

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IN RE: APPLICATION OF THE SOLID WASTE MANAGEMENT CORPORATION

This matter is before the hearing officer on the applications of the Solid Waste Management Corporation to construct and operate a resource recovery facility at the Quonset Point/Davisville Industrial Park in the Town of North Kingstown, Rhode Island. Specifically, the Solid Waste Management Corporation has applied for two licenses, (1) a license to construct and operate a solid waste management facility pursuant to Chapter 18.9 of Title 23 of the Rhode Island General Laws and the Rules and Regulations for Solid Waste Management Facilities adopted by the Department of Environmental Management and filed with the Secretary of State on November 4, 1982, and (2) a license to construct and operate a major source of air pollution in an attainment area pursuant to the Clean Air Act, Chapter 23 of Title 23 of the Rhode Island General Laws and the Air Pollution Control Regulations adopted by the Department of Environmental Management and filed with the Secretary of State.

mg

A pre-hearing conference was held pursuant to the Notice of Public Hearing issued by the Division of Air and Hazardous Materials on November 23, 1987 in Room 209 of the Cannon Health Building, 75 Davis Street, Providence, R. I. A timely Petition to Intervene was received from the Town of North Kingstown and, no objection being filed, the petition was granted. After much discussion, the prehearing conference was continued until December 8, 1987 by agreement of the parties, to hear argument on any motion subsequently submitted. Concern, Inc. submitted a Petition to Intervene and, no objection having been received, the petition was granted. No other requests to intervene were received by the hearing officer.

At the December 8 conference Concern made two motions: (1) to continue the hearing until February 16, 1988 and (2) to disqualify applicant's legal counsel. After hearing argument from all parties in these matters, said motions were denied and a separate order was issued which is part of the administrative record.

Hearings were held at the Davisville Middle School, North Kingstown High School and the North Kingstown Library on forty occasions commencing on December 9, 1987 and concluding on June 23, 1988. All hearings were held pursuant to the Rhode

Island Administrative Procedures Act, RIGL §42-35-1 et seq, and the Administrative Rules of Practice and Procedure adopted by the Department of Environmental Management. The parties to the proceeding were; the applicant, Rhode Island Solid Waste Management Corporation, represented by Attorneys Richard Sherman and George West, the Department of Environmental Management, Division of Air and Hazardous Materials, represented by Attorney Claude A. Cote, the Town of North Kingstown, represented by Attorneys Mark McSally and Harlan Doliner and Concern, Inc. represented, during a majority of the hearings, by Paul Plunkett. Kendra L. Beaver served as Legal Counsel to the hearing officer. During the course of the proceedings, 37 witnesses testified. All parties were given an opportunity to voir dire expert witnesses and the hearing officer, in his discretion, qualified the witnesses as set forth below.

The following witnesses were called on behalf of the applicant:

1. Richard C. Hittinger who was qualified as an expert in PSD modelling, PSD application, PSD application preparation.
2. Kay H. Jones, PhD who was qualified as an expert in environmental planning and analysis, air quality management systems analysis, air quality impact analysis, air pollution control systems design, energy conversion

feasibility, hazardous pollutant assessment and/or air quality, research program development, pollution exposure modelling, environmental toxicology, atmospheric modelling, acid rain research, industrial hygiene, international air pollution program development, and combustion engineering.

3. Glenn T. Almquist, who prepared and narrated the solid waste application but was not presented as an expert.
4. Hulis B. Ratterree who was qualified as an expert in design of resource recovery facilities, engineering of resource recovery facilities and the operation of steam electrical plants.
5. Christopher J. Raithel who was qualified as an expert in endangered wildlife species.
6. Craig Swanson, PhD was qualified as an expert in hydrodynamic modelling and water quality modelling.
7. Deborah French, PhD was qualified as an expert in biological oceanography, in use of bioassays and mesocosm, and the use of modelling in a marine and aquatic environment.
8. Russell Carlson who is the Solid Waste Management Corporation project manager and was not qualified as expert.

9. Benjamin G. Siebecker of Wehran Engineering who was qualified as an expert in engineering of sanitary landfills, design of sanitary landfills and the preparation of operation plans for sanitary landfills.
10. Dante Ionata who is the head of planning and new projects division of the Rhode Island Solid Waste Management Corporation, and was responsible for drafting the statewide resource recovery system development plan.
11. Edward Willoughby who is employed by Blount subsidiary as Vice President for civil and environmental engineering. He was qualified as an expert in acoustical engineering and analysis and control of noise from operation of industrial facilities.

The following witnesses were called on behalf of the Department of Environmental Management:

1. Stephen Majkut who is Supervising Engineer, Division of Air and Hazardous Materials was qualified as an expert in air permitting requirements and implementation of RIDEM air regulations.
2. Douglas McVay who is a Principal Air Quality Engineer, Division of Air and Hazardous Materials and was qualified as an expert in air pollution control permit review, application of air quality models, review of air quality models and compliance with Air Pollution Control regulations.

3. Barbara Morin who is a Principal Engineer, Division of Air and Hazardous Materials and was qualified as an expert in air toxics and setting air standards.
4. John S. Quinn, Jr. who was Supervisor of Solid Waste Management Programs for the R. I. Department of Environmental Management and was qualified as an expert in review of solid waste applications.

The following witnesses were called on behalf of the Town of North Kingstown:

1. James M. Osborn of Metcalf and Eddy, Director of Solid Waste Division, was qualified as an expert in the field of consulting engineering for resource recovery facilities, consulting engineering concerning permitting and program development phases of resource recovery facilities development and power plant design.
2. Charles W. Smith, the Fire Chief of the Town of North Kingstown and Assistant State Fire Marshal was qualified as an expert in review of buildings for compliance with R. I. State Fire Code.
3. Joseph W. McCarthy, the Resource Recovery Manager for Metcalf and Eddy, was qualified as an expert in operation of resource recovery facilities and power plant operations.

4. John R. Martin, the Vice President of Meteorological Evaluation Services, Inc. was qualified as an expert in consulting meteorology, dispersion modelling, deposition modelling, PSD application preparation and review relating to the above.
5. Dominique N. Brocard, PhD in Civil Engineering, technical specialist in water quality modelling and hydraulics for Metcalf and Eddy, was qualified as an expert in water quality modelling and analysis, but was not including biological impact assessment.
6. James Dolan who is Fire Chief, North Andover, MA.
7. Vincent Pawloski who is Engineering Manager, Trea Industries.
8. Charles B. Cooper, Project Manager for Metcalf and Eddy, was qualified as an expert in environmental assessment with particular emphasis on environmental assessment of industrial and waste management facilities.
9. Robert Getter, a mechanical engineer for Metcalf and Eddy who maintains the firm's resource recovery facilities emissions data base.

10. Lawrence Copley, PhD is a consultant engineer in environmental noise. He was qualified as an expert in the study, investigation and analysis of sounds in the outdoor environment including sounds made by transportation or industrial machinery, more generally described as environmental noise.

The following witnesses were called on behalf of Concern, Inc.:

1. Francis J. Foley a resident of Shore Acres, North Kingstown since 1960.
2. Douglas Sheehan, a resident of Mount View, North Kingstown since 1968 and a shellfisherman.
3. John F. Finneran testified to conducting sanitary surveys and to being a commercial shellfisherman, but was not qualified as an expert.
4. Barbara J. Ray was qualified as an expert in atmospheric chemistry with emphasis on fates of particulates, dry and wet depositional analysis and aerosol particle interactions.
5. Theodore Smayda, PhD of the Graduate School of Oceanography, URI, was qualified as an expert in biological oceanography, phytoplankton dynamics in fresh and marine environments and impact analysis of various substance loadings into both environments with regard to the effects on biota in both systems.

6. Gregory Coppa, a resident of Steamboat Avenue in Wickford (Poplar Point).
7. Joanne Messerlian, a resident of Shore Acres, North Kingstown.
8. Rhett Bishop, a resident of Camp Avenue, North Kingstown.
9. Louis Popoloski, a resident of Shore Acres, North Kingstown who also works at Electric Boat, Quonset Point.
10. Ruth Ann Baker, a resident of Wickford, approximately one mile from site.
11. Kirk W. Brown, PhD in agronomy, specializing in soil sciences and who is a Professor of Soil Sciences at Texas A&M, was qualified as an expert in operational effectiveness of clay and synthetic landfill liners and movement of liquid contaminants through water underlying landfills.
12. Paul Connet, PhD in Chemistry, Dartmouth College and who teaches in Chemistry Department of St. Lawrence University. He was qualified as an expert in chemistry, generally, and in the comparative mathematical analysis of ingestion of cow's milk as a human exposure route for dioxin relative to inhalation.

The exhibits that were introduced into evidence, and marked as full exhibits or solely for identification, are listed in Appendix A which is a part of the record for these proceedings.

The parties were asked to submit memorandum on certain issues of law that arose during the course of the proceedings. Separate decisions and orders were issued by the hearing officer on those issues which are set forth in Appendix B and are also part of the administrative record.

The applicant, the Rhode Island Solid Waste Management Corporation (hereinafter referred to as the "SWMC") had the burden of proving by a preponderance of the evidence that the facility as proposed would be constructed and operated in compliance with all of the applicable General Laws and regulatory requirements set forth above.

The within Decision and Order addresses licenses to construct and operate a solid waste management facility and to construct and operate a major source of air pollution in an attainment area. After review of all the documentary and testimonial evidence of record, I make the following findings of fact which pertain to both permits.

1. Notice of the prehearing conference public hearings and comment period was published in the Providence Journal, a newspaper of general circulation throughout the state on November 6, 1988.
2. Prehearing conferences were held on November 23 and December 8, 1987.
3. Public hearings were held on forty occasions in the Town of North Kingstown commencing on December 9, 1987 and concluding on June 23, 1988.

4. The Applications were submitted to the Division of Air and Hazardous Materials in March of 1987 and were amended in November of 1987.
5. The applicant is the Rhode Island Solid Waste Management Corporation.



I. LICENSE TO CONSTRUCT AND OPERATE A MAJOR
SOURCE OF AIR POLLUTION IN AN ATTAINMENT AREA

RULE NO. 2: VISIBLE EMISSIONS

Per its Guidance on Resource Recovery Facilities (Exhibit 7), the Division has recommended that an opacity limit of 10% be imposed as a permit condition. Applicant's witness, Mr. Hittinger, testified to the facility's ability to comply with this standard, if operated in accordance with its design specifications.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. Facility emissions will result in "opacity" as defined by this regulation.
2. Opacity can be limited to 10% which is below the regulatory standard.

WJG

RULE NO. 3: PARTICULATE EMISSIONS FROM INDUSTRIAL PROCESSES

Applicant's witness Mr. Hittinger's testimony that this Rule applies only to ash residue and lime handling operations was not contested, nor was his representation that the enclosure of both operations and the employment of baghouse air pollution controls would result in compliance.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. Proper enclosure of the regulated operations and a design which ensures that all emissions are processed through a fabric filter baghouse of adequate capacity will ensure compliance with this Rule.

RULE 4: OPEN FIRES

Applicant's witness, Mr. Hittinger, represented that no open burning of any kind would be involved in the operation of the facility. The Division, in its guidance, concurred and found compliance on that basis. Objector's cross-examination of this witness indicated concerns regarding the potential for open burning associated with smouldering refuse loads entering the facility and/or caused by accidents, particularly those involving hazardous materials.

Handwritten initials/signature

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The operation of the facility does not contemplate or require open burning nor would its design accomodate such burning.
2. The applicant has not claimed an exemption pursuant to Rule 4.3.

RULE 5: FUGITIVE DUST

Testimony on this Rule focused on both facility construction and subsequent operation.

Regarding facility construction, applicant's witness, Mr. Almquist, acknowledged under cross examination that the PSD Application document contained no description of dust control measures during site preparation or facility construction. Applicant's witness, Mr. Ratterree, however, testified that exposed areas would be watered down to control dust. The Town in its closing argument recommended that numerous additional dust control measures be undertaken if construction is authorized.

Various applicant's witnesses, most notably Mr. Hittinger, testified that during facility operation dust generated as a result of the tipping of MSW, its mixing in the refuse bunker and charging of the furnace feed hoppers would be vented through the furnaces, incinerated and passed through the scrubber-baghouse in the combustion exhaust gas stream. This venting process, driven by fans feeding combustion air under pressure to the furnaces, would, it was asserted, place the entire tipping hall under negative pressure and thereby effectively eliminate the escape of fugitive dust. Fugitive dust from other operational sources was not anticipated by applicant's witnesses in that all access roads would be paved, refuse trucks would be closed or covered, and other potential sources such as lime and ash handling systems controlled per Rule 3.

The Division in its testimony and Application Review (Exhibit 6B) agreed with the applicant's representations regarding operations and concluded that compliance with this Rule could be expected. This conclusion was not rebutted by the objectors.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The applicant through its witness, Mr. Ratterree, has proposed minimally acceptable precautions to prevent generation of fugitive dust during facility construction.

2. The Town has identified additional precautions which could reasonably be taken at little cost or inconvenience to further minimize construction related dust.
3. The design and proposed operation of the tipping hall, refuse bunker, MSW furnace and emissions control system represent good industrial practice regarding the elimination of fugitive dust emissions.

MJB

RULE 6: OPACITY MONITORS

Applicant's witness, Mr. Hittinger, testified that the required monitoring device would be incorporated in the facility's design. The Division's Application Review found compliance to be assured based on its Guidance requirement. The Town commented critically on the absence of an opacity monitor location and design specification in the PSD Application document.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The required monitor will be installed in the facility's main exhaust stack.

RULE 7: EMISSION OF AIR CONTAMINANTS DETRIMENTAL
TO PERSON OR PROPERTY

1. Impacts on Human Life: The Division's witness, Mr. McVay, testified that the Division had found conformance with Rule 7 regarding protection of human health on the basis

MJ/S

that projected emissions would not exceed or contribute to the exceedence of applicable Rhode Island Ambient Air Levels (AALs) and/or primary National Ambient Air Quality Standards (NAAQS'). Mr. McVay further testified that the primary NAAQS' were set at levels calculated to be protective of human health, as were the AALs. The Division's Ms. Morin, who testified that she had performed the analyses underlying the AALs, confirmed Mr. McVay's representations regarding the AALs. Under cross-examination, Mr. McVay acknowledged that the applicant had not been required or directed to perform any additional studies, most particularly a human health risk assessment or a depositional analysis, to demonstrate that its facility would be protective of human health.

Applicant's witness, Mr. Hittinger, confirmed that the applicant had relied on its compliance with applicable state and federal air quality emission standards as sufficient in itself to likewise prove compliance with this Rule's human health requirements.

9/11/15

Because it was a subject of such intense scrutiny by the objectors, it is appropriate to describe in at least brief summary the process Ms. Morin testified to in setting AALs for the twenty-two pollutants not regulated under the federal (NAAQS) standards. Ms. Morin testified that this process involved an intensive review of the available literature on human health effects of airborne pollutants, but did not include any original research. For all regulated pollutants a dose-response relationship was identified for various concentrations and exposure durations. Threshold levels at which no adverse health impact was observed (NOAELs) and/or lowest levels at which adverse health impacts were observed (LOAELs) were then set. For known or suspected carcinogens it was assumed that there would be no safe minimum exposure level and an EPA approved model was employed to identify the emission concentration representative of the one in one million additional (cancer) risk factor recommended by EPA as acceptable and employed by most U.S. regulatory agencies.

Except where the literature suggested other health impact pathways to be determinative, Ms. Morin testified that she employed what she characterized as the generally accepted methodology of considering inhalation as the primary pathway for human exposure with an adjustment

factor added to account for the contribution of other pathways, most notably ingestion of and dermal exposure to contaminated soil. Ms. Morin testified to adjusting acceptable exposure levels downward by thirty percent on the recommendation of EPA to account for these other non-quantified pathways and such other potential non-quantified factors as bio-accumulation of pollutants in food stuffs and additive impacts.

The objectors both through testimony of various of their witnesses and cross-examination of Ms. Morin argued at length that the reliance on the single inhalation pathway with an adjustment for other exposure routes could not be considered protective and would in fact be expected to underestimate impacts on human health. Witnesses such as the Town's Mr. Cooper and Concern's Dr. Connett were offered to testify to their opinion that completion of such a multi-path health risk assessment was essential to demonstrating compliance with this Rule. Concern through its cross-examination demonstrated considerable concern that the impact on human health of consuming locally grown and most particularly, waxy green, vegetables had not been specifically addressed. While it introduced numerous witnesses who testified to their consumption of such vegetables it qualified no witnesses who testified as to the significance of that consumption relative to facility emissions or human health.

In responding to the objector's criticism of her reliance on the inhalation pathway and by way of rebuttal, Ms. Morin testified that a multiple-pathway risk assessment had not been performed in setting the AALs because at the point in time that the AALs were established, she lacked confidence in the accuracy of multiple-pathway assessments based on inconsistent and therefore unreliable, results. She further expressed her opinion that reliance on an established exposure pathway together with a determined effort to be as conservative as possible in establishing exposure limits was the most reliable means of establishing AALs and protecting human health.

In subsequent testimony on recall regarding a May, 1988 DEM document entitled Draft Risk Assessment Guidelines (Exhibit 73), Ms. Morin testified that the state-of-the-art for multiple-pathway risk assessment had advanced rapidly in the last several years such that their results could today be viewed with more confidence. As a consequence, the Division was now considering requiring future resource recovery applicants to perform such assessments. She opined, however, that based on reviews of recent assessments and conversations with regulators in other states and the federal government she was not aware

of any instance where a subsequent multiple pathway assessment impugned the validity of a conservative inhalation pathway assessment of the sort she had performed. She expressed confidence, therefore, that a multiple-pathway risk assessment, if performed for the proposed facility, would not result in any adjustments to the Division's AALs. This opinion was qualified by the admission that although her confidence in the AALs and the manner in which they were established remained unshaken, it also remained untested.

During her recall testimony, Ms. Morin expressed additional reservations regarding her confidence without additional analysis in the degree to which the AALs were protective of children exposed to lead in soils, given the sensitivity of this segment of the population to that pollutant. She likewise conceded that although she again did not believe it would result in any adjustments to the AALs, the cumulative effects of various pollutants could and probably should have been calculated utilizing a so-called "hazards index" methodology.

The Town in cross-examining Ms. Morin attempted to elicit admissions that the state-of-the-art for multiple pathway risk assessment was more advanced in early 1986 when she set the AALs than she had represented it to be.

Ms. Morin confirmed that several of the multiple-pathway assessments on which she was questioned by the Town had been published prior to 1986, but returned to her argument that it was not the availability, but rather the reliability of these assessments that she questioned.

The Town, likewise, attempted to extract admissions from Ms. Morin that several siting decisions were in fact reversed based on subsequent completion of multiple-pathway risk assessments. Ms. Morin was unable to confirm that this was the case.

The Town questioned Ms. Morin at length as to the internal review and consultation process which culminated in the Division's 1986 decision to not require the applicant to perform a multiple-pathway risk assessment, particularly in regards to an earlier reference by this witness to "policy" discussions with her superiors. Ms. Morin's replies indicated that discussions as to the appropriateness of her recommended course of action took place with numerous regulators both in and outside of state government and ran to the technical validity or correctness of that course of action.

While as noted previously, the applicant asserted that its demonstrated compliance with applicable NAAQS and AAL standards was sufficient evidence in itself to carry its

burden under this Rule, the applicant nevertheless introduced considerable testimony through its witness, Dr. French, as to the human health effects of seafood consumed from nearby water bodies, principally Narragansett Bay and Fry's Pond. Dr. French testified to the results of three studies of facility impacts on marine and aquatic biota, that she had completed at the applicant's request, introduced as Exhibits 27, 28 and 72. The substance of these studies and other studies introduced into evidence on the applicant's behalf and on which Dr. French's work relies are described elsewhere in this Argument Summary. Suffice it to observe here that based on the deposition estimates she employed, Dr. French found no significant threat to human health from the consumption of seafood associated with any of the various emissions deposition scenarios modelled by other applicant's witnesses. These include a hypothetical (twenty day) dry deposition scenario, a similarly hypothetical (forty day) wet/dry "absolute" worst case deposition scenario, several "real storm" scenarios and a long term chronic scenario.

Dr. French testified to having compared projected pollutant concentrations in the marine environment to EPA chronic (long term) and acute (short term) ambient water quality criteria which she represented to be set at levels

protective of human health and based on the conservative assumption that an exposed individual would consume 100% of a set amount of seafood each year for a seventy year life span from an impacted water body. Based on this comparison, she concluded that risks associated with lifetime consumption of Narragansett Bay seafood exposed to chronic steady-state facility deposition levels would be extremely low relative to the one in one million incremental risk level standard set by EPA. In the few instances where she found predicted facility deposition levels in the Bay immediately after real or hypothetical storm events to approach or exceed EPA chronic criteria for specific pollutants she testified that the extremely limited duration of these events would not allow for bioaccumulation in exposed seafood and hence human consumption at these elevated levels.

Dr. French similarly testified that human health impacts resulting from consumption of seafood harvested from Fry's Pond would be negligible even though facility deposition levels in the Pond under all scenarios, particularly after storm events, were projected to be considerably higher than in the Bay with the consequence that the incidence of chronic ambient water quality exceedances would be greater. Here again, the short

duration of elevated pollutant concentrations associated with storm events was presented as a mitigating factor. In addition, Dr. French testified to there being virtually no recreational nor any commercial fishery in the Pond with the consequence that seafood inhabiting it is for all intents and purposes were unavailable for human consumption.

The Town questioned Dr. French on the amount of seafood assumed to be consumed per the EPA ambient criteria which Dr. French testified as being approximately one half pound per month, a national average as opposed to a higher assumed consumption rate for areas of high consumption. Concern established through cross-examination that at least one recreationally significant species, the blue crab, had been observed in Fry's Pond and was capable of migrating from the Pond into Narragansett Bay (where it was available for harvest) through the culverts that connect the two water bodies.

2. Impacts on Plant Life: The applicant has in the PSD Application document at Section VII described the effects on plant life of six pollutants which it represents are those of concern relative to vegetative impacts. These are SO₂, TSP, NO_x, Ozone, HCl and HF. This description consists of a brief summary of damage thresholds associated with direct contact with foliage at various concentrations and for various periods of exposure, as reported in the scientific literature.

In its Air Pollution Application Review at page 39 the Division concludes that the applicant has adequately demonstrated that facility emissions will not adversely effect surrounding vegetation. Division witness, Mr. McVay, testified that demonstrated compliance with applicable NAAQS secondary standards and state AALs obviated the need for site specific studies to confirm the applicant's representations. He further testified that the NAAQS secondary criteria are set at levels determined by EPA to be protective of plant and animal life. Under cross-examination, however, Ms. Morin testified that she had considered vegetative impacts in setting the AALs for only two pollutants, HCl and HF. She further acknowledged that impacts on aquatic biota, including aquatic vegetation, were not considered by her in setting the AALs.

The Town established through its cross-examination of Mr. McVay that the Division had not considered plant uptake of pollutants deposited in water and soils. Applicant's witness, Mr. Cooper, testified to the importance of soil uptake as an exposure route and the need to examine the impacts of plant exposure to pollutants at chronic levels over extended periods of time, an area of investigation in which he represented that numerous studies had been reported in the

Handwritten signature or initials in the bottom left corner of the page.

literature. The substance and conclusions of these studies were, however, not entered into evidence.

3. Impacts on Animal Life: The applicant again relied on demonstrated compliance with applicable NAAQS and AAL limits as evidence of its having met its burden regarding injury to animal life under this Rule.

