



Consulting Engineers  
and Scientists

PASTOR, BEHLING & WHEELER, LLC  
2201 Double Creek Dr., Suite 4004  
Round Rock, TX 78664

Tel (512) 671-3434  
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VIA HAND DELIVERY

**RECEIVED**

February 13, 2015  
PBW Project No. 1358

Ms. Bobbie Rogans  
Business & Program Services Section  
MC-126  
Texas Commission on Environmental Quality  
P.O. Box 13087  
Austin, Texas 78711-3087

**FEB 13 2015**

**WASTE PERMITS DIVISION  
TEXAS COMMISSION ON  
ENVIRONMENTAL QUALITY**

**Re: Response to Administrative Notice of Deficiency Letter Dated December 17, 2014  
Permit Renewal/Compliance Plan with Major Amendment  
Union Pacific Railroad Company – Houston Wood Preserving Works  
Houston, Harris County, Texas  
Permit/Compliance Plan Number: 50343  
ISWR No. 31547  
CN600131098/RN100674613**

Dear Ms. Rogans:

Pastor, Behling & Wheeler, LLC (PBW) is pleased to submit on behalf of Union Pacific Railroad (UPRR) the additional information and revisions to the RCRA Permit Renewal/Compliance Plan (Permit/Compliance Plan No. 50343) for the UPRR Houston Wood Preserving Works in Houston, Texas to address the Texas Commission on Environmental Quality (TCEQ) Notice of Deficiency (NOD) Letter dated December 17, 2014. Deficiencies listed in the NOD letter are addressed in a comment-response below with the additional information, supplementing the original application, attached with this letter.

#### **General Comments**

*The Permit Application must be completed using the application form format. A response must be provided for each and every item in the application at the location provided in the application form. Please complete all section of the application including the tables or provide reference to where the materials to each section can be located within the application. If a section or any of the tables within the section are not applicable, state not applicable. Please fill out the Part A and B Application in its entirety.*

**Response:** Part B Sections IV, V, VI, VII and IX of the Permit Application have been updated to provide a response to each item or a reference to the materials attached. The referenced material provided in the permit renewal application submitted on December 10, 2014 has not been updated and is therefore not provided as part of this submittal.

#### **Part A – General Information**

*TCEQ Deficiency: Section I.A. – Facility Charter Number, Page 7: Please revise Page 7 of the Part A application to add the Facility's Charter Number. The Texas Secretary of State database*

*lists the number as 800725939.*

*TCEQ Deficiency: Section I.A. – Facility Contact, Page 7: Please provide the correct mailing address for the Agent in Service or Agent of Service registered with the Texas Secretary of State's Office.*

Response: Section I.A, Page 7 of Part A has been amended to include the facility's Charter Number as well as the updated address for the Agent in Service.

## **Part B – General Information**

*TCEQ Deficiency: Section I.A. – Facility Charter Number, Page 1: Please revise Page 1 of the Part B application to add the Facility's Charter Number. The Texas Secretary of State database lists the number as 800725939*

Response: Section I.A, Page 1 has been amended to include the facility's Charter Number.

*TCEQ Deficiency: Section I.A. – Facility Contact, Page 2: Please provide the correct mailing address for the Agent in Service or Agent of Service registered with the Texas Secretary of State's Office.*

Response: Section I.A, Page 2 of Part B has been amended to include the updated address for the Agent in Service.

*TCEQ Deficiency: Section I.D.1. – Application Type and Facility Status, Page 3: Please revise and submit Page 3 of the Part B application to request Major Amendment.*

Response: Section I.D.1, Page 3 has been amended to request Major Amendment.

*TCEQ Deficiency: Section I.G. – Local Officials List, Page 6: Please provide the name of the health authority of the municipality in whose territorial limits or extraterritorial jurisdiction the facility is or will be located. In addition, please provide the name of the health authority of the country in which the facility is located in accordance with 30 TAC 39.103(c). On page 6 of the Part B application please revise Judge Emmett's address from 101 to 1001 Preston Street, Suite 911, Houston Tx.*

Response: Section I.G, Page 6 of has been amended to include the names of the directors of the Municipal and County Health Authorities. The name of the acting director for the Regional Health Authority has been updated. Judge Emmett's address was updated to 1001 Preston Street, Suite 911, Houston, Texas.

*TCEQ Deficiency: Section V. – Engineering, Page 30: Please provide the as-built drawings for the RCRA final cover system drawings for the closed unit (TCEQ Permit Unit No. 50343) as specified in accordance with 40 CFR 270.21(e).*

Response: The regulation 40 CFR 270.21(e) referenced in the deficiency above specifically regulates the final cover for landfills:

***40 CFR 270.21(e): Detailed plans and an engineering report describing the final cover which will be applied to each landfill or landfill cell at closure in accordance with § 264.310(a), and a description of how each landfill will be maintained and monitored after closure in accordance with § 264.310(b). This information should be included in***

*the closure and post-closure plans submitted under § 270.14(b)(13) .*

The Solid Waste Management Unit (SWMU) No. 1 was not a landfill but rather a former surface impoundment that was clean closed in 1984 through the removal of the wastes and underlying clay liner as detailed in the previous permits for the facility. Therefore, with the former unit identified as a surface impoundment, 40 CFR 270.17 for surface impoundments applies instead of the referenced 40 CFR 270.21(e) for landfills. After reviewing the requirements under 40 CFR 270.17, as well as 30 TAC 335.169 (Closure and Post-Closure Care (Surface Impoundments)), there are no specific requirements for detailed plans or as-built drawings for the final cover system of the regulated unit. In addition, as part of this permit renewal with major modifications, UPRR requests no further action and ceasing of post-closure care for SWMU 1 since groundwater monitoring results have been compliant with the TCEQ Remedy Standard A requirements for groundwater protection for the past eight years as detailed in Part B, Section V.D. of the permit renewal.

Therefore, UPRR respectively requests this deficiency removed from the NOD letter.

*TCEQ Deficiency: Section VIII.A. – Financial Assurance, Page 110: Please complete this section of the application including the tables. Provide the financial assurance for post-closure care.*

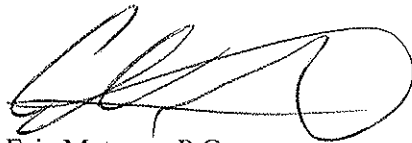
Response: Section VIII.A. – Financial Assurance has been updated to include the estimated costs for calculating financial assurance for the post-closure care for SWMW No. 1. In addition, the Financial Disclosure as required by the application is also provided.

Additionally, new signature pages for Section I, Part A and Section I, Part B have been included. The original and three additional copies of the changed pages have been included for replacement in the original submission.

Thank you again for your consideration of this permit renewal application. If you have any questions or need any additional information, please call me at (512) 671-3434.

Sincerely,

PASTOR, BEHLING & WHEELER, LLC



Eric Matzner, P.G.  
Associate Hydrogeologist

Enclosure

cc: Mr. Geoffrey Reeder, Union Pacific Railroad

**Texas Commission on Environmental Quality**  
**Permit Application for a Hazardous Waste Storage/Processing/Disposal Facility**  
**Part A - Facility Background Information**

I. General Information

A. Facility Name Union Pacific Railroad Company Houston Wood Preserving Works  
(Individual, Corporation, or Other Legal Entity Name)

TCEQ Solid Waste Registration No: 31547 EPA I.D. No. TXD000820266

Street Address (If Available): 4910 Liberty Road

City: Houston, State TX Zip Code 77026

County Harris

Telephone Number: 281-350-7197 Charter Number 800725939

If the application is submitted on behalf of a corporation, please identify the Charter Number as recorded with the Office of the Secretary of State for Texas.

B. Facility Contact

1. List those persons or firms who will act as primary contact for the applicant during the processing of the permit application. Also indicate the capacity in which each person may represent the applicant (engineering, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include the complete mailing addresses and phone numbers.

**Mr. Geoffrey B. Reeder, P.G.**  
**Manager, Environmental Site Remediation**  
**Union Pacific Railroad Company**  
**24125 Aldine Westfield Rd.**  
**Spring, TX 77373**  
**Phone: 281-350-7197**  
**Fax: 402-233-2351**  
**gbreeder@up.com**

2. If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State's office and provide a complete mailing address for the agent. The agent must be a Texas resident.

**C T Corporation System**  
**1999 Bryan Street, Suite 900**  
**Dallas, TX 75201-3136**  
**Phone: 214-979-1172**

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Signature: Bob Grimalta Date: \_\_\_\_\_

Name and Official Title (type or print) Bob Grimalta, UP Safety

Operator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print) \_\_\_\_\_

Operator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print) \_\_\_\_\_

Operator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print) \_\_\_\_\_

To be completed by the operator if the application is signed by an authorized representative for the operator

I, \_\_\_\_\_ hereby designate \_\_\_\_\_  
(operator) (authorized representative)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

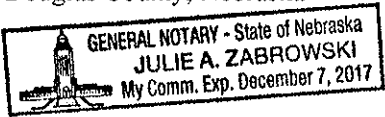
\_\_\_\_\_  
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said Bob Grimalta on this  
16<sup>th</sup> day of January, 2015.

My commission expires of the 7 day of Dec., 2017

Julie A. Zabrowski  
Notary Public in and for Douglas County, Nebraska







**Texas Commission on Environmental Quality**  
**ATTN: Industrial and Hazardous Waste Permits Section MC130**  
**Permits Division**  
**P. O. Box 13087**  
**Austin, Texas 78711-3087**  
**Industrial & Hazardous Waste Part B Permit Application**

I. General Information

A. Facility Name: Union Pacific Railroad Company Houston Wood Preserving Works  
(Individual, Corporation, or Other Legal Entity Name – Must match the Chief Clerk’s database records for the Facility)

Previous or former names of the facility, if applicable: Houston Tie Plant

Address: 4910 Liberty Road

City: State: Houston, TX Zip Code: 77026

Telephone Number: 281-350-7197

TCEQ Registration No.: 31547 EPA I.D. No.: TXD000820266

County: Harris

If the application is submitted on behalf of a corporation, please identify the Charter Number as recorded with the Office of the Secretary of State for Texas.

800725939  
(Charter Number)

B. Facility Contact

1. List those persons or firms, including a complete mailing address and telephone number, who will act as primary contact for the applicant during the processing of the permit application.

**Mr. Geoffrey B. Reeder, P.G.**  
**Manager, Environmental Site Remediation**  
**Union Pacific Railroad Company**  
**24125 Aldine Westfield Rd.**  
**Spring, TX 77373**  
**Phone: 281-350-7197**  
**Fax: 402-233-2351**  
**gbreeder@up.com**

2. If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State’s office and provide a complete mailing address for the agent. The agent must be a Texas resident.

**C T Corporation System**  
**1999 Bryan Street, Suite 900**  
**Dallas, TX 75201-3136**  
**Phone: 214-979-1172**

3. List the individual who will be responsible for causing notice to be published in the newspaper and his/her mailing address, telephone number and fax number. If e-mail is available please provide an e-mail address.

**Mr. Geoffrey B. Reeder, P.G.**  
**Manager, Environmental Site Remediation**  
**Union Pacific Railroad Company**  
**24125 Aldine Westfield Rd.**  
**Spring, TX 77373**  
**Phone: 281-350-7197**  
**Fax: 402-233-2351**  
**gbreeder@up.com**

4. For applications for new permits, renewals, major amendments and Class 3 modifications a copy of the administratively complete application must be made available at a public place in the county where the facility is, or will be, located for review and copying by the public. Identify the public place in the county (e.g., public library, county court house, city hall), including the address, where the application will be made available for review and copying by the public.

**Tuttle Branch Library**  
**702 Kress**  
**Houston, TX 77020**

5. If an applicant proposes a new industrial or hazardous waste facility that would accept municipal solid waste, the applicant shall hold a public meeting in the county in which the facility is proposed to be located. This meeting must be held before the 45th day after the date the application is filed. In addition, the applicant shall publish notice of the public meeting in accordance with 30 TAC 39.503(e)(5).

**Not Applicable – application is for a renewal of an existing permit.**

C. Operator <sup>1</sup>: Identify the entity who will conduct facility operations.

Union Pacific Railroad Company

Address: 1400 Douglas St., STOP 1030

City: Omaha, NE

Zip Code: 68179

Telephone Number: 402-544-5000

<sup>1</sup>The operator has the duty to submit an application if the facility is owned by one person and operated by another [30 TAC 305.43(b)]. The permit will specify the operator and the owner who is listed on Part A of this application [Section 361.087, Texas Health and Safety Code].



D. Application Type and Facility Status

1.  permit     amendment     modification  
 new     major     Class 3  
 interim status     minor     Class 2  
 renewal     Class 11  
 RD&D     Class 1  
 Compliance Plan

2. Is this submittal part of a Consolidated Permit Processing request, in accordance with 30 TAC Chapter 33?

- Yes     No

If Yes, state the other TCEQ program authorizations requested.

3. Does the application contain confidential material?  Yes  No

If Yes, cross-reference the confidential material throughout the application to Section XIII: Confidential Material, and submit as a separate Section XIII document or binder conspicuously marked "CONFIDENTIAL".

4. In either column, check all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> proposed hazardous waste management facility | <input checked="" type="checkbox"/> existing hazardous waste management facility |
| <input type="checkbox"/> on-site                                      | <input checked="" type="checkbox"/> on-site                                      |
| <input type="checkbox"/> off-site                                     | <input type="checkbox"/> off-site  |
| <input type="checkbox"/> commercial                                   | <input type="checkbox"/> commercial  |
| <input type="checkbox"/> recycle                                      | <input type="checkbox"/> recycle   |
| <input type="checkbox"/> land disposal                                | <input type="checkbox"/> land disposal   |
|   | <input type="checkbox"/> areal or capacity expansion                             |
|   | <input checked="" type="checkbox"/> compliance plan                              |

5. Is the facility within the Coastal Management Program boundary (for Class 3 Modifications, Permit Renewals, and New Permit applications only)?  Yes.  No.

6. Provide a brief description of the portion of the facility covered by this application, including the changes for which an amendment or modification is requested.

Permit/Compliance Plan Section	Brief Description of Proposed Change	Modification or Amendment Type	Supporting Regulatory Citation
Permit Section I	Information was updated, including changing the Site name from Houston Tie Plant to Houston Wood Preserving Works.	Minor Amendment	30 TAC §305.62(c)(2)
Permit Section II	Information was updated to include the most recent Flood Insurance Map.	Minor Amendment	30 TAC §305.62(c)(2)
Permit Section III	Inspection of SWMU 1 ceases, quarterly inspection of facility.	Minor Amendment	30 TAC §305.62(c)(2)

Provide the name and mailing address of the mayor and health authority of the municipality in whose territorial limits or extraterritorial jurisdiction the facility is or will be located. In addition, please provide the county judge and health authority of the county in which the facility is located. [30 TAC 39.103(c)]

**Mayor, City of Houston**

**Annise Parker, P.O. Box 1562, Houston, Texas 77251**

**Municipal Health Authority**

**Stephen L. Williams, Director, Houston Department of Health and Human Services (HDHHS),  
8000 North Stadium Drive, Houston, TX 77054**

**Harris County Judge**

**Honorable Ed Emmett, 1001 Preston, Suite 911, Houston, TX 77002**

**County Health Authority**

**Umair A. Shah, Harris County Public Health & Environmental Services,  
2223 West Loop South, Houston, TX 77027**

**Regional Health Authority**

**Texas Department of State Health Services, Health Service Region 6/5 South, Paul K. McGaha,  
D.O., M.P.H., Acting Regional Medical Director, 5425 Polk, Suite J, Houston, Texas 77023**

**Adjacent Landowners List – See Attachment I.G. A CD with MS Word compatible address labels has also been submitted with this application.**

Submit a map indicating the boundaries of all adjacent parcels of land, and a list (see samples in the instructions) of the names and mailing addresses of all adjacent landowners and other nearby landowners who might consider themselves affected by the activities described by this application. Cross-reference this list to the map through the use of appropriate keying techniques. The map should be a USGS map, a city or county plat, or another map, sketch, or drawing with a scale adequate enough to show the cross-referenced affected landowners. The list should be updated prior to any required public notice. For all applications (with the exception of Class 1 and Class 11 modifications) this mailing list should be submitted on:

1. a Compact Disk (CD) using software compatible with MS Word [30 TAC 39.5(b)]; or
2. four sets of printed labels.

