south approximately 2,000 feet to a 10-inch subtrunk line that flows in a westerly direction. The subtrunk connects to an interceptor line just west of Shingle Creek.

A system of storm water laterals, subtrunks and trunk lines serves this portion of Brooklyn Park. A catch basin located approximately 80 feet south of the site connects an 18-inch pipe with a 78-inch concrete storm sewer. This 78-inch sewer directs storm water runoff west until it discharges into Shingle Creek (Lenthe, 1985).

There are two gas mains in Winnetka Av. N.: a 12-inch, 175-psi line located 19 feet west of the east right-of-way, and a 2-inch, 60-psi line located 13 feet east of the 12-inch line (HDR, 1985).

NSP maintains a 13.8-kV, 3-phase overhead line on the west side of Winnetka Av. N. adjacent to the east side of the site. Northwestern Bell provides telephone service on the west side of Winnetka Av. N.

4.8.3.1.6 Westwood

A 6-inch water service line for domestic water and fire protection to the building will be provided. The building water service line would tie into the city water main in Bury Dr. This line is adequate for facility water requirements. The transfer station's water demand represents an insignificant percentage (less than 1 percent) of the average daily municipal water demand.

The facility wastewater discharge would be 100 gpd. A 4-inch sanitary sewer line from the building to the existing sanitary sewer in Bury Dr. at the northern border of the site would be required.

The development of the site and paved area would result in a 25-year, one-hour storm flow of 6.3 cfs. An 8-inch diameter storm sewer would be required to provide the necessary drainage.

The building would require a connected load of approximately 25 Kva, which can adequately be provided by the existing 13.8-Kv line. Since this site is an existing commercial/industrial area, the existing NSP electric distribution system will accommodate building requirements with only minor on-site changes and no required off-site changes.

Low-pressure natural gas from Minnegasco would be required for the facility and would likely be provided from their three-inch, 60-psi line on Bury Dr. The facility will require telephone service, which would be provided to the building by Northwestern Bell.

4.8.3.1.7 Railroad

A 6-inch water service line for domestic water and fire protection to the building would be provided. The building water service line would tie into the city water main in Industrial Dr. This line is adequate for facility water requirements. The transfer station's water demand represents an insignificant percentage (less than 1 percent) of the average daily municipal water demand.

The facility wastewater discharge would be 100 gpd. A 4-inch sanitary sewer line from the building to the existing sanitary sewer in Industrial Dr. at the northern border of the site will be required.

The development of the site and paved area would result in a 25-year, one-hour storm flow of 9.5 cfs. A 10-inch diameter storm sewer would be required to provide the necessary drainage. Catch or sedimentation basins would be required for water discharged to Nine-Mile Creek.

The building would require a connected load of approximate 25 Kva, which can adequately be provided by the existing 13.8-Kv line. Since this site is an existing commercial/industrial area, the existing NSP electric distribution system would accommodate building requirements with only minor on-site changes and no required off-site changes.

Low-pressure natural gas from Minnegasco would be required for the facility and would likely be provided from their three-inch, 60-psi line on Industrial Dr. The facility will require telephone service, which would be provided to the building by Northwestern Bell.

4.8.3.1.8 Greenhouse

All necessary on-site utilities are present as described in the Westwood discussion (above). Municipal services and utilities must be extended to the exact location of the facility.

4.8.3.1.9 National Lead/Golden Auto

Currently, water is supplied to the site by a water line located beneath Hampshire Av. along the eastern boundary of the site. This supply line is connected to a 12-inch water main located beneath West Lake St.

Sanitary sewer service in the city is provided by a local collection system that connects to four metropolitan interceptors owned and operated by the Metropolitan Waste Control Commission. One of these interceptors is located beneath W. Lake St. on the north side of the site. Local sewage collection pipes are located beneath both Hampshire Av. on the east, and Monitor Av. on the west.

Storm water runoff from the site would be collected by a storm sewer line located beneath Monitor Av. This line is part of the local collection system that serves most of the city. Storm water is collected and directed to a system of ponding areas that provide temporary storage until discharged at various points within the city and allowed to leave the city.

Natural gas, electrical and telephone services are provided throughout the city of St. Louis Park. Investigations indicated capacities adequate to serve the requirements of a transfer station at this site.

4.8.3.1.10 Pyrofax

Currently, water is supplied to the site by a water line located beneath Hampshire Av. along the eastern boundary of the site. This supply line is connected to a 12-inch water main located beneath W. Lake St.

Sanitary sewer service in the city is provided by a local collection system that connects to four metropolitan interceptors owned and operated by the Metropolitan Waste Control Commission. One of these interceptors is located beneath W. Lake St. on the north side of the site. Local sewage collection pipes are located beneath both Hampshire Av. on the east, and Monitor Av. on the west.

Storm water runoff from the site would be collected by a storm sewer line located beneath Monitor Av. This line is part of the local collection system that serves most of the city. Storm water is collected and directed to a system of ponding areas that provide temporary storage until discharged at various points within the city and allowed to leave the city.

Natural gas, electrical and telephone services are provided throughout the city of St. Louis Park and appear to have capacities adequate to serve the requirements of a transfer station at this site.

4.8.3.1.11 Airport Southwest

The only utility currently provided at the Airport Southwest site is storm sewers. A high-capacity storm sewer, 10 feet high by 7.5 feet wide, carries storm water runoff parallel to I-494 and eventually discharges into the Minnesota River.

All other utilities (that is, sanitary sewer, water supply, electrical service, natural gas and telephone service) are provided to the Metropolitan Transit Commission garage adjacent to the east of the site. Available information indicates that these services, with capacities sufficient for transfer station operations, could be extended to serve this site.

4.8.3.1.12 I-494 and Nicollet

The water distribution network consists of storage reservoirs and various sized distribution mains. Distribution mains literally surround the site, as they are located south of I-494; beneath Nicollet Av.; beneath 80th St. W.; and beneath Lyndale Av.

Although central sanitary sewer service is provided throughout Bloomington, some on-site systems remain, including this site. A trunk sewer line is available at 79th St. W. with adequate capacity to serve the 100 gallons pe. day generated by a transfer station.

Storm drainage in this area is provided by storm sewers which carry runoff to natural or manmade ponding areas. Adequate storm draining facilities exist at the site.

Electrical service to the site would be provided by the Northern State Power Company's Wilson substation located just to the east of the site.

Minnegasco's Dakota station has natural gas mains running beneath both Lyndale Av. and Nicollet Av. Natural gas service appears available and adequate at th site.

4.8.3.1.13 Freeway Landfill

City sewer and water services are located at the southeastern edge of the site. Connections and site development would be required to extend services t the transfer station. The transfer station's water demand represents an insignificant percentage (less than 1 percent) of the average daily municipal water demand.

The facility wastewater discharge will be 100 gpd. A four-inch sanitary sewer line from the building to the existing sanitary sewer at the southeast corner of the site will be required.

The building would require a connected load of approximately 25 Kva, which car adequately be provided by the existing 13.8-Kv line. Since this site is an existing commercial/industrial area, the existing NSP electric distribution system will accommodate building requirements with only minor on-site changes and no required off-site changes.

Low-pressure natural gas would be required for the facility and would likely t provided by propane storage on site. The facility would require telephone service, which would be provided to the building by Northwestern Bell.

4.8.3.2 Impacts

4.8.3.2.1 All Transfer Stations

The water, sanitary sewer, storm sewer, gas, fire protection, electric and telephone service requirements for all the transfer stations will be similar. A facility consisting of a tipping area, load-out area, and minimal office space and toilet facilities will require the following utility capacities:

- 2-inch domestic water service (35 gpm peak flow--500 gpd total).
- 4-inch sanitary sewer (25 gpm--100-gpd total).
- 10-inch storm sewer (1.92 cfs--862 gpm).
- 6-inch fire protection service (850 gpm).
- 1-1/4-inch low-pressure gas service or smaller, depending on final buildi heating requirements.
- 100-ampere, 120/240-volt, single-phase (assuming a connected load of ss than 25 kVA--in excess of 50-kVA, three-phase service will be required).

4.8.3.2.2 Bloomington East

Except as noted below, all existing utility services are provided at the site and are adequate to meet the needs of a transfer station.

The facility would require a connected load of 25 KVa, which can be provided by 100-ampere, 120/240-volt single-phase service. NSP had adequate capacity to provide this 25-KVa load. The existing on-site electrical service will be replaced with more compatible service to meet facility demand. The primary 13.8-Kv line adjacent to the property will be adequate to carry the required load.

Low-pressure natural gas service will be required for the facility. Minnegasco has an existing 2-inch, 60-psi natural gas service line buried along W. 96th St. and would provide gas service to the building. Required telephone service would be provided by Northwestern Bell.

4.8.3.2.3 Brooklyn Park East

Except as noted below, all existing utility services are provided at the site and are adequate to meet the needs of a transfer station.

The new building and paved area would result in a 25-year, one-hour, 2.4-inch storm flow of 12.5 cfs. A 10-inch diameter storm sewer would be required. Two options exist for storm drainage. The first alternative entails connecting a facility storm sewer to the existing 78-inch storm sewer which has an invert elevation of 866.20. Alternatively, site storm runoff may be collected and then independently discharged into Shingle Creek. The proposed building location's existing grade of 875 would allow gravity flow of the storm water to the Shingle Creek outfall at an invert elevation of 871 feet. In addition to the storm drainage line, two catch basins would be constructed.

The facility would require a connected load of approximately 25 KVa, which can adequately be provided by the existing overhead 13.8-Kv line. An overhead or underground service into the site would have to be installed and would be provided by NSP. NSP has adequate capacity to provide the service.

Low-pressure natural gas service would be required for the facility. Natural gas service would be from either the 12-inch, 175-psi or the 2-inch, 60-psi gas mains on Winnetka Av. N. to the facility. A one- or two-line overhead or underground telephone service could be provided to the site. Although there is an underground cable system adjacent to the east side of the project site, there is at present no customer phone service to the site proper.

4.8.3.2.4 Hopkins

Except as noted below, all existing utility services are provided at the site and are adequate to meet the needs of a transfer station.

The building would require a connected load of approximately 25 Kva, which can adequately be provided by the existing 13.8-Kv line. Since this site is an existing commercial/industrial area, the existing NSP electric distribution system has adequate capacity to accommodate building requirements with only minor on-site changes and no required off-site changes.

Low-pressure natural gas from Minnegasco would be required for the facility ar would likely be provided from their 3-inch, 60-psi line on Third Av. S. T existing 1-inch line on site would not accommodate the proposed facility's load, and would have to be relocated to permit excavation and construction of new buildings and loads. The facility would require telephone service which would be provided to the building by Northwestern Bell.

4.8.3.2.5 Minneapolis South

The site presently is used by the city as a solid waste transfer station, and the existing sewer and water lines are adequate to serve the proposed project' domestic and sanitary sewer needs. Further, the present site is nearly 100 percent covered by buildings and pavement, and no increase in site runoff or storm water handling system requirements are anticipated. Rather, a slight decrease in runoff is expected. The present facility does not have an automatic fire protection system, and thus the proposed station would require new 6-inch water main for fire protection. The 6-inch main in 20th Av. S. is adequate to provide this service.

The present NSP distribution system will accommodate any feasible building facility requirement with minor on-site changes and no required off-site changes. Telephone service exists at the site and may require minor modifications which would be performed by Northwestern Bell.

4.8.3.2.6 Alternative Transfer Station Sites

Of the nine sites included in the EIS as alternative locations for transf stations, only two (National Lead/Golden Auto, and I-494 and Nicollet) hav a necessary services provided to the site itself. The remaining seven sites would require relatively short extensions of utilities. Typically the servic are available along roads near or adjacent to the sites.

4.8.3.3 Mitigations

No significant impacts requiring mitigation were identified.

To minimize impacts on Nine-Mile Creek, a sedimentation basin is recommended at the Railroad site.

4.9 Socioeconomics

4.9.1 Greyhound Site

4.9.1.1 Existing Conditions

The Greyhound site is located in an older, fully developed commercial and industrial area of the city. The EIS discusses existing socioeconomic conditions such as housing, employment, population, community sevices, property values and taxing authorities. Of these, property values and tax losses may be the areas most affected by the facility. Currently, the total assessed value of the Greyhound site is $978,850. Property tax revenues are currently $134,721 annually.

4.9.1.2 Impacts

New employment opportunities would be created by the construction and operational phases of the facility. A preliminary estimate of the construction labor force for the resource recovery facility is an average of 130 persons with a possible peak of 210 persons. Approximately $26 million of the project's $70 million capital cost would be paid for labor during construction. During plant operations, about 45 persons would be employed at the Greyhound site.

Concern has been expressed that the proposed facility could adversely affect the property values of industrial and commercial properties adjacent to the site, due to perceived potential facility nuisance impacts such as: noise, odors, traffic and appearance. This issue of property values is dependent upon many factors external to facility operation (such as interest rates) which could affect the market for and value of property in the area. These other factors could modify or outweigh any negative impacts of the proposed facility.

Opinions expressed by the Minneapolis City Assessor's Office concerning the resource recovery facility (Bernier, Minneapolis City Assessor's Office, County of Hennepin, 1985) are that the development would have no impact, or possibly even a positive impact, on property values. The assessor's office felt that any possible adverse effects would be due primarily to a perceived negative image of resource recovery facilities.

Concern has been expressed regarding the impact of the facilities on adjacent property values. No conclusive evidence exists to categorically show that resource recovery facilities reduce the value of adjacent properties.

Taxing authorities that include the Greyhound site within their jurisdiction would experience a net tax gain as a result of development of the resource recovery facility. The operator of the facility will lease the site land from the county and will pay property taxes on the leased real property of the site (County of Hennepin, July 27, 1985).

The total annual property tax revenues from the Greyhound site would increase from $134,721 at present (County of Hennepin, July 2, 1985), to approximately $955,000 (payable in 1991). Because the total assessed value of the site would also increase--from $978,850 (County of Hennepin, July 2, 1985) to approximately $8,775,000 (Evenson-Dodge, Inc., September 1985)--this tax gain would be spread among all the taxing authorities. The entire Twin Cities Metropolitan Area would benefit from the increased tax revenues collected through the area-wide fiscal disparities rate.

Present annual residential collection and disposal ranges from $78 to $115 household. Annual residential collection and disposal fees without the proposed system are expected to reach $84 to $121 per household by 1990. Residential solid waste fees could be increased further to $97 to $134 per household as a result of new MPCA regulatory and design requirements on landfills.

Potential markets for the energy produced by the resource recovery facility have been identified as NSP for electricity, and the Minneapolis Energy Center the Metropolitan Medical Center and the Soo Line Railroad for steam (HDR, June 18, 1985). At present, no agreements have been finalized with any of these parties.

4.9.1.3 Mitigations

The county could allow a private party to develop the sites (own and operate), thereby being subject to pay property taxes. Development of all the sites represents lost opportunity costs to utilize the sites for other purposes. Estimates and discussion of lost opportunity costs are discussed in Part 3, Response to Comments.

4.9.2 Pacific St.

4.9.2.1 Existing Conditions

The proposed facility would be located almost one-fourth of a mile away from any substantial residential development. Impacts to the general populati ar to housing in the census tract in which the proposed facility would be locate are not anticipated.

The current assessed value of the Pacific St. site is $1,712,400.

4.9.2.2 Impacts

New employment opportunities would be created by the construction (as many as 210 employees) and operation (45 employees) phases of the resource recovery facility.

The use of the site as a resource recovery facility represents a heavier industrial use than the existing uses. The facility may enhance the industri area in which it sits. The construction of the resource recovery facility on the site may improve property values in the area. The production of steam could attract new industry to redevelop the area, improving the general industrial area.

The Pacific St. site contains one parcel under construction with an assessed value of $1,712,400 (County of Hennepin, July 2, 1985; property tax records). The taxing authorities of jurisdiction would lose $165,213.13 annually (1985 assessments) in revenues as a result of county purchase of the parcels.

4.9.2.3 Mitigations

The county could allow a private party to develop the sites (own and operate), thereby being subject to pay property taxes. Development of all the sites represents lost opportunity costs to utilize the sites for other purposes. Estimates and discussion of lost opportunity costs are discussed in Part 3, Response to Comments.

4.9.3 Transfer Stations

4.9.3.1 Existing Conditions

The response to comments section (Part 3) discusses additional investigation and analysis of the potential impact of a transfer station on property values near a site, as well as the lost opportunity cost for a tax exempt transfer station.

4.9.3.1.1 Bloomington East

The proposed transfer station would be located within a light industrial and commercial area. The closest residential lands are 1,500 feet south of the site. As a result, displacement of the area's population and housing should not occur.

The parcel of land within the Bloomington East transfer station site is privately held and thus contributes to the taxing authorities of jurisdiction. Once purchased by the county for construction of a transfer station, the parcel would not be subject to property tax.

The current assessed value of Bloomington East property currently under industrial use is $269,898.

4.9.3.1.2 Brooklyn Park East

The proposed facility would be located almost half a mile away from any substantial residential development. The facility would result in the displacement of one home. Impacts, however, to the general population and to housing in the census tract in which the proposed facility would be located are not anticipated.

The Brooklyn Park East site contains three parcels (one residential, two vacant industrial zoned lots) with a combined assessed value of $110,700 (County of Hennepin, July 2, 1985; property tax records).

4.9.3.1.3 Hopkins

The proposed facility would be located in the middle of a narrow industrial corridor. While there are industrial and commercial lands surrounding the site to the west, north and northeast, there are significant residential lands in close proximity (700 to 1,000 feet) to the south and east. This neighborhood is characterized by a slightly higher income and median home value than the city as a whole. It is not anticipated that the facility would result in displacement of any homes or persons.

The Hopkins DOT site is publicly held and is thus not assessed for property taxes. Development of the transfer station would not alter the tax exempt status of the parcels, and the taxing authorities with jurisdiction would neither gain nor lose revenues.

4.9.3.1.4 Minneapolis South

The proposed facility would be located in a relatively populated census tract, which is generally lower in income than the city as an average. However, ther are a limited number of residential properties adjacent to or in the immediate vicinity of the site.

Parcels within the Minneapolis South transfer station site are publicly held and thus are not assessed for property taxes. Development of the tranfer station would not alter the tax exempt status of the parcels, and taxing authorities would neither gain nor lose revenues.

4.9.3.1.5 73rd and Winnetka

Structures on the site are a house used as an office, and buildings used for the vehicle salvage business currently in operation. South of the site is a relatively new truck repair business.

The assessed market value of land parcels at the proposed transfer station sit is $47,240.

4.9.3.1.6 Westwood

The proposed facility would be located almost half a mile away from any substantial residential development. Impacts to the general population and tc housing in the census tract in which the proposed facility would be located ar not anticipated.

The Westwood site contains one parcel currently under construction with an assessed value of $50,400.

4.9.3.1.7 Railroad

The proposed facility would be located almost one-fourth of a mile away from any substantial residential development. Impacts to the general population ar to housing in the census tract in which the proposed facility would be locate(are not anticipated.

The Railroad site contains one developed parcel with an assessed value of $122,700.

4.9.3.1.8 Greenhouse

The proposed facility would be located almost half a mile away from any substantial residential development. Impacts to the general population and t housing in the census tract in which the proposed facility would be located a not anticipated.

The Greenhouse site contains three parcels with an assessed value of $22 J00

4.9.3.1.9 National Lead/Golden Auto

The National Lead/Golden Auto site is located in an industrial area of the city of St. Louis Park. Surrounding land uses in the area include: an NSP substation, a manufacturing company, an automobile service station and a welding supply company. Immediately west of the site is a vacant industrial property. South and east of the site are elevated railroads that screen the site from residential areas.

The National Lead site contains two parcels with an assessed value of $164,320.

4.9.3.1.10 Pyrofax

The Pyrofax site is located in an industrial area of the city of St. Louis Park. Nearby land uses in the area include: an NSP substation, a manufacturing company, an automobile service station and a welding supply company. Foundations of the previous business (Pyrofax) remain. South and east of the site are elevated railroads that screen the site from residential areas.

The Pyrofax site contains two parcels with an assessed value of $209,360.

4.9.3.1.11 Airport Southwest

There are no records of assessed values for parcels within the Airport site since it is tax exempt land.

4.9.3.1.12 I-494 and Nicollet

The I-494 and Nicollet Av. site and surrounding area has been used as a commercial and industrial site for some time.

This site contains five parcels with an assessed value of $603,744.

4.9.3.1.13 Freeway Landfill

The facility is zoned industrial and will be taxed at a very low rate associated with vacant land after the landfill closes. Little capacity remains at the landfill and it is expected to close in the near future.

4.9.3.2 Impacts

The facility, due to its proximity and current use, is not expected to have an impact on the socioeconomics of Burnsville.

4.9.3.2.1 Bloomington East

The effect of the proposed industrial facility on nearby property values cannot be completely predicted.

The proposed transfer station would be located in an area where there is a mix of office, industrial and commercial businesses. There has been little recent development activity in this area and little turnover of properties on which to base speculation of the sensitivity of market values in the area. High demand for both commercial and heavy industrial properties is focused elsewhere in the city. The Bloomington assessor's office stated that there were too many variables to completely assess the impact of the facility on property values,

and that impacts could range from none to negative. A private appraiser supported this statement of uncertainty as to what property value impacts r be, but did reflect that the proposed facility might negatively affect property. However, he stressed that impacts would be dependent upon the volum of truck traffic, distance separation and buffers between the facility and nearby properties, and the facility design, volume and hours of operation.

The current assessed value of the Bloomington East parcel, currently under industrial use, is $269,898. Taxing authorities would lose $28,450 annually (1985 assessments) in revenues as a result of the county's purchase of the parcel.

The revenue loss of $6,480 through the area-wide fiscal disparities tax would be shared by all counties in the seven-county Twin Cities Metropolitan Area (Minn. Stat. 1984).

4.9.3.2.2 Brooklyn Park East

The effect of an industrial facility on nearby property values cannot be completely predicted. The proposed facility would be located in an area of industrial and commercial expansion slated for industrial growth. As a result of demand for industrial property, development of industrial tracts and industrial property values within Brooklyn Park has been increasing in recent years (Brooklyn Park Assessor's Offices, 1985). Both the city assessor's office and a private appraiser were contacted regarding their views of the proposed transfer station on property values. Neither would offer any definitive conclusions. However, the private appraiser did feel that compliance with city zoning requirements (regarding nuisance impacts such odor, noise, etc.) could preclude impacts to neighboring properties, such as Northland Industrial Park. The proposed site, while inconsistent with its zoning designation of light industrial, would, if properly designed and operated, comply with nuisance standards and standards regarding landscaping and setback requirements. The private appraiser also indicated that the effe of the proposed facility on the property values of adjacent industrial and commercial lands would be influenced by supply and demand relationships (Orlang, 1985).

The taxing authorities of jurisdiction would lose $11,949 annually (1985 assessments) in revenues as a result of county purchase of the parcels.

The three parcels also have a combined debt of $6,727 for special assessments levied by the city; however, the city would require payment of this amount at the time of the ownership transfer. The parcels are undeveloped and are not subject to the area-wide fiscal disparities tax.

4.9.3.2.3 Hopkins

The Hopkins City Assessor's Office (Renne, 1985) has expressed an opinion tha property values would decline as a result of implementation of the proposed transfer station, given its proximity to residential neighborhoods and new development. The assessor's office also indicated that property values for specialized industrial properties, that is, food warehouses, would also be affected. A decline in property values of at least 5 percent for both u w estimated by the assessor's office.

A private appraiser (Johnson, 1985) stated that heavy atypical traffic usually impacts property values and can result in eventual blighting of an area. This appraiser indicated that traffic may be the most bothersome aspect of the facility. Similarly, the city of Hopkins attorney and the Hopkins Main Street Project have voiced similar concerns about decreased values resulting from facility traffic.

The Hopkins DOT site is publicly held and is thus not assessed for property taxes. Development of the transfer station would not alter the tax exempt status of the parcels, and the taxing authorities with jurisdiction would neither gain nor lose revenues.

4.9.3.2.4 Minneapolis South

The proposed structure could be less visible than the existing one. Contruction of a new transfer station on this site, however, would only result in the replacement of an aging facility with a more modern structure. Therefore, its impact should be positive.

4.9.3.2.5 73rd and Winnetka

The assessed value of parcels of land at this site if $47,240. Total tax loss if this site were to be developed as public land (transfer station) would be approximately $6,444.

4.9.3.2.6 Westwood

The effect of an industrial facility on nearby property values cannot be completely predicted. The proposed facility would be located in an area of industrial and commercial expansion slated for industrial growth. As a result of demand for industrial property, development of industrial tracts and industrial property values within Eden Prairie has been increasing in recent years (Metropolitan Council, 1984). A private appraiser did feel that compliance with city zoning requirements (regarding nuisance impacts such as odor, noise, etc.) could preclude impacts to neighboring properties in Brooklyn Park. Eden Prairie is experiencing similar growth in commercial and industrial activity. The proposed site, while inconsistent with its zoning designation of light industrial, would, if properly designed and operated, comply with nuisance standards and standards regarding landscaping and setback requirements. The private appraiser also indicated that the effect of the proposed facility on the property values of adjacent industrial and commercial lands would be influenced by supply and demand relationships.

The Westwood industrial site contains one parcel under construction with an assessed value of $50,400 (County of Hennepin, July 2, 1985; property tax records). The taxing authorities of jurisdiction would lose $5,392.28 annually (1985 assessments) in revenues as a result of county purchase of the parcels.

4.9.3.2.7 Railroad

The use of the site as a transfer station represents a lighter industrial use than the existing asphalt plant. The city of Eden Prairie has stated that it may enhance the industrial area in which the facility is lotated. The construction of the transfer station on the site may improve property values in the area.

The Railroad site contains one developed parcel with an assessed value of $122,700 (County of Hennepin, July 2, 1985; property tax records). The ta: authorities of jurisdiction would lose $4,672.77 annually (1985 assessments) revenues as a result of county purchase of the parcels.

4.9.3.2.8 Greenhouse

The effect of an industrial facility on nearby property values cannot be completely predicted. The proposed facility would be located in a mature area of industrial and commercial development. As a result of demand for industria property, development of industrial tracts and industrial property values within Eden Prairie has been increasing in recent years (Metropolitan Council, 1984). A private appraiser did feel that compliance with city zoning requirements (regarding nuisance impacts such as odor, noise, etc.) could preclude impacts to neighboring properties in Brooklyn Park. The proposed site, while inconsistent with its zoning designation of light industrial, would, if properly designed and operated, comply with nuisance standards and standards regarding landscaping and setback requirements. The private appraiser also indicated that the effect of the proposed facility on the property values of adjacent industrial and commercial lands would be influence by supply and demand relationships.

The Greenhouse site contains three parcels with an assessed value of $227,000 (County of Hennepin, July 2, 1985; property tax records). The taxing authorities of jurisdiction would lose $7,979.42 annually (1985 assessments) revenues as a result of county purchase of the parcels.

4.9.3.2.9 National Lead/Golden Auto

The National Lead/Golden Auto site is subject to the following taxing authorities: Hennepin County, the city of St. Louis Park, Independent School District 283 and the Minnehaha Creek Watershed District. Property tax losses if this site were to develop as a transfer station (public land) would be approximately $25,457.

4.9.3.2.10 Pyrofax

The Pyrofax site is subject to the following taxing authorities: Hennepin County, the city of St. Louis Park, Independent School District 283 and the Minnehaha Creek Watershed District. Total tax losses, should this site devel as a county-owned transfer station, would be approximately $29,390.

4.9.3.2.11 Airport Southwest

The Airport Southwest site is publicly held and is not assessed for property taxes. Development of a transfer station at this site would not alter the ta exempt status, and the taxing authorities with jurisdiction would neither gai nor lose revenues.

4.9.3.2.12 I-494 and Nicollet

The parcels of land within the I-494 and Nicollet Av. site are privately held and thus contribute to the taxing authorities of jurisdiction. Once pu ıse by the county for the construction of a transfer station, the parcels would r be subject to property tax.

The current assessed value of the parcels currently under industrial use is $603,744. Taxing authorities would lose $63,737 annually (1985 assessments) in revenues as a result of the county's purchase of the parcel.

4.9.3.2.13 Freeway Landfill

The facility is zoned industrial and will be taxed at a very low rate associated with vacant land after the landfill closes (anticipated closure is December 1985). The facility, due to its proximity and current use, is not expected to have an impact on the socioeconomics of Burnsville.

4.9.3.3 Mitigations

Operation of the transfer stations by the county would reduce real estate tax payments at the Bloomington East, Brooklyn Park, 73rd and Winnetka, Westwood, Railroad, Greenhouse, National Lead, Pyrofax, and I-494 and Nicollet sites and, to some extent, the Freeway Landfill site.

Concern has been expressed regarding the impact of the facilities on adjacent property values. No conclusive evidence exists to categorically show that resource recovery facilities reduce the value of adjacent properties. However, if the facilities were not constructed, the potential for changes in property values from transfer station facilities would be eliminated.

The county could allow a private party to develop the sites (own and operate), thereby being subject to pay property taxes. Developers could also utilize the publicly owned sites, such as the Hopkins site, for profit-making purposes (if the county would sell the land). Development of all the sites represents lost opportunity costs to utilize the sites for other purposes. The city of Hopkins has provided an estimate of the opportunity cost developing the site at $925,000 (estimated market value of property). Estimates for other sites have not been provided. (See Part 3, Response to Comments, for additional analysis and discussion.)

4.10 Aesthetics and Cultural Resources

4.10.1 Greyhound Site

4.10.1.1 Existing Conditions

The views from nearby land uses of the site, including the MTC facility, reveal a Greyhound bus terminal garage in various stages of repair. Much of the site consists of broken concrete and paved areas with grass, weeds and shrubs growing throughout the site. An abandoned storage shed is present on the west side of the site. A railroad repair track and double track main line can be seen at the southern boundary of the site. From Sixth Av. N., the downtown business district, including many multistory office towers, can be viewed. The site is out of character with more modern or rehabilitated buildings such as MTC and Butler Square Buildings surrounding it.

4.10.1.2 Impacts

Given the previously disturbed nature of this industrial site and the lack of properties on site of archaeological value, the proposed resource recovery facility would not impact any archaeological or historic properties on site.

The proposed facility would consist of buildings and a stack 213 feet tall. The 213-foot stack would be visible from surrounding land uses. It would be visible from downtown locations with unobstructed views. The remaining buildings would be of modern design and consistent with other modern adjacent structures such as the MTC garage.

4.10.1.3 Mitigations

Impacts on visual aesthetics could be eliminated by not constructing any of th facilities (see Part 2, Section 1.0 of the EIS). In addition, impacts can be minimized at all of the facilities by several strategies. These include:

- Extensive landscaping and ornamental tree/shrub plantings.
- Use of aesthetically pleasing architectural treatments. This could involv establishment of community-based committees to have impact into the desig of the facilities.
- Exterior finishings compatible with adjacent structures.
- Landscaping utilized to block views of the facilities.
- Buildings sited as far as possible from adjacent structures to preserve a buffer zone.
- Efforts made to preserve existing natural vegetation to the extent possib

4.10.2 Pacific St. Site

4.10.2.1 Existing Conditions

This site is located in an industrial area and is currently occupied by eight businesses including Minneapolis Gas Co., Heron Cement Co., and Williams Stee and Hardware, Inc. The Minneapolis North transfer station is also located on the site.

4.10.2.2 Impacts

With the possible exception of the stack (213 feet high), no impact on the aesthetics of this industrial area is anticipated.

4.10.2.3 Mitigations

The mitigative measures included in the Greyhound site summary (above) apply to the Pacific St. site as well.

4.10.3 Transfer Stations

4.10.3.1 Existing Conditions

4.10.3.1.1 Bloomington East

The site for the proposed Bloomington East transfer station is a partially developed industrial parcel of land surrounded by light industrial and commercial uses. Structures on site house the operations of Hose, Inc., and Conveyors, Inc.

The site itself is occupied by a single building with a parking lot and vehicle storage areas. Large cylinders of industrial materials are stored in open areas near the building. The area has no special scenic qualities and is typical of the industrial nature of the area.

4.10.3.1.2 Brooklyn Park East

There are no structures of historic, architectural, cultural or engineering significance on site. One 20th century residence is located in the southeast corner of the site.

The area within the site boundary is undeveloped and vegetated with thick stands of trees and undergrowth. A steel frame building under construction adjacent to the site has a limited view of the area proposed for development. There are other commercial and industrial activities adjacent to the site, as well as approximately six residences.

4.10.3.1.3 Hopkins

The Hopkins DOT transfer station site is in the northwest corner of a 41-acre parcel currently used by the Hennepin County Department of Transportation for storage and maintenance of vehicles, equipment and construction materials.

The dominant features of the site are several vertical and horizontal storage containers and several transmission lines and parked trucks. Trucks and storage containers are owned by the Hennepin County DOT and stored on the site to support the county's highway construction and maintenance activities. The site contains a building and considerable parking and exposed soil and piles (sand and salt). A perimeter chain-link fence with visual screening, shrubs and vegetation surrounds the site, providing some screening of existing site structures, storage piles, equipment and other activities. The present visual condition of the site holds no aesthetically pleasing features and has no special scenic qualities.

4.10.3.1.4 Minneapolis South

The site is presently used as a solid waste transfer station (converted from an incinerator). It is bounded on two sides by industrial and commercial buildings built mostly of concrete and masonry. The Pioneers and Soldiers Cemetery with large stands of mature trees borders the site on the south and west. The general area is industrial. The southern part of the western view is well screened by the trees in the cemetery. Residences one block east of the site are separated from the facility by other commercial and industrial uses.

The dominant visual features of the site are the transfer station structures and a chimney (not now used) from the old incinerator. Ground-level development in the vicinity consists of mostly parking and storage facilities, city streets and railroad tracks. Because of the substantial industrial development, the site has no special scenic qualities.

4.10.3.1.5 73rd and Winnetka

Structures on the site are a house used as an office, and buildings used for a vehicle salvage business. South of the site is a relatively new truck repair business. Since most of the site has been previously disturbed, there are no structures of historic, architectural, cultural or engineering significance.

4.10.3.1.6 Westwood

The site is bounded to the west and north by other industrial parcels that are largely undeveloped. South of the site is multifamily residential. Land use 400 feet to the east is multifamily residential. One-half mile south of the site is Forest Hills Elementary School.

A two-story office/warehouse structure is currently under construction on the site.