The Division's Mr. McVay testified to a similar reliance on the state and federal standards to come to the same conclusion. While his reliance on the NAAQS secondary criteria as being protective of animal life was not challenged, both he and Ms. Morin were questioned by the objectors at length as to whether the AALs were similarly protective of animal life. She stated that while the AALs did not account for differences in body mass between smaller mammals and humans, they would reflect consideration of emissions impacts on other mammalian species since laboratory experiments on test mammals supported many of the human health impact studies reviewed in their preparation. She conceded, however, that she had not considered or accommodated impacts on non-mammalian species such as birds, reptiles, amphibians or marine life in establishing the AALs.

The Town's witness, Mr. Cooper, testified to his opinion that human health based standards could not be

considered protective of bird life because of differences in size and metabolism unless substantiated by specific examination of avian sensitivity to the various pollutants expected to be emitted.

4. Impacts on Marine and Aquatic Biota: While impacts on marine and aquatic biota are not specifically addressed in the PSD Application document itself, the applicant presented during the course of the hearing an extensive case regarding the facility's projected impacts on plant and animal life in Narragansett Bay and associated water bodies and wetlands, including impacts on fish eating birds. This case, reduced to its essentials, consists of three interrelated components, each of which manipulates and builds on data generated by its predecessor. The first of these is a series of depositional modelling exercises performed by Environmental Science Services, Inc., entered into evidence as Exhibits 23, 24 and 70, which were prepared and testified to by Mr. Hittinger. The second is a series of hydrodynamically driven modelling exercises which utilize the depositional analysis performed by Mr. Hittinger to project impacts on water quality in the form of pollutant loadings. These were performed by Applied Science Associates, identified

as Exhibits 25, 26 and 71, and were prepared and testified to by Dr. Swanson. The last is a series of marine and aquatic biota impact assessments in turn predicated on the pollution loadings generated by Dr. Swanson. These too, were performed by Applied Science Associates, are identified as Exhibits 27, 29 and 72, and were prepared and testified to by Dr. French. In each case the last Exhibit in the series, Numbers 70, 71 and 72, respectively, is based on updated (relative to the PSD Application) emissions source data introduced by the applicant through Mr. Hittinger as Exhibit 69.

Deposition- In Exhibit 23, Mr. Hittinger testified that he employed an EPA approved model to examine facility generated deposition to Narragansett Bay via Fry's Pond under what he characterized as worst case conditions of twenty days of dry deposition followed by a short duration (six hour) intense rain storm which washed all of the accumulated dry deposition from the Pond drainage basin into the Pond and from there into the Bay over a short period of time. The result was projected to be a pulse of uncharacteristically high facility derived pollutant loadings to the marine environment.

In order to ensure that predicted loadings would be worst case, Mr. Hittinger testified to a number of what he characterized as extremely conservative assumptions employed in his model, as follows:

- . Emissions were calculated on the basis of the facility operating at its maximum capacity twenty-four hours a day for the entire modelling period when it was represented as being capable of operating at this level only two hours in twenty-four;
- . Meteorological data was obtained from the worst twenty day period of the worst year of five examined;
- . 100% of dry deposition falling in the Fry's Pond drainage basin was assumed to be carried to the Bay in the storm runoff at the end of the modelling period.

In Exhibit 24, Mr. Hittinger testified that he had again employed the EPA approved model to generate an "absolute" worst case, once in a thousand years deposition scenario proposed by the Town in an earlier proceeding. This so-called wet/dry scenario postulated twenty days of maximum dry deposition in the Fry's Pond drainage basin followed by a snowfall which scours additional pollutants from the atmosphere, followed by twenty days of additional maximum dry deposition on top of the unmelted snow cover, followed finally by an intensive six hour rain storm which melts the snow cover

and flushes all of the forty days of accumulated wet and dry deposition into Fry's Pond and then the Bay in a single intense slug of pollutant laden runoff. All of the above was represented as incorporating the same conservative assumptions as have previously been described with regard to Exhibit 23 together with the additional assumption that during the entirety of the modelled period a constant gentle wind would be blowing pollutants from the facility's stack directly over the Fry's Pond drainage basin, thereby maximizing deposition.

By way of rebuttal, the Town, through Mr. Martin, introduced as Exhibit 55, its own analysis of the "absolute" worst case scenario modelled by Mr. Hittinger. Mr. Martin's study also described ten actual storm events which he represented had occurred over the last forty years, eight of which by his modelling calculations resulted in pollutant deposition to Fry's Pond heavier than for Mr. Hittinger's "absolute" worst case scenario. Mr. Martin additionally testified to having modelled cumulative deposition over a forty-year period, utilizing Mr. Hittinger's modelling methodology and assumptions as set forth in Exhibit 24. Based on these various modelling exercises, Mr. Martin testified to having calculated a wide range of deposition values

depending on whether one applied the emissions source data and resulting scaling factors employed by Mr. Hittinger in preparing Exhibits 23 and 24, which produced the lowest deposition results; the source data and scaling factors employed in the PSD Application, which produced considerably higher values; or the emissions limits set by DEM, which produced values which were much higher still.

Responding to the objectors' various challenges to its depositional analyses and resultant impact projections, the applicant recalled Mr. Hittinger during its rebuttal case to testify to his preparation of Exhibit 69 which is an analysis of pollutant emissions from six scrubber-baghouse equipped resource recovery facilities. Mr. Hittinger characterized these data as being much more representative of the actual emissions levels which could be anticipated from the proposed facility than those contained in the PSD Application since they were obtained from facilities employing comparable air pollution control equipment. He testified to emissions levels which when corrected or scaled to the proposed facility showed overall reductions of fifty per cent relative to the PSD Application.

Under cross-examination, Mr. Hittinger acknowledged that the new emissions data showed emissions increases for several pollutants and that some of the data was obtained from a pilot-scale Canadian emissions test. He was questioned at length regarding differences in MSW characteristics between the foreign facilities from which data was gathered and the typical U.S. MSW and the effects such differences might have on emissions levels.

In response to these questions, Mr. Hittinger testified that he had not considered such factors as moisture content, higher heating value (HHV) or metals content as significant influences on emissions levels and so had not investigated them. He defended this decision on the basis that the type and effectiveness of the air pollution control equipment installed rather than the characteristics of the MSW burned was the primary influence on emissions levels. Pursuing this argument, Mr. Hittinger testified to his opinion that MSW moisture content and HHV would have no effect on emissions levels and metals content very little, the latter because of the high collection efficiency of the scrubber technology.

In its surrebuttal case, the Town introduced Mr. Getter who, while not qualified as an expert, testified to deficiencies he perceived in Exhibit 69. He was

critical of the typically low emissions data obtained from the controlled burn Canadian pilot scale test and testified to differing HHV, higher moisture content and lower metals levels in MSW burned at several of the foreign resource recovery facilities from which Mr. Hittinger took emissions data. These differences were represented by the Town in its closing arguments as rendering the data as employed by Mr. Hittinger virtually useless.

In response to Mr. Martin's Exhibit 55 and based on the results of his Exhibit 69 emissions data, the applicant again reintroduced Mr. Hittinger to testify to the substance of Exhibit 70 as part of its rebuttal case. Exhibit 70 was represented as incorporating these more realistic emissions estimates and conservative meteorological and operational modelling assumptions to arrive at more realistic deposition predictions than had been generated by Mr. Martin in Exhibit 55. Application of these assumptions resulted in cumulative deposition levels to Fry's Pond all of which were considerably lower than those projected by Mr. Martin. Mr. Hittinger was particularly critical of Mr. Martin's alleged failure to use recorded (real) wind direction and precipitation data in his storm modelling, his assumption that deposition to

the Fry's Pond drainage basin would occur regardless of wind direction, and his use of emissions data that would require the facility to operate without let up at its maximum capacity twenty-four hours a day for forty years when it was capable of operating at that level only two hours in twenty-four.

The Town again put on Mr. Martin to testify to various deficiencies he had identified in the methods and assumptions employed on behalf of the applicant in the preparation of Exhibit 70, deficiencies he opined would result in a significant underestimation of cumulative deposition to Fry's Pond. These included most notably the alleged failure to account for wind driven deposition to the Fry's Pond drainage basin outside of the compass quadrant between 140 degrees and 210 degrees when the facility stack, albeit at the extreme southern end, was entirely within the basin. They also included the failure to model deposition beyond 1.5 kilometers from the stack even in the 140 to 210 degree compass quadrant when in fact a considerable area of the basin extends beyond this distance, and a large underestimation of the pollutant collection efficiency of snow relative to rain.

Under cross-examination of this witness, the applicant by way of rebuttal established that in its modelling it had in fact calculated as deposition to the Fry's Pond drainage basin certain areas that were actually outside the basin, that under certain wind directions half the facility's stack plume would actually be outside the basin although it had been modelled as if all of it was in, and that a portion of the basin which was modelled as resulting in deposition to Fry's Pond in actuality drained directly to the Bay under storm conditions and would, therefore, have minimal impact on the Pond.

Pollutant Loadings - The applicant's Dr. Swanson, testified that his analysis of loadings to Narragansett Bay and Fry's Pond (Exhibits 25 and 26) utilized the results of Mr. Hittinger's depositional analysis, previously described as Exhibits 23 and 24. Dr. Swanson's analyses were represented as employing a tide driven two dimensional vertically averaged hydrodynamic and pollutant transport model to predict the impacts to Fry's Pond and Narragansett Bay of the same two worst case (dry) and absolute worst case (wet/dry) deposition scenarios modelled by Mr. Hittinger.

Dr. Swanson testified that his dry deposition analysis in Exhibit 25 examined both direct atmospheric deposition of facility emissions to the Bay surface over a twenty-day period and storm runoff at the end of that period, with the latter found to generate significantly higher levels of water quality impact. He also testified that he had modelled two extreme deposition scenarios to "bracket" impacts, one reflecting the dissolving of all pollutants as they entered the Bay, the other the movement of totally particulate pollutants through the water column. Based on his modelling effort, Dr. Swanson concluded that the elevated pollutant levels which followed the modelled storm would be short-lived, with concentrations falling off by a factor of ten within six hours after the end of the storm. He also concluded that the highest concentration levels, which were predicted in the vicinity of the outfall from Fry's Pond, would likewise fall off rapidly as one moved away from the outfall into the Bay proper. All predicted concentration levels were testified to be within the natural variability of Bay concentrations with the probable result that their water quality impacts would not be measurable. This was also represented to be the case for chronic benthic accumulation caused by direct deposition.

11/9/77

In preparing Exhibit 26, Dr. Swanson testified to applying the same modelling procedures and assumptions to Mr. Hittinger's absolute worst case wet/dry deposition estimates. The same spatial and temporal distribution pattern of pollutant concentrations was detected with highest levels in the hours immediately following the hypothetical storm and in the area immediately adjacent to the Fry's Pond outfall. While predicted metals levels were considerably higher (approximately forty-seven times) than under the chronic (dry deposition) scenario, Dr. Swanson again concluded that these increases were well within the natural variability of metals concentration in the waters off Quonset Point with the consequence that it was highly improbable that they would be detectable.

Under cross-examination, Dr. Swanson conceded that his model did not accommodate a number of physical and/or hydrodynamic processes which various of the objectors' witnesses testified to as being important influences on particulate water quality impacts. These included an assumption that pollutants would not be cycled back through the impact area by tidal action, no consideration of the effects of flocculation on particulate setting rates, no consideration of the effects of sediment resuspension on



concentration levels, no ambient water quality data for Fry's Cove and Fry's Pond, and no data on ambient dioxin levels for the Bay, Cove or Pond.

Dr. Swanson did, however, subsequently describe an unpublished modelling exercise in which he had assumed a fifty percent tidally driven pollutant return rate which resulted in a twenty per cent increase in pollutant concentrations at the outermost limits of the impact area, but no increase in the area of highest impact, Fry's Cove.

In pressing its case that the applicant had seriously underestimated emissions impacts on the Bay and associated waterbodies, the Town presented Dr. Brocard who testified to the results of an analysis of pollutant loadings he had prepared based on Mr. Martin's Exhibit 55. This was entered into evidence as Exhibit 60. Dr. Brocard testified that his analysis was based on the depositional loadings to Fry's Pond Mr. Martin had calculated for thirteen actual storm events and on certain assumptions Dr. Brocard had made relative to tidal range, water volume and exchange rates, and sediment resuspension (100% for all events). As had Mr. Martin, Dr. Brocard modelled for three scenarios, one based on the emissions source data and scaling factors used by Mr. Hittinger in preparing Exhibits 23 and 24, one on the source data and scaling factors used in the PSD Application document, and one on the State emissions limits (AALs).

Based on this analysis, Dr. Brocard predicted facility caused violations of EPA chronic aquatic life criteria for mercury during all thirteen storms and under all three emissions scenarios; violations of chronic and acute aquatic life and human health criteria for mercury and violations of chronic aquatic life criteria for lead using the emissions factors employed in the PSD Application; and, when employing the State's AAL emission limits, violations of the human health criteria for arsenic, mercury, PAH and dioxin, the acute aquatic life criteria for nickel, mercury and lead, and the chronic criteria for lead and mercury.

In its rebuttal case, the applicant recalled Dr. Swanson to testify to the substance and conclusions of Exhibit 71 which he represented as employing Mr. Hittinger's previously described cumulative depositional analysis (Exhibit 70) and the results of newly completed field studies and laboratory simulations to provide a more accurate picture of cumulative impacts on Fry's Pond than that offered by Dr. Brocard.

Dr. Swanson testified to having established the salinity, temperature profile, volume, area and average depth of the pond by field survey, its flushing rate by dye study and its mean tidal range by observation. Sediment samples were subjected to resuspension tests in the laboratory and Army Corps of Engineers formulas were applied to the physical data acquired during the field studies to determine the wind speed necessary to cause sediment resuspension. Dr. Swanson indicated that this speed was in excess of 69 m.p.h. even at depths shallower than the pond average. Having to his satisfaction discounted resedimentation as a factor in cumulative loadings and based on actual measurements of the pond's physical parameters which differed markedly from the assumptions Dr. Brocard had employed, Dr. Swanson testified to steady state particulate concentrations less than a third of those predicted by Brocard and hypothetical worst case concentrations less than a quarter of Brocard's.

Under cross-examination, Dr. Swanson's use of sediments which he conceded were ten times larger than those projected to be actually emitted from the facility for purposes of modelling resuspension and settling rates was questioned. He countered, however, that based on his understanding of particle dynamics, he would expect emitted particles to join together in larger particles before being washed into Fry's Pond during a storm event.

Impacts on Biota - Applicant's witness, Dr. French, testified to having analyzed the impact of Hittinger's dry and wet/dry deposition scenarios, Exhibits 23 and 24, respectively, on marine and aquatic biota in her Exhibits 27 and 28. Both Exhibits contain descriptions of Narragansett Bay's pelagic and benthic environments, their planktonic and free swimming inhabitants and the interrelationships between those inhabitants. They contain descriptions of associated water bodies such as Davol and Fry's Ponds, and freshwater and coastal wetlands in the vicinity of the proposed site.

Dr. French also relates in Exhibits 27 and 28 and reiterated in her testimony information regarding background levels of various pollutants in the Bay, their behavior in the marine environment and their effects on marine life. Particular attention was focused on metals as an emission of concern relative to the proposed facility. Dr. French testified that only 10% and typically much less of total metals levels in the marine environment is in the most toxic free ion form and that while marine organisms can bioaccumulate such toxic metals up to and even exceeding levels in their environment, they cannot with the exception of organic mercury biomagnify levels as they pass up the food chain.



Regarding background levels of metals in the Bay, Dr. French further testified that one substance, total nickel, exceeds EPA chronic water quality criteria, while two others, total copper and total mercury, approach the criteria. She testified, however, that levels of the toxic free ion form of each metal would actually be well below the standard.

Background levels of PAH were also reported. However, Dr. French testified that such information was not available for dioxin.

In her examination of dry depositional impacts (Exhibit 27), Dr. French reported under worst case conditions that metals loadings would be insignificant relative to ambient levels in the Bay (less than 0.01%) and in Fry's Cove (less than 1%), so low in fact that no significant change in metals concentrations in sediments, aquatic biota or wildlife would be anticipated. In Fry's Pond loadings were projected to be higher, but would be still an order of magnitude below the EPA chronic criteria except for copper and nickel which would approach the criteria and mercury which would exceed it.

Again, however, it was represented that less than 10% of these loadings would actually be of a toxic form and that actual impacts on marine biota would be undetectable.

Dr. French also testified that PAH and dioxin emissions impacts posed no significant risk to marine organisms and projected PAH levels in the Bay and Fry's Cove at least six orders of magnitude, and levels in Fry's Pond three orders, below chronic toxicity levels. Dioxin levels were projected at seven orders of magnitude below the standard in the Bay, four orders below in the Cove and below the minimum toxic concentration in the Pond.

The impact of acid gas emissions was discounted based on the "tremendous" buffering capacity of seawater.

In the body of her Exhibit #28 regarding the impacts of Hittinger's absolute worst case deposition scenario (Exhibit 24) and in her testimony on this Exhibit, Dr. French, while acknowledging the resulting pollutant loadings are as much as ten times higher than under the dry deposition scenario, still concluded that resultant concentrations of metals, PAHs and dioxins in the Bay and Fry's Cove will remain below EPA thresholds of toxic effects to aquatic biota. She further concluded that the wet/dry scenario overpredicts pollutant loadings to the marine environment and will be an event of

such infrequent occurrence and short duration that bioaccumulation of elevated levels of pollutants will not pose a threat to consumers of aquatic life.

Again, Dr. French's testimony acknowledged that levels of copper, nickel and mercury in Fry's Pond will be elevated, all above EPA chronic criteria for the six hour period immediately after the end of the hypothetical worst storm. She stated, however, that the short duration of the exposure event and the low proportion of total metals which is actually toxic are mitigating influences such that no adverse effects on biota would in reality be expected.

Under cross-examination, Dr. French was questioned regarding the absence of reported background pollutant concentrations for Fry's Pond. While she conceded that such levels had not been established empirically, she testified to assuming that they would be similar to those reported for Narragansett Bay since the Pond was tidally flushed by Bay water.

Dr. French was also questioned regarding the limited number of benthic sampling stations referenced in Exhibits 27 and 28 and the absence of stations in the areas of maximum loadings, Fry's Cove and Fry's Pond.



While agreeing that her confidence in the data acquired had to decrease with distance and that the data she had was not necessary representative of Fry's Cove, Dr. French asserted that the principal focus of her effort was to evaluate the impacts on marine and aquatic biota, an exercise which she represented as not having been compromised by the paucity of benthic sampling stations. Dr. French conceded under cross-examination that the investigations reported in Exhibits 27 and 28 did not consider cumulative impacts over the postulated forty-year life time of the proposed facility.

In its case-in-chief, Concern through its witness, Dr. Smayda, introduced testimony critical of Dr. Swanson's and Dr. French's analyses. Dr. Smayda testified to his opinion that neither research had adequately considered the impact of pollutant loadings on pelagic species, particularly the phytoplankton and zooplankton which he characterized as being the foundation species in the Bay ecosystem. Dr. Smayda testified to the differing sensitivity of planktors to the growth inhibiting and/or promoting effects of various metals and the potential this has for disrupting the natural balance between the Bay's native species. Dr. Smayda also stated his opinion that the EPA ambient water quality criteria were not protective of planktors.



Dr. French was called back by the applicant in its rebuttal case to testify to her preparation of Exhibit 72, which she represented as being an analysis of the biological impacts of the long term study-state, real and hypothetical worst storm events modelled by Mr. Hittinger and Dr. Swanson in Exhibits 70 and 71, respectively. In her testimony, Dr. French reaffirmed her earlier findings both as regards dry deposition pollution loadings to the Bay and Fry's Pond, and hypothetical absolute worst case wet/dry storm loadings. She further testified to her opinion that the EPA chronic criteria were protective at sublethal levels of all aquatic life forms including sensitive pelagic and benthic fish, invertebrates, larvae, plants, phytoplankton and their human consumers.

Regarding Hittinger and Swanson's projected "steady-state" loadings to Fry's Pond, Dr. French testified to their being at least one and typically four or five orders of magnitude below EPA chronic (aquatic life) criteria levels, the worst case being mercury at 10% of the criteria. Likewise, she concluded that peak loadings in the period immediately following real and hypothetical worst case storms as modelled by Hittinger and Swanson in no instance exceeded EPA acute criteria, typically remaining four or five orders of magnitude lower. For the four day period after these

storms, Dr. French testified that the chronic criteria level for mercury was projected to be exceeded in four instances and approached in two others. She opined, however, that the frequency of these exceedences (approximately once in ten years) was not sufficient to constitute a violation of the EPA chronic criterion (once in three years). Again, based on these findings of low loading levels relative to EPA acute and chronic criteria, Dr. French testified to her conviction that no impacts on aquatic biota in Fry's Pond should result from facility emissions.

Dr. French testified to their being no standard specifically protective of wildlife or bird consumers of contaminated aquatic life, but that to the extent that their sensitivity was similar to mammals whose sensitivity is measured in setting human health criteria, they would be expected to be protected by the EPA chronic criteria. The validity of this assumption was questioned under cross-examination and Dr. French conceded that there were differences in metabolism and body weight relative to mammals that might effect the sensitivity of birds to pollutants. She, however, again cited the extremely low level of expected emission relative to both background concentrations and chronic criteria as supportive of her conclusion that birdlife would not be adversely affected.

5. Property Damage: The applicant again relied on demonstrated conformance with applicable federal (NAAQS) and State (AALs) emissions standards as sustaining its entire burden under this Rule. However, the PSD Application at Section VII also represents that emissions will not increase acid corrosion due to the use of a (lime) spray dryer to neutralize acid gases contained in the emissions stream.

The Town through its witness, Mr. Pawloski, brought before the hearing certain information regarding an industrial facility, Trea Industries, under construction in the immediate vicinity of the proposed site. It was represented by Mr. Pawloski that construction of this facility was 90% complete and that its design incorporated a so-called "clean room" where particulate levels in the air had to be maintained at a very low level to facilitate the production of clear plastic films. Particulate levels were to be maintained at the required level by processing outside air through rooftop filters which the witness estimated would be located approximately 350 feet from the proposed facility's stack. Mr. Pawloski expressed concern that particulate emissions from the proposed facility would overload his building's filtration system and adversely affect his

product. Under cross-examination he evidenced limited knowledge of the PSD Application and conceded that his firm had conducted no analyses to confirm his expressed concerns.

The applicant in its rebuttal case recalled Mr. Hittinger to testify to his authorship of a modelling analysis of predicted impacts on the Trea building's air intakes, entered into evidence as Exhibit 68. This analysis concluded that the facility would emit negligible levels of small particulates, representing a very small percentage of background levels, and would not adversely effect Trea Industries.

6. Interference with the Enjoyment of Life and Property:

Applicant's witness, Mr. Hittinger, testified that compliance with this requirement was demonstrated by the facility's ability to meet state and federal emissions standards. Ms. Morin, however, under cross-examination acknowledged that the state AALs do not address this impact.

Extensive testimony was introduced both on behalf of the applicant and the Town regarding noise levels projected to be generated by the facility and their impacts on nearby residential areas. Lesser amounts of testimony was introduced regarding the various impacts of

off-site truck traffic. For reasons set forth in the Findings of Fact which follow, I find no purpose in summarizing this testimony here.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. Primary NAAQS criteria have been set with the objective of being protective of human health and are found to be so.
2. The applicant was not directed by the Division of Air and Hazardous Materials to perform a human health (multiple-pathway) risk assessment or depositional analysis in support of its burdens under this Rule. Moreover, a draft protocol for performing such multiple pathway assessments introduced into evidence as Exhibit 73 was stipulated by all parties to this proceeding to not apply to the matter before the hearing as a matter of law.
3. The applicant and the Division has concurred that it has done so on the basis that conformance with applicable NAAQS, PSD increments and AALs has been demonstrated.