If the adjacent landowners list is submitted on a compact disk (CD), please label the disk with the applicant's name and permit number. Within the file stored on the disk, type the permit number and applicant's name on the top line before typing the addresses. Names and addresses must be typed in the format indicated below. This format is required by the U.S. Postal Service for machine readability. Each letter in the name and address must be capitalized, contain no punctuation, and the appropriate two-character abbreviation must be used for the state. Each entity listed must be blocked and spaced consecutively as shown below. The list is to be 30 names, addresses, etc. (10 per column) per page (MS WORD Avery Standard 5160 – ADDRESS template).

Example:

Industrial Hazardous Waste Permit No. 50000, Texas Chemical Plant  
TERRY M JENKINS  
RR 1 BOX 34  
WACO TX 76710  
MR AND MRS EDWARD PEABODY  
1405 MONTAGUE LN  
WACO TX 76710-1234

Signature Page

I, Bob Grimaika, VP Safety  
(Operator) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: BGrimaika Date: 1-16-2015

**To Be Completed By The Operator If The Application Is Signed By An Authorized Representative For The Operator**

I, \_\_\_\_\_, hereby designate \_\_\_\_\_  
(Print or Type Name) (Print or Type Name)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

\_\_\_\_\_  
Signature

SUBSCRIBED AND SWORN to before me by the said Bob Grimaika

On this 16<sup>th</sup> day of January, 2015

My commission expires on the 12 day of 7, 2017

Julie A. Zabrowski  
Notary Public in and for Douglas County, Nebraska



(Note: Application Must Bear Signature & Seal of Notary Public)





## IV. Wastes and Waste Analysis

*(Sections IV.A, IV.C, and IV.D of the application do not apply to post closure applications.)*

### A. Waste Management Information

For a new hazardous waste management facility or for a facility hazardous waste management capacity expansion, complete Table IV.A. - Waste Management Information for each waste, source, and volume of waste to be stored, processed, or disposed of in the facility units to be permitted as required by 30 TAC 305.50(a)(9). For on-site facilities, list “on-site” for the waste source. For off-site facilities, list the source of the waste. If unknown, identify potential sources (e.g., industries/processes to be serviced).

**Not Applicable. This facility is not a new commercial hazardous waste management facility or expansion of hazardous waste management facility. Table IV.A is not applicable.**

### B. Waste Managed In Permitted Units

For all hazardous waste management facilities and for inclusion into a permit, complete Table IV.B. - Wastes Managed In Permitted Units for each waste and debris to be managed in a permitted unit. Provide a description, EPA waste codes, and TCEQ waste form codes and classification codes. Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes, TCEQ publication RG-22, contains guidance for how to properly classify and code industrial waste and hazardous waste in accordance with 30 TAC 335.501-335.515 (Subchapter R).

Applicants need not specify the complete 8-digit waste code formulas for their wastes but only the 3-digit form codes and 1-digit classification codes. This allows the applicant to specify major categories of wastes in an overall manner without having to list all the specific waste streams as generated.

**Not Applicable. The unit is clean closed and seeking no further action. Table IV.B is attached.**

### C. Sampling and Analytical Methods

For inclusion into a permit, complete Table IV.C. - Sampling and Analytical Methods for each waste and debris proposed to be sampled and analyzed and include sampling location, sampling method, sample frequency, analytical method, and desired accuracy level for each waste and debris to be managed in a permitted, storage, processing, or disposal unit at the facility.

**Not Applicable. The unit is clean closed and seeking no further action. No waste management will be performed. Table IV.A is not applicable.**

### D. Waste Analysis Plan

The Waste Analysis Plan must address the requirements of 40 CFR 264.13 and 268.7. The Plan should include supplemental and coordinating information on how the facility will analyze wastes and debris (as listed in Table IV.B) to be managed in permitted units. The plan must address the determination of land disposal restrictions. Generators must determine and certify with the manifest the land disposal restriction status of a waste, even if the waste or debris is not intended for land disposal. Land disposal treatment facilities must identify the treatment process and analytical procedures to be used, and include them in the waste analysis plan. Land disposal restriction records must be maintained at the facility until closure of the facility [40 CFR 264.73(b)]. Landfill facilities must determine through the Paint Filter Liquids Test (SW-846 Method 9095) if there is free liquid in a bulk or containerized waste to be landfilled. If so, it must be stabilized; adding adsorbents alone is not acceptable, even for containerized waste.

For off-site facilities the waste analysis plan must specify procedures which will be used to inspect and, if necessary, analyze each movement of industrial and hazardous waste or hazardous debris received at the facility to ensure it matches the identity of the waste designated on the accompanying shipping ticket. The plan must describe methods which will be used to determine the identity of each movement of waste and debris managed at the facility and sampling method used if the identification method includes sampling in order to store, process, or dispose of the wastes and debris in accordance with 40 CFR Parts 264 and 268 and any abnormal characteristics which may upset further treatment or processing operations. Include rejection criteria for shipments of waste and debris received at the facility

For on-site facilities the waste analysis plan must specify the normal characteristics of the waste (including EPA hazardous waste codes, EPA hazard codes, and 40 CFR 261 Appendix VIII Hazardous Constituents) which must be known to store, process, or dispose of the wastes and debris in accordance with 40 CFR Parts 264 and 268 and any abnormal characteristics which may upset further treatment or processing operations.

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Those sampling methods listed in 40 CFR 261 Appendix I, for sampling waste with properties similar to the indicated materials, or equivalent sampling methods approved by EPA under 40 CFR 260.20 and 260.22, will be considered by the TCEQ to be acceptable.

**Not Applicable. The unit is clean closed and seeking no further action. No waste management will be performed.**











## V. Engineering Reports

The engineering report represents the conceptual basis for the storage, processing, or disposal units at the hazardous waste management (HWM) facility. It should include calculations and other such engineering information as may be necessary to follow the logical development of the facility design. Plans and specifications are an integral part of the report. They should include construction procedures, materials specifications, dimensions, design capacities relative to the volume of wastes (as appropriate), and the information required by 40 CFR 270.14(b)(8), 270.14(b)(10). Since these reports may be incorporated into any issued permit, the report should not include trade names, manufacturers, or vendors of specific materials, equipment, or services unless such information is critical to the technical adequacy of the material. Technical specifications and required performance standards are sufficient to conduct a technical review. For landfills, surface impoundments, and waste piles, a Construction Quality Assurance Plan, which considers the guidance in EPA publication 530-SW-85-014, Minimum Technology Guidance on Double Liner Systems for Landfills and Surface Impoundments; Design, Construction, and Operation, should be submitted.

For facilities which will receive wastes from off-site sources, the engineering report must also contain information on the units which will manage these off-site wastes in accordance with 30 TAC 335.45(a).

Certain ancillary components or appurtenant devices must be addressed in the Part B application. These include but are not limited to sumps, pipelines, ditches, and canals. The technical information and the level of detail required will vary with the nature, scope, and location of the ancillary component. At a minimum they should be included in descriptions of piping and process flow. More information may be required. A single area containing a large number of ancillary components or a remote appurtenant device in an unusually sensitive location may warrant some specific permit requirements. All ancillary components must be included in calculating closure cost estimates.

In each of the unit-specific sections, describe precautions taken to prevent accidental commingling of incompatible wastes. If reactive or ignitable wastes are to be managed, or if incompatible wastes are deliberately commingled, provide information to ensure that precautions are taken to avoid danger due to:

- generation of extreme heat or pressure, fire, explosion, or violent reaction;
- production of uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
- production of uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion;
- damaging the structural integrity of the device or facility containing the waste; or
- threatening human health or the environment by any other means.

Comprehensive consideration should be given to ensure that the facility is designed in accordance with good public health and hazardous waste management practices. The application will be evaluated primarily for the aspects of design covered by the regulations. Nothing in any approval is intended to relieve the facility owner or operator of any liabilities or responsibilities with respect to the design, construction, or operation of the project.

### A. General Engineering Reports

#### 1. General Information

Provide an overall plan view of the entire facility. Identify each hazardous or industrial solid waste management unit (container storage area, tank, incinerator, etc.) to be permitted in relation to its location and the type of waste managed in that unit. Also provide a plan view at an appropriate scale to clearly show the location of all hazardous waste management units to be permitted on one or more 8.5" x 11" sheets. Indicate on this plan view how the design or operation provides for buffer zones or waste segregation as appropriate for incompatible,



ignitable, or reactive wastes.

**Figure V.A.1 provides an overall plan view of the facility. Figure V.A.2 illustrates the location of the unit on an 8.5 x11 sheet. No buffer is needed because no waste is stored.**

Submit a topographic map or maps of the facility which clearly shows the information specified in 40 CFR 270.14(b)(19), 270.14(c)(3), and 270.14(d)(1)(i) (for large HWM facilities, the TCEQ will allow the use of other scales on a case-by-case basis). Please note that the term “facility” includes all contiguous land, structures, other appurtenances, and improvements on the land for storing, processing, or disposing of hazardous and industrial solid waste.

**Figure V.A.2 provides a topographic map with the information specified above.**

2. Features to Mitigate Unsuitable Site Characteristics

For all new hazardous waste management storage and/or processing facilities or areal expansions of existing hazardous waste management storage and/or processing facilities, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(a)(1) and (a)(3) through (9).

**Not applicable. The facility is not a new hazardous waste management facility nor an areal expansion to an existing facility.**

3. Construction Schedules

- a. In order to meet the required design standards, extensive retrofitting of some facilities may be required. In the worst case, the applicant may elect to close certain operations rather than comply with the RCRA standards. Thus, the permit may specify a schedule of compliance requiring the accomplishment of given tasks within specific time frames. As required, indicate an appropriate schedule(s) of compliance in this application. The schedule should provide for facility compliance as soon as possible and in accordance with 40 CFR 270.33(a)(2) and 270.33(b).
- b. For commercial hazardous waste management facilities, permit applications (new, renewal, or interim status applications), major amendments, and Class 3 modifications submitted after 11/23/94, must include a construction schedule. A construction schedule must be submitted even if the application does not include an addition of units or a revision to permitted units. This schedule should comply with the requirements of 30 TAC 305.149.

**Not Applicable. There is no planned construction for the permitted unit.**

4. Provide detailed plans and specifications which when, accompanied by the engineering report, will be sufficiently detailed and complete to allow the Executive Director to ascertain whether the facility will be constructed and operated in compliance with all pertinent permitting requirements. Engineering plans and specifications must be prepared under the supervision of and sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm’s name and Registration Number as required by the Texas Engineering Practice Act. For some facilities, plans in the form of a standard piping and instrumentation diagram will be sufficient. Overall dimensions and materials of construction must be shown.

**Not Applicable. There is no planned construction for the permitted unit.**



## B. Container Storage Areas

**Not Applicable. This permit renewal application is for the closed surface impoundment.**

1. Provide an engineering report which includes all of the information specified in 40 CFR 264.170-264.173, 264.175-264.177, and 270.15.

Complete Table V.B - Container Storage Areas and list the container storage areas covered by this application to be permitted. List the N.O.R. unit number, the rated capacity or size of each unit (including the maximum number of each type of container to be stored at each unit), the areal dimensions, containment volume, whether ignitable, reactive, or incompatible waste will be stored in each unit, and whether processing will occur within the unit.

2. Container storage areas must have a containment system that is capable of collecting and holding spills, leaks, and precipitation. In addition to the requirements of 40 CFR 270.15, the design report should include the following:
  - a. Capacity of the containment relative to the number and volume of containers to be stored; in addition, for unenclosed areas, the amount of rainfall collected prior to removal. The TCEQ recommends using a 25-year, 24-hour rainfall event for this extra capacity; and
  - b. Run-on into the containment system must be prevented, or a collection system with sufficient excess capacity must be provided. If run-on is collected within the containment system, delineate the area(s) from which run-on is collected. The 25-year, 24-hour rainfall event should be used to calculate the excess capacity.

3. Wastes Containing No Free Liquids

With the exception of 40 CFR 264.175(d), storage areas that hold only wastes that do not contain free liquids need not have a containment system, provided that compliance with 40 CFR 264.175(c) is demonstrated. This demonstration must be submitted as part of the application and must include:

- a. test procedures and results or other documentation or information to show that the wastes do not contain free liquids; and
- b. a description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids.

4. Managing Ignitable or Reactive Wastes

If a container storage area will manage ignitable or reactive waste, as indicated on Table V.B, provide in the engineering report drawings demonstrating compliance with the buffer zone requirement of 40 CFR 264.17 and 264.176.

5. Managing Incompatible Wastes

If a container storage area will manage incompatible waste, as indicated on Table V.B, provide in the engineering report a description of the procedures used to ensure compliance with 40 CFR 264.17 and 264.177.

## C. Tanks and Tank Systems

**Not Applicable. This permit renewal application is for the closed surface impoundment.**

Provide an engineering report which includes all of the information specified in 40 CFR 264.190-264.194, 264.196, 264.198-264.199, and 270.16.

For inclusion into a permit, complete Table V.C - Tanks and Tank Systems and list the tanks covered by this application to be permitted. List the N.O.R. unit number, whether the unit is for storage and/or processing, the waste managed in each unit, the rated capacity of each unit, overall dimensions of each unit, containment volume, and whether ignitable, reactive, or incompatible waste will be stored in each unit.

If a tank will manage ignitable or reactive waste, as indicated on Table V.C, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.198 and provide drawings demonstrating compliance with any applicable buffer zone requirements and 40 CFR 264.17.

If a tank will manage incompatible waste, as indicated on Table V.C, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.199.

Submit written assessments that were reviewed and certified by an independent, qualified licensed Professional Engineer that attests to the structural integrity and suitability of handling the hazardous waste for each tank system, as required under 40 CFR 264.191-264.192 for existing tanks which do not have secondary containment meeting the standards of 40 CFR 264.193. The engineer signing the written assessment must make the certification specified in 40 CFR 270.11(d). The certification must be sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm's name and Registration Number as required by the Texas Engineering Practice Act.

If a tank has been de-rated or if the permitted capacity is otherwise different from the design capacity, specify in the engineering report.

#### D. Surface Impoundments

**See the attached report for specific information regarding the closed surface impoundment.**

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(6), 335.168, 335.169, and 40 CFR 264.19, 264.220, 264.221, 264.222, 264.223, 264.226(a) and (c), 264.227, 264.229-264.231, and 270.17.

For storage surface impoundments at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(d). For any surface impoundment to be closed as a landfill (where wastes will remain after closure of the impoundment) at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(e).

For all impoundments, include in the report the following information.

1. Complete Table V.D.1 - Surface Impoundments and list the surface impoundments, covered by this application, to be permitted. List the waste(s) managed in each unit and the rated capacity or size of each unit.

**Table V.D.1 is attached.**

2. If a surface impoundment will manage ignitable or reactive waste, as indicated on Table V.D.1., describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.229.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

3. If a surface impoundment will manage incompatible waste, as indicated on Table V.D.1., describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.230.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

4. If a surface impoundment will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.D.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.231.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

5. Describe the surface impoundment. A plan view and cross-section of the surface impoundment should be included with the engineering report.

**The surface impoundment SWMU No. 1 was not an engineered structure, nor was it designated to serve as a landfill. It was used from 1979 to 1982 for the disposal of contaminated surface soils containing K001 type wastes.**

SWMU No. 1 is bordered on the southern side by an earthen berm, which is about 2 feet by 3 feet by about 80 to 100 feet long. The berm extends about 100 feet south of the southwest corner of the SWMU No. 1. A chain-link security fence is located along the northern and western margins of SWMU No. 1. The original dimensions of the unit were about 180 feet by 106 feet at the surface, extending to a depth of about 7 feet bgs (SPTCo, 1991). Based on these dimensions, SWMU No. 1 would have a capacity of 133,560 cubic feet (about 4,950 cubic yards). According to SPTCo facility representatives, a clay liner was installed during the original construction of SWMU No. 1. No information was available concerning the thickness and engineering properties of the liner.

6. Freeboard  
**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

Specify the minimum freeboard to be maintained and the basis of the design to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. [40 CFR 264.221(g)] Show that adequate freeboard will be available to prevent overtopping from a 100-year, 24-hour storm.

If the impoundment is inflow sensitive, it should be equipped with a high-level alarm based on a different level sensor than that used for automatic control.

