ATTACHMENT D

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CORRECTIVE MEASURES STUDY

The purpose of a Corrective Measures Study (CMS) is to develop and evaluate remedial alternative(s) and to recommend the remedy(ies) to be taken (refer to Permit Condition II.D). The Permittee may elect either to screen a number of potential remedies prior to evaluating a smaller number of potential remedies or delete the screening step and proceed with evaluation of the expected remedy(ies); including any specified by EPA.

The Corrective Measures Study shall consist of:

1. Screening of Potential Remedies:

   Should the Permittee elect to screen a number of potential remedies, any potential remedy specified in EPA's approval of the RFI Report shall also be screened. The Permittee shall document the reasons for eliminating any technology.

   a. The characteristics which shall be used to screen inapplicable remedies or technologies include, but are not limited to:

      (1) Site and Media Characteristics

      Site and media data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site or media characteristics shall be eliminated from further consideration;

      (2) Waste Characteristics

      Potential remedies clearly limited by the waste characteristics should be eliminated from consideration; and

      (3) Technology Limitations

      During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process.

   b. The Permittee shall select remedy(ies) based on the above screening, together with any remedy(ies) specified by EPA, for further evaluation. Should an EPA-specified potential remedy(ies) prove infeasible based on the above screening, the Permittee may request that the alternative(s) be dropped from further investigation. However, until approved, the

request shall not stay the conditions of this permit.

2. Evaluation of Potential Remedies
The Permittee shall evaluate the selected potential remedy(ies), including any specified by EPA.

The evaluation shall include a description of each potential remedy which shall include, but is not limited to: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. Each potential remedy shall be evaluated with respect to the following criteria:

a. Technical

(1) Evaluation of the performance, reliability, ease of implementation, and potential impacts of the remedy; including safety impacts, cross media impacts, and control of exposure to any residual contamination;

(2) Assessment of the effectiveness of potential remedies in achieving adequate control of source and cleanup of the hazardous waste (including hazardous constituents) released from solid waste management units;

(3) Assessment of the time required to begin and complete the remedy;

(4) Estimation of the costs of remedy implementation; and

(5) Assessment of institutional requirements, such as state or local permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy(ies).

b. Environmental: An evaluation of the facility conditions and pathways of contamination actually addressed by each potential remedy. The evaluation shall include the short-term and long-term beneficial and adverse effects, any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate such adverse effects.

c. Human Health: The potential remedy(ies) shall be evaluated with respect to mitigation of short-term and long-term potential exposure to any residual contamination and protection of human health, both during and after implementation.

d. Institutional: The Permittee shall evaluate the effects of federal, State, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations, including the requirements for construction and operating permits on the design, operation, and timing of the remedy(ies).

3. Cost Estimate

The Permittee shall develop a cost estimate for the remedy(ies) and for each phase or segment of the remedy(ies) including:

a. Capital costs consisting of direct (construction) and indirect (non-construction and overhead) costs; and

b. Post-construction costs, including operation and maintenance necessary to ensure continued effectiveness of the alternative(s).

4. Interim Reporting

The Permittee shall submit bi-monthly progress reports containing:

a. A description and estimate of the percentage of the CMS completed;

b. Summaries of all findings;

c. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Actions being taken to rectify problems;

f. Changes in personnel during the reporting period; and

g. Projected work for the next reporting period.

5. Final Report

According to the approved schedule, the Permittee shall submit to EPA for approval and to VDEQ a Corrective Measures Study Report. The report shall include:

a. An updated description of conditions at the Facility and the nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall update the information with respect to any response activities or interim measures which have or are being implemented at the Facility;

b. Recommended objectives for corrective action for each SWMU, AOC, or group of SWMU/AOCs. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable federal statutes or regulations;

c. The Permittee shall justify and recommend a remedy(ies) using technical, human health, and environmental criteria. These recommendations shall include summary tables which allow the alternative(s) to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. Information on all evaluated potential remedy(ies) shall be presented; and

d. The Report shall, at a minimum, include:

(l) A description of the facility, site topographic map(s) and preliminary layouts;

(2) For the selected remedy(ies) include:

(a) Performance expectations, i.e., the selected remedy is expected to achieve the Media Cleanup Standards in the approved RCRA Facility Investigation Report;

(b) Preliminary design criteria and rationale;

(c) General operation and maintenance requirements;

(d) Long-term monitoring requirements;

(e) Design and Implementation Precautions:

(i) Special technical problems;

(ii) Additional engineering data required;

(iii) Permits and regulatory requirements;

(iv) Access, easements, right-of-way;

(v) Health and safety requirements; and

(vi) Community relations activities; and

(f) Cost Estimates and Schedules:

(i) Capital cost estimate;

(ii) Operation and maintenance cost estimate; and

(iii) Project schedule (design, construction, operation); including estimated operating time required to achieve the performance expectation.

e. Upon review of the Corrective Measures Study Report, the Regional Administrator may require the Permittee to evaluate further, and report upon, one or more additional remedies, or develop particular elements of one or more proposed remedies. Such further requirements will, if necessary, be incorporated into this permit via 40 C.F.R. §§ 270.41 or 270.42.