4. The Division's AALs have been set with the objective of being protective of human health and the process by which they were developed was sufficiently comprehensive and conservative so as to achieve this objective.
5. Multiple pathway health risk assessment has been demonstrated to be a reasonable alternative means to weigh the impacts of pollutant emissions on human health and to set appropriate emissions standards. It has not, however, been demonstrated to yield more accurate or credible results than the methods employed by the Division.
6. An additional analysis of lead levels in soils is important to insure that the health of children exposed to such soils will be protected.
7. The cumulative effects of various pollutants on human health should have been considered utilizing a "hazards index" methodology.
8. Subject to the conditions outlined below, the AALs as set are protective of human health.
9. The internal decision making process by which the Department approved the method proposed by staff to establish AALs was predicated on scientific/technical judgments and was both routine and proper.



10. Elevated pollution levels in the hours immediately after worst-case storms will not cause elevated levels of such pollutants in the flesh of seafood available for human consumption. Steady-state pollution levels as predicted in Exhibit 69 will remain well below EPA human health criteria.
11. Consumption of seafood harvested from Narragansett Bay waters impacted by facility emissions as predicted in Exhibit 69 will not adversely effect human health.
12. Harvesting of seafood from Fry's Pond or of seafood which has spent a portion of its life cycle in Fry's Pond can reasonably be expected to be negligible. Consumption of such seafood, particularly in light of the limited quantities available for harvest will not adversely effect human health at emissions levels predicted in Exhibit 69.
13. Prudence, however, suggests that ambient levels in seafood of pollutants likely to be emitted by this facility should be measured and that such levels should be systematically monitored to some reasonable distance from the facility after it commences operation.

14. The applicant has satisfactorily demonstrated that facility emissions will be below plant injury thresholds for the following pollutants: SO₂, TSP, NO_x, Ozone, HCl and HF.
15. The NAAQS secondary criteria have been set with the objective of being protective of plant life and are found to be so.
16. The AALs have not been demonstrated to be protective of terrestrial or aquatic plant life except for HCl and HF. The Division's reliance on the AALs as protective of plant life with reference to other pollutants likely to be emitted by this facility is in error.
17. The applicant has not specifically addressed the impacts of state regulated pollutants except for acid gases, TSP, NO_x and Ozone. However, the levels of emission projected for this facility in Exhibit 69 are so low relative to applicable standards that the potential for harm would appear to be extremely remote so long as these levels are not exceeded. Prudence suggests, however, that ambient levels in vegetation of pollutants likely to be emitted by the facility should be measured before operations commence and systematically monitored after they begin out to some reasonable distance from the facility.

18. The NAAQS secondary criteria have been set with the objective of being protective of animal life and are found to be so.
19. The AALs are protective of terrestrial mammals, but have not been demonstrated to be protective of birds, reptiles and amphibians or of any marine or aquatic biota. The Division's reliance on the AALs as protective of these other forms of animal life with reference to the pollutants likely to be emitted by this facility is in error.
20. The levels of emission projected for this facility in Exhibit 69 are nevertheless so low relative to the standard that the potential for harm to non-mammalian animal life would appear to be extremely remote so long as those levels are not exceeded. No evidence has been entered into the record which would suggest otherwise.
21. In order to ensure that indigenous animal species including birds are not subjected to harmful levels of pollution as a result of the operation of this facility, ambient levels of pollutants in soils, surface water and vegetation should be measured before operations commence and systematically monitored after they begin out to some reasonable distance from the facility.

22. Exhibits 23 and 24, regarding dry deposition and absolute worst case wet/dry deposition scenarios, respectively, model predicted as opposed to permitted emissions levels. Both are also based on lower average emissions source data and are, therefore, predicated on lower predicted facility emissions than are employed in the PSD Application.
23. Exhibits 23 and 24 employ conservative assumptions whose application to the model used support the applicant's contention that the deposition predicted is conservatively high for the emission level modelled.
24. Worst case weather conditions which generated maximum short term deposition occurred much more frequently than assumed by the applicant, but they would still appear to be infrequent and unusual.
25. The Town's projection of cumulative deposition over a forty-year facility life is seriously flawed by the employment of unrealistic assumptions regarding operating and meteorological conditions and is thus not credible.

MJS

26. The applicant's Exhibit 70 which projects cumulative long term deposition and peak worst case deposition during storm events employs predicted as opposed to permitted emissions levels. These levels are based on another set of emissions source data (Exhibit 69) whose use results in predicted emissions levels which on average are approximately 50% lower than those reflected in the PSD Application.
27. Exhibit 70 employs reasonable operating assumptions and realistic meteorological data and assumptions in support of its cumulative and storm induced peak deposition predictions. The applicant's argument that direct stormwater discharges out of the Fry's Pond drainage basin and other mitigating factors previously described compensate for modelling deficiencies noted by the Town, also previously described, is credible but would have been buttressed by quantifiable analysis.
28. Exhibits 25 and 26 employ reasonable and conservative modelling assumptions and the projections, respectively, that dry depositional loadings and peak storm induced loadings to Narraganset Bay will be within the natural variability of Bay concentrations and thereby undetectable are credible, so long as emissions levels are limited to those modelled in Exhibits 23 and 24.

29. Predicted dioxin loadings are small and the overall pattern of predicted loading for other pollutants suggests an extremely remote potential for harmful dioxin impacts. However, a monitoring program to establish existing Bay and Fry's Pond dioxin levels and to monitor post-operational levels is necessary to address the absence of ambient data on dioxin levels in the Bay and in Fry's Pond.
30. In its use of field verified data regarding the physical properties of Fry's Pond and of established methods for calculating sediment resuspension, Exhibit 71 presents the most credible analysis of steady state, worst case and cumulative pollutant loadings to Fry's Pond which would result from facility emissions at the levels projected in Exhibit 69.
31. Exhibits 27, 28 and 72 describe pollutant impacts on all pelagic and benthic inhabitants, plant and animal, of Narragansett Bay and associated waterbodies and wetlands.
32. EPA chronic (CCC) and acute (CMC) ambient water quality criteria have been set with the objective of being protective of the most sensitive marine and aquatic plant and animal species and are found to be so.

33. Exhibits 27 and 28 present a credible case that facility pollutant loadings to Narragansett Bay and Fry's Pond under the hypothetical dry depositional and absolute worst case scenarios modelled in Exhibits 23 and 24 would pose no significant risk to marine organisms and their consumers so long as the emission levels employed in Exhibits 23 and 24 are not exceeded.
34. Exhibit 72, however, presents an even more credible analysis of likely impacts on marine and aquatic biota of the steady-state, worst case and cumulative pollutant loadings to Fry's Pond which would result from facility emissions at the levels projected in Exhibit 69. Because Exhibit 72 is based on the results of Exhibit 71 which in turn employs much improved data regarding the physical properties of Fry's Pond relative to earlier modelling exercises performed for the applicant, Exhibit 72 can reasonably be expected to present the most accurate assessment of impacts on Fry's Pond biota placed before the hearing.
35. Protection of marine and aquatic biota, human and animal consumers of such biota, vegetation and birds from injury caused by emissions from the proposed facility has only been conclusively shown for those New Emissions Estimates reported in Table 3 of

Exhibit 69, except for cobalt and vanadium for which no new values relative to those cited in the PSD Application are reported.

36. Facility emissions will not cause corrosion of nearby property.
37. Facility particulate emissions will not adversely impact Trea Industries' "clean room" operation.
38. Noise is not an air pollutant under Rhode Island Air Pollution Control Regulations.

RULE 8: SULFUR CONTENT OF FUELS

Applicant's witness, Mr. Hittinger, testified under cross examination that although he had not tested the sulfur content of MSW, he expected it to be significantly less than the 0.55 pounds per million BTUs which would qualify it as a high sulfur fuel. He later, however, testified under re-direct examination that the sulfur content of MSW had been calculated at 0.26 pounds per million BTU, well below the high sulfur standard.

The Division's witness, Mr. McVay, testified that the Division assumed that MSW would constitute a high sulfur fuel and that controlled stack emissions would, therefore, be required to meet the 1.1 pound SO₂ standard. He further

mg

testified that the Division had determined the facility capable of meeting the 1.1 pound limit, a representation which is confirmed by the Air Pollution Application Review's finding at page 39 that maximum projected SO2 emissions from the refuse furnaces will be 0.3 pounds per million BTU actual heat input.

The objectors attacked the credibility of the applicant's emissions projections in general, as is described elsewhere in this Decision and Order, but offered no testimony which directly rebutted either the applicant's or the Division's representations relative to this Rule.

Natural gas, the proposed fuel for the auxiliary burners was represented by the applicant to be low in sulfur content, a contention which was not challenged by any of the parties to the proceeding.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. Absent evidence that the applicant has performed any tests of MSW to support its contention that it is a low sulfur fuel, and in light of the Division's conflicting conclusions, I find MSW to be a high sulfur fuel as defined by this Rule.

mjs

2. The projected MSW furnace(s) SO2 emissions are below the maximum limit set forth in rule 8.3.1 for use of high sulfur fuel in combination with an approved stack gas cleaning process.
3. Natural gas such as is proposed to be burned in the auxiliary furnaces is a low sulfur fuel.

MS

RULE 9: APPROVAL TO CONSTRUCT, INSTALL, MODIFY OR OPERATE

Rules 9.2.2, 9.6, 9.7: Division witness, Mr. Majkut, testified that the Division does not presently administer an operating permit program due to budgetary and manpower limitations.

Rule 9.4.2: Division witnesses, Mr. Majkut and Mr. McVay, testified to the Division's policies regarding the processing of applications for individual pollution control system components. This policy calls for an internal ministerial review of separate permit applications for all such components which is both separate and apart from and later in time than the PSD (Rule 9.13) permit review and issuance process. The purpose of this secondary permitting process was characterized as being to confirm that proposed air pollution control equipment is capable of meeting emissions standards and limitations and/or any other conditions attached to the new source construction permit issued pursuant to Rule 9.13. Mr. McVay testified and the Air Pollution Application Review (Exhibit 6B) confirms that applications for all air pollution control system components have been submitted and are awaiting processing.

MJS

Under cross-examination both Mr. Majkut and Mr. McVay were questioned closely by the objectors regarding the language of the Hearing Notice relative to construction and operation licensing and their representations that the permitting of air pollution control system components would be decided subsequent to the hearing and without an opportunity for public input.

Cross-examination by the applicant elicited the opinion that concurrent review and approval of the PSD source construction permit and the separate permits required for air pollution control system components per rule 9.4.2 was practically and logically impossible since the latter determination required the former to have already been decided.

Rule 9.4.3: The PSD Application document briefly describes the various components of the proposed facility's design including waste handling, primary and auxiliary boiler systems, air pollution control systems and their operation and maintenance. Additional design and operational plans and specifications for all major plant systems are contained in the Solid Waste Facility License Application (Exhibit 12). Various applicant's witnesses, most notably Mr. Almquist and Mr. Ratterree, testified at considerable length as to details of the design, proposed maintenance and operation of these systems and components. Mr. Ratterree also described the

applicant's plans regarding the handling of hazardous materials and the design and operational provisions which are proposed to be made for preventing and/or dealing with fires and hazardous waste emergencies.

The objectors through testimony of various of their witnesses and through cross examination were broadly critical of the lack of design and operational detail provided by the applicant, particularly in the application documents themselves.

Argument regarding design and operations is described at length in the Solid Waste Facility Decision and Order and is incorporated herein by reference.

Rule 9.7.2: This Rule imposes no burden of proof on the applicant, but various operational conditions proposed by the Division in its Guidance On Resource Recovery Facilities (Exhibit 7) and its Air Pollution Application Review (Exhibit 6B) were the subject of argument.

Objector's witnesses were critical of the absence of detail provided by the applicant as to specific design parameters and proposed location of monitoring devices and the proposed use of theoretical rather than actual measuring devices for monitoring furnace gas temperatures.

Applicant's witness, Mr. Ratterree, described a manual system for activating the auxilliary burners in cases where furnace gas temperatures fell below optimum levels. He testified to his opinion that a manual system by being more flexible and responsive allowed for earlier and more effective intervention than the automatic system recommended by the Division in its Application Review. In their cross-examination of Mr. Ratterree, the Division and the Town continued to express considerable skepticism regarding Mr. Ratterree's opinions in this matter, his arguments notwithstanding.

The Division's witness, Mr. McVay, was examined closely on the Division's proposed daily MSW throughput limit of 388.5 tons per day per boiler which was established by cross examination as authorizing the processing of up to 377 tons of MSW per day as opposed to the 750 tons permitted by law and the 710 tons proposed.

Applicant's witness, Mr. Ratterree, testified to the applicant's objection to a permit condition proposed by the Division which would prohibit the by-passing of the facility's air pollution control system under any circumstances. He argued that this requirement should apply to the MSW boilers only since the auxilliary gas-fired boilers require no emissions controls to meet emissions standards and the high

MJS

moisture content of their emission would clog or bind the fabric filters in the baghouse. The Town's witness, Mr. Osborne, testified to his concern that a by-pass capability could be abused and does not represent good engineering practice (GEP). In its Closing Argument the Division held firm to its recommendation.

Applicant's witness, Mr. Ratterree, also testified to the applicant's objection to another permit condition proposed by the Division which would require that procedures to shutdown operations and terminate emissions be initiated immediately upon evidence of an emissions limit exceedance. He asserted that in some cases it would take less time and thereby generate less emissions exceedance overall to continue operations while effectuating necessary repairs. Mr. McVay testified for the Division that unless it could be demonstrated that uncontrolled emissions would not exceed applicable standards and limitations, the Division's recommendation stood. Mr. McVay also testified that the applicant would be required to submit procedures for implementing both scheduled and unscheduled shutdowns for the Division's review and approval prior to commencing operations.

Also, through its witness, Mr. Ratterree, and later in its Closing Argument, the applicant objected to the Division's requirement that the existing Quonset Point Industrial Park process steam plant be shut down before the proposed facility commences operation. The applicant argued that this requirement would impose a severe hardship on present industrial park tenants since the proposed facility would not be capable of supplying them with process steam during its start-up and shakedown period, thereby depriving them of a service on which they depend.

Under cross-examination, Mr. Ratterree indicated uncertainty as to whether the applicant had investigated the collective impacts on air quality standards and emissions levels of concurrent operation of the existing oil fired steam plant and the applicant's MSW fired facility. The Division's witness, Mr. McVay testified to his opinion that the proposed permit condition should not be relaxed unless the applicant submitted interacting source modelling data to demonstrate that concurrent operation would not result in emission standards exceedances.

MJS

Applicant's witness, Mr. Hittinger, confirmed that the Division had not recommended that an ambient air modelling program be required.

Testimony and arguments regarding facility and component maintenance are described in the Solid Waste Facility Decision and Order.

Rule 9.3(a): With specific reference to the MSW combustion train, the PSD Application identifies Best Available Control Technology (BACT) for TSP (particulates) as being electrostatic precipitators, with its proposed dry scrubber baghouse as actually exceeding BACT and capable of meeting the Rhode Island emission standard of 0.015 grains per dry standard cubic foot. The Division in its Air Pollution Application Review agrees that the facility is capable of meeting the standard, but has found that the dry scrubber baghouse is BACT.

For SO₂ and the acid gases (HCl, H₂SO₄ and HF) the Application represents that the burning of MSW is BACT because of its low sulfur content and that, again the addition of a dry scrubber baghouse exceeds BACT. The Division's Review, also again, disagrees with the applicant's identification of BACT, but finds instead that the proposed scrubber-baghouse is BACT. The Review concurs with the applicant's representation that the proposed control strategy complies with its emission standard.

For carbon monoxide (CO) and the volatile organics (VOC) the application contends that BACT is good combustion practice including good air/gas mixing in the combustion zone, adequate flue gas residence time and temperature, and thorough mixing of MSW prior to and during combustion. Proposing to employ these good combustion practices, the applicant contends it will meet the Rhode Island emission standards. The Application Review concurs with the applicant's findings re good combustion practices, but sets reduced CO emissions limits and minimum oxygen standards for the combustion zone both of which it finds the applicant is capable of achieving. The Division also sets air inlet flue gas temperature limit of 300 degrees for the scrubber baghouse.

The applicant again identifies good combustion practices including maintenance of minimum combustion temperature above 1,600 degrees F and minimum gas retention times of 0.5 seconds as BACT for hydrocarbons (HC) and aromatic hydrocarbons (PAH). The Division concurs with the above noted modifications and the applicant's representation that it will meet applicable emissions limits.

The applicant argues that BACT for oxides of nitrogen (NOx) is combustion grate and combustion zone air control, with no add on controls on the market. It represents it is

capable of complying with applicable emissions standards employing good combustion practices alone. The Division's Application Review finds an additional need to carefully control combustion gas temperatures to balance the low temperatures required to reduce NOx emissions against the high temperatures needed to reduce dioxin and furan emissions. The Division's witness, Mr. McVay, testified that BACT would also require an emission limitation, and agreed with the applicant's representation that the commercial feasibility of add on NOx controls was unproven.

Under cross-examination by the Town, Mr. McVay acknowledged that NOx was an important ozone precursor although less important than hydrocarbon emissions in Rhode Island and that the entire northeast was a non-attainment area for ozone. He also conceded that add on NOx controls have, indeed, been commercially available for some applications for some time and that one had been installed on an operating resource recovery facility in Commerce, California within the last year. He testified, however, that he had no personal knowledge regarding the performance of the Commerce facility and on that basis was reluctant to revise his BACT determination for NOx. Mr. McVay testified to being unfamiliar with a report describing a commercial selective non-catalytic NOx reduction process purportedly of the sort

employed at the Commerce facility and which was introduced for purposes of identification as Exhibit 47 by the Town.

The applicant identified BACT for metals, generally, as good control of particulate emissions, particularly fine particulates. It represented consequently that BACT was the employment of electrostatic precipitators to treat stack gases and argued that its dry scrubber baghouse exceeds BACT. The Division's Application Review found that the scrubber baghouse is BACT with inlet temperature limited to 300 degrees F to remove fine particulates carrying volatilized and condensed metals. It finds compliance on the applicant's part.

The applicant cites the Division's Guidance on Resource Recovery Facilities (Exhibit 7) in identifying BACT for dioxins and furans as good combustion practices resulting in complete and uniform combustion. It represents that while the scrubber baghouse enhances emission reduction by removing fine particulates, it is in itself not BACT. The Division's Application Review indicates agreement with the applicant's determination.

Regarding proposed auxiliary natural gas burners, the applicant identifies the use of natural gas as a fuel as BACT for all emissions, with good combustion practices also particularly important in reducing emissions of carbon monoxide (CO), volatile organics (VOC) and oxides of Nitrogen (NOx). The Division's Application Review indicates agreement.

BACT for lime and ash storage bins is represented as being the venting of all emissions through fabric filter baghouses, which would virtually eliminate fugitive dust emissions. Again, the Application Review indicates agreement with the applicant's BACT determination.

Rule 9.13.1(b): The emissions source data and resulting emissions factors employed by the applicant for purposes of modelling facility emissions and ground level concentrations (GLC) of emitted pollutants was the subject of considerable testimony and intense scrutiny by the objectors.

As previously noted in the summary of Rule 7 argument relating to impacts on marine and aquatic biota, the applicant's PSD modelling expert, Mr. Hittinger, employed emissions data obtained from three groups of resource recovery facilities for purposes of various modelling exercises undertaken in support of the applicant's case.

The first data set was obtained from five facilities equipped with electrostatic precipitators which were represented as being roughly the same size as the proposed facility. It was data from these facilities that Mr. Hittinger used in predicting the emissions levels employed in the PSD Application and which he represented would be expected to be higher than for the proposed facility with its improved air pollution control system. It was, therefore argued that the average emission of these facilities for each pollutant

when corrected for the proposed facility's design MSW throughput could be expected to yield a conservatively high emissions estimate.

In their cross-examination of Mr. Hittinger regarding this emissions data it was criticized by the objectors as being incomplete, selective and not shown to be representative of the type of MSW which the proposed facility would be burning. It was in this latter regard established that the applicant had not investigated the constituents of the MSW burned in these other facilities relative to "typical" Rhode Island waste. Mr. Hittinger opined, however, that real world emissions data as was used could be expected to reflect and accomodate the same variabilities in MSW content as would be seen in Rhode Island waste. The different amounts and types of data obtained from the facilities examined was explained as reflecting differences in the sampling protocols of those who had obtained the data. The witness nevertheless acknowledged that his data on antimony, arsenic, copper, cobalt, molybdenim, selenium and tin came from only one facility.

The Division's air quality modelling expert, Mc. McVay, testified to having confirmed the applicant's emissions estimates independently and the Application Review finds them "reasonable and conservative." The substance of his analysis, however, was not testified to.

Mr. Hittinger testified to having utilized the emissions data described above to calculate emissions factors for purposes of modelling facility emissions levels and resultant GLCs which were then compared to applicable NAAQS's, PSD increments and AALs. Mr. Hittinger testified to having employed the then most current version (6.2) of the Rhode Island Department of Environmental Management and Environmental Protection Agency approved Industrial Source Complex Short Term (ISCST) model to predict worst case (conservatively high) GLCs and, at the Division's request, concentrations at nine elevated receptors. Mr. McVay testified that the Division had required modelling of elevated receptors because of concerns regarding potential downwash from the stack and the number of pollutants to be emitted and because it wished to determine if projected concentrations indicated a need for stricter emissions limits.

Mr. Hittinger further testified, as was confirmed by Mr. McVay, that the applicant was not required to by the Division and consequently did not perform depositional analysis in support of the PSD Application. Mr. McVay, in fact, testified to his opinion that such analysis was not necessary to support his conclusion that the facility was capable of complying with the federal and state emissions standards.

Mr. Hittinger testified to employing in his modelling hourly meteorological data for the years 1970-1974 obtained from a U.S. Weather Service Station at T. F. Green State Airport in Warwick, the professed reason being that historic data for Quonset Point itself was incomplete. In order to ensure that resultant GLC predictions would be representative, however, Mr. Hittinger testified to having run the model with 1964 data for both Quonset and T. F. Green and to have found no significant differences in the results.

Based on Mr. Hittinger's emissions source data and his modelling of GLCs and concentrations at elevated receptors, the PSD Application, confirmed by Mr. Hittinger's testimony, finds no exceedances of NAAQS's, PSD Increments or AALs, even at what it characterizes as conservatively high MSW emissions estimates. The applicant also cites conformance with regards to emissions from the auxilliary burners, lime and ash storage bins. These representations are, in turn, confirmed by the Division's Application Review which, however, states that the Division intends to set emissions standards for MSW derived NOx, lead and mercury because they exceed the Rule 9 Significance Levels.

The Town in its cross-examination of Mr. Hittinger and more so through testimony entered into the record by its witnesses, Mr. Martin and Dr. Brocard, identified numerous of

what were perceived to be defects and deficiencies in the applicant's modelling effort and consequently expressed considerable doubt that predicted GLCs were credible.

Mr. Martin was critical of the absence of any depositional modelling which he characterized as typically required for similar licensing actions. He further argued that the meteorological data employed in the ISCST model was dated and, therefore, not representative of current weather patterns while also being obtained from a site considerably further inland which would not reflect the influence of Narragansett Bay on localized wind and weather. Mr. Martin, in fact, opined that even data obtained from the Quonset Point airport could not be considered representative and recommended that a meteorological tower be constructed on site to obtain valid information. A further source of meteorological error identified by Mr. Martin was the use for modelling purposes of an incorrect anemometer height for T. F. Green wind data (6.1 meters actual versus 10 meters assumed). This error, he represented as resulting from his calculation in a thirty percent under-prediction of GLCs.