7. Waste Flow  
**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

Describe the means that will be used to immediately shut off the flow of waste to the impoundment to prevent overtopping or in the event of liner failure, and include appropriate detailed drawings.

If the surface impoundment is a flow-through facility describe the flow of waste, including a hydraulic profile.

8. Dike Construction

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

a. If dikes are used, include the following certification as part of the engineering report:

“I, *(qualified licensed Professional Engineer)*, Texas P.E. License Number *\_\_\_\_\_*, of Registered Firm *(Name)* Registered Firm No. *(Registration Number)* certify under penalty of law that I have personally examined and am familiar with the design and construction of the dikes that are a portion of *(surface impoundment unit name)* .

I further certify that I have evaluated the dike design and materials of construction using accepted engineering procedures, and have determined that the dike, including the portion of the dike providing freeboard, has structural integrity, and:

- (1) Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and
- (2) Will not fail due to scouring or piping, without dependence on any liner system included in the impoundment construction.

Date: \_\_\_\_\_”  
(Signature)

“(Seal)”

- b. The structural integrity of the dike system must be certified by a qualified Professional Engineer before a permit is issued. If the impoundment is not being used, the dike licensed system must be certified before it can be put into use. The certification must be sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm’s name and Registration Number as required by the Texas Engineering Practice Act.
- c. A report shall accompany the dike certification which summarizes the activities, calculations, and laboratory and field analyses performed in support of the dike certification. Describe the design basis used in construction of the dikes. Provide the following analyses as attachments to the engineering report (A Quality Assurance Project Plan <QAPP> should be included in the report to ensure that each analysis is performed appropriately):
  - (1) Slope Stability Analysis
  - (2) Hydrostatic and Hydrodynamic Analysis
  - (3) Storm Loading
  - (4) Rapid Drawdown
- d. Earthen dikes should have a protective cover to minimize wind and water erosion and to preserve the structural integrity of the dike. Describe the protective cover used and describe its installation and maintenance.

9. Containment System

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

TCEQ Technical Guideline No. 6, Monitoring Systems and Leachate Collection, which can be obtained from the I&HW Permits Section, contains suggested methods of leak detection system construction and EPA publication 530-SW-85-014 provides design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

- a. Complete Table V.D. 6. - Surface Impoundment Liner System for each surface impoundment to be permitted.
- b. In the engineering report, describe the design, installation and operation of liner and leak detection components. The description must demonstrate that the liner and leak detection system will prevent discharge to the land, and ground and surface water. Include the following analyses as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

- (1) Seaming method
- (2) Surface preparation method
- (3) Tensile Strength
- (4) Impact Resistance
- (5) Compatibility Demonstration
- (6) Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

- (7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated waste constituents
- (8) Atterberg Limits, % passing a #200 sieve, and Permeability
- (9) Moisture Content
- (10) Standard Proctor Density, Compaction Data

For leachate collection systems:

- (11) Pipe Material and Strength
- (12) Pipe Network Spacing and Grading
- (13) Collection Sump(s) Material and Strength
- (14) Drainage Media Specifications and Performance
- (15) Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
- (16) Compatibility Demonstration
  - (a) Capacity of System
  - (b) rate of leachate removal
  - (c) capacity of sumps
  - (d) thickness of mounding and maximum hydraulic head
- c. Specify the liner system installation date and expected lifetime of liner system (years).
- d. Specify whether the liner is chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
- e. Submit a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.

10. Surface impoundments that receive waste on or after May 8, 1985 (or for newly-regulated units, the effective date of the new RCRA regulation) into new units and/or lateral expansions or replacements of existing units must meet the minimum technological requirements of the Hazardous and Solid Waste Amendments of 1984, unless an appropriate waiver is granted by the Commission. Plans and specifications for both new and existing surface impoundments must demonstrate conformity with 30 TAC 335.168 and 40 CFR 264.221.

**Not Applicable. The surface impoundment was clean closed in 1984.**

11. Run-on Diversion

Describe in detail how the surface impoundment system will manage stormwater run-on away from the surface impoundment. Stormwater run-on must be diverted away from a surface impoundment. Use at least a 100-year, 24-hour rainfall event in the design and analysis of diversion structures. Where dikes are used to divert run-on, they must be protected from erosion. Include all analyses used to calculate run-on volumes.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

12. The Commission may approve an alternate design or operating practice for a surface impoundment if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.221(d)]:
  - a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system required by 40 CFR 264.221; and
  - b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

13. Exemption from Double-Liner Requirements for Monofills [264.221(e)]

Owners or operators of hazardous waste surface impoundment monofills will be exempted from the double-liner requirements if the Commission finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics are at least as effective as a double liner in preventing migration of hazardous constituents to the groundwater or surface water. If an exemption is sought, submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time.

**Not Applicable. The wastes stored in the surface impoundment have been removed and the unit was clean closed in 1984.**

#### E. Waste Piles

**Not Applicable. This permit renewal application is for the closed surface impoundment.**

This section applies to owners or operators of industrial solid waste facilities that store or process hazardous waste in piles. A hazardous waste pile that will be closed with wastes left in place must be



managed as a landfill. Existing portions of waste piles are those areas that were listed on the original Part A and on which wastes have been lawfully placed.

Provide an engineering report which includes all of the information specified in 30 TAC 335.170 and 40 CFR 264.19, 264.250, 264.251, 264.252-264.253, 264.254(a) and (c), 264.256, 264.257, 264.259, and 270.18.

For waste piles at a new hazardous waste management facility or which are part of any areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(c).

For all waste piles, include in the report the following information.

1. For inclusion into a permit, complete Table V.E.1 - Waste Piles and list the waste piles covered by this application. List the waste managed in each unit and the rated capacity or size of the unit.

If a waste pile will manage ignitable or reactive waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.256.

If a waste pile will manage incompatible waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.257.

If a waste pile will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.259.

2. Describe the waste pile, including any structure surrounding or enclosing the waste pile.
3. Containment System

TCEQ Technical Guideline No. 6, Monitoring Systems and Leachate Collection, which can be obtained from the I&HW Permits Section, contains suggested methods of leak detection system construction and EPA publication 530-SW-85-014 provides design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

- a. For inclusion into a permit, complete Table V.E. 3 - Waste Pile Liner System and specify the type of containment/liner system.
- b. In the engineering report, describe the design, installation, construction, and operation of the liner and leachate collection system. The description must demonstrate that containment systems will prevent discharge to the land, surface water, or groundwater. Include the following analyses as attachments to the engineering report, when applicable to the containment system being described (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

- (1) Seaming method
- (2) Surface preparation method
- (3) Tensile Strength
- (4) Impact Resistance
- (5) Compatibility Demonstration

- (6) Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

- (7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated constituents.
- (8) Atterberg Limits, % passing a #200 sieve, and Permeability
- (9) Moisture Content
- (10) Standard Proctor Density, Compaction Data

For leachate detection, collection, and removal system:

- (11) Capacity of system
  - (a) rate of leachate removal
  - (b) capacity of sumps
  - (c) thickness of mounding and maximum hydraulic head
- (12) Pipe Material and Strength
- (13) Pipe Network Spacing and Grading
- (14) Collection Sump(s) Material and Strength
- (15) Drainage Media Specifications and Performance
- (16) Analysis showing that pipe and perforation size will prevent clogging and allow free liquid access to the pipe.
- (17) Compatibility Demonstration

- c. Containment/liner system installation date and expected lifetime of liner system (years).
- d. Specify whether the containment/liner system is chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
- e. Submit a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.

4. Wind Dispersal [30 TAC 335.170(j)]

Waste piles containing hazardous waste which could be subject to dispersal by wind must be covered or otherwise managed so that wind dispersal is minimized. Describe practices to control wind dispersal (e.g., cover or frequent wetting) of the hazardous waste.

5. Run-on Diversion [30 TAC 335.170(g)]

Describe in detail the measures used to control and divert run-on from the unit. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 100-year, 24-hour storm.

Include all analyses used to calculate: rates of flow; run-on volume and depth; and back-water calculations for the ditches on plant property.

Any tanks or basins associated with the run-on control systems must be emptied or otherwise managed expeditiously after a storm to maintain the design capacity of the system. [30 TAC 335.170(i)]

6. Run-off Control [30 TAC 335.170(h)]

Describe in detail the measures used to control run-off from the unit. Include all analyses used to calculate the run-off volumes.

The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 100-year, 24-hour storm.

Collection and holding facilities (e.g., tanks or basins) associated with the run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system. [30 TAC 335.170(i)]

7. Give a description of design and operating procedures to properly manage and/or dispose of any residuals (e.g., leachate) that may be generated during waste management. Describe the management process and any equipment used.
8. Provide a description and list of all equipment and procedures used to place the waste in or on the waste pile, and how the liner surface will be exposed for inspection, if necessary. A containment system must be protected from plant growth which could puncture any component of the system.

9. Exemption from Liner and Leachate Collection Requirements

The Commission may approve an alternate design or operating practice for a waste pile if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.251(d)]:

- a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system; and
- b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

10. Exemption from Groundwater Monitoring

A waste pile may be exempt from groundwater monitoring if the following standards are met:

- a. The waste pile (including its underlying liners) must be located entirely above the seasonal high water table; and
- b. The waste pile is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated, provided that:
  - (1) Liquids or materials containing free liquids are not placed in the pile;
  - (2) The waste pile is protected from surface water run-on by the structure or in some other manner;
  - (3) The waste pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and
  - (4) The waste pile will not generate leachate through decomposition or other reactions; or
- c. The waste pile must have a leachate collection and removal system above the top liner; and
- d. underlayment:
  - (1) either
    - (a) The waste pile must be underlain by two liners, which are designed and constructed in a manner that prevents the migration of liquids into or out of the space between the liners and a leak detection system which must be designed, constructed, maintained, and operated between the liners to detect any migration of liquids into the space between the liners; and

- (b) A demonstration must be made that there is a low potential for migration of liquid from the waste pile to the uppermost aquifer during the life of the waste pile (including the closure period). The owner or operator must base any predictions made on assumptions that maximize the rate of liquid migration; *or*
- (2) either
  - (a) The waste pile must be underlain by a liner (base) that is designed, constructed, and installed in a manner that prevents the migration of liquids or waste beyond the liner; and
  - (b) The wastes in the waste pile must be removed periodically, and the liner must be inspected for deterioration, cracks, or other conditions that may result in leaks. The frequency of inspection will be specified in the inspection plan and must be based on the potential for the liner (base) to crack or otherwise deteriorate under the conditions of operation (e.g., waste type, rainfall, loading rates and subsurface stability).

The liner(s) used to satisfy V.D.13.d. must be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical damage from equipment used to place waste in or on the pile or to clean and expose the liner surface for inspection.

#### F. Land Treatment Units

**Not Applicable. This permit renewal application is for the closed surface impoundment.**

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(6), 335.171, 335.172, 40 CFR 264.270-264.272, 264.273, 264.276, 264.278, 264.279, 264.281-264.283, and 270.20 for each land treatment unit.

For land treatment units at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(b).

For all land treatment units, include in the report the following information.

1. Complete Tables V.F.1 - Land Treatment Units and V.F.2 - Land Treatment Unit Capacity and list the land treatment units covered by this application. List the waste(s) managed in each unit and the rated capacity or size of the unit. If different wastes are placed on separate portions of the land treatment area, each portion is considered a land treatment unit, and requires a separate summary form and engineering report.

The treatment zone is defined as the soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized. In this section, specify the depth of the treatment zone. The maximum depth of the treatment zone for new land treatment units must be [40 CFR 264.271(c)]:

- a. No more than 1.5 meters (5 feet) from the surface; and
- b. More than 1 meter (3 feet) above the seasonal high water table.

If a land treatment unit will manage ignitable or reactive waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.281.

If a land treatment unit will manage incompatible waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.282.

If a land treatment unit will manage F020, F021, F022, F023, F026 and F027 waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.283.

2. Describe the land treatment unit. A plan view and cross-section of the unit should be included with the engineering report.
3. Complete Table V.F.3. - Land Treatment Principal Hazardous Constituents and list the wastes for which the treatment demonstration will be made and the principal hazardous constituents in each waste. Specify in the report the data sources to be used to make the demonstration such as laboratory data, field data, operating data, literature, or other.

4. Run-on Diversion

Describe in detail the measures used to control run-on and divert run-on from the unit. Include all the analyses used to calculate the run-on volumes.

The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the land treatment unit during peak discharge from a 100-year, 24-hour storm. [30 TAC 335.171(3)]

Any tanks or basins associated with the run-on control system must be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system. [30 TAC 335.171(5)]

5. Run-off Control

Describe in detail the measures used to control the run-off from the unit, and minimize hazardous constituents in the run-off, include all the analyses used to calculate the run-off volumes.

The owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 100-year, 24-hour storm. [30 TAC 335.171(4)]

Collection and holding facilities (e.g., tanks or basins) associated with run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. [30 TAC 335.171(5)]

6. Wind Dispersal

The owner or operator of a land treatment unit containing hazardous waste which could be subject to dispersal by wind must cover or otherwise manage the land treatment unit so that wind dispersal is minimized. Describe practices to control wind dispersal (e.g., cover or frequent wetting) of the hazardous waste. [30 TAC 335.171(6)]

7. Treatment Demonstration

A description of the treatment demonstration required under 40 CFR 264.272 and 270.20(a) shall be included with the engineering report. If the owner or operator intends to conduct field tests or laboratory analyses in order to make the demonstration, he must obtain a treatment or disposal permit.

8. Food Chain Crops [40 CFR 264.276]

Several conditions must be satisfied if food-chain crops are to be grown in or on the treatment zone. A demonstration must be prepared similar to the one described in the Treatment

Demonstration and submitted at least 90 days prior to the planting of crops. The demonstration need not be submitted with this application. However, a description of the demonstration must be included as part of the engineering report. This demonstration may be combined with the Treatment Demonstration description, as some of the information required is identical.

#### G. Landfills

**Not Applicable. This permit renewal application is for the closed surface impoundment.**

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(5), (6), (9), (10), and (12), 335.173, 40 CFR 264.19, 264.300, 264.301, 264.302, 264.303(a), 264.304, 264.309, 264.312, 264.313, 264.315-264.317, and 270.21(with the exception of 270.21(e), (g), (h), and (i)). The text of the report should be written to supplement engineering plans, specifications, and test results necessary to provide a detailed description of how the landfill will comply with these standards.

For landfills at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(e).

For all landfills, include in the report the following information.

Complete Table V.G.1 - Landfills and list the landfills (and number of cells, if applicable) covered by this application. List the waste(s) managed in each unit and the rated capacity or size of the unit. If wastes are segregated in some manner, list the cell number in which wastes are placed next to each waste type.

If a landfill will manage ignitable or reactive waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.312.

If a landfill will manage incompatible waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.313.

If a landfill will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.317.

1. Describe the landfill. A plan view and cross-section of the landfill should be included with the engineering report.
2. Containment System

TCEQ Technical Guideline No. 6, Monitoring Systems and Leachate Collection, which can be obtained from the I&HW Permits Section, contains suggested methods of leak detection system construction and EPA publication 530-SW-85-014 provides design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

- a. Complete Table V.G.3. - Landfill Liner System and specify the type of liner used for the landfill.
- b. In the engineering report, describe the design, installation, construction, and operation of the liner and leachate collection system. The description must demonstrate that the liner system will prevent discharge to the land, groundwater, and surface water. The following analyses should be included as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:



- (1) Seaming method
- (2) Surface preparation method
- (3) Tensile Strength
- (4) Impact Resistance
- (5) Compatibility Demonstration
- (6) Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

- (7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated waste constituents
- (8) Atterberg Limits, % passing a #200 sieve, and Permeability
- (9) Moisture Content
- (10) Standard Proctor Density, Compaction Data

For Leachate Collection System

For incorporation into the permit, complete Table V.G.4. - Landfill Leachate Collection System used for the landfill.

