STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF WASTE MANAGEMENT

SOLID WASTE REGULATION NO. 4

INCINERATORS AND RESOURCE RECOVERY FACILITIES

EFFECTIVE DATE JANUARY, 1997

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4.1.00 INCINERATORS AND RESOURCE RECOVERY FACILITIES

4.1.01 General Information: The following requirements are related to the incinerator or resource recovery facility site and building(s). All general requirements set forth in Rule 1.5.00 must be submitted. All information relating to the residue disposal site required by Rule 2.1.00 must also be submitted.

4.1.02 Radius Plan: A radius plan, including all the information listed below, shall be submitted. A radius plan must be drawn to a minimum scale of one inch to two hundred feet (1" = 200 feet), adjusted to fit on standard 24 x 36 inch sheet(s) and including all areas within one-quarter (1/4) mile radius out from all property lines of the site. The required information includes:

(a) Zoning of the area as required in Rule 1.5.05 above

(b) Legal boundaries of site and licensed area if different -- these boundaries shall be certified by a Registered Land Surveyor in the State of Rhode Island

(c) All roads

(d) All buildings and dwellings

(e) All water supplies (wells, etc.)

(f) All surface water courses

(g) North arrow

(h) Locus Plan

4.1.03 Site Plan: A site plan, including all of the information listed below for all areas within the site, shall be submitted. The site plan must be drawn to a minimum scale of one inch to one hundred feet (1" = 100 feet), adjusted to fit on standard 24 x 36 inch sheet(s). The required information includes:

(a) Legal boundaries of site and licensed area if different -- these legal boundaries shall be certified by a Registered Land Surveyor in the State of Rhode Island

(b) Proposed fences and gates

(c) Roads (if any)

(d) On site traffic patterns

(e) Parking areas

(f) Weighing facilities (if any)

(g) Buildings (if any)

(h) Hot load inspection area

(i) Random load content inspection area

(j) Vehicle impoundment area(s) for hot loads, prohibited loads, etc.

(k) Crane drop area for hazardous waste (if any)

(l) Temporary storage area(s) for bulky waste, special waste, or prohibited waste

(m) Areas to be used for storing salvaged materials (if any)

(n) On site ash storage area (if any)

(o) On site residue disposal area (if any)

(p) Power and pipe lines and other utilities (e.g. water, sewer, gas, electric, telephone, etc.) including:

(1) any aboveground and underground active or abandoned utility lines

(2) any aboveground and underground active or abandoned storage tanks

(q) Rights-of-way

(r) Auxiliary fuel storage area

(s) Wells (if any), including groundwater supply and groundwater observation wells and soil boring locations (if any)

(t) Surface water courses (if any)

(u) Proposed leachate collection and treatment facilities (if any)

(v) Site drainage facilities (if any)

(w) Landscaping

(x) Location of buffer zones

(y) North arrow

4.1.04 Construction and Engineering Plans and Specifications

A preliminary set of construction and engineering plans and specifications relating to all buildings, equipment and key features of the facility must be submitted to the Department. This set shall be in sufficient detail to allow for a comprehensive application review. A complete set of final plans will be submitted prior to construction or operation per Department requirements.

(a) Overall schematics to include, at minimum, plant systems flow schematics and energy conversion schematics, if applicable (feedwater, steam, condensate).

(b) Piping and instrumentation drawings to include, at minimum, the combustion train of equipment, air pollution control train of equipment, drainage and discharge systems, air handling systems, and auxiliary fuel systems.

(c) Plan and cross sectional views of the facility at different elevations, with dimensions, to include:

(1) Vehicle weigh station

(2) Any unloading, inspection, sorting, separating, and storage or holding areas for all types of solid waste, including municipal solid waste, bulky waste, prohibited and special wastes

(3) Refuse processing equipment locations and configurations

(4) Air supply ductwork locations

(5) Residue and recyclables (if any) collection equipment and transfer lines, storage areas and loading areas for these materials

(6) Steam generation equipment (if any), pollution control equipment, and other major equipment in the plant

(7) Office space and employees' facilities

(8) Auxiliary fuel handling and storage areas

(9) Fire protection station(s)/area(s)

(d) Outline specifications for all refuse processing equipment (and steam generating equipment if applicable). Include information pertaining to the make, model, and manufacturer (if available) and information on capacity, reliability, efficiency, or other design and performance factors.

(e) Outline design specifications for:

(1) Vehicle weigh station

(2) Any loading, inspection, sorting, separating, and storage or holding areas for all types of solid waste, including municipal solid waste, bulky waste, prohibited and special wastes. Include storage capacities, where appropriate.

(3) Residue and recyclables (if any) collection equipment and transfer lines storage areas and loading areas for these materials. Include storage capacities.

(4) Auxiliary fuel handling and storage areas

(5) Water distribution system (for potable and sanitary water, irrigation needs, process, and fire fighting needs)

(6) Plant energy supply system (including provisions for temporary power supply, in event of primary supply outage)

(7) Fire-fighting and hazardous waste protection systems, equipment and materials

(8) Environmental control equipment (sweepers, snowplows, etc.)

(9) Control room displays, instrumentation and controls

(10) Security/traffic control measures (fencing, gates, material screening devices, roads, traffic signs, traffic lights, general lighting, etc.)

(11) Communication equipment

(12) Landscaping and buffer zones (if applicable)

(f) Process flow diagram(s) that illustrate the complete material and process sequence. They must depict all major equipment associated with the processing, heating, cooling, transportation and storage for all material flow streams including air, water, solids, and energy balances. The material flow streams must show all inputs and outputs and be characterized by the following process variables:

(1) Average flow rates (liquid and solid being measured by weight or volume per unit time and gas being measured by standard cubic feet per minute).