4.10.3.1.7 Railroad

On this 7.5-acre parcel an asphalt plant is operated by Midwest Asphalt, Inc. The site is bounded on the east and west by elevated bed rail lines. A general industrial area is to the north and a floodplain area borders to the south across Edenvale Blvd.

4.10.3.1.8 Greenhouse

The site is bounded on the east by the north branch of Nine-Mile Creek. To the south lies an elevated bed rail line, and beyond that to the south lies the railroad site (see Part 1, Section 4.4 of the EIS). To the north and west lie property owned by Hennepin County. A school building lies on the property to the west. The school building is currently occupied by a Christian Day Elementary School. Property to the southwest of the site is wetland and public land used for recreational purposes. The site is currently proposed for redevelopment from the existing greenhouse operations to a refuse-derived fuel processing plant by Reuter, Inc.

4.10.3.1.9 National Lead/Golden Auto

The National Lead/Golden Auto site is located in an industrial area of the cit of St. Louis Park. Surrounding land uses in the area include: an NSP substation, a manufacturing company, an automobile service station and a welding supply company. Immediately west of the site is a vacant industrial property. South and east of the site are elevated railroads that screen the site from residential areas.

The National Lead portion of the site contains several concrete buildings dating back to 1940 or earlier, currently in various stages of disrepair and collapse. The 4.5-acre Golden Auto site is currently being used as an automobile wrecking and used parts business by Quality Auto Body.

4.10.3.1.10 Pyrofax

The Pyrofax site is located in an industrial area of the city of St. Louis Park. Nearby land uses in the area include: an NSP substation, a manufacturi company, an automobile service station and a welding supply compnay. Foundations of the previous business (Pyrofax) remain. South and east of the site are elevated railroads that screen the site from residential areas.

4.10.3.1.11 Airport Southwest

The Airport Southwest site is located within the airport property. East of th site is an MTC bus garage. This facility was built about 1978. North of the site is Rich Acres golf course. Northeast of the site is vacant airport, MAC property.

West of Cedar Av. (Hwy. 77) existing land uses in the vicinity of this site along Cedar are apartments, and some commercial uses along the intersection of I-494 and Cedar Av. The area south of I-494 from the site is mixed service commercial, primarily motels and restaurants.

4.10.3.1.12 I-494 and Nicollet

The I-494 and Nicollet Av. site and surrounding area have been used as a commercial and industrial site for some time. The city's comprehensive plan shou this area as "urban without vegetation." The site has been previously disturbed for development and the moving of material during construction of I-49

4.10.3.1.13 Freeway Landfill

The site itself is a mature landfill nearing closure. Much of the site has been revegetated. The land surrounding the site is vacant or used for mining and general industrial.

4.10.3.2 Impacts

The construction of a transfer station on the site would be compatible with existing land uses in the area. The nearest sensitive land use is a residential area over one mile from the site.

4.10.3.2.1 Bloomington East

Visual conditions would change from the existing situation as a result of transfer station development. The transfer station would replace the existing structure and be of approximately the same size and configuration. The transfer station would stand about 35 feet above the truck access ramp. The facility would be visible from other adjacent land uses as would truck traffic. The proposed facility, however, would be visually compatible with the surrounding existing industrial buildings' uses.

4.10.3.2.2 Brooklyn Park East

The visual character of this site would change from present conditions as a result of transfer station development. The site is screened by stands of mature trees, interrupting the view from the west. The site is visible from an office park development to the northwest of the site. Other sensitive receptors in the area would include the residential uses along Winnetka Av. to the east of the site. Although their view of the facility would be partially screened by vegetation, they would view most of the truck traffic to the facility. The site is essentially vacant at present. Development on the site would be considered by itself a visual impact. This particular location is screened, considerably reducing visual impacts. A transfer station 35 feet above the truck access ramp built at this site would have a visual impact on the area. The facility does not appear to conflict, however, with the surrounding industrial development.

4.10.3.2.3 Hopkins

The building of a transfer station about 35 feet above the truck access ramp would be visible to area residents. Existing views would not be significantly interrupted by the proposed structure. The present views are of industrial properties and highways. The facility itself would be consistent with other industrial buildings in the area, although somewhat taller. The existing visual characteristics of the site area are primarily industrial and commercial in nature and are not unique or unusual. The present view of the county storage facility would not be significantly altered by the introduction of another industrial structure on the site. Sensitive receptors considered were the apartment buildings along County Rd. 3 to the north and the residential area to the south. The remaining views of the site are from industrial and commercial properties. Much of the truck traffic at the facility would be visible, especially to residents to the north and south. All access is proposed to be via Hwy. 18 to County Rd. 4. The facility will be industrial like other buildings in the area. The change of visual conditions posed by the transfer station would not significantly alter the industrial character and view of the area. The transfer station on the DOT site would, however, be visible to residential neighbors to the south and the north because of its height above other nearby industrial structures.

The future transfer station would be one of the first structures viewed upon entering Hopkins. The city of Hopkins has expressed concerns about visual impacts (Rapp, 1985).

4.10.3.2.4 Minneapolis South

Development of a new transfer station would not significantly alter the visual impact on the neighborhood. The present transfer station at the site includin the chimney would be removed and replaced by a more modern facility. The proposed facility would be of lower profile (does not involve a stack). It would be consistent with its current use and with the surrounding commercial and industrial development.

Truck traffic to the facility would be screened by the adjacent development. The structure just north of the facility would screen out the view of traffic, while trees on the cemetery to the south will block views from that angle. Th proposed structure could be less visible than the existing one. Construction of a new transfer station on this site, however, would only result in the replacement of an aging facility with a more modern structure. Therefore, its impact should be positive.

4.10.3.2.5 73rd and Winnetka

The visual character of this site would change from present conditions as a result of transfer station development. The site is visible from an office park development to the west of the site. Other sensitive receptors in the area would include the residential uses along Winnetka Av. to the east of the site. Although their view of the facility would be partially screened by vegetation, they would view some of the truck traffic to the facility. The site is currently used for vehicle salvage. Development of a transfer station does not appear to conflict with surrounding industrial development.

4.10.3.2.6 Westwood

The site is bounded to the west and north by other industrial parcels that are largely undeveloped. South of the site is multifamily residential. Land use 400 feet to the east is multifamily residential. One-half mile south of the site is Forest Hills Elementary School.

A two-story office/warehouse is currently under construction on the site. The development of the site as a transfer station would require the removal of the structure.

4.10.3.2.7 Railroad

The land use on a parcel 500 feet to the north along Industrial Dr. is being used as a refuse company's office, which includes repair facilities and outsic storage of refuse trucks. Other facilities between the site and County Rd. 6 have outside storage of trucks and equipment. The city of Eden Prairie has stated:

> The railroad yard is superior from a zoning standpoint: its I-general classification is the type suited for a transfer station. A transfer station may be a more optimal use of this site compared with the existing land uses. Current land uses do not reflect an efficient use of this land. These uses include towed auto storage, roofing, natural gas s ag and asphalt production. A transfer station would appear to blend well wi the existing uses; in fact, the new construction would probably enhance t area. This area is relatively isolated and well screened from nearby lan and roadways.

4.10.3.2.8 Greenhouse

The site is located only 200 feet away from an elementary school. Four hundred feet to the southwest lies Birch Island Park, a passive recreation area which has a large expanse of wetland habitat. Camp Indian Chief has been established adjacent to the site on the southwest. The building will be visible to these areas and traffic may be disruptive.

4.10.3.2.9 National Lead/Golden Auto

The existing Golden Auto salvage yard and the remains of the National Lead smelting facility would be replaced by the transfer station. This facility would generate more truck traffic than is present now. The new facility in this industrial area would replace those older facilities currently on site. Screening of the site is provided on the south and east by elevated railroad beds.

4.10.3.2.10 Pyrofax

This site, although previously developed, is now vacant land with random grass and plant growth. Some evidence of foundations still exists. Although a large structure would replace this vacant site, the surrounding area is developed in similar industrial uses. In addition, this building would be visible by traffic along Louisiana Av. west of site.

4.10.3.2.11 Airport Southwest

Although a large structure will occupy a vacant site, the building of a transfer station at this location would not significantly alter the present visual conditions. No quality visual paths are interrupted by the proposed structure, only the views of the airport. The facility itself could not be considered a visual disadvantage over present conditions.

Sensitive receptors to be considered are the apartment buildings along Cedar Av. to the northwest and west. The remaining views of the site are from industrial and commercial properties. Much of the truck traffic at the facility would be visible, especially to residents to the northwest and west. Architecturally, the facility appears to be compatible with the industrial visual character of the area. The change of visual conditions posed by the transfer station may not likely be considered to improve on the existing situation, but it is not likely to degrade the aesthetics either. The development of a transfer station on the airport site will not adversely affect the visual aesthetics of the area.

4.10.3.2.12 I-494 and Nicollet

The existing industrial businesses currently operating at this site would have to be relocated. The buildings currently occupying this site would be demolished and replaced by the transfer station. Due to the industrial nature of this site and surrounding area, no adverse visual impact is anticipated.

4.10.3.2.13 Freeway Landfill

The land surrounding the site is vacant or used for mining and general industrial. The construction of a transfer station on the site would be compatible with existing land uses in the area. The nearest sensitive land use is a residential area over one mile from the site. No adverse visual impact is anticipated.

4.10.3.3 Mitigations

Impacts on visual aesthetics for any individual site could be eliminated by constructing the facilities elsewhere (see Part 2, Section 1.0 of the DEIS). In addition, impacts can be minimized at any of the sites by several strategies. These include:

- Extensive landscaping and ornamental tree/shrub plantings.
- Use of aesthetically pleasing architectural treatments. This could involve establishment of community-based committees to have impact into the design of the facilities.
- Exterior finishings compatible with adjacent structures.
- Landscaping to block views of the facilities.
- Buildings sited as far as possible from adjacent structures to preserve a buffer zone.
- Efforts made to preserve natural vegetation to the extent possible.

SECTION V

WRITTEN COMMENTS

minneapolis
city of lakes

MAYOR DONALD M. FRASER

January 31, 1986

Ms. Sandra Gardebring, Chair
Metropolitan Council
300 Metro Square Building
7th & Robert Streets
St. Paul, MN 55101

Dear Ms. Gardebring:

As you are aware, the City of Minneapolis recently hired the Center for the Biology of Natural Systems (CBNS) to do an independent analysis of the Metropolitan Council's draft EIS on the proposed mass burn facility. Our City Council has submitted a copy of their report to your staff as part of our official City response to the draft EIS. I am writing to underscore our interest in a careful review of that report as part of the Metropolitan Council's final EIS process.

I am disturbed by the 28-fold difference in cancer risk assessments described in the draft EIS vs. CBNS reports, and I am concerned about the environmental, legal and economic implications of committing significant public investment towards a technology that is not yet fully understood, and for which regulatory safeguards are not yet in place.

S-1

It may be the case that the draft EIS cancer risk assessment is accurate. However, the regulatory work currently underway at the federal and state levels appears to demonstrate that the draft EIS dioxin risk of 9.3 cases per million lies perilously close to existing guidelines of the Environmental Protection Agency, the Minnesota Department of Health, and the Pollution Control Agency. Clearly, this is not a project where time pressures should prevent a thorough review of the questions involved.

I feel confident that your Council staff will have the expertise lacking in City goverment to respond to all of the methodological and technical issues raised in the CBNS report.

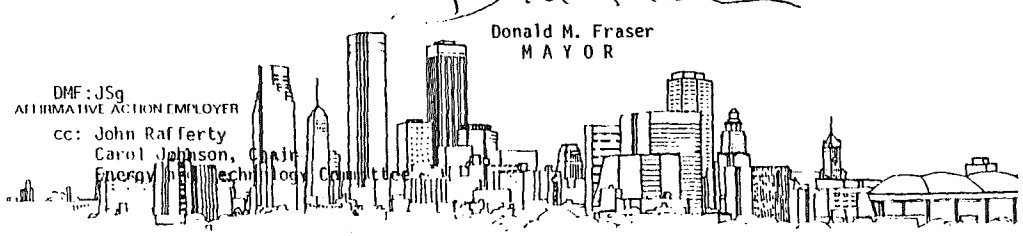
Thank you for your careful consideration of this matter.

Sincerely,

Donald M. Fraser
MAYOR

DMF:JSg
AFFIRMATIVE ACTION EMPLOYER

cc: John Rafferty
Carol Johnson, Chair
Energy and Technology Committee



January 29, 1986

Ms. Sandra S. Gardebring, Chair
Metropolitan Council
300 Metro Square Building
Seventh and Robert Streets
St. Paul, Minnesota 55101

Dear Ms. Gardebring:

The following are the City of Minnetonka's comments concerning the draft Environmental Impact Statement for the Hennepin County Resource Recovery Project, particularly the transfer station site alternatives. I do not wish to comment on where the appropriate site may be, rather, to express concern over the potential selection of any of the Eden Prairie sites.

Previously, when the County was considering two locations in Minnetonka on the north side of County Road 67 we identified a number of salient reasons why neither was acceptable. Several apply to the proposed Eden Prairie sites as well.

First, the City has a number of generic concerns related to all sites, including:

1. Access. These sites are convenient to several County Roads as well as Interstate 494. However, the City believes that if any of these sites are developed for the transfer station, access should be limited to the Interchange with I494 and Baker Road. This would permit vehicles to travel County Road 67 (the Crosstown) to the site, through what is basically a non-residential area. If, however, if the County were to permit access along County Road 4 (Eden Prairie Road), County Road 3 (Excelsior Boulevard), or County Road 60 (Baker Road), well developed residential areas would be impacted in each instance. The City believes, therefore, that only the access along County Road 67 from the Baker Road interchange with I494 should be considered.

City Offices Located At
14600 Minnetonka Boulev.
Minnetonka, Minnesota 55
612 933 2511

2. County Property. The City is concerned that the construction of a solid waste transfer station in this corridor could adversely affect the future redevelopment of Hennepin County's Glen Lake facilities. While the City is not aware of any definitive plans that the County has for this property, it has previously expressed interest in selling the property and proposals for multi-family development have been discussed. With an amenity such as Glen Lake in the immediate proximity, and now the certain extension of the Crosstown past the property, it is certain that it will become increasingly valuable in the future. If there are other equally satisfactory or better sites available, it seems unwise for the County to locate a solid waste transfer station facility on these sites.

3. Location. When the location of the proposed resource recovery facility at Seventh Street and Sixth Avenue North in Minneapolis is considered it would seem desirable to locate transfer stations between it and major population (refuse contribution) areas. Locating a facility on any of the sites along County Road 67 in Eden Prairie, where much of the refuse would be coming from the east, or from the north and east, and which then would require transportion east again, does not appear to be prudent.

4. Traffic. It is understood that the City of Eden Prairie has given site plan approval to a refuse derived fuel (RDF) processing facility on one of the three sites (Greenhouse) being considered for a transfer station. Although it is understood that this facility will be smaller than the one contemplated in Minneapolis, nevertheless it would seem that there is a potential for conflict between the refuse packers that will be trying to access the RDF facility and the transfer station. More importantly, however, the City is concerned that having a resource recovery facility and transfer station in close proximity to each other will exacerbate the traffic concerns expressed above. Likewise, this City is concerned that having two such facilities so near to each other could create adverse impacts on residential neighborhoods as well.

In addition to the general concerns expressed above, the draft Environmental Impact Statement finds several apparently serious reservations about the Westwood and Greenhouse sites in particular. For example, Section 4.3.2.3 SURFACE WATER states: "The construction of a facility on site that greatly increases the amount of impervious surface will have a negative impact on the surface water quality of Nine Mile Creek." This is of major concern to the City. Nine Mile Creek is a valuable watershed flowing into the Bryant Lake Regional Park. Not only does it seem imprudent to jeopardize the environmental qualities of the creek and the lake, but such a use could have negative consequences for future recreational development of the corridor.

Concerning the Greenhouse site, Section 4.5.2.4 LAND USE AND ZONING and 4.5.2.5 TRANSPORTATION, when read together, amount to what is perhaps the most serious reservation for any of the sites in that area. It is noted that this site is within 200 feet of an elementary school, and yet in the following section it is observed that "safety of children with the peak refuse truck volumes is an impact whose severity has not been assessed." This suggests that there are potentially significant safety hazards to area residents, hazards which could be easily avoided by the selection of a more appropriate site. Likewise, as mentioned, it appears that the use of this site may already be precluded by recent actions of the City of Eden Prairie.

The City believes that Hennepin County has exercised good judgement in the analysis of alternative sites throughout this process and further believes that the conclusions in the draft Environment Impact Statement corroborate previous findings that sites in this location are less desirable, and in some cases present unmitigatable concerns. The City appreciates the opportunity to comment on this important matter, and will gladly supply any additional information to assist you in your review.

Sincerely,

James F. Miller
City Manager

cc: Mayor and Members of the City Council
Warren K. Porter
Carl Julie

Park Valley Association

January 29, 1986

Sandra Gardebring, Chair
Metropolitan Council
300 Metro Square Building
7th & Robert Street
St. Paul, MN 55101

Re: Proposed Garbage Transfer Station of Hennipen County site in Hopkins.

Dear Ms. Gardebring:

We the residents of Park Valley, are very strongly opposed to the location of a waste transfer station so close to our neighborhood. Further, we feel that the EIS is in need of more evaluation concerning the following points:

* Inconsistent with surrounding area, particularly food warehouses and residential development.

* Increased noise levels will be unacceptable. Noise level is already too high.

* Truck traffic is already a problem - this will increase the problem.

* The railroad crossing at 5th & County Road #3 already creates traffic congestion and delays - this will make a bad situation worse.

* Property values will be reduced - concerned about losing valuable tax base.

* Downtown business' image will be negatively affected due to influx of garbage trucks on the main access route through the city.

Again, we are most concerned about the impact this facility will have on our neighborhood, our homes, and the quality of life in Park Valley.

Sincerely,

Douglas L. Denny
President, Park Valley Association
532 5th Ave. So.
Hopkins, MN 55343
933 - 1014

cc: Craig Rapp
Hopkins City Manager

5-3

Goldstein & Associates, Inc. Investment Real Estate

January 23, 1986

Ms. Sandra Gardebring
METROPOLITAN COUNCIL
300 Metro Square Building
7th & Robert Streets
St. Paul, MN 55101

RE: PROPOSED GARBAGE TRANSFER STATION OF HENNEPIN COUNTY SITE IN HOPKINS

Dear Ms. Gardebring:

I am the President of the Knollwood Association, a neighborhood residents group in Hopkins. As you study appropriate sites for the Garbage Transfer Station, we strongly urge you not to choose the land you are considering in Hopkins for the following reasons:

1. Garbage trucks would be forced to use the main access route through the City of Hopkins. Needless to say the downtown businesses would be negatively impacted.

2. Property values in Hopkins would be reduced eroding the tax base.

3. We have a railway crossing at 5th & County Road #3 which is heavily congested and causes long delays. This will exasperate the situation.

4. The noise level in this area is already intolerably high. This will make things significantly worse.

5. Hopkins is a mega for truck traffic now with it's unusually high count of industrial companies. This will significantly increase the problem.

Page Two
Ms. Sandra Gardebring
January 23, 1986

In summary, with all the residential development and high number of food warehouses in the surrounding area, the Hopkins site would not be suitable for the Garbage Transfer Station. We hope you will agree and choose a more appropriate location.

We appreciate your reading this letter and hearing our views.

Sincerely,

THE KNOLLWOOD ASSOCIATION

Bruce M. Goldstein
President

BMG/vlp

5-4

631-8th Ave So
Hopkins, Minn
55343

Metropolitan Council -

I was regards to the waste transfer situation intended for our fair city of Hopkins - I would like to make my opinions too. You have heard from our Representatives Local business people and the list goes on - of why the business section sanitation & congestion of traffic it is not a good idea to dump on us this garbage transfer station - I am a taxpayer - Hopkins has been my home for forty years - thirty-five of those years has been spent at 631 - 8th Ave So.

Hopkins was a booming town when I moved to Maple Moline had put it on it's feet. Main Street was booming - and things were good - for a while -

Hopkins got left by the wayside when the big and suburban shopping centers opened up around her and she further suffered as Moline's failing. The ensuing years have seen a lot of changes. The raspberry fields & local farmers selling out to the highest bidders with the results of big becoming evident in the last few years -

Hopkins has grown and grown till now she has re established herself in a total new concept - Business's - offices - warehouses - housing - from apartment buildings have grown all around us who have maintained their homes.

We the home owners were shocked twenty years to realize there were colonies of rats that were living to thirty feet underground - Then showed up when earth moving began to start the building of the first of the Westbrooke apartments in Hopkins - It went through quite a deal at that time to rid the area of the creatures - I personally saw plenty of the rats myself - I was able to keep one and one drowned in my collie's drinking water - It took a lot of doing but the situation finally was cleared up -

for much of my personal needs.

Traffic has been a problem for our area with 11th one being our main route. Finally after years the city managed to open up a second route to & from town - Lane - Great - only now we have more trucks in the area - trucks piled up in different areas awaiting to pick up their food loads - trucks waiting at train crossings - trucks pulling back into line of traffic and cars - we have more traffic going through the area that you seem to think is so ideal for your transfer station - I have to ask who this is ideal for?

We have struggled to see Hopkins become something better than the Raspberry Capital of the nation - Now you come along and tell us you want to put a garbage transfer station at a place so obvious to thousands of residents that each time we leave our home or return it will be to drive past this monstrous site - I can see it now - food trucks lined up on one side of the street and garbage trucks lined up on the other and the cars going in between on our two lane roads - How nice.

I say forget it I'm sure you can come up with something better than this for a solution to your problems - You can say where it's to go but we have to live with it.

Sincerely,
Mrs. W. S. Hansen

5-5

1/28/86

Metropolitan Council
Sandra S. Gardebring, Chair
300 Metro Square Bldg.
7th and Robert Streets
St. Paul, Mn. 55101

To Ms. Gardebring and all other members of the Metropolitan Council:

Subject: Public Meeting regarding the proposed Hopkins site for a Solid Waste Transfer Station, conducted by the Metropolitan Council, Thurs., Jan. 16, at 7 pm at the Edina Community Center.

The purpose of this letter is to not only convey to you my opposition to locating the proposed Solid Waste Transfer Station immediately adjacent to the Park Valley Residential Area, location of my home, but to also comment on the process of the Jan. 16 meeting and significant points brought forth during the information presentations.

It has long been my perception that it is the responsibility of members of a governmental body, when they are involved in making critical decisions, to attend public meetings they have scheduled and to attend with open minds and a great sense of responsibility to all of the parties involved. In my six years as a reporter and news editor for the former Hopkins and Eden Prairie Sun Newspapers and 13 years as Communications Coordinator for Hopkins Public Schools, I have never witnessed a public meeting/hearing in which a minority (in this case only two of 16 members) of the governing body attended the meeting. I do appreciate the attendance of Council Members Joan Campbell and Josephine D. Nunn. I am very concerned about the absence of the other 14 members of the Council. Do they not care?

We in Hopkins care. We in Park Valley care very much. There is little doubt that locating the Station within 700 feet of our single family home neighborhood will have a significant impact on our property values, on our environment, on our very quality of life.

When we moved to our home at 604 5th Ave. S., deer and pheasant roamed into our yards. We expected changes - and we have experienced many changes.

- more-

metro council - add one

We never dreamed we would have as many as 305 unsanitary, noisy, rodent and insect-ridden garbage trucks rolling into our area each day of the week. We never dreamed we would have a facility such as the proposed solid waste station located within the sight, sound and smell of our single family residential area, much less directly across the street. We never dreamed a governing body could be so indifferent to the health and welfare of the citizens of the Metropolitan area and the Upper Midwest that it would even consider locating a facility such as the proposed in the immediate area of three major food suppliers.

Surely each of you has driven behind a sanitation truck. Next time, I would ask you to take notice of the debris hanging out the back, or even the open back of the truck. Surely you have inspected the site from all sides and seen that Country Club warehouse is not one and one-half blocks away as printed in the Minneapolis Star and Tribune. It is directly across the street - a stones throw - with doors open throughout the day for loading and unloading trucks. Surely you have seen that Super Valu and Red Owl food warehouses are but a short distance from the Hopkins DOT site and easily within the range of rodents and flying insects.

Surely you have taken time to observe at the intersection of County Road 3 and 5th Ave. So. the traffic congestion not only when a train passes, but when the lights are out of operation, when there is an accident, and yes even just at normal traffic hours. Surely you have taken the time to see the amount of truck traffic Super Valu alone generates between its two main facilities. These facilities are located at each end of the same roadway which services the proposed station site.

Surely you have studied the architect's rendition of the facility and noticed that there is a significant grade into the station. Can you imagine the sound generated by a heavy laden truck grinding up that grade every few minutes, occasionally one after the other, during the 12 hour day?

It is totally inconceivable to me that you would consider the Hopkins DOT land as a viable site originally, much less give further consideration to this site after the information given at the meeting on the draft EIS Statement, but then again how many of you heard it?

- more -

metro council - add two

I ask each of you, as members of a Council appointed to serve the entire Metropolitan area, to do your own research on this very critical issue -and to give this matter the unbiased, responsible consideration it warrants.

Thank you for taking your time to read this.

Sincerely,

Virginia C. Moll

Virginia C. Moll (Mrs. Dale C.)
604 5th Ave. S.
Hopkins, Mn. 55343

Phone - 938-2878

Past President, Park Valley Homeowner's Association

133 Ashley Rd.
Hopkins, Mn. 55343
Jan. 13, 1986

Sondra Gardebring, Chair
Metropolitan Council
300 Metro Square Building
7th and Robert Sts.
St. Paul, Mn. 55101

Dear Ms. Gardebring:

We would like to register our opposition to the proposed Garbage Transfer Facility Site in Hopkins. While we support a garbage recycling program, Hopkins is already a much more enclosed, contained, and developed city than some of the other possible areas. To put a large garbage site in the middle of an established city with no room to expand will cause serious problems. Hopkins is working hard to improve its image and to attract downtown business development, but the garbage site, with its truck traffic, noise, odor, and unsightliness would be a serious and probably permanent setback. With Super Value threatening to move out as one example, we are concerned about our tax base and the possibility of lowered property values. Please reconsider alternative sites in other areas. Thank you.

Sincerely,
Connie and Jim Connors

5-7

Jan. 15, 1986

Dear Sirs:

Sorry we could not attend the meeting on the proposed (EIS).

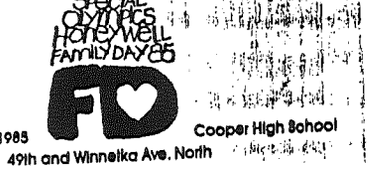
My husband and I are very much opposed to having it in Hopkins. We've lived here for fifteen years and love our little suburb, that has a little town of its own.

The proposed site is only two or three blocks from our home, and would not like all the extra traffic and the value of our house going down - times are tuff enough.

Thank you
Virginia Butz
616 7½ Ave. So.
Hopkins, Minn.
55343

I'm very much against the proposed garbage Transfer Station at 5th Ave. & Co. Rd 3. It's a ridiculous suggestion.

Barbara & Scott
100 Holly Rd
Hopkins Mn
55343



Saturday July 27, 1985
49th and Winnetka Ave. North

5-8

Neil N. Lapidus
221 Oakwood Road
Hopkins, Minnesota 55343

January 20, 1985

Ms. Sandra Gardebring, Chair Metropolitan Council
300 Metro Square Building
7th & Robert Streets
St. Paul, Minnesota 55101

RE: The proposed garbage transfer station of Hennepin County site in Hopkins

Dear Sandra Gardebring,

This letter shall serve as a letter of opposition regarding the proposed garbage transfer site at 5th Avenue South and County Road 3. I am opposed to the transfer station in Hopkins for the following reasons:

I believe that the transfer station would be inconsistent with the surrounding area, particularly the food warehouses and residential development.

The increased noise level will be unacceptable. I believe the noise level is currently high enough and any increase due to the trucks in the neighborhood would make that level unacceptable.

Property values will be reduced. I believe my property values, hence the tax base will be adversely affected by this transfer station.

Downtown businesses images will be negatively affected due to the influx of garbage trucks on the main access routes through the city.

I would appreciate if you would contact me in the event you have any further questions, and would appreciate if you would note my personal opposition at your next meeting.

Very truly yours,

Neil N. Lapidus/bw

Neil N. Lapidus

NNL:bw

Jan 15, 8

Sandra Gardebring, Chair
Metropolitan Council
300 Metro Square Bldg
7th and Robert Streets
St Paul, Mn. 55101

Re: Proposed Garbage Transfer Station of Hennepin County site in Hopkins

The multitude of problems accompanying such a proposal is mind boggling. As a homeowner in Hopkins, I must declare myself an opponent of such a proposition.

Among such negatives such as putting County garbage closer to food wareh... increased noise levels produced by gar... trucks, railroad crossing, rattling ... traffic, reduced property values (tax ba... and negative business image on a fa... new business mall, THERE IS ALWAYS T... CONCERN OF SUPPLY OF QUALITY WATER ... A DENSELY POPULATED AREA.

NO, NO, NO to dumping Hennepin County garbage in Hopkins.

Mrs. D. J. Keefe
253 Ashley Rd
Hopkins, MN. 5534

5-9

Matropilitan Council
300 Metro Square Building
7th and Rboert sts
St Paul Min. 55101

Dear Madam/ RE: proposed garbage trandfer station Hennepin Countu site in Hopkins.

I am apropertyowner at the above address for the past 11 years. I definitely object to sucha transfer tation in Hopkins. This is a lving persons commumity- no factories no Dumps and NONE to be instituted HERE. In 1930 and early 1940 I lived ne ar Clinton Iowa and hey had a garbageburning site in Cojton Ia on the east oedge of the Mississippe river- and the smell of burning garbage was usffrned by ll people ibhat lived in the north - south east and wes of th plano withing 4 miles- depending on which way the wind was from. Even smell tohigh he ven when you w rere accross from it in Illinois..

I ask you to refrain frm establishing such a plac naywhere ne er Hopkins..

Farmers ner Clinton Iowa used th ashed ontheir farm land and soon had more RATS ehnnthey wantd to see.

It will lso deive 3 grocery ch ins from tis location.

FORGET about it/

Yours truly
G Jerry Reiff

Harriet Long resident Harriet L Long.

Mrs. Edwin G. Pickler
100 Maple Hill Road
Hopkins, Minnesota 55343

To Sandra Gardebring - Chair.
Metropolitan Council -

Re - Proposed Garbage Transfer Station of Hennepin County site in Hopkins

Being a residence of Hopkins Mr Pickler and I are very much against this action. This site has warehouses (food) too near - a health hazard not only to Hopkins - as they service the surrounding communities in the State as well -
The traffic is bad enough due to Trucks and the trains that come through - This would not be help to our property values - we've lived here 46 years - Hopkins has spent money and time to revitalize the city the past two years - Please take that into consideration - this site would [illegible] Hopkins -
Thank you for your attention -

Sincerely
[illegible] Pickler

By the return address on this stationery there should be no doubt in your mind what is on my mind.

My husband and I were very disappointed and disheartened by the Council's poor representation at the Garbage Transfer Hearing at the Edina Community Center. The very expensive "survey", "report", "EIS" or whatever name you care to attach to it is ludicrous.

As communities are judged, Hopkins is old, historic and jam packed with residences, retail & commercial businesses and the hub of supplies for grocery stores in Minneapolis, Saint Paul, Wisconsin, Iowa, North & South Dakota. If your council considers this sentence seriously you all will come to realize that vermin of any sort, 4 footed or winged that extend the warehouses of Super Value, Country Club or Red Owl would be closed immediately by the FDA and then, where would any of us get our groceries ??? This is not just a Hopkins issue — it is region wide.

Hopkins is also directed by 4 train tracks — long, heavily loaded slow trains. I leave it to you to figure out what transfer truck delays would mean.

We've lived in the same home for 40 yrs and have seen the county raise havoc with our rural setting — "The Raspberry Capitol" now imports the berries because the farms are all under concrete — that's highways.

I could go on, but I hope the council

5-10

RESOLUTION #1986- 40

RESOLUTION IN OPPOSITION TO HENNEPIN COUNTY LOCATING A GARBAGE TRANSFER SITE AT 70TH & WINNETKA AVENUES NORTH

WHEREAS, the City of Brooklyn Park has been notified that one of four garbage transfer sites to be located in Hennepin County is to be located near 70th & Winnetka Avenues North; and

WHEREAS, the Metropolitan Council has prepared a draft Environmental Impact Statement (EIS) and has brought the draft EIS to a public hearing to determine adequacy; and

WHEREAS, the Brooklyn Park city staff has reviewed the draft EIS and has determined that adequate protection to flora and fauna have not been addressed, percentage of fill in the flood plain, and impact on an unsignaled 70th Avenue and T.H. 169 intersection have not been adequately addressed; and

WHEREAS, early opposition from surrounding communities, based on "anticipated" public outcry, saw their sites being dropped from the available inventory in favor of a more expedient site but one with highly sensitive wetland features;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Brooklyn Park challenges the adequacy of the draft EIS; and

BE IT FURTHER RESOLVED that the City Council of the City of Brooklyn Park is opposed to the location of a garbage transfer site known as the Brooklyn Park East location.

The foregoing resolution was introduced by Councilmember Slack and duly seconded by Councilmember Engh.
The following voted in favor of the resolution: Krautkremer, Engh, Marshall, Slack, Pearson, Dix and Gustafson.
The following voted against: None.
The following were absent: None.
Whereupon the resolution was adopted.

ADOPTED: JANUARY 27, 1986

James J. Krautkremer

JAMES KRAUTKREMER, MAYOR

CERTIFICATE

STATE OF MINNESOTA
COUNTY OF HENNEPIN
CITY OF BROOKLYN PARK

I, the undersigned, being the duly qualified and acting Clerk of the City of Brooklyn Park, Minnesota, hereby certify that the above resolution is a true and correct copy of the resolution as adopted by the city council of the City of Brooklyn Park on January 27, 1986.

WITNESS my hand officially as such Clerk and the corporate seal of the City this 28th day of January, 1986.

Joyce Rocker, Deputy
WESLEY LONG, CITY CLERK

(SEAL)

5-11

#1986-40

Mr. John Rafferty
Metropolitan Council
300 Metro Square Building
St. Paul, Minnesota 55101

BLOUNT

January 29, 1986

Dear Mr. Rafferty:

Carolyn Konheim of Konheim and Ketcham has reviewed the Hennepin County Resource Recovery Project Draft Environmental Statement, Publication No. 12-85-155B and the Commoner, et al. Final Report to the City of Minneapolis, dated January 17, 1986.