- (11) Capacity of the system:
    - (a) rate of leachate removal
    - (b) capacity of sumps
    - (c) thickness of mounding and maximum hydraulic head
  - (12) Pipe Material and Strength
  - (13) Pipe Network Spacing and Grading
  - (14) Collection Sump(s) Material and Strength
  - (15) Drainage Media Specifications and Performance
  - (16) Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
  - (17) Compatibility Demonstration
- c. State whether the liner system components are chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
  - d. Submit a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.
  - e. Whether the leachate collection components are chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
3. For Dikes:
    - a. Slope Stability Analysis;
    - b. Hydrostatic and Hydrodynamic Analyses
    - c. Ability to withstand scouring from leaking liner.
  4. Landfills that receive waste on or after May 8, 1985 (or for newly-regulated units, the effective date of the new RCRA regulation) into new units and/or lateral expansions or replacements of existing units must meet the minimum technological requirements of the Hazardous and Solid Waste Amendments of 1984, unless an appropriate waiver is granted by the Commission. The minimum technological requirements include the installation of two or more liners and a leachate collection system above and between the liners [40 CFR

264.301(c)]. Plans and specifications for both new and existing landfills must demonstrate conformity with 30 TAC 335.173.

5. Site Development Plan

Describe the methods used to deposit waste in the landfill. This description should include rate of waste deposition, waste segregation, average lift size, maximum lift, average cell or trench size, maximum cell or trench size, and other information necessary to depict how the landfill will be developed. Do not include liner or leachate collection system information, closure information, or handling of special wastes. This will be included elsewhere in the report.

6. Run-on Control [30 TAC 335.173(g)]

The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 100-year, 24-hour storm.

In the engineering report, include the following analyses:

- a. Run-on volume and depth calculations from the peak discharge of the 100-year, 24-hour storm; and
- b. For ditches on the plant property, back-water calculations.

Collection and holding facilities associated with the run-on control system must be emptied or otherwise managed expeditiously. [30 TAC 335.173(i)]

7. Run-off Control [30 TAC 335.173(h)]

The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control the water volume resulting from a 100-year, 24-hour storm.

Include all analyses used to calculate run-off volumes.

Collection and holding facilities (e.g., tanks or basins) associated with run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. [30 TAC 335.173(i)]

8. Wind Dispersal [30 TAC 335.173(j)]

If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to minimize wind dispersal. Based upon the characteristics of the material to be landfilled describe the likelihood of wind dispersal occurring. Describe in detail any method and/or control mechanism used to prevent wind dispersal.

9. Liquid Waste

If liquid waste or waste containing free liquids is to be stabilized and then placed in the landfill, the procedures used to stabilize the waste must be described in the engineering report. The waste must be treated prior to landfilling using a treatment technology that does not solely involve the use of a material that functions primarily as a sorbent. Provide supporting documentation to verify that an appropriate stabilization procedure is used to comply with 30 TAC 335.175.

10. The Commission may approve an alternate design or operating practice for a landfill if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.301(d)]:

- a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system; and
- b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

11. Exemption from Double-Liner Requirements for Monofills [264.301(e)]

Owners or operators of hazardous waste monofills will be exempted from the double-liner requirements if the Commission finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics are at least as effective as a double liner in preventing migration of hazardous constituents to the groundwater or surface water. If an exemption is sought, submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time.

12. Above-grade Benefits

The engineering report must evaluate the benefits, if any, associated with the construction of the landfill above existing grade at the proposed site, the costs associated with the above-grade construction, and the potential adverse effects, if any, which would be associated with the above-grade construction. [TX. Health and Safety Code 361.108]

## H. Incinerators

Provide an engineering report which includes all of the information specified in 30 TAC 305.171-305.175, 40 CFR 264.340, 264.342-264.346, 264.347(a), and 270.19.

**Note:** A permit is not required prior to conducting a trial burn for existing incinerator operating under 30 TAC 335.2(c). However, without the prior approval of the Executive Director the operator cannot be certain that the trial burn data will be sufficient to demonstrate compliance with regulations. Applicants are encouraged to obtain approval prior to conducting a test burn. For any trial burn plan approved by the TCEQ or EPA, the applicant shall submit a certification that the previously conducted trial burn was conducted in accordance with the approved trial burn plan.

1. Complete Table V.H.1 - Incinerators and list the incinerators covered by this application and list the waste managed in each unit.

Complete Table V.H.2 - Incinerator Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems.

Complete Table V.H.3 - Maximum Constituents Feed Rate.

Complete Table V.H.4 - Maximum Allowable Emission Rates

For use during the shakedown period, the trial burn period and the period after completion of the initial trial burn, complete Table V.H.5 - Incinerator Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff-Short-Term Operation.

If an incinerator will manage reactive or incompatible waste, as indicated on Table V.H.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17.

If an incinerator will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.H.1, the DRE requirement is 99.9999%.

2. If a trial burn will be performed, designate one or more of the 40 CFR 261 Appendix VIII organic compounds present in the wastes to be incinerated as Principal Organic Hazardous Constituents (POHCs). Selection will be based upon the degree of difficulty of incineration of these compounds and upon their concentration or mass in the waste feed. These POHCs will be used to determine the destruction and removal efficiency (DRE) specified in the performance standards of 40 CFR 264.343. In addition, complete Table V.H.8 - Principal Organic Hazardous Constituents.
3. Submit a Quality Control/Quality Assurance Plan for all sampling, analysis, and monitoring activities which will occur in conjunction with the trial burn.

#### I. Boilers and Industrial Furnaces

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(13), 305.571-573, 40 CFR 266.100 and 266.102 (as incorporated by reference in 30 TAC 335.221 through 335.225), 266.104-266.112, and 270.22.

1. Complete Table V.I.1 - Boilers and Industrial Furnaces and list the boilers and/or industrial furnaces covered by this application to be permitted and list the waste managed in each unit.  
Complete Table V.I.2 - Boiler and Industrial Furnace Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems.  
Complete Table V.I.3 - Maximum Constituent Feed Rate.  
Complete Table V.I.4 - Maximum Allowable Emission Rates.  
For use during the shakedown period, trial burn period and the period after completion of the initial trial burn, complete Table V.I.5 - Boiler and Industrial Furnace Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems-Short-Term Operation.  
If a boiler or industrial furnace will manage reactive or incompatible waste, as indicated on Table V.I.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17.  
If a boiler and industrial furnace will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.I.1, the DRE requirement is 99.9999%.
2. If a trial burn will be performed, designate one or more of the 40 CFR 261 Appendix VIII organic compounds present in the wastes to be incinerated as Principal Organic Hazardous Constituents (POHCs). Selection will be based upon the degree of difficulty of incineration of these compounds and upon their concentration or mass in the waste feed. These POHCs will be used to determine the destruction and removal efficiency (DRE) specified in the performance standards of 40 CFR 266.104. In addition, complete Table V.I.8 - Principal Organic Hazardous Constituents.
3. Submit a Quality Control/Quality Assurance Plan for all sampling, analysis, and monitoring activities.

#### J. Drip Pads

Provide an engineering report which includes all of the information specified in 40 CFR 264.570-573 and 270.26.

1. Complete Table V.J.1. - Drip Pads and list the drip pads, covered by this application, to be permitted. List the N.O.R. unit number, the waste managed in each unit, the rated capacity of

each unit, and the overall dimensions of the unit (including perimeter curb or berm height) that will be in contact with the waste.

2. For either new drip pads<sup>2</sup> or existing drip pads for which the owner/operator elects to comply with the synthetic liner requirement of 40 CFR 264.573(b), please complete Table V.J.2. - Drip Pad Synthetic Liner System.
3. In the engineering report, describe the design, installation, construction, and operation of the liner and leakage collection system. The description must demonstrate that the liner system will prevent discharge to the land, groundwater, and surface water. The following analyses should be included as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

- a. Seaming method
- b. Surface preparation method
- c. Tensile Strength
- d. Impact Resistance
- e. Compatibility Demonstration
- f. Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For Leakage Collection System

- g. Capacity of the system:
  - (1) rate of leachate removal
  - (2) capacity of sumps
  - (3) thickness of mounding and maximum hydraulic head
- h. Pipe Material and Strength
- i. Pipe Network Spacing and Grading
- j. Collection Sump(s) Material and Strength
- k. Drainage Media Specifications and Performance
- l. Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
- m. Compatibility Demonstration

## K. Miscellaneous Units

A miscellaneous unit is a unit other than a container, tank, incinerator, boiler, industrial furnace, landfill, surface impoundment, waste pile, underground injection well, land treatment area, drip pad, or unit eligible for an R, D & D permit that is used to process, store, or dispose of hazardous waste.

For each miscellaneous unit for which an operating permit is sought, provide an engineering report which includes all of the information specified in 40 CFR 264.600-264.602, and 270.23.

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<sup>2</sup>New drip pads are those drip pads constructed after 12/06/90 and which had no binding contract for construction. If electing to comply with 40 CFR 264.573(b), the requirement to install a leakage collection system of 40 CFR 264.573(b)(3) applies only to those drip pads constructed after 12/24/92 and which had no binding contract for construction.

1. Complete Table V.K - Miscellaneous Units and list the miscellaneous units covered by this application. List the waste managed in each unit and the rated capacity or size of the unit. If the information requested is not applicable, an explanation must be submitted.
2. Provide any other information which is descriptive of the relationship between the miscellaneous unit and the environment. Application information may include design requirements of 30 TAC 305 and 335, 40 CFR Part 264 Subparts I through O, and Part 270 that are appropriate for the miscellaneous unit or portions of the unit being permitted.
3. For a unit which involves combustion, please provide emissions data or a trial burn plan. Tables V.H.1-5 for incinerators or Tables V.I.1-5 for boilers and industrial furnaces may be adapted as appropriate to provide operation, monitoring, and emission information for a miscellaneous combustion unit.

#### L. Containment Buildings

Provide an engineering report which includes all of the information specified in 40 CFR 264.1100-1101(c)(3), and 264.1101(d)-(e).

Complete Table V.L. - Containment Buildings and list the containment buildings covered by this application to be permitted. List the N.O.R. unit number, whether the unit is for storage and/or processing, the waste or debris managed in each unit, the rated capacity of each unit, and the overall dimensions of the unit (including containment wall height) that will be in contact with the waste or debris.



**Table V.B. - Container Storage Areas  
 Not Applicable**

Permit Unit No.	Container Storage Area	N.O.R. No.	Rated Capacity	Dimensions	Containment Volume (including rainfall for unenclosed areas)	Unit will manage Ignitable, <sup>1</sup> Reactive, <sup>1</sup> or Incompatible <sup>2</sup> Waste (state all that apply)

<sup>1</sup>Containers managing ignitable or reactive waste must be located at least 1.5 meters (50 feet) from the facility's property line.

<sup>2</sup>Incompatible waste must be separated from other waste or materials stored nearby in other containers, piles, open tanks, or surface impoundments by means of a dike, berm, wall, or other device.



**Table V.D.6. - Surface Impoundment Liner System  
 Not Applicable**

Surface Impoundment	Primary Liner		Secondary Liner			Clay Liner			
	Material	Permeability $y$ (cm/sec)	Thickness $s$	Material	Permeability $y$ (cm/sec)	Thickness	Material	Permeability $y$ (cm/sec)	Thickness

**Table V.E.1. - Waste Piles  
 Not Applicable**

Permit Unit No.	Waste Pile	N.O.R. No.	Waste Nos. <sup>1</sup>	Rated Capacity	Dimensions	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

<sup>1</sup>from Table IV.B, first column

**Table V.E.3. - Waste Pile Liner System  
Not Applicable**

Waste Pile	Primary Liner		Secondary Liner		Clay Liner				
	Material	Permeability y (cm/sec)	Thickness s	Material	Permeability y (cm/sec)	Thickness s	Material	Permeability y (cm/sec)	Thickness

**Table V.F.1. - Land Treatment Units  
Not Applicable**

List the land treatment units covered by this application. List the waste managed in each unit and the rated capacity or size of the unit.

Permit Unit No.	Land Treatment Unit	N.O.R. No.	Waste Nos. <sup>1,2</sup>	Dimensions	Distance from lowest liner to groundwater	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

<sup>1</sup>from Table IV.B, first column

<sup>2</sup>If cadmium is present in the waste, state the concentration in the report.



**Table V.F.2 - Land Treatment Unit Capacity  
Not Applicable**

For the land treatment units listed in Table IV.F.1, specify the waste treatment capacity.

Permit Unit No.*	Land Treatment Unit	N.O.R. No.	Rated Capacity				Treatment Zone Depth
			Monthly Hydraulic Loading	Monthly Organic Loading	Monthly Inorganic Loading	Cumulative Lifetime Loading	

\* This number should match the Permit Unit No. given on Table V.F.1.





**Table V.G.3. - Landfill Liner System  
Not Applicable**

Permit Unit No.*	Landfill	Primary Liner		Secondary Liner		Clay Liner					
		Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	

\* This number should match the Permit Unit No. given on Table V.G.1.

**Table V.G.4. - Landfill Leachate Collection System  
Not Applicable**

Landfill	Primary Leachate Collection System				Secondary Leachate Collection System					
	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material

**Table V.H.1. – Incinerators  
Not Applicable**

List the incinerators covered by this application to be permitted. List the waste managed in each unit and the rated capacity or size of each unit.

Permit Unit No.	Incinerators	N.O.R. No.	Waste Nos. <sup>1</sup>	Waste Physical Form (Pumpable or Non-pumpable)	Reactive, Incompatible, or F020, F021, F022, F023, F026, or F027 Waste

<sup>1</sup>From the first column of Table IV.B.  
 \* If the unit is already permitted, use the established “Permit Unit No.” If the unit is not yet permitted, the number given here for the unit will become the “Permit Unit No.” The numbers should be in an order that will be convenient for the facility operator.



**Table V.H.2. - Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems  
Not Applicable**

[Use a table for each unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
<b>Operating Parameters</b>						
Maximum Total Hazardous Waste Feed Rate (Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs)		[Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter as applicable to the feed mechanism]	Feed System	lb/hr	Y	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate [Not applicable for Tier I or Tier I adjusted metals control limits]		Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter	Feed System	lb/hr		
Minimum Primary Combustion Chamber Temperature		Thermocouple [or other device]	Primary Chamber Exit	°F	Y	N
Minimum Secondary Combustion Chamber Temperature		Thermocouple [or other device]	Secondary Chamber Exit	°F	Y	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature [Include if using Tier II, III metals controls only]		Thermocouple [or other device]	Secondary Chamber Exit	°F	Y	Y
Maximum Flue Gas Temperature at PM Control Device Inlet [Tier II and Tier III Metals only as applicable]		Thermocouple [or other device]	At entrance to PM Control Device	°F	Y	Y

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
Maximum Combustion Gas Velocity Indicator [If condition is something other than maximum combustion gas velocity, write specific name of condition]					Y	Y
Atomization parameters [as necessary]						[as appropriate]
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter <sup>4</sup> or Mass Flow Meter	Feed Systems	Limits Specified in Table [Maximum Constituent Feed Rates]	N	N
Secondary Combustion Zone Pressure [or other method for fugitives monitoring]				e.g., in. H <sub>2</sub> O	[Yes, if neg. pressure is used to control fugitives.]	[Yes, if neg. pressure is used to control fugitives.]
Primary Combustion Zone Pressure [or other method for fugitives monitoring]				e.g., in. H <sub>2</sub> O	[Yes, if neg. pressure is used to control fugitives.]	[Yes, if neg. pressure is used to control fugitives.]
<b>CEMS Monitoring Parameters</b>						
Stack Oxygen	Continuous	CEMS	Stack	No Limit (for correction to 7% O <sub>2</sub> )	N	N
Stack CO	Continuous HRA	CEMS	Stack	100 ppmv HRA, 7% O <sub>2</sub> , dry basis	Y	Y

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
Stack THC [If specified in the permit]	Continuous HRA	CEMS	Stack	20 ppmv HRA, 7% O <sub>2</sub> , dry basis	Y	Y
<b>APCD Parameters</b>						
Pressure drop across Baghouse [or fabric filter]				_____ in. W.C.		
[Wet Scrubbers:]						
Ionizing Wet Scrubber minimum voltage				_____ kilovolts (kV)		
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)		
Minimum scrubber blowdown				_____ gallons/min		
Minimum scrubber water pH				_____		
[Venturi Scrubbers:]						
Venturi scrubber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet minute (acfm)		
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.		
[Dry Scrubbers:]						
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber				_____ pounds per minute		

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
Maximum flue gas flow rate				_____ acfm		
[Absorbers:]						
Absorber minimum pH of incoming liquid				_____		
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)		
Other Air Pollution Control Devices permit conditions as necessary						

<sup>1</sup> *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

*Continuous monitor* is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

*Hourly Rolling Average (HRA)* as defined in 40 CFR 266.102(e)(6)(i)(B).