Mr. Martin, supported by Dr. Brocard, also testified to his opinion that Mr. Hittinger had underestimated pollutant concentrations at elevated receptors by not using the most current version of the ISCST model (6.3) which he represented

as having been modified to more accurately account for deposition to such receptors. Dr. Brocard testified to having performed calculations based on emissions data supplied by Mr. Martin which showed significant and pervasive violations of emissions standards at elevated receptors. Under cross-examination, however, Mr. Martin acknowledged that modelling of predicted emissions as opposed to permitted emissions showed no exceedances of standards. Similar testimony was extracted from Dr. Brocard.

Both witnesses were critical of Mr. Hittinger's failure to model pollutant concentrations at the Trea Industries building's roof top air intakes and predicted exceedances for numerous pollutants.

Mr. Martin was called upon to testify to his opinion that the applicant had not adequately accounted for building downwash and other factors relating to the less than good engineering practice (GEP) stack height which were represented as likely to increase GLCs beyond levels predicted by Mr. Hittinger. He further testified to having performed a modelling exercise employing the GEP stack height of 293 feet which showed reductions in GLCs of 40% and reduced concentrations at elevated receptors of more than 60%.

Cross-examination of Mr. Ratterree established that while the applicant had requested a waiver of the Federal Aviation Administration's 200 foot elevation limit for stack height (Exhibit 53), it had not requested a waiver to the full GEP height and had in fact limited its request to 213 feet. Applicant's witness, Mr. Carlson, subsequently testified that this elevation had been suggested some years ago by regional FAA officials as being acceptable to their agency, but again confirmed that the applicant had limited its waiver request to the 213 feet proposed.

Another source of error cited by Martin was Mr. Hittinger's decision not to model impacts on complex terrain, defined as terrain higher in elevation than the proposed stack. Mr. Martin criticized Mr. Hittinger's modelling assumption that the facility would emit 301 days out of the year when the applicant had in fact represented that the facility would operate all 365 days. Again a resultant underprediction of GLCs was alleged to result. Mr. Hittinger testified in response that the 301 day operating year represented the facility's throughput guarantee and accounted for shutdowns.

Regarding Mr. Martin's criticisms on the lack of depositional modelling, Mr. McVay testified to the applicant's having performed such an analysis, however, not as part of the PSD Application document itself. As noted previously in the summary of argument on Rule 7, the applicant's depositional analysis was subsequently entered into the record of the hearing and was the subject of considerable testimony. Since, however, this analysis was not presented in defense of the applicant's case under Rule 9, it will not be further characterized here.

On defending its use of meteorological data which was not the most recent available per EPA modelling guidelines the applicant cited the Division's and EPA's approval of the 1970-1974 data employed. Mr. McVay confirmed that he had consulted with an EPA meteorologist before approving use of this data. Mr. Hittinger testified to his opinion that the quality and completeness of the data was more important than the period from which it was obtained and that it would not be expected that weather patterns would change appreciably between the early to mid 1970s and the late 1980s.

Mr. Hittinger testified that the good agreement found between model runs using comparative 1964 meteorological data from Green State Airport and Quonset Point supported his argument that Green data was representative of weather conditions at the proposed site. He, therefore, defended its use as preferable to the much less complete historical data available for Quonset Point airport.

The applicant did not contest Mr. Martin's representation that the actual height of the T. F. Green anemometer was 6.1 meters as opposed to the model assumption of 10 meters. However, it entered on the record and Mr. Hittinger testified to the conclusions of Exhibit 66 which recalculated GLCs using the correct Green anemometer height and the newest Version (6.3) of the ISCST Model. Mr. Hittinger testified that this version had not been available at the time the application was proposed. As testified to by Mr. Hittinger the results of the recalculation showed very minor increases in annual and twenty-four hour concentrations (3% and 5%, respectively) which still remained well below applicable standards.

Mr. Hittinger also testified on rebuttal to his preparation of Exhibit 67 which was represented as addressing the Town's criticisms of the applicant's elevated receptor modelling and which again employed the newly released Version 6.3 of the ISCST Model to demonstrate continued predicted compliance with applicable emissions standards. Exhibit 67 was testified to as specifically considering impacts on Trea Industries roof top air intakes and as having predicted no exceedances.

Mr. Hittinger was asked on rebuttal by the applicant to testify to his preparation of Exhibit 64 which employed the approved EPA complex terrain or Valley Model to measure SO₂ levels and by use of scaling factors other facility emissions

on elevated terrain located some considerable distance to the west of the proposed site. Mr. Hittinger testified that the results of this exercise showed no elevated levels or exceedances and confirmed the applicant's earlier decision not to model complex terrain in the PSD Application.

Rule 9.13(c): Visibility - the PSD Application represents that operation of the proposed facility will not result in atmospheric discoloration and/or haze. The Division's Application Review concurs.

Growth - the PSD Application suggests that due to its proposed location in an existing industrial park the facility may attract additional tenants due to its production of process steam. Applicant's witness, Mr. Hittinger, however, testifies to his opinion that because the availability of process steam will not be a new amenity since there is already a steam plant at the Industrial Park, the rate and/or type of new development would not be expected to be affected dramatically. Mr. Hittinger, in fact, expressed confidence that construction of the facility would result in a net improvement of air quality by accomodating the decommissioning of the existing antiquated oil fired steam plant with its uncontrolled emission.

Mr. McVay testified to his conclusion which is reflected in the Division's Application Review that it is not possible to quantify the air quality impacts of associated growth given the diverse range of industries that might potentially site in the Quonset-Davisville Industrial Park.

Under cross-examination by the Town, both Hittinger and McVay conceded they had neither performed nor solicited any growth impact analysis to support their conclusions and, further, that neither of them was qualified to perform such an analysis. No testimony was introduced on behalf of the objectors, however, regarding any associated growth scenario.

Vegetation: Predicted impacts on vegetation of the facility itself are described in the summary of Rule 7 argument.

Soils: Both the applicant and the Division relied on the demonstrated ability of the facility's emissions to meet applicable NAAQS and AAL standards as proof that soils will not be adversely effected by those emissions. Mr. McVay's testimony that the NAAQS' secondary criteria are protective of soils was not questioned or rebutted. However, his reliance on the AALs as similarly protective was not supported by Ms. Morin who testified to not having considered or addressed soils impacts in developing the human health based AALs.

Mr. Hittinger testified that no soils analysis or studies were performed by the applicant because of the very low GLCs predicted and because none were required to be performed by the Division. Mr. Majkut defended the Division's decision not to require before and after soils testing because he did not anticipate given the low predicted GLCs that any changes would be detectable. No analysis was testified to in support of this opinion, however.

The Town's witness, Mr. Cooper, testified to his concerns regarding the absence of a soils analysis given the potential impacts of soil contamination on people, plants and animals exposed to such soils. He further testified that his concerns were increased by the high soils deposition levels modelled by Dr. Brocard.

Rule 9.14: The PSD Application represents that ambient air quality monitoring data for the years 1983-1985 was obtained from existing monitoring stations in various locations throughout the state based on the expectation that the station selected would report conservatively high emissions levels of a given pollutant. These conservatively high levels were then for modelling purposes considered representative of the ambient air quality on which the facility's impacts were superimposed for assessment purposes. Use of existing monitoring data to establish ambient levels was confirmed in its Application Review to have been approved by the Division as representative. Monitoring stations employed were located at Newport City Hall, Kent Heights in East Providence, Brown University and Cranston Fire Station.

In their cross-examination of applicant and Division witnesses regarding this data, the objectors attacked its use as unrepresentative of actual levels at Quonset Point

due to various differences in site characteristics, neighboring activities and/or meteorological conditions, particularly prevailing wind patterns.

Rule 9.15: The Division concurred in its Application Review with the applicant that there were no interacting sources for the two pollutants of concern, SO₂ and TSP. The full remaining available PSD increment was, therefore, found to be available to the applicant who demonstrated based on the largest increment likely to be consumed an ability to comply with both twenty-four hour and annual standards.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The proposed facility is a major stationary source of air pollution per Rule 9.1.27 because it has the potential of emitting 100 tons per year or more of certain regulated air pollutants.
2. A separate and subsequent review process will be undertaken by the Division on construction applications for air pollution control system components. The purpose of this review will be to confirm that such components are capable of meeting any emissions standards or limitations and any other design or operational conditions attached to this Decision and Order.

3. Separate construction applications have been received by the Division for spray dryers, baghouses, incinerator boilers, auxilliary boilers, lime silo dust collectors and ash surge bin dust collector.
4. The process for these separate air pollution control system application reviews is technical and ministerial in nature and does not require or normally involve public review or input.
5. Plans, specifications and data have been submitted by the applicant pursuant to Solid Waste Facility and PSD Applications and testimony has been entered into the record describing how the facility is designed and in what manner it will be operated and controlled.
6. In its Air Pollution Application Review (Exhibit 6B) and its Guidance On Resource Recovery Facilities (Exhibit 7) the Division has described the various emissions testing procedures and protocols it will require the applicant to follow. These include substantive requirements, schedules and reporting procedures as set forth in Permit Conditions and Emission Limitations (for) Quonset Point Resource Recovery Facility (Exhibit 6C), Section F "Stack Testing", and in Guidance On Resource Recovery (Exhibit 7), Section VII, "Stack Testing."

M)S

7. The Division does not presently administer an air pollution source Operating Permit program nor does it inspect sources to determine if conditions attached to a permit to construct have been satisfied as is required pursuant to Rule 9.7.1.
8. An automatic system for activating auxilliary gas fired burners in cases where combustion of MSW does not maintain boiler temperatures at optimum levels represents good engineering practice (GEP). It should be noted, however, that installation and operation of an automatic system is not incompatible with operator initiated (manual) manipulations to increase boiler temperature.
9. Operation of both MSW boilers at the maximum throughput levels permitted in the Division's Application Review could result in violating the limit of 750 tons per day throughput imposed by law.
10. The design capability to bypass air pollution control equipment during start-up or other periods when the auxilliary gas fired burners are operating introduces an unacceptable potential for operator abuse and does not represent GEP.
11. Alternative means (as opposed to bypassing) to prevent binding of fabric filters by moisture contained in natural gas combustion emissions exist.

M75

12. It has not been satisfactorily demonstrated that continued facility operation during an episode of emissions exceedance and while corrective measures are concurrently being initiated would minimize the severity or duration of the exceedance. The concurrent initiation of shutdown procedures and corrective actions would, however, likely minimize the severity of the exceedance and the former action could be reversed if the latter corrected the exceedance.
13. The applicant has been directed by the Division in its Application Review to submit for its review and approval and at some point in time prior to commencing operations a description of the procedures it will follow in the case of scheduled and unscheduled shutdowns.
14. The applicant has not satisfactorily demonstrated by interacting source modelling that the existing Quonset Point steam plant and the proposed facility can be operated concurrently even under start-up and shakedown conditions without resulting in exceedance of applicable air quality standards and emission limits.
15. The applicant has not demonstrated that alternative means to supply steam users have been explored or exhausted.

MJS

16. In its Air Pollution Application Review (Exhibit 6B), the Division has recommended that DEM reserve the right to require ambient air monitoring if it suspects ambient air impacts in excess of NAAQS's or AALs.
17. The Division has recommended numerous conditions, limitations and requirements regarding facility emissions, design, operation, operational and emissions monitoring, stack testing, record keeping and reporting, and other related matters in Permit Conditions and Emission Limitations (for) Quonset Point Resource Recovery Facility (Exhibit 6C). These recommended conditions and limitations are further described in the Division's Guidance On Resource Recovery Facilities (Exhibit 7) at Section III, "Operational Requirements"; Section IV, "Continuous Monitors"; and Section VI, "Air Enforcement."
18. The applicant has demonstrated that it has proposed BACT for the following emissions and/or emissions sources and is capable of meeting emissions limits as set forth in the NAAQS' and AALs:

TSP

SO₂

Acid gases

CO

NO_x

HC

PAH

Metals

Dioxins

Furans

Auxilliary burners (natural gas fired)

Lime storage bin

Ash storage bin

19. Add on (thermal/non-catalytic) emissions controls for NO_x are commercially available. However their use on resource recovery facilities has thus far been limited to one U.S. facility and that, only within the last year.
20. The applicant's emissions source data for purposes of demonstrating compliance with NAAQS's, PSD Increments and AALs is derived from operational resource recovery facilities equipped with less efficient air pollution control equipment than is proposed for this facility. Its use, therefore, yields conservatively high emissions estimates.

21. The objectors representation that the applicant's emissions source data is so incomplete, selective and/or non-representative as to yield invalid emissions estimates was not supported by the evidence.
22. The applicant employed the most current version then available of the EPA approved emissions model, the Industrial Source Complex Short Term Model Version 6.2, in preparing its application. It subsequently remodelled and reconfirmed emissions estimates using the newer 6.3 version of the ISCST Model.
23. The applicant modelled predicted pollutant concentrations for nine elevated receptors on which were located rooftop air intakes, again, employing the then most current version of the ISCST Model. The applicant subsequently remodelled and reconfirmed its estimates for these nine receptors and one additional (Trea Industries) using the newer ISCST version.
24. The applicant did not perform depositional analysis in support of its burdens under this Rule. Such deposition as was performed was pursuant to Rule 7 and has been previously described.

25. The applicant's use of meteorological data from Green State Airport in its modelling has been shown by quantitative analysis to yield results which are sufficiently representative of Quonset Point weather conditions so as to support credible estimates of pollutant concentrations on the ground (GLCs) and at elevated receptors.
26. The applicant's use of meteorological data from the period 1970-1974 was approved by EPA and RIDEM and it is not reasonable to suggest, as have the objectors, that local weather conditions would have changed in the interim sufficiently to affect the credibility of this data.
27. The applicant's use for modelling purposes of data obtained from an anemometer which in actuality is less than four meters lower than the assumed height would not reasonably be expected to appreciably affect the results of modelling exercises employing this data. The applicant has confirmed this supposition by credible quantitative analysis employing the correct anemometer height.
28. Town witnesses projected pervasive emissions exceedances at ground level and at elevated receptors. However, these exceedances were projected based on permitted emissions levels as opposed to predicted levels.

29. The applicant's emissions calculations demonstrate no violation of applicable emissions standards at the Trea Industries rooftop air intakes.
30. The applicant has not modelled GLCs or emissions concentrations at elevated receptors based on maximum GEP stack height. However, building downwash has been adequately considered and accounted for in the air quality impact analysis performed.
31. The applicant has never requested permission from the Federal Aviation Administration for a maximum GEP stack height because it has received representations that such a request would not be favorably received.
32. The applicant has performed a complex terrain model which demonstrates that the facility will not cause emissions concentrations in excess of applicable standards at elevated terrain to the west of the site.
33. The applicant has demonstrated that facility emissions will not cause or contribute to the violation of any applicable NAAQS, available remaining PSD Increment or AAL.
34. The applicant has demonstrated that the facility will not impair visibility.

35. The applicant's argument that replacing one source of process steam for tenants in an established industrial park with another source of process steam should not be expected to dramatically effect development of that park is credible.
36. Decommissioning of the existing Quonset Point steam plant will result in an improvement in air quality.
37. The NAAQS secondary criteria are protective of soils.
38. The Division's reliance on its AALs as being protective of soils is in error.
39. The extremely low ground level concentrations of pollutants which would result from limiting facility emissions to the levels herein ordered suggests an extremely remote potential for impairment to soils. However, prudence would dictate that ambient pollutant levels in soils within the impact area be measured and that post-operational levels be monitored regularly.
40. The applicant has performed an analysis of ambient air quality for each pollutant that the facility has a potential to emit. The monitoring stations chosen have yielded conservatively high ambient levels for each pollutant. The timeframe monitored exceeds the regulatory one year requirement and includes the year immediately preceding application preparation.

RULE 12: INCINERATORS

Applicant's witness, Mr. Hittinger, testified to the facility's design particulate emission level of 0.015 (grains/dry standard cubic foot), a level which the Divison's Application Review concurred it is capable of achieving. As has been noted in the summary of argument on Rule 9, the objectors were uniformly critical of all the applicant's emissions predictions, the data upon which they were based, and the methods employed to calculate them.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The applicant has demonstrated an ability to maintain particulate emissions below the regulatory maximum.

RULE 14: RECORD KEEPING AND REPORTING

The applicant, through its witness, Mr. Ratterree, testified to its intention to maintain such records as the Department requires. The Division Application Review indicates that reporting and record keeping requirements will be imposed as permit conditions.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The applicant will maintain such records as are required by the Division.

RULE 16: OPERATION OF AIR POLLUTION CONTROL SYSTEMS

Applicant's witness, Mr. Ratterree, testified that the applicant will comply with any relevant condition attached to its permit.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The operator will immediately commence shut-down operations in a case of air pollution control system failure, but operations may continue during the period a baghouse fabric filter module is being replaced or repaired.

RULE 17: ODORS

Applicant's witness, Mr. Hittinger, testified to the applicant's primary reliance for odor control on continuous fan induced venting of the tipping hall and refuse bunker through the MSW furnace. As a consequence he testified that the tipping hall will be maintained under slight negative pressure relative to the environment with the result that odors will be drawn into the furnaces where they are destroyed even at temperatures (1,100 degrees F to 1,500 degrees F) below those at which the furnaces are designed to operate.

Mr. Hittinger further testified that during shutdown conditions one furnace would typically be operating and capable of drawing off and destroying odors. Even were both furnaces down, he testified that the induced draft fans would remain in operation and draw odors up through the stack where they would be destroyed by oxidation and dispersed on the wind.

The Division's Application Review concluded that these odor control measures were acceptable.

The Town in its cross-examination of Mr. Hittinger and Mr. Ratterree questioned the absence of any modelling to support the applicant's representations and expressed considerable skepticism that odors could be controlled in instances where

both MSW furnaces were inoperable. Both Mr. Hittinger and Mr. Ratterree testified to the likelihood of both MSW furnaces being down at the same time as remote.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The applicant will employ described adequate measures to control odors during normal operations and shutdown conditions where at least one emissions train remains capable of venting unburned odorous gases through the facility stack.
2. The applicant has not described methods to control odors during shutdown conditions which preclude venting through the stack. These are rare occurrences.

CONCLUSIONS OF LAW

Based upon all of the documentary and testimonial evidence of record, I conclude the following as a matter of law.

1. Reasonable notice of the hearings was provided as required by the Administrative Procedures Act, RIGL §42-35-1 et seq., and Rule 13(d) of the Administrative Rules of Practice and Procedure for the Department of Environmental Management.
2. The applicant bears the burden of proving by a preponderance of the evidence compliance with all of the air Pollution Control Regulations referenced in the within Decision and Order.
3. Subject to the following conditions, the applicant has demonstrated by a preponderance of the evidence that the facility will comply with the applicable General Laws and the Air Pollution Control Regulations adopted by the Department of Environmental Management.
3. Rule 3 is limited in its application to controlled and fugitive emissions from the facility's ash residue handling system and the lime handling and transfer system which services the dry scrubbers.

Therefore it is

ORDERED

that the license to construct and operate a major source of air pollution in an attainment area is granted subject to strict compliance with all of the conditions delineated below.

1. Emissions from the facility's main exhaust stack shall not exceed 10% opacity for a period or periods not to exceed three minutes in any one hour.
2. No visible emissions of any sort except those caused by the presence of uncombined water shall be permitted from any other stack, vent, or opening in the facility, its various buildings and/or components.
3. All components of the facility involved in the handling of lime in its dry (powder) state shall be fully enclosed and vented through a fabric filter baghouse of a design and capacity approved by the Division prior to its installation to ensure compliance with this Condition. "Handling" shall include all aspects of the offloading, storage and transfer of dry lime.

4. All components of the facility involved in the handling of dry ash residue, including fly and bottom ash, shall likewise be fully enclosed and vented through a fabric filter baghouse of a design and capacity approved by the Division prior to its installation to ensure compliance with this Condition. "Handling" shall include the transportation of the dry ash from its point of generation, through any intermediate processing steps (watering or dewatering), and to the on-site storage building.
5. Emission testing shall be conducted by the facility owner or operator according to Methods of Appendix A to Subpart 60 of Title 40 of the code of Federal Regulations.
6. Under no circumstances, including but not limited to scheduled or unscheduled shutdowns of one or both MSW boilers, shall open burning of combustible material be permitted.
7. Construction access and circulation routes shall be provided a temporary pavement surface.

8. All other construction related travel routes, exposed or excavated areas shall be watered down as frequently as necessary to minimize dust.
9. Construction vehicles transporting loose aggregate shall be covered with a tarpaulin or similar dust resistant membrane.
10. Construction vehicle operating speeds shall be controlled to minimize generation of dust.
11. All construction related open storage areas and/or piles of soil, aggregates or any other dust producing material shall be covered or watered down as necessary to prevent generation of dust.
12. Any spillage from construction trucks or other construction equipment on any public street shall be removed promptly.
13. All waste materials and spoil shall be handled, transported and disposed of in accordance with applicable federal, state and local law, rule and/or ordinance.
14. All trucks employed in the removal of ash residue off-site shall be fully enclosed or tightly covered.

9/27/77

15. The design of the ash storage building shall incorporate a wheel washing station or similar device to ensure that ash residue is not carried into the environment on truck tires. Wash water shall be discharged to the ash quench basin or may be used to wet down stored ash.
16. A back-up opacity monitor shall be installed at the same time and in the same approximate location as the first-line monitor. It shall in all respects be capable of meeting the requirements of Rule 6 and this Decision and Order.
17. The opacity monitor(s) shall automatically register all episodes of non-compliance on a device which shall maintain a permanent record of such episodes, which device shall further be capable of telemetrically transmitting data to the Division's offices.
18. The opacity monitor(s) shall be calibrated to record an exceedance and sound an alarm at 10% opacity.
19. The audible alarm shall sound in the facility control room.
20. Monitors must satisfy applicable EPA Performance specifications contained in 40 CFR, 60; Appendix B.

21. Emissions of state regulated (AAL) pollutants shall not exceed those reported in Table 3 of Exhibit 69 except for cobalt and vanadium which shall not exceed levels reported in the PSD Application, as follows:
(Units are millograms per second per flue (mg/sec/flue) except for 2, 3, 7, 8 Total Toxic Equivalents (Dioxins/Furans) which are micrograms per second per flue (ug/sec/flue).

Lead	5.53 E-01
Antimony	2.20 E-01
Arsenic	8.90 E-03
Beryllium	2.00 E-03
Cadmium	2.20 E-01
Chromium	7.56 E-02
Copper	1.26 E-01
Cobalt	3.00 E-02
Manganese	4.29 E-01
Mercury	1.48 E-01
Molybdenum	1.25 E-02
Nickel	1.57 E+00
Selenium	9.84 E-03
Tin	1.24 E-02
Vanadium	3.10 E+00
Zinc	7.71 E-01
PAH	4.78 E-02
B (a) Pyrene	6.25 E-03
2,3,7,8 TTE	2.80 E-06

Handwritten signature/initials

22. The applicant shall within six months of the date of issuance of this Decision and Order submit to the Division of Air and Hazardous Materials for its review and approval an emissions impact monitoring program plan which shall provide for the following:
- a. Measurement of ambient (pre-operational) levels of all regulated pollutants likely to be emitted by the facility in soils, seafood and shellfish harvested for human consumption, vegetation, fresh water bodies, Narragansett Bay and Fry's Pond including their benthic and pelagic environments and their inhabitants at various trophic levels.
 - b. Identification and establishment of appropriate monitoring stations at various distances and in various directions from the facility, but to include at a minimum at least one upland station in the Fry's Pond drainage basin, at least one in the Pond itself, at least one in Fry's Cove and another in the West Passage eastward of the facility, and at least one each in the residential areas to the north and south of the facility (Mt. View and Shore Acres).