(2) Average compositions, designation of flow phase (solid, liquid, gas), temperature in degrees fahrenheit, and pressure in pounds per square inch absolute. Energy balances must include the average heat content (measure in BTU/lb) for all input and output material or any equipment which changes the heat content of these streams. Energy converted or transferred as heat must be indicated in BTU/hr. All major sources of heat input and loss must be noted. Electrical energy either generated or utilized must be shown in kilowatt hours with average use and peak demand shown

(g) Process flow diagram and water balance for plant water distribution system (for potable and sanitary water, irrigation needs, process and fire fighting needs).

4.1.05 Description of Proposed Facility

This overview should include, at minimum:

(a) A sequential description of the major components used for the acceptance, storing, screening and separating (if applicable), incinerating, treating, reclaiming or recycling (if applicable), and loading/disposing of solid waste, starting from delivery at the weigh station and continuing through the ash residue loading and shipping to disposal.

(b) A general description of the overall process and functional description of all equipment to be used with supporting information such as design criteria, anticipated performance, and overall process flow diagrams.

(c) A discussion of process trains capable of being operated independently from each other and other provisions to minimize downtime and minimize by-passing of wastes to other facilities.

4.1.06 Operating Plan

(a) An operating plan shall be submitted including information on all of the numbered sections below. The minimum requirement for information to be provided is

outlined in each section. The duration of the operating plan shall equal that of the license. The operating plan shall be reviewed by the applicant prior to license renewal and any changes to such plan shall be submitted to the Department for approval at that time.

(b) The applicant must comply with incinerator or resource recovery facility design and operating standards listed in Rules 4.2.00 and 4.3.00 respectively.

(1) Operating rates and design capacities

(i) Expected short-term and projected long-term daily refuse loading (tons per day) inputted to facility.

(ii) Projected year by year refuse loading (tons/year) from year one to end of plant life.

(iii) Rated refuse capacity of the facility, in tons per day and tons per hour.

(2) Operating hours

(i) Naming of the days of the week, and the time intervals (exact hours) on each of these days, that the facility will be open to the public.

(ii) Description of operating shifts, including number and time intervals for each shift.

(iii) Discussion of any seasonal variations in the operating hours, including planned facility shutdown periods (if any), holidays when the facility will be closed, etc.

(3) Provisions for limited access

(i) Normal access road(s) into the facility and egress road(s) from the facility.

(ii) Emergency access road(s), if any, into the facility.

(iii) Security equipment and location including physical description of any fencing around the facility, physical description of barriers or gates at inlet/egress points, and any security personnel stations.

(iv) Any natural land features which prevent access to the facility.

(v) Security surveillance, including security personnel work schedules.

(vi) Any special access capabilities by emergency personnel, such as police, firemen, rescue, medical, etc.

(4) Types of refuse to be accepted

(i) Categories of waste accepted by the facility.

(ii) Categories of waste that will be incinerated.

(iii) Categories of waste, if any, that will be separated from the waste stream prior to incineration, for alternate disposal or recycling.

(iv) Specification of prohibited wastes that will not be accepted by the facility for incineration or recycling.

(v) Outline of pre-operations informational programs and ongoing programs during operation, if any, that educate waste haulers, communities, commercial businesses, and individual residents on acceptable versus prohibited wastes.

(vi) Exact details of sign(s) at facility entrance which mention prohibited materials.

(5) Traffic patterns

(i) Description of on-site road network serving employee vehicles, incoming waste hauling vehicles, outgoing empty vehicles and vehicles removing residue or reclaimed/recycled materials or other materials from the facility.

(ii) Specification of expected types, capacity, number and frequency of vehicles entering and leaving facility.

(iii) Traffic flow patterns on-site.

(iv) Traffic control methods on-site including directional signs, traffic lights, speed control measures, etc.

(v) Parking areas and capacities.

(6) Weighing facilities (if any)

(i) Physical description of weighing facilities.

(ii) Details of information to be recorded on incoming vehicles carrying solid waste, outgoing empty vehicles and outgoing vehicles carrying residue or other materials (if applicable).

(iii) Details of information recording and storage equipment, and procedures.

(7) Substitute disposal and/or transfer arrangements

(i) Description of proposed measures to handle incoming solid waste flow during periods of emergency, equipment breakdown, or short-term facility shutdown (not including extended outages requiring total waste by-passing to alternate site.)

(ii) Identification of an alternate solid waste management facility and description of agreement to accept solid waste (either part or all of the waste) in the event of an emergency, equipment breakdown or short or long term facility shutdown.

(iii) Discussion of the types of outages and outage time intervals that would trigger total by-passing of the incoming waste to alternate solid waste management facility.

(iv) Procedures for waste removal from the facility, if substitute disposal is required, including, at minimum:

A. Removal of waste from refuse pit or storage area

B. Removal of refuse from feed hopper in case of mechanical system breakdown

(8) Residue and fly ash handling, storage, and disposal

(i) Estimated quantity of fly ash and bottom ash generated daily.

(ii) Estimated quantity of material to be segregated from ash residue for reuse/recycling (if applicable).

(iii) Methods and equipment to reclaim materials from the ash (if applicable).

(iv) Method of wetting and/or containment to ensure dust emissions are controlled during on-site and off-site storage, loading, transport, and unloading.

(v) Description of method of storage and facilities for storage of on-site ash and ash storage capacity.

(vi) Method of draining free liquid during ash storage and description of run-off management system.

(vii) Copy of agreement with appropriate licensed solid waste management facility(s) to accept and dispose ash residue and copy of the facility's license or permit indicating the facility's ability to accept ash residue.

(viii) Discussion of transportation of fly ash to disposal site, including environmental control factors.

(ix) Ash sampling, analysis and testing procedures (during on-site ash storage) including:

A. Sample collection procedures, techniques, and schedules

B. Sample preservation and shipment procedures

C. Description of parameters, analytical procedures, test methods, and schedules

D. Identification of laboratories performing tests and analyses (to be provided to Department prior to plan operations)

E. Chain of custody control

F. Discussion of QA/QC procedures

G. Details of documentation of sampling analyses and tests

(x) Procedures for segregation and isolation of ash during ash testing and procedures for ash disposal, following test results.