- For carcinogenic metals and lead feed rates: Instantaneous as defined above or, rolling average as defined in 40 CFR 266.102(e)(6)(ii).

<sup>2</sup> AWFCO: Automatic Waste Feed Cutoff. For AWFCOs indicated by ■Y, the Permit Limit in the table triggers an AWFCO.

<sup>3</sup> Specific gravity associated with the volumetric rate must be known to determine the mass feed rate.

<sup>4</sup> The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

**Table V.H.3. - Maximum Constituent Feed Rates  
Not Applicable**

[Multi-chamber Incinerators (e.g., rotary kilns) may need feed rate limits to each combustion chamber.] The total feed rate of constituents to the incinerator(s) shall not exceed the following limitations in grams per hour (g/hr) or tons per year (T/yr), as noted. The metals limitations have been evaluated through the risk assessment. The ash and chlorine limits are based upon testing or regulatory limits.

Constituent	Maximum Allowable Feed Rate In All Feedstreams Hourly Basis (g/hr)	Maximum Allowable Feed Rate In All Hazardous Waste Feedstreams Hourly Basis (g/hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Pumpable Hazardous Waste Feedstreams Hourly Basis (g/hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Feedstreams Annual Basis (T/yr)
Arsenic				
Beryllium				
Cadmium				
Total Chromium				
Antimony				
Barium				
Lead				
Mercury				
Silver				
Thallium				
(Others as Necessary)				
Total Chlorine		Not applicable	Not applicable	Not applicable
Ash to Secondary Combustion Chamber or Other Primary Chamber if Only Pumpable Waste is Fed		Not applicable	Not applicable	Not applicable

<sup>1</sup>Not applicable for Tier I or Tier I adjusted metals feed rate screening limits.

[Hourly feed rate limits must comply with the requirements of 40 CFR 266.106 for carcinogenic metals and non-carcinogenic metals. As applicable, the feed rate limit for chromium may be specified as hexavalent and total chromium limits.]

**Table V.H.4. - Maximum Allowable Emission Rates  
 Not Applicable**

Use a table for each operating mode as applicable

Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate <sup>1</sup>	Units <sup>2</sup>
Arsenic (Tier )		g/hr
Beryllium (Tier )		g/hr
Cadmium (Tier )		g/hr
Chromium, Total (Tier )		g/hr
Non-Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate <sup>1</sup>	Units <sup>2</sup>
Antimony (Tier )		g/hr
Barium (Tier )		g/hr
Lead (Tier )		g/hr
Mercury (Tier )		g/hr
Silver (Tier )		g/hr
Thallium (Tier )		g/hr
Hydrogen Chloride (Tier )		g/hr
Free Chlorine (Tier )		g/hr
Particulate Matter	0.08	Grains/dscf

<sup>1</sup> Not applicable for Tier I or Tier I adjusted feed rate screening limits.

<sup>2</sup>g/hr denotes grams per hour. Grains/dscf denotes grains per dry standard cubic foot (standard conditions: 760 mm Hg, 68 EF) after correction to a stack gas concentration of 7% oxygen.

**Note:** Site-specific dispersion modeling factor =x.xxx [insert dispersion factor for Tier III as applicable] micrograms per cubic meter per grams per second emission rate.



**Table V.H.5. - Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems - Short-Term Operation Not Applicable**

[Use this table for each new or modified Incinerator unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Operating Parameters								
Maximum Total Hazardous Waste Feed Rate (Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs)		[Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter as applicable to the feed mechanism]	Feed System	lb/hr			Y	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate [Not applicable for Tier I or Tier I adjusted metals screening limits]		Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter	Feed System	lb/hr				
Minimum Primary Combustion Chamber Temperature		Thermocouple [or other device]	Primary Chamber Exit	°F			Y	N
Minimum Secondary Combustion Chamber Temperature		Thermocouple [or other device]	Secondary Chamber Exit	°F			Y	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature [Include if using Tier II/ III metals controls.]		Thermocouple [or other device]	Secondary Chamber Exit	°F			Y	Y

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Maximum Flue Gas Temperature at PM Control Device Inlet [Tier II/III metals controls as applicable.]		Thermocouple [or other device]	At entrance to PM Control Device	°F		Y	Y	
Maximum Combustion Gas Velocity Indicator [If condition is something other than maximum combustion gas velocity, write specific name of condition]						Y	Y	
Atomization parameters [as necessary]							[as appropriate]	
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter <sup>4</sup> or Mass Flow Meter	Feed Systems	Limits Specified in Table ____		N	N	
Secondary Combustion Zone Pressure [or other method for fugitives monitoring]				e.g., in. H <sub>2</sub> O		[Yes, if neg. pressure is used to control fugitives.]	[Yes, if neg. pressure is used to control fugitives.]	
Primary Combustion Zone Pressure [or other method for fugitives monitoring]				e.g., in. H <sub>2</sub> O		[Yes, if neg. pressure is used to control fugitives.]	N	
CEMS Monitoring Parameters								
Stack Oxygen	C	CEMS	Stack	No Limit (for correction to 7% O <sub>2</sub> )		N	N	
Stack CO	C, HRA	CEMS	Stack	100 ppmv HRA, 7% O <sub>2</sub> , dry basis		Y	Y	

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Stack THC [If specified in the permit]	C, HRA	CEMS		20 ppmv HRA, 7% O <sub>2</sub> , dry basis			Y	Y
APCD PARAMETERS								
Pressure drop across Baghouse [or fabric filter]					_____ in. W.C.			
[Wet Scrubbers:]								
Ionizing Wet Scrubber minimum voltage					_____ kilovolts (kV)			
Minimum liquid to flue gas ratio (L/G)					_____ gallons/1000 actual cubic feet (acf)			
Minimum scrubber blowdown					_____ gallons/min			
Minimum scrubber water pH					_____			
[Venturi Scrubbers:]								
Venturi scrubber minimum liquid to gas ratio (L/G)					_____ gallons/1000 actual cubic feet minute (acfm)			
Minimum differential gas pressure across venturi scrubber					_____ in. W.C.			
[Dry Scrubbers:]								

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber				_____ pounds per minute				
Maximum flue gas flow rate				_____ acfm				
[Absorbers:]								
Absorber minimum pH of incoming liquid				_____				
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)				
Other Air Pollution Control Devices permit conditions as necessary								

<sup>1</sup> (I) *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

(C) Continuous monitor is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.  
(HRA) *Hourly Rolling Average (HRA)* as defined in 40 CFR 266.102(e)(6)(ii).

<sup>2</sup> *AWFCO*: Automatic Waste Feed Cutoff. For AWFCOs indicated by ■Y•, the Permit Limit in the table triggers an AWFCO.

<sup>3</sup> Specific gravity associated with the volumetric rate must be known to determine the mass feed rate.

<sup>4</sup> The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.



**Table V.I.1. - Boilers/Industrial Furnaces  
 Not Applicable**

Permit Unit No.	Boilers/Industrial Furnaces	N.O.R. No.	Waste Nos. <sup>1</sup>	Waste Physical Form (Pumpable or Non-pumpable)	Reactive, Incompatible, or F020, F021, F022, F023, F026, or F027 Waste

<sup>1</sup>From the first column of Table IV.B.  
 \* If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

**Table V.I.2. - Boiler/Industrial Furnace Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems  
Not Applicable**

[Use a table for each unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N <sup>2</sup>
Operating Parameters					
Maximum Total Hazardous Waste Feed Rate				lb/hr	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate [Not applicable for Tier I or Tier I adjusted metals screening limits]		Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter	Feed System	lb/hr	Y
Minimum Device Production Rate (e.g., steam)				[e.g., lb/hr]	
Maximum Device Production Rate (e.g., steam)				[e.g., lb/hr]	
Minimum Combustion Temperature		Thermocouple [or other device]	Boiler/Industrial Furnace Exit	°F	Y
Maximum Combustion Temperature [Include if using Tier II/ III metals controls.]		Thermocouple [or other device]		°F	Y
Maximum Flue Gas Temperature at PM Control Device Inlet [Tier II/ III metals controls as applicable.]		Thermocouple [or other device]	At entrance to PM Control Device	°F	Y
Maximum Combustion Gas Velocity Indicator [If condition is something other than maximum combustion gas velocity, write specific name of condition]					Y
Atomization parameters [as necessary]					[as appropriate]



Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N <sup>2</sup>
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter <sup>4</sup> or Mass Flow Meter	Feed Systems	Limits Specified in Table _____ [•Maximum Constituent Feed Rates•]	N
Number of Soot Blowing Events per 24 hours [if applicable]				[insert number]	N
Combustion Zone Pressure [or other method for fugitives monitoring]				e.g., in. H <sub>2</sub> O	[Yes, if neg. pressure is used to control fugitives.]
CEMS Monitoring Parameters					
Stack Oxygen	Continuous	CEMS	Stack	No Limit (for correction to 7% O <sub>2</sub> )	N
Stack CO	Continuous HRA	CEMS	Stack	100 ppmv HRA, 7% O <sub>2</sub> , dry basis	Y
Stack THC [If specified in the permit]	Continuous HRA	CEMS	Stack	20 ppmv HRA, 7% O <sub>2</sub> , dry basis	Y
APCD Parameters					
Pressure drop across Baghouse [or fabric filter]				_____ in. W.C.	
[Wet Scrubbers:]					
Ionizing Wet Scrubber minimum voltage				_____ kilovolts (kV)	
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)	
Minimum scrubber blowdown				_____ gallons/min	

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N <sup>2</sup>
Minimum scrubber water pH				_____	
[Venturi Scrubbers:]					
Venturi scrubber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet minute (acfm)	
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.	
[Dry Scrubbers:]					
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber				_____ pounds per minute	
Maximum flue gas flow rate				_____ acfm	
[Absorbers:]					
Absorber minimum pH of incoming liquid				_____	
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)	
Other Air Pollution Control Devices permit conditions as necessary					

<sup>1</sup> *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

*Continuous monitor* is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

*Hourly Rolling Average (HRA)* as defined in 40 CFR 266.102(e)(6)(i)(B).

For carcinogenic metals and lead feed rates: Instantaneous as defined above or, Rolling average as defined in 40 CFR 266.102(e)(6)(ii).

<sup>2</sup> *AWFCO*: Automatic Waste Feed Cutoff. For AWFCOs indicated by ■ Y •, the Permit Limit in the table triggers an AWFCO.

<sup>3</sup> Specific gravity associated with the volumetric rate must be known to determine the mass feed rate.

<sup>4</sup> The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

**Table V.I.3 - Maximum Constituent Feed Rates  
Not Applicable**

The total feed rate of constituents to the boiler/industrial furnace(s) shall not exceed the following limitations in grams per hour (g/hr) or tons per year (T/yr), as noted. The metals limitations have been evaluated through risk assessment. The ash and chlorine limits are based upon testing or regulatory limits.

Constituent	Maximum Allowable Feed Rate In All Feedstreams Hourly Basis (g/hr)	Maximum Allowable Feed Rate In All Hazardous Waste Feedstreams Hourly Basis (g/hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Pumpable Hazardous Waste Feedstreams Hourly Basis (g/hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Feedstreams Annual Basis (T/yr)
Arsenic				
Beryllium				
Cadmium				
Total Chromium				
Antimony				
Barium				
Lead				
Mercury				
Silver				
Thallium				
(Others as Necessary)				
Total Chlorine		Not applicable	Not applicable	Not applicable
Ash		Not applicable	Not applicable	Not applicable

<sup>1</sup>Not applicable for Tier I or Tier I adjusted metals feed rate screening limits.

[Hourly feed rate limits must comply with the requirements of 40 CFR 266.106 for carcinogenic metals and non-carcinogenic metals. As applicable, the feed rate limit for chromium may be specified as hexavalent and total chromium limits.]

[Applicant to use a table for each operating mode as applicable and for each unit]

**Table V.I.4. - Maximum Allowable Emission Rates  
Not Applicable**

Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate <sup>1</sup>	Units <sup>2</sup>
Arsenic (Tier )		g/hr
Beryllium (Tier )		g/hr
Cadmium (Tier )		g/hr
Chromium, Total (Tier )		g/hr
Non-Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate <sup>1</sup>	Units <sup>2</sup>
Antimony (Tier )		g/hr
Barium (Tier )		g/hr
Lead (Tier )		g/hr
Mercury (Tier )		g/hr
Silver (Tier )		g/hr
Thallium (Tier )		g/hr
Hydrogen Chloride (Tier )		g/hr
Free Chlorine (Tier )		g/hr
Particulate Matter	0.08	Grains/dscf

<sup>1</sup> Not applicable for Tier I or Tier I adjusted feed rate screening limits.

<sup>2</sup> g/hr denotes grams per hour. Grains/dscf denotes grains per dry standard cubic foot (standard conditions: 760 mm Hg, 68 EF) after correction to a stack gas concentration of 7% oxygen.

Note: Site-specific dispersion modeling factor =x.xxx [insert dispersion factor for Tier III as applicable] micrograms per cubic meter per grams per second emission rate.

**Table V.I.5 - Boiler/Industrial Furnace Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems - Short-Term Operation Not Applicable**

[Use this table for each new or modified Boiler/Industrial Furnace unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			AWFCO (Y/N) <sup>2</sup>
				Pre-trial burn (Shakedown Period)	Trial Burn	Post Trial Burn	
Operating Parameters							
Maximum Total Hazardous Waste Feed Rate						lb/hr	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate [Not applicable for Tier I or Tier I adjusted metals screening limits]		Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter	Feed System			lb/hr	Y
Minimum Device Production Rate (e.g., steam)						[e.g., lb/hr]	
Maximum Device Production Rate (e.g., steam)						[e.g., lb/hr]	
Minimum Combustion Temperature		Thermocouple [or other device]	Boiler/ Industrial Furnace Exit			°F	Y
Maximum Combustion Temperature [Include if using Tier II/ III metals controls.]		Thermocouple [or other device]				°F	Y
Maximum Flue Gas Temperature at PM Control Device Inlet [Tier II/Tier III metals controls as applicable.]		Thermocouple [or other device]	At entrance to PM Control Device			°F	Y

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			AWFCO (Y/N) <sup>2</sup>
				Pre-trial burn (Shakedown Period)	Trial Burn	Post Trial Burn	
Maximum Combustion Gas Velocity Indicator <b>[If condition is something other than maximum combustion gas velocity, write specific name of condition]</b>						[as appropriate]	Y
Atomization parameters [as necessary]						[as appropriate]	[as appropriate]
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter <sup>3</sup> or Mass Flow Meter	Feed Systems			Limits Specified in Table _____ [•Maximum Constituent Feed Rates•]	
Number of Soot Blowing Events per 24 hours <b>[if applicable]</b>						[insert number]	N
Combustion Zone Pressure <b>[or other method for fugitives monitoring]</b>						e.g., in. H <sub>2</sub> O	[Yes, if neg. pressure is used to control fugitives.]
CEMS Monitoring Parameters							
Stack Oxygen	Continuous	CEMS	Stack			No Limit (for correction to 7% O <sub>2</sub> )	N
Stack CO	Continuous HRA	CEMS	Stack			100 ppmv HRA, 7% O <sub>2</sub> , dry basis	Y

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			AWFCO (Y/N) <sup>2</sup>
				Pre-trial burn (Shakedown Period)	Trial Burn	Post Trial Burn	
Stack THC [If specified in the permit]	Continuous HRA	CEMS	Stack			20 ppmv HRA, 7% O <sub>2</sub> dry basis	Y
APCD Parameters [insert parameters as applicable]							
Pressure drop across Bathhouse [or fabric filter]						_____ in. W.C.	
[Wet Scrubbers:]							
Ionizing Wet Scrubber minimum voltage						_____ kilovolts (kV)	
Minimum liquid to flue gas ratio (L/G)						_____ gallons/1000 actual cubic feet (acf)	
Minimum scrubber blowdown						_____ gallons/min	
Minimum scrubber water pH						_____	
[Venturi Scrubbers:]							
Venturi scrubber minimum liquid to gas ratio (L/G)						_____ gallons/1000 actual cubic feet minute (acfm)	
Minimum differential gas pressure across venturi scrubber						_____ in. W.C.	