- c. Provisions for post-operational monitoring of the above stations for levels of regulated pollutants and a schedule for performing such monitoring.
 - d. Protocols and procedures for assessing impacts of pollutant concentrations on marine and aquatic biota, human and animal consumers of such biota, vegetation, and birds.
 - e. Provisions for maintenance of monitoring data and for timely reporting of such data and related impact assessments.
23. The Division shall review the proposed emissions impact monitoring program plan submitted by the applicant and shall put such plan out to public notice. A public hearing shall be scheduled to provide interested persons with an opportunity to comment orally or in writing before such plan is approved, modified or denied by the Division.
24. Implementation of the aforementioned monitoring plan in the form of aquisition of pre-construction ambient data shall begin no later than six months before the facility is scheduled to commence operations.

25. The Division shall within six months of the date of issuance of this Decision and Order determine by appropriate analysis whether and to what extent the AALs applicable to this facility require adjustment to accomodate exposure of children to lead in soils and/or to account for cumulative impacts on human health of exposure to multiple pollutants (hazard index).
26. Upon completion of its review of any subsequent plans submitted by the applicant to construct and install components of the facility's air pollution control system and prior to approving or denying such plans, the Division shall make such plans available for public review and written comment.

27. The applicant shall undertake all testing procedures and shall do so in accordance with the substantive requirements, schedules, recording and reporting procedures set forth in Permit Conditions and Emission Limitations, Etc. (Exhibit 6C) Section F and in Guidance on Resource Recovery Facilities Section VII.
28. Upon completion of construction of this facility and prior to its being authorized to commence start-up shakedown and/or operation the Division shall inspect the facility to determine if all conditions attached to this Decision and Order and any separate permit to construct or install air pollution control equipment have been satisfied. Authorization to commence start-up, shakedown and/or operation shall be withheld until such inspection is completed and compliance with all permit conditions is confirmed by the Division in writing.
29. A fully automatic system, not susceptible to operator manipulation or bypass, shall start auxilliary gas burners when the temperature, at a point representative of one second downstream of secondary air injection, drops to or below 1,500 degrees F.

30. Maximum allowable MSW throughput shall be 377 tons per boiler per day, not to exceed 710 tons total for both boilers in any given twenty-four hour period.
31. Bypassing of any air pollution control system component during start-up or scheduled or unscheduled shutdown or any other period whatsoever when MSW and/or auxiliary burners or boilers are operating expressly forbidden.
32. As necessary, moisture controls shall be installed to minimize binding of baghouse fabric filters during operation of auxiliary gas burners.
33. Immediate steps shall be initiated by the operator to terminate the charging of MSW to the boilers and to effectuate an orderly shutdown of the facility in any instance where a monitor indicates an emissions exceedance or where an air pollution control system component fails, provided that the operator may bypass an individual baghouse filter module to replace or repair filters so long as emission limits are not thereby exceeded.



34. The operator shall at least six months prior to the date it proposes to commence shakedown operations submit to the Division for its review and approval specific procedures to be followed when unscheduled shutdowns are necessary. These procedures shall specify conditions necessitating a shutdown, a step-by-step description of the order of procedures to be implemented and the expected time necessary to effectuate the shutdown. Prior to approving or requiring modification of such procedures the Division shall make these specific procedures available for review and written comment by interested persons.
35. The existing Quonset Point steam plant shall be permanently shutdown prior to facility start-up and/or shakedown unless on the basis of an interactive air quality modelling analysis approved by the Division the applicant demonstrates to the Division that concurrent operation of the existing steam plant and the facility during facility start-up and/or shakedown will not result in exceedance of any emissions standard or limitations attached to this Decision and Order.

36. As components of the environmental monitoring program required to be implemented pursuant to this Decision and Order the applicant shall also monitor pre-construction and post-operational air quality and soil pollutant levels. The substantive monitoring requirements outlined in Condition 22 shall apply to the monitoring of air and soils.
37. All conditions, limitations and requirements regarding facility emissions, design, operation, operational and emissions monitoring, stack testing, record keeping and reporting and related matters as set forth in Permit Conditions and Emissions Limitations, Etc. (Exhibit 6C) generally and in Guidance on Resource Recovery Facilities (Exhibit 7), Sections III, IV and VI shall apply to the facility and are incorporated by reference into this Decision and Order as Conditions Attached.
38. The facility shall be designed so as to accommodate the installation of catalytic or non-catalytic NOx add-on pollution control technology and shall be required to install such technology at such time as the Division determines that it has become BACT. The Division should immediately research the operating



history and effectiveness of the non-catalytic NOx reduction process employed at the Commerce, California resource recovery facility. The Division shall within six months of the date of issuance of this Decision and Order and based on evaluation of the operational effectiveness of add-on technology installed on the Commerce, California resource recovery facility, confirm or, as appropriate, modify its BACT determination for NOx.

39. Entrance doors to the tipping hall shall be closed to the maximum extent consistent with the combustion air requirements of the MSW furnaces during all scheduled periods in which MSW is not being received.
40. If shutdown conditions do not allow for venting of odorous gases through the stack for a period in excess of 24 hours and weather conditions are such that the generation of excessive quantities of such odorous gas is likely, the operator shall at the end of that 24 hour period initiate procedures to empty the refuse bunker, convey its contents to a licensed MSW landfill, and wash down and deodorize/disinfect the bunker and all other equipment and surfaces normally in contact with unburned MSW.

II. LICENSE TO CONSTRUCT AND OPERATE A
SOLID WASTE MANAGEMENT FACILITY

RULE 4.00: GENERAL REQUIREMENTS AND PROCEDURES

4.01: Considerable legal argument was heard regarding the applicant's responsibility as part of this proceeding to demonstrate compliance with the Operating Regulations, both general and specific, set forth in Part III of the Solid Waste Management Facility Rules and Regulations. The applicant's position in this argument was that its obligation was limited to complying with construction licensing requirements set forth in Part II of the Regulations. The Town argued that the applicant's obligations also extended to Part III Operating Regulations. The Division argued that the actual issuance of the operating permit was a subsequent ministerial action by which it verified compliance with all terms and conditions of the construction license.

At the April 6, 1988 hearing session the Hearing Officer rearticulated a ruling he had made on the record at the March 3 and 18 hearing sessions regarding this matter; as follows:

The general licensing requirement for solid waste management facilities clearly contemplate that as a condition attached to applying for a construction permit, the applicant must satisfactorily address the regulatory requirements for operating of the facility as well. Now, I could understand the possibility of confusion arising on the Applicant's part if the rules required interpretation in this regard. They do not. They are absolutely unambiguous and explicit. The very first general licensing requirement at 4.01 requires applicants to demonstrate their ability to comply with all general operating regulations set forth in part 3 of the regulations. The construction licensing regulations specific to incinerators and resource recovery facilities at 7.06 and 8.06 respectively require that an operating plan be submitted in support of such a license and that the applicant must demonstrate an ability to comply with all general operating standards and with the incinerator and resource recovery facility standards listed in Rules 11.00 and 12.00. (Transcript, 4/6/88, pp. 11-12.)

4.04: The Solid Waste Facility License Application at Appendix E describes the property line noise impacts of facility operations with respect to Industrial Park and Town Ordinance Requirements. Considerable testimony in both the applicant's case-in-chief and rebuttal regarding noise impacts was entered on the record by the applicant's noise expert, Mr. Willoughby, and for the Town by its noise expert, Dr. Copley. All such testimony was directed at establishing whether or not noise at the property line and at the nearest residential neighborhood had been properly calculated and

whether or not predicted levels were violative of the North Kingstown Noise Ordinance (Exhibit 81). The Hearing Officer finds no purpose in further characterizing this testimony in the context of Rule 4.04 for reasons set forth in the Conclusions of Law.

4.05: In its cross-examination of applicant's witness, Mr. Ratterree, the Town established that the plans contained in the Solid Waste Facility License (Exhibit 12) were not stamped by a Rhode Island registered professional engineer as is required by this Rule. However, Mr. Ratterree testified that properly stamped plans had been submitted to the Division in support of the Application. These were subsequently introduced into the record as Exhibit 29.

4.06: During the course of the January 22, 1988 hearing session considerable legal argument was presented by the parties regarding the applicant's obligations to establish need for the proposed facility in the manner prescribed under this Rule. Parties were directed by the Hearing Officer to submit written argument by February 19, 1988 and replies by February 26, 1988. Such arguments and replies were incorporated into the record of the hearing and a Ruling was issued by the Hearing Officer on March 17, and is part of the administrative record. In relevant part the March 17, 1988 Ruling finds at page 10 as follows:

...the applicant is subject to the requirements of 4.06, which requirements, however, can be met by a demonstration that the facility before me has been found to be necessary in the manner prescribed by law in The Statewide Resource Recovery System Development Plan.

Applicant's witness, Mr. Ionata, testified to the findings and conclusions of the Statewide Resource Recovery System Development adopted by the Rhode Island Solid Waste Management Corporation (RISWMC) commissioners in June, 1987 and entered into the record as Exhibit 50. Mr. Ionata represented that the proposed facility at Quonset Point was one of three called for in the Plan and that both economies of scale and the mandates of the Flow Control Bill, so called, dictated that it be as large as allowed under the law.

Mr. Ionata testified to the Plan's findings regarding the volume of MSW produced annually in Rhode Island, the means by which this volume had been calculated and the implications the data had relative to existing disposal options and future disposal needs. He represented that numerous scenarios which project waste generation over the next twenty years were developed and are described in the Plan. Among these a most likely scenario was identified and served as the basis for projecting disposal facility needs. This scenario was described as assuming that a statewide mandatory recycling program would result in a 25% reduction in MSW which presently requires disposal by other means. Mr. Ionata testified to the Statewide Plan's documented conclusion that

projected waste generation even with recycling far exceeds the state's current disposal capacity at the Central Landfill and clearly establishes a need to develop alternatives of the sort proposed.

Mr. Carlson, for the applicant, testified that eleven communities had been identified by RISWMC to tip (dump) at the proposed facility. These included Coventry, East and West Greenwich, Exeter, West Warwick, Warwick, North and South Kingstown, Narragansett, Jamestown and half of Cranston, all of which were testified to as currently tipping at the Central Landfill.

Mr. Carlson further testified that the applicant and the Statewide Plan had identified landfilling as the principal alternative to the proposed facility's incinerator technology for much of the state's MSW, although as previously noted an assumption was made that 25% could and would be recycled. The numerous environmental objections to and problems with landfilling were described.

The objectors closely scrutinized applicant's witnesses regarding the credibility of applicant's examination of alternatives to the proposed facility. Considerable skepticism was expressed through cross-examination relative to the consideration afforded recycling as an alternative to

incineration and applicant's witnesses were queried as to their awareness of data from other states showing recycling levels much higher than those anticipated in the Statewide Plan. It was suggested, again through cross-examination, that these higher recycling levels might obviate the need for the facility and further that an incinerator would actively undermine an effective recycling program and should consequently not be built until the recycling program was established.

Objectors were critical of what they perceived as the applicant's failure to adequately consider the cost to affected communities of the proposed facility, the failure to consider the cost of activities ancilliary to its operation such as ash disposal, and its cost relative to alternatives. Applicant's witness, Mr. Carlson, was questioned closely regarding the applicant's consideration of other sites within the Quonset-Davisville Industrial Park.

4.08: The Application contains at Section III a description of the process the operator will follow to close the facility, although it expresses the applicant's intention to continue operations indefinitely. Applicant's witness, Mr. Almquist, testified to the applicant's closure plan and was questioned by the objectors at length about its brevity and lack of specifics.



The applicant did not contest the objectors' observation that the closure plan contained no estimate of closure costs as is required per Rule 4.08(b)(1). It, however, argued to an interpretation of the regulations which would not require submission of such a cost estimate until operations are actually terminated. The Division's witness, Mr. Quinn, gave conflicting testimony regarding his interpretation of this requirement.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The application to construct was submitted at least six months prior to the planned opening date of the facility.
2. The Solid Waste Facility Application (Exhibit 12) at Appendix A includes a Certificate of Ownership and at Appendix B a Proxy Statement which identifies the officers and director's of the owners and operators of the facility.
3. Required plans have been stamped by a professional engineer registered in the State of Rhode Island.

4. Alternatives to incineration were explored by the applicant.
5. There presently exists a need for a 710 tons per day capacity MSW resource recovery facility in Rhode Island.
6. Recycling of MSW even at levels far in excess of the 25% assumed in the Statewide Plan will not obviate the state's need for additional waste management capacity.
7. There is no sound basis for predicting that construction of this facility will conflict with or undermine the state's efforts to encourage recycling.
8. The Application contains a closure plan which contains no estimate of the cost of implementing that plan.
9. No harm to the environment or to public health and safety would result from later submission of a closure cost estimate.

The applicants's arguments that such a closure cost estimate is not required to be submitted until closure is actually undertaken are not convincing.



RULE 7: INCINERATORS (CONSTRUCTION)

RULE 8: RESOURCE RECOVERY FACILITIES (CONSTRUCTION)

7.01: The issue of how the Hearing Officer should interpret the regulatory requirement that all information required by Rule 6.00 relating to the [ash] residue disposal site be submitted was the subject of extended legal argument at the hearing session of January 26, 1988. The Hearing Officer directed the parties to submit written Argument by February 19, 1988 with Reply Briefs due February 26, 1988. These were incorporated into the record of the Hearing. On March 17, 1988 the Hearing Officer issued a Ruling on this issue which is also part of the record of the hearing. In relevant part the March 17, 1988 Ruling finds at page 13 as follows:

The applicant can comply with the requirements of Rules 7.01 and 11.04 by demonstrating that it has applied for the requisite [RIDEM] license per Rule 6.00 for the ash disposal site. I conclude that it has made this demonstration and meets its burden in this regard, subject, however, to the following conditions and limitations:

1. This finding does not address nor does it represent an opinion regarding the substance, or completeness of any other application presently pending before the Department of Environmental Management including but not limited to any pending application(s) concerning the Central Landfill in Johnston, R. I.
2. An agreement with an appropriately licensed Rhode Island or out-of-state ash disposal facility must be in place prior to the commencement of RRF construction, if a license is granted. "Construction" shall not be deemed to include site clearing and grading, but shall include any phase of building construction and the ordering or installation of equipment.

Testimony by applicant's witnesses, Mr. Almquist and Mr. Ratterree, established that at the present time the applicant intends to dispose of non-hazardous ash at the State Central Landfill and that it has identified no alternative destinations for such ash. Testimony by Mr. Carlson confirmed that the Central Landfill is not presently licensed to accept incinerator ash, although an application to construct an ash monofill at Central has been submitted to the Division. Various plans and reports in support of this other application were entered on the record by Mr. Siebecker as Exhibit's 40-46. It was clearly established by cross-examination of Mr. Almquist that the Application contains none of the information required by Rule 6.00 for the Central Landfill.

In its Closing Argument the applicant requested modification of the Hearing Officer's March 17 Ruling to lift the requirement that it have in place an agreement with a licensed ash disposal facility prior to commencing construction and to modify the Order to require such an agreement only prior to commencing operations. In support of its request the applicant argued that the requirement would delay the beginning of construction pending receipt of its Central Landfill license and would penalize it financially as a result. It further argued that the Order makes no practical or economic sense since no ash will be produced

during construction and that the Order is generally unreasonable, unwarranted and unnecessary.

7.03 and 8.03: Cross-examination by the Town of various applicant's witnesses established that the applicant's Radius Plan does not recognize the presence of the Trea Industries building.

7.04 and 8.04: Applicant's witnesses, Mr. Almquist and Mr. Ratterree, testified to the various facility components and site conditions required to be identified on the Site Plan. Mr. Ratterree was questioned under cross-examination regarding the location of existing and/or abandoned underground utilities and/or storage tanks on the site, particularly such as might be covered with asbestos and indicated that he was unaware of any, although no investigations to confirm this understanding had been undertaken.

Mr. Ratterree was likewise questioned regarding the location of gas lines servicing the site and on the site. He identified on the applicant's Underground Utilities Plan an eight inch gas line running from Belvere Avenue to the facility, but testified to not being aware of the location of the nearest off-site gas line.

The Town's witness, Mr. Osborne, testified critically regarding the absence in the submitted plans of details regarding the facility's electrical interconnection with the

utility grid, the location of the nearest gas line and the lack of an indicated backup pressurized fire fighting water supply. However, under cross-examination by the applicant, Mr. Osborne conceded that it was not unusual for only the basic outline of utility interconnections to be identified in an application of this sort.

7.05 and 8.05: The completeness of the applicant's construction and engineering plans and specifications for buildings alone per 7.05, for buildings and equipment per 8.05, as set forth in the Application and as testified to by Mr. Almquist and Mr. Ratterree was the subject of extensive critical cross-examination by the objectors and similarly critical testimony from Town witnesses Mr. Osborne and Mr. Cooper.

On March 16, 1988 at the conclusion of its case-in-chief, however, the applicant requested a variance from Rules 7.05 and 8.05. This variance request is part of the administrative record of this hearing. The Hearing Officer ruled on the variance requested in a statement read into the record of the April 6, 1988 hearing session, which statement briefly summarizes the arguments presented by the parties on this point and finds as follows:

Having carefully reviewed and considered the variance, the various arguments bearing on the applicant's request for a variance to Rule 7.05 and 8.05, I find as follows: The word "complete" as employed in Rule 7.05 and 8.05 is not defined

and the applicant's argument that complete does not necessarily mean final is well taken. For purposes of this hearing, I will define complete as quote "being of sufficient scope and detail to allow a reasonable person to make an intelligent judgment as to whether the facility described is designed so as to be capable of being operated in conformance with the intent and policies of Rules 1.02 and 1.03." I agree with the Applicant's argument that requiring final, as opposed to complete, construction and engineering plans is unreasonable, given the increasing prospect that this proposal, if permitted, will be substantially modified by order of the director as a result of this hearing. This agreement, on my part, is subject, however, to the caveat that the plans and specifications placed before the hearing must be complete, as I have just defined the term. Having reviewed such plans and specifications at some length, I'm referring to those incorporated in the Solid Waste Application, I conclude that they are complete in the sense that they will support an intelligent judgment regarding the facility's conformance with Rules 1.02 and 1.03. I therefore conclude that the plans and specifications before me provide an acceptable alternate method for fulfilling the purposes of Rule 7.05 and 8.05. (Transcript, 4/6/88, pp. 13-14).

In its Closing Argument the applicant requested clarification of a proposed condition attached to the Hearing Officer's variance ruling. That condition would require that the Division review and approve shop drawings for all facility components as part of the review/approval process by applicant's construction manager prior to the installation and/or construction of that component. In support of its request the applicant argues that an interpretation which requires submission and approval of all facility components before any construction is authorized to begin is inconsistent with its proposed "fast track" construction strategy and would cause it significant financial harm.

7.06 and 8.06: The Solid Waste Facility License Application (Exhibit 12) contains at Section III-E an "Operation Plan" which describes in general terms the manner in which it is proposed the facility will be operated, with specific reference to the twenty-two parameters that are required to be addressed pursuant to 7.06(b) and the 21, most of which are duplicative, required to be addressed per 8.06(b). Considerable testimony regarding these parameters was also entered into the record through applicant's witnesses, Mr. Almquist, Mr. Ratterree and Mr. Carlson. Applicant's witnesses were extensively cross-examined by the objectors and the Town put on several witnesses who testified at length to perceived inadequacies in the applicant's Operating Plan.

For reasons that are set forth in the attached Findings of Fact, summaries of the argument heard regarding the Operating Plan and the various parameters required to be addressed are contained in the discussion of Rules 9.00, 11.00 and 12.00, in this Decision and Order, respectively.

7.07 and 8.07: The Solid Waste Facility License Application contains at Section III-F a general description of a Closure Plan and specifically, albeit very briefly, addresses the seven subject areas identified in this Rule. In addition, Mr. Almquist testified on behalf of the applicant regarding the Closure Plan.

Applicant's Plan was roundly criticized by the Town as being unacceptably general in nature. Cross-examination of Mr. Almquist attempted to establish that the applicant's Plan did not adequately provide for emissions and odor control, ground and surface water protection, and post-closure building maintenance. In response to the Town's questions regarding these matters, Mr. Almquist testified that removal of remaining MSW at closure would eliminate the only remaining odor or emissions source, that mothballed buildings would remain tied into sanitary sewers, and grounds and parking lots into storm drains to prevent water pollution, and that plant components would be placed in a standby condition awaiting possible reuse. He conceded that no building maintenance plan had been developed.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The Hearing Officer issued an Administrative Decision and Order on March 17, 1988 which requires that prior to commencing construction the applicant have in place an agreement with a licensed [non-hazardous] ash disposal facility.

2. For a variety of reasons cited, the applicant has requested modification of this Order to extend the deadline for having such an agreement in place until the beginning of facility operations.
3. The Hearing Officer finds that compliance with the Order as written will not delay the applicant's project, as the applicant has alleged. It does not preclude the applicant from entering into some form of interim or conditional agreement with an appropriately licensed landfill. The Hearing Officer further finds it unacceptable as a matter of public policy to license the construction of a facility which, by the applicant's own calculations will, when it commences operations, generate 200 tons per day of waste ash without the Hearing Officer being assured before construction commences that the applicant has available an appropriate location to dispose of that ash.
4. Exhibits 40-46 which purport to be elements of RISWMC's application are not of a subject properly before the Hearing Officer.



5. An Initial Investigation Plan containing the information required by Rule 7.02 was submitted to the Divison on February 3, 1987 and has been entered into the record as Exhibit 13.
6. The Radius Plan submitted by applicant is substantially complete except for its failure to indicate the location of the Trea Industries building. This defect can be readily corrected and represents no threat of harm to the public health and safety or the environment, if so corrected.
7. The Site Plan, submitted by the applicant, is substantially complete, except for the absence of any indication that the existence and location of abandoned underground utilities or storage tanks has been investigated. Again, this defect can be readily corrected and represents no threat to the public health and safety or the environment, if so corrected.
8. The applicant is not required to have identified off-site utility locations including gas lines since the requirement to submit a site plan is limited to areas within the site.
9. The applicant's construction and engineering plans and specifications are complete, provided that the

Division reviews and approves shop drawings for all facility components prior to their construction and/or installation.

It was and remains the Hearing Officer's intention that this condition would require the Division's continuing review and approval as shop drawings for each component are submitted by applicant's contractors and vendors.

10. The applicant has submitted an Operating Plan which contains information on all the subjects listed under Rule 7.06(b).
11. The applicant has submitted a closure plan addressing the subjects detailed in Rule 7.07.

RULE 9.00: GENERAL OPERATING STANDARDS

9.02 (Access): The Application indicates that the facility will operate twenty-four hours per day, year round. However, MSW will be received only between the hours of 7:00 a.m. and 6:00 p.m. weekdays and 7:00 a.m. to 12:00 p.m. on Saturdays. The facility will not accept waste on Sundays and legal holidays. The applicant has indicated that the plant will be staffed twenty-four hours per day in three shifts.

The Application also indicates that a sliding gate will be provided at the single entrance/egress point for MSW vehicles and that a separate entrance will access a staff and visitor parking lot. Applicant's witness, Mr. Almquist testified that the entire site perimeter will be surrounded by a fence.