We offer these comments for your consideration with the following Addendum, dated January 28, 1986, which was received verbally from Carolyn Konheim.

> "In the attached comments, I assumed the risk level of 260 per million referred to the Commoner, et al. projection of 270 per million, resulting from the existing concentration of PCDD/PCDF in human tissue samples in a recent widely disseminated paper.[1]
>
> Upon receiving today the January 17, 1986 Final Report by Commoner, et al to the City of Minneapolis, I note that 260 per million is indeed a calculated risk level for the proposed Hennepin County Facility. While I have not had time to review the methodology of the calculations, my explanations in the attached comments for a risk factor of less than 9.3 in one million are likely to remain applicable".

Yours truly,

Hulic B. Ratterree
Manager, Technical Services

cc: J. Ard, BERC
L. Hands, BEI
W. Porter, Hennepin County
M. Wollschlager, HDR

HBR/jam

1 B. Commoner, et al., "Environmental Levels and Health Effects of PCDD's and PCDF's with addendum," November 25, 1985.

4520 EXECUTIVE PARK DRIVE
P O BOX 4577
MONTGOMERY AL 36195 0801
205 277 8860

Mr. John Rafferty
Metropolitan Council
300 Metro Square Building
St. Paul, Minnesota 55101

BLOUNT

January 29, 1986

Dear Mr. Rafferty:

Blount has received the Hennepin County Resource Recovery Project Draft Environmental Impact Statement, Publication No. 12-85-155B, prepared by the Metropolitan Council.

We offer the attached comments for your consideration.

Yours truly,

Hulic B. Ratterree
Manager, Technical Services

cc: J. Ard, BERC
L. Hands, BEI
W. Porter, Hennepin County
M. Wollschlager, HDR

HBR/jam

Hennepin County Resource Recovery Facility

Comment to Draft Environmental Impact Statement

Health Assessment Section 4.3

Blount uses a tetrachloro dibenzodioxin (TCDD) emission factor for the Hennepin County Resource Recovery Facility of 5.4×10^{-8} lbs/ton while the Draft EIS uses a TCDD emission factor of 1.64×10^{-6} lbs/ton which is 30 times higher than the Blount factor.

For 2,3,7,8 TCDD, Blount uses an emission factor of 3.2×10^{-9} lbs/ton while the draft EIS states an emission factor of 6.06×10^{-8}. This is 19 times higher than the Blount factor.

Blount emission factors are conservative. They are based on emissions obtained by other somewhat similar facilities currently in operation. These facilities, however, do not have the following traits that the Hennepin County facility will have. These traits should contribute to actual emissions lower than the Blount emission factors.

1) Two second retention time above 1800°F after secondary air injection.

2) High velocity secondary air injection.

3) Continuous monitoring of oxygen to maintain oxygen concentrations above 7%.

4) Continuous monitoring of carbon monoxide with feedback to maintain CO concentrations less than 100 ppm on a 4 day moving average.

5) State of the art spray dryer scrubbing system that will cool heavy organics including dibenzodioxins sufficiently for these materials to be absorbed onto particles.

6) State of the art baghouse operating at less than 280°F with excellent fine particle collection efficiency for collection of condensed organic matter including dibenzodioxins.

While data is sparce on the source and treatment of these emissions from resource recovery facilities, the above 6 improvements over current facilities should reduce emissions to significantly less than the Blount emission factors presented above.

Even if emissions were only equivalent to the Blount emission factors, total equivalent 2,3,7,8 TCDD ambient concentrations should be a factor of approximately 20 less. This would result in a lifetime hazard characterization risk associated with 2,3,7,8 TCDD equivalents of approximately 5×10^{-7}.

LMH/sms

Mr. John Rafferty
Senior Environmental Planner
Metropolitan Council
300 Metro Square Building
St. Paul, MN 55101

January 29, 1986

RE: Comments on Hennepin County Garbage Burning Incinerator Draft Environmental Impact Statement (DEIS).

Dear Mr. Rafferty:

Earth Protectors' interest in the above referenced project is to protect the air, land, and water resources of our state and nation from contamination and misuse.

The chief criticisms of the DEIS relate to what the consultants did not do, as well as to what they did do. By failing to undertake other analyses and by failing to provide complete interpretation of factual data, the DEIS is skewed in the direction of incineration in downtown Minneapolis.

5-13

1. ALTERNATIVES - The DEIS only mentions alternatives to incineration but does not compare. The DEIS must describe and compare the costs of the proposed system, including its operation and maintenance, with alternative systems that include waste reduction, recycling, composting, and reprocessing for reuse. Further, the comparison should include human health impacts and environmental impacts from these systems. The publication we provided Metropolitan Council entitled, To Burn Or Not To Burn by the Environmental Defense Fund, shows that alternatives to incineration are economical and viable.

2. CANCER RISK ASSESSMENT - The greatest threat to human health posed by burning garbage may be the increased risk of cancer to the exposed population. The DEIS in estimating a maximum cancer incidence rate of 9.3 per million people exposed, carefully eliminated information that would not support this number. We submit for the record, the attached study recently completed by the Center For The Biology of Natural Systems

more

(CBNS) as our rebuttal to the 9.3 cancers per million of exposed population indicated in the DEIS. In order to avoid the DUELING CONSULTANT SYNDROME, we submit this report to the record primarily to point out the glaring differences in various theories. The CBNS study theorizes 260 cancers per million people exposed while the DEIS theorizes 9.3. Even if the CBNS study were discredited by 95% or even totally thrown out as evidence, the 9.3 would certainly be suspect knowing that the trigger for problems with the project is 10.1. We suggest that the DEIS sought evidence to support the numbers they needed to propel the project forward rather than research the evidence and publish the complete picture. The U.S. Surgeon General has noted, "No level of exposure to a chemical carcinogen should be considered toxicologically insignificant for man. For carcinogenic agents a safe level for man cannot be established by the application of our present knowledge."

3. EMISSION CONTROL - The DEIS failed to supply factual evidence that the dry scrubber and baghouse emission control equipment proposed would be effective in preventing dioxin emissions. One of your reference documents is a paper presented to the Air Pollution Control Association in Detroit, Michigan, June 1985, by Dr. Barry Commoner, entitled The Origins And Methods Of Controlling Polychlorinated Dibenzo-p-Dioxin And Dibenzofuran Emissions From MSW Incinerators. This paper offers the theory that dioxins and their friends are formed after the control equipment as the emissions cool down. In addition, it offers the possibility that combustion temperature is only relevant to the possible destruction of precursors that form dioxins. Information obtained during a conversation I had with the California Air Resources Board (CARB) on January 14, 1986, indicated that preliminary studies from a Japanese incinerator will support the fact that combustion temperatures of 1800° F will not destroy sufficient numbers of precursors and higher temperatures begin to cause NO_x formations and stress on the equipment. Chlorinated plastics burned with lignin (wood products) have a synergistic relationship which is not clearly understood at this time.

more

earth protector®

4. ASH CREATION AS A RESULT OF INCINERATION - There is little doubt that the fly ash from garbage incinerators is hazardous and if this project is allowed to go forward this ash will be buried. There is universal agreement that if you bury hazardous materials in water rich Minnesota, the leaching toxins will surely contaminate water in time. We will not comment on the absurdity of diluting fly ash with bottom ash from incinerators to render the fly ash acceptable for burial because we are confident that anyone that pursues that line of thinking in Minnesota will certainly be unemployed. We should not be manufacturing hazardous materials in order to dispose of garbage.

5. BIOACCUMULATION - When the potential exposure to dioxin, acid gasses, enriched metals, and other garbage incinerator emissions is added to present exposures to these emissions, and other carcinogenic compounds, additional biological questions need to be asked. Will this additional exposure coupled with present exposures exacerbate the cancer risk? Is there an additive or synergistic effect between dioxin and other carcinogenic agents? If so, how will this additional environmental insult increase the risks?

5-14

IN CONCLUSION - The DEIS for the Hennepin County Incinerator does a disservice to the decision-making process by leaving the impression that the facility has been shown to be safe. In fact, the DEIS analysis is neither complete nor quantitatively or qualitatively precise. Consequently, to the extent that the DEIS skews the thinking of the public or decision-makers into believing that the burning of garbage is a sound, environmentally safe practice, the DEIS has clouded the issue and made the decision-making process more difficult.

Yours For A Cleaner Earth

Sincerely,

Leslie Davis, President
Earth Protector, Inc.

LD/wo

Enclosure, CBNS Report

1138 Plymouth Building, Minneapolis, Minnesota, 55402 612-375-0202

LOMBARD PROPERTIES INC.

Executive Offices
625 Fourth Avenue South
Suite 1550
Minneapolis, Minnesota 55415
612/343-0250

January 29, 1986 HAND DELIVERED

Mr. John Rafferty
Sr. Planner
Metropolitan Council
300 Metro Square Building
St. Paul, MN 55101

RE: Hennepin County Waste Station
Hopkins, Minnesota

Dear Mr. Rafferty:

On behalf of Property Investments I, a partnership managed by Lombard Properties, Inc., is the fee owner of property adjacent to the Hennepin County selected site for the above referenced waste station. Our property is the Dataserv Building, 509 Second Avenue South, located south of the Hennepin County property and west of Highway 18.

We would like to go on record to oppose the location of the waste station on the Hennepin County site, Hopkins, Minnesota. We are not in agreement with the EIS Report, and we feel that the potential traffic, noise and odor problems are not clearly represented in the Environmental Impact Study.

We would appreciate of being kept apprised of future events surrounding this issue. If you have a mailing list, please forward all future notices and information to the attention of Ms. Judith Bright, at the offices of Lombard Properties, Inc.

Yours truly,

C. E. Samluk
President

CES:cjb

cc: Craig Rapp, City Manager
Senator Phyllis McQuaid

Minnesota Pollution Control Agency

January 30, 1986

Mr. Paul Smith
Project Manager/Senior Environmental
Planner
Metropolitan Council
300 Metro Square Building
7th & Robert Streets
St. Paul, Minnesota 55101

Dear Mr. Smith:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the draft environmental impact statement (EIS) for the Hennepin County Resource Recovery Project to be constructed in downtown Minneapolis. The staff has comments to offer on revisions which need to be made to the air quality, noise, and solid and hazardous waste sections of the document for incorporation into the final EIS for the project.

Air Quality

The following air quality comments are divided into three areas: 1) general air quality concerns, 2) issues associated with criteria air pollutants, and 3) issues associated with the non-criteria air pollutants, i.e., the health risk assessment.

-General Air Quality Concerns

On page 1-6 of the draft EIS it is stated that the combustion chamber will be equipped with auxiliary burners for plant start-up and to aid in maintaining a temperature of 1800°F in the combustion chamber, at lower operating levels. The final EIS should contain a description of the rated heat input of the auxiliary burners in relation to the total rated heat input of the incinerator and a description of the auxiliary fuel to be burned.

In Tables 2-1 and 2-3 of the draft EIS, on pages 2-2 and 2-5, respectively, the MPCA air quality permit should be listed as an air emission facility permit not as an air emission facility installation/operating permit or air quality installation permit. The installation and operational phases of air quality facilities are now covered under one permit.

It is stated on page 3-6 in section 3.1.6.2 of the draft EIS, that the New Brighton Waste Energy Systems proposal was given an exclusion from Hennepin

Phone: 296-7301
1935 West County Road B2, Roseville, Minnesota 55113-2785
Regional Offices • Duluth/Brainerd/Detroit Lakes/Marshall/Rochester
Equal Opportunity Employer

5-15

County's waste flow designation plan. It should be noted in the final EIS that the Waste Energy Systems proposal was denied a special use permit by the New Brighton City Council in December of 1985.

In paragraph 5 of page 4-16 of the draft EIS it is stated that "state-of-the-art boiler design and operation would be used to optimally reduce the concentrations of nitrogen oxides, carbon monoxide, and hydrocarbons." The final EIS should contain a discussion expanding on and supporting this statement.

-Criteria Air Pollutant Issues

The proposed project will be located in a nonattainment area for total suspended particulate, sulfur dioxide (SO_2) and carbon monoxide (CO) emissions. The Environmental Protection Agency's (EPA) emission offset interpretative ruling precludes the construction in nonattainment areas of new sources which will emit over 100 tons per year of a criteria air pollutant for which the area is designated nonattainment. The proposed incinerator will emit over 100 tons per year of SO_2 and over 100 tons per year of CO. Thus, the project cannot be constructed until the area is redesignated as attaining the ambient air quality standards for these pollutants by the EPA or the proposed SO_2 and CO emissions for the facility are reduced to less than 100 tons per year.

The MPCA has applied for redesignation of the Twin Cities Metropolitan Area SO_2 and CO nonattainment areas to attainment. The EPA is expected to approve the request for CO redesignation in mid-1986 (this timing should not affect the construction schedule for the proposed Greyhound facility) and to approve the request for SO_2 redesignation in early 1987. When these redesignations are approved, the project would not be subject to nonattainment review for these pollutants or to the construction ban, but would be reviewed under the Prevention of Significant Deterioration (PSD) or attainment area rules. The proposed facility would be a significant source of CO and SO_2 emissions under the PSD rules and best available control technology (BACT) would have to be applied for control of air pollutants.

On the other hand, the construction ban does not apply to the facility if less than 100 tons per year of SO_2 or CO were to be emitted. To achieve this reduction in SO_2 emissions, the facility's air pollution control equipment would have to be run at a higher SO_2 removal efficiency (greater than 70%) than is committed to in the draft EIS. It appears that the higher removal efficiency is possible for the facility based on the design SO_2 removal efficiency for the dry scrubber of 90% (see our comment below).

On page 3-13 of the draft EIS, it is stated that waiver of the PSD program ambient air quality analysis can occur under two major conditions. Add "and PSD increments and National Ambient Air Quality Standards (NAAQS) are not threatened" to the second condition.

The particulate matter emission rate for the proposed project is estimated at 0.01 grains/dry standard cubic foot (dscf) corrected to 12% CO_2 (refer to page

3-19 of the draft EIS). This estimate is one-eighth of the new source performance standard for particulate matter from incinerators. The final EIS should contain a discussion justifying this low particulate emission rate or a higher emission rate should be used for the proposed facility. Available data from mass burn incinerators using the proposed technology should be used for this justification.

On page 3-19, it is stated that, to date, National Emission Standards for Hazardous Air Pollutants (NESHAPS) do not apply to the design or operation of resource recovery facilities. The basis for exemption of these facilities should be fully cited in the final EIS.

The spray dryer design removal efficiencies for SO_2 and hydrochloric acid (HCl) are given as 90% and 95%, respectively, on page 4-14 of the draft EIS. In Table 4.2-1 (page 4-15), the removal efficiency used for SO_2 is about 70% (much less than 90%). If the proposer operated the dry scrubbing system at a 90% removal rate for SO_2 the estimated emissions would be less than 100 tons per year and the proposed facility would be a minor not a major source of SO_2 emissions under the emission offset interpretative ruling. The final EIS should contain a discussion about the feasibility of the 90% removal efficiency rate from an economic and technical standpoint.

Dry scrubbing systems have been used to control air emissions from coal fired boilers. It is our understanding that there is at least one mass burn incinerator, the National Incinerator Testing and Evaluation Program (NITEP) pilot project in Flakt, Ontario which utilizes a dry scrubber and baghouse. Any current application of dry scrubbing for municipal solid waste (MSW) incineration, (including this Canadian plant or any European plants), should be described and any experience/data obtained from these facilities discussed in the final EIS. In addition, the characteristics of MSW ash should be compared to coal ash. This discussion should highlight any differences with regard to SO_2 removal efficiencies of the baghouse filter cakes from the two types of facilities. For example, the alkaline pH of a coal ash filter cake helps to remove SO_2 in the baghouse filter. Comparison of the pH of the filter cakes for the two types of ashes may be useful for evaluating their SO_2 removal efficiencies. Moreover, SO_2 removal efficiency is affected by the concentration of SO_2 in the flue gas; a lower removal efficiency is expected with lower incoming SO_2 concentrations. The final EIS should contain a discussion on the effect of SO_2 flue gas concentration on SO_2 removal efficiency for the project.

At page 4-16 of section 4.2.3.2 of the draft EIS, major SO_2 background sources for the project are discussed. It should be noted that the Real Time Air Model (RAM) air quality modelling input data for the GAF facility, the FMC Northern Ordinance plant and the Northern States Power Company (NSP) Riverside plant is subject to change. Please contact Dennis Becker of the Division of Air Quality at 296-7396 for the most recent modelling data for the Minneapolis-St. Paul area when preparing the final EIS for the project.

In sections 4.2.4.4, 4.2.6.2 and 4.2.6.3 at pages 4-24 and 4-26, it should be noted that the monitored background SO_2 concentrations used for the PSD analyses

are probably not representative of 'worst-case' or 'hot spot' background SO_2 concentrations in downtown Minneapolis. However, they are adequate for use in the air quality modelling analysis.

The staff also has some comments to offer with regard to factors affecting the ambient air quality impact of traffic due to the project. The following traffic/roadway issues should be discussed in the final EIS:

1) The final EIS should contain a discussion about the future location of the Greyhound bus storage facility and its impact on parking and traffic at its new location.

2) The final EIS should contain a more detailed discussion about the carbon monoxide ambient air quality monitor located at the Seventh Street and Hennepin Avenue 'hot spot'. This monitor has been moved to the north side of Hennepin Avenue and is now serving as a background monitor. The data from this new monitor location has not yet met EPA's acceptance criteria. This information should be noted in the final EIS.

3) The final EIS should contain a discussion about traffic signal timing at the Olson Memorial Highway (TH 55) and Seventh Street North intersection. It is important to discuss whether the signal is timed to Seventh Street North or to TH 55. If the traffic signal at Olson Memorial Highway is synchronized with Seventh Street North traffic, traffic backups could be experienced.

4) A correction should be made in the final EIS regarding the Hennepin Avenue and First Avenue North one-way pair. An error was noted at page 3-92 of the draft EIS. Hennepin Avenue is eastbound, not westbound; First Avenue North is westbound.

5) The draft EIS contains a roadway traffic capacity (level of service "LOS") analysis for traffic going to the proposed facilities. The final EIS should also contain a LOS analysis for traffic leaving each of the proposed project sites. Traffic leaving the sites may back up at metered freeway entrances. The staff is concerned that traffic congestion could occur at I-35W in Bloomington at the Bloomington East transfer station, for example, and that localized 'hot spots' may be created near this site.

6) The final EIS should contain a discussion about planned roadway/safety improvements or proposed changes in traffic flow in the project area. The City of Minneapolis has not yet finalized its plans for changes in Seventh Street North traffic and the City of Bloomington is planning to make channelization improvements at Girard and Humboldt Avenues South. The staff is also concerned about the potential for serious accidents at 98th Street and James Avenue South near the Bloomington East transfer station. Traffic safety measures such as signalization may be warranted for this location with the project. The final EIS should also contain a discussion regarding the impact of the Bloomington East transfer station traffic on this intersection.

-Non-Criteria Air Pollutant Issues - The Health Risk Assessment

The Office of Planning and Review, and Division of Air Quality staff have reviewed the human health section (Section 4.3, pages 4-48 through 4-79, and Appendix D) of the draft EIS. This section and appendix contain the health risk assessment conducted for the project. Our comments relate to the health risk assessments conducted for the chlorinated dibenzo-p-dioxins (PCDD's) and dibenzofurans (PCDF's) and for the metals emissions from the proposed facility, and contain our staffs' recommendations for an expanded health risk assessment for inclusion in the final EIS for the project.

-Chlorinated Dibenzo-p-dioxins (PCDD's) and Dibenzofurans (PCDF's).

The staff believes that the emission factor and, therefore, the health risk assessment analysis for 2,3,7,8 TCDD is based on insufficient, and possibly unrepresentative, data. This concern is of particular importance because the health risk assessment result of a 9.27×10^{-6} increase in incidence of cancer per 100,000 people for the 2,3,7,8 TCDD equivalents (Table 4.3-9) is very close to the Minnesota Health Department's significance threshold of 1×10^{-5}, and because of the proposed location of the plant in the downtown Minneapolis area.

First, our staff is concerned about the representativeness of the data used for calculating the emission factors for PCDD's and PCDF's from the facility. In particular, the staff is concerned that only a minimal amount of data was used to develop the emission factors for 2,3,7,8 TCDD; stack emission tests from only one facility during one test period were used for the analysis. Specifically, data from the Northwest Resource Recovery Unit located near Chicago, which has air pollution control equipment consisting of an electrostatic precipitator (ESP), was used for this analysis. The risk assessment for the PCDD's and PCDF's in the final EIS should be based on all data currently available from facilities similar to that being proposed. This data should be obtained from facilities with similar combustion systems (particularly those using the Widmer-Ernst combustion technology) and, if possible, from facilities using similar air pollution control equipment (in particular, the dry scrubber and baghouse combination). In addition, all sources of data and calculations used for these analyses, including data caveats, must be presented in the final EIS.

The MPCA staff understands that there are at least two operating incinerators with the combination of dry scrubber and baghouse for air pollution control equipment. These are the NITEP project, the Canadian pilot project in Flakt, Ontario, and the Bay Area Resource Recovery project in California, a refuse-derived fuel (RDF) facility. Any data meeting quality control criteria which can be obtained from these facilities, and any European facilities using these combustion and control technologies, should be used for the health risk assessment in the final EIS. If a decision is made not to utilize this data, the final EIS should contain a discussion justifying its exclusion.

Second, the staff believes that the variability of the data used for the development of the dioxin and furan emission factors is too large. It is impossible to characterize these emission factors as "worst-case" or even as typical due to the following factors:

1) The standard deviation of the values used is greater than the derived emission factors (Appendix D of the draft EIS).

2) While 2,3,7,8 TCDD comprises 3.7% of total TCDD emissions used for risk characterization, it accounted for 65% of the total TCDD at the Northwest facility.

3) If one were to calculate 2,3,7,8 TCDD emissions using the probability methodology used for the rest of the PCDD/PCDF family, the emission factor would be increased by 20%.

4) If one were to apply the percentage of 2,3,7,8 TCDD to total TCDD at the Northwest facility to the average TCDD concentration derived from all five facilities contained in the data set, emissions of 2,3,7,8 TCDD would be increased by a factor of 15.

An expanded data base is needed for calculation of the dioxin and furan emission factors in the final EIS. With an expanded data base, the confidence level of the analysis could be increased. For all cases, the confidence level of the analysis should be provided in the final EIS.

-Metals Emissions Analysis

The metals emissions data was derived from only one facility, the SWRC facility in Washington, D.C. However, our staff has reviewed several documents which contain metal emissions data from the Gallatin, Tennessee mass burn facility. The metals data from the Gallatin facility should be included and evaluated in the final EIS or justification presented for its exclusion. In general, an expanded metals emissions data base is needed for the health risk assessment in the final EIS.

-Need for an Expanded Health Risk Assessment

The staff is recommending that the following elements, in addition to that discussed above for the PCDD and PCDF and metals analyses, be included in the health risk assessment for the project.

1. Because of the uncertainty in plant operating efficiency and in emissions control efficiency, we are proposing that a two scenario risk assessment approach be conducted consisting of:

   a) The most reasonable case, which would describe what the assessment considers to be the most reasonable expected risk to both maximally exposed individuals and the community as a whole, i.e., based on the

proposed facilities emission factors and emission control efficiencies, and expected population, residency turnover, absorption and retention factors, and

b) The worst plausible case, which would describe the exposure of a maximally exposed individual and the community as a whole, occurring under less than optionally expected facility operating conditions and pollution removal efficiencies, i.e., based upon emission factors and removal efficiencies which would occur if the facility malfunctioned for a short period of time, and less than normal population turnover.

2. A study addressing the population of the impacted area should be included. An analysis of the county population and labor force, and community patterns would allow an estimation of the size of the population potentially affected by the proposed facility.

3. Sensitive receptors or facilities of high value to the community should be listed and their location specified. Parks, schools, swimming pools, shopping centers, community centers, hospitals, convalescent homes, housing for the elderly and day care centers should be included in this analysis.

4. The cancer burden of the exposed population as well as the corresponding risk to the average individual should be identified in the final EIS. Individual risk is defined as the probability of cancer induction due to individual exposure, as opposed to community risk, which is the increased incidence of cancer in the community due to the pattern of exposure experienced by the community.

5. Other existing facilities within the identified project impact area may also be contributing sources of pollution. The health risk assessment should contain a discussion about all sources contributing to health risk within the area.

6. A discussion about criteria air pollutants should be included in the health risk assessment. The health effects of criteria pollutants should be addressed.

7. Non-cancer health effects from non-criteria emissions should be discussed in detail. Where there are existing standards, rules or guidelines, e.g., ambient water quality criteria, drinking water standards, acceptable daily intakes, and threshold limit values, they should be specified.

8. The magnitude of human exposure to emitted contaminants is calculated via two exposure routes, inhalation and ingestion. The average lifetime daily dose is not only a function of air and soil/dust exposure but is also a function of dermal absorption. Even if it is assumed that the exposure due to dermal absorption poses no risk, a rationale should be provided for not including it in the total exposure assessment.

9. The individual cancer hazard characterization risks listed in Table 4.3-9 should be added together to obtain a cumulative risk for the project.

In general, as discussed above for the PCDF and PCDD and metals analyses, an expanded data base is needed for the health risk assessment to lend more credibility to conclusions associated with the impact of the proposed facility. Because of the importance associated with MSW incineration and dioxin and furan emissions, a more inclusive treatment of this subject would be appropriate.

Noise Impacts

In general, there does not appear to be significant adverse operational noise impacts due to the proposed resource recovery facility or due to the Brooklyn Park and Hopkins' transfer stations. Construction noise impacts may be a problem at the Greyhound facility and this issue should be discussed in greater detail in the final EIS. Noise standards for the City of Minneapolis are listed in Table 4.8-3, on page 4-193 of the draft EIS. However, it is unclear how these standards were calculated. Please contact David Kelso of the Division of Air Quality at 296-7372 to explain the basis for these calculations. The final EIS should contain these calculations.

Significant noise impacts (the MPCA considers a 3 dBA increase in L_{10} noise levels as perceptible) will occur at the Minneapolis South transfer station due to the operation of the station and, at the Minneapolis South and Bloomington East transfer stations and possibly, the Hopkins transfer station, due to packer truck traffic associated with these facilities. An error was noted at page 4-211 of the draft EIS, where it is stated that the only significant noise increase at the Minneapolis South transfer station, will be due to truck traffic on 28th Street East. Truck traffic on 20th Avenue South will also result in a significant increase in noise levels at nearby sensitive receptors. In addition, the staff believes that traffic congestion and possibly a significant noise impact may occur due to packer truck traffic from the proposed Hopkins transfer station. Three major food distribution warehouses are located in the project area and it is our understanding that the truck traffic from these warehouses was not included in the noise analyses for the proposed facility. The final EIS should contain an evaluation of the noise impacts due to all truck traffic in the project area.

The final EIS should contain a discussion regarding any proposed noise mitigation measures such as adjusting the opening and closing times of the transfer stations and the Greyhound facility for delivery of MSW. This noise mitigation measure is being proposed for the Bloomington East transfer station, and should be effective in reducing adverse noise impacts at nearby receptors.

Solid and Hazardous Waste

Staff comments for the solid and hazardous waste section concern the acceptance of household hazardous waste at the proposed facility, methods to be used for

disposal of ash from the facility, and the proposed facility's impact on sanitary landfills currently receiving Hennepin County's solid waste.

The final EIS should contain a more detailed discussion regarding household hazardous wastes to be burned at the facility. Section 4.1.2.2 of the draft EIS does not list household hazardous wastes as being acceptable or unacceptable at the resource recovery facility and transfer stations. However, it is clear that these wastes will be accepted because of the difficulty of excluding them. Any significant impacts associated with the handling or burning of household hazardous wastes should be discussed in the final EIS.

The final EIS should also contain a more detailed discussion about landfill sites to be used for ash disposal and for the disposal of wastes bypassing the facility during downtime. Concerns which should be discussed include:

1) The final EIS should contain a discussion identifying the landfills to be used for the disposal of the project's process residue and bypass waste. The capacities of these landfills, the impact of the project on the regional landfill system, and the need for new land capacity should be identified for a ten year disposal period.

2) The final EIS should contain a discussion specifying the type of landfills to be utilized for the ash and the bypass waste from the project, whether they will be lined or unlined, segregated or unsegregated. The possibility of using the ash as the final layer over existing solid waste at the landfill, before final cover, should also be discussed.

3) The requirements for using lined versus unlined landfills for ash disposal should be discussed. The economic impacts of these two alternatives should also be discussed.

Finally as a potential responsible governmental unit (RGU) for the project under the Minnesota Environmental Quality Board (EQB) rules due to the air pollution category, the agency staff would like two weeks for review of the air quality, traffic and noise areas of the preliminary draft of the final EIS before the final changes are made to that document. Please contact Marlene Voita, the environmental review coordinator for the project, at 296-7796, in advance of the MPCA's receipt of the preliminary draft of the final EIS to facilitate our agency's review of that document.

Thank you for the opportunity to review the draft EIS. If you have any questions concerning these comments, please contact Ms. Voita.

Sincerely,

Thomas J. Kalitowski
Executive Director

TJK:jal

cc: Mr. Gregg Downing, Environmental Quality Board
Mr. Rob Krieger, Minnesota Department of Health
Dr. Velma Charles-Shannon, Office of Planning and Review
Mr. Ahto Niemioja, Division of Air Quality
Mr. David Bordson, Division of Air Quality
Ms. Susanne Pelly, Division of Air Quality
Mr. David Kelso, Division of Air Quality
Mr. Ken Podpeskar, Division of Solid and Hazardous Waste
Mr. Don Kyser, Division of Solid and Hazardous Waste
Mr. Lou Chamberlain, Division of Air Quality
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January 21, 1986

Mr. John Rafferty
Senior Environmental Planner
Metropolitan Council
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Seventh and Robert Streets
St. Paul, Minnesota 55101

Mr. Rafferty:

This letter is a response to your communication inviting commentary on the draft EIS for the Hennepin County Resource Recovery Project. A review of the human health effects section (4.3) of the draft has been completed, using similar proposals from other states as a basis for comparison. A discussion of resulting questions and concerns related to the contents of section 4.3 is presented in the following text, listed by number for clarity of presentation.

1. Adequacy of the Emissions Data Base: Review of the proposal indicated an extremely restrictive set of selection criteria used to obtain data for predicting emissions from the Hennepin County facility. As a result, the projections for trace metals were calculated using emissions from only one plant (SWRC) as a model. Similarly, the TCDD emission projections were based upon test results obtained from only one facility in Chicago. Without some indication of facility to facility differences in emission levels and inventories, it is clearly impossible to predict if the proposed facility will produce more or less than the model examples. Review of similar data from other types of incinerators indicated wide differences in emissions between plants, even when operational parameters were similar (temperature of operation, capacity, waste type, etc.). In general, the level of uncertainty here is of significant public health concern, since both of the emission classes in question contain carcinogenic compounds. Rational examination of the material provided leads to the conclusion that the emissions evaluation was insufficient to model expected metal and chlorinated organic emissions for the proposed facility.

Another point of concern regarding the emissions data base relates to the use of "average" emission rates for the data presented in Table 4.3-3. The text does not explain how these "averages" were calculated. Examination of the ranges involved, however, leads to the conclusion that an "average" for such data makes very little sense. The ranges reported for minimum and maximum values vary by 2 to 6 log factors, depending upon the chemical class. No method of averaging numbers with such a wide variance would have much mathematical validity. A more sensible approach would be to provide data based on most reasonable case, and worst plausable case. Contrasting these two emission modes would be more informative than the attempt at averaging emission ranges.

5-20

2. Air Toxics Dispersion Model: According to the project description, the RAM model was used to estimate atmospheric dispersion of the proposed air toxics emissions. As part of this modeling process, wind speed, wind direction, atmospheric stability, and temperature are the vital parameters used in calculating dispersion. Yet these data were derived from the airport, and as far away as St. Cloud. Anyone familiar with the "canyon" wind effects in downtown Minneapolis would question the relevance of airport data on windspeed, direction, or atmospheric stability to downtown conditions. Temperature is well documented to vary between these locations as well. Since all of the health effect projections depend upon the selection of an appropriate dispersion model, it would be helpful to have more information regarding tests of RAM's ability to successfully model a complex environment like the downtown area. In particular, some error levels would be helpful, indicating how RAM compared to other models (Complex 1, MPTER) based on sector averaging rather than steady state Gaussian distributions. The major potential fault with RAM would be that the receptors will be influenced by cross-wind distance from the plume centerline, which is identified by a standard wind direction. Since the rest of the health effect assessment depends upon the dispersion model used, some measure of the reliability of RAM to assess the downtown area is needed, as well as local downtown meteorological measurements for use in the modeling process.

3. Criteria Pollutants: No health effects attributed to criteria pollutants are discussed. Although it is a popular misconception that these effects are not significant at levels meeting NESHAPS, criteria levels contain an economic consideration as well as health effect components. Therefore, a section demonstrating that the maximally exposed individual is not at risk from criteria pollutants should be produced.

4. Hazard Assessment: This section should relate an accurate estimation of the toxic effects expected from the substances identified in the emissions inventory. In general, this section is both weak and inaccurate. For example, compounds are missing from this list that are present in those produced for other similar facilities (e.g. antimony). Other problems include inaccuracy of the data base (for example, the mutagenic and teratogenic properties of selenium are not mentioned), and a lack of a reference framework. ADI numbers should be included for each compound, when possible, to provide a comparison to expected dosage from the emission source. The information presented does not adequately summarize the documented toxic effects produced by the expected emissions.

5. Exposure Assessment: This section contains a number of deficiencies and irregularities, so only the general ones will be mentioned, as listed below:

a. selection process for receptor sites is not clear (no schools, hospitals, nursing homes present in the 10 mile radius around the plant?)
b. worst probable emissions case not modeled

c. no population estimates were prepared - how many people are affected? Factor sites are supposed to be population concentration centers. Were these determined without recourse to census data?

d. the commuting population was ignored. Exposure assessment consists of evaluating resident workers, commuters into the zone during work hours, residents working elsewhere, and residents that do not work anywhere.

e. no age distribution for the impact zone population was provided.

All of these factors are required to identify the population at risk, to ascertain if special risk catagories apply to the study population, and to identify "sensitive receptor" sites in the community of particular value. The exposure assessment provided failed to accomplish these objectives.