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Short-Term Operating Permit Limits			AWFCO (Y/N) <sup>2</sup>
				Pre-trial burn (Shakedown Period)	Trial Burn	Post Trial Burn	
[Dry Scrubbers:]							
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber						_____ pounds per minute	
Maximum flue gas flow rate						_____ acfm	
[Absorbers:]							
Absorber minimum pH of incoming liquid						_____	
Absorber minimum liquid to gas ratio (L/G)						_____ gallons/1000 actual cubic feet (acf)	
Other Air Pollution Control Devices permit conditions as necessary							

<sup>1</sup> *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

*Continuous monitor* is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

*Hourly Rolling Average (HRA)* as defined in 40 CFR 266.102(e)(6)(i)(B).

- For carcinogenic metals and lead feed rates: Instantaneous as defined above or, Rolling average as defined in 40 CFR 266.102(e)(6)(ii).

<sup>2</sup> *AWFCO*: Automatic Waste Feed Cutoff. For AWFCOs indicated by ■Y\*, the Permit Limit in the table triggers an AWFCO. During the Trial Burn phase, AWFCOs will be as necessary to ensure protection of human health and the environment.

<sup>3</sup> The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

















## VI. Geology Report

This portion of the application applies to owners or operators of new hazardous waste management facilities; areal and/or capacity expansions of existing hazardous waste management facilities; and existing industrial solid waste facilities that store, process or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles (except those waste piles that meet the requirements of Section V.E.10.b. of this application), and tanks or drip pads which require a contingent post-closure plan.

For a new Compliance Plan or modification/amendment to an existing Compliance Plan of Section XI of this application, submit a Geology Report which contains updated site geologic information derived from on-going investigations since submittal of the last Permit modification/amendment application.

Submit a Geology Report which includes at a minimum the following information. This report and all specifications, details, calculations/estimates and each original sheet of plans, drawings, maps, cross-sections, other graphics, such as limits of contamination maps, etc. or any other geoscientific work must be signed and sealed by a Professional Geoscientist licensed in the State of Texas under the Professional Geoscientists Practice Act.

**An updated Geology Report is attached as a separate report with each subsection of the report correlated to the corresponding subsection in the application form. The report has been updated to include updated site geologic information derived from investigations which have taken place since the submittal of the last Permit application.**

### A. Geology and Topography

#### 1. Active Geologic Processes

Provide a description and interpretation of the active geologic processes in the vicinity of the facility. This description should include:

- a. An identification of any faults (active or otherwise) in the area of the facility. The preparer should determine which Holocene sediments or man-made structures have been displaced. The report should contain a description of the investigation techniques used to identify faults and should assess the degree, if any, to which a particular fault increases the long-term potential for waste migration. The clearance required from active faults to ensure that liner systems will not be disrupted will be based upon site specific factors such as the zone of significant surface deformation, uncertainty in locating the fault, activity of the fault, and a distance to provide a reasonable margin of safety. These issues should be addressed when discussing the offset of an industrial solid waste facility unit from an active fault.

To satisfy the requirements of 30 TAC 305.50(a)(4)(F) and 305.50(a)(10)(E), for a proposed hazardous waste management facility or a modification or amendment of a permit which includes a capacity expansion of an existing hazardous waste management facility, submit the following.

- (1) A geologic literature review should be conducted, from which useful information on the possibility of faulting at a given site may be revealed. This includes, but is not limited to, maps of surface faults, subsurface structure, and field investigations by the author(s).
- (2) Descriptions and maps of faulting, fracturing, and lineations in the area are necessary. An aerial photo with lineation interpretations is suggested.
- (3) The maps and cross-sections are to be constructed using an amount of data necessary to adequately describe the geology of the area. Surface data, including data regarding known surface expressions, such as surface faults, gas seeps, lineations,

- etc., should be accounted for in the subsurface interpretations. A surface structure map should be prepared, incorporating all of the subsurface data as well as known surface features.
- (4) A minimum of two structural cross-sections, utilizing available oil field and/or water well electric log data, shall be made perpendicular to each other, crossing at the proposed surface unit location. These cross-sections should define geologic units, indicating especially Holocene sediments and Underground Sources of Drinking Water (USDWs), as well as lithology. The cross-sections should be constructed from the surface, down through the shallowest major structure or the base of the Holocene, whichever is deeper. These cross-sections need to be on a scale necessary to depict the local geology (3000' radius from the site location minimum). If needed to adequately describe the local geology, then a larger radius or deeper area of review may be necessary.
  - (5) A minimum of two structural subsurface maps need to be prepared. One map should be made on the shallowest mappable subsurface marker, the other on a deeper horizon that shows the underlying major structure. Additional maps may be necessary.
  - (6) Field surveillance will be necessary to check the area of the facility for surface features, such as lineations, and to investigate potential surface faults as indicated by, but not limited to, aerial photos, topographic maps, and seismic and subsurface structural maps.
  - (7) The above requirements do not limit the use of any additional information, such as seismic data, isopach maps, or potentiometric maps, that may help in defining the geology of the area of review.
  - (8) If faulting exists within 3000 feet of the surface unit, it must be demonstrated that the fault has not had displacement within Holocene time. If such a fault does exist, it cannot pass within 200 feet of the surface unit.
  - (9) If a fault that has been active within the Holocene is located within 3000 feet of the surface unit, it must be demonstrated that, a.) the fault is not transmissive, i.e., it will not provide for groundwater movement that would result in endangerment to human health or the environment, and b.) there is no actual and/or potential problem of subsidence, which could endanger the stability of the surface unit.
- b. A discussion of the extent of land surface subsidence in the vicinity of the facility including total recorded subsidence and past and projected rates of subsidence. For facilities located at low elevations along the coast which have experienced appreciable rates of subsidence, the potential for future submergence beneath Gulf water should be addressed.
  - c. A discussion of the degree to which the facility is subject to erosion. The potential for erosion due to surface water processes such as overland flow, channeling, gullying, and fluvial processes such as meandering streams and undercut banks should be evaluated. If the facility is located in a low-lying coastal area, historical rates of shoreline erosion should also be provided.
  - d. Complete Table VI.A.1. – Major Geologic Formations. – **See Attached.**
2. Regional Physiography and Topography (applicable only to owners or operators of facilities that store, process, or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles, except waste piles exempt from groundwater monitoring requirements, and tanks which require a contingent post-closure plan)
    - a. Distance and direction to nearest surface water body
    - b. Slope of land surface
    - c. Direction of slope



- d. Maximum elevation of facility
  - e. Minimum elevation of facility
3. Regional Geology (applicable only to owners or operators of facilities that store, process, or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles, except waste piles exempt from groundwater monitoring requirements, and tanks which require a contingent post-closure plan)

Provide a description of the regional geology of the area. This section should include:

- a. A geologic map of the region with text describing the stratigraphic and lithologic properties of the map units. An appropriate section of a published map series such as the Geologic Atlas of Texas prepared by the Bureau of Economic Geology is acceptable.
- b. A description of the generalized stratigraphic column in the facility area from the base of the lowermost aquifer capable of providing usable groundwater to the land surface. At least the uppermost 1,000 feet of section below the facility should be described. The geologic age, lithology, variation in lithology, thickness, depth, geometry, hydraulic conductivity, and depositional history of each geologic unit should be described based upon available geologic information. Regional stratigraphic cross sections should be provided, where available.

4. Subsurface Soils Investigation Report

This section should contain the results of an investigation of subsurface conditions for each land based unit and/or unit which requires contingent closure and post-closure care. If several units are in close proximity, a single investigation for the area will suffice. This report should include:

- a. The logs of borings performed at the waste management area. All borings must be conducted in accordance with established field exploration methods. Investigation procedures should be discussed in the report. A sufficient number of borings should be performed to establish subsurface stratigraphy and to identify and allow assessment of potential pathways for pollution migration. Borings must be sufficiently deep to allow identification of the uppermost aquifer and underlying hydraulically interconnected aquifers. Borings should penetrate through the uppermost aquifer and all deeper hydraulically interconnected aquifers, deep enough to identify the aquiclude at the lower boundary. Borings should be completed to a depth at least 30 feet below the deepest excavation planned at the waste management area. The required number of borings will increase or decrease depending on the heterogeneity of subsurface materials. Locations with stratigraphic complexities such as non-uniform beds which pinch out, vary significantly in thickness, coalesce, or grade into other units, will require a significantly greater degree of subsurface investigation than areas with simple hydrogeologic frameworks. Boring logs should include a detailed description of materials encountered including any discontinuities such as fractures, fissures, slickensides, lenses or seams. Whenever possible, electric logs should be run on each borehole. The hollow stem auger boring method is recommended in those instances where an accurate determination of initial water levels is important. A key explaining both the symbols used on the boring logs and the classification terminology for soil type, consistency, and structure should be provided.
- b. Cross-sectional drawings prepared from the borings depicting the generalized soil strata profile at the site. For small waste management areas two cross sections prepared perpendicular to each other will normally suffice.
- c. A text which describes the investigator's interpretations of the subsurface stratigraphy based upon the field investigation. If appropriate, soils may be assigned to generalized strata to aid in the discussion.

- d. Complete Table VI.A.4. - Waste Management Area Subsurface Conditions and provide in the report data which describes the geotechnical properties of the subsurface soil materials. All laboratory and field tests must be performed in accordance with recognized procedures. A brief discussion of test procedures should be included. All major strata encountered during the field investigation phase should be characterized with regard to: Unified Soil Classification, moisture content, percent less than number 200 sieve, Atterberg limits (liquid limit, plastic limit, and plasticity index), and coefficient of permeability. Field permeability tests should be used to determine the coefficient of permeability of sand or silt units and should also be used to supplement laboratory tests for more clay-rich soils. In addition, particle size distribution and relative density based upon penetration resistance should be determined for coarse-grained soils. For fine-grained soils the following parameters should also be determined: cohesive shear strength based upon either penetrometer or unconfined compression tests, dry unit weight, and degree of saturation(s). For the major soil strata encountered, the maximum, minimum, and average for each of these variables should be compiled.

**Table VI.A.4 is not applicable.**

- e. For land treatment units, provide a description of the surficial soils at the site which includes:
- (1) The name and description of the soil series at the site;
  - (2) Important physical properties of the series such as depth, permeability, available water capacity, soil pH, and erosion factors;
  - (3) Engineering properties and classifications such as USDA texture, Unified Soil Classification, size gradation, and Atterberg limits (liquid limit, plastic limit, and plasticity index); and
  - (4) The cation exchange capacity (CEC) of the soil(s) expressed in units of meq/100g.

Much of this information may be obtained by consulting the county soil survey published by the United States Department of Agriculture, Soil Conservation Service. If available, a copy of an aerial photograph showing soil series units on the land treatment area should be provided.

If an aerial photograph is not available, include a soil series map as an attachment to this subsurface soils investigation report.

## B. Facility Groundwater

If past monitoring has shown the presence of hazardous constituents in the groundwater, the owner or operator must submit a Compliance Plan Application with this application. The Compliance Plan Application and instructions can be found in Section XI of this application form.

### 1. Regional Aquifers

Provide a description of the regional aquifers in the vicinity of the facility based upon available geologic references. The section should provide:

- a. Aquifer names and their association with geologic units described in Section VI.A.3.b.;
- b. A description of the constituent materials of the aquifer(s);
- c. A description of the water-bearing and transmitting properties of the aquifer(s);
- d. Whether the aquifers are under water table or artesian conditions;
- e. Whether the aquifers are hydraulically connected;
- f. A regional water table contour map or potentiometric surface map for each aquifer, if available, from published references;

- g. An estimate of the rate of groundwater flow in units of ft/yr;
- h. Values for total dissolved solids content of groundwater from the aquifers;
- i. Identification of areas of recharge to the aquifers; and

(An application for a new hazardous waste surface impoundment, waste pile, land treatment unit, or landfill, which is to be located in the apparent recharge zone of a major or minor aquifer, as designated by the Texas Water Development Board in the publication entitled Water for Texas, Today and Tomorrow (1990) or subsequent revision must include a hydrogeologic report documenting the potential effects, if any, on the regional aquifer in the event of a release from the waste containment system. (30 TAC 305.50(6))

- j. The present use of groundwater withdrawn from aquifers in the vicinity of the facility.

The preparer should update Section III.C.1.e. of the Part A permit application to ensure that all water wells within 1 mile of the property boundaries of the facility have been located. The aquifer(s) yielding water should be identified for each well.

- 2. Provide groundwater conditions for each land based unit or unit which requires post closure care which includes all the information specified in 30 TAC 335.156-335.167. This discussion should also include:
  - a. Records of water level measurements in borings. The boring logs prepared in response to Section VI.A.4.a. should be annotated to note the level at which groundwater is first encountered and the level of groundwater after equilibration. Normally a 24-hour period is adequate for equilibration of groundwater but an extended period may be required for saturated clay deposits. This information should also be presented on the cross-sections required in Section VI.A.4.b. and recorded and retained in the facility groundwater monitoring record.
  - b. Records of maximum and minimum static water level measurements in monitor wells. Historic water level measurements made during any previous groundwater monitoring should be presented in a table for each well.
  - c. Upper and lower limits of the uppermost aquifer and deeper aquifers which are hydraulically interconnected to it beneath the facility boundary. In most cases this identification would include surface contour maps of the top and bottom surfaces.
  - d. A site specific water table contour map or potentiometric surface map for the uppermost aquifer, and the basis for such identification (the information obtained from hydrogeologic investigations of the facility area). The predicted groundwater flow direction and rate should be indicated.
  - e. A discussion of the variation of hydraulic gradient across the site, including vertical gradient. Calculations for the maximum, minimum, and average groundwater flow velocities for each aquifer identified should also be provided, including pump test data where appropriate.
  - f. An analysis of the most likely pathway(s) for pollutant migration in the event that the primary barrier liner system is penetrated.
- 3. Description of the Detection Monitoring Program

**A Detection Monitoring Program is not applicable to the regulated unit. Table VI.B.3.b. and Table VI.B.3.c. are not applicable. It is recommended at this time that all post-closure care activities, including groundwater monitoring of SWMU No. 1, be terminated and the monitoring wells associated with the unit be plugged and abandoned. While it is proposed that groundwater monitoring of the regulated unit be terminated, facility wide groundwater monitoring activities will be on-going. These activities are**

**discussed in detail in Section XI – Compliance Plan of this Permit application and the Response Action Plan.**

The groundwater monitoring standards apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, landfills, or tanks without satisfactory secondary containment for which a post-closure care plan or permit is required. If a waste management unit meets certain standards it may qualify for an exemption to the groundwater monitoring requirements. An exemption for a unit does not exempt an entire facility. (See the instructions for each type of unit for a specific exemption.) A facility-wide exemption is described in Section VI.C.

It is important to note that even if the proposed program may use the same well system as the present program, the sampling parameters may be different.

- a. Include in the design report a description of the proposed detection monitoring program. This description should contain all requirements of 30 TAC 335.163-335.164. Provide a justification for the selected suite of waste specific parameters specified in Table VI.B.3.c. - Groundwater Sample Analysis based on toxicity, mobility, persistence, and concentrations in light and dense non-aqueous phase components of the waste. Describe the proposed sampling, analysis, and statistical comparison procedures to be utilized in evaluating groundwater monitoring data. Specify the statistical method and process for determining whether constituent concentrations in groundwater are above background, in accordance with 30 TAC 335.163. Refer to the EPA guidance document entitled ***Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities – Unified Guidance (March 2009) (document # EPA 530-F-09-020)*** for recommended methods.

All data submitted to the TCEQ shall be in a manner consistent with the latest version of the “*Quality Assurance Project Plan for Environmental Monitoring and Measurement Activities Relating to the Resource Conservation Recovery Act and Underground Injection Control*” (TCEQ QAPP) which can be found on the agency’s website.

Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity. The method used to obtain a representative sample of the material to be analyzed shall be the appropriate method from Ground Water, Volume II: Methodology, (document # EPA/625/6-90/016b) or an equivalent method approved by the Executive Director of the TCEQ. Laboratory methods shall be those specified in ***Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 1987, as revised; Standard Methods for the Examination of Water and Wastewater, Fifteenth Edition, 1980, and 1981 supplement, or current adopted edition; RCRA Ground-Water Monitoring: Draft Technical Guidance, 1992, OSWER Directive 9950.1,*** or an equivalent method approved in writing prior to use by the Executive Director. [30 TAC Section 305.125(11)(A)]

- b. For inclusion into a permit, complete Table VI.B.3.b. - Unit Groundwater Detection Monitoring System to specify the proposed well system for each unit or waste management area which requires groundwater monitoring.
- c. For inclusion into a permit, complete Table VI.B.3.c to specify:
  - (1) the suite of waste specific parameters (indicator parameters, waste constituents, or reaction products) which will be analyzed at each sampling event for each well or group of wells. These parameters must provide a reliable indication of the presence of hazardous constituents in the groundwater;
  - (2) the sampling frequencies and calendar intervals (e.g., monthly; quarterly within the second 30 days of each quarter; semiannually within the first 30 days of the 2nd and 4th quarters, etc.);

- (3) the analytical method and the achievable detection limit of the sample preparation and analysis methods for the selected parameters. This detection limit will represent the capability of the sampling and analysis to reliably and accurately determine the presence of the selected parameters in the sample; and
  - (4) the concentration limit which will be the basis for determining whether a release has occurred from the waste management unit/area. Concentration limits shall be based on background values for the waste management unit/area, or Practical Quantitation Limit (PQL) values developed through laboratory data obtained using practices consistent with the latest version of the TCEQ QAPP. If background values are lower than PQLs, the applicant may choose respective PQLs as concentration limits for hazardous constituents.
- d. Submit drawings depicting the monitoring well design, current and proposed.
  - e. Submit at least one map of the entire facility and additional maps or drawings if necessary on one or more 8.5" x 11" sheets of sufficient scale to show the following in adequate detail:
    - (1) Monitoring well locations, current and proposed;
    - (2) Soil-pore liquid and core sampling points, current and proposed;
    - (3) Waste management unit(s)/area;
    - (4) Property boundary;
    - (5) Point of compliance;
    - (6) Direction of groundwater flow; and
    - (7) Extent of any known plume of contamination

### C. Exemption from Groundwater Monitoring for an Entire Facility

In accordance with 30 TAC 335.156(b)(4), a waste management facility may be exempt from groundwater monitoring if the owner or operator can demonstrate that there is no potential for migration of liquid from any regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and post-closure care period. This demonstration must be submitted with the permit application, and must be certified by a qualified geologist or geotechnical engineer.

This exemption does not apply to Unsaturated Zone Monitoring. Owners and operators of Land Treatment Units must monitor the unsaturated zone under all circumstances.

The following areas should be addressed in the demonstration, and any predictions must be made on assumptions that maximize the rate of liquid migration:

1. Thickness of soil between the base of the unit and saturated zone;
2. Thickness of saturated zone;
3. Head pressure of the fluids;
4. Properties of the saturated and unsaturated zone (including permeability, effective porosity, and homogeneity), and
5. Total life of facility

The criteria used for the evaluation of this demonstration are more stringent than those used for evaluations of demonstrations submitted prior to permitting. Thus it is necessary for an owner or operator to submit another demonstration even if one was submitted and approved previously.

This type of exemption differs from the exemptions described in Sections V.D. (Surface Impoundments), V.E. (Waste Piles), and V.G. (Landfills). An owner or operator may pursue a facility-wide exemption as well as an exemption for a particular unit, if the owner or operator wishes.

#### D. Unsaturated Zone Monitoring

This section applies only to facilities which contain land treatment units. Attach any previous monitoring data to the monitoring report.

1. List all hazardous constituents that have been or will be monitored.
  - a. Current parameters.
  - b. Proposed parameters.
2. Number of soil-pore liquid sampling points.
  - a. Depth of sampling points.
  - b. Equipment used for soil pore liquid monitoring.
3. Number of soil core sampling points.
  - a. Depth of soil core sampling points.
  - b. Indicate on a facility map locations of all sampling points.

**Table VI.A.1. – Major Geologic Information**

Names Of Major Geologic Formation(s) Beneath The Facility	Lithology Of The Major Geologic Formation	Formation Thickness (Feet)	Depth To Top Of Formation	
			Feet/MSL <sup>(1)</sup>	Feet/BGS <sup>(2)</sup>
1. Formation: Fill & Alluvium Series: Holocene System: Quaternary Era: Cenozoic	Well-sorted, fin-rained sand with some silt and clay; typically includes some fill material on site	9 ft	15 ft MSL	30-39 ft
2. Formation: Beaumont Series: Pleistocene System: Quaternary Era: Cenozoic	Mostly clay and silt with discontinuous sand layers or lenses (cannel sands, point bar deposits or reworked barrier islands)	>200 ft	Approximately -3 ft to -30 ft MSL	Varies; approximately 50 ft to 80 feet MSL
3. Formation: Lissie (upper Lissie = Montgomery; Lower Lissie = Bently) Series: Pleistocene System: Quaternary Era: Cenozoic	Fluvial clay, silt, sand and gravel (minor amounts). Upper Lissie is locally calcareous; Lower Lissie is non-calcareous	Unknown	No information; not differentiated	No information
4. Formation: Willis Series: Pleistocene System: Quaternary Era: Cenozoic	Fluvial clay, silt and fine gravel, locally cemented with iron oxide, non-calcareous	75-100 ft	No information; not differentiated	No information
5. Formation: Goliad Sand Series: Pliocene System: Tertiary Era: Cenozoic	Coarse sand interbedded with siliceous gravel and silty or clayey zones	Approximately 1600 ft	-550(±) ft MSL	Approximately 550 ft

(1)MSL = Mean Sea Level

MLGL = Mean Low-tide Gulf Level

(2)BGS = Below Ground Surface

Source: *Compliance Plan Application and Amendments*, ERM, 2003.





**Table VI.B.3.b. - Unit Groundwater Detection Monitoring System  
Not Applicable**

Waste Management Unit/Area Name <sup>1</sup>	Well Number(s):						
Hydrogeologic Unit Monitored							
Type (e.g., point of compliance, background, observation, etc.)							
Up or Down Gradient							
Casing Diameter and Material							
Screen Diameter and Material							
Screen Slot Size (in.)							
Top of Casing Elevation (ft, MLGL or MSL)							
Grade or Surface Elevation (ft, MLGL or MSL)							
Well Depth (ft, Below Grade Surface [BGS])							
Well Depth (Ft, Below Top of Casing [BTOC])							
Screen Interval, From(ft, BGS) To(ft, BGS)							
Screen Interval, From(ft, BTOC) To(ft, BTOC)							
Facility Coordinates (e.g., lat/long or company coordinates)							

<sup>1</sup>From Tables in Section V.





## VII. Closure and Post-Closure Plans

Submit a full closure plan and post-closure plan, if applicable, which contains all the information required by 30 TAC 335.8, 335.169, 335.172, 335.174, 335.177-335.178, 335.551-335.569, 30 TAC Chapter 350, 40 CFR 264.112, 264.118, 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, 264.575, 264.601, 264.603, 264.1102, 270.14(b)(13), 270.17(f), 270.18(h), 270.20(f), 270.21(e), 270.23(a)(2) & (3), and 270.26(c)(16) where applicable. The owner of property on which an existing disposal facility is located must also submit documentation that a notation has been placed in the deed to the facility that will in perpetuity notify any potential purchasers of the property that the land has been used to manage hazardous wastes and its use is restricted (see 30 TAC 335.5). For hazardous waste disposal units that were closed before submission of the application, the applicant should submit documentation to show that plats and notices required under 40 CFR 264.116 and 264.119 have been filed.

### A. Closure

**Not Applicable. The surface impoundment has been clean closed.**

This section applies to the owners and operators of all hazardous waste management facilities to be permitted. The applicant must close the facility in a manner that minimizes need for further maintenance and controls, or eliminates, to the extent necessary to protect human health and the environment, the post-closure release of hazardous waste, hazardous constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere.

The facility type and type of unit to be closed can determine the level of detail sufficient for a closure plan.

For each unit to be permitted, complete Table VII.A. - Unit Closure and list the facility components to be decontaminated, possible methods of decontamination, and possible methods of disposal of wastes and waste residues generated during unit closure.

Additionally, if the applicant plans to close a surface impoundment in accordance with 30 TAC 335.169(a)(1) and the impoundment does not comply with the liner requirements of 30 TAC Section 335.168(a) then the closure plan for the impoundment must include both a plan for complying with 30 TAC 335.169(a)(1) and a contingent plan for complying with 30 TAC 335.169(a)(2).

Guidance on design of a closure cap and final cover for landfills is given in TCEQ Technical Guideline No. 3, and EPA publication 530-SW-85-014 presents guidance on construction quality assurance of liner construction.

If a waste pile does not comply with the liner requirements of 30 TAC Section 335.170(a)(1) then the closure plan for the waste pile must include both a plan for complying with 40 CFR 264.258(a) and a contingent plan for complying with 40 CFR 264.258(b).

The final certification of closure of a land treatment unit may be prepared by an independent qualified soil scientist in lieu of an independent licensed Professional Engineer.

### B. Closure Cost Estimate (including contingent closure) [30 TAC 335.178, 40 CFR 264.142]

**Not Applicable. The surface impoundment has been clean closed.**

This section applies to owners or operators of all hazardous waste facilities, except state and federal agencies. A detailed estimate, in current dollars, of the cost of closing the facility should be included in the report. The cost estimate must include the cost of closure at the point in the facilities operating life when the extent and manner of its operation would make closure the most expensive. The TCEQ has published Technical Guideline No. 10, Closure and Post-Closure Cost Estimates, for calculating closure costs which should be consulted. Closure costs should be developed on the basis of abandonment of the



site at full capacity and closure activities to be conducted by a third party with no operable on-site equipment. The costs for closing each unit must be detailed.

1. If closure costs are based on contractor bids, the applicant should submit a copy of the bid specification and each contractor's response.
2. If closure costs are based on a detailed analysis, the applicant should submit details of item costs and number of each item, and details of costs for equipment rental, third party labor and supervision, transportation, analytical costs, etc. Provide an itemized cost on Table VII.B. - Unit Closure Cost Estimate for a complete, third party permitted facility closure.  
  
As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.
3. The closure plan may propose on-site disposal of wastes, residues, etc. during closure of a unit, and this may be executed if on-site capacity exists in other units during closure of a unit. However, the cost estimate for closure must be based on off-site shipment and disposal during closure of all wastes, waste residues, wastes generated by decontamination, contaminated stormwater, and leachate.
4. For each surface impoundment, waste pile, or tank system required to have a contingent closure plan, the cost for closure under the contingent closure plan should be detailed, as well as the cost of proposed closure. The more expensive of the cost of the proposed closure of a unit versus the cost of the contingent closure of the unit should be used in the total facility closure cost estimate.

#### C. Post-closure

##### **The attached report provides a post-closure care plan for the regulated unit.**

This section applies to owners or operators of all hazardous waste disposal facilities. This section also applies to certain waste piles, tanks and surface impoundments from which the owner or operator intends to remove wastes at closure but which are required to have contingent post-closure plans.

Post-closure care of each hazardous waste management unit must continue for 30 years after the date of completing closure of the unit and must consist of monitoring and reporting of the groundwater monitoring systems in addition to the maintenance and monitoring of waste containment systems. Continuation of certain security requirements may be necessary after the date of closure. Post-closure use of property on or in which hazardous waste remains after closure must never be allowed to disrupt the integrity of the containment system. In addition, submit the following information.

1. The post-closure care plan for a landfill or of a surface impoundment, waste pile, miscellaneous unit, or tank system closed with wastes or waste constituents left in place, or closed under a contingent closure plan, must demonstrate compliance with 30 TAC 335.174(b).
2. The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure period; and
3. A discussion of the future use of the land associated with each unit.
4. For landfills, surface impoundments, waste piles, and land treatment areas closed under interim status, submit the required documentation of 40 CFR 270.14(b)(14).

**Not Applicable. The surface impoundment is not closed under interim status.**

5. Landfills, surface impoundments, waste piles and land treatment areas that received hazardous wastes after July 26, 1982 or for which closure was certified after January 26, 1983 must be included in post-closure care plans unless they have been determined to have closed by removal equivalent to the closure standards in 40 CFR 264 Subpart G. If such a demonstration has been made pursuant to 40 CFR 270.1(c)(5), but an equivalency determination has not been made, please submit a copy of the demonstration documentation. If an equivalency determination has been made pursuant to 40 CFR 270.1(c)(6), applicant should submit a copy of the determination. Complete Table VII.C.5. - Land-Based Units Closed Under Interim Status for all land based units closed under interim status.

D. Post-closure Cost Estimate [40 CFR 264.144]

**The attached report provides a post-closure care plan for the regulated unit.**

This section regarding post-closure cost estimate applies to owners or operators of all hazardous waste disposal facilities, except state and federal agencies, and certain waste piles, tank systems, and surface impoundments from which the owner or operator intends to remove wastes at closure, but which are required to have contingent closure and post-closure plans. A detailed estimate, in current dollars, of the annual cost of monitoring and maintenance of the facility in accordance with the applicable post-closure regulations must be included in the report. The TCEQ has published Technical Guideline No. 10 for calculating post-closure costs, which should be consulted. Costs should be developed in detail for 30 years of post-closure care activities to be conducted by a third party, for each applicable unit.

1. The applicant should submit details of item costs and number of each item for off-site disposal of leachate and bailed monitor well water, labor and supervision, monitor well sampling and analyses, inspection and repair of the cap(s), mowing and re-seeding of the vegetative cover, maintaining site security, etc. Provide an itemized cost estimate on Table VII.D. - Unit Post-Closure Cost Estimate for complete, third party permitted facility post-closure care.  
As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.
2. Total annual cost of post-closure care for the facility including costs of contingent post-closure care should be multiplied by 30 years.<sup>3</sup>

E. Closure and Post-Closure Cost Summary

Please complete Table VII.E.1 - Permitted Unit Closure Cost Summary. – **Not Applicable. The surface impoundment has been clean closed.**

Please complete Table VII.E.2 - Permitted Unit Post-Closure Cost Summary. – **Table VII.E.2 is attached.**

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<sup>3</sup> or the remainder of 30 years from the date of closure certification for each unit if the unit has been previously certified closed.



**Table VII.B. - Unit Closure Cost Estimate  
 Not Applicable**

Task	Cost
<i>(Name of permitted unit, e.g., Tank TK-1)</i>	
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Other tasks <i>(such as labor, lab analysis, transportation, certifications, etc.)</i>	\$\$,\$\$\$
Other tasks	\$\$,\$\$\$
<b>subtotal</b>	<b>\$\$\$,\$\$\$</b>
<b>Contingency (10% minimum)</b>	<b>\$\$,\$\$\$</b>
<b>Total Unit Closure Cost</b>	<b>\$\$\$,\$\$\$ (20__)</b>
<i>(Name of permitted unit, e.g., Surface Impoundment West)</i>	
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Verbal description of task <i>(waste amount generated x disposal cost/unit amount)</i>	\$\$,\$\$\$
Other tasks <i>(such as labor, lab analysis, transportation, certifications, etc.)</i>	\$\$,\$\$\$
Other tasks	\$\$,\$\$\$
<b>subtotal</b>	<b>\$\$\$,\$\$\$</b>
<b>Contingency (10% minimum)</b>	<b>\$\$,\$\$\$</b>
<b>Total Unit Closure Cost</b>	<b>\$\$\$,\$\$\$ (20__)</b>
<b>Total Permitted Facility Closure Cost (all unit costs combined)</b>	
<b>\$\$,\$\$\$,\$\$\$ (20__)</b>	









## VIII. Financial Assurance

### A. Financial Assurance Information Requirements for all Applicants (30 TAC Chapter 37, Subchapter P, 305.50(a)(4)(A-E), 335.152(a)(6) and 335.179)

#### 1. Financial Assurance for Closure

An owner or operator must establish financial assurance for the closure of the facility no later than 60 days prior to the first receipt of hazardous waste. Please refer to 30 TAC Chapter 37, Subchapter P, for the financial assurance requirements for closure and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

If the financial mechanism(s) has been obtained, provide a copy of the mechanism(s)

**See the attached for the Financial Disclosure Letter for Union Pacific Railroad Company.**

#### 2. Financial Assurance for Post-Closure Care (applicable to disposal facilities and contingent post-closure care facilities only)

An owner or operator subject to post-closure monitoring or maintenance requirements must establish financial assurance for the post-closure care of the facility no later than 60 days prior to the first receipt of hazardous waste. Please refer to 30 TAC Chapter 37, Subchapter P for the financial assurance requirements for post-closure and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

If the financial mechanism(s) has been obtained, provide a copy of the mechanism(s)

**See the attached for the Financial Disclosure Letter for Union Pacific Railroad Company.**

#### 3. Liability Requirements (not required for post-closure care)

All owners or operators must establish financial assurance for third party sudden liability coverage of the facility no later than 60 days prior to the first receipt of hazardous waste. Owners or operators of disposal facilities must establish financial assurance for third party sudden and nonsudden liability coverage of the facility no later than 60 days prior to the first receipt of hazardous waste. Please refer to 30 TAC Chapter 37, Subchapter P, for the financial assurance requirements for liability coverage, and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

If the financial mechanism(s) has been obtained, provide a copy of the mechanism(s).