(xi) Ash residue removal procedures in case of a mechanical breakdown in the facility ash transporting system.

(9) Fire and explosion prevention and control (Ref: Rules 4.2.04, 4.2.19, 4.2.21, 4.2.22, 4.2.23, 4.3.27)

(i) Description and location of fire and explosion protection and alarm equipment and systems used to detect, control, and extinguish fires and explosions in appropriate locations at the facility, including, but not limited to, areas where solid waste, chemicals, flammable or explosive materials are stored or handled, and in the monitoring and control room(s).

(ii) Description of any fire protection and safety elements provided in construction materials and facility design.

(10) Utility requirements

(i) Identification of types and quantities of fuels stored on-site (e.g. auxiliary fuel for burners) and description of on-site storage and handling equipment.

(ii) Estimates of water quantity consumed for potable or sanitary, irrigation, process, and fire-fighting needs.

(iii) Estimate of total electric power (kw) generated on site and consumed on site and quantity of outside power supplied, if any.

(iv) Estimate of total steam generated on site (lb/hr, pressure, and temperature) and amount consumed on site.

(v) Identification of provision for auxiliary power, sized to enable emergency shutdown of facility and to provide emergency lighting and fire-fighting needs.

(vi) A utilities plan identifying and describing all outside utility systems which will serve the facility. A description of the carrying capacities of these utility systems and availability within the system to meet present and future facility utility needs.

(11) Communication equipment

(i) Description of the types and location of communication equipment throughout the facility.

(ii) Identification of personnel that will use each type of communication equipment.

(iii) Identification of communication networks and personnel to be linked by the networks.

(12) Aesthetic considerations

Description of landscaping and buffering actions to reduce potential negative visual impacts off-site.

(13) Water and wastewater treatment and disposal

(i) Description, characteristics, types and quantities of sanitary and process water usage and wastewater effluent.

(ii) Discussion of (or plan for) processing, treatment and disposal or recycling of waste water, including disposal of firefighting water usage.

(14) Outline operation and maintenance manual

This document will be submitted as a part of the operating plan. It will include, at minimum, the following sections further described in each section: personnel staffing, personnel protection, personnel training, waste screening, bulky waste handling, special wastes handling, process operations, emergency contingency plans, facility housekeeping procedures, and facility maintenance.

(i) Personnel staffing

This section will include, at minimum:

(A) An organizational/manning chart for the entire facility.

(B) Job descriptions, i.e., duties and responsibilities for key (critical) facility positions. Each description should include the requisite experience and skills, education, certifications, and other qualifications for that position.

(C) The staffing provided for each shift, including the job titles and number of employees for each title to satisfy operating and maintenance needs.

(D) Provisions for assuming responsibilities of each key job slot in case of temporary absence of the primary person.

(ii) Personnel protection

This section should include, at minimum, a discussion of personnel safety equipment, protection gear, and related items. This would include, but is not limited to, the following:

(A) Hard hats, hearing protection, safety goggles, and other protective clothing.

(B) Protective clothing for emergency situations including fires, explosions, and hazardous waste incidents or releases of harmful constituents into the air, soil, surface water or groundwater or onto surfaces of the facility.

(C) Personnel hygiene facilities, first aid stations, showers, eye wash stations, and related items.

(iii) Personnel training (Ref: Rules 4.3.31, 4.3.32)

This section will include a training plan which provides the following:

(A) Description of how all facility personnel will successfully complete a program of classroom instruction and/or on-the-job training that teaches them to perform their duties competently, and in a manner protective of human health and the environment. The type and amount of initial and follow-up training should be described.

(B) Identification of the job positions which will receive training in order to become knowledgeable of the procedures, equipment, and processes at the facility, relative to the positions in which they are employed.

(C) A training plan outline to enable facility personnel to respond effectively to emergencies by familiarizing them with

emergency and safety equipment, abnormal or emergency procedures, and emergency systems. The outline should include, where applicable:

(1) Procedures for using, inspecting, repairing and replacing facility emergency and monitoring equipment.

(2) Operational start-up and shutdown procedures; both normal and emergency procedures.

(3) Emergency communication or alarm systems.

(4) Response to fires or explosions.

(5) Identification and handling procedures, relative to prohibited wastes, including hazardous waste.

(6) Response to hazardous waste emergencies.

(7) Response to groundwater contamination incidents.

(D) Identification of the trainer(s) and any requirements for instructor status (to be provided to the Department prior to plant operations).

(E) Description of plan for documentation of training using a training records system, where training records will be kept, and duration for retaining records.

(iv) Waste screening procedures

To ensure that the facility receives only authorized waste as provided by the permit of the facility, that the recyclable materials content of each load of incoming waste is in compliance with the "Rules and Regulations for Reduction and Recycling of Municipal Solid Waste" and the "Rules and Regulations for Reduction and Recycling of Commercial and Non-Municipal Residential Solid Waste", and that the waste received is in an acceptable condition, this section should include details of the initial screening of incoming waste on vehicles, inspection of suspicious loads, handling and isolation of hot loads, random inspection of incoming loads, and procedures for isolating prohibited wastes that have not been accepted.

This section will include, at minimum:

(A) A description of any device(s) to be used to screen incoming wastes on vehicles.

(B) A listing, by job title, of the personnel trained to perform waste screening.

(C) A description of the waste screening duties for each person trained to perform waste screening, and an overview of the procedures to be used by each of these persons.

(D) An overview of the plan used to train the waste screening personnel.

(E) A discussion of the records which will be maintained, relative to information on each load dumped into the refuse pit and records of waste inspection.

(v) Bulky waste handling procedures

(A) Description of separation procedure and temporary storage facility/area (if any) for bulky waste.

(B) Description of arrangement for removal and disposal of bulky waste from the facility, including transporter pick-up frequency.

(vi) Special waste handling procedures

Depending on license conditions and other possible factors, certain special wastes may be accepted and incinerated, or may be accepted but separated from the waste stream prior to incineration of the waste stream. These special wastes may include demolition and construction waste, certain non-hazardous liquid wastes, and other categories of non-hazardous waste.