Another part of the exposure assessment that needs some additional resolution is the discussion on routes of exposure. The formula for inhalation is conventional and reasonable, but the ingestion model presented does not conform to others produced for similar situations (e.g. Kimbrough on dioxin ingestion). Metals and organics are not equally distributed in all particle sizes, and fine particle enrichment must play a part in the particle distribution related ingestion model. Other factors, such as chemical half-life in soil, solar decomposition rates, and size dependent deposition rates play an important role in modeling particle ingestion doses. It should also be stressed that the amount of soil ingested by an individual is largely age dependent, with children aged 2-3 ingesting 10 g of soil per day, compared to an adult rate of 0.1 g per day. An average of 4.45 g/d is used to estimate soil ingestion averages for children. This is where a competent exposure assessment is necessary, particularly age distributions.

Daily Ingestion (g/d = % population <5 yrs. old X (4.45 g/d)
+ % population >5 yrs. old X (0.10 g/d)

The ingestion rate average used in the EIS (0.05 g/d) is not an appropriate figure to use to estimate oral doses attributed to the expected facility emissions. Small children ingest 90 times the average used in the proposal, and the population age distribution was not identified in the EIS. It is therefore not possible to project if small children are at higher than estimated risk for oral exposure to emission particles. This should be better resolved in the proposal.

A more apropriate formula would be:

$$D_I = D_I \times S_I$$

where:

D_I = daily ingestion dose from soil
C_I = amount of chemical deposited in soil available for ingestion
S_I = amount of soil ingested per day

$C_I = (1.44 \times t_{1/2} \times Dep_t)/\text{soil density}$
$t_{1/2}$ = pollutant half-life in soil (seconds)
Dep_t = deposition rate for pollutant ($mg/m^2/yr$)

Dermal Absorption was also ignored in the EIS section on health effects, and should be included to complete the exposure assessment ser .

6. Risk Assessment: For the sake of brevity, the problems with this section are listed below:

a. The table listing the CAG potency slopes is not correct; the slope for beryllium is 2.6, cadmium is 6.1 (EPA AUGUST, 1985)

The slope for nickel should be rechecked, since CAG announced a modification of nickel risk assessment last month

b. Commuter risks are not estimated, nor included in the process of evaluating health effect impacts

c. The TCDD equivalents presented in Tables 4.3-6, 4.3-7 are not derived by a method that can be discerned. The numbers do not correlate with the most recent EPA estimations, or with the CDHS. Example tables are provided as extracted from a risk assessment produced for the Bay Area Resource Recovery Project. This discrepancy should be resolved before risk assessment for these compounds can be realistically addressed.

d. Contributing source risk is not addressed. It is imperative that the background levels for carcinogenic substances be determined in order to assure that construction and operation of this facility will not pose a threat to public health by adding emissions that boost ambient levels beyond an acceptable risk. The same type of analysis should be done for the criteria pollutants, using the additive level (proposed emissions + ambient levels) to judge the acceptability of the project emission levels .

e. No estimation of community risk is presented. This is particularly important for a project sited in an area of high population density. For example, an individual risk of 1×10^{-5} in a population at risk of 500,000 would produce 5 cancer cases due to the project. If the project was sited in a rural area, with a population at risk of 5,000, no cases would be expected. This siting dependent factor should receive careful consideration in selecting a location for the proposed facility, and should have impact in the risk assessment process for the proposed downtown site.

f. The overall risk of the project is the sum of the individual risks. If one hypothetically accepts the risk assessment as it is presented, the sum risks attributed to project emissions exceed the acceptable risk level determined by the Minnesota Department of Health (1×10^{-5}). The uncertainties associated with the submitted risk assessment are too large to predict if the necessary modifications would increase or reduce this estimate of cumulative individual risk.

6. Risk Assessment (cont.)

g. No risk assessment was developed for the ash and solid waste that will be produced by the facility. This is a major oversight, since such material will have to be disposed of in some manner, probably by landfill. In order to fully evaluate the health related impacts of the proposed project, a comprehensive risk assessment of the residual ash should be provided.

h. The final table in this section compares cancer incidence to death from other causes. Since the risk assessment models for increased cases of cancer, and not death, the validity of these comparisons is questionable. Comparison of cancer incidence from other sources would be more appropriate, if such a comparison table is required. A comparison of risk using other methods of domestic waste treatment would be of particular value here (e.g. risk from proposed project vs. risk of living on perimeter of a landfill).

7. Summary: The health effects section of the Hennepin County Resource Recovery Facility Draft Environmental Impact Statement requires extensive modification before a realistic evaluation of the expected health impacts can be determined. Use of an unnecessarily restrictive emission data base, obsolete toxicity data and incomplete risk assessment processes preclude any ability to determine health risks associated with the proposed project. The consultant responsible for this section of the EIS is referred to a document prepared by Systems Applications, Inc. entitled "Bay Area Resource Recovery Facility Project, Appendix J: Supplemental Environmental Information - Health Risk Assessment" as an example of competent risk assessment methodology.

Sincerely,

Robert A. Kreiger

Dr. Robert A. Kreiger
Research Scientist
Health Risk Assessment

RAK:no

Attachments

5-22

January 28, 1986

Metropolitan Council

Re: Proposed site of Hennepin County Waste Transfer Station on Hennepin County Highway grounds at 3rd and 5th Streets in Hopkins.

Members of the Council,

We, the undersigned citizens of the northwest corner of Edina, live in an area immediately west of the above mentioned proposed site. Measurements from the Hopkins Engineering place the middle of Adams Ave. (the second row of houses west of County Road 18) at 1400 ft. west of the east boundary of the proposed site.

We ask that you request that Hennepin County place this proposed station at a site (possibly in St. Louis Park) which would not be so close to residential and food-processing areas.

We join the citizens of Hopkins in noting that the Environmental Impact Study is either vague or discounts the impact of additional noise, traffic, dust odor and possible vermin to the area. With relatively narrow roads and two sets of railroad tracks for an acknowledged 700 to 900 truck trips a day to cross over, it is clear to us that the roads will be pushed to well over their capacity and,despite assurances to the contrary, impatient drivers will use routes through the neighboring residential areas, severely impacting our neighborhood.

With no official notice to the residents of the area and only a two day notice in a local paper for the January 16 hearing we have had only the testimony of others at the hearing and the information we have been able to glean from telephone calls to local officials on which to base our objections. It seems clear that the E.I.S. is designed to obscure or ignore, rather than clarify, potential problems.

This is not just a case of "not in my back yard", but one of a permanent facility negatively impacting the community for years to come. There are alternatives and they have been ignored for the quick and "cheap" solution.

January 29, 1986

Paul Smith
Metropolitan Council
Metro Square Building
700 Robert Street
St Paul, Minnesota 55101

HENNEPIN COUNTY RESOURCE RECOVERY PROJECT EIS

Northern States Power offers the following comments and questions for your consideration in preparing the final Environmental Impact Statement for the proposed Hennepin County Resource Recovery project.

Our comments generally fall into two areas; air quality impacts and regulation, and alternative technology and sites to the proposed action:

AIR QUALITY

Section 3.2.1.3 Non-attainment Area Regulations states, "The proposed facility is located in a NA area for SO_2, 0_2 and TSP. . Because SO_2, 0_2 and CO emissions are both estimated to be greater than 100 tons per year, non-attainment review requirements for SO_2 and CO will apply to the facility, unless the requested redesignation of the area for SO_2 and/or CO is approved by EPA." It is our understanding that EPA approval of redesignation to attainment status for CO may be granted this summer, however, the area will remain non-attainment for SO_2 for at least a year. As stated on page 4-24, the analysis of air quality impacts is "under the assumption that the redesignation of the SO_2 and CO non-attainment status to attainment may be approved by the EPA prior to submission of the permit applications, a PSD modeling analysis will be performed." The pages which follow were based on that assumption. Since the State Implementation Plan (SIP) has not been approved, modeling based on numbers in the SIP are not necessarily valid. Based on NSP's experience and guidance from EPA, these critical assumptions do not appear valid. We believe the issue requires closer scrutiny in the final EIS.

Since the assumptions may be invalid, requirements for alternative cases should be clearly addressed in the EIS. Section 3.2.1.3 also states the four requirements for compliance with EPA's Offset

Interpretative Ruling for Non-attainment Areas. Section 4 does not describe how these conditions will be met. It is our understanding that Resource Recovery facilities may be exempted from the emission offsets only if:

1. The applicant demonstrates that it made its best efforts to obtain sufficient emission offsets and that such efforts were unsuccessful;

2. The applicant has secured all available emission offsets, and

3. The applicant will continue to seek the necessary emission offsets and apply them when they become available (40 CFR Part 51 Appendix S).

There is no mention in the EIS that offsets have been sought. Although NSP would be a logical source for offsets, we have not been contacted about their use. In addition, EPA has placed a no construction ban on non-attainment areas and MPCA staff have told NSP that if we wish to build in this area we would need offsets -- yet the Hennepin County EIS does not discuss this at all. These apparent conflicts need to be clarified.

Section 4.2.3.1 states the following: "Typically, mass burn produces lower levels of chlorine, sulfur and trace elements than RDF which is a concentrated form of plastics and paper refuse. Thus, the emissions of sulfur, chlorine and certain trace elements are lower from mass burn than from RDF facilities (CARB, March 1980)."

In the Washington/Ramsey Waste-to-Energy EIS, the Metropolitan Council said, "It is generally believed that most types of air emissions from RDF fired boilers are less objectionalbe than those from mass-burn fired boilers. Processing to concentrate organic materials of uniform size is believed to contribute to more complete combustion. Existing boilers used for RDF combustion typically achieve more complete material decomposition because they are designed to more precisely meter fuel and oxygen than incinerators are." There is no evidence to show that emissions from RDF facilities are higher. The reference to CARB 1980 is an outdated source. Tables 3 and 4 (Attachment I) are taken from CARB May 1984. However, it is known that the potential for emissions of Dioxins from mass burn facilities are greater. Testing at NSP's Red Wing Plant detected no dioxin while burning RDF at a minimum detectable concentration of .001 ug/m^3.

Page 4-14 indicates a SO_2 removal efficiency of 90%, yet the following page shows uncontrolled emissions of 587 TPY and controlled emissions of 176 TPY which appears to be only 70 percent removal.

Also, on page 4-24, it states "There are no other sources located in the Minneapolis-St Paul area which will consume PSD increments. . . Therefore, the PSD increment consumption analysis was based solely on concentrations caused by the proposed sources SO_2 emissions."

The first statement is inaccurate -- NSP is planning to construct a new source in the area, a steam and electricity cogenerator in Washington County. Also, we do not believe the second statement is allowed by EPA regulations -- no one source may consume all of the PSD increment.

AVAILABILITY

Section 1.1.2 Process Description states "The county also intends to produce steam for distribution to downtown Minneapolis users." We believe decision makers should be given up-to-date information in the final EIS concerning progress in securing those markets. Sale of steam to downtown customers was Hennepin County's original justification for the Greyhound site. If the sale does not materialize, further justification for site selection should be given.

On page 1-9 Energy Production and Export the following statements are made: "During turbine outage, steam produced by the boilers will be reduced in pressure and cooled in a steam desuperheating station, and then condensed in a bypass condenser, thus permitting the boilers to remain on-line and refuse to be processed. Turbine generation will be of a design which would allow the production and sale of steam to downtown markets." Thus, during turbine outage, the energy from the MSW is essentially wasted.

Section 1.1.5 Facility Availability and Reliability does not discuss the availability and reliability of the turbine-generator. Although it states that shutdown of the turbine generator will not affect the facilities' boiler availability, the discussion should address alternative methods of utilization of this energy. The purpose of the facility is not just waste reduction but also resource recovery. These are, in our view, significant negative impacts associated with mass-burn technology and the Greyhound site situation, and should be examined thoroughly.

Alternatives

In response to the scoping EAW last May, NSP presented information concerning alternatives to the proposed project. While the council severely limited the scope of the EIS, NSP continues to believe that a meaningful discussion of alternatives is lacking and should be included in the final EIS.

Technology Alternatives

The Capital Cost section in Part II. Alternatives, Sec 3.2, on page 3-3, gives an extremely broad range of potential capital cost figures for RDF technology making it impossible to make meaningful comparisons with other technologies. The final EIS for the Washington/Ramsey Waste-to-Energy Project reports on page 16 that, "Cost of existing plants were identified and typical costs of 1,000 ton-per-day facilities were estimated as follows: mass-burn--$50 to $75 million; RDF with existing boilers--$20 million; and co-compost--$15 to $50 million. Pyrolysis plants on a 1,000 ton-per-day scale do not appear to be practical; costs for a 100 ton-per-day system were estimated at $2 to $4 million."

In the Thermal Efficiency section, RDF is characterized as experimental. We do not believe that to be the case. The facilities that NSP has patterned its RDF proposals after have a sound operating track record of several years. NSP's proposals include the utilization of the fuel produced at highly efficient power plant boilers. Very little is said about availability of RDF processing. Within an RDF facility there is complete redundancy of systems. Therefore, at any given processing site availability is expected to be 95 percent. NSP is also making the necessary modifications at several existing boilers so that fuel utilization is expected to be 100 percent.

On page 3-4, with regard to air emissions, the EIS states, "It is generally believed that most types of air emissions from RDF fired boilers are no more objectionable than those from mass-burn fired boilers."

In the Washington/Ramsey Waste-to=Energy EIS, the Metropolitan council said, "It is generally believed that most types of air emissions from RDF fired boilers are less objectionable than those from mass-burn fired boilers. Processing to concentrate organic materials of uniform size is believed to contribute to more complete combustion. Existing boilers used for RDF combustion typically achieve more complete material decomposition

because they are designed to more precisely meter fuel and oxygen than incinerators are. Other environmental concerns such as noise, traffic, and materials handling risks are known to exist. These concerns appear to be of the same order of magnitude as those associated with similar size mass-burn facilities." While both statements are true, we believe the latter is more accurate and informative.

On page 3-5 of the Environmental Concerns section, a parenthetical remark is made that noise impacts tend to be greater for RDF. NSP is not aware of any justification for the remark. Again, the Washington/Ramsey Waste-to-Energy EIS found that, "Overall, noise levels in the site vicinity will not be affected by construction or operation of the proposed facility."

In summary, the Washington Ramsey EIS found the following advantages and disadvantages associated with RDF:

This is quoted material:

"Advantages - RDF installations shred, then classify waste into combustible and noncombustible fractions. By classifying materials before incineration, the noncombustibles can be separated into distinct fractions such as ferrous metals, aluminum and glass. These classified fractions will be relatively pure compared to mass-burn incinerator residue and, therfore, will contribute to higher salvage and heating values.

The RDF has a lower ash content, a higher heating value, and a slightly lower moisture content than unprocessed refuse (mass-burn). It can be further treated to form a fluff, a powder, or briquettes. The RDF can be incinerated on-site or transported to an existing fossil-fuel facility and can be burned by itself, or as a fuel supplement to coal or oil. The potential for flexibility is one of the major advantages of the RDF process.

Metals, glass, paper and plastics can be removed from the solid waste stream for recovery and resale. The prepared fuel is compact and can be transported for incineration off-site. RDF plants typically have a lower capital cost and comparable operating costs when compared to other similar sized alternative processing plants.

Several facilities are operational in the U.S. and have operated very reliably for a number of years. Although some concern has been expressed regarding maintenance of these facilities, it is believed that most of the major technical problems have been resolved. With respect to thermal efficiency, the RDF

process is superior to mass-burn and comparable to that of pyrolysis (an as yet unproven technology). There are several vendors with the expertise to develop and operate and RDF facility in a reliable and cost-effective manner. Environmental impacts appear to be very similar to those of mass-burn facilities. The savings in capital cost and increased flexibility are deemed to be the major advantages."

Disadantages - RDF plants require extensive fuel preparation equipment, which is both costly to buy and to operate. RDF boilers experience loss of material and heat value in precombustion and combustion processes. Additional costs are incurred if the RDF is transported off-site for incineration. In the past, there has been some question regarding the reliability of RDF processes. This disadvantage appears to have been addressed and it is believed that reliable operations are being and can be achieved."

Alternative Sites

As part of proposals to Hennepin County, NSP offered several waste processing alternatives which included alternative sites to the Greyhound site. NSP continues to believe that those proposals constitute reasonable alternatives within the meaning of the Environmental Policy Act.

Specifically, NSP offered to build an RDF processing facility at the freeway landfill site. Depending on the desires of Hennepin County and other neighboring counties, the facility could be built with one, two, or three processing lines. With each added line the facility is capable of processing approximately 500 tons more MSW per day. The fuel could be utilized at several existing boilers in the NSP system, but principally at the Black Dog power plant approximately two miles away. The Freeway RDF facility could serve Hennepin County alone or a combination of Hennepin County, Dakota County, and others. The discussion of the Freeway landfill site in Sec 4.10 of the alternatives volume characterizes the site and surroundings.

Another alternative is to divert waste to a facility proposed in Elk River, Minnesota. NSP, UPA, and Anoka County have agreed to build at least a 500 ton-per-day facility in Elk River. The project can be expanded to include MSW from Hennepin County. The utilities and Anoka county are currently seeking participation from surrounding counties. The processing cost per ton of MSW is reduced with larger commitments of waste.

Further description of the Anoka County RDF project and the proposed site can be found in the attached Environmental Assessment Worksheet prepared by MPCA (Attachment II).

The third alternative presented is a combination of the first two. Hennepin County waste could be split between the Elk River project and the Freeway Project. With such a system in place, the Metropolitaion region would have an efficient system of resource recovery.

Anyone of these proposals would eliminate the need for a new facility, new air emission source in downtown Minneapolis, and other associated impacts.

P K Graika, Administrator
Plant Permits & Compliance

J R Alders, Administrator
Routing and Siting

ah

Attachments

cc: Gordy Wagner - City of Mpls
Eric Kilberg - MPCA

11/5/86

I am writing to protest the use of the Hopkins property for a Garbage Transfer station.

I am unable to attend the meeting on 11/6/86 so I feel I must write.

The area proposed is surrounded by residential area on 2 sides. Hopkins has been a good place to raise a family but future plans for the area both by the county & the city may drive people away.

It seems irresponsible of the County to consider exposing area families to the traffic, pollution & health hazards which would come about if the transfer station were built in this area.

Truck & other vehicle traffic is very high in the area now due to Highway 18, local business & industry & apartments.

2/

I also see the area food distributors show concern about rats, etc. Someone from the county suggested these business will have to take care of their areas themselves.

That is really irresponsible. Chances are none of those eating at this site live near or around a proposed site.

Have you ever followed garbage trucks seen what they drop along the way?

We would have garbage & varmints all over the area, not just at the trans station.

I feel if you've done your job & are honest with your motives for consider this site you will realize this would be a poor choice. To select the site just bec you own the land & not to consider the environment & population of the area is totally irresponsible.

I'm hoping you're listened to all of the concerned citizens & businesses in the area & will reconsider your point & find a site somewhere out where people & food aren't endangered. Thank you

5-27

CITY OFFICES / 8950 EDEN PRAIRIE ROAD / EDEN PRAIRIE, MN 55344 2499 / TELEPHONE (612) 937-2262

December 19, 1985

Thomas R. Caswell
Environmental Planner
Metropolitan Council
300 Metro Square Building
Seventh and Robert Streets
Saint Paul, Minnesota 55101

Dear Mr. Caswell:

The City of Eden Prairie has had an opportunity to review the Draft Environmental Impact Statement (DEIS) for the Hennepin County Resource Recovery Project. The City welcomes the opportunity to comment on the document. Comments on the DEIS will focus on the portion addressing alternate sites in Eden Prairie for the proposed Hopkins transfer station.

4.3 Westwood Industrial Site

.2.1 Air Quality The DEIS asserts that a transfer station should not be a source of odor to surrounding neighborhoods. Is this an average condition or an absolute one? The City's experience with odors from the Flying Cloud Sanitary Landfill demonstrates that odor problems vary with seasons, and are prevalent during hot and relatively humid weather. The likelihood of such season variations at a transfer station should be identified.

.2.3 Surface Water The City believes the analysis of negative impacts to surface water quality is adequate.

.2.4 Land Use and Zoning The City believes the analysis relating to the intent and requirements of its zoning regulations is accurate. It should be noted that Hennepin County may appeal the City's determination of consistency to the Metropolitan Council for any of the three sites addressed in the DEIS.

.2.6 Noise Noise impacts from a transfer station would, as noted, be significant - probably greater than other uses intended within the industrial park. Which noise standards take precedence: the L(50) and L(10),or the L(eq)?

.2.7 Utilities In order to provide a fire sprinkling system within the building, an eight-inch water main may need to be extended.

.2.8 Socioeconomics Some economic analysis needs to be done to provide comparison, either direct or indirect, with the costs of a transfer station in Hopkins. In this particular case, the cost of relocating a business and demolishing a brand-new structure should be estimated. The cost of additional travel to this location, and its impact on waste generators' collection and disposal costs, should also be calculated.

.2.9 Aesthetics and Cultural Resources See comments above relating to 4.3.2.4.

4.4 Railroad Site

.2.1 Air Quality As described in the comments on the Westwood Industrial Site, the likelihood of seasonal variations for the presence of odors should be identified.

.2.2 Geology and Soils While the narrative mentions the possibility of existing soil contamination and subsequent effect on development costs, it should also identify responsibilities and liabilities of past, current, and future owners of the property.

.2.4 Land Use and Zoning The City believes the analysis relating to the intent and requirements of its zoning regulations is accurate. The quote of the City's position that "The railroad yard is superior from a zoning standpoint" is taken out of context. The site is superior compared to the other two sites identified in Eden Prairie. It is not the City's position that a transfer station is a superior use at this site, especially when other sites not in the City are available for such a use.

.2.5 Transportation A time and frequency study of rail traffic needs to be conducted. Data made available to the City show that each rail line has 10 rail operations per day, with five occurring during the day and five at night. Delays at the at-grade crossings appear to be infrequent and marginal.

.2.6 Noise Which noise standards take precedence: the L(50) and L(10), or the L(eq)?

.2.7 Utilities The City concurs with the assertion of negative impact on Nine-Mile Creek water quality with storm runoff from this site.

.2.8 Socioeconomics Some economic analysis needs to be done to provide comparison, either direct or indirect, with the costs of a transfer station in Hopkins. In this particular case, the cost of relocating an existing business and demolishing existing structures should be identified. The financial risk and liability posed by ownership of possibly contaminated soils and groundwater need to be determined. The cost of additional travel to this location, and its impact on waste generators' collection and disposal costs, should also be calculated.

.2.9 Aesthetics and Cultural Resources See comments above relating to 4.4.2.4.

4.5 Greenhouse Site

.2.1 Air Quality As described in the comments on the other sites, the likelihood of seasonal variations for the presence of odors should be identified.

.2.3 Surface Water The responsible unit of government for enforcement of removing fill to restore the floodplain should be identified.

.2.4 Land Use and Zoning The City believes the analysis relating to the intent and requirements of its zoning regulations is accurate.

.2.6 Noise Noise impacts from a transfer station would, as noted, be significant - probably greater than those which would occur from a dRDF proposed by Reuter, Inc. Which noise standards precedence: the L(50) and L(10), or the L(eq).

.2.8 Socioeconomics Some economic analysis needs to be done to provide comparison, either direct or indirect, with the costs of a transfer station in Hopkins. In this particular case, the cost of purchasing private property and demolition of existing buildings should be estimated. The risks and exposure to a lawsuit filed by Reuter, Inc. for possible delays in construction and interference with its commerce should be determined. The cost of additional travel to this location, and its impact on waste generators' collection and disposal costs, should also be calculated.

The last paragraph of Section 1.1.1 of the DEIS estimates the costs of the recovery system (mass facility and transfer stations)to be $32 to $42 per ton. These figures should be identified as the value of the dollar in 1985, in 1990, or whatever year is correct.

Please contact me or Craig Dawson, Assistant to the City Manager, at 937-2262 if you have any questions or desire further clarification.

Sincerely,

CITY OF EDEN PRAIRIE

Carl J. Jullie

Carl J. Jullie
City Manager

CJJ:CWD:jdp

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OF COUNSEL

MEMORANDUM

TO: Environmental Resources Committee

FROM: Charles K. Dayton
Ellen G. Sampson

DATE: January 14, 1986

RE: Draft Environmental Impact Statement Dealing with the Hennepin County Resource Recovery Project

INTRODUCTION

Our law firm represents the City of Hopkins with respect to the siting of a three hopper waste transfer facility on the Hennepin County Department of Transportation site in Hopkins. As you are all aware, the City is extremely concerned that the location of this facility as proposed will have a material detrimental environmental effect upon development in the City of Hopkins and surrounding land uses. The City has raised its concerns both during the process which resulted in the formulation of a scoping document and during the process which has resulted in the draft Environmental Impact Statement (EIS) which is before you for consideration at this time. The City's concerns with respect to the draft EIS are of two types: some involve procedural concerns and general issues with regard to the draft EIS while others are specific and deal with actual language in the draft document which is before you. The purpose of this memorandum is to address both types of concerns.

I. GENERAL AND PROCEDURAL CONCERNS

A. CRITIQUE OF ASSUMPTIONS UNDERLYING THE EIS PROCESS

In the City's opinion, the underlying theme during the scoping and EIS process has been in essence to validate a decision already made by the County with regard to the selection of the Hopkins site. The City was required to spend considerable time ensuring that the scoping document required that alternatives be analyzed in the EIS even though the City maintained that the initial site selection process undertaken by the County was flawed and even though the Minnesota Environmental Policy Act (MEPA) and the Minnesota Environmental Quality Board regulations legally require an analysis of reasonable alternatives.

Once a list of alternatives to be studied was included in the scoping document, the City has continued to express concern about the thoroughness of the analysis of those alternatives. Courts have repeatedly emphasized that, "All reasonable alternatives must receive 'a rigorous expiration and objective evaluation,'. The performance of this duty requires substantive good faith consideration of alternatives 'to the fullest extent possible,' a very high standard." Calvert Cliffs Coordinating Committee, Inc. v. U.S. Atomic Energy Commission, 449 F.2d 1109, 1114 D.C. Cir. 1971, cited in Libbey Rod and Gun Club v. Poteet, 12 E.R.C. 1343 (D.C. Mont. 1978).

The City remains dissatisfied with much of the analysis contained in the discussion of alternative sites. Generally, it is extremely difficult to compare the selected site with alternative sites. Objections to the alternative sites such as the proximity of adjacent land uses are merely stated as likely possibilities while objections to the selected site in Hopkins are mentioned often as concerns raised by the City and then analyzed away. Before accepting objections to alternative sites as valid, analysis should be done. Specific references to portions of the draft EIS will be made at a later stage in this memorandum.

B. TREATMENT OF TRANSFER STATION IN COMPARISON WITH TREATMENT GIVEN TO BURN PLANT

The draft EIS provides considerable detail about the construction and operation of the burn facility itself in Sections 1.1.2, et. seq. In Sections 1.2, et. seq., however only a very general description is provided of transfer stations. It is extremely difficult to evaluate environmental impacts unless more specific details are provided. In section 5.11.4 dealing with mitigation, the draft EIS states that "pollution control measures such as carbon filtering, wash down, bag houses, and deodorant sprays could be incorporated into the design to remove odors and airborn contaminants. Acoustical materials incorporated into the design layout could be considered." This statement seems to acknowledge that odors airborne contaminants and noise are a result of the operation of transfer stations. Yet at other places in the draft EIS such as in Section 4.2.9.2 the document states that "the proposed Hennepin County transfer stations would be designed to

contain odors within site buildings and to minimize packer truck queueing." Does this mean that the mitigation items referred to above would be incorporated into the design of a transfer station? If that is correct, why are they discussed under mitigation. These questions can be resolved only if more detail is provided about the design and operation of transfer stations. Since such detail is provided about the burn facility, it remains unclear as to why the treatment of transfer stations is less thorough.

C. RESPONSE TO CRITICISM OF EARLIER DRAFTS

The Metropolitan Council staff has been cooperative with the City of Hopkins in providing notice of and the opportunity to attend meetings. We have met with the staff of the Council, with representatives of the consultant retained by the Council, and with representatives of Hennepin County on several occasions to raise our concerns as the document was drafted. Our concerns have focused in general on adverse impacts to Hopkins if the transfer station is built. In particular, the issues of traffic, noise, odor, pollution of Nine Mile Creek, negative impact on the surrounding uses (in particular the residential neighborhoods and the food industries), lost opportunity cost to the City and harm to the City's downtown redevelopment goals have been stressed.

Specific comments regarding current treatment of those issues in the document before you appear below. The City objects to the way some of our earlier concerns have been treated. In earlier versions of the document, odor was downplayed as a problem at the Hopkins site while odor was mentioned as a possible significant problem at certain of the alternative sites, particularly those in Eden Prairie. When the City pointed out that if odor is a problem in one place it is a problem in another place, the later versions of the draft EIS including the one before you use the same language dealing with odor at all the sites. This language concludes that odor will not be a problem without any convincing explanation of how that can be ensured.

An earlier version of the draft found that selecting an Eden Prairie alternative would increase transportation costs. Hopkins agreed that that was the case and also pointed out that selecting a St. Louis Park site would decrease transportation costs. Documentation is available which illustrates that transportation costs would be decreased if a site in St. Louis Park were to be chosen instead of the Hopkins site. Instead of continuing to deal with the issue of transportation costs which is certainly a valid concern when choosing a site for a transfer station, all mention of transportation costs has been

dropped from the current document. Thus a major factor which would make a St. Louis Park alternative site preferable to the Hopkins site has been removed from active consideration.

The document spends considerable time discussing noise. It admits that the Hopkins site is currently out of compliance with MPCA noise guidelines. It concludes, therefore, that the additional noise of a transfer station will not be a detrimental impact. In other words, the site is so noisy already that a little more noise is insignificant. Noise, however, is found to be a potentially serious problem at the alternative sites in Eden Prairie even though certain of these sites are already marked for industrial development and will most assuredly become more noisy.

D. PUBLIC HEALTH CONCERNS

Section 1.2.3 of the draft EIS contains some very general statements under the heading of a discussion of environmental controls. It says that since "no processing of waste occurs these facilities do not generate air pollutants other than some dust and other airborn particulate matter from waste handling and emissions from traffic in and out of the facility." The potential for emissions is apparently to be controlled by having an enclosed building and by requiring refuse vehicles to be covered. The section does not address the three hopper openings in the floor of the proposed transfer station; it does not consider that these openings will create a "chimney" effect and result in a constant flow of air through the building with the potential of picking up odors and airborn pollutants which are then discharged into the air of the surrounding environment. Observation of the Minneapolis Pacific Street transfer station makes it clear that the doors are never closed during operations and that the hopper opening itself has no provision for being closed. At the Pacific Street transfer station, trailers are covered with screens which permit the escape of odors and pollutants. Some uncovered vehicles were also observed.

In Section 4.6.5 of the draft EIS statements are made to the effect that there is no evidence that the transfer station will have a negative impact on either the nearby residential neighborhoods nor on the food manufacturing and warehousing industries which abut the proposed site. It does not appear, however, that any concerted effort was made to assess the environmental affect on any of these adjacent uses. While specific studies may not be available to assess the effect on the proximity of food handling industries to transfer stations this may well be because such a facility has never before been constructed within 70 feet of a food manufacturing and

warehousing facility and because it is highly unlikely that such a business would construct a new facility so close to an existing transfer station!

In Section 4.1.2.2, et. seq. of the draft EIS a discussion of acceptable and unacceptable waste appears. This discussion is essentially focused on the burn facility not on the transfer station. In Section 4.1.2.4 for example, the draft EIS notes that "Specific procedures regarding the segregation and removal of hazardous waste at the transfer stations have not been developed by the County. The County's processing agreement does specify general procedures for the recovery facility." The City of Hopkins has raised the issue of human waste being brought to the transfer station specifically in the form of disposable diapers. The City was told that the problem had been addressed. It is not, however, mentioned in the Hennepin County ordinance nor in the draft EIS.

Literature relating to these concerns is available. The Environmental Protection Agency has a publication entitled, Municipal Solid Waste: Land Disposal, which provides considerable information on this topic. It is significant that a transfer station receives waste from a garbage truck much in the same way as it would if the truck were delivering waste to a landfull. Information about waste being delivered to landfills should be considered if similar information is not available about transfer stations themselves. The waste will be dumped onto the floor and then either pushed into a receiving hopper or dropped into a trailer. It may indeed be piled on the floor until some other disposal arrangements can be made. Pictures of piles of trash at the Pacific Street station illustrate this procedure. While the waste is being handled, contaminants are exposed to the environment and could be a source of contamination which would affect human health. A training course manual, Sanitary Landfill Principles published by the U.S. Department of Health, Education and Welfare also relates to the handling of refuse at transfer stations much as it would at sanitary landfills. It points out that flies, mosquitos, rats, birds and other animals can be attracted to the exposed waste.

The draft EIS notes in Section 4.1.2.2 that, "Refuse vehicles with loads of unacceptable waste should be detected prior to entering the tipping areas." How this will be done is not clear. The document admits that some unacceptable waste will be delivered to the transfer station and transferred to the recovery plant. This is apparently regarded as an acceptable risk. The draft also concludes that unacceptable wastes that are isolated may be temporarily stored at transfer stations although no discussion of how this will be done is included.

The City of Hopkins wishes to reiterate that the problems of a public health nature may well be resolvable at transfer stations in some particular locations. The concern with this particular site is that when a site is within 700 feet of residential facilities and within 70 feet of food warehousing and manufacturing facilities such problems are serious and the potential for harm is so great that the site is environmentally unacceptable.

II. SPECIFIC COMMENTS

A. DESCRIPTION OF THE SITE

In Section 3.5.4, the draft EIS describes the Hopkins site and notes that, "The parcel of land west of the site is slated for industrial growth in the City's master plan. Developable vacant land comprises less than 10% of the area of the City. Vacant lands are being developed at a rapid pace and are deemed significant for the increase in employment base which they bring." At the same time that the document includes this language, it is unwilling to view the loss of the transfer station site as a significant loss to the City of Hopkins.

It is true that since the County already owns the land, the County will not have added out-of-pocket costs or relocation costs for current users. It is not true, however, that no costs are involved in the use of this land for this particular purpose. If the County no longer needs this portion of the site for Department of Transportation purposes, it would be available for another use. If it were not County land, it would have been included in the City development district. Since the County no longer needs it, it should be put to the highest possible use. Thus, the cost to the County of using this land is the price for which it could be sold to another buyer. A memorandum from Dr. Charles M. Grey, a professor of economics at St. Thomas College and a consultant with Economic Consulting Services is attached which provides more detail on this point.