9.03 (Salvage): The Application indicates, and the applicant's witness, Mr. Ratterree, testified that no salvage will take place during the operation of the facility and, in fact, that salvageable material such as white goods and demolition waste will not be accepted. Mr. Ratterree testified however that separate areas on either end of the refuse bunker will be built to allow for the temporary storage prior to removal from the site of white goods, bulky goods, hazardous waste and other prohibited materials which find their way into the bunker.

9.04 (Water Pollution): Applicant's witnesses, Mr. Almquist and Mr. Ratterree, testified to the facility's compliance with applicable state and federal laws regarding prevention of surface and groundwater pollution. It was represented that compliance was conclusively demonstrated by the issuance of a preliminary permit to discharge pretreated sanitary and process waste water to the Quonset Point-Davisville Industrial Park sewage treatment plant (Exhibit 14) and by a letter from RIDEM indicating an intention to issue a so-called RIPDES permit for stormwater runoff (Exhibit 16) based on an application submitted by the applicant for such a permit (Exhibit 15). Applicant's witnesses testified that there would be no other sources of unregulated or uncontrolled releases to surface or groundwater.

Under cross-examination by the Town, Mr. Almquist testified to there having been no other analyses or investigations including groundwater modelling performed by the applicant to support its demonstration of compliance. Cross-examination also revealed that the RIPDES stormwater discharge application limited itself to the predicted quantity of stormwater runoff and did not address its quality.

In its Closing Argument the applicant represented that construction of its facility will not result in the discharge of dredged material into a wetland. No evidence contrary to this representation was entered into the record.

9.05 (Vector Control): Applicant's witness, Mr. Almquist, testified that all MSW will be enclosed in the bunker, itself enclosed, and accessible only through the tipping hall doors. He expressed his opinion that the traffic and activity in the tipping hall area during the periods when MSW is being received would discourage vermin from entering the facility. Mr. Ratterree testified that the doors to the tipping hall would be kept closed to discourage vermin at all other times and that the tipping hall floor would be rinsed down nightly to maintain sanitary conditions. Mr. Almquist represented that a licensed exterminator would be retained if these measures proved insufficient.

Under cross-examination Mr. Almquist conceded that the proposed measures would not entirely discourage insects and that the possibility of disease being spread by insects and rodents had not been addressed in the Application.

9.06 (Signs): Mr. Ratterree testified to the applicant's intention to post at the main entrance to the facility a sign indicating:

- the name of the facility, its owner and operator
- the names of the communities serviced
- an emergency phone number
- a list of prohibited materials
- operating hours

9.07 (Communication): The Application document indicates that the facility will employ telephones, paging systems, two-way radios, and in some areas closed-circuit television for purposes of communication. Mr. Ratterree testified that two-way radios would be employed between the crane operator and employees in the crane drop area to direct the transfer of hazardous materials from the refuse bunker to lined storage receptacles.

9.08 (Air Pollution): Summaries of testimony regarding Open Burning, Air Standards and Odors are included in the Air Pollution Control Application Decision and Order and are incorporated herein by reference.

9.09 (Inspections): Applicant's witness, Mr. Ratterree, testified that the facility will be open to inspection by RIDEM at any time.

9.10 (Endangered Species): Applicant's witness, Mr. Raithel, testified to having surveyed the vicinity of the site on at least six occasions over a period of three years for signs of the presence of rare or endangered birds. He further

testified that this work was performed in the course of his duties as an employee of RIDEM's Division of Fish and Wildlife. Mr. Raithel represented that he had found no sign of any federally threatened or endangered species within at least a five mile radius of the site. Three bird species on the state's list of threatened species were found within a mile of the site, but not actually on it.

Under cross-examination, Mr. Raithel acknowledged that he had not specifically looked for threatened or endangered mammals or fish. However, he qualified this admission by testifying that there were no federally or state threatened or endangered mammals or freshwater fish in the entire state. He represented himself as not being knowledgeable on saltwater fish. Also under cross, Mr. Raithel conceded that he had not looked for endangered or threatened plants, although he testified to there being no suitable habitat on the site or in its vicinity for the only state threatened plant. Mr. Raithel testified that it was possible that the federally threatened peregrine falcon would visit the site briefly, during migration, but that it does not nest there.

Applicant's witness, Mr. Almquist, testified under cross-examination that the Application does not describe design features or operating procedures which are protective of critical habitat for federally endangered or threatened species, but observed this was because no such species had been found on or near the site. Mr. Raithel stated that there was no federally listed critical species or habitat on site or in the entire state for that matter.

9.11 (Dust Control): Testimony regarding dust control measures is summarized in the Air Pollution Control Decision and Order and is incorporated herein by reference.

9.12 (Litter Control): The Solid Waste Facility License Application indicates and Mr. Almquist testified that the operator will undertake daily litter patrols along all access and egress roads within the Industrial Park. It further represents that the enclosure of the tipping hall and refuse bunker will prevent the generation of air borne litter.

9.13 (Safety Provisions): Noise - The Solid Waste Facility License Application at Appendix E describes the various calculations performed to demonstrate that operation of the facility will not violate the property line noise limit of 65 DBA set by the Rhode Island Port Authority. Applicant's counsel argued that the Town noise ordinance does not apply.

The Town's witness, Mr. Osborne, testified to his opinion that the applicant's analysis had not considered background noise levels and that if it did the Industrial Park and Town property line noise ordinances would be violated. Cross-examination established, however, that Mr. Osborn was not qualified as an expert regarding noise assessment.

The applicant called Mr. Willoughby to testify on rebuttal as to certain measurements of background noise levels he had performed at the site. Mr. Willoughby represented that these showed levels which when added to predicted facility noise levels in the appropriate (logarithmic) manner confirmed the conclusion of Appendix E that property line noise levels would not be exceeded. Under cross-examination, Mr. Willoughby acknowledged that all his field measurements had been taken at the same time on one day.

Appendix E also goes on to conclude that because the site is in an industrial area removed 0.7 miles from the nearest homes, no noise impacts to those homes will result. Mr. Willoughby, again, testified to having performed various calculations to confirm this conclusion.

The Town introduced considerable testimony regarding noise through its expert, Dr. Copley, who noted various perceived deficiencies in Mr. Willoughby's methods and conclusions and who testified to measurements and

calculations he had performed to support his own conflicting opinions. These included, most notably, that facility derived noise levels at the nearest residence would be 44 DBa, considerably higher than projected by Mr. Willoughby and clearly audible. Cross-examination of Dr. Copley by the applicant, however, established that the maximum receiving level for residential areas established by the North Kingstown Noise Ordinance was 60 DBa from 8:00 a.m. until 10:00 p.m. and 50 DBa for the nighttime hours.

Management of Hazardous Materials - Applicant's witnesses, Mr. Almquist, Mr. Carlson and Mr. Ratterree, testified extensively as to the various steps the applicant proposes to take to eliminate such hazardous materials as hazardous, pathological and radioactive wastes from the waste stream and to handle and remove them if and when they do find their way into the facility.

Mr. Carlson testified that the applicant would undertake a vigorous educational program to educate haulers, communities and individuals as to the need to keep hazardous substances out of the waste stream. Mr. Ratterree testified that prohibitions regarding the tipping of such substances would be clearly posted at the facility entrance and that drivers would be questioned as to the contents of their loads by the scale house operator, who would also visually inspect

the vehicle for any obvious signs of hazardous material. Additionally, he testified that the tipping hall attendant would monitor the contents of loads as they are tipped into the refuse bunker, while the refuse crane operator would spend 50% of his time inspecting the contents of the refuse pit as he mixed those contents in preparation of charging the furnace hoppers. Mr. Ratterree and Mr. Carlson further testified that as a deterrent to illicit dumping of hazardous substances, the equivalent of six randomly selected packer trucks per week would be dumped on the tipping hall floor and their contents inspected for the presence of prohibited materials.

Mr. Ratterree testified that if the crane operator identified any suspect material in the refuse bunker, he would remove it and the refuse immediately around it with the crane grapple and transport it to a crane drop area to be located at one end of the bunker. Directed over two-way radio by a facility employee in the drop area, he would lower the grapple of waste through a hatch in the ceiling of the drop area and into a four cubic yard lined dumpster. At this point, RIDEM would be notified and a licensed hazardous waste hauler contacted to remove the material to a licensed off-site disposal facility. Mr. Ratterree testified that the crane drop area would be designed and operated in compliance with RIDEM's standards for the temporary storage by a generator of liquid hazardous waste.

Mr. Ratterree testified that in order to prevent mixing of incompatible hazardous materials each grapple of suspect material would be placed in a separate lined container until removed from the site and that all containers would be inspected daily for leaks and grounded to prevent sparks and accidental fires or explosions. Mr. Ratterree testified that the hazardous waste hauler with whom the facility operator would contract would be required to remove suspect material within 24 to 48 hours of being notified by the operator.

Mr. Carlson testified to Exhibit 37 which is an appendix to the Service Agreement (Exhibit 33) between the applicant and the operator and which was described as setting forth the components of a hazardous waste emergency (contingency) plan and training protocol. Mr. Ratterree testified that the development and conduct of the emergency training program would be a responsibility of the hazardous waste hauler contracted to remove suspect material from the site.

Applicant's witnesses were questioned closely by the objectors regarding the adequacy of the applicant's proposals to keep hazardous materials out of the waste stream. This questioning established that the scale house operator would only infrequently be able to see even the surface contents of trucks entering the facility since most would be closed. It was likewise established that the tipping hall attendant

would have difficulty simultaneously inspecting the contents of the up to seven trucks that at any given time could be tipping waste into the refuse bunker at once. Mr. Ratterree conceded that the crane operator, given the size of the refuse bunker and his location in an elevated crane pulpit, would have difficulty in identifying and consequently in removing anything but large or obvious materials such as oil drums and hospital red bags. Cross-examination of Mr. Carlson established that the applicant's proposed random truck inspection schedule would in practice only result in at most inspection of 1.5% of trucks entering the tipping hall, less (0.5%) if transporter trucks rather than packers were inspected.

Mr. Ratterree was questioned as to the applicant's intentions regarding the interdiction of radioactive waste and testified to the fact that scanning of loads at the scale house was being considered. Town witness, Mr. McCarthy, testified to the practice of routine scanning of incoming loads at a North Andover, Massachusetts resource recovery facility.

Mr. Ratterree was also questioned extensively regarding the handling of suspect material removed by crane grapple from the refuse bunker. He acknowledged that the four cubic yard temporary storage containers proposed to be located in

the crane drop area had a smaller capacity than the six cubic yard crane grapple, but argued that the crane operator would in practice only grapple the waste immediately surrounding the suspect item(s). In response to a question regarding the availability of protective clothing and breathing apparatus, Mr. Ratterree indicated that they would be accessible to plant employees including the crane operator, but did not indicate that they would routinely be employed when handling suspect material. Mr. Ratterree acknowledged that ambient air monitoring devices in the crane drop area were not accomodated in the proposed design, but represented their use was being considered. He likewise acknowledged that potential impacts associated with the likely trucking of hazardous materials across the Hunt's River aquifer on Devil's Foot Road had not been considered.

The applicant's reliance on a contractor to prepare an employee hazardous waste contingency training program was criticized by Town witness Mr. Osborn. Cross-examination of Mr. Carlson established that the hazardous waste contingency plan described in Exhibit 37 had not actually been developed with Exhibit 37 only describing its broad outline and establishing an obligation on the part of the operator to prepare the plan for RIDEM review and approval. As a consequence, it was established that the applicant had not

yet identified who would assume the responsibility of the hazardous waste emergency coordinator, nor had it at this time identified procedures to be employed to minimize the potential for emergencies and/or to manage those that occur. This was characterized by the Town's counsel as contrary to the requirements of the Division's Guidance on Resource Recovery Facilities (Exhibit 7).

Town fire chief, Mr. Smith, testified as to the lack of any consultation on the applicant's part with his department regarding managing hazardous waste emergencies. He further testified to his department's needs regarding personnel, training and specialized equipment and protective gear to effectively deal with hazardous waste emergencies. He represented the department as presently being ill-prepared and equipped to respond.

Mr. Ratterree was questioned by the Town regarding the facility's compliance with various state hazardous waste generating and storage regulations. This line of questioning in turn led to legal arguments between the parties regarding the applicability of various state and federal laws and regulations. The Hearing Officer requested parties to submit written argument on this issue with a submission deadline of July 1, 1988. The issue was briefed by the applicant, the Division and the Town of North Kingstown whose briefs are entered into the record of the hearing.

Management of Ash Residue: The solid Waste Facility License Application describes, and Mr. Almquist and Mr. Ratterree testified to, a process whereby dry top and bottom ash will be transferred by closed conveyor belt to a water quench tank or surge bin where they will be mixed and moistened before being transferred by another closed conveyor system to an ash storage and loading building. Within the ash storage building, the approximately 200 tons of ash generated each day will be stored in separate bins where it will be held until receipt of test results on the contents of that bin. Depending on these results the ash will be handled as a hazardous or non-hazardous material and disposed of off-site accordingly.

The ash storage building was described as complying with RIDEM's regulations for temporary storage of liquid hazardous wastes with hardened concrete walls on three sides, a slab underneath and a low curb separating the storage area from a truck loading ramp. Mr. Ratterree testified that any leachate from the ash storage piles would be collected and returned to the ash quench basin for reuse.

Mr. Ratterree further testified to measures the applicant has taken to accommodate the complete separation of the top (fly) and bottom ash handling systems if required by a change in EPA mixing regulations. These would involve construction of a separate closed conveyor system for fly ash and partitioning of ash storage bins to prevent mixing of the ash streams. He testified that it would require between 90 and 180 days to effect the necessary modifications.

The Application represents at Section III that ash will be tested daily for toxic metals levels and monthly for a full spectrum of pollutants in accordance with the currently approved EPA testing protocol, that being the so-called EPTOX method. Top and bottom ash will be tested after mixing unless changes in EPA's "mixing rule" require separation before testing. Mr. Ratterree testified that multiple samples will be collected and an average value calculated.

The applicant called Mr. Carlson to testify to its proposed ash disposal procedures. Mr. Carlson testified that the applicant proposed to dispose of non-hazardous ash in a dedicated ash monofill at the State Central Landfill. Arguments regarding the licensing status of the Central monofill have been previously summarized as has been the Hearing Officer's Ruling of March 17, 1988 on this issue.

Mr. Carlson testified that ash tested to be hazardous would be disposed of at a licensed hazardous waste landfill of which there were testified to be none in Rhode Island. Two letters from operators of out-of-state hazardous waste landfills indicating what the witness characterized as willingness to accept hazardous ash were, however, entered into evidence as Exhibits 34 and 35.

Under cross-examination, Mr. Ratterree acknowledged that the Application document did not contain a detailed description of ash handling procedures as was required by the Division Guidance for Resource Recovery Facilities. However, as noted previously he testified at some length and in significant detail regarding these procedures.

Mr. Ratterree was questioned closely by the objectors regarding ash testing procedures and the reporting of results. Mr. Ratterree represented that testing and averaging of results would comply with approved EPA testing methods and that sampling procedures would not be manipulated to effect averaging results. He testified that results would be reported to the applicant, whose counsel argued they would thus become public record.

Questioning of Mr. Carlson by the Town established that if and when the Central Landfill was licensed to receive incinerator ash, the projected lifetime of its proposed ash monofill would be approximately five years with the three resource recovery facilities identified in the Flow Control laws operating. It was further established by questioning of Mr. Carlson and Mr. Ionata that the projected operating life for the proposed facility was approximately forty years and that the applicant's search for additional ash disposal capacity was in a very preliminary stage.

Under cross-examination by the Town, Mr. Carlson conceded that the two letters he had received from out-of-state hazardous waste landfills while giving him an indication that at least two facilities were available did not provide any assurance that either facility would enter into a contract with the applicant. He testified, however, that until actual ash residue test results were available vendors would not enter into a contract. Mr. Carlson acknowledged that the applicant was aware of the financial risks of disposing of ash tested to be hazardous at the two facilities which had responded to his inquiries, one located in up-state New York and one in Louisiana.

Training and Certification - The Application at Section III represents and applicant's witnesses, Mr. Ratterree and Mr. Almquist testified that shift supervisors and other key employees would be trained and certified according to any then required certification program. Mr. Ratterree testified that there presently exists no federal or Rhode Island certification requirement. However, he testified that the applicant intended to require key personnel to take and pass an operator certification course currently being developed by the American Society of Mechanical Engineers.

The Application, also at Section III, expresses a commitment to develop and submit to the Division for review and approval an employee training program. This is proposed to occur at least 180 days prior to the scheduled beginning of operations. The purposes of the training program and its broad outline are described. Likewise, Appendix C to the Application contains detailed representative job specifications for several facility positions and brief job descriptions of other positions.

Cross-examination of Mr. Almquist established that the Guidance document's requirement that an employee training program be submitted with a license application had not been complied with, although Division witnesses Majkut and Quinn testified to their opinions that submission of such a program would properly be a condition precedent to receipt of an operating (as opposed to construction) permit.

Town witness, Mr. Osborn, testified to his opinion that more details of a training program should have been included in the Application, but under applicant's cross-examination acknowledged that "industry practice" did not normally include submission of a detailed employee training program with a construction license application. He further confirmed that it was customary for equipment vendors to provide employee training on their equipment during plant shakedown.

Maintenance - The Application at Section III describes in broad outline the contents of a facility maintenance plan whose details will be refined prior to commencing operations. It is represented that this plan will provide for preventive maintenance, major scheduled overhauls and emergency procedures for unplanned outages. It is further represented that specific requirements and schedules will be dictated by the equipment and components selected. Appendix

F to the Application contains specifications for major facility components which in each case include a requirement that operation and maintenance procedures manuals be provided by the vendor.

Town's witness, Mr. Osborn, testified critically regarding the absence of detailed overhaul and maintenance plans in the application, the development of which he, under cross-examination, nevertheless characterized as an on-going process.

Emergency Access - Mr. Almquist testified under cross-examination regarding provisions made for emergency vehicle access. He represented that it was his understanding that a second access point, normally locked was provided for emergency vehicles and that it would also be possible for them to employ the exit lane of the main entrance if queued refuse vehicles blocked the entrance lane.

Bird Hazard - Applicant's witness, Mr. Ratterree, was called to testify regarding measures to be employed to prevent attraction of birds that could represent a hazard to aircraft. He testified that no MSW would be stored in the open and that the enclosed design of the tipping hall and refuse bunker together with the heavy traffic and activity in the building would discourage birds from entering. He additionally represented that entrance doors would be closed to a minimum level when MSW was not being received.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The applicant has demonstrated that access to the property will be limited to hours during which operating personnel will be on duty.
2. The applicant has represented that no salvage will take place during the operation of the proposed facility.
3. The applicant has demonstrated that it has obtained the necessary permits to discharge pretreated sanitary and process wastewater to the Rhode Island Port Authority sewage treatment plant and has likewise obtained a letter of intent from RIDEM to issue a RIPDES permit for the facility's stormwater runoff discharge.
4. No evidence was placed on the record as to any alleged failure on the part of the applicant to obtain any other required state or federal water quality related permits.
5. No discharge of dredged material or fill will take place from construction or operation of the facility.
6. The applicant has accommodated in the design and operating plan for the facility features which will substantially minimize vector related problems. However, other steps can and should be taken to prevent the spread of disease by vectors.

6. The applicant will install the type of sign required per Rule 9.06(a) at the entrance to the facility.
7. Suitable means of communication will be provided for.
8. A separate Air Pollution Control Decision and Order has been issued which addresses the issues of open burning, air standards and odors.
9. The facility will at all times be open to inspection by RIDEM.
10. There are no threatened or endangered plant or animal species as defined under the Endangered Species Act (16 U.S.C. 1531 et seq.) either on the site or anywhere within its area of potential impact, although one federally listed species, the peregrine falcon, may occasionally visit the site while migrating.
11. There is no critical habitat of federally protected (endangered or threatened) species on site or within the potential impact area.
12. Dust control is addressed in the before-mentioned Air Pollution Control Decision and Order and those findings of fact are incorporated herein by reference.
13. The applicant will take suitable measures to minimize litter and to routinely maintain the cleanliness and appearance of the site.

9/17/9

14. The North Kingstown Noise Ordinance (Exhibit 81) at Section 7-6-1(a) identifies excessive noise as "a serious hazard to public health" among other things. It further sets forth standards for excessive noise for industrial and residential areas.
15. The noise level generated by the facility will not exceed 44 DBa or cause a hazard to the public health.
16. The Town Noise Ordinance prohibits noise in excess of 60 DBa between 8:00 a.m. and 10:00 p.m. and 50 DBa the remainder of the day.
17. The applicant has proposed measures and has accomodated in facility design provisions which, with conditions that are attached to this Decision and Order, demonstrate a capability to protect facility users, personnel and other persons in close proximity from harm associated with receipt, improper handling and/or improper disposal of hazardous substances.
18. Deterrence is by far and away the most effective means of minimizing potential problems associated with hazardous



substances entering the waste stream. The most effective deterrent in this instance is the random dumping and inspection of significant numbers of waste loads on the tipping hall floor. Six loads per week is not found to represent a significant number of loads relative to the working capacity of the facility.

19. Dumping of waste loads on the tipping hall floor and inspection of those loads for the presence of hazardous substances requires that certain precautions be taken in the design and operation of the facility to protect users and employees from accidental exposure to fire, explosion and/or hazardous gases and liquids caused by the presence of such hazardous substances.
20. The applicant will refuse entry to and detain trucks leaking suspect liquids, carrying smouldering or hot loads and/or which are determined by inspection to be carrying hazardous or otherwise prohibited substances. This protocol dictates that a secure area, apart from the tipping hall and capable of containing the contents of such vehicles be constructed.
21. The applicant's expressed intention to have an employee in the crane drop area direct the crane operation by radio in the transfer of suspect material from the crane grapple to a temporary storage container will expose that employee to an unacceptable and unnecessary degree of risk.

21. The crane drop area and the temporary storage containers in it will be designed and operated to conform with RIDEM's regulations governing the temporary storage by generators of liquid hazardous waste.
22. In order to ensure the safety of facility users, employees and neighbors with regard to temporary storage on site of suspected hazardous materials it is necessary that:
 - a. Sufficient numbers of temporary storage containers are maintained on site to ensure their availability when needed;
 - b. The capacity of temporary storage containers equals or exceeds the capacity of the crane grapple;
 - c. Temporary storage containers must be removed from the site to a licensed disposal or treatment facility by a licensed hazardous waste hauler as soon as reasonably possible;36d.

Temporary storage containers holding suspect material must at all times be stored in a secure area which conforms with RIDEM's above referenced hazardous waste storage regulations pending their removal from the site.

23. A hazardous waste emergency contingency plan is necessary and must be developed prior to commencement of operations and in sufficient time to allow for rigorous review by the Division and public comment before it is approved.
25. In order to ensure the safety of facility users, employees and neighbors, it is necessary that entering trucks be routinely scanned for radioactive materials.
26. In order to ensure safety, suitable protective clothing is required to be worn by facility employees when handling suspected hazardous materials.
27. Ambient air quality and explosive gas monitors fitted with audible alarms must be placed in all locations where hazardous substances are handled or stored to adequately ensure the safety of facility users and employees.
28. In establishing the routes which vehicles removing hazardous materials will follow, it is critical to develop such routes with due regard for the location of groundwater aquifers and residential areas.
29. An employee training program with specific reference to the interdiction of hazardous materials, their safe handling, fire prevention and control, and hazardous waste emergency procedures must be in place prior to the facility commencing operation.