Other special wastes which are prohibited could accidentally not be initially screened out, and in turn get dumped into the pit or elsewhere. These include RIDEM regulated hazardous wastes (see also 40 CFR Part 261 "Identification and Listing of Hazardous Waste"), suspected hazardous wastes, or certain other wastes not

regulated by RIDEM as hazardous, but which would require special handling, such as radioactive, pathological, and biological waste.

Therefore, provide the following information, where applicable, for each of the above types of special waste, that are not to be incinerated but instead are to be separated from the waste stream.

(A) Description of procedures for separation and isolation of the waste.

(B) Description of temporary storage facility/area (if any) for the waste.

(C) Description of arrangement for removal and disposal of the waste from the facility including transporter pickup frequency.

(vii) Process operations

This section will include, at a minimum:

(A) Description of procedures for operation of each major facility component.

(B) Operating procedures for facility normal start-up, normal shut-down, and emergency shut-down.

(C) A description of how the operator will utilize process and instrumentation controls during start-up and shut-down procedures.

(D) Identification of the operating variables for the process and any control devices used to detect a malfunction or failure, the normal range of these variables and a description of the method of monitoring; and the sequence of responsible actions in the event that the equipment and instruments exceed normal operating ranges.

(E) Methods and schedules to check operation of control equipment and instrumentation, exclusive of emission monitoring equipment, including a list of all equipment and instruments requiring calibration and a schedule of proposed

calibration intervals (to be provided to the Department prior to plant operation).

(viii) Emergency contingency plans

This section should provide detailed procedures for responding to fires, explosions, and hazardous waste incidents, including any unplanned and non-permitted sudden or non-sudden releases of harmful constituents into the air, soil, surface water or groundwater or onto surfaces of the facility. The contingency plans should contain, but not be limited to:

(A) A description of the actions facility personnel will take in the event of each type of emergency listed above.

(B) A discussion of arrangements made with outside emergency support groups (fire, police, rescue, hospital, hazardous waste emergency response company, hazardous waste transporter, etc.) to provide any needed assistance during the emergencies and discussion of any training in conjunction with those support groups.

(C) A list of names, addresses, and phone numbers (office and home) of all persons qualified to act as an emergency coordinator for the facility, including the primary designated coordinator and any alternates.

(D) A list of names, addresses, and phone numbers of outside emergency support groups (fire, police, rescue, hospital, hazardous waste emergency response company, hazardous waste transporter, etc.) that are under contract to respond to such emergencies.

(ix) Facility housekeeping procedures

This section should include, at minimum:

(A) Identification of the areas at or near the facility that would be susceptible to:

(1) Dust problems

(2) Litter problems

(3) Odor problems

(4) Vector problems

(B) A detailed description of the proposed measures (including methods, procedures and schedules) to control and prevent dust, litter, odor, and vector problems.

(C) A description of the procedures to clean the refuse pit and other areas in the facility where any solid waste or residue is located. (Ref: Rules 4.3.11-4.3.14)

(D) A list of chemicals, including quantities to be used at the facility, amounts to be stored, location of storage, and safety procedures for handling and storage, as appropriate.

(x) Facility maintenance

This section will include at a minimum:

(A) A facility inspection plan to include:

(1) A list of items to be inspected.

(2) The schedule and frequency of inspection for each item.

(3) The basic elements to be included in the inspection of each item, including types of problems to look for and minimum criteria for acceptability.

(4) Documentation and storage of inspection summaries.

(5) A general facility inspection and its schedule (at least annually).

The scope of inspection (A (1) above) should include operational process equipment (to discover and correct malfunctions or deterioration, safety and emergency equipment, and to determine if operational errors are occurring), discharges (health or environmental hazards), and structural aspects of the facility. The schedule for inspection

(A (2) above) should be based on the projected rate of equipment deterioration or malfunction and the probability of failure between inspections and whether or not adverse health or environmental effects may result if a failure occurs. The records (A (4) above) should include, at minimum, the date and time of inspection, inspector's name, observations and recommendations, and date and nature of any repairs or remedial actions. The general facility inspection should be performed under the direction of and certified by a Rhode Island Professional Engineer. This licensed engineer will prepare a summary report of findings and submit it to RIDEM.

(B) A maintenance and overhaul plan to include:

(1) A list of items to be repaired on an ongoing basis, including a failure analysis.

(2) The anticipated repair schedules for each item.

(3) Schedules and procedures for major equipment replacement.

(4) Maintenance contracts.

(5) A list of equipment dealers under contract to supply standby or emergency equipment, when required.

(C) Spare parts plan to include:

(1) An analysis and list of parts that are expected to fail frequently.

(2) Suggested list of spare parts, and quantity of each that will be maintained in the inventory, to allow the facility to remain operational.

(3) Relative to each spare part, name of supplier(s) that readily supply the part.

(4) Identification of method of recording spare parts usage and inventory control.

(D) Miscellaneous support equipment to maintain operation of equipment functions, including, at minimum:

(1) Standby processing equipment (if any).

(2) Equipment used to maintain any phase of facility operations.

4.1.07 Closure Plan

Pursuant to the requirements set forth in Rule 1.5.10, this plan will include the following, at minimum:

(a) Planned or estimated year of proposed closure.

(b) Measures taken to remove all remaining refuse and residue from the facility.

(c) Methods to restrict access and prevent additional waste disposal at the facility, including physical description and location of any fences or gates placed at the facility.

(d) Discussion of impact of closure on legal boundaries of site, changes in ownership, and description of anything that affects the legal boundaries of the site.

(e) Intended future use of the facility, following closure (immediate and long-term use).

(f) A financial estimate of the costs to properly close the facility. With respect to financial assurance (Rule 1.5.10(b)(2)), the applicant must post financial assurance for the full amount of the closure cost estimate as a pre-condition for the issuance of a solid waste management facility license.