B. NOISE

In Section 3.7.4.1 titled Sensitive Receptors, the draft EIS identifies the residences and parks south of Fifth Street South as sensitive receptors. It is unwilling to conclude that the businesses are also sensitive receptors despite the fact that non-residential buildings are sited as sensitive receptors when in a discussion of noise at the Greyhound site in 3.7.1.1. In Section 4.8.5.1, the draft EIS concludes that a transfer station operation is expected to increase existing noise levels by 3 dBA or less and that traffic increase

resulting from the transfer station would result in an increase of 2 dBA or less. Both of these increases are considered to be insignificant. In Section 4.8.6.2, the draft EIS concludes that operation of a transfer station at the Minneapolis south site will result in a noise increase of 5 dBA or less. The 5 dBA figure appears again in 4.8.3.1 which deals with noise at the Bloomington East Transfer Station. With regard to traffic at the Bloomington East Station an increase as much as 5 dBA is also predicted. Traffic at the Brooklyn Park East Transfer Station is expected to increase noise by 4-5 dBA according to figures in 4.8.4.1. The 5 dBA figure appears again in an analysis of noise at the alternative sites. It appears in 4.3.2.6 dealing with noise at the Westwood industrial site as well as in 4.4.2.6 dealing with the railroad alternative site, and in 4.5.2.6 dealing with the greenhouse alternative site. It is unclear why the other sites appear to be more affected by noise than the Hopkins site.

C. VALUE OF THE PROPERTY

In Section 3.9.5, the draft provides a table which lists assessed market value for parcels adjacent to the Hopkins site. Since these parcels are not identified or given a size, it is impossible to determine how to compare the dollars and with what sites.

D. CULTURE RESOURCES AND AESTHETICS

In Section 3.10.4.2, the draft EIS basically concludes that the construction of the transfer station will not be aesthetically detrimental to the City of Hopkins. It finds that, "The present visual condition of the site holds no aesthetically pleasing features and has no special scenic qualities." The City asserts that the transfer station will be the tallest building in the area and will be immediately visible to residents who live less than 1,000 feet from the site and to those entering downtown Hopkins. No amount of buffering will conceal the site effectively. Inability to conceal the site is especially significant since the selection of the Hopkins site violates MPCA guidelines which suggest that such facilities be sited at least 1,000 feet from any residential areas. There are two residential areas well within 1,000 feet of the selected site in Hopkins. In Section 4.11.5.2, the draft EIS admits the sensitive receptors which it defines as residents will see the facility. In Section 5.9, dealing with mitigation, the draft EIS suggests landscaping as an aesthetic improvement. Clearly this will not be adequate to conceal such a high facility.

E. ODOR

In Section 4.2.9.2, the draft EIS concludes , "In the immediate vicinity of the transfer stations however there may be some odor from waste and packer trucks if vehicles are in line waiting to unload. However, this impact would probably be minor because the Hennepin County Transfer Stations are designed to process all waste on a daily basis."

This language appears in the odor sections for the proposed transfer station site and for the alternatives as well. It does not explain how the transfer stations will be designed to avoid the odor problem nor does it discuss what will happen if there is a breakdown and waste cannot be processed on a daily basis. The section on odor goes on to point out that no odor complaints have been received as a result of the Minneapolis south transfer station. No effort is made to identify the location and size of that transfer station and to compare it with the location and size of the proposed new transfer stations, particularly the one in Hopkins which is so close to residential areas and food industries and which is to be a three hopper station.

F. LAND USE AND ZONING

In Section 4.6.5, the draft EIS points out that the Country Club food warehouse and Super Value perishable warehouses are within about 100 and 750 feet respectively west of the proposed facility. It also states that single family and multi-family residences are both 750 and 800 feet from this proposed site. It then goes on to conclude that, "Although food warehouses are within close vicinity of the site, there is no current evidence of municipal waste and transfer stations affecting food handling or food warehouses." There is no evidence however to show that food warehousing and garbage transfer stations exist comfortably together in any other location. The food companies involved are strongly opposed to the transfer station. Maintaining a high level of sanitation is critical to their operation and such a close location of a garbage transfer facility is in direct contravention of that goal.

The draft EIS concludes that, "Adverse land use impacts to these residental areas due to implementation of a transfer station may be more perceived than real." The draft also says that, "There is no evidence of existing transfer facilities generating impacts due to odors, rodents or litter on the nearby neighborhoods."

The EIS does not state whether there is evidence that transfer stations do not generate those kinds of impacts or whether there is really nothing on the topic available. The City of Hopkins is extremely concerned that this is an inappropriate and incompatible use for this parcel of land. In its analysis of the alternative sites in Eden Prairie, the EIS includes without criticism a comment by the City of Eden Prairie that the use of the Westwood industrial site is incompatible with zoning. In its discussion of the Greenhouse alternative site in Section 4.5.2.4, the draft EIS also quotes the conclusion of the City of Eden Prairie that the use of this site is inconsistent with zoning regulations. In addition, the draft concludes that "the traffic and noise would be incompatible with adjacent land use." The decision seems to be based on a statement that the proposed site is 200 feet away from an elementary school and 400 feet from a park. The Hopkins site is less than 1000 feet from the closest residential areas and sensitive food industries through which 80% of the food sold in the Twin Cities passes. Yet this is not deemed by the authors of the draft EIS of significant importance with regard to the Hopkins site.

G. TRAFFIC

A detailed analysis in Section 4.7.5.3 of the draft EIS concludes that levels of service will be acceptable at the Hopkins site when the transfer station is built in spite of increases in traffic. It concludes that that will be the case even if a train delays the garbage trucks 10 minutes. The City remains seriously concerned about the introduction of all these additional trucks to a site which already has considerable truck traffic and about the impact of trains, particularly unscheduled trains.

The draft EIS uses its analysis to mute these concerns yet without an equivalent analysis of traffic at the St. Louis Park site it concludes in Section 4.6.2.5 that, "Some congestion westbound on Highway 7 may occur as a result of vehicles waiting to turn left onto Louisiana Avenue.". In Section 4.5.2.5 the draft EIS concludes that since the transfer station traffic would peak at the same time as school bus traffic, this would negatively impact service. Once again no analysis is provided to support this opinion.

H. PROPERTY VALUES

In Section 4.2.5, the draft EIS concludes that, "The neighborhood (which abuts the transfer station) is characterized by a slightly higher income and median home value than the City as a whole." It then goes on to conclude that

the impact on property values of the transfer station is not clear. There is, however, evidence to show that siting landfills does impact negatively on property values. Increases in pollution and noise also have negative impacts. It seems highly likely that a significant residential area in the City of Hopkins will be adversely effected by the transfer station.

CONCLUSION

For these reasons the City of Hopkins is asking that significant changes be made in the draft EIS before the Metropolitan Council reviews it for adequacy. The City thinks that each of the general concerns regarding the process and assumptions underlying the EIS process and each of the specific comments with respect to the draft itself need to be addressed before the adequacy of the document can be reviewed. This will require much more specific information about the proposed transfer stations, a more detailed analysis of the alternative sites, and a more thorough review of probable environmental impacts at the Hopkins site.

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STATEMENT BY CHARLES K. DAYTON, ATTORNEY AT LAW,
REPRESENTING THE CITY OF HOPKINS

PREPARED FOR SUBMISSION TO THE ENVIRONMENTAL RESOURCES COMMITTEE OF THE METROPOLITAN COUNCIL A THE PUBLIC HEARING ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT PREPARED TO ADDRESS A PROPOSAL TO CONSTRUCT A RESOURCE RECOVERY FACILITY AND TRANSFER STATION IN HENNEPIN COUNTY

JANUARY 16, 1986

INTRODUCTION

Minnesota Rules Chapter 4410.4400 provides that the Metropolitan Council is the responsible governmental unit (RGU) for supervising the preparation of an Environmental Impact Statement when a solid waste facility is to be built in the seven county Metropolitan Area. As part of that process, the Environmental Resources Committee has been involved with the preparation of an EAW, a scoping document and now the draft Environmental Impact Statement. Tonight you have heard representatives of the City of Hopkins, individuals who live and work in Hopkins and others explain why the siting of a garbage transfer station in Hopkins is inappropriate. We are asking you to require that certain revisions be made to the draft EIS before the Council reviews the final version of the EIS.

Minnesota Rules §4410.228, Subpart 1 requires the RGU to "determine the adequacy of the final EIS." According to Subpart 4 of Minesota Rule 4410.228, the final Environmental Impact Statement shall be found adequate by the RGU if it:

(a) addresses the issues raised in scoping so that all issues for which information can be reasonably obtained have been analyzed;

(b) provides responses to the substantive comments received during the draft EIS review concerning issues raised in scoping; and

(c) was prepared in compliance with the pr ures of the Act in subparts 4410.0200 to 4410.7800.

If the RGU determines that the Environmental Impact Statement is not adquate, it has 60 days in which to prepare an adequate EIS.

ARGUMENT

The materials prepared by the City of Hopkins for submission during this hearing, and the materials provided by the Hopkins residents and businesses who have also participated, illustrate the ways in which the Draft Environmental Impact Statement (DEIS) has failed adequately to address issues raised by the City of Hopkins throughout the process.

The City maintains that the siting of a garbage transfer station in Hopkins is likely to create pollution, impairment or destruction as defined by Minnesota Statutes 116B, the Minnesota Environmental Rights Act (MERA). This statute requires that where there is a showing of a likelihood of pollution, impairment or destruction, it is necessary for the proposer of the project to show that there is "no feasible and prudent alternative ... and economic considerations alone shall not constitute a defense ..." A substantially identical standard applies in the statute under which the Council will consider the certifice of need application for landfills.

Hennepin County has made a decision based essentially on cost. It has chosen in proposing the Hopkins site to identify a site which it owns. It is this factor which has overridden all other concerns in contravention of Minnesota Statutes 116B.04.

In summary, our particular concerns are as follows:

1. The draft EIS does not describe the proposed construction of the transfer stations in sufficient detail to enable the public to "identify the purpose of the project, its size, scope, environmental setting, geographic location, and anticipated phases of development" as required by Minnesota Rules 4410.2300(e). In many places, the draft EIS asserts that problems will be overcome by design, yet no information is provided as to what kind of design or how it will overcome the problems. In other areas, the document suggests that certain kinds of filters and other control devices may be used to mitigate potential problems such as odors without indicating whether such items will be required or will be incorporated into the design.

2. The draft EIS does not give sufficient weight to the MPCA guideline which suggests that such facilities be at least 1,000 feet removed from residential areas. In this case, not only is the proposed site between 750 and 800 feet from a variety of residential environments, but it is less than 70 feet from highly sensitive food warehousing and manufacturing industries. The introduction of even one mouse into a food warehouse is of major significance when one considers that 80 percent of the Twin Cities residents purchase the food which comes through these three warehouses. The draft EIS ignores the fact that rodents will travel in garbage packer trucks. Rodents can leave the trucks waiting in line or can leave the transfer facility once the garbage is dumped. The drafters of the EIS claim there is no evidence food manufacturers and warehouses cannot co-exist with the transfer station. They present no positive evidence and they sought no input from the businesses to see if there were concerns.

3. The draft EIS has not dealt adequately with the legitimate concern of the City of Hopkins for its redevelopment. The City has an active redevelopment district and many individuals and groups are involved in downtown redevelopment plans. If this parcel of land were not owned by the County, it would be included in the redevelopment district which abuts the parcel. The City's plan is to rejuvenate and improve downtown Hopkins. Much work has already been accomplished. New development is planned and sited. The transfer facility will adversely affect those plans.

For example, the draft EIS minimizes the noise generated by the facility because of the existing background, but the City's goal is to come into compliance with MPCA noise standards not to sanction uses which bring it further out of compliance.

In discussing aesthetics, the draft EIS talks about buffering without addressing the reality of the situation. The transfer station will be the tallest structure in the area. It will be visible from the residences, from apartment buildings and from the road. No amount of shrubs or buffering will hide it.

4. Analysis of the alternatives is cursory compared to the analysis given to the selected site. This is a crucial issue as the city has repeatedly stated that Hennepin County selected only sites zoned industrial while ignoring the fact that adverse impacts could be worse in industrial areas than in areas with some other zoning classification. Moreover, the county gave inordinate priority to finding a site which it owned, even though the power of condemnation is readily

available to the county for the assembly of another site where the environmental impact would be less serious, and even though the cost to the county of using its own land is the "opportunity cost", i.e. the amount for which the land could be sold.

Given the way the document is prepared it is extremely difficult even to compare alternative sites with a selected site. It would be much easier to determine which sites have the most advantages and disadvantages if material dealing with topics such as aesthetics, noise, property values, etc. were placed together, either in the document itself or in some sort of summary format. As it is, one needs to sift through many hundreds of pages before getting to the information on the alternatives and in order to see how the alternatives are treated in comparison with a selected site, it is necessary to move back and forth from baseline data to expected impact data to alternative site data. This difficulty is important because a discussion of alternatives is the heart of the entire process which surrounds the development of an Environmental Impact Statement.

Unless there is a detailed analysis of alternatives the conclusions and decisions of an agency appear to be detached from and unrelated to environmental concerns. Monroe County Conversation Counsel v. Volpe, 4 ERC 1888 (2nd Cir. 1972). Also given the standard which appears in the Minnesota Environmental Rights Act and in the statutes dealing with the granting of certificates of need by the Metropolitan Council, the ability to compare the environmental impacts of alternatives is absolutely essential. The discussion of the alternatives included in this draft of the EIS is superficial and incomplete. It accepts possible problems without doing the requisite analysis to determine whether they are actual problems or not. It gives credence to conclusions drawn by local units of government when it does not give the same credence to similar conclusions drawn by the City of Hopkins. Information provided on the alternatives is insufficient to make it possible to compare potential environmental impacts at the selected sites with potential environmental impacts at the alternative sites.

CONCLUSION

The city wishes to stress again that it is not opposed to the general concept of a resource conversion facility such as the one proposed at the Greyhound site in Minneapolis, nor does it find inappropriate the general concept of bringing refuse to a number of transfer facilities for reshipment to downtown. The city is convinced, however, that the site selected by

Hennepin County within Hopkins for a transfer station is environmentally ging to the City of Hopkins. The tone of the draft EIS is reinforce a questionable decision made by the County rather than to do a thorough analysis of the selected site and the alternatives in an effort to determine whether an alternative would be less environmentally damaging.

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
BOX 10, 500 LAFAYETTE ROAD • ST. PAUL, MINNESOTA • 55146

DNR INFORMATION
(612) 296-6157

January 31, 1986

Mr. Paul Smith
Metropolitan Council
300 Metro Square Building
Seventh and Robert Streets
St. Paul, Minnesota 55101

RE: HENNEPIN COUNTY RESOURCE RECOVERY PROJECT - DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS)

Dear Mr. Smith:

The Department of Natural Resources (DNR) has reviewed the above-referenced document and we offer the following comments for your consideration.

Our primary concern with this project is that the Brooklyn Park East transfer station site and alternative are located in areas that could be adversely impacted by the project. As described in the EIS, both of these sites are adjacent to the marshy floodplain of Shingle Creek, which is a protected wetland. The preferred site appears to require fill into the floodplain area.

5-38

The Shingle Creek area is zoned as a conservancy district and designated for future park development. It currently provides good habitat for a variety wildlife species. The EIS describes the measures that would be applied to protect the marsh and creek from adverse stormwater runoff and water quality impacts. We recommend that, if another more environmentally suitable alternative site cannot be found, that a maximum level of mitigation be implemented at the site. Such measures would include avoiding floodplain construction and routing stormwater through a retention basin during and after construction. The facility should be adequately screened from view to the west and a buffer area of natural undisturbed vegetation should be retained on the western border of the site.

Thank you for the opportunity to comment on this project.

Sincerely,

Thomas W. Balcom

Thomas W. Balcom
Environmental Review Coordinator

TWB/DB:jl

c: Kathleen Wallace
Earl Huber
Wayne Edgerton
Gregg Downing - EQB
Warren Porter - Hennepin Co. Dept. of Environment and Energy

er 223

Municipal Building • 2215 West Old Shakopee Road • Bloomington, Minnesota 55431 • (612) 881-5811

James H. L.
Mayor

John G. Pidgeon
Manager

January 28, 1986

Sandra Gardebring, Chair
Metropolitan Council
300 Metro Square Building
7th & Robert Streets
St. Paul, Minnesota 55101

RE: Draft Environmental Impact Statement
Hennepin County Resource Recovery Project - Comments

Dear Ms. Gardebring:

The City Council of the City of Bloomington, at its Monday, January 27, 1986, meeting, reviewed the Draft Environmental Impact Statement (DEIS) for the Hennepin County Resource Recovery Project. The DEIS includes the proposed Bloomington East Transfer Station, located in the area of West 96th Street and James Avenue South, and alternative sites identified as Airport Southwest, I-494 and Nicollet, and Freeway Landfill. The City of Bloomington is presenting the following comments on the adequacy of the responses contained in the DEIS.

5-39

The City has significant concerns with regard to the quality of information and the lack of indepth analysis related to the proposed Bloomington East Transfer Station in the following areas: air quality, surface water, transportation, noise, utilities, socio-economics, ecological resources, and solid waste.

AIR QUALITY. Details on the air quality of the affected environment are not included in the DEIS. No analysis is provided on operational or transportation-related air quality impacts. The generation or impact of odors in the immediate or adjoining areas is incomplete as micro-climate factors and wind distribution effects are not considered. The DEIS contains no modeling of air quality impacts and no evaluation of air quality conditions in relationship to transportation and operational factors at the proposed site.

SURFACE WATER. The DEIS does not include a surface water analysis that takes into consideration total watershed volumes and pollutant concentrations and loadings. As the drainage for the area is the Minnesota River and the National Wildlife Refuge, consideration of surface water impacts related to storm events and facility maintenance is of major importance. The possibility and effect of mixed municipal waste or unacceptable wastes entering the storm drainage system is not considered in the DEIS.

TRANSPORTATION. The transportation sections of the DEIS should include additional analyses and a recommendation on designated routes related to the point of collection origin. Inadequate consideration is given to intersection movements and needed improvements at West 98th Street and James Avenue South. Intersection movements at Humboldt Avenue South and Girard Avenue South at West 98th Street should reflect roadway improvement plans. The DEIS is overly optimistic of levels of service at intersections in the area given additional land use development and the expansion of existing facilities at higher densities. If, as the DEIS suggests, 50% of trips will be from a northeasterly direction, then I-35W and its interchanges will be impacted during peak periods. It may be difficult to maintain a level of service "C" or better in the affected area.

NOISE. It is not clear whether the DEIS noise prediction of the "facility alone" includes calculations of the vehicles servicing the facility. If not, the net impact of noise generated by the building "alone" might be imperceptible. Such a conclusion is implausible when one considers the noise impact, particulatly in the L-10 metric, caused by garbage trucks servicing the facility. Adding additional noise from garbage trucks (the number two noise nuisance source in citizen complaints registered in Bloomington for the last four years) in an area where existing levels currently exceed State environmental regulations would hardly seem to be "imperceptible". A closer description of what will result is an increase in the peak noise levels for sensitive receivers along the traffic routes for the facility and, thus, an increase in the time of exposure over the State limit and an increase in total noise in an area already over the NAC-1 limit. The net effect of the proposal upon noise pollution is to further contribute to noise impacts in an area where existing noise exceeds State standards.

UTILITIES. The DEIS does not provide thorough information on sanitary sewer flow projections for the proposed facility. It is emphasized that waste transfer is a dry process and water use will be generally limited to employee drinking and sanitary facilities. Water use will also be an aspect of facility maintenance and general sanitation. The collection and disposal of this wastewater is not discussed. An evaluation of sanitary sewer flows on the City's collection system should be included.

SOCIO-ECONOMICS. The DEIS does not evaluate the impact of the location of the facility upon growth and development in Bloomington's Central Industrial Area. This area was designated as a municipal development district by the City Council, and a development program was adopted for planned industrial development. Considerable public investment has been made to provide a basis for continued industrial development. Loss of tax base, jobs and economic benefits in the Central Industrial Area that could result from the location of the facility should be analyzed.

ECOLOGICAL RESOURCES. The DEIS does not assess impacts on ecological resources that would be related to surface water drainage. The DEIS does not identify drainage characteristics, concentrations and loadings and the effect of the drainage on the Minnesota River and Minnesota Valley National Wildlife Refuge ecology. Of particular concern is the possibility of acceptable or unacceptable wastes entering the drainage system.

SOLID WASTE. The handling of processible and nonprocessible wastes is not specified for the proposed Bloomington facility. No procedures are described for the handling of hazardous wastes if they are found deposited at the transfer facility. General sanitation and rodent control needs are not identified.

The DEIS section dealing with mitigation that would reasonably eliminate or minimize any adverse environmental, economic, employment or sociological effects provides no mitigative measures for impacts that are specific to the Bloomington East site. Given the above comments on the adequacy of the DEIS responses, revisions should result in more site-specific and area impacts that should be mitigated. The DEIS should be revised to include necessary mitigative measures for the proposed transfer station facility location and its alternatives prior to proceeding with the preparation of the final EIS.

The analysis and evaluation of site alternatives to the Bloomington East facility should be expanded and additional documentation should be provided. For instance, in the consideration of the Freeway Landfill site, reference is made to soil conditions not being able to support development and the possible displacement of sensitive wildlife species that would result from noise impacts, but little or no documentation is provided.

The DEIS, in considering the proposed Bloomington East Transfer Station and alternatives, is generally incomplete and provides inadequate responses to many of the issues contained in the scoping document. The City recommends that revisions be prepared for several DEIS sections that focus on the Bloomington East Transfer Station and its alternatives. In order to allow for a comprehensive evaluation of environmental effects associated with the development of a facility, adequate responses and sufficient information should be provided.

Sincerely,

James H. Lindau
Mayor

RS/nh
cc: Dale Ackmann
Vern Genzlinger
Luther Nelson

DRAFT
January 14, 1986

COMMENTS, DRAFT EIS, HENNEPIN COUNTY RESOURCE RECOVERY PROJECT

Scope/project Definition/Alternatives

Resource Recovery Plant — The project, as described is clearly an electrical generation plant. While adaptation for district heating steam distribution potentials is suggested in the EIS and while the County's contract with the vendor is structured to be able to add provisions for steam distribution, it is clear that the facility set for construction is and may indeed remain, (only) an electrical generating plant.

As stated in the City's scoping remarks on the EAW, alternative outlying locations which: 1), did not require shipping waste to the relatively congested center of the City and 2), did not complicate (or be complicated by) emissions there, would be far less environmentally troublesome for electrical generation. Given electricity as the only energy output of the facility at hand, we can only repeat the logic that consideration of an alternative, non-central-city location should be developed, evaluated and presented.

Plant — Since the stack itself is a very likely place for the formation of dioxins and dibenzofurans, accurate measures of actual toxic emissions can only be determined by sampling gasses at the top of the stack. Stack design should accommodate an air sampling port at the top of the stack and access to it.

Plant — While the document ties its description of operations to the physical facility, the nature of those operations justify treating such subjects as employee safety unique to this plant. What provisions will be made for the adequate safety training of employees who will be maintaining fly ash pollution control equipment which will probably contain toxic concentrations of dioxins, dibenzofurans and other toxic chemicals (such as used baghouse bags)?

Another area of operations concern throughout siting discussions has been operational provisions for policing the site for litter and general exterior plant and grounds maintenance. Such matters take on unique significance since the public will undoubtedly, and incorrectly, view the plant as a government-run facility.

For treatment of those Alternatives selected for evalvation, see below.

Governmental Approvals

Plant — Applicable City Ordinances in Air Quality and Noise governing operations are not listed. An Environmental Review provision is included in our Zoning Ordinance, to be conducted prior to issuance of building permits.

Conditions attached to city permitting can be enforced, under state law, if approved by the Metropolitan Council (Cit.___)

augmented in the final EIS to include the relatio[illegible] of new research being undertaken by MPCA to assist it in permitting [illegible]ermit amendment.

Plant — It is not clear whether the electrical production, sale and/or particular method of connection (e.g. using any City right of way) would involve this project with City franchise authority.

Effected Environment

Plant — The draft's discussion of surrounding land use (p. 3-73) cites the general industrial character of the site. It does not recognize however, that conversion of former warehouses for other uses including some housing, has occurred - - principally east of the site.

Plant — The description of the street network serving the plant (p. 3-92) incorrectly implies that eastbound Hennepin Avenue at 7th Street North now has an exclusive left turn lane.

Plant — Though the capacity calculations for the street system are acknowledged as correct, the City Traffic Engineer considers the intersection of Olson Highway at 7th Street North to be operating at a level of service "C" not higher as stated, given the (60/40) signal split required.

Environmental Impacts

Plant — Permit processes (p. 4-6) describe testing for toxicity of ash for disposal. Will there be prevision for periodic testing of recovered materials (p. 4-7) (i.e. ferrous metals) and for used baghouse bags for dioxins and other toxics.

Regarding expectations for reduction in needed landfill capacity (p. 4-8), the basis for the relative volume difference involved are not clear. According to the Environmental Defense Fund's report To Burn or Not To Burn (1985), incineration plants reduce the relative volume of garbage by only 21% "Although incineration significantly reduces the volume of the material to be landfilled — to less than 10% of the original volume — ordinary garbage also undergoes volume compression due to compaction after it its landfilled. The relative volume reduction factor — incinerated garbage vensus ordinary landfilled garbage is 21%." (p. 5)

Human Health

Minneapolis contracted with the Center for the Biology of National Systems for an idependent analysis of human health issues in the EIS. The comments below are based on that report. The full report was submitted separately to Metropolitan Council staff.

The City of Minneapolis has no judgement on the validity of the CBNS critique or conclusions. The report was commissioned by the City, and is presented to the Metropolitan Council, in the interest of providing a full range of analysis in this most difficult and important area of the EIS.

1. Data Base Selected for Estimating Expected PCDD/PCDF Emission Concentration.

a) The procedures used in the EIS to establish a data base for estimating the expected rate of PCDD/PCD Emission are called into question for the following reasons:

(1) The chief criterion used to select plants for inclusion in the data base (operation in North America) is questionable. No evidence is presented in the available literature that PCDD/PCDF emissions are affected by the difference in the waste used as fuel between European and North American facilities.

(2) No basis is given for excluding RDF plants from the data base.

b) The EIS concludes that a data base derived from ESP-equipped facilities provides a "conservative" (i.e. higher) estimate of emission rate than that expected in the proposed incinerator, because the scrubber-baghouse control system to be used in the County's facility will be more effective than an ESP. However tests of the scrubber/baghouse control system at the Tsushina, Japan incinerator indicate it was not an effective control system for dioxins. Tests show that as much as 7 times more PCDD/PCDF left the system than entered it.

c) The EIS conclusion that the planned operating temperature of 1800 F represents "...combustion conditions which should result in more complete combusion (that is, less emissions)" than the facilities included in the data base is uncertain. Analysis of data from incinerator tests shows PCDD/PCDF emissions which are not, in fact, reduced by operating incinerators at elevated furnace temperatures.

2. Determination of Emission Factors for PCDD/PCDF. The PCDD/PCDF emission factors computed in the EIS underestimate the emission concentration expected from the proposed facility. Reasons are as follows:

a) The use of a highly selected data base by the EIS.

b) The method used by the EIS to compute the average emission concentration from such a selected data base biases the results from the incinerator with the greatest number of runs, i.e. the Montreal plant.

c) Tests results for the Montreal plant were as much as 1,000 times lower than the other ther values in the EIS data base, yet these values represent nearly half of the results used to compute the average emission concentration. Furthermore, Mr. Raymond Kilcues, Program Engineer in the agency which conducted the tests on the Montreal plant, the Ontario Ministry of the Environment, has reportedly concluded that the results are not "sufficiently reliable to be used in making risk assessments" because he believes the values are the result of some unexplained artifact.

3. Hazard Identification

Of the biological activities exhibited by PCDDs and PCDFs, the only one that appears to be relevant to a risk assessment — at the environmental levels expected from incinerator emissions — is cancer induction. However, the statement in the EIS that PCDDs and PCDFs are "potent carcinogens" may not fully characterize the actions of these compounds in cancer induction.

There is evidence to support the view that PCDDs and PCDFs increase cancer incidence in animal experiments not because they are carcinogens, but because they act as cancer "promoters" — that is, they sharply increase the cancer-inducing potency of other environmental agents. This effect appears to be due to the capability of PCDDs and PCDFs to powerfully stimulate the activity of the AHH enzymes that chemically convert a number of substances that occur in the environment into active carcinogens. This concept is important in a risk assessment because it provides a basis for considering the effect of all the active PCDDs and PCDFs.

4. Computation of 2,3,7,8-TCDD Toxic Equivalence Factors (TEF)

The procedure for computing toxic equivalence factors (TEF) proposed by the U.S. EPA Work Group, which is used in the EIS, is only one of a total of six different procedures that have been recognized by various environmental agencies, including U.S. EPA. The different procedures yield widely varying results. The EPA Work Group (1985) procedure yields the lowest TEF's. The highest TEFs are those proposed by the Ontario Ministry of the Environment and the California Department of Health Services (CDHS). In other words, if the EPA TEFs are used to convert a PCDD/PCDF emission concentration into 2,3,7,8-TCDD equivalents, the resultant estimate of cancer-inducing activity will be very much smaller than that yielded by a computation based on the CDNS or Ontario TEFs.

The adoption by the EIS, from among the available methods, of a method for computing the cancer-enhancing activity of the different PCDD/PCDF homologues which yields by far the lowest values is a matter of concern in a risk assessment for the following reason:

a) The method used in the EIS — the EPA Work Group (1985) method — is in draft form and does not at this stage represent EPA policy.

b) It appears that the TEFs proposed by the EPA Work Group do not represent current knowledge of the relative AHH activating capabilities (refer to #3 above) of the different PCDDs and PCDFs, and by inference their relative effects on cancer incidence. The procedure adopted by the EPA Work Group may understimate the cancer-inducing potency of a number of the PCDDs and PCDFs that occur in incinerator emissions, especially the latter.

5. Exposure Assessment

Evaluation of exposure to PCDD and PCDF through ingestion and dermal contact with soil or dust contaminated with particulates emitted from incinerators is a new and speculative field. Besides the model developed in the EIS, only two other such assessments are known to have been attempted — by Hart and by CBNS.

The EIS model is incomplete, compared with the Hart and CBNS models, in two primary respects: First, it only examines ingestion of soil contaminated with incinerator particulates, ignoring that indoor dust will probably have higher concentrtions of PCDD/PCDF than soil. Secondly, it assumes a low amount of combined soil and dust ingestion, 50 mg/day. Hart uses 100 and 410 mg/day respectively (with 30% or 80% bioavailability), the latter based on the work of Kimbrough of the Center for Disease Control.

6. Cancer Risk

The procedures used to assess the significance of the cancer risk represent an inappropriate, albeit fairly common, conception of risk assessment.

The appropriate way of assessing the significance of the cancer risk due to the proposed incinerator in accordance with the National Environmental Policy Act of 1969 is to compare it with the risk from an alternative means of dealing with the trash — rather than with lists of various

activities that have nothing to do with trash disposal. The EIS fails to make this necessary comparison.

Accordingly, the EIS fails to provide the decision-making agencies with a proper means of evaluating the significance of the computed cancer risk from the proposed Hennepin County incinerator. By comparing this risk with "everyday" risks that are very much larger, the EIS reduces its significance. The risks from alternative trash technologies are likely to be at least as low as that computed for the proposed incinerator (and probably less), so that a proper comparison would tend to enhance the significance of the computed incinerator risk.

7. CBNS Risk Assessment

The Center for the Biology of Natural Systems, risk assessment leads to an expectation of 260 additional cases of cancer per million people exposed over a 70-year lifetime compared to the 9.3 per million as computed in the EIS, (28 times greater than the EIS computation).

8. PCDD/PCDF Concentration of Fly Ash

Fly ash should be tested as a hazardous substance and committed to a Class I landfill. If it is mixed with bottom ash (which contains almost no PCDD/PCDF), the PCDD/PCDF in the fly ash is sufficiently diluted so that the mixture may be classified as "non-hazardous." This manuever does not, however, mitigate the environmental hazard, because, in the absence of studies regarding the mobility in landfills of PCDD/PCDF adsorbed on fly ash, there are no assurances that toxic concentrations will not occur in leachates.

Plant As regards Land Use Impacts, the draft does correctly list (p. 4-90) specific inconsistencies for district compatibility. Interestingly, it compares the conflicts involved for the Land Use Plan with the consistency a district heating plant could have for other elements of the Plan. As noted at the outset of these remarks, the plant as described does not, and may not, include district heating steam output, however.

Plant As regards traffic impacts, it has been the City's position throughout all siting discussions that agreement concerning operations at rush hour will be necessary to optimize traffic flow. While such assurances have been informally recieved from the County, those assurances will need to be implemented with its vendor.

Plant It is absolutely essential that sufficient queing capacity for packer and transfer trucks be assured on site, a matter not addressed in the draft.

Transfer Station Specific attention must be directed toward provisions for traffic using the intersection of E. 28th Street and Hiawatha Ave. Detailed modifications may be necessary: (Fig. 4.7-44-53)

- Southbound on Hiawatha to Westbound 28th Street
  (acute, tight right turn for transfer trucks to be contained)
- Northbound on Hiawatha to Westbound 28th Street
  (a left turn arrow phase may be needed)

Most importantly, the draft does not recognize the preliminary engineering being developed for upgrading Hiawatha Avenue. C[illegible]nation has been initiated, but follow-up will be required.

Plant The description of projected water service (p. 4-212) suggest a looping system. The method described would be permitted only under certain conditions. Because the water supply is sufficient and available, specific coordination with Water Department officials can be expected to provide an acceptable design for the service.

Plant As regards, Aesthetics and Cultural Resources Impacts (p. 4-228), the red striped white metal panel plant as proposed, would not blend in color or materials with the (warm, earth tone brick) of predominant surrounding buildings, nor with the nearby historic district of similar characteristics. A committee has therefore been established to secure modifications for more acceptable exterior treament and site plan (landscaping). While those discussions are very promising, assurance of an acceptable design unfortunately cannot be expected by Hearing time. Agreement on an acceptable exterior material has been achieved however, with favorable prospects of committment to its use by the County and the Company.