30. Arrangements must be made with the North Kingstown Fire Department to ensure that its employees are adequately trained and equipped to assist in the containment and correction of hazardous substance emergencies.
31. The applicant has proposed measures and has accommodated in facility design provisions which substantially demonstrate a capability to protect facility users, employees and other persons in close proximity from harm associated with improper handling, storage and/or disposal of ash residue. Supplemental measures can be taken which provide additional protection.
32. The area within which ash will be stored and subsequently transferred to trucks for removal from the site should be protected from the effects of wind and weather to prevent the escape of ash into the environment.
33. The ash storage building will be built and operated in accordance with RIDEM's regulations for the temporary storage of liquid hazardous waste.
34. Leachate from the ash storage building will be recycled to the ash quench basin.

35. Provisions should be made for the safe handling of ash residue during the time required to separate top and bottom ash handling systems if at some time in the future a change in EPA's "mixing rule" requires such a separation.
36. The ash testing protocol proposed by the applicant is that presently approved by EPA.
37. The ash testing frequency and protocol proposed by the applicant should be increased and maintained for a longer period than is proposed by the applicant or required by the Division's Guidance.
38. Two hazardous waste landfills are conditionally willing to accept hazardous ash generated at the facility. The conditions attached to these Exhibits 34 and 35 are reasonable and cannot readily be complied with until such time as ash is actually generated and available for testing.
39. The applicant has proposed employee training and certification programs which substantially demonstrate a



capability to protect facility users, employees and other persons in close proximity from harm associated with uninformed, improper, and/or dangerous operation of the facility and its various components. Supplemental measures will provide for additional protection.

40. The employee training and certification program must be submitted prior to scheduled operations. The language of the Guidance as it relates to when a training program should be submitted is contradicted by the testimony of its authors and the Hearing Officer finds that the testimony controls.
41. The Town has not established that a detailed employee training program would normally be expected to be included in an application of this sort or that its absence represents any threat to the safety of facility users, employees or neighbors.
42. The applicant has described an equipment maintenance and overhaul program which substantially demonstrates a capability to protect facility users, employees and other persons in close proximity from the consequences of inadequate or improper maintenance and overhaul of facility equipment and components. Supplemental measures will provide additional protection.

MJD

43. A secondary means for emergency vehicles to access the operational components of the facility is necessary to ensure the safety of users, employees and others in close proximity. The various plans attached to the Application show only one access and egress point to the operational components of the facility with separate entrances and exits to an administration building.
44. The facility if built and operated as proposed does not present a hazard to aircraft from birds.

RULE 11.00: INCINERATOR OPERATING STANDARDS

11.02 (Equipment Failure and Shutdown Provisions) - The applicant has through its witness, Mr. Carlson, represented that it proposes to employ the State Central Landfill in Johnston which it owns and operates as the backup facility required by this Rule.

Mr. Carlson was closely questioned regarding the licensing status and capacity of the Central Landfill. He acknowledged that at that time (early March, 1988) the Landfill was operating under a Consent Agreement while a license application for an eighteen month extension of its operating license was being processed and that its capacity pending approval of that interim license was four to five weeks. Mr. Carlson also acknowledged that Central Landfill is a Superfund hazardous waste cleanup site.

11.03 (Waste Storage) - The Application identifies the capacity of the refuse bunker as equalling six days of normal MSW throughput. The applicant has consequently requested a variance from the prohibition on storage of combustible waste for more than forty-eight hours. In support of that request, applicant's Mr. Ratterree testified that the additional capacity was needed to ensure an adequate supply of MSW for the boilers and to allow for thorough mixing of MSW in the

bunker to even out variations in MSW content. He also acknowledged under cross-examination, however, that the additional capacity was necessary to permit the operator to meet its contractual throughput obligations. Both Mr. Ratterree and Mr. Almquist testified that the various precautions against fire that the applicant had designed into the facility and/or which it proposed to accommodate in its operation adequately protected the public health and safety and the environment from the consequences of fire in the refuse bunker.

The Division's witness, Mr. Quinn, testified that the Division agreed that a variance was appropriate to accommodate better mixing of MSW and a more homogeneous feed to the boilers. Cross-examination of Mr. Ratterree extracted the acknowledgement that all other things being equal the risk of fire increased with the length of time MSW remained in the pit.

On an unrelated requirement of the Rule, Mr. Almquist testified that all MSW, including combustible and putrescible components, would be contained in the enclosed refuse bunker, itself enclosed in a larger structure.

11.04 (Incinerator Residue) - Testimony regarding this requirement has been previously summarized (see summary of Rule 7.00 argument).

11.05 (Wastewater and Leachate) - Testimony regarding this requirement has been previously summarized (see discussion of Rule 9.00).

11.06 (Fire Protection) - Mr. Almquist and Mr. Ratterree testified at length regarding the facility's fire prevention and control design features and proposed operating protocols. It was represented that the Rhode Island Port Authority as owner/operator of the Quonset Point-Davisville Industrial Park had guaranteed 2,000 gallons per minute of water at 28-65 p.s.i. for fire fighting purposes which would in turn be raised to 75 p.s.i. by a 1,500 g.p.m. electric booster pump installed at the facility.

Mr. Ratterree testified that the pressurized system would feed a sprinkler system installed over the refuse bunker, two 300 g.p.m. manually operated water cannons capable of being directed into the bunker, and a standpipe and hose system servicing the main operating levels of the boiler house. Mr. Ratterree testified to proposed use of an automatic halon system in the facility control room and reliance on portable dry chemical and CO extinguishers in storage spaces and the hazardous material crane drop area. The tipping hall was described as having available portable extinguishers in the truck inspection area and several wash down hose stations. It was also represented that the two previously referenced water cannons would be capable of being directed into the tipping hall.

As a matter of practice, Mr. Ratterree testified that no refuse would ever be stored on the tipping hall floor to minimize the potential of fire. If a small fire was detected in the refuse bunker the crane grapple would be employed to feed the burning or smoldering debris to the furnace to prevent spread to the remainder of the bunker. As necessary, the water cannons would simultaneously be employed to water down burning or smoldering material.

Mr. Ratterree testified that the facility would be fitted with an automatic presignal alarm system which would warn operators of the location of a fire and provide them an early opportunity to suppress it. All these various fire fighting procedures were proposed to be set forth in detail in a fire emergency contingency plan to be submitted to the Division for review and approval prior to commencing operations.

The Town presented its fire chief, Mr. Smith, to testify to problems he would anticipate in responding to a fire emergency at the proposed facility. These principally related to slow response time due to distance from the nearest fire station and heavy traffic on Route 1, and inadequate manpower and equipment to respond with the necessary force without leaving the rest of the community unprotected. The Chief also, as previously noted, testified

to the need for specialized training and equipment to deal with hazardous materials fires. He acknowledged that a former Navy fire station remained at the Industrial Park, but that it was in extremely poor condition and would require extensive improvements to support a fire company.

Chief Smith and other Town witnesses including the former operator of a North Andover, Massachusetts resource recovery incinerator where an MSW fire had occurred, Mr. McCarthy, and the North Andover Fire Chief, Mr. Dolan, all testified to various defects that they perceived in the applicant's fire fighting plans. Particular criticism was directed at the absence of a sprinkler system in the tipping hall area since the North Andover fire originated in the tipping hall. The Town's witnesses were also critical of the amount of water available for fire fighting purposes, the absence of a backup water source, and the failure to provide for an emergency power supply (diesel generator) to pressurize the firefighting system in case of a power failure.

The manual-only operation of the water cannons was criticized by the North Andover Chief who cited difficulties his firefighters had had in locating and putting into operation the cannons at the North Andover facility under fire conditions. He also testified that the experience at North Andover had demonstrated the need for some means of

reversing the normal facility venting system to allow for the venting to the environment of heat and smoke.

North Kingstown Chief Smith criticized the presignal alarm system as creating the potential for delay in notifying his department by affording inexperienced facility personnel an opportunity to fight a fire before sounding an outside alarm. Chief Smith also testified to his opinion that the applicant's reliance on portable extinguishers to fight fires in flammable substance storage areas was ill-advised and recommended installation of automatic-halon systems instead.

Through cross-examination of Chief Smith, the applicant established that the problems North Kingstown firefighters anticipated in responding to a fire at the facility were not unique to it, and in fact, to varying degrees were generic to the Quonset Point Industrial Park as a whole. The Chief acknowledged that other Industrial Park tenants would benefit directly, as would the Town, from any improvements to local firefighting capabilities supported by the applicant.

Mr. Ratterree was called on rebuttal to argue that installation of sprinklers in the tipping hall area was not necessary despite the experience at North Andover because MSW would not be stored on the tipping hall floor as it had been at North Andover. He also testified to the design specifications incorporated in the Application for the presignal alarm system which, contrary to Chief Smith's



understanding, describe a direct automatic signal to the Town Fire Department immediately upon the system detecting a fire. He continued to argue the wisdom of manually operated water cannons based on better control and visibility, but acknowledged that units could be designed to operate both manually and automatically.

Town Fire Chief Smith testified under cross-examination that to the best of his knowledge, his Department had never received funds paid in lieu of taxes to the Town by the Rhode Island Port Authority to support the provision of local police, fire and road maintenance services. He further acknowledged that if his Department were to receive any significant portion of the \$500,000 the applicant would be legally required to pay the Town each year, many of the shortcomings in his Department's response capabilities could be addressed.

The applicant through its witness, Mr. Carlson, testified to its efforts to negotiate a firefighting agreement with the Town as is required by subpart (b) of this Rule. Mr. Carlson testified to the preparation by the applicant of Exhibit 38 which was described as a service agreement sent to the Town in draft form for its consideration in June of 1987. Mr. Carlson testified that the Town had not responded to the draft and that the applicant was consequently considering

approaching a neighboring community with the objective of obtaining fire protection services. Cross-examination established that no service agreement with any community had actually been signed nor had any overtures to other communities been made.

On March 16, 1988, however, the applicant requested a variance from the requirements of this Rule regarding a written agreement with a local fire department. This variance request was entered into the record of the hearing. At the April 6, 1988 hearing session, the Hearing Officer ruled on the applicant's request as follows:

I am, however, mystified in the extreme as to why the applicant has not, prior to submission of its brief on March 23, introduced testimony as to the substance of Joint Exhibit #11, the 1980 Town/Port Authority agreement as it bears on Applicant's Rule 11.06(b) burden.

The Town's protestations, to the contrary, this agreement appears to be unambiguous and unqualified in obligating the town to provide, as of July 1, 1982, fire protection services to all facilities, whether leased or wholly owned, located in the Quonset Point/Davisville Industrial Park. It further at 1(c) sets forth clear guidelines for the scope and nature of this service, which must be of a kind and quality as that provided by similarly sized communities to similarly sized facilities; be at a level which reflects the number and nature and use intensities of the facilities located at Quonset Point/Davisville, and includes fire prevention, suppression and rescue. I find in this agreement no suggestion that it can or should be construed as being limited to the period during which a covered facility is under construction as opposed to the period of its subsequent operation. I therefore conclude that the requirements of Rule 11.06(b) are satisfied as they relate to both construction and operation, so long as the 1980 agreement remains in effect.

The town argues that the existence of the agreement aside, 42-64-13(d) of the General Laws prohibits the applicant through the Port Authority from imposing any service obligation on the town which would necessitate capital outlay. To my mind, this argument fails to address provisions of the 1980 agreement which require Port Authority payments to the town in lieu of taxes and also ignores requirements of law at 23-19-26 which obligate the applicant to pay the town annually as host community \$2 per ton of waste received at its facility or \$500,000, whichever is less, as a payment in lieu of taxes. I agree with the town, however, that the record of the hearing thus far apprises neither it nor me with adequate direction as to what types and amounts of equipment manpower and training will be necessary to respond effectively to fire emergencies at the Applicant's facility. I will look to the applicant and, to the extent it wishes, the town as well addressing this matter during the remainder of this hearing. For these various reasons, the Applicant's request for a variance from the literal requirements of 11.06(b) is granted, again, however, only so long as the 1980 Town/Port Authority agreement remains in effect. (Transcript, 4/6/88, pp 15-17)

11.07 (Brush Handling) - The applicant has requested a variance from the requirement that all brush be buried within forty-eight hours of arrival in line with its request that refuse bunker capacity be set at six days MSW throughput since any brush received would be mixed with MSW. Objectors again questioned applicant's witness, Mr. Almquist, as to the increased potential for fire associated with maintaining MSW on site for extended periods. Mr. Almquist argued that enclosure of waste in the refuse bunker minimized the potential for brush fires.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I make the following specific findings of fact.

1. The Hearing Officer takes administrative notice of a RIDEM Decision and Order issued on May 23, 1988 whereby the operating license of the State Central Landfill was extended for a period of four months subject to various conditions, with two additional seven month extensions provided for if certain additional requirements are met.
2. At the time of issuance of this Decision and Order, the Central Landfill is a licensed solid waste landfill. However, the Hearing Officer has no way of determining whether it will be so licensed when the proposed facility commences operations and it is, therefore, necessary that this possibility be accomodated in the conditions attached hereto.
3. The applicant has demonstrated that combustibile and putrescible waste will be stored in a protective structure.
4. The applicant has substantially demonstrated that operation of the proposed facility will not pose a hazard to persons or property from fires. Supplemental measures will provide additional protection.

9/17/88

5. A fire prevention and suppression plan which provides for on-going training of facility personnel alone and jointly with local firefighters is necessary to ensure coordination of fire fighting efforts. It is necessary that this be done promptly to allow for necessary manpower and equipment to be acquired and training completed before operations commence.
6. A first response method for fighting fires in the temporary hazardous material (crane drop) area and any other areas where flammable substances are stored which does not require employees to enter such areas is necessary. Reliance on hand held extinguishers may expose employees to avoidable and unacceptable danger.
7. A backup diesel generator capable of maintaining pressure to the firefighting systems and running emergency lighting would provide an alternative means of power in the event of a power failure.
8. It is necessary that the facility's firefighting system be capable of delivering the full volume of water guaranteed to be available to it by the Rhode Island Port Authority. Redundancy should be built into the system to preclude interruption of water flow.

9. Provisions are necessary for handling smoldering waste loads where such loads are detected prior to tipping.
10. To ensure safety, emergency equipment and clothing should be convenient to the crane operator.
11. A means of reversing the normal negative pressurization of the tipping hall and refuse bunker should be designed into the facility to accomodate venting of heat and smoke during a fire.
12. Water cannons should be capable of manual or automatic operation to prevent unnecessary exposure of employees and firefighters to danger.
13. The tipping hall should be provided with additional fire suppression capability in the form of standpipes and sprinklers.
14. On March 6, 1988, the applicant requested a variance from Rule 11.06(b) requiring it to enter into a written agreement with a nearby fire department to provide emergency service on call. The Hearing Officer on April 6 ruled that a 1980 Agreement between the Rhode Island Port Authority and the Town (Exhibit 11) satisfied the applicant's burden in this regard, but noted that additional details as to necessary manpower, equipment and training should be provided.

15. The applicant has requested a variance from Rule 11.07 to allow for storage of brush mixed with MSW in the refuse bunker for periods in excess of forty-eight hours. The six day refuse bunker capacity and enclosure of waste in the refuse bunker will fulfill the purpose of the rule from which the variance has been requested. The applicant has demonstrated that granting the variance would not adversely effect public health and safety or cause contamination of water, land or air.
16. The applicant has requested a variance from Rule 11.03 to allow the storage of combustibile waste for more than forty-eight hours. The various precautions against fire that will be designed into the facility and its operation will fulfill the purpose of the rule from which the variance has been requested. The appliant has demonstrated that granting the variance would not adversely effect public health and safety or cause contamination of water, land or air.

RULE 12.00:; RESOURCE RECOVERY FACILTY OPERATING STANDARDS

See summary of Rule 11.00 in this Decision and Order.

Findings of Fact:

After review of all the documentary and testimonial evidence of record, I adopt specific findings of fact stated under Rule 11.00 of this Decision and Order.

Conclusions of Law

Based upon all of the documentary and testimonial evidence of record, I conclude the following as a matter of law.

1. Reasonable notice of the hearings was provided as required by the Administrative Procedures Act, RIGL §42-35-1 et seq. and Rule 13(d) of the Administrative Rules of Practice and Procedure for the Department of Environmental Management.
2. The applicant has an obligation to demonstrate an ability to comply with all of the Rules and Regulations for Solid Waste Management Facilities discussed in the within Decision and Order, including all of the General Operating Regulations set forth in Part III of RIDEM's Rules and Regulations for Solid Waste Management Facilities (Exhibit 8), as well as Regulations 11.00 and 12.00 governing the operation of incinerators and resource recovery facilities.

3. That the issuance of a RIDEM license does not in any way relieve the applicant of its responsibility to comply with local ordinance. Neither RIDEM nor the Hearing Officer has any authority to enforce local ordinances, including the North Kingstown Noise Ordinance, under these Regulations.
4. In accordance with the Hearing Officer's ruling of March 17, 1988, the applicant has demonstrated that the Statewide Resource Recovery Facility Development Plan was legally promulgated, and provides for the construction of a resource recovery facility at Quonset Point to remedy the critical solid waste disposal problem recognized by the legislature in RIGL §23-19-11.1. I further conclude as a matter of law that the facility is reasonably required to dispose of wastes generated within the state as required by §23-18.9-8.1.
5. Rule 7.06(b) clearly contemplates that the only standard of adequacy imposed on the information it requires the applicant to submit is that this information be capable of supporting a demonstration of compliance with Rules 9.00 and 11.00. No independent standard is expressed or implied.

6. Rule 9.00 sets forth various requirements and standards affecting the operation of solid waste management facilities generally. Pursuant to the Rules 4.01, 7.06(b) and 8.06(b), the applicant for a license to construct a solid waste incinerator/resource recovery facility is required to demonstrate the ability to comply with the standards set forth in Rule 9.00.
7. No discharge of dredged material or fill in violation of Section 4.04 of the Clean Water Act, as amended, will result from approval of this application.
8. There is no evidence on the record to suggest that operation of the facility would violate the North Kingstown Noise Ordinance.
9. The Hearing Officer is without jurisdiction in this proceeding to determine whether the applicant complies with the Rules and Regulations for Hazardous Waste Generation, Transportation, Treatment, Storage and Disposal.
10. Rule 9.14 relating to Operating and Engineering Plans and 9.15 relating to Closure Procedures impose no burden of proof on the applicant with regard to matters before the hearing.

11. Variances were requested from Rules 11.03(b), 11.06(b) and 11.07. Each variance requested is not contrary to the purposes and policies expressed in Rules 1.02 and 1.03 of the Regulations and the alternative methods proposed by the applicant fulfill the purposes of the Rule from which a variance is requested.
12. Subject to the following conditions, the applicant has demonstrated by a preponderance of the evidence that the facility will comply with applicable Rhode Island General Laws and the Rules and Regulations for Solid Waste Management Facilities adopted by the Department of Environmental Management.

Therefore it is

ORDERED

that the license to construct and operate a solid waste management facility is granted subject to strict compliance with all of the conclusions delineated below.

1. The applicant shall within six months of the date of issuance of this Decision and Order submit to the Division an estimate in current dollars of the cost to close and secure the facility.

2. An agreement with an appropriately licensed Rhode Island or out-of-state ash disposal facility must be in place prior to the commencement of RRF construction. "Construction" shall not be deemed to include site clearing and grading, but shall include any phase of building construction and/or the ordering or installation of equipment. This agreement may be interim in nature and may include a cancellation clause contingent upon the applicant entering into a subsequent agreement for ash disposal or on its obtaining a license to operate an ash disposal facility of its own.
3. The applicant shall correct its Radius Plan and all other appropriate Plans required to be submitted in support of its application to indicate the presence of the Trea Industries Building and the presence and location of any existing underground utilities and/or storage tanks under the proposed site.
4. Shop drawing submitted to the applicant's and/or operator's agent by contractors and vendors for all major facility components shall be forwarded to the Division for their timely review and approval prior to those components being built and/or installed. This review process shall be promptly undertaken.

The Division shall within sixty days of the date of issuance of this Decision and Order provide the applicant a list of those major facility components it proposes to review per this Condition.

5. The applicant's Closure Plan shall be amended to include a description of procedures to:
 - a. Clean, disinfect and deodorize all plant components exposed to MSW.
 - b. Treat and dispose of all washdown water.
 - c. Remove, dispose of or store all hazardous, flammable or explosive materials such as lubricants, paints, solvents and the like.
 - d. Maintain all buildings, equipment and components until such time as they are removed from the site and properly disposed of.

The amended plan shall be submitted to the Division for its review and approval no later than six months before scheduled startup.

6. The facility shall be surrounded by a secure chain link fence, at least six feet in height. All access and egress points shall be fitted with gates which shall be secured during all times when the facility is not open to receive MSW. The visitor and/or staff parking area may be secured by a card



activated lift gate or similar device, but all other gates shall be locked except during the hours the facility is open to receive MSW. The North Kingstown Police and Fire Departments shall be provided keys to all locked gates.

7. No salvage activities shall be permitted.
8. Prohibited materials including, but not limited to, white goods, bulky material, demolition and/or construction debris, pathological waste, hazardous waste and radioactive waste which are identified and removed from the waste stream prior to incineration shall not be stored in the open whether contained or uncontained and shall be removed from the site to licensed disposal facility within one week for non-hazardous substances, and for hazardous substances as provided for per Condition 21.
9. The facility shall at all times be operated in compliance with its RIPDES stormwater discharge permit and its Port Authority wastewater discharge permit.
10. The following steps shall be taken to minimize on-site vector populations:
 - a. The facility shall be designed so that it is not necessary to keep the tipping hall doors open to provide sufficient combustion air for the furnaces, in which case the doors are to be closed at all times when MSW is not being received; or

- b. The door openings shall be fitted with some form of screen or barrier which allows for the passage of air, but which would prevent vectors from entering the tipping hall, in which case these barriers would be required to be in place whenever MSW is not being received.
- c. The bunker shall be designed so as to eliminate nooks and crannies capable of harboring vectors.
- d. The tipping hall floor shall be scrubbed down nightly with a disinfectant/deodorant solution and rinsed thoroughly.
- e. Whenever scheduled or unsecheduled shutdowns allow accessible surfaces normally exposed to MSW shall be thoroughly cleaned with a disinfectant/deodorant solution and rinsed thoroughly.
- f. When scheduled or unscheduled shutdowns occur during seasons when insects are active and unwashed waste remains or is likely to remain in the bunker for more than twelve hours, a licensed applicator shall spray the bunker contents with an approved insecticide at sufficient intervals to control insect levels in the bunker and tipping hall.

- g. All surfaces normally exposed to raw MSW shall be treated, sealed and /or painted so as to be impermeable and non-absorbitive.
 - h. All fan intakes to the tipping hall, bunker areas shall be screened to prevent entry of insects.
11. Directional signs shall be installed where necessary to direct drivers to the tipping hall, assist in traffic control, regulate speed and otherwise contribute to the safe and orderly operation of the facility.
12. Facility personnel shall daily police the site and roads within the Industrial Park and remove and properly dispose of all litter. Such personnel shall on at least a weekly basis remove litter from the main Industrial Park access road from its intersection with Route 1. A written record of the date and time the litter is removed offsite must be maintained and sent to the Division on a monthly basis and made available to the public. Such record shall include the date, time, name of employee and areas covered.



13. The operator shall be required to randomly select over the course of each operating day a minimum number of vehicles whose loads of MSW will be dumped on the tipping hall floor and inspected for the presence of hazardous materials according to the following schedule:

Monday - Friday:	2 transfer trailers
(per day)	4 packers
Saturday:	1 transfer trailer
	2 packers

14. An area of the tipping hall shall be dedicated to the inspections required per Condition 13, above, and shall be so designed as to provide for the containment of wastes being inspected and any liquid seepage from such wastes. The area so dedicated shall be provided with a source of pressurized water suitable for fire-fighting purposes with associated hose and nozzle, dry chemical fire-fighting equipment, and protective clothing and breathing apparatus all to be located in close proximity. An air quality/explosive gas monitor with audible alarm shall be affixed in a suitable location over the inspection area.