4.1.08 Permits Section

List and describe all environmentally related authorizations and approvals that are required for this facility including, but not limited to, those from other Offices of RIDEM, other state agencies, federal agencies, local governments, agricultural districts, fire equipment insurance underwriters, and the appropriate electric utility.

4.2.00 INCINERATOR AND RESOURCE RECOVERY FACILITY DESIGN STANDARDS

4.2.01 On-Site Roads and Vehicle Areas: The facility shall be designed in a manner which prevents traffic backups and related traffic hazards on access roads serving the facility and allows for an even and fluid vehicle flow on-site. The on-site roadway design configuration and layout shall provide sufficient roadway for unobstructed vehicular passages. Unobstructed vehicle passage shall be achieved and/or enhanced using parking areas, providing maneuvering space in the loading and unloading areas, and with traffic control measures (i.e. lane delineations, signals, directional and speed signs, and barriers, etc.). All on-site roadways used by refuse and residue vehicles shall be constructed and surfaced in accordance with standards for heavy truck usage.

4.2.02 Fencing and Gates: The facility shall be designed with perimeter security fencing, where necessary, and with gate controls to prevent unauthorized access to the site and to control the off-site escape of litter. Metallic chain link fencing, or its equivalent, extending to a height of six feet, shall be the minimum design standard.

4.2.03 Emergency Access: Provisions for emergency access, including roads if necessary, for fire, police, rescue, etc., must be included in facility design.

4.2.04 Waste Size Reduction Equipment: All such equipment which, due to the nature of its operation, may have the potential for explosion, shall be designed and equipped with an effective explosion detection and suppression system which shall be situated within the facility in such a manner so as to prevent the explosion and/or directionalize the force of any explosion in order to effectively minimize potential of human injury and minimize damage to the building.

4.2.05 Waste and Residue Storage Area Features: All tipping floors, sorting pads, waste or residue storage areas, bunkers and pits, where heavy vehicle usage will be employed, shall be constructed of concrete or other similar quality material and be able to maintain traction in wet and dry conditions. Floor drains shall be provided in all such areas and surfaces shall be appropriately graded to facilitate washdown operations. Floor drains shall be designed to recycle wastewater for appropriate uses or into a collection and treatment system approved by the Department and/or other appropriate authorities. If waste or residue storage pits are utilized, the base and sidewalls shall be sufficiently waterproofed to prevent groundwater intrusion. Tipping floors shall be designed with suitable wheel stops to prevent vehicles overdriving the pit edge.

4.2.06 Prohibited Waste in Refuse Pit: A part of the tipping floor shall include an area designed to accept prohibited waste or other waste that, for any reason, gets into the storage pit and needs to be unloaded from the pit.

4.2.07 Waste Storage Capacity: The facility shall be designed with sufficient internal storage areas for unprocessed incoming solid waste. The design shall account for maximum anticipated facility loading rate.

4.2.08 Temporary Holding and Storage Areas for Non-Processed Waste: The facility design shall include temporary holding areas for hot loads and prohibited loads, and temporary storage area of sufficient capacity and appropriate design for bypassed, separated, or recycled solid waste, where applicable.

4.2.09 Random Load Inspection Area: An area shall be included in the facility design for random inspection of incoming waste loads.

4.2.10 Hazardous Waste Storage Area: A hazardous waste storage area is required. The temporary storage area must be in compliance with hazardous waste regulations governing temporary storage areas for generators of hazardous waste.

4.2.11 Dust and Odors: Storage areas for solid waste to be incinerated at the facility shall be designed with the capability of maintaining interior pressure below that of the exterior atmosphere and shall employ a system of delivery doors, designed and operated to minimize the potential for migration of odors and dust outside the confines of the waste receiving and storage building. Air drawn off, as a result of maintaining negative pressure, shall be directed to the combustion chamber.

4.2.12 Feed Hoppers: The waste loading system servicing the combustion chambers shall be designed and equipped in such a manner as to prevent the occurrence of backfire into the feed hopper. The feed hopper shall also be designed to allow removal of refuse in case of equipment failure or plant shutdown.

4.2.13 Combustion Equipment: The combustion chambers and ancillary support equipment shall be designed with the capability of handling and effectively disposing of those wastes authorized for receipt at the proposed facility, taking into account the expected normal fluctuations in quantity, moisture content, heat release value, and chemical makeup of the wastes.

4.2.14 Instrumentation and Controls: Where possible, the facility subsystems shall be equipped with automatic process controls which contain the necessary instrumentation and related feedback mechanisms to ensure that process operational parameters are being met. Automated systems shall be equipped with manual override capabilities. Instrumentation displays and related control mechanisms shall be positioned within the facility in an accessible and highly visible manner for monitoring purposes.

4.2.15 Component and System Reliability: Redundant features or other system layout aspects shall be incorporated into the facility design to maximize on- line availability for the receipt of processing of solid waste. Mechanical components shall be constructed of materials that will withstand the rigors of facility operation and shall have a rated capacity that prevents backups and blockages within the related system. Replacement equipment and parts for

equipment which is subject to excess wear or frequent breakdown, due to the nature of operation, shall be stored on-site to provide expedient repair. A properly sized parts storage area shall be included in the facility.

4.2.16 Facility Support Equipment: Appropriate heavy equipment and other facility operational support equipment, and a storage area for this equipment, shall be provided at the facility.

4.2.17 Ash Design Standards: Design standards for the system of ash handling, collection, transfer and storage are provided in Appendix A.

4.2.18 Liquids Spill Control: The facility shall be designed and equipped with appropriate control mechanisms to minimize and contain the accidental spillage of reagents, lubricants or other liquids used in the operation or maintenance of the facility, or any waste generated by such operation.

4.2.19 Fire Protection: The facility shall be provided with adequate stationary and portable fire fighting equipment designed, sized and located to provide protection throughout the facility. The facility shall be designed with alarm and fire protection systems capable of detecting, controlling, and extinguishing any and all fires that may occur during operation.