Part 2, Alternative Considerations

Plant The No-build Alternatives (p. 1-1, p. 1-4) do not follow NEPA requirements with respect to intensive policy committment toward recycling, including composting and co-composting In the public discussions, including those on the EAW, it has been apparent that there is a great need for public and decision-maker information on the contribution (in varying degrees of committment) that recycling, composting co-composting could make to the landfill problem. Understanding of the magnitude of the problems and opportunities, costs and cost savings, and resource and environmental health degradation comparisons would seem to require treatment of this subject as a No Build alternative in the DEIS.

In the sketch form in which they are presented and analyzed (p. 3-1 p. 3-5), the basis for choice of Mass Burn technology is not evident over RDF, recycling, co-composting,composting; or a mix of RDF and non-burn alternatures.

Pacific Street Drainage (p. 4-5) at Pacific Street could be directed to storm sewers, but this will require careful design, since the site adjoins the Mississippi River. The Land Use discussion ignores the concerted re-development efforts (principally west and south of the site) to enhance the area as a light industrial park. The transportation discussion (p. 4-60) does not present a worst case, which would involve the congestion/backup that occurs with a rail grade crossing at 26th Avenue N. The discussion on Aesthetics (p. 4-8) ignores the conflicts which have arisen over river shoreline encroachment and the extension of river vista improvement that characterized debate on the West Riverbank site.

Pacific Street

In general, selection of the Pacific Street site seems to have been intended to heighten acceptance of the Greyhound Site. The most interesting contrast of Alternatives, for policy and technical evaluation prior to decision making, could be achieved by considering a suburban power generation plant. Variations on technology and size could then have been presented most productively for review.

GW-ss b15

HENNE_ COUNTY D.E.I.S. REVIEW AND COMMENTS Jan. 30, 1986

General

Air Quality/Human Health

Land Use and Zoning

Transportation

Utilities

Socioeconomics and Aesthetics

Geology, Hydrology, Terrestrial Ecology, and Cultural Resources

Alternatives

General

Part 1

Page 1-6 - First paragraph: "Blount" should be changed to "Blount Energy Resource Corporation".

Part 2

Section 2.2, page 2-2; For each transfer station a statement should be added as to where truck traffic may go if that particular transfer station is reduced in size by 50% (e.g. to other transfer station, if so specify; or to landfill).

Section 3.2, page 3-3; Costs cited for pyrolysis plants should not be included because they are not comparable to costs cited for cogeneration as they are not complete systems including boilers or turbine generators.

Section 4.10.2.2, page 4-66; second paragraph, second sentence states "... the use of piles for support of the structure (is) practicable," however this statement disregards potential negative effects on downward leachate flow, corrosivity, and whether this would be permitted by the MPCA.

Comments on Section 4.3 -- Human Health

Hennepin County Resource Recovery Project EIR

General Comments

The analysis performed in this section can be legitimately described as a worst-case analysis of the health impacts associated with the operation of existing solid waste incineration facilities but it does not provide adequate information on health risks which may be related to the Hennepin County Resource Recovery Project. The document does not appear to be sufficient for informed decision making. Unfortunately, decision makers who are not experienced in dealing with health risk assessment usually want to examine the results of such an analysis in a similar manner to the analysis for compliance with criteria pollutants. This is not generally appropriate for risk assessment, as the uncertainties involved in the analysis are much greater than simply the uncertainties in emission rate and modeling accuracy that are so important to the evaluation of compliance with standards.

5-46

Much more detailed quantitative discussion of the magnitude of uncertainties involved in quantitative risk assessment based on a multisource data base needs to be included in the document. This should include, but not be limited to: emission estimates, exposure assumptions, dispersion modeling and carcinogenic potency. Of these issues, the ones most profoundly affecting the quantitative risk estimates are the emissions and the carcinogenic potency. No attempt was made in this report to evaluate the Hennepin project based on the individual merits of the project. The analysis is, in effect, a risk assessment for a generic 1000 ton/day waste incinerator. This produces extremely misleading results. A health risk assessment should be done which provides a reasonable estimate of potential

health risks which may result from the proposed facility. The following comments and attached documents provide information which can be used to produce such an assessment. Comments are also provided on ways to improve the present risk assessment pertaining to existing facilities. The County asserts that the present assessment, even if revised to incorporate recommended improvements, is only representative of an assortment of existing facilities which are substantially different than the facility being proposed. Such an assessment should only be used for purposes of comparison to a risk assessment which reflects the characteristics of the proposed facility.

Regarding the type of approach used in the existing analysis, involving averaging of emissions data from various existing sources without regard to facility design, more explanation is necessary on the reliability and probability of assumptions made.

The parameter that leads to the greatest amount of uncertainty in a quantitative risk assessment is the carcinogenic potency of a given subtance. The assumptions inherent in extrapolating carcinogenicity from animals to humans and from high doses to low doses is not discussed anywhere in the document. The uncertainties associated with CAG's use of body surface extrapolations as well as the use of liver tumors observed in the Kociba study to develop the 2, 3, 7, 8-TCDD potency slopes are additional factors leading to uncertainty, and overestimates of risk (note: many toxicologists believe that a threshold exists for liver tumors). In developing risk estimates for the mixture of PCDDs and PDCFs there are many more assumptions that have to be made since there is no animal data for most isomers of PCDD and none for PDCF. The bottom line is that the carcinogenic

potency assumptions may overestimate the cancer risk by several orders of magnitude. An overestimate of this magnitude is magnified by the consistently conservative assumptions on emissions and exposure used in this risk assessment. The effects of multiplication of errors, sometimes referred to as the "oiling up of conservative assumptions", is not discussed anywhere in this document. Such discussion is essential in order to provide indication of the extreme conservatism of the analysis.

The bottom line is that a decision maker who reads this report will look at the quantitative risk estimates and think that he is looking at a set of "best estimates" rather than the extremely conservative numbers that they really are. It is true that the report mentions the use of upper 95 percent confidence limit potency slopes as producing an estimated risk that is not likely to be exceeded. However, combining this with an upper 95 percent exposure assumption and a conservative emission rate, etc., actually leads to a result which is more accurately characterized as a probability of one in one hundred thousand that the maximum exposed individual will have a risk as high as one in one hundred thousand of contracting cancer from facility emissions. This needs to be brought out in such an anlysis so that the numbers are placed in proper perspective.

5-47

Specific Comments

Page 4-49, paragraph 2: The reason for ignoring foreign data is not adequately supported. Emissions of organic pollutants has not been clearly shown to be related to waste composition therefore this is a questionable basis for excluding such data. Screening of data based on design and operation criteria is a more appropriate approach.

Section 4.3.2.4

The paragraph entitled "Certainty of the Estimates" suggests that the risk might be considerably lower based upon Blount data. This statement supports the case for use of more representative data instead of a statistical summary of all data regardless of design, operation, control equipment, etc. Recent data on PCDDs and PCDFs, including isomer-specific analysis, is available from West Germany. (See attached VKS Paper - Dioxins in Waste Disposal). This paper includes data from a Widmer & Ernst facility in Bielefeld West Germany. This is data more representative of the proposed facility which uses Widmer & Ernst technology.

Pages 4-50, 51: No reason is given for the selection of these substances for analysis. There is much more detail given in this table than is reflected by the subsequent analysis. For example, the chlorophenols are broken down into the di - through penta isomers. Health risks were only evaluated for PCP. The emissions of substances that are not evaluated for health risks should not be included in this table.

Page 4-57: Again, this table has considerably more detail than is appropriate given the health risk analysis that is performed later in the report.

Page 4-54: Use of the Hampton 1982 data for organics is inappropriate. High emissions were measured during this period due to severe overloading of the furnace (well beyond the rated capacity) which led to insufficient oxygen and inadequate burn-out. The Hennepin County facility is subject to operational limits which restrict the amount of fuel processed to the design capacity. This will preclude the adverse opperational conditions encountered at Hampton. (See attached EPA paper from Donald Barnes on

Hampton). The table should contain a description of the pollution control systems used at each of these facilities in addition to the measured control efficiencies of particulate matter.

Page 4-59, paragraph 2: The decision to use the Washington D.C. SWRC facility for trace metal emissions is questionable. The SWRC facility is not a modern resource recovery facility, it is an incinerator for solid waste volume reduction consisting of six small incineration furnaces equipped with mechanical collectors and ESPs. An excellent data set for trace metals exists for the Gallatin, Tenn. resource recovery facility with a baghouse for particulate control. The Gallatin data contains both controlled and uncontrolled emissions as well as the distribution of trace metals by particle size. This would allow an evaluation of the effectiveness of a baghouse in controlling volatile condensibles as well as non-volatile trace metal emissions. (See paper attached by Jeffrey Hahn-Cooper Engineers - Air Emission measurement of MSW combustion).

5-48

Even if the SWRC data were appropriate for use in the risk assessment, the way the data were used is totally incorrect. The use of the average emission rates plus two standard deviations may be appropriate for an evaluation of acute health effects, however, the main focus of this risk assessment is on chronic exposure. Therefore, it is the mean emission rate that should be used. The rate used in the assessment is only relevant to maximum short term emissions not long term emissions. Since the SWRC facility employs ESP's with lower removal efficiency as compared to a baghouse, the mean concentration of the SWRC emission data would be a very conservative set of emission estimates for a conservative risk assessment.

Page 4-61: The hazard identification section needs additional explanation. A statement should be made at the beginning of the section that explains that most of the health effects described have occured in an occupational setting or are as a result of animal studies in which the dose applied was intended to be significant enough to cause observable health effects. This needs to be said since subsequent analysis shows that the exposure resulting from facility emissions is much smaller than would be required to produce the health effects described in the hazard identification section.

Page 4-65, paragraph 1: The criteria for elimination of tin, copper, etc. as pollutant emissions of concern was not stated. Reasons should be included.

Page 4-65, last paragraph: The other assumptions inherrent in the analysis of carcinogens should be included. Primarily, this includes the assumption that all of the carcinogenic trace metals emitted were assumed to be of the carcinogenic form (e.g, all chromium assumed to be Cr(VI)). This is an additional factor in the conservative nature of this analysis.

Page 4-66, 2nd section: The evaluation of noncancer health effects should be expanded. Acceptable Daily Intake values exist for a number of substances other than the four considered including some of the carcinogenic trace metals and vanadium. (See Environmental Technical Report 8 - Human Health HDR Techserv, Inc., 1985).

Page 4-73, paragraph 2: No mention in this section is made regarding the assumption of complete absorption of all inhaled substances (it is mentioned that 100 percent of inhaled substances are assumed to be respirable). The assumption of complete absorption is acceptable for a conservative risk assessment, but this needs to be clearly stated.

Page 4-74, paragraph 3: Nothing is stated regarding the assumption of PCDD half-[illegible] in soil (which has been estimated to be from 1/2 to 12 years). The assumption made in this risk assessment was apparently that the half-life is infinite. This should be stated and the conservative effect on the analysis quantified. A better approach would be to use a half life value in the analysis (one year). Data is available to support this. (See ETR-8, HDR Techserv, 1985)

Page 4-74, paragraph 5: The assumption of a deposition velocity of 1.0 cm/sec is much too conservative. This is particularly the case for PCDDs and PCDFs, which are, as earlier stated in the report, emitted primarily in the gaseous phase. The trace metal emissions will probably have a mass median diameter of less than 5 microns because of the efficiency of control particles in the baghouse. A deposition velocityt of .01 cm/sec is recommended. (See ETR-8, HDR Techserv, 1985). There is no mention of an assumption of perfect reflection, which produces some double-counting of pollutant exposure in the soil and in the air. This needs to be stated and the health risk effect quantified.

5-49

Page 4-75, paragraph 6: It needs to be clarified that the risk of 0.9 per 100,000 was calculated for a hypothetical maximum exposed individual (i.e., one who is born on the day that the facility begins operation and lives in spot of maximum facility impact continuously for 30 years). The assumptions used in the approach taken result in a health risk result which is only relevant to a very small (and in reality imaginary) portion of the population. The effect of this assumption more than doubles an already conservative risk factor - this should be stated. It would be more appropriate to estimate risk for the average individual in the area taking

into account age distribution, competing risks, the cancer la[illegible]cy period, population mobility, etc.

Page 4-70, paragraph 1, 2: Additional information should be given to put the risks into perspective. As a minimum this should include the current background lifetime cancer risk from all causes, which is approximately 1 in 4.

An analysis should be done which factors in design and operational characteristics of the proposed facility. This should be done in place of the existing approach used in the D.E.I.S. At a minimum such an analysis should be included in addition to the approach taken for purposes of comparison. The decision-makers should be given an indication of how the actual emissions from the facility might differ from the emissions assumed in the present analysis. For the dioxins, the results of Niro Atomizer's experiments with the control efficiency of a dry scrubber/baghouse system should be presented to give an indication of the potential benefits of this system compared to those facilities used for developing the emission rates used in the analysis which lack such controls. See attachments - Reduction of Dioxins and Furanes by Spray Dryer Absorption from Incinerator Flue Gas and Joy/Niro Spray Dryer Absorption Flue Gas Cleaning System.

Page 4-57, paragraph 1: The first sentence of the first bullet is stated correctly, however, the Niro Atomizer paper would indicate that the effect of the dry scrubber may reduce the gas phase organic fraction substantially. Based on this information the second statement is probably not accurate. The third bullet states that the additional control afforded by the use of a baghouse, instead of an ESP, was not factored into the analysis. The potential for additional control through use of a baghouse should have been

evaluated by using a range of size distributions.

Section 4.3.1.3

The use of emissions data from facilities known to be unlike the proposed facility are of little useful value. The Hennepin County facility will have specific design combustion parameters and have a maximum operating capacity. Emissions data from facilities known to have been operated at excess capacity and at reduced temperatures are not representative of the Hennepin County facility. In the case of trace metal emissions, more appropriate emission factors should have been used. The potential benefits of the use of a dry scrubber/baghouse pollution control system, such as that being proposed for the project should have been quantified.

Adequate information is available to support this type of approach. A variety of materials are being submitted with these comments to provide you with such data. In addition, more recent test data on more comparable facilities including extensive documentation of operating conditions is becoming available. Such information will be supplied as it is acquired for your use in revising the health risk assessment.

5-50

Transportation

1. The EIS Document neither discusses, nor includes in its analysis, improvement projects identified in each municipality's Transportation Improvement Plan,. As a minimum, those projects that will be completed by Opening Day should be considered in all capacity analyses.

2. The transportation discussion concerning the Bloomington East site makes frequent reference to the intersection of W. 98th Street and Old Shakopee Road, however, this road is never identified on any of the figures

in this section. In particular, this intersection has been identified as a problem area and yet the traffic volumes are seemingly not available to ascertain the magnitude and nature of this problem. (Section 4.7.3)

3. As was discussed on page 3-12 of the ETR, the recommendation for signalization of a particular intersection should consider total vehicular delay and only be made after a thorough study of existing geometrics, volumes and traffic progression from nearby signals. Quite often unsignalized intersections operate at LOS C or worse during peak periods and yet total vehicular delay is less than would be realized if a signal were installed. The most common method of determining the need for a signal is to evaluate the intersection based on the Manual on Uniform Traffic Control Devices signal warrants. This manual should be referenced and used to evaluate the need for a signal.

4. Railroad operations as reported in the EIS differ significantly with the Transportation ETR discussion. In the ETR it was assumed that one, 100-car train would block Fifth Avenue (Hopkins Site) for four minutes during the peak hour. The EIS (page 4-160) states that it is possible for three 100-car trains to block Fifth Avenue for 30 minutes (10 min/train). A review of the Hennepin County DOT study of this location corroborates the ETR analysis. This EIS analysis should be reviewed for accuracy and revised to reflect actual conditions.

5. In Section 5.6 - Tran sportation Mitigations, reference is made to "Jones Avenue." I believe this should be "James Avenue". (Page 5-8)

6. All intersections identified for consideration of traffic signals should be checked against MUTCD signal warrants and the results stated. (Page 5-8)

Land Use

1. Donaldson Company has sold 16 acres of land 8 acres of which was used as a test track for noise testing, located adjacent to the Bloomington site. The sale is to Marfield Belgrade Yaffe Co. Construction is to begin on part of the site in February of an office and service building complex (Minneapolis Tribune, January 14, 1986). This should be noted on pages 3-74, 4-91, and 4-94.

Utilities Review Pages 3-151 to 3-154

Page 3-151, 4th paragraph: Change to: 90-inch sanitary sewer is located on Fifth Street North.

Page 3-152, paragraph 2: Change Pennsylvania Avenue South to Penn Avenue South.

Page 3-152, paragraph 3: Change second sentence to: The fire hydrant at Fremont Avenue South and the South side of West 96th Street. . . .

Page 3-153, 3.8.3 last paragraph, first sentence - change to read: . . . site, there is one customer service line into the property.

Change the last sentence to read site, there is a customer phone service line into the property to serve the residence.

Page 3-154, 3rd paragraph: Change to: . . . to an existing building south of the site.

5-151

That's the unsavory prospect for the U.S. economy if those in power continue to act as if we can print all the money we want, without having to worry about future inflation.

In my mail as I write this I find expressions of alarm from seasoned observers on both sides of the Atlantic who fear that the United States already is forgetting the most basic lessons of the 1970s in a short-sighted political effort to stimulate without end.

To Americans accustomed to the standard Washington talk about Federal Reserve Chairman Paul Volcker being a tightwad, such worries may seem downright zany. But Volcker's

Rukeyser
On economics

Fed has not for some time been the legendary stern disciplinarian who conquered double-digit inflation.

In fact, since October 1984, the nation's basic money supply, M1, has accelerated from a 3.4-percent growth rate to 12.8 percent. Historically, such a dramatic speed-up invariably has translated, at the same point down the road, into inflation.

The prevailing view both in the Reagan administration and in Congress is that it won't happen this time. (Or, in any event, not before the next election.) Besides, it is noted complacently, the monetarists — those who advocate a steady, predictable rate of money growth — have not always been perfect predictors, either.

True enough. But as the London Economist has just observed with concern: "Month-by-month, monetarism may have become a fickle guide. For the long haul, its rules still look surprisingly useful."

Ironically, the monetarists for a

Company news/

Donaldson Co. Sells 16-acre plot

Donaldson Co., a manufacturer of air cleaners and filters, said it has sold 16 acres south of its Bloomington headquarters to a St. Louis Park office construction company. The sale, for an undisclosed amount of cash, will result in a $1.4 million net gain for Donaldson in its second quarter ending Jan. 31.

William Hodder, Donaldson chairman and chief executive, said the land was not needed for the company's long-term requirements and the offer from Marfield Belgarde & Yaffe Co. was an attractive one. "The sale represents part of a continuing effort to improve our return on assets by freeing cash tied up in non-income-producing property," he said.

The land, which had been used as a test track for noise-testing, had been part of a parcel bought for Donaldson's headquarters about 20 years ago, said company spokesman Ernest Andberg. Headquarters are located on four squareblocks with expansion room available, he said.

Marfield Belgarde & Yaffe plans to build two 115,000-square-foot office and service buildings on the site, said Ken Belgarde, partner and project coordinator. Construction on the first building will start next month and is scheduled to be completed by Sept. 1, Belgarde said. The construction schedule for the second unit will depend on the rental market, he add-

Marketplace Publications, a 14-year-old private company with 22 employees, has been owned and operated by Frank and Rosalie Kiperstin. They will continue to play an active role in the business, MSP said.

Datafax acquires Allied Travel Group

Datafax Corp., Minneapolis, said it has acquired Allied Travel Group, Inc., and Allied's subsidiary, Eden Travel, Inc., Eden Prairie. Terms weren't disclosed.

Datafax owns a travel advisory service and a newsletter. Earlier this month two investors bought more than 70 percent of the company's stock and said the firm was "aggressive looking" for travel agencies to in the Twin Cities and else-

Bio ascular lists start-up sales

Bio-Vascular, Inc., a company formed July 31 by the acquisition of the cardiovascular products of Genetic Laboratories, Inc., said it had start-up sales of $119,000 for its first three months of operation. The company earned $4,000 in that period.

The company's first fiscal year started Nov. 1 and it expects to report first-quarter results in February. Lawrence Gadbaw, president and chief executive, said the company's first three months were devoted to establishing a worldwide network of cardiovascular distributors.

The firm said it has 20 distributors in North America and expects to establish 10 for international distribution

NASDAQ removes

Block

Continued from page 6B

up to 45 million acres.

Land accepted into the reserve will be removed from cash-crop production for 10 years and be protected from further erosion through the planting of trees and native grasses. Farmer-owners will be paid rental under a 10-year contract reflecting their bids.

Block's order on loan rates — the basic determinant in setting domestic prices for the commodities affected — represents a decisive step in the administration's effort to change the direction of federal farm policy after a half century of increasing government regulation and financial support.

Under the new law, the administration could have set the loan rates for corn at $2.18 and for wheat at $2.70, but chose lower levels, USDA officials said, in order to assure the competitiveness of those crops on foreign markets.

However, the law was designed to protect farm income over the next two years from the impact of falling prices by maintaining income subsidies at last year's level of $3.03 a bushel for corn and $4.38 for wheat.

Nonetheless, corn farmers may see their net income drop anyway because the amount of land that they will be required to idle in order to qualify for income subsidies will be increased from 10 percent to 17½ percent. They will also have to idle an additional 2½ percent of their land, but they will be compensated scheme involving either cash or the provision of in-kind commodities from surplus government

Farm

By Steve Brandt
Staff Writer

A group of farm ac
gee Amdahl, chief
St. Paul farm cr
more than an hou
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for credit policy ch

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cue the Farm C
which the district
issue in Amdahl's a
those attending a
Farm and Food P

Review of Pages 4-212 through 4-217 - Utilities

Page 4-212, 4.9.2, 3rd paragraph delete: for a period of three hours, or 180,000 gallons for fire protection.

Page 4-214, 3rd paragraph, rewrite as follows: . . . will be rerouted to Sixth Avenue North and Fifth Street North. (delete the remaining part of this sentence).

The rerouted storm sewer will tie into the existing manholes at Sixth Street North and Sixth Avenue North and at the railroad tracks. The existing elevations would be maintained with a flow from the southeast to the northwest and the discharge from the proposed pond would tie into a manhole in this line at Sixth Avenue North and Fifth Street North. If plans proceed with the proposed storm drainage tunnel the 36 inch storm sewer should flow from the Northwest catchbasin in Sixth Avenue North and Sixth Street North to the southeast side of the site near the existing manhole then cross under the railroad tracks. The discharge from the pond will still tie into the proposed man hole at Sixth Avenue North and Fifth Street North but the invert will be lower.

5-52

Next paragraph: Revise sentence: The facility will thus result in a net increase in electrical production capacity.

Also move the last sentence to first sentence of the same paragraph.

Page 4-216, 4.9.5: Hopkins in 6th line change to Third Street South.

Socioeconomics/Aesthetics - Comments

Page 3-155: 1980 Estimate should be 1990 estimate,

Page 4-218: 38 will be employed at Greyhound operations, not 45.

Page 4-228: Aesthetics, Greyhound site: Fails to make the point of the new development and urban landscaping that would be a considerable upgrading for the area. A statement should be included that the County, BERC and the City of Minneapolis have formed a committee to deal with aesthetic and architectural matters. This could be put in the mitigations section.

Comments - Geology, Hydrology, Terrestrial Ecology, Cultural Resources

Page 3-43, Paragraph 1. The site is not 0.3 miles north of Bassett Creek as stated. Is is approximately 1/4 mile south-southeast of the Bassett Creek Tunnel, an underground conduit that drains to the Mississippi River.

U.S.G.S. Topo maps would be helpful to indicate site locations, well log locations, or cross-section locations.

Page 4-237 through 4-240, general: First statement says facility "will have no adverse affect on biological resources". Air emission levels are all below limits for potential negative impact. Therefore, the ensuing 3-1/2 page discussion of the potential effects of air pollutants on sensitive species such as "tomatoes and navel oranges" is irrelevant and misleading. It only serves to confuse the reader and make an issue out of a non-issue. Entire section can be condensed to one paragraph.

Page 5-7 Section 5.4, general: Table of Contents indicates this section addresses "Water Quality and Ecological Resources"; however, terrestrial ecology is not mentioned here or in any other section of Mitigations.

Page 5-7, Section 5.4, Paragraph 2 and 3: Contains contradictory statements. Paragraph 2 states that restricting construction to areas outside the flood

fringe is "infeasible", then in paragraph 3 suggests this as a mitigation measure.

Page 5-10, Section 5.10, general: Section is titled "Aesthetics and Cultural Resources"; however, cultural resources are not mentioned here or anywhere else in Mitigations.

Part 2 - Alternatives

Page 1-3: Greyhound (1.2.2): Environmental Impacts, under no-build, the lack of a 213 foot stack is deemed a positive impact, but fails to stress the lack of site upgrading and landscaping as a result of no-build, which would be a negative impact.

Section 3.2, page 3-3; The cost data - especially operating cost data is completely incorrect as has been previously pointed out. Accurate data is available from the Hennepin County Proposal Evaluations, HDR Techserv, 1985.

Peter J.
Patchin
& Associates, Inc.
Valuation Consultants
14300 Nicollet Court, Suite 240, Burnsville, Minnesota 55337 (612) 435-5999

January 16, 1986

City of Hopkins
1010 South 1st Street
Hopkins, Minnesota 55343

Attn: Craig Rapp
City Manager

Ref: Study of Value Impact
on Neighborhood
Solid Waste Transfer Station
Hopkins, Minnesota

Gentlemen:

At your request I have completed a preliminary study of the probable value impacts of placing a solid waste transfer station at 6th Avenue South and 3rd Street South in Hopkins, Minnesota.

A summary of my findings are as follows:

Single Family Residential	minus	10%
Multiple Family Residential	minus	6%
Light Industrial	minus	15% - 50%

A discussion of the factors considered, are as follows:

The Proposed Facility

The proposed facility is a solid waste transfer station with a design capacity of 1,200 tons per day and an anticipated operating-level of about 600 tons per day. Traffic generated is anticipated to be 120 packer trucks per day (in and out) plus about 35 transfer truck trips per day.

The Proposed Facility (Continued)

The facility will have a total height of about 50 ft. and therefore should be visible throughout most of the neighborhood.

The major access route to and from the site will be via County Road #3 at 5th Avenue South. Licensed haulers will be restricted from using access from County Road #18 via 5th Street South. This restriction will be a mitigating factor when considering value damages to the remainder of the neighborhood.

The Neighborhood

The neighborhood is a mixture of commercial, light industrial and residential uses. Neighborhood boundaries would be County Road #18 on the East; the properties fronting on the north side of County Road #3 on the North; 11th Avenue South to the West; and 8th Street South on the South.

The major access routes to the neighborhood are via County Road #3 at 5th Avenue South and County Road #18 at 7th Street South. Existing traffic counts are approximately 22,000 vehicles per day on County Road #3;, 3,000 on 5th and 6th Avenues South, South of County Road #3; and 3,000 per day on 5th Street South.

The area lying south of 5th Street is single family residential. A brief review of our comparable sale files showed 9 sales of homes in this area during 1985 at a range of $58,900 to $81,000, with the average price at $74,000.

The area lying on the north frontage of County Road #3 is dominated by medium sized apartment buildings.

The area lying to the west is developed along a light industrial nature. The two primary occupants are the Super Value food processing and warehouse operation and the Country Club food warehouse.

Causes of Value Decline

Any time inharmonious elements are introduced into a neighborhood the possibility of value declines exist. In this particular case, the primary problem appears to be the introduction of a heavy industrial use alongside of residential and light industrial uses.

The causes of value decline may be from unpleasant view, odors, dust, contamination, traffic and noise. In my experience of appraising numerous heavy industrial properties, I have found that

Causes of Value Decline (Continued)

although there may be the best of intentions, there are technological limits to the control of noise, odor, contamination and rodents. Seldom, if ever, are such measures 100% effective.

Perhaps the most important factor in value estimation is public acceptance. If the public perceives something to be a negative influence in a neighborhood, the result is usually a negative value impact. It makes little difference if the public perception is right or wrong, from a technical standpoint. If a negative influence is perceived, a value decline results, regardless of the technical facts. Needless to say, the public perception of a garbage handling facility is bound to be negative.

On a functional basis, the proposed facility may be compared to a large grain elevator. If one of these facilities is observed at harvest time, one will find problems with truck traffic, noise, dust control and rodent control in spite of the use of the best equipment to prevent such problems. In the case of the proposed facility however, "harvest time" will be year round.

Estimate of Value Impact

Single Family Residential

The impact upon this area is estimated at a negative 10%. In other situations, the impact could be far worse, however in this case, mitigating factors were the lower value levels in the neighborhood and the restriction of truck traffic along 5th Street South.

Multi-Family Residential

The impact on these properties is estimated at a negative 6%. It has been my experience that rental rates are little effected by negative influences as already described. However, turnover and vacancy rates are very definitely effected by such influences. An increase of 1% in vacancy rate typically results in a 2% value decline. Based upon my experience with other apartment buildings that have negative influences, an increase of 3% in the vacancy rate appears to be very possible.

The specific causes of value decline in this case would be public perception and unpleasant view. The factors of extra traffic and noise would be very secondary in this case and have only a minor effect.

Estimate of Value Impact (Continued)

Light Industrial

The light industrial properties in question are used for food processing and/or warehousing. These facilities are both under the inspection and supervision of the U.S. Food & Drug Administration (F.D.A.). If either of these facilities should be compelled to relocate the negative value impact would be severe.

The Super Value facility is very large, consisting of approximately 117,000 S.F. of gross floor area. Approximately 80% of this space is in the form of special purpose temperature or environment rooms. If this facility could no longer be used for food processing and/or storage, the value impact would be severe, most likely in the range of 40% to 50%.

The Country Club facility is more of a food warehouse operation and is not such a special purpose facility, as is Super Value. The value decline in this case would probably be in the range of 15-20%.

At this point, I could not render a more detailed opinion of value without a great deal of investigation, research and study.

The opinions expressed herein, are intended to be preliminary indications of value only, and may not be construed as final opinions of value.

Sincerely,

Peter J. Patchin, M.A.I, A.S.A.
President
Member, American Institute of
Real Estate Appraisers
Senior Member, American
Society of Appraisers

PJP/cw

Attachment: Qualifications

WEST SIDE CITIZENS ORGANIZATION

5.32

To: John Rafferty, Metropolitan Council
From: West Side Citizens Organization-Environment Committee
Date: January 30, 1986

Re: Public Comment on Proposed Hennepin County Resource Recovery-Municipal Solid Waste Incinerator

We are one of St. Paul's 17 Citizen Participation Districts, located on the West Side of St. Paul (accross the river from downtown). We consider that we have " standing " to comment on the proposal due to the prevelant west/north-west winds that would carry any particulate matter, toxic gases, or other hazardous elements directly over the city of St. Paul and its residential communities.

We are very qualified to comment due to our detailed research on the subject of burning PCB's that we did in relation to proposed plans by NSP (in 1982) to handle oils ladden with PCB's in the amount of 50-500 parts per million at their High Bridge Power Plant in St. Paul.

There are far too many questions remaining about the true extent of cancer risks arising from the hazardous gases and particulate matter escaping from the proposed plant. Contrary to public opinion, when handling wastes (either hazardous or simple trash), it is not only a question of " bury or burn ". Just as there are alternatives including chemical and biological processes for handling PCB oils, there are likewise numerous alternatives to burning trash in order to produce power. One obvious step to alleviate part of the projected dioxin problem would be the separation of paper and plastics. On the whole, the WSCO Environment Committee sees far too many unfounded assumptions used to support the proposed incinerator.

Our major areas of concern:

* Are there accurate projections for cancer risks associated with the plant, and are there adequate provisions for the public health and safety ? It would be far better to come down on the side of caution in this area.

* Why locate the plant in a major urban area, where any accident or uncontrolled emissions would affect such a large population ?

* What will the particulate matter deposition in the surrounding area be ?

* Why is there " little provision for public input and involvement in the planning of this project ?

* Why with such a dangerous proposal are there only three examples studies to determine safety levels ? Why only two models for testing the plan ?

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WSCO cont'd

Many more questions come to mind upon review of the CBNS Report (commissioned by the City of Minneapolis w/ internationally known scientist Barry Commoner). We at WSCO request, in conjunction with Earth Protectors of Minneapolis, that the CBNS Report be incorporated into the record. We consider it to be of very strong credibility, and it sheds new light on many areas glossed over by the more supportive studies favoring the solid waste incinerator.

We at this time voice our opposition to the proposed solid waste incinerator, based on our objections to not only the location but also the process. We hope to have many of the questions we have raised, and many more, answered before any approval is given to this project, as we see it as a very serious threat to health and public safety We do not believe it is someone else's responsibility to handle our garbage, but at the same time, we do not see in the Hennepin County proposal enough solid information to prove the incinerator as a responsible solution for our Twin Cities solid waste problem.

RESOURCE RECOVERY FACILITY TECHNOLOGY COMPARISON
COMPARABLE CASE FOR HEALTH RISK ANALYSIS

APPENDIX A

PART III

RESOURCE RECOVERY FACILITY TECHNOLOGY COMPARISON

COMPARABLE CASE FOR HEALTH RISK ANALYSIS

1.0 INTRODUCTION

The proposed Hennepin County Resource Recovery facility incorporates several design and operational features which will promote complete and efficient combustion, minimize organic compound emissions and control a variety of potential pollutant emissions both organic and inorganic. Due to the use of state-of-the-art combustion and emission control features there are no identical facilities in the United States or Europe. However, there are facilities on which substantial amounts of organic emissions data are available which have some similar features. Such facilities include the Chicago Northwest and Westchester County facilities in Illinois and New York for which complete emissions data (including PCDDs, PCDFs, PAHs, etc.) are available. There are also facilities which are quite different in design and operation which have been tested for organic compound emissions. The Hampton, Virginia facility has been used as a worst case for organic compound emissions and health risk purposes for the Hennepin County EIS. The emissions test data for Hampton shows that it is far above most other solid waste combustion facilities on which data is available.

This discussion will describe design and operational characteristics of the Hampton and Chicago Northwest facilities in comparison to the proposed Blount/Hennepin County facility to outline what similarities and differences exist relative to combustion and emissions characteristics. Chicago Northwest is considered to be comparable in many respects to the proposed Blount/Hennepin facility. The Westchester County, New York facility also

has many similarities to the proposed Blount/Hennepin County facility; however, in order to be conservative in selecting a comparable facility Chicago Northwest has been selected as a reasonably conservative comparable case. Chicago Northwest PCDD, PCDF-organic compound emissions are about twice the emission rates tested at Westchester. In addition, much of the design and operational data on the Westchester facility is protected as proprietary data by the Vendor (Signal RESCO) and is; therefore, not available for publication.