A daily written record of each load dumped on the tipping hall floor must be maintained and sent to the Division weekly and made available to the public. Such record must include the date, time, name of the employee, hauler, license plate of the vehicle and an indication as to whether materials prohibited from the facility were found.

15. A secure vehicle impoundment area of sufficient size to accomodate the largest type of MSW vehicle anticipated to tip at the facility shall be constructed at a safe distance from the main building. This impoundment area shall be so designed and operated as to comply with RIDEM rules for the temporary storage, handling and/or transportation of liquid hazardous waste. All vehicles containing smouldering loads, leaking suspect liquids, or suspected of or determined to be containing prohibited materials shall be diverted to this area until such time as appropriate action regarding their contents is completed.
16. A television camera or cameras remotely controlled from the crane pulpit shall be installed in the hazardous materials crane drop area and shall be employed by the crane operator to transfer suspect

material from the crane grapple to a temporary storage container; provided that the applicant may propose for the Division's review and approval other means of accomodating direct viewing by the crane operator of the interior of the crane drop area. No facility employees shall remain in the crane drop area while suspect waste is being so transferred.

17. The hazardous waste crane drop area and any temporary hazardous waste storage containers shall be designed and operated so as to conform with RIDEM regulations governing the temporary storage, handling and transportation of liquid hazardous waste. Temporary storage containers shall be inspected daily for leaks and shall be electrically grounded when in use.
18. Sufficient numbers of temporary hazardous waste storage containers must be maintained on site such that there is at a minimum two containers available to receive suspect material during all periods in which the facility is receiving MSW. If at any time the number of available storage containers drops below two, further acceptance of MSW shall be terminated until the situation is corrected.

19. Temporary hazardous materials storage containers shall have a safe capacity equal to or greater than the design capacity of the crane grapple.
20. Each item or grapple of suspected hazardous material shall be placed in a separate temporary storage container until it can be removed from the site.
21. The Division and the operator's licensed hazardous waste hauler shall be immediately notified upon the transfer of any suspect hazardous material into a temporary storage container and the suspected materials must be removed from the site within twenty-four hours of such notification.
22. Any temporary storage container containing suspect material awaiting removal from the site shall be itself stored in a containment which complies with RIDEM regulations governing the temporary storage of liquid hazardous waste.
23. The applicant must submit to the Division for its review and approval a hazardous waste emergency contingency plan describing measures which it proposes to employ to interdict hazardous materials entering the site, handle, store and dispose of them once identified and deal with hazardous waste related emergencies including, but not limited to fire, explosion, release of poisonous fumes and



spillage of liquids, acids or caustics. This plan shall identify and provide for the installation of appropriate fixed hardware, protective and safety equipment and vehicles and shall likewise provide for and describe training protocols for operating employees and local police, fire and rescue personnel. The plan shall be submitted to the Division within one year of the date of issuance of this Decision and Order or one year before facility operation is scheduled to begin, whichever comes first. The Division shall put such plan out to public notice. A public hearing shall be scheduled to provide interested persons with an opportunity to comment orally or in writing, before such plan is approved, denied or modified by the Division. The applicant will be required to have an approved plan in place and to have acquired all materials and have completed all training necessary to implement it before it will be permitted to commence operations.

24. A suitable means of screening entering vehicles for the presence of radioactive waste shall be installed in the scale house. The applicant shall submit specifications for the screening device(s) to the Division for its review and approval within six months of the date of issuance of this Decision and Order.

25. Facility employees shall be required to wear protective clothing and breathing apparatus whenever handling suspected hazardous materials or storage containers containing such materials.
26. The hazardous waste crane drop area shall be fitted with ambient air quality and explosive gas monitors fitted with audible alarms.
27. The applicant shall immediately initiate discussions with the Town of North Kingstown regarding the preferred routing off-site of vehicles carrying suspected hazardous materials or hazardous ash residue to licensed off-site facilities. An agreement regarding such routing shall be in place at least six months prior to the scheduled beginning of facility operations; provided that the Division will designate a route if the Town and applicant are unable to reach agreement.
28. The applicant must submit to the Division an employee training program for its review and approval; an employee training program plan describing how each class of employee will be trained to carry out routine duties and responsibilities and emergency duties and responsibilities in cases of fire or explosion. This plan shall be submitted to the Division

according to the same schedule and shall be subjected to the same standard and form of internal and public review as is required pursuant to Condition No. 23 above. It shall likewise be required to be in place and employees trained according to its requirements before the facility will be permitted to commence operations.

29. The applicant shall immediately initiate discussions with appropriate Town officials and the North Kingstown Fire Department regarding the department's personnel, equipment and training needs as they relate to managing hazardous waste related emergencies and fire fighting responsibilities. The applicant and the Town shall prepare a capital improvement plan, training schedule and operating budget as necessary to support local emergency services to be provided by the Town. The applicant shall provide funds from monies it is otherwise required by law or agreement to pay the Town for the specific purpose of supporting agreed upon levels of service. An agreement regarding provision of and payment for such local emergency and firefighting services shall be in place at least six months prior to the scheduled beginning of facility operations; provided that if the Town and applicant are unable

to reach agreement, the Division may authorize the applicant to negotiate a similar agreement with another nearby fire department, the Rhode Island Port Authority or to provide the necessary services with its own equipment and employees.

30. The area within which ash will be stored and subsequently transferred to trucks for removal from the site shall be constructed and operated so as to comply with RIDEM's regulations pertaining to the temporary storage, handling and/or transportation of liquid hazardous waste and shall, further, be protected from the effects of wind and weather by appropriate walls and a roof. All floor drains and/or leachate collection devices within the ash storage area shall be designed to drain to the ash quench basin and there shall be no connection with sanitary or storm sewers.
31. If a change in EPA's "mixing rule" requires the separation of ash residue streams and during the time necessary to modify the facility to accommodate such separation, the applicant shall operate in accordance with any restrictions, conditions or schedules imposed on its normal operations by EPA or the Division.

32. The applicant shall test ash daily for E.P. toxicity metals and weekly (starting with the first sample) for complete E.P. toxicity and 2, 3, 7, 8-TCDD during the period of facility startup and shakedown and for six months thereafter. Daily testing for E.P. toxicity metals shall therefore continue for an additional period of one year, while the frequency of testing for complete E.P. toxicity and 2, 3, 7, 8-TCDD will be reduced to once per month. The Division shall determine when shakedown has been completed and shall further direct the applicant as to the necessary frequency and substance of testing it will require after the testing required per this Condition is completed.
33. Test results for all samples collected shall be forwarded at least weekly to the Division and shall be open to public inspection.
34. Any ash residue confirmed by testing to be hazardous shall be removed from the site within forty-eight hours by the operator's licensed hazardous waste hauler to a licensed temporary storage facility pending the applicant entering into a disposal contract with a licensed hazardous waste landfill for permanent disposal.

35. The duration of any operating permit issued for this facility shall not exceed the projected capacity in years of its ash residue disposal site(s). The operator shall at all times have access to a licensed ash residue disposal site.
36. The applicant shall prepare a detailed employee training and certification program and shall submit this program to the Division for its review and approval at least one year before operations are scheduled to begin. The Division shall afford interested parties a reasonable opportunity to review and comment on the applicant's training and certification program prior to making any decision. The required training and certification program shall comply with the standards set forth in Section XIII of the Division's Guidance On Resource Recovery Facilities.
37. The applicant shall prepare a detailed facility maintenance and overhaul plan including schedules for the facility and all major components and shall submit this plan to the Division for its review and approval at least six months before operations are scheduled to begin.

38. The applicant shall construct an access point for emergency vehicles from Conway Avenue which shall be paved and connected to the facility's internal road network. This access point shall be sufficiently wide to accommodate the passage of two fire trucks and shall be fitted with a gate which shall be locked at all times. Town police, fire and rescue units shall be provided keys to this gate.
39. At the time of scheduled commencement of operation of this facility and at all times subsequent thereto the State Central Landfill must be a licensed solid waste landfill or, if the Central Landfill at any point in time is now so licensed, the applicant must demonstrate that it has in place a written agreement with another licensed solid waste management facility in Rhode Island or elsewhere, which agreement provides for that other facility accepting by-pass MSW during periods of equipment failure or forced shutdown.



- 410 The capacity of the refuse bunker shall not exceed 4,260 tons (6 days' throughput) with waste stacked to its maximum height. No waste shall be stored on the tipping hall floor or in any location except the refuse bunker.
41. The applicant shall prepare and submit to the Division for its review and approval a fire prevention and suppression plan describing measures which it proposes to employ to prevent and/or suppress fires. This plan shall address measures that will be taken by the operator, the Town, and the two acting cooperatively and shall be prepared in consultation with the Town. It shall identify and provide for the acquisition and installation of appropriate fixed hardware, protective and safety equipment and vehicles and shall likewise provide for and describe training protocols for operating employees and local police, fire and rescue personnel including periodic drills. The plan shall be submitted to the Division within one year of the date of issuance of this Decision and Order or one year before facility operation is scheduled to begin, whichever comes first and may be consolidated with the hazardous waste emergency contingency plan required pursuant to Condition 23 and the employee

training plan required pursuant to Condition 28 of this Decision and Order. The plan shall be submitted according to the same schedule and shall be subjected to the same standard and form of internal review as is required pursuant to Condition 23 above. The applicant will be required to have an approved plan in place and to have acquired all materials and have completed all training necessary to implement it before it will be permitted to commence operations.

42. The applicant shall install in the hazardous waste crane drop area and in any other rooms or areas where flammable or explosive substances including paints and lubricants are proposed to be stored automatic flame suppression devices such as dry chemical, CO2 and/or halon dispensers. These shall have capacities reflective of the size of the space to be protected and the nature of the flammable materials likely to be stored in them. A manual override shall be provided in the immediate vicinity of, but outside the space to be protected.
43. The applicant shall install a backup diesel electrical generator which shall be of a generating capacity sufficiently large to support the facility's firefighting pumps and other firefighting equipment including emergency lighting systems.

This backup generator shall be capable of operating automatically in case of a power failure.

44. The applicant shall install a booster pump or pumps to pressurize its firefighting water system to 75 p.s.i. constant pressure. Pumping capacity shall be not less than 2,500 g.p.m. at 75 p.s.i.
45. The operator shall direct the driver of any vehicle suspected to be carrying a smoldering load to the vehicle impoundment area required to be constructed pursuant to Condition 15 of this Decision and Order and the vehicle shall be detained there pending the arrival of firefighting apparatus. However, if a vehicle is already located in the impoundment area, the smoldering load shall be directed to any open area on site away from all buildings and shall remain there pending the arrival of firefighting apparatus.
46. An emergency equipment locker shall be located in the immediate vicinity of the crane pulpit and shall be fitted out with protective clothing, self-contained breathing apparatus and spare air tanks.
47. An emergency fire escape route fitted with two hour fire rated walls, ceiling and floor shall connect the crane pulpit to the outside of the tipping hall.



48. The tipping hall shall be fitted with manually operated or heat fuse linked vent openings of sufficient size and number to allow for the release of heat and smoke caused by a fire. These shall be located in or near the roof of the building. All fans installed in the tipping hall walls or roof for purposes of drawing combustion air into the building shall be reversible and the direction of air flow shall be controllable from the main facility control room.
49. Water cannons shall be capable of being operated manually or remotely with remote operation controlled from the crane pulpit or similar vantage point.
50. A pressurized standpipe for firefighting purposes shall be installed outside of the tipping hall at or near each vehicle access door.
51. The facility's internal firefighting water supply system shall be capable of being fed from both ends and shall be connected to the Quonset Point-Davisville Industrial Park water system at two separate points, as far removed from each other as is practicable.

53. The applicant shall install a full automatic sprinkler system covering all areas of the tipping hall.
54. All standpipes, hoses and hose fittings shall be of a size and thread approved by the North Kingstown Fire Department.
55. Any fire alarm system shall ring at the North Kingstown Fire Department dispatcher's office at the earliest time a fire is detected. There shall be no manual override capability.
56. The control room shall be fitted with an automatic halon system capable of manual operation.
57. The control room is to be separated from the bunker area and tipping hall by a two hour rated fire wall. The hazardous substance crane drop area shall be similarly fitted with fire walls on all sides.
58. The North Kingstown Fire Department shall be provided a complete set of as-built plans for the facility prior to the beginning of operations.

The foregoing is hereby recommended to the Director for adoption as a final Decision and Order.

10/3/88

Date

Malcolm J. Grant

Malcolm J. Grant
in his capacity as
Hearing Officer

10/3/88

Date

Robert L. Bendick, Jr.

Robert L. Bendick, Jr.
Director, Department of
Environmental Management

MJD

APPENDIX A

Exhibit Number

- | | | |
|----|---------|---|
| 1 | (Joint) | Notice of Public Hearing |
| 2 | (Joint) | Affidavit of Publication in Providence Journal and Bulletin, Nov. 6, 1988 |
| 3 | (Joint) | Workshop Announcement Prov. Journal 11/5/87 |
| 4 | (Joint) | Workshop Announcement (NK Standard Times) 11/5/87 |
| 5 | (Joint) | DEM Fact Sheet for the Proposed Quonset Point Resource Recovery Facility |
| 6A | (Joint) | Air Pollution Application |
| 6B | (Joint) | Air Pollution Application Review |
| 7 | (Joint) | Guidance on Resource Recovery Facilities |
| 8 | (Joint) | Rules and Regulations for Solid Waste Management Facilities, 12/1/82 |
| 9 | (Joint) | Air Pollution Control Regulations |
| 10 | (Joint) | SWMC Related Legislation, Title 23 |
| 11 | (Joint) | Agreement between Port Authority and the Town of North Kingstown, dated 6/16/80 |
| 12 | (Joint) | Quonset Point Resource Recovery Facility Solid Waste Facility License Application |
| 13 | (Joint) | Initial Investigation Plan for Proposed Quonset Point Resource Recovery Facility dated 2/3/87 |
| 14 | (Joint) | Wastewater Discharge Permit No. QPD-CQ-01-01-0 issued by R. I. Port Authority |

- 15 (Joint) Quonset Point Resource Recovery Facility Application for RIPDES Permit to Stormwater Runoff, 3/87
- 16 (Joint) DEM letter to SWMC re RIPDES, dated 4/27/87
- 17 (Joint) Letter to DEM from Blount re comments on conditions, dated 12/3/87
- 18A (DEM) Letter from DEM from EPA dated 12/9/87 re additional permit conditions
- 18B (DEM) DEM amendments to proposed permit conditions
- 19 (DEM) Trea Building Permit
- 20 (ID) Proposed EPA Rules, (Federal Register Vol. 51, No. 174, Tues., 9/9/86)
- 21 (Town) Draft Preliminary Environmental Assessment for a Proposed Mass Burning Resource Recovery Facility located at the Central Landfill, Johnston, R.I., November 10, 1986
- 22 (ID) Weston Letter dated 6/1/87
- 23 (App.) Estimates of Particulate Loading to Narragansett Bay Resulting from the Dry Deposition of QPRRF Stack Emissions, November, 1987
- 24 (App.) Worst Case Dry & Wet Deposition Analysis Impact on Narragansett Bay, 11/87
- 25 (App.) Estimated Impacts of Stack Emissions from the Proposed Quonset Point Resource Recovery Facility on Narragansett Bay, April, 1987 Revised January, 1988
- 26 (App.) Estimated Impacts of Combined Wet and Dry Deposition on Narragansett Bay from Stack Emissions of the Proposed Quonset Point Resource Recovery Facility, 1/88

- 27 (App.) Estimated Biological Impacts of Dry Deposition from Stack Emissions of the proposed Quonset Point Resource Recovery Facility on Narragansett Bay, Ponds and Wetlands, 11/87
- 28 (App.) Estimated Biological Impacts of Combined Wet and Dry Deposition from Stack Emissions of the Proposed Quonset Point Resource Recovery Facility on Narragansett Bay, Ponds and Wetlands, November, 1987
- 29 (App.) Quonset Point Resource Recovery Facility Full Scale Plans
- 30 (Town) Ambient Water Quality Criteria for Mercury - 1984
- 31 (Town) Update #2 to Quality Criteria for Water 1986, May 1, 1987
- 32 (Concern) Polluted Shellfish Areas, 12/86
- 33 (App.) Service Agreement between Blount Energy Resource Corp. and R. I. SWMC dated January 5, 1987
- 34 (App.) Letter to SWMC from SCA Chemical Services Inc. re Incinerator Ash from QPRRF, dated January 22, 1988
- 35 (App.) Letter to SWMC from CECOS International, Inc. re hazardous waste dated March 7, 1988
- 36 (App.) Appendix Q (Plan of Inspection) to Blount/SWMC Service Agreement
- 37 (App.) Appendix R (Hazardous Waste Contingency Plan) to Blount/SWMC Service Agreement
- 38 (App.) Draft Agreement between the Town of North Kingstown and the RISWMC
- 39 (App.) Cover letter from SWMC to Town dated June 26, 1987
- 40-46(App.) Miscellaneous Reports, Plans and Drawings re Central Landfill "Ash Cell" for ID Only

9/11/87

- 47 (Town) Thermal DeNo x: A Commercial Selective Noncatalytic No x Reduction Process for Waste to Energy Applications
- 48A (DEM) Letter to DEM from SWMC dated 6/15/87
- 48B (DEM) Letter to SWMC from DEM dated 6/24/87
- 49 (DEM) Derivations of Acceptable Ambient Levels (AALs) Used for Evaluating the Quonset Point Incinerator Application, March 1988
- 50 App.) Statewide Resource Recovery System Development Plan, June, 1987
- 51 (ID) Executive Summary of the Special House Legislative Commission to Study the Proposed Resource Recovery Project January, 1986
- 52 (App.) Water Flow Charts, August 27, 1987
- 53 (App.) U.S. Department of Transportation Federal Aviation Administration Stack Height Variance Aeronautical Study No. 85-ANE-013-OE
- 54 (App.) Warren County, N.J. Final Environmental & Health Impact Statement, August, 1985
- 55 (Town) Analysis of Pollutant Deposition into Fry's Pond Resulting from Proposed Quonset Point Resource Recovery Facility Emissions, March 29, 1988
- 56 (Town) Screening Model Comparison of Dispersion from the Proposed 65-M Stack Height and an Alternative 89.3-M (GEP) Stack Height Using Emissions from the Proposed Quonset Point Resource Recovery Facility, March 29, 1988
- 56A (Town) Appendix A ISCST Model Output Sheets Listing of Hourly Meteorological Data

9/15

- 57 (Town) MES Graph of Air Emissions
- 58 (Town) T. F. Green Weather Station Log
- 59 (App.) Fry's Pond Watershed
- 60 (Town) Memo to North Kingstown from D. Brocard dated March, 1988 re Fry's Pond
- 61 (App.) Ambient Water Quality Criteria for dioxin
- 62 (Town) North Andover Fire Chief's Report dated January 25, 1988
- 62A (Town) North Andover Fire Department Video dated 1/17/88
- 62B (Town) North Andover Fire Photos with cover letter to M. Grant from H. Doliner dated July 29, 1988
- 63 (Town) Predicted Impacts on Fry's Pond during Storm and Resuspension events v. LC50 Concentrations for Aquatic Species (1)(2)
- 64 (App.) Analysis of Predicted SO₂ Impacts from the Quonset Point Resource Recovery Facility in Complex Terrain
- 65 (App.) Comparison of Lead Impacts Calculated Using a Conversion Factor with Actual Modeled Quarterly Output for QPRRF (5/88)
- 66 (App.) Comparison of Impacts Predicted by the ISCST Model Version 6.2 with a 10 m Anemometer Height Verses the ISCST Model Version 6.3 with a 6.1 m Anemometer Height (May, 1988)
- 67 (App.) Modeling of Tall Buildings at Quonset Point as "Flagpole Receptors" Using ISCST Ver. 6.3 (May, 1988)

MJ

- 68 (App.) Particulate Impacts on the Trea-Toray Building's Fresh Air Intakes from the QPRRF (May, 1988)
- 69 (App.) Prediction of Emissions from QPRRF Based on Scrubber-Baghouse Equipped Emissions Facility Emissions Data (May, 1988)
- 70 (App.) Quonset Point Resource Recovery Facility Response to MES "Analysis of Pollutant Deposition into Fry's Pond Resulting from Proposed Quonset Point Resource Recovery Facility Emissions" dated May, 1988
- 70A (App.) Fry's Pond Drainage Basin and Wind Vectors with Respect to QPRRF
- 71 (App.) Estimated Constituent Concentrations from Deposition and Runoff Loading to Fry's Pond from Stack Emissions of the Proposed Quonset Point Resource Recovery Facility, May, 1988
- 72 (App.) Potential Impacts of the Proposed Quonset Point Resource Recovery Facility on Aquatic Biota and Their Consumers, May, 1988
- 73 (DEM) Draft Risk Assessment Guidelines and letter to Attys of Record from M. Grant dated June 13, 1988
- 74 (Town) The National Incinerator Testing and Evaluation Program: Air Pollution Control Technology Summary Report, 9/86
- 75 (Town) West County Agency of Contra Costa County Waste Co-disposal/Energy Recovery Project -- Air Emissions and Performance Testing of a Dry Scrubber (Quench Reactor), Dry Venturi and Fabric Filter System Operating on Flue Gas from Combustion of Municipal Solid Waste in Japan, May, 1985

MJ

- 76 (Town) Air Emissions Testing at the
Wurzburg,
West Germany Waste-to-Energy Facility
June, 1986
- 77 (Town) Environmental Test Report, 11/21/86
- 78 (Town) QPRRF - ID Fan Noise Radiated from
Stack
- 79 (Town) QPRRF - Air Cooled Condenser Noise
- 80 (Town) Letter from SWMC to Town dated
12/9/87
- 81 (App.) North Kingstown Noise Ordinance
- 82 (Concern) Chemosphere Connett Article
- 83 (Concern) Formation and Fate of PCDD and PCDF
from Combustion Processes
- 84 (Concern) Environmental Report -- Formation and
Dispersion of Dioxins, Particularly
in Connection with Combustion of
Refuse December, 1984
- 85 (Concern) Dioxin in the Foodchain: A Model for
Calculating Health Risk from RDF
Incinerators
- 86 (Concern) Memo re Assessment of Deposition
Impacts of Proposed Resource Recovery
Incinerator Facility at New Richmond,
Wisconsin dated May 13, 1987

CERTIFICATION

I hereby certify that a true and accurate copy of the within Decision and Order has been sent first class mail, postage prepaid to Mark A. McSally, Esq., McSally & Taft, P. O. Box 8830, 21 Garden City Drive, Cranston, R. I. 02920, Richard A. Sherman, Esq., Tillinghast, Collins and Graham, One Old Stone Square, Providence, R. I. 02903, George West, Esq., Manning, West, Santaniello & Pari, 711 Fleet Bank Building, Providence, R. I. 02903, Harlan M. Doliner, Esq., McGregor, Shea & Doliner, P.C., 27 School Street, Suite 300, Boston, MA. 02108, and Paul O. Plunkett, Concern, Inc., 2 First Street, North Kingstown, R. I. 02852, and by interoffice mail to Claude A. Cote, Esq., 9 Hayes Street, Providence, R.I. 02908 on this ~~fourth~~ ^{fifth} day of October, 1988.

fifth day
Barbara Mann

MP 0668B