4.2.20 Communication Systems: The facility shall be designed with adequate communication systems to support normal and emergency operating conditions.

4.2.21 Fire Walls: The facility shall be designed with appropriate fire rated walls as required by fire codes and shall provide an adequate design for emergency evacuation routes. The solid waste storage area and tipping area must be separated (by a wall) from the solid waste combustion equipment.

4.2.22 Water Supply: The water supply system shall be sized and designed to meet potable, sanitary, irrigation, process, and firefighting needs and shall include design redundancy to preclude interruption of water flow to the facility's internal firefighting water supply system. The sizing and design of this system may include satisfying appropriate types of water needs with non-potable water or recycled wastewater as a water conservation measure.

4.2.23 Backup Power Supply: The facility shall be designed with a backup power supply to ensure power supply to meet facility needs during facility outages and to provide adequate power during emergencies, including fires.

4.2.24 Plant Interior Layout: Interior layout design for all facilities shall provide for system installations that maximize accessibility for repairs, maintenance, and ease of cleaning, while affording employee safety.

4.2.25 Utilities Demand: The design of the facility shall not place a demand exceeding the remaining use capability of existing utilities including, but not limited to, potable and non-potable water supplies, waste water and storm water collection and treatment (if applicable), energy supply and transmission, transportation systems, or any other site related infrastructure subsystems, except in those cases where plans have been developed or are being implemented to provide for the expansion of existing utility systems or establishment of new utility systems which will meet the additional demand generated by construction and operation of the facility.

4.2.26 Buffer/Setback: A buffer and setback area shall be provided to allow for plant expansion or adequate planning for installation of pollution control equipment that may be required due to future advances in the state-of-the-art. All structures that store or process solid waste shall be designed with a minimum setback of two hundred (200) feet from the facility's property line. All other structures shall be designed with a minimum setback of one hundred (100) feet from the facility's property line.

4.3.00 INCINERATOR AND RESOURCE RECOVERY FACILITY OPERATING STANDARDS

Incinerator and resource recovery facilities shall meet all regulations set forth in this rule and shall comply with the provisions and limitations of all other regulations of the Department.

4.3.01 Traffic Flow: The delivery of solid waste to the facility and the removal of residues and recovered products from the site shall be scheduled so as to eliminate traffic backups and allow for fluid vehicular movement on site.

4.3.02 Signs: Sign(s) shall be erected at the entrance to the facility which are clearly legible and visible, and which contain the following:

(a) Name of facility and operator

(b) Emergency phone number

(c) Restricted (prohibited) materials (if applicable)

(d) Operating hours and days open

4.3.03 Public Access Hours: Access to the facility shall be limited to the hours in which authorized operating personnel are on duty at the facility. Additional time shall be designed before and after normal operating hours to allow for "housekeeping chores." There shall be no public access to the facility during the latter time interval.

4.3.04 Gates: Gates at all entrances to the facility shall prevent public access to the facility at all times other than operating hours. These gates shall be locked when the site is unsupervised.

4.3.05 Waste Screening and Inspection: The owner or operator shall implement waste receiving area control procedures that provide for the screening and inspection of the incoming waste stream to prevent the acceptance of prohibited or unauthorized waste types, to operate in compliance with the "Rules and Regulations for Reduction and Recycling of Municipal Solid Waste" and the "Rules and Regulations for Reduction and Recycling of Commercial and Non-Municipal Residential Solid Waste" regarding source segregation of recyclable materials and, correspondingly, the maximum recyclable materials content in the incoming waste stream, and to remove undesirable or unprocessible materials prior to the initiation of processing, as provided in the approved operating plan.

4.3.06 Brush Handling: Any brush accepted at the facility must be chipped within one week after arrival or transferred for disposal within forty-eight (48) hours of arrival. Chipped brush may be stored up to one week at the site prior to on-site use or off-site use or disposal.

4.3.07 Waste Storage: With respect to waste storage:

(a) Unprocessed, incoming solid waste to be incinerated shall be stored in pits, bunkers, or similar containment vessels, and shall be kept at all times at levels that prevent spillage or overflow.

(b) All combustible and/or putrescible waste storage shall be conducted within the confines of a protective structure.

(c) The capacity of the storage pit shall be equivalent to at least the rated capacity of the incinerator/combustion chamber for one and one-half (1 1/2) days of operation.

(d) No combustible solid waste shall be stored for more than forty-eight (48) hours at the facility, except for three (3) day holiday weekends.

4.3.08 Substitute Disposal Provisions: The facility must have an alternate method of disposal, in writing, with another in-state or out-of-state licensed solid waste management facility for by-passing of incoming solid waste, in the event of equipment failure or forced shutdown which prevents the facility from receiving a part of or all of its normal solid waste input.

4.3.09 Recyclables Handling: Removal and handling of waste for utilization, salvage, or recycling shall be performed in a controlled manner that does not impede the proper operation of the facility, and that insures the health and safety of all persons engaging in such activities.

4.3.10 Special Solid Waste and Recyclables Storage: Incoming solid waste identified as oversized bulky, unprocessible or non-putrescible recyclables (if any) may be temporarily stored in

closed-top containers at the facility, with the Department's permission and only for a time period approved by the Department, and as provided for in the approved operating plan.

4.3.11 Odors: Suitable measures shall be taken to minimize odors originating at the facility. This may be accomplished by immediate processing and/or disposing of waste at other solid waste management facilities. Methods shall be employed to prevent odors associated with putrification of stored waste.

4.3.12 Dust: The operator shall undertake suitable measures to control dust whenever necessary at the facility, on access roads to the facility, and all other areas related to the facility's operation. This may be accomplished by spraying small amounts of water over the dust producing area and/or by the application of suitable chemicals or paving materials on access roads.

4.3.13 Litter: Suitable measures shall be taken to minimize the scattering of refuse. The operator shall provide for routine maintenance and general cleanliness of all areas related to the facility's operation.