Specific design, emission and operational data is set out below on the Hampton, Chicago Northwest and Blount/Hennepin facilities. Comparitive data is presented in Table 1 for these facilities. The following overview summarizes some of the major factors related to organic compound emissions from these facilities.

1.1 Hampton Refuse-Fired Steam Generating Facility, Hampton, Virginia

1.1.1 Design Characteristics

The Hampton facility is a mass burn combustion facility consisting of two 100 TPD design capacity combustion units. The facility is owned by the federal government, supplies steam to a federal facility and is operated by the City of Hampton, Virginia. The facility has inclined Detroit Stoker reciprocating grates, waterwall boilers and electrostatic precipitators for emission control. Required particulate control is .08 gr/dscf at 12% CO_2. Each boiler has a design capacity of 27,500 lbs/hr of steam. The facility commenced commercial operation in 1980.

The facility combustion air system distributes underfire air up through the grates and overfire air through the ports located at the front, back and

Table 1

FACILITY CHARACTERISTICS COMPARISON

	Hampton	Chicago N.W.	Blount-Henn. Co.
Design Combustion Unit Capacity	100 TPD	450 TPD	600 TPD
Average Waste Throughput	120-140 TPD	370-400 TPD	500 TPD
Combustion Air			
Overfire	30%	20%	45%
Underfire	70%	80%	55%
Overfire Ports - Height Above Grate	1-5 ft	7-15 ft	13 ft
Furnace Temperature (°F) Design	1,650	1,810	1,868
Operating	1,150-1,700	NA	1,868
Residence Time	Approx. 1 second (from flame front to furnace exit)	1-2 seconds (in combustion zone)	Approx. 2.5 sec. @> 1,868° F Approx 3.5 sec. @> 1,800° F
Emissions - CO	100-3,000 ppm	70-110 ppm	<170 ppm
THC	0-300 ppm	<2 ppm	0.1-12 ppm
Emission Control	ESP - .08 gr/dscf	ESP - .05 gr/dscf	Dry Scrubber + Baghouse TSP - .02 gr/dscf SO_2 - 80-90% HCL - removal

along the sides of the furnace. Overfire air ports vary from 1-foot above the grate to 5 feet above the grate. Combustion air design ratios are 70% underfire air and 30% overfire air. No data is available on combustion air proportions during testing. The facility did not originally have combustion air preheaters, but these where added subsequent to the emissions testing discussed herein.

The design operating temperatures (at full capacity) for the Hampton combustion units is approximately 2300 ^{o}F at the grates, 1650 ^{o}F (average) in the furnace and 540 ^{o}F at the economizer exit (Clark Kenith, Inc., "Hampton, Virginia Experience," November 1983; "Assessment of Emissions of Specific Compounds from a Resource Recovery Municipal Incinerator," Midwest Research Institute report for U.S. EPA, November 1983).

While no specific data is available on flue gas residence time in the furnace, data provided in the Clark-Kenith experience document (see above reference) indicates a velocity in the furnace of below 20 fps. The top of the furnace chamber is approximately 30 feet above the grate; therefore, at design capacity operation flue gas residence time in the furnace after injection of overfire air would be about one second.

1.1.2 Facility Operations/Emissions Testing

The Hampton facility was originally designed to burn 100 TPD per unit and produce 27,500 lbs/hr of steam per boiler. During the first three years of operation the facility operated well above these design levels. The facility processed 219,246 tons of waste from November 1, 1980 to October 31, 1983. During this period total facility availability was about 84.9%; therefore, the average rate of waste combustion during operation was

39 TPD which is 20% over design capacity. At times the facility processed waste well above this average level. During December 1981 the facility averaged 275 TPD of waste during that month and was operating 97% of the time; therefore, it was operating at 40% above its design capacity for that month (Clark Kenith "Hampton Operating Experience, November 1983). The emissions testing done for EPA at Hampton by MRI was conducted during 1983. From November 1982 through October 1983 the plant processed 82,237 tons of waste. Assuming it operated at its average availability (84.9%) during this one year period then the facility averaged about 270 TPD when operating; therefore, it consistently operated at 35% above design capacity.

The facility testing performed by MRI included both emissions testing and ash testing. Facility operating temperatures and steam production were recorded during the testing periods. Emissions testing included total hydrocarbons (THC), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (PCDDs), mono-octa chlorinated, and polychlorinated dibenzofurans (PCDFs) mono-octa chlorinated.

Furnace temperature was measured with a thermocouple inserted into the furnace wall. Readings taken of furnace temperature during the five days of testing ranged from about 1200 ^{o}F to 1700 ^{o}F. Most readings were between 1300 ^{o}F to 1500 ^{o}F (see attached figures).

Carbon monoxide levels ranged from 100 ppm to 3000 ppm. During sampling periods CO levels were:

Day 1 - 1120 ppm
Day 1 - 1230 ppm
Day 3 - 888 ppm
Day 4 - 1451 ppm
Day 5 - 965 ppm

The test results show a great fluctuation in CO levels during the 5-day testing period with CO levels well over 500 ppm most of the time.

High CO levels indicate incomplete combustion in the furnace. These same combustion conditions likely contribute to the relatively high levels of complex organic hydrocarbon emissions detected at the facility.

Total hydrocarbon (THC) emissions were recorded as high as 300 ppm during the testing. The average during the test period was about 56 ppm.

Oxygen and CO_2 levels in the flue gas were also quite variable, O_2 ranged from 2 to 14%, CO_2 levels ranged from 6 to 16% (MRI report).

Another indication of incomplete combustion can be seen from the ash test data. Composite samples of fly ash and bottom ash were collected during the testing period and analyzed. The ash analysis shows relatively high levels of volatiles and carbon especially in the fly ash (MRI report, Table 18). Bottom ash volatiles and carbon ranged from 2.15% (by weight, dry) to 12.2%. Fly ash volatiles and carbon were about 20 to 21% (by weight, dry). Btu content of bottom ash was 720 to 950 Btu/lb. Fly ash Btu content was 1823 to 1914 Btu/lb. Such characteristics are indicative of relatively high levels of incompletely burned materials (soot) especially in the fly ash.

Subsequent to emissions testing done at the Hampton facility, facility operations have been changed to reduce waste charging rates to levels closer to the design capacity of the units. In addition, combustion air preheaters have been added to improve waste combustion (telephone conversation with plant engineers, May 21, 1986).

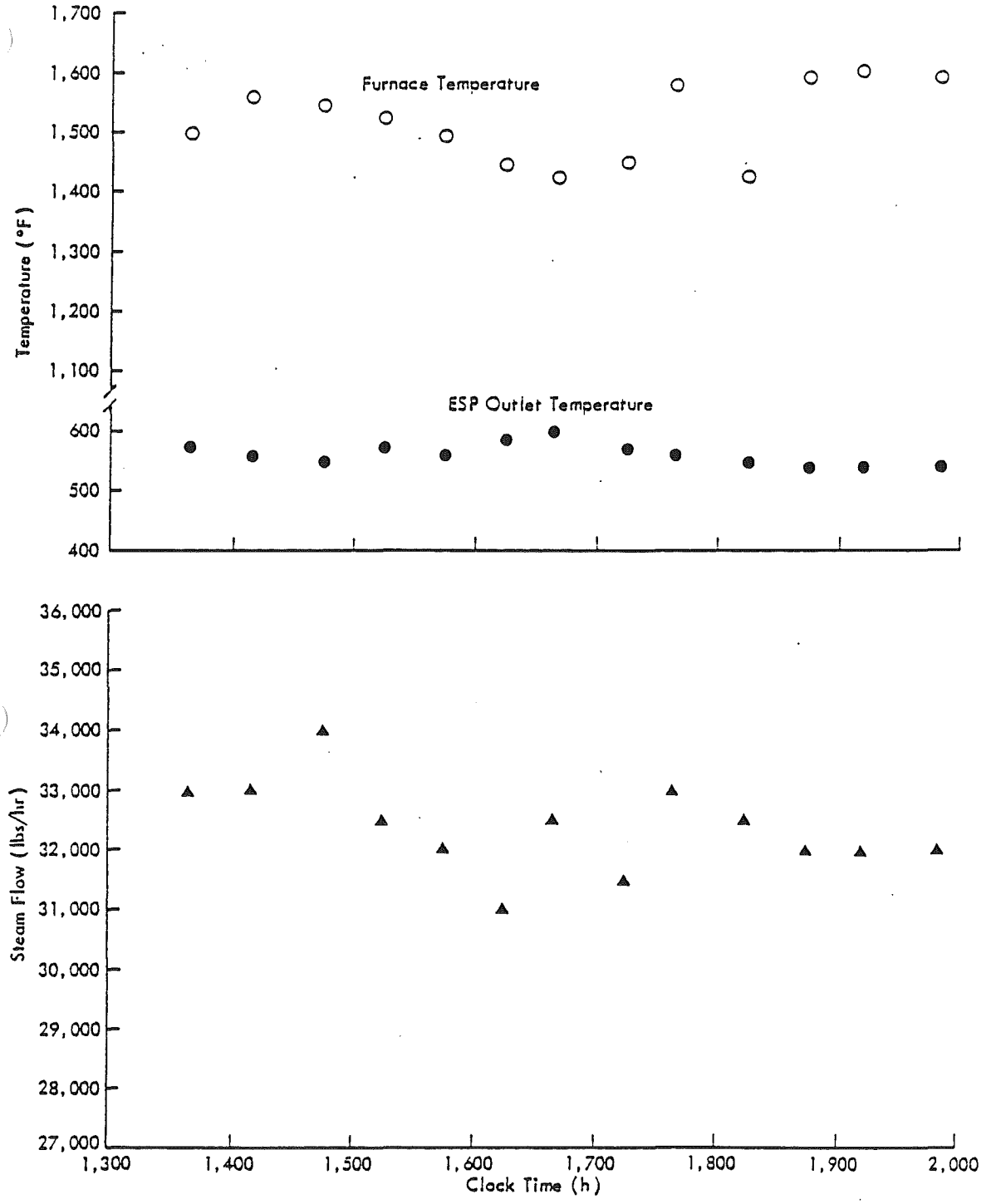

Figure 6. Operating temperatures and steam flows recorded during flue gas sampling - day 1.

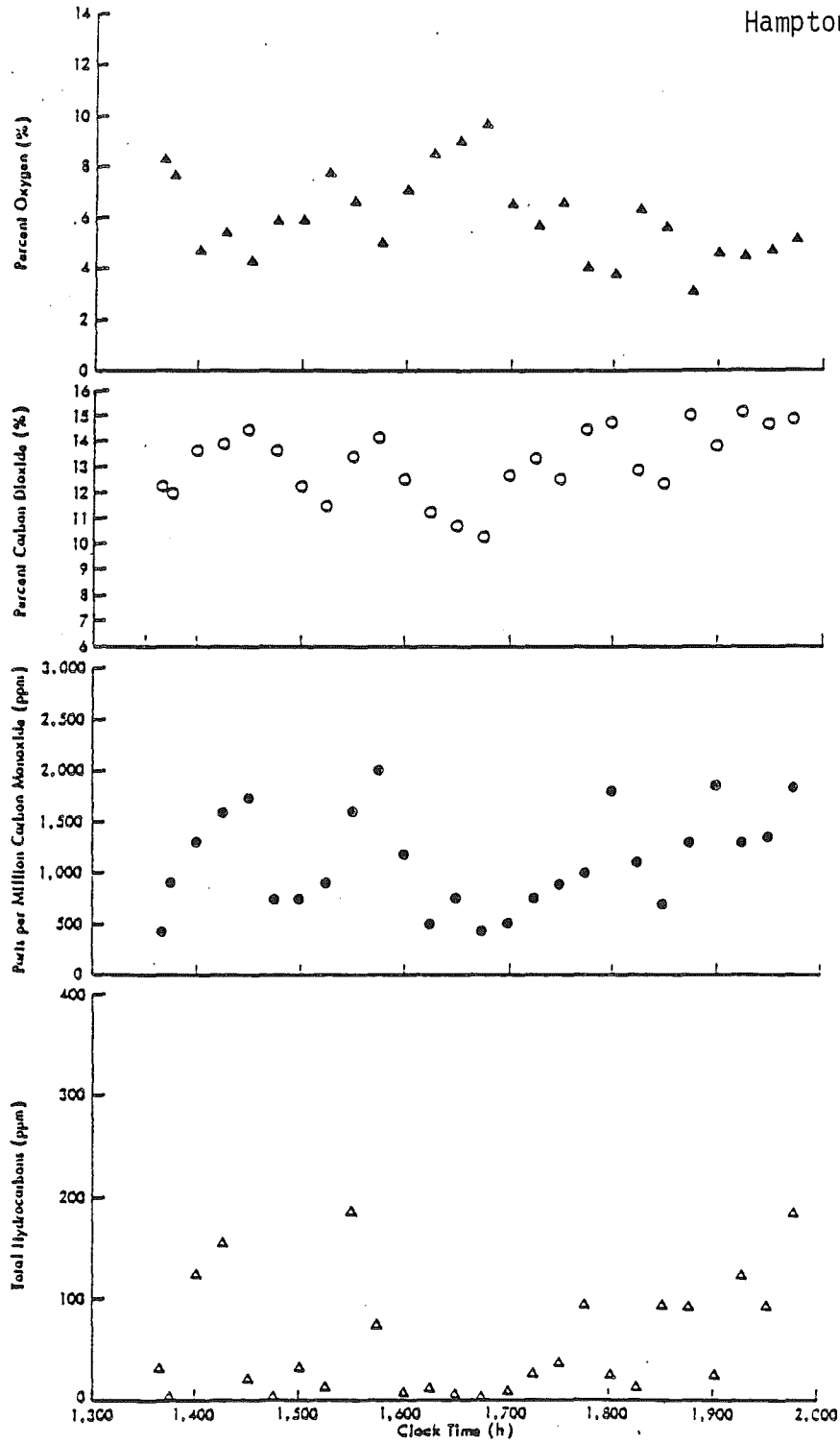

Figure 7. Combustion gas analysis results from continuous monitoring during flue gas sampling - day 1.

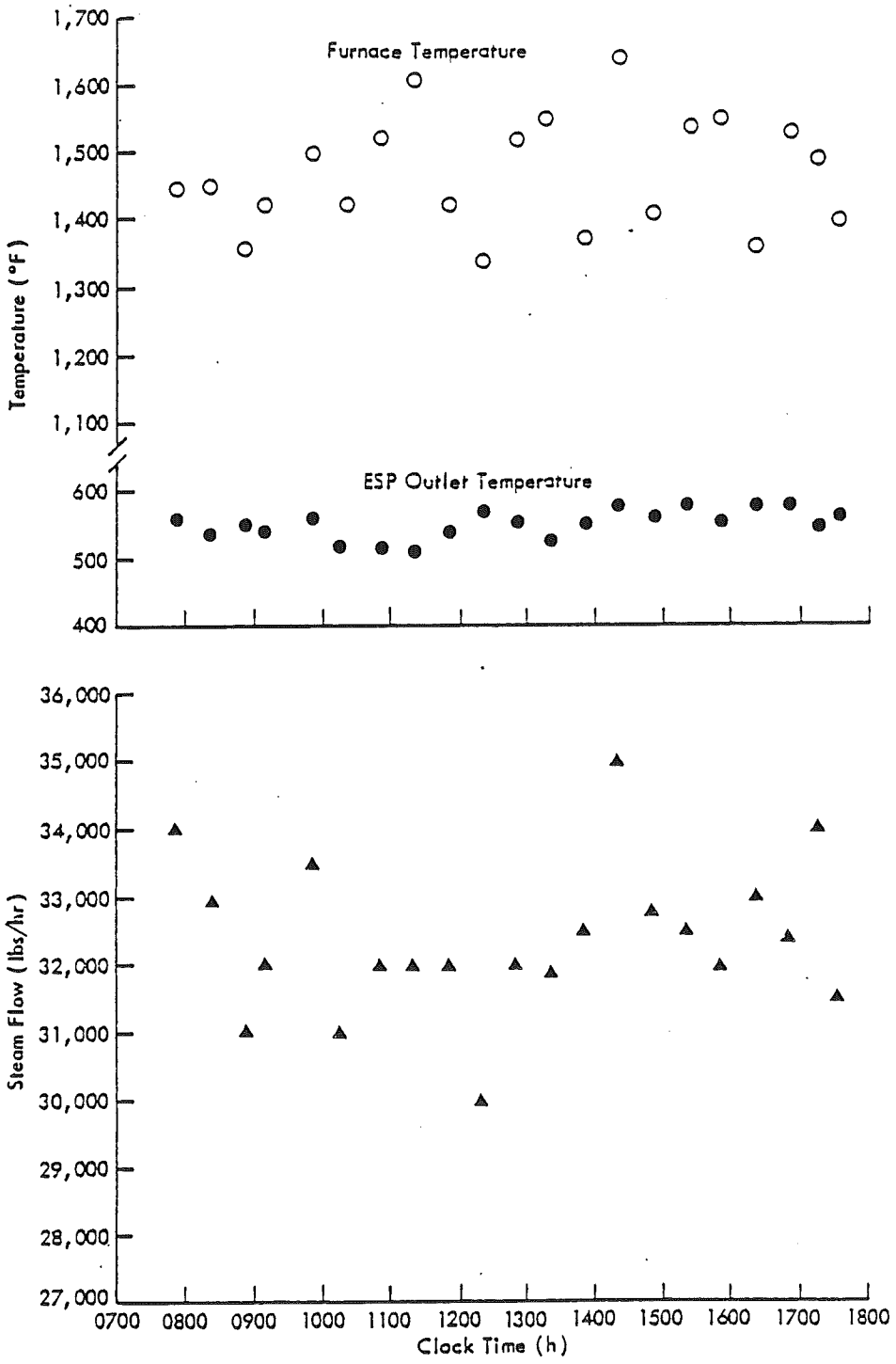

Figure 8. Operating temperatures and steam flows recorded during flue gas sampling - day 2.

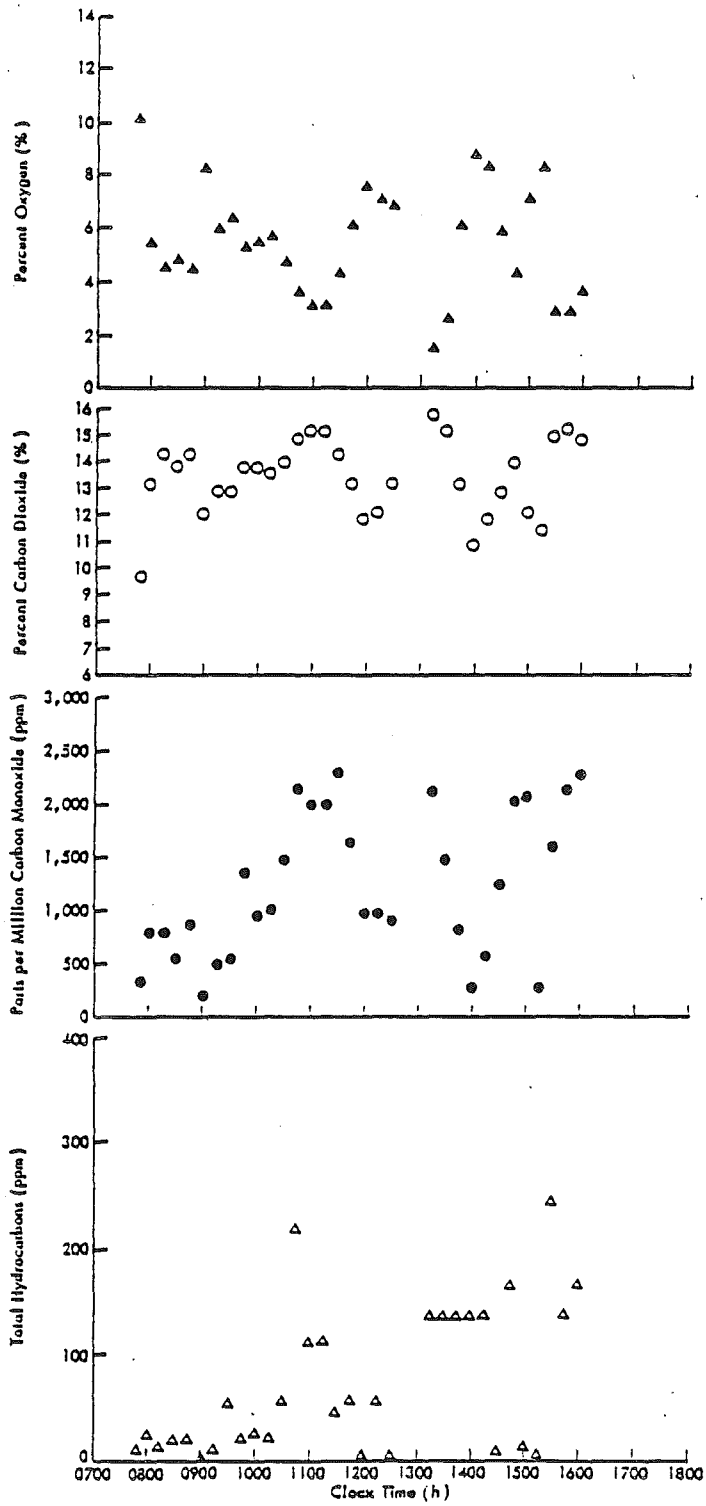

Figure 9. Combustion gas analysis results from continuous monitoring during flue gas sampling - day 2.

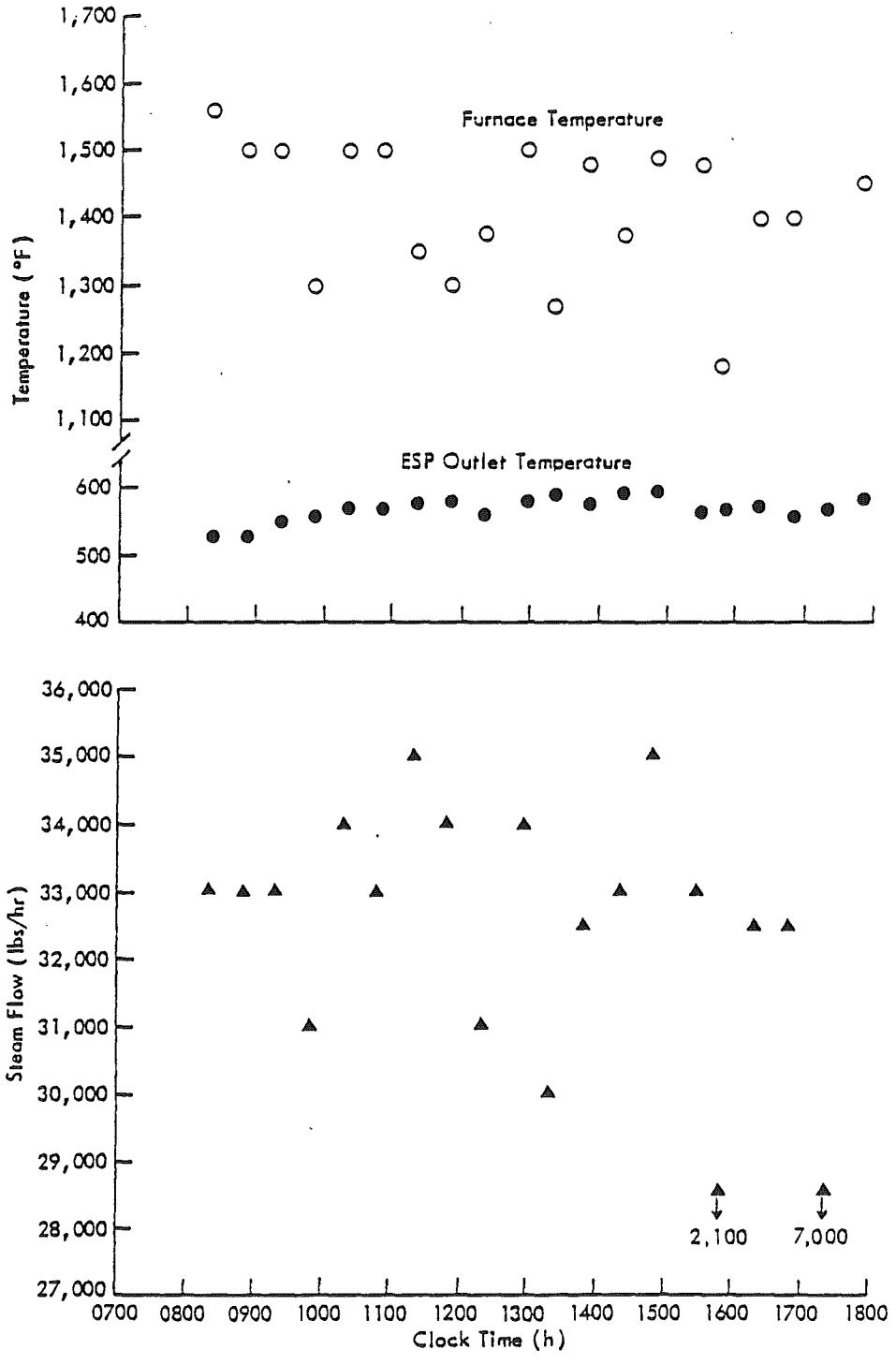

Figure 10. Operating temperatures and steam flows recorded during flue gas sampling - day 3.

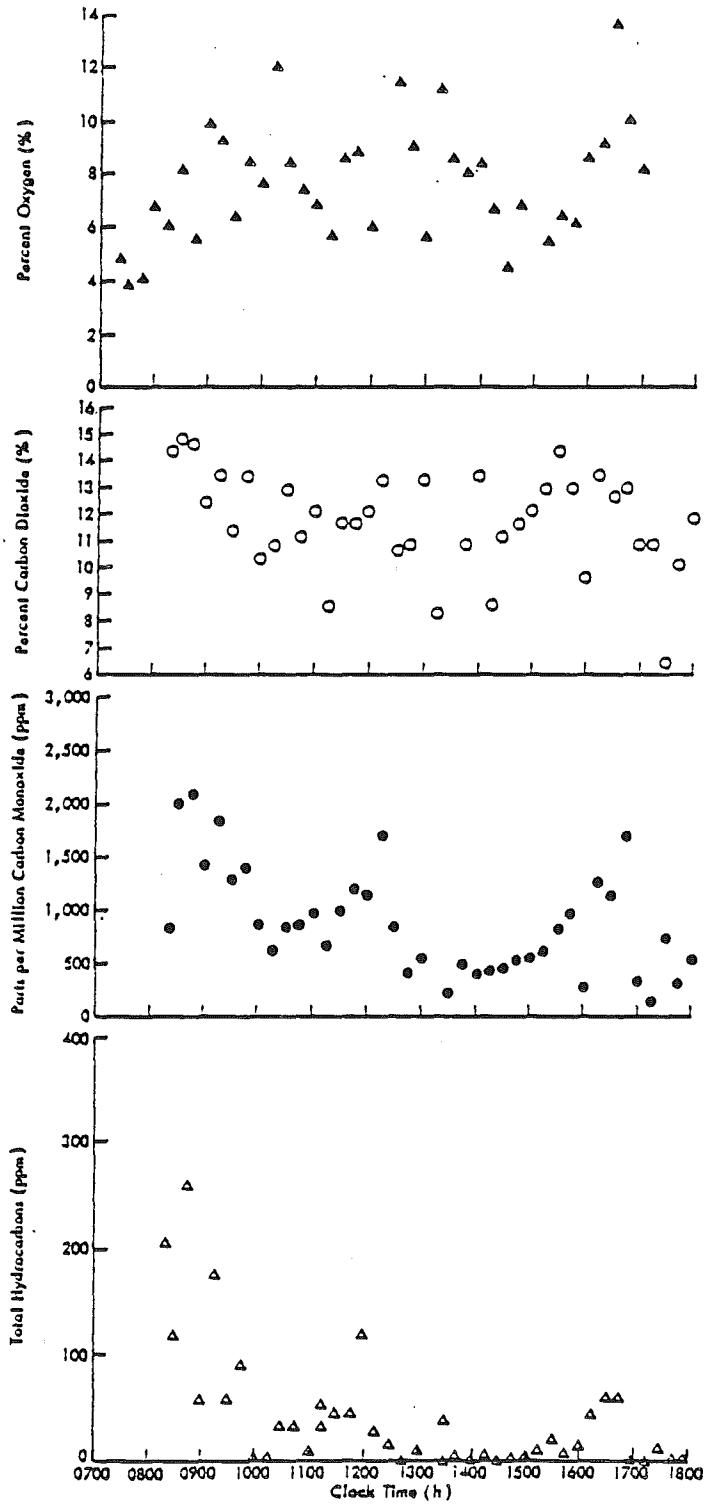

Figure 11. Combustion gas analysis results from continuous monitoring during flue gas sampling - day 3.

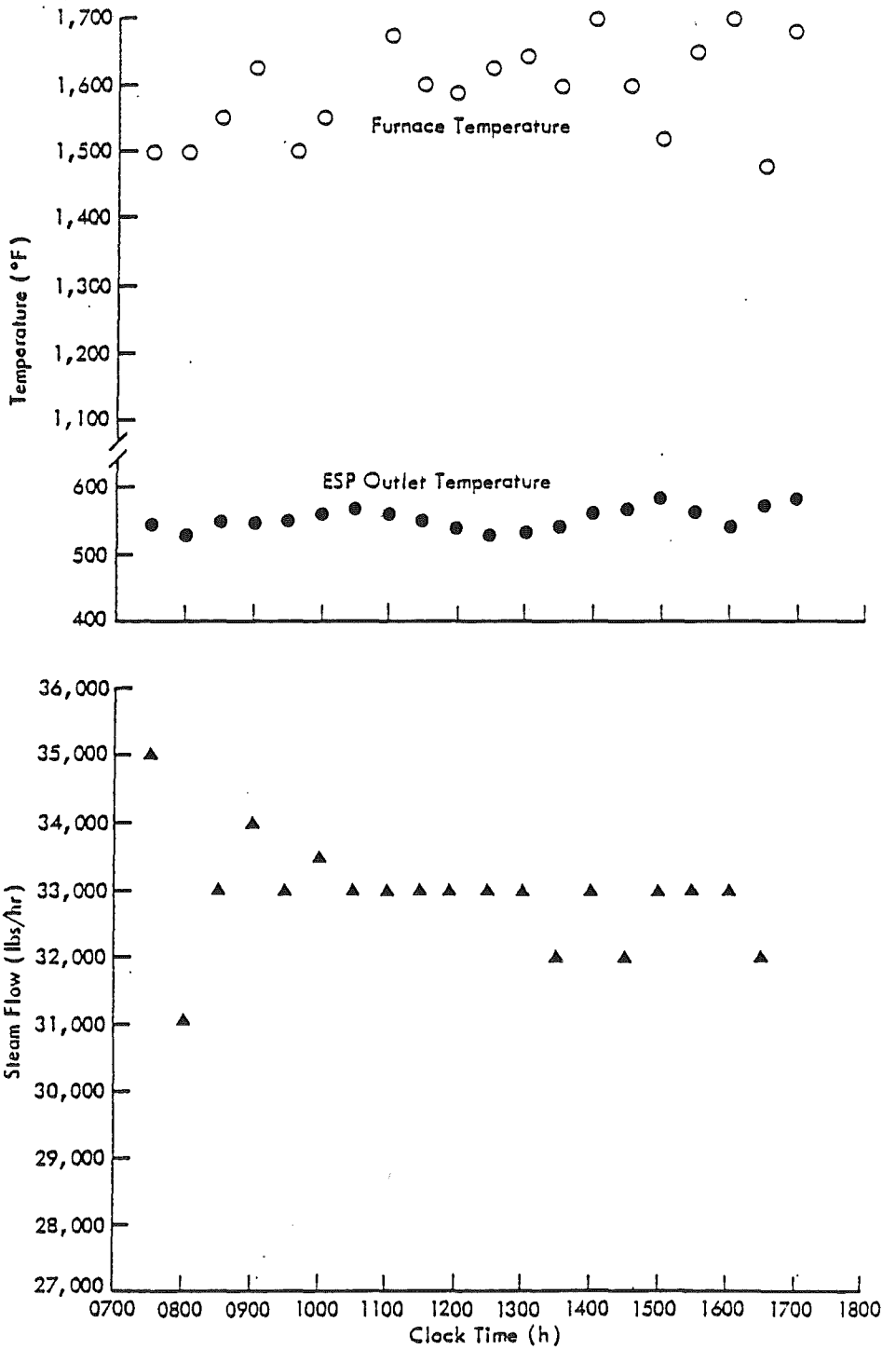

Figure 12. Operating temperatures and steam flows recorded during flue gas sampling - day 4.