4.3.14 Vectors: The facility shall not operate unless any on-site vector population is minimized by appropriate techniques that will protect public health. Conditions shall be maintained that are sanitary and therefore unfavorable for the harboring, feeding, and breeding of vectors. Control of insects and rodents where needed shall be effected by means of a program directed by a professional exterminator utilizing insecticides and/or rodenticides or other means approved by the Department.

4.3.15 Open Burning: Open burning of any type shall be prohibited at the facility.

4.3.16 Air Standards: With respect to air standards, the facility shall not violate state implementation plans approved or promulgated pursuant to: Chapter 23-23, 1956 R.I.G.L., as are or as amended; the rules and regulations adopted to implement such chapter; and the Clean Air Act, 42 U.S.C. 7401 et. seq, as is and as amended.

4.3.17 Surface Water Pollution: The facility shall not cause pollution of the surface waters of the United States so as to violate the Water Pollution Act, 1956 R.I.G.L., Chapter 46-12, as is or as amended, or Section 402 of the Clean Water Act, 33 U.S.C. 1251 et. seq., nor shall the facility cause a discharge of dredged material or fill in violation of Section 404 of the Clean Water Act, as is or as amended.

4.3.18 Groundwater Pollution: The facility shall not cause pollution of any groundwater. In addition, the facility shall comply with the requirements of the Clean Water Act, 33 U.S.C. 1251 et seq., and the regulations adopted pursuant to the Act, specifically 40 CFR Section 257.3-4, as are or as amended.

4.3.19 Wastewater and Liquid Waste: Any wastewater and liquid waste that is not recycled, but instead disposed, shall be disposed in a manner that does not pollute any source of private or public supply, any of the waters of the state or groundwaters. These wastes shall include, but not be limited to, water used to quench the incinerator residue, scrub the flue gas, clean the facility, liquid waste from the refuse collected in the storage pit, and tipping floor run-off.

4.3.20 Endangered Species: The facility shall not cause or contribute to the taking of any endangered or threatened species pursuant to the Endangered Species Act, 16 U.S.C. 1531 et seq., and/or the regulations adopted to implement such Act, and are or as amended. The facility shall not cause or contribute to the destruction or adverse modifications of the critical habitat of endangered or threatened species.

4.3.21 Residue and Recovered Material Storage: Facility ash residues, effluent (if any), and recovered materials (if any) shall be stored in bunkers, pits, bins or similar leakproof containment vessels, and shall be kept at all times at levels that prevent leakage, spillage, or overflow.

4.3.22 Ash Operating Standards: Operating standards for ash sampling, testing, characterization, management, disposal, and removal are provided in Appendix B.

4.3.23 Facility Inspection and Maintenance: The operator of the facility shall maintain all facility systems and equipment in a manner that facilitates proper operation and minimizes system downtime.

(a) Immediately following the initiation of facility operation, facility personnel shall begin routine inspections for operating effectiveness and equipment deterioration or malfunction.

(b) Written records of inspection shall be maintained and be available for review by the Department.

(c) A planned maintenance and overhaul schedule for major equipment shall be established and executed during facility operation.

4.3.24 RIDEM Access: All land, buildings, facilities, and equipment used in the disposal, transfer, or processing of solid waste must be available for inspection by the Director at any time.

4.3.25 Bird Hazard: The facility shall not pose a bird hazard to aircraft, as required per Rule 1.7.12.

4.3.26 Health and Safety: The facility shall be designed, operated, and maintained in such a manner to protect the health and safety of users of the facility and personnel associated with the operation of the facility, and persons in close proximity to the facility.

4.3.27 Fire Protection: The facility shall not pose a fire hazard to persons or property. All buildings must have a suitable quantity of water at sufficient pressures, on each floor, suitable for firefighting purposes and approved by the local fire authority.

4.3.28 Emergency Support Services: The facility shall have arrangements, in writing, from nearby fire, police, rescue, medical services, hazardous waste emergency response company and hazardous waste transporter to provide emergency services in case of fires, explosions, hazardous waste incidents or other similar emergencies.

4.3.29 Personnel Requirements: The facility shall maintain sufficient personnel during each operating shift to assure the proper and orderly operation of all components and systems, along with the ability to handle all routine maintenance requirements. Such personnel shall have sufficient educational background, employment experience and/or training to enable them to perform their duties in a competent and safe manner.

4.3.30 Facility Management: Each operating shift shall have a designated shift supervisor or equivalent to direct and implement operational decisions during that shift.

4.3.31 Training and Certification Programs:

(a) A comprehensive training program covering normal job responsibilities and procedures, emergency situations, and procedures and safety issues, shall be provided to facility employees.

(b) Employees involved with the operation and maintenance of the facility shall receive training at least annually. These include, but are not limited to, the chief facility operator, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load handlers.

(c) Facility specific training and operating manual(s) shall be used for training of personnel in 4.3.31(b). The manual(s) shall be kept up to date, with any necessary revisions made at least annually. The manual(s) shall be kept in a readily accessible location and shall be available for inspection by the Department.

(d) The initial review of the training and operating manual(s) shall be conducted prior to assumption of operational job duties, for all personnel mentioned in 4.3.31(b).

(e) The chief facility operator and the shift supervisor for each operating shift shall obtain and keep current ASME operator certification or an equivalent certification approved by the Department. Also, the facility shall not operate at any time without the presence of a certified shift supervisor or other certified operator.

4.3.32 Training Records: Training records that document the type and amount of training received by current facility personnel shall be maintained at the facility in accordance with the approved operating plan.

4.3.33 Contingency Planning: Contingency plans and procedures to handle fires, explosions, hazardous waste incidents, and similar emergencies shall be developed for facility personnel and in conjunction with supporting local authorities (fire, police, rescue, and medical groups), prior to facility operation. Training and practice to handle these emergencies shall be periodically provided during the operation of the facility.

4.3.34 Communications: A suitable means of communication (telephone, two-way radio, etc.) shall be available at the facility, and shall be maintained in good working order.

4.3.35 Closure Plans: The facility shall adhere to appropriate closure procedures:

(a) The facility must notify the Department at least three (3) months prior to the anticipated date that closure operations are to begin.

(b) The facility must implement the approved closure plans.

(c) Requests for deviations from previously approved closure plans shall be in writing, and written approval from the department must be obtained prior to implementation.

(d) After the closure plans have been fully implemented, the Department shall be notified so that an inspection may be made by the Department personnel. A list of the deficiencies, if any, will be returned to the owner of the facility. A final inspection will be required after all deficiencies are corrected.

(e) A professional engineer registered in the State of Rhode Island must certify that the facility is properly closed in accordance with the approved closure plan.

APPENDIX A

Incinerator Ash Design Standards

(a) Ash Separation: The facility must be designed to allow for the possibility that fly ash and bottom ash will not be mixed. There must be provisions for separate handling, collection, transfer and storage facilities for each of the ashes.

(b) Ash Transport: An ash transport system shall be provided for transfer of the bottom ash and fly ash and spent scrubber reagent (if applicable) from the combustion process to residue storage area(s). A secondary system shall be provided in case of breakdown of the primary transfer system.

(c) Ash Quenching: Vessel(s) shall be provided to quench or cool all siftings, and ash residues. The vessel(s) shall be designed to handle the maximum potential ash volumes that could be generated when operating at maximum design throughput capacity refuse. The quench vessel shall be designed to maintain a water level of sufficient height to prevent infiltration of exterior air into the combustion chamber, while maintaining suitable freeboard to prevent spillage.

(d) Ash and Recovered Materials Storage Capacity: The facility shall be designed with sufficient internal storage area for ash and recovered materials (if applicable). Ash storage areas must be designed and installed in compliance with requirements for storage of hazardous waste at new hazardous waste management facilities (40 CFR 264 Subpart J). The volume of the storage area shall be based on ash generation rates, ash sampling frequency, ash tests and laboratory turn around time, contractual arrangements with other licensed temporary storage sites and/or licensed final disposal sites and scheduling with transporters.

(e) Ash Drains and Liquids Collection Chambers:

All floor drains and/or collection chambers for liquid run-off from 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.

APPENDIX B

Incinerator Ash Operating Standards

(a) Ash Sampling and Testing: Facility ash residues shall be tested for hazardous characteristics. Sampling and testing will be in accordance with whatever techniques are acceptable to RIDEM and that, at minimum, satisfy the Code of Federal Regulations and/or U.S. EPA requirements. The procedures shall apply to either the combined or separate fly ash and bottom ash, dependent upon the EPA interpretation of the hazardous waste "mixing rule" at the concurrent time of incinerator start-up, shakedown, or during normal operation after the shakedown period.

Unless otherwise directed by RIDEM or unless the applicant proposes an alternate sampling and testing plan acceptable to RIDEM, the following guideline shall be used for ash sampling and testing:

(1) Sampling will be performed in triplicate, i.e. each sampling will require the collection of three representative samples. The EPA interpretation of the hazardous waste "mixing rule" will determine the makeup of the three representative samples, i.e., three samples of combined ash or three samples each of the fly ash and bottom ash. Each representative sample will be taken in accordance with RIDEM approved sampling methods.

(2) Ash shall be tested daily for TCLP metals and weekly (starting with the first sample) for complete TCLP toxicity and 2,3,7,8 - TCDD during the period of facility start-up and shakedown, and for six months thereafter. For an additional period of one year thereafter, daily testing for TCLP metals shall be employed, while the frequency of testing for complete TCLP toxicity and 2,3,7,8-TCDD will be reduced to once per month. RIDEM shall determine when shakedown has been completed and shall define the frequency and substance of testing that be required after this additional one year period. Complete TCLP toxicity includes testing for eight (8) metals, six (6) pesticides and herbicides, and twenty-five (25) other organic chemicals and any additional constituents required by revisions of the TC rule (if any).

(b) Ash Characterization: Ash that is generated the day of sampling takes place and ash that is generated on subsequent day(s) until the next sampling will be determined to be hazardous waste or non-hazardous waste, based on the lab analysis of that sampling.

(c) Hazardous Ash Management: Ash that is determined by testing to be hazardous waste shall be managed as hazardous waste to include storage, transportation, and disposal of the ash.

(d) Ash Disposal: The facility must have an agreement in writing with at least one licensed solid waste management facility for the disposal of ash determined by testing to be non-hazardous waste. The facility must also have an agreement in writing with:

(1) At least one licensed hazardous waste landfill for the permanent disposal of ash determined by testing to be hazardous waste or which the facility elects to dispose as hazardous waste.

or

(2) At least one licensed hazardous waste storage facility for the temporary storage of ash determined by testing to be hazardous waste or which the facility elects to dispose of as hazardous waste, pending a contract with a licensed hazardous waste landfill for permanent disposal.

(e) Hazardous Ash Removal: Any ash residue determined by testing to be hazardous waste shall be removed from the site within forty-eight (48) hours by the operator's licensed hazardous waste hauler to a licensed hazardous waste temporary storage facility or to a licensed hazardous waste landfill for permanent disposal.

The foregoing "Solid Waste Regulation No. 4- Incinerators and Resource Recovery Facilities" of the "Rules and Regulations for Composting Facilities and Solid Waste Management Facilities, January 1997", after due notice, are hereby adopted and filed with the Secretary of State this _____ _ day of _____, 2001____ to become effective twenty (20) days thereafter, in accordance with the provisions of Chapters 2-1, 2-22, 2-23, 5-51, 23-18.8, 23-18.9, 23-19, 23-19.1, 23-23, 23-63, 37-15.1, 42-17.1, 42-17.6, 42-35, 44-27, and 46-12 of the General Laws of Rhode Island of 1956, as amended.

_____

Jan Reitsma, Director
Department of Environmental Management

Notice Given on: _____

Public Hearing held: _____

Filing Date: _____

Effective Date: _____