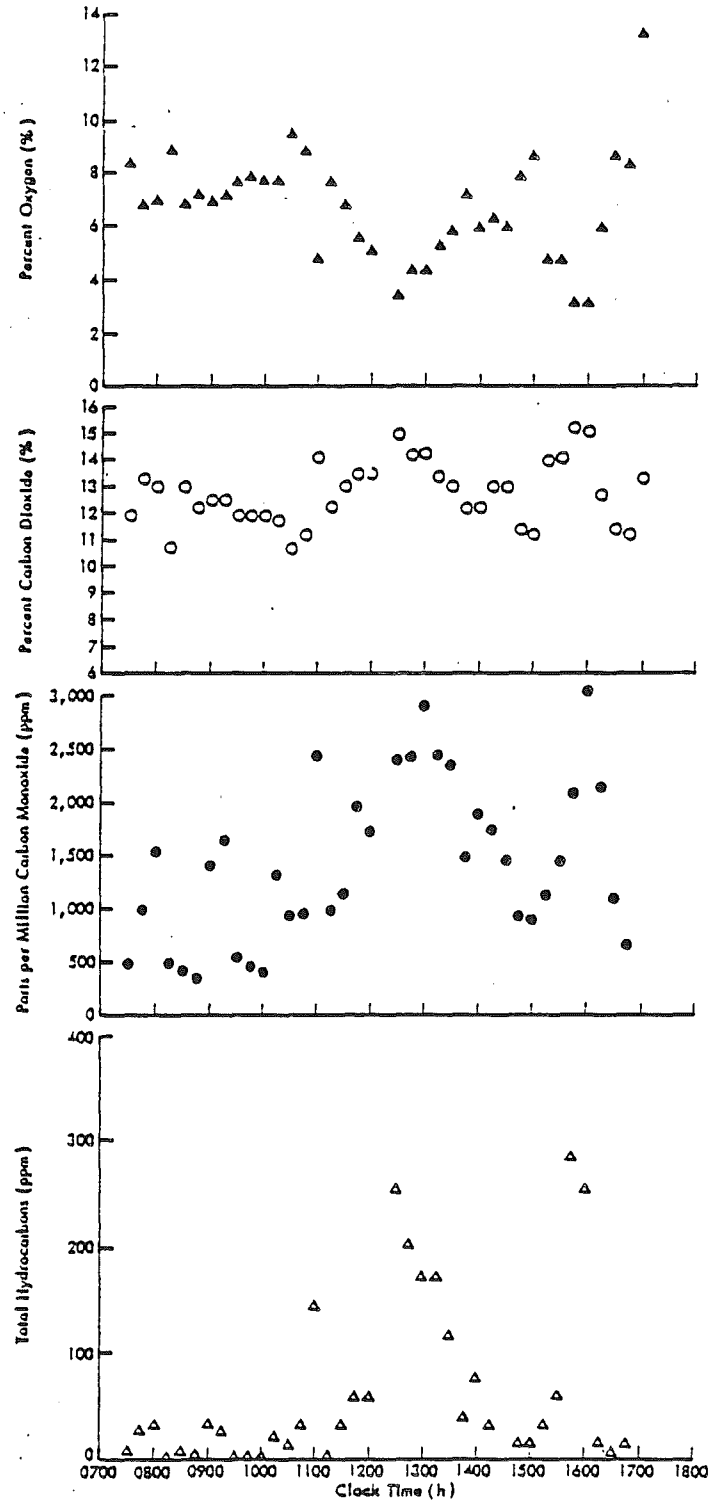

Figure 13. Combustion gas analysis results from continuous monitoring during flue gas sampling - day 4.

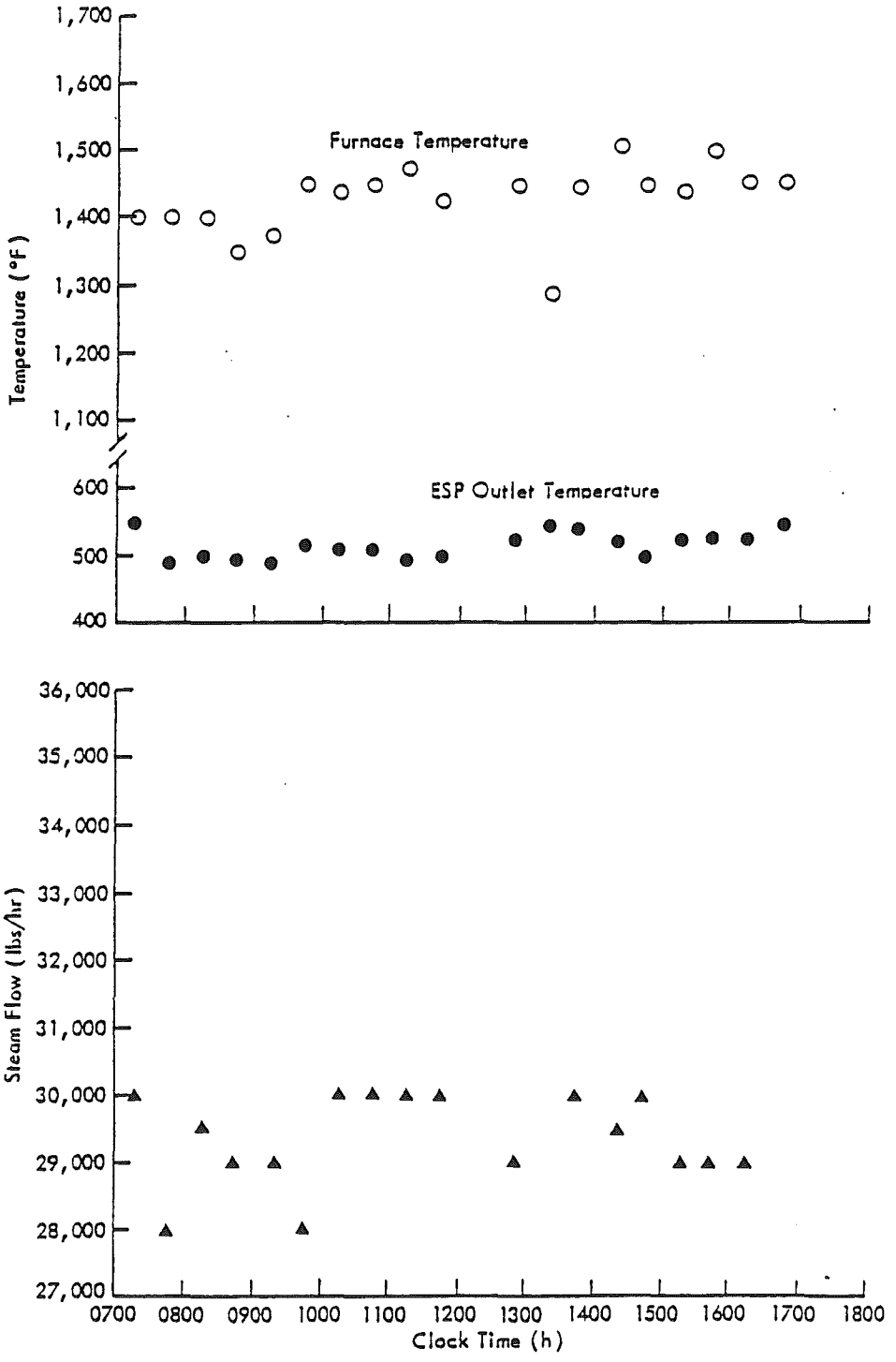

Figure 14. Operating temperatures and steam flows recorded during flue gas sampling - day 5.

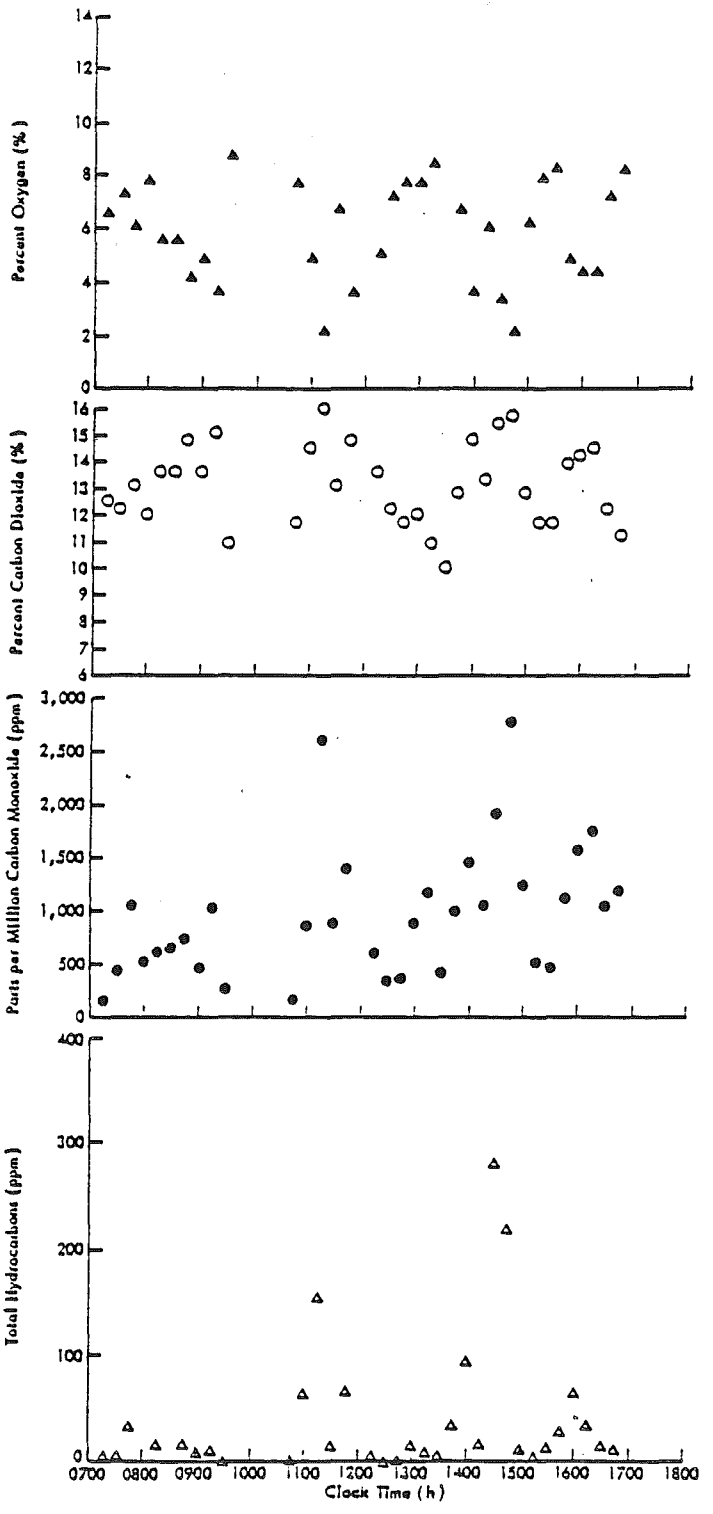

Figure 15. Combustion gas analysis results from continuous monitoring during flue gas sampling - day 5.

1.2 Chicago Northwest Facility

1.2.1 Design Characteristics

The Chicago Northwest facility consists of four mass burn units each having a design capacity of 450 TPD. Total plant capacity is rated at 1600 TPD, one unit is primarily a backup unit. The facility has waterwall boilers and inclined Martin reverse reciprocating grates. The facility is owned and operated by the City of chicago. The facility supplies steam to a nearby Brach Candy Company. Each boiler has a steam capacity of 110,000 lbs/hr. The facility was placed in operation in 1970. The average annual waste throughput is 1100 TPD.

Particulate emissions are controlled by electrostatic precipitators. TSP permit limit is .05 gr/dscf at 12% CO_2.

The Chicago Northwest combustion facility units are designed to introduce combustion air upward through the grates and overfire air into the furnace from air ports in the front and back walls of the furnace. Overfire air ports are 12 to 15 feet above the front of the grate and 7 to 8 feet above the rear of the grate. The units are designed to use 67,200 scfm of underfire air and 16,800 scfm of overfire air. Combustion air proportions are; therefore, 80% underfire air and 20% overfire air. The Chicago Northwest boilers have five passes. The normal temperature profile for the units are:

Furnace - Combustion Zone	1810 ^{o}F
Furnace - Exit	1550 ^{o}F
Convector - Inlet	1470 ^{o}F
Convector - Outlet	790 ^{o}F
Economizer - Exit	450 ^{o}F

The temperatures recorded during the May 1980 testing were from a thermocouple located at the inlet to the second boiler pass; therefore, the temperature data recorded is considerably lower than temperatures in the combustion zone since this point is downstream from the combustion zone.

Temperature recorded from the sensor during the testing period (May 4-19, 1980) ranged from a daily mean of 1096 ^{o}F to 1209 ^{o}F. The mean temperature recorded for the entire testing period was 1160 ^{o}F with a standard deviation of 41.5 ^{o}F (EPA report, Tables 2-3, 2-4). The mean steam production rate for Unit No. 2 was about 100,000 lbs/hr with a standard deviation of about 4000 lbs/hr.

1.2.2 Emissions/Operating Data

The Chicago Northwest emissions and facility operation data discussed herein was collected during May 1980 and is contained in an EPA report (Comprehensive Assessment of the Specific Compounds Present in Combustion Processes, Volume 1, Pilot Study of Combustion Emissions Variability, U.S. EPA, June 1983). Testing was done by Midwest Research Institute, Research Triangle Institute, Southwest Research Institute and Gulf South Research Institute. Data collection included steam flow, combustion air flow, combustion air temperature, furnace temperature and weekly waste processed. Emission data includes O_2, CO_2, CO and THC, Polychlorinated Biphenyls (PCBs, DI-Penta), polychlorinated aromatic hydrocarbons (PAH), poly-chlorinated dibenzodioxins PCDDs (tri-octa) and polychlorinated dibenzofurans (PCDFs - tri-octa).

Waste feed rates in the above reports were approximations since there was no way to directly weigh the waste fed into individual units. During

the four week period from April 28 to May 25, 1980 total waste processed was estimated to be about 33,500 tons (EPA - Table 21). This gives an average of 8387 TPW. Three units were operating during this time period and the fourth unit did not process any waste. Therefore, the average waste consumption for the three units is 400 TPD.

There was some downtime for the three operating units so actual consumption was somewhat higher. Unit No. 2 was the unit tested during this period. Total hours of downtime for Unit No. 2 was 73 hours of a possible 672 hours in the 4-week period (EPA, Appendix B, Table 2-8). Therefore, Unit No. 2 was available 89% of the time over the 4-week period of testing. The average waste processed per unit divided by the availability of Unit No. 2 gives a waste processing rate of a little less than 450 TPD during the actual operating hours.

Estimates of waste processed by Unit No. 2 during tests, May 3 to May 17, resulted in a mean value of 17,200 kg/hr (EPA report, Table 63). This is equivalent to a 454 TPD rate. This indicates that Unit No. 2 was operating at or near its design capacity during the period in which it was tested. This correlates with the mean steam production data for Unit No. 2 mentioned above (100,000 lbs/hr) which is slightly less than the design rating of 110,000 lbs/hr.

Gas composition was monitored during the emissions testing from May 4 to May 19. The CO readings for May 4 to May 8 were determined to be high due to excessive instrument drift (EPA report - Table 19). The CO readings were affected by dessicant exhaustion. After replacing the dessicant CO levels dropped to well under 100 ppm. A new CO analyzer was subsequently installed due to drift and balance problems. The CO levels

recorded during periods of testing in which the CO analyzer was functioning properly were generally under 100 ppm. Oxygen readings ranged from 7.9 to 11.8% with most values falling between 8 to 10%. CO_2 levels ranged from 7.2 to 10.7% with most values between 9 and 10.5%. Total hydrocarbon levels were all under 2 ppm (EPA report, Table 19).

This data demonstrates that the Chicago Northwest Unit No. 2 was functioning at or near its design capacity during this testing program. The data indicates stable operating conditions since temperature and flue gas composition data remained within fairly narrow ranges. The low CO and THC levels demonstrate that combustion was well controlled, efficient and complete.

TABLE 20. MEANS OF THE MEANS FOR PROCESS DATA, ALL TEST DAYS, CHICAGO NW INCINERATOR, BOILER NO. 2[a]

Parameter	24-hr process data		Flue gas test duration process data	
	Mean	Standard deviation	Mean	Standard deviation
eam flow rate (lbs/hr)				
Disc recorder	99,000	4,500	100,000	8,100
Chart recorder	103,000	4,500	104,000	8,300
Digital integrator	99,000	3,600	100,000	10,300
eam pressure (psig)	282	4	287	2
edwater flow rate (lbs/hr)				
Chart recorder	99,000	4,800	101,000	8,400
Digital integrator	97,000	5,400	100,000	11,000
edwater temperature (°F)	221	1	221	1
ombustion air flow rate (ft^3/hr)				
Chart recorder	79,000	2,000	78,000	2,700
Digital integrator	72,000	2,600	70,000	2,200
omb tion air temperature (°F)	663	21	673	23
.D. fans pressure (inches H_2O)	2.6	0.2	2.5	0.3
.D. fans pressure (inches H_2O)	14.1	0.4	14.1	0.6
urnace draft (inches H_2O)	0.23	0.06	0.22	0.8
urnace temperature (°F)	1,160	42	1,198	67

a From Appendix B.

TABLE 19. DAILY DATA SUMMARIES FOR FLUE GAS MEASUREMENTS, CHICAGO NORTHWEST INCINERATOR, BOILER NO. 2

Date (1980)	Test No.	Sampling location		Sample volume DSCF	Sample volume DSCM	Gas composition[a] O_2 %	CO_2 %	CO ppm	THC ppm	Stack temperature °F	Molecular weight	Moisture %	Velocity ft/sec	Gas flow[b] ACFM	Gas flow[b] DSCFM	Gas flow[b] DSCMM	Isokinetic rate %
5-4	1	Inlet	North[c]	256.84	7.27	11.2	7.4	172[d]	< 2	459.47	28.26	11.56	20.17	111,400	56,500	1,600	90.82
			South[e]	135.20	3.83	11.2	7.4	172	< 2	444.88	28.52	9.57	21.27				79.24
		Outlet	North	317.86	9.00	11.3	7.7	156	< 2	432.76	28.33	11.56	36.40	102,200	51,830	1,468	94.61
			South	324.14	9.20	11.3	7.7	156	< 2	451.27	28.41	10.87	39.33				97.96
5-6	2	Inlet	North[f]	408.46	11.57	9.6	10.1	159	< 2	459.04	28.53	12.24	20.62	104,300	51,300	1,453	96.25
			South[f]	379.18	10.74	9.6	10.1	159	< 2	445.78	28.56	12.03	18.42				98.32
		Outlet	North[g]	418.43	11.85	10.4	9.5	171	< 2	442.00	28.45	12.47	38.21	106,400	55,310	1,566	98.85
			South[g]	457.89	12.97	10.4	9.5	171	< 2	451.04	29.58	2.95	40.60				93.23
5-7	3	Inlet	North	324.36	9.19	9.4	9.8	185	< 2	445.55	28.34	13.43	19.90	110,900	54,930	1,555	98.17
			South	400.66	11.34	9.4	9.8	185	< 2	431.46	28.36	13.26	21.23				97.71
		Outlet	North	403.32	11.42	9.4	9.7	189	< 2	459.04	28.39	12.86	36.70	102,000	49,780	1,410	100.75
			South	407.07	11.53	9.4	9.7	189	< 2	457.78	28.41	12.75	38.87				96.29
5-8	4	Inlet	North	331.52	9.39	9.9	9.5	142	< 2	445.36	28.57	11.27	19.34	105,600	52,770	1,494	100.22
			South[h]	370.83	10.50	9.9	9.5	142	< 2	460.60	28.50	11.85	19.96				97.28
		Outlet	North[h]	427.50	12.11	10.4	8.9	169	< 2	454.20	28.82	8.60	38.39	108,100	54,430	1,541	96.59
			South	457.50	12.96	10.4	8.9	169	< 2	464.32	28.47	11.60	41.69				100.04
5-9	5	Inlet	North[i]	342.70	9.77	7.9	10.5	61	< 2	423.77	28.30	14.14	17.71	93,900	45,870	1,299	99.85
			South[j]	367.81	10.42	7.9	10.5	61	< 2	460.80	28.20	14.94	17.31				101.90
		Outlet	North	371.55	10.52	8.1	10.7	59	< 2	449.64	28.17	15.46	32.99	88,400	42,770	1,211	105.57
			South	383.75	10.87	8.1	10.7	59	< 2	437.76	28.24	14.89	32.48				107.99
5-10	6	Inlet	North	320.56	9.08	8.8	10.3	1	< 2	452.59	28.37	13.62	18.12	96,530	46,250	1,310	108.82
			South	347.61	9.84	8.8	10.3	1	< 2	457.63	28.34	13.83	17.86				105.61
		Outlet	North[k]	367.97	10.42	9.4	9.7	1	< 2	448.92	28.50	11.94	35.43	101,200	49,320	1,397	98.61
			South	412.06	11.67	9.4	9.7	1	< 2	452.28	28.33	13.40	39.50				96.51
5-11	7	Inlet	North	344.80	9.76	9.8	9.0	1	< 2	463.29	28.19	13.86	19.12	101.000	48,280	1,367	100.85
			South	378.50	10.72	9.8	9.0	1	< 2	462.48	28.15	14.24	18.51				100.82
		Outlet	North[m]	299.62	8.49	9.8	9.5	1	< 2	462.53	28.37	12.91	38.99	103,900	50,470	1,429	99.20
			South[m]	459.63	13.02	9.8	9.5	1	< 2	447.47	28.30	13.52	38.13				102.22
5-12	8	Inlet	North	316.55	8.96	8.7	9.7	1	< 2	456.24	28.40	12.57	17.58	98,830	47,970	1,358	98.95
			South	373.03	10.56	8.7	9.7	1	< 2	468.33	28.38	12.79	19.11				94.93
		Outlet	North	376.48	10.66	10.4	9.0	1	< 2	442.84	28.41	12.21	36.73	102,500	50,800	1,438	102.67
			South	391.17	11.08	10.4	9.0	1	< 2	452.88	28.42	12.08	39.17				100.42
5-13	9	Inlet	North	308.73	8.74	9.7	9.6	1	< 2	465.61	28.19	14.57	16.42	92,240	43,330	1,227	105.23
			South	364.16	10.31	9.7	9.6	1	< 2	468.65	28.19	14.52	17.82				102.11
		Outlet	North	366.28	10.37	9.1	9.8	1	< 2	457.16	28.25	14.10	36.85	102,900	49,060	1,389	104.01
			South	388.73	11.01	9.1	9.8	1	< 2	453.52	28.20	14.54	39.39				102.82
5-15	10	Inlet	North	338.45	9.59	10.2	9.4	111[o]	< 2	465.43	28.29	13.60	18.05	95,870	46,760	1,324	102.87
			South	376.86	10.67	10.2	9.4	111	< 2	458.88	28.27	13.75	17.67				102.67
		Outlet	North[n]	377.44	10.69	9.6	9.7	98	< 2	459.56	28.88	8.89	35.47	99,850	49,810	1,410	102.40
			South	396.28	11.22	9.6	9.7	98	< 2	463.68	28.24	14.22	38.49				106.30

(continued)

TABLE (continued)

Date (1980)	Test No.	Sampling location		Sample volume DSCF	Sample volume DSCM	Gas composition[a] O_2 %	CO_2 %	CO ppm	THC ppm	Stack temperature °F	Molecular weight	Moisture %	Velocity ft/sec	Gas flow[b] ACFM	Gas flow[b] DSCFM	DSCMM	Isokinetic rate %
5-16	11	Inlet	North	353.83	10.02	11.1	8.5	88[o]	< 2	465.32	28.49	11.15	18.79	99,300	49,200	1,395	101.23
			South	357.30	10.12	11.1	8.5	88	< 2	467.67	28.42	11.69	18.22				93.06
		Outlet	North	404.61	11.46	11.8	7.9	98	< 2	455.72	28.35	11.79	38.83	117,500	58,310	1,651	104.09
			South	416.58	11.80	11.8	7.9	98	< 2	460.24	28.38	11.59	40.83				101.62
5-17	12	Inlet[p]	North	324.92	9.20	10.3	10.0	80	< 2	474.80	28.27	13.47	17.25	91,430	43,540	1,233	97.56
			South	331.75	9.40	10.3	10.0	80	< 2	475.00	28.37	13.70	16.85				102.20
		Outlet[p]		218.81	6.20	10.7	9.0	84	< 2	451.00	28.16	14.38	39.27	106,000	51,350	1,454	103.01
5-18	13	Inlet	North	[q]													
			South														
		Outlet		219.36	6.20	10.7	9.2	102	[r]	463.00	28.25	13.91	44.37	119,800	57,360	1,624	92.45
5-19	14	Inlet	North	[q]													
			South														
		Outlet		240.61	6.81	12.7	7.2	304	[r]	465.60	28.36	11.65	44.53	120,200	59,140	1,675	98.36

a Average during test period.

b Sum of the North and South train measurements.

c Test was run for 350 min. Test was discontinued because of unsuccessful leak checks after filter replacement.

d High due to excessive instrument drift.

e Test ran for only 193 min due to plant shut down because of a boiler leak.

f Only 21 of the required 24 points were traversed.

g Test quality was poor due to crack in the probe.

h Low moisture obtained because of cracked probe.

i Sampling time increased from 20 to 25 min per point after 180 min. Test quality was good.

j Sampling time increased from 20 to 25 min per point after 267 min. Test quality was good.

k Test was halted one point from completion due to stormy water. Test quality was good.

l Analyzer taken off line (see d).

m Due to excessive leak rate in the north tracer, 60% of the sample was collected with the south tracer, 40% with the north.

n Probe was found with a cracked tip. Based on 8.9% moisture versus 12% moisture for the other tests, it was determined that only the last 10 points were traversed with the broken probe. Test quality was fair.

o Results ± 10% due to drift.

p Inlet QA test, outlet 1st day cadmium test.

q Inlet sample not required for cadmium test.

r THC data not required for cadmium test.

2.0 COMPARABLE CASE DISCUSSIONS

2.1 Hampton Va.

The Hampton, Virginia combustion units are much smaller than either Chicago Northwest or the Hennepin County facility. The two Hampton units are designed to combust 100 TPD of waste each, whereas Chicago units are designed for 450 TPD and the Hennepin County units are designed for 600 TPD. Combustion conditions within small units such as Hampton are more susceptible to disruption due to overloading and high moisture waste due to the smaller furnace volume and waste quantities present in the furnace. This is particularly true when combustion air and other combustion controls are manual as in the case of the Hampton facility. Operating data on the Hampton facility shows that the facility was consistently operated well above its design capacigy during the first three years of operation. This was the same period in which emissions of complex organics (PCDDs and PCDFs, PAH, etc.) were tested. The facility was operated 20 to 40+ percent above design levels. Overloading of waste combustion facilities tends to restrict air flow up through the grate and waste, lower temperature due to quenching of flame and incomplete combustion, decrease residence time of gases in furnace due to combusting more waste in the same furnace volume and result in incomplete burnout of waste due to larger waste volume passing through the unit within a similar time period.

These effects are clearly evident in the test results from Hampton (MRI report 1983). High levels of CO and hydrocarbons are evident, fluctuating furnace temperatures are evident with most values in the 1300-1500^{o} F range (below design values) and high levels of carbon and volatiles (combustibles) are evident in the ash test data.

This is further substantiated by the fact that a combustion air preheating system was added to the facility subsequent to the emissions tests and the level of operation was reduced to levels closer to design values.

The facility has both underfire and overfire combustion air systems. No data was collected on the proportion of underfire versus overfire air used during the testing. The location of the overfire air ports (1-5 feet above the grate) results in overfire air being injected into the furnace at a relatively low level rather than near the flame front. Injection of unheated combustion air at this point likely contributes to the lower furnace temperature and may not be as effective in complete oxidation of flue gases as injection at furnace levels which are near the flame front.

Combustion controls at the Hampton facility are manual. The parameters which are monitored are steam production rate and furnace temperature. Furnace temperature is used to adjust the grate operation (speed). Steam production rate is used to adjust the ram feeders which control the rate of waste feed into the units. Combustion air flows are controlled by manual dampers which are set at certain points for normal operation and adjusted manually if necessary. This type of control system is oriented toward maintaining a desired level of steam production. The level of combustion efficiency and burnout are not an integral part of such a system. This is evident from the facility data during testing which shows steam production was generally maintained well above design levels (27,500 lbs/hr) despite great variations in combustion conditions, CO and hydrocarbon levels.

The emissions control system at Hampton consists of two electrostatic precipitators. The emissions limit required for the facility is .08

grains/dscf at 12% CO_2. No particulate or opacity readings were taken during testing of the facility. No pollutant control is required other than particulates.

2.2 Chicago Northwest

The Chicago Northwest facility consists of four combustion units with a capacity rating of 450 TPD per unit. The facility is normally operated using three units with one unit on standby. Therefore, this facility is much closer to the size of the proposed Hennepin County facility (two units at 600 TPD design capacity each). The Chicago facility is operated at levels at or below design capacity. Annual average throughput is 1100 TPD, waste throughput during testing estimated at 400-450 TPD for Unit No. 2. Therefore, the emissions test results for Chicago Northwest are indicative of emissions and conditions of a facility that is operating within design specifications in contrast to the Hampton facility.

The Chicago Northwest facility utilizes Martin inclined reverse reciprocating grates. The grate bars move against the flow of waste through the furnace to produce greater agitation and mixing of burning waste on the grates. Combustion air is fed into separate compartments under the grates (underfire air) and is injected at varying levels (7-15 feet) over the grate through overfire air ports. Underfire air is controlled in relation to the combustion needs and conditions on different areas of the grate. The proposed Hennepin County facility also has separate underfire air compartments to provide combustion air needed to different combustion zones on the grates.

Injection of overfire air at levels from 7-15 feet above the grate provides for more effective combustion and oxidation of substances in the flue gas. Proportions of combustion air, overfire vs. underfire, were not determined during the testing at Chicago. Total combustion air flow and flue gas flow measured during testing appear to be consistent with design values. Design values for overfire and underfire air are 16,800 scfm and 67,200 scfm respectively which is about 20% overfire and 80% underfire. The proposed Hennepin County facility combustion air proportions are about 45% overfire and 55% underfire. Therefore, the higher proportion of overfire air should promote complete combustion of flue gases as well or better than the Chicago facility. The temperature profile in the Chicago Northwest furnace and boiler is similar but slightly lower than the proposed Hennepin County facility. Residence time in the Chicago Northwest furnace is estimated at 1-2 seconds which is similar but slightly less than the design values for the Hennepin County facility (approximately 3.5 seconds).

Combustion air flow temperature (inlet to second boiler pass), percent oxygen, steam flow, and combustion air pressure (underfire air compartments) are monitored in the Chicago facility control room. Adjustments are manual and done as needed.

The effective combustion conditions at the Chicago Northwest facility are evident from the test data. CO levels were generally under 100 ppm, total hydrocarbons were consistently under 2 ppm, temperature in the boiler remained very stable (1160°F plus or minus 42°F), oxygen and CO_2 content of flue gas remained within fairly narrow ranges (O_2 - 8-11%, CO_2 - 8-10%).

Emissions of PCDDs, PCDFs and other complex organics were far less at the Chicago facility than those at Hampton. (Chicago PCDD+PCDF = 2% of Hampton levels).

Emissions control for the Chicago facility consists of four electrostatic precipitators. Particulate emissions are required to be less than .05 grains/dscf at 12% CO_2. The Hennepin County facility will have dry scrubbers and baghouse for emissions control which will provide greater particulate control (less than .02 grains/dscf at 12% CO_2) and will control other pollutants (SO_2, HCL) which are not subject to control at Chicago Northwest. Recent data on dry scrubbers (Nielsen, Moeller & Rasmussen - 1985) indicates potential substantial removal for gas phase PCDDs & PCDFs based on initial emissions testing of Niro Atomizer scrubber systems on a European solid waste combustion facility.

This difference in emission control equipment is a major difference between the Chicago Northwest and Hennepin County facilities.

2.3 Hennepin County (Blount) Facility

The Hennepin County facility provided by Blount Energy Resources Co. will utilize Widmer & Ernst combustion technology. The facility will have two units designed to handle 600 TPD each of solid waste having a Btu content of 3800 to 5200 Btu/lb. Annual average throughput is limited by law to 1000 TPD; therefore, the units will operate at or under their design capacity. This prevents the potential of facility operation above design capacity as in the case of the Hampton, Virginia facility. The facility will operate 24 hours/day, 7 days per week except for maintenance periods necessary to maintain optimum operation. The facility is designed to

cogenerate steam and electricity depending on energy market conditions. The facility will operate at a level of 1000 TPD on an annual average producing energy which will be sold to a utility (electrical energy) or steam heating systems in downtown Minneapolis. This allows continuous stable operations since electricity can always be sold whether steam is sold or not. It also creates a substantial incentive for efficient and complete combustion because waste throughput is limited. In order to derive maximum revenue the facility must extract as much energy as possible from the solid waste which means it must be efficiently and completely combusted.

The facility will have Widmer & Ernst horizontal, double motion overthrust grates. These grates provide a controlled movement of waste through the furnace plus agitation and mixing of waste for good burnout. (See detailed facility description.) Combustion air is introduced under the grate through 4 chambers and is coordinated with grate speed to optimize combustion needs for the drying, ignition, combustion and post combustion zones. Underfire air can be preheated as necessary relative to moisture content of waste.

Flame temperature in the furnace will be over 2000°F and total residence time at temperatures in excess of 1800°F will be about 3.5 seconds at design conditions. Overfire air is injected well above the grate to provide optimum turbulence and oxidation of flue gases. In addition, the furnace chamber is designed with a "vortex nose" which promotes turbulence in the combustion zone. Combustion air proportions at nominal conditions are approximately 45% overfire and 55% underfire. Automatic combustion controls are provided which optimize combustion conditions (See detailed project descriptions).

The efficient combustion and complete burnout achievable in Blount (Widmer & Ernst) facilities is further supported by ash analyses of combined bottom and flyash from W & E facilities in Europe. Ash samples were analyzed from facilities in Sweden and Switzerland. (Nytest Environmental, 1985). These ash samples were tested for combustible content which averaged 3.65% by weight. This is much lower than tests of Hampton ash in which carbon and volatile content (combustibles) ranged from 2.15% to 12.2% by weight (bottom ash) and 19-22% by weight (flyash). A weighted average of fly and bottom ash assuming 90% bottom ash and 10% flyash gives a composite weighted average of 8.5% by weight combustibles (carbon & volatiles) as compared to the 3.65% combustibles for the W & E ash. No ash test data was available from Chicago Northwest; however, data is available from the Westchester, New York facility which shows a composite average of combustibles (volatiles & carbon) of approximately 5%. The Btu content of the Westchester ash averaged about 120 Btu/lb as compared to a composite weighted average for Hampton of 940 Btu/lb.

The emission control system will include both dry scrubbers and baghouses to provide high levels of control of particulates, SO_2 and HCL. Recent data supports the theory that the reduced temperature of flue gas and the increased particle quantity due to reagent injection also operate to remove complex organics from the flue gas. While this effect appears to be well founded no credit is taken in the analysis of organic compound emissions. The Chicago Northwest facility is proposed as a conservative but comparable case for organic compound emissions. It does not have all of the design features of the Blount facility to minimize organic compound emissions but it is representative of a large modern energy recovery facility which achieves efficient combustion. It is much more comparable

rom an operation and design standpoint than the Hampton facility used as a worst case for organic emissions in the EIS. The Hampton facility was operated well above its design levels, had a much lower furnace temperature, lower injection of overfire air, much smaller furnace volume, much shorter residence time and much less effective emissions controls.

Therefore, in trying to evaluate potential organic emissions and health risks the Chicago Northwest facility constitutes a reasonably conservative comparable facility relative to the proposed Hennepin County facility.