**Not Applicable**

#### 4. State's Assumption of Responsibility

If the State of Texas assumption of responsibility is found to be acceptable, the owner or operator may satisfy the financial assurance requirements by use of both the State's assurance and additional financial mechanisms specified in 30 TAC Chapter 37. The amount of funds available through the State and owner or operator's mechanisms must at least equal the required amount. (30 TAC 37.6041)



**Not Applicable**

**B. Applicant Financial Disclosure Statements for a permit, permit amendment, or permit modification (30 TAC 305.50(a)(4))**

1. A statement signed by an authorized signatory per 30 TAC 305.44 explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, and provide adequate liability coverage for the facility.
2. Audited financial statements for the last two years and the most current quarterly financial statement prepared according to generally accepted accounting principles. If audited statements have not been prepared for the applicant, copies of the applicant's last two years of financial statements and tax returns shall be submitted. The copies of the tax returns shall be certified by original signature of an authorized officer or owner as being a "true and correct copy of the return filed with the Internal Revenue Service." Additionally, an audited financial statement shall be prepared and submitted for the most recent fiscal year. All financial statements shall include a balance sheet, income statement, cash flow statement, notes to the financial statements, and the accountant's opinion letter.
3. For publicly traded companies, copies of Securities and Exchange Commission Form 10-K for the last two years and the most current Form 10-Q.
4. For privately-held companies, written disclosure of the information that would normally be found in Form 10-K including, but not limited to, the following:
  - a. descriptions of the business and its operations;
  - b. identification of any affiliated relationships;
  - c. credit agreements and terms;
  - d. any legal proceedings involving the applicant;
  - e. contingent liabilities; and
  - f. significant accounting policies.

**See the attached for the Financial Disclosure Letter for Union Pacific Railroad Company.**

**C. Applicants Requesting Facility Expansion, Capacity Expansion, or New Construction**

**Not Applicable.**

Provide the following information as applicable to the particular financial circumstances:

1. Estimate of capital costs for expansion and/or construction. Complete Table VIII.C. - Estimated Capital Costs.
2. Evidence of financial resources to construct, operate safely, close, and provide liability coverage for the facility.
  - a. Applicants demonstrating through financial statements or existing credit arrangements sufficient financial resources to construct, operate, and close the facility may address this requirement with the signed statement submitted to satisfy Section VIII.B.1.

- b. Applicants that must obtain additional financing through a new stock offering or new debt issuance for construction or expansion as requested in this application shall submit the following information:
  - (1) financial plan sufficiently detailed to clearly demonstrate that the applicant will be in a position to readily secure financing for construction, operation, and closure if the permit is issued. The submitted financial plan must be accompanied by original letters of opinion from two financial experts, not otherwise employed by the applicant, who have the demonstrated ability to either finance the facility or place the required financing. The opinion letters must certify that the financial plan is reasonable, certify that financing is obtainable within 180 days of issuance of the permit, and include the time schedule contingent upon permit issuance for securing the financing. Only one opinion letter from a financial expert, not otherwise employed by the applicant, is required if the letter renders a firm commitment to provide all the necessary financing; and
  - (2) a written detail of the annual operating costs of the facility and a projected cash flow statement including the period of construction and first two years of operation. The cash flow statement must demonstrate the financial resources to meet operating costs, debt service, and financial assurance for closure, post closure, and liability coverage requirements. A list of the assumptions made to forecast cash flow shall also be provided.
3. For new commercial hazardous waste management facility applications, a written statement signed by an authorized signatory per 30 TAC 305.44 explaining how the applicant intends to provide emergency response financial assurance per 30 TAC 305.50(a)(12)(C) or (D).

**Table VIII.C - Estimated Capital Costs**

**Not Applicable**

	Estimated Capital Costs
Site preparation, fencing, paving, curbing, lighting, roadways .....	\$ _____
Foundations, buildings, other structures, utilities and connections, drainage system, HVAC system, Electrical system, wastewater system.....	\$ _____
Process and control equipment.....	\$ _____
Auxiliary equipment, including but not limited to exhaust hoods, fans, ducting, pumps, piping, conveyors, stacks, storage tanks, process tanks, waste disposal facilities, pollution control equipment, and fire protection system .....	\$ _____
Process integration and instrumentation .....	\$ _____
Emergency response equipment.....	\$ _____
Transportation equipment .....	\$ _____
Office equipment.....	\$ _____
Engineering design, supervision, overhead.....	\$ _____
Construction expenses including permits, insurance, temporary facilities, and clean-up .....	\$ _____
Contractor’s fees and overhead .....	\$ _____
Contingency .....	\$ _____
Total	\$ _____

The estimates listed above were derived from the following sources:

**VIII. FINANCIAL ASSURANCE**



January 29, 2015

Mr. Bob Patton, Jr.  
Manager, Industrial and Hazardous Waste Permits Section  
Texas Commission on Environmental Quality  
Building F, MC 130  
12100 Park 35 Circle  
Austin, Texas 78753

Subject: Financial Disclosure Letter for Union Pacific Railroad Company  
Permit Renewal  
Union Pacific Railroad Houston Wood Preserving Works  
4910 Liberty Road, Houston, TX  
Hazardous Waste Permit/Compliance Plan No. 50343  
Industrial and Solid Waste Registration No. 31547  
EPA ID No. TXD000820266  
CN600131098/RN100674613

Dear Mr. Patton:

This letter is furnished to you in response to financial disclosure requirements as applicable under Texas Health and Safety Code Section 361.085 and Title 30, Texas Administrative Code (30 TAC), Section 305.50 to provide assurance that Union Pacific Railroad has sufficient financial resources.

In keeping with the above law and rule requirements I hereby certify that Union Pacific Railroad is adequately capitalized and has sufficient financial resources to operate, close, provide post-closure care for and perform corrective action for the above-referenced facility in a safe manner, and in compliance with the permit and all applicable rules.

Union Pacific Railroad Company currently provides a corporate guarantee financial assurance mechanism as set out in 30 TAC, Chapter 37, Subchapter C to meet Union Pacific Railroad's financial assurance obligations.

I am authorized to make these statements on behalf of Union Pacific Railroad Company. I understand that the TCEQ may request additional information as part of their review.

Sincerely,



Robert M. Grimaila  
Vice-President - Safety

Union Pacific Railroad Company  
1400 Douglas Street - STOP 1180  
Omaha, Nebraska 68179







## IX. Releases From Solid Waste Units And Corrective Action

### **The Preliminary Review Checklists are attached separately in the format required in Section IX.C.**

The Texas Solid Waste Disposal Act, 30 TAC 335.167, 40 CFR 270.14(d) and Section 3004(u) of the Hazardous and Solid Waste Amendments of 1984 (HSWA) require that each hazardous waste management permit application review shall address corrective action for all releases of hazardous waste and hazardous constituents listed in 40 CFR 261, Appendix VIII, 40 CFR Part 264, Appendix IX, and/or other constituents of concern from any solid waste management unit (SWMU) and/ or Areas of Concern (AOCs) at a facility, regardless of the time at which waste was placed in such unit.<sup>5</sup> Current EPA interpretation of this requirement has resulted in a Corrective Action process that begins with a RCRA Facility Assessment (RFA) to determine if corrective action is necessary.

The first step in the RFA is the development of a Preliminary Review (PR) from all available documentation for a facility (including but not limited to all facility documents, Part A, and Part B of the permit application, TCEQ correspondence files and inspection reports, etc.). The PR compiles available information on every SWMU and/or AOC that has ever existed at the facility. A unit checklist is completed for each SWMU and/ or AOC. On a unit-by-unit basis, the PR may recommend no further action for:

- well-designed and well-managed units;
- units that have not managed hazardous wastes or wastes containing hazardous constituents;
- units already under corrective action by enforcement order; or
- units scheduled to be addressed in a compliance plan.

In addition, the unit checklists are summarized in a Facility Checklist. If there is a known release or potential for a release of hazardous waste or hazardous constituents from a unit/area, the PR may recommend a RCRA Facility Investigation (RFI), or an Affected Property Assessment (APA), if 30 TAC Chapter 350, Texas Risk Reduction Program (TRRP) applies, to determine the extent of the release for future corrective action, or stabilization as an appropriate and immediate corrective action.

The second step is a Visual Site Inspection (VSI) of the entire facility. The RFA is the combination of the PR and VSI documentation and any sample results. The RFA process should be scheduled so as to be completed during the latter stages of the Technical Review process or no later than one month in advance of the preparation of an initial draft permit for the facility. The RFA includes recommendations for whether further investigation or corrective action is warranted.

The requirements for an RFI or any other corrective action will be included in the permit, in the associated compliance plan which is mandatory for facilities with known groundwater contamination, or pursuant to 40 CFR 270.14(d)(3), the applicant may be required to start the RFI or other corrective action before the permit is issued. The RFI shall comply with all the applicable items contained in the U.S. EPA publication EPA/520-R-94-004, OSWER Directive 9902.3-2A, RCRA Corrective Action Plan (Final), May 1994, unless an alternate investigation approach is approved by the Executive Director. An RFI workplan may typically include a soil boring program, installation of monitoring wells, and sampling and analysis for 40

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<sup>5</sup>For the purposes of HSWA Corrective Action, a SWMU may include, but is not limited to, any landfill, surface impoundment, land treatment unit, waste pile, underground injection well, incinerator, boiler, industrial furnace, tank, container storage area, drip pad, containment building, miscellaneous unit; any units exempt from hazardous waste permitting requirements, such as wastewater treatment units, elementary neutralization units, totally enclosed treatment units, waste recycle/reuse units, and 90-day accumulation time units; or process units or areas which may have routine and/or systematic releases to the environment (e.g., process drainage ditches or product storage tanks).



CFR 261 Appendix VIII and 40 CFR 264 Appendix IX hazardous constituents for surface soils, subsurface strata, surface water, groundwater, and/or air.

The permittee shall perform the RFI or APA and report the results. Corrective Action under 30 TAC Chapter 350 consists of an APA, determination of protective concentration levels, selection of a remedy standard (if necessary), development and implementation of a response action (if necessary), and submittal of required report according to 30 TAC Chapter 350.

If the RFI report indicates releases of hazardous waste or hazardous constituents for SWMUs and/or AOCs that have been grandfathered under 30 TAC Chapter 335 Subchapters A and S, Corrective Action shall consist of, if necessary, Interim Corrective Measures, Baseline Risk Assessment (BLRA)/Corrective Measures Study (CMS) Report, and Corrective Measures Implementation (CMI).

For grandfathered SWMUs and/or AOCs, the permittee may continue to complete the Corrective Action requirements under 30 TAC Chapter 335, Subchapter A and S, provided the permittee complies with the notification and schedule requirements pursuant to 30 TAC 335.8 and 350.(2)(m).

This report shall evaluate the risk, identify and evaluate corrective measure alternatives, and recommend appropriate corrective measure(s) to protect human health and the environment. The BLRA/CMS Report shall address all of the applicable items in 30 TAC 350, 30 TAC 335 Subchapter S, and the U.S. EPA publication EPA/520-R-94-004, OSWER Directive 9902.3-2A, RCRA Corrective Action Plan (Final), May 1994.

Upon approval of the BLRA/CMS Report by the TCEQ, the permittee shall submit a CMI Workplan to address all of the items for CMI Workplan contained in the U.S. EPA publication EPA/520-R-94-004, OSWER Directive 9902.3-2A, RCRA Corrective Action Plan (Final), May 1994. For projects conducted under TRRP, the risk assessment process shall be addressed in the Affected Property Assessment Report (APAR), and the evaluation of corrective measures shall be conducted as part of the remedy standard selection process provided in the Response Action Plan (RAP). If the CMI or RAP does not propose a permanent remedy, then a CMI Workplan or RAP shall be submitted as part of a new compliance plan application or as a modification/amendment application to an existing compliance plan. The workplan or RAP shall contain detailed final engineering design, monitoring plans, and schedules necessary to implement the selected remedy. Implementation of the corrective measures shall be addressed through a new and/or a modified/amended compliance plan. Upon installation of a corrective action system based upon the approved CMI Workplan or RAP, the permittee shall submit a CMI Report or RAP which includes as-built drawings of the corrective action system. To report the progress of the corrective measures, the permittee shall submit periodic CMI Progress Reports or Response Action Effectiveness Reports to the TCEQ in accordance with the schedule specified in the compliance plan. Upon completion of the corrective action requirements, the permittee shall submit CMI Report or Response Action Completion Reports for review and approval.

Please note that the applicant/permittee may perform voluntary corrective action, stabilization, or “interim measures” at any time prior to or during the RFA/RFI/CMS/CMI or the APAR/RAP process without prior TCEQ approval. The TCEQ strongly supports these actions when undertaken to mitigate releases or reduce or minimize exposure and releases to human health and the environment.

#### A. Preliminary Review Checklists

For all facility SWMUs (as defined previously) and/or AOCs, complete the accompanying forms entitled “Preliminary Review Facility Checklist” and “Preliminary Review Unit Checklist”. Make additional copies as necessary. The following instructions are provided in same format as these forms:

### Preliminary Review Facility Checklist Instructions

Facility Checklist - On the form provided, supply the following information:

Fill out the information block at the top of the page (the reviewer space should remain blank for the TCEQ authorized agent).

Facility: \_\_\_\_\_ City: \_\_\_\_\_

ISW Reg. No: \_\_\_\_\_ Date: \_\_\_\_\_

Permit No: \_\_\_\_\_ Reviewer: \_\_\_\_\_

EPA ID No: \_\_\_\_\_

#### Waste Management Units:

1. RCRA Regulated Units: List all units that received hazardous wastes after July 26, 1982 or for which closure was certified after January 26, 1983 with the appropriate information under the three provided column headings as explained in the Unit Checklist instructions. [40 CFR 264.90(a)(2)]
2. Solid Waste Management Units, and/or Areas of Concern (AOC): List all remaining SWMUs and/or AOCs.

#### Reviewed Documents:

1. Enter the appropriate information for sub-items 1-6, including document dates (item 6 should include company files).

#### Summary:

1. Provide an overall summary of the results of this Preliminary Review noting units and areas of concern.

#### Recommended Actions:

1. Summarize the Unit Checklist Recommended Actions and list those units recommended for further investigation including appropriate Unit No.

**Preliminary Review Unit Checklist Instructions (Continued)**

Unit Checklist - On the form provided, supply the following information for EACH unit or area of concern:

- A. Waste Management Unit: Enter SWMU and/or AOC name and facility designated number (e.g., Tank 101)
- B. N.O.R. No.: enter TCEQ Notice of Registration (N.O.R.) Number or, if unassigned, a letter designation (i.e., A-Z)
- C. Description: enter type of unit (e.g., above-grade processing tank) and Process Code as listed below:

**Process Types Table**

Process Code	Unit Type	Process Code	Unit Type
	Disposal	T82	Lime Kiln
D79	Injection Well	T83	Aggregate Kiln
D80	Landfill	T84	Phosphate Kiln
D81	Land Application	T85	Coke Oven
D83	Surface Impoundment - Disposal	T86	Blast Furnace
D99	Other Disposal	T87	Smelting, Melting, or Refining Furnace
	Storage	T88	Titanium Dioxide Chloride Process Oxidation Reactor
S01	Container	T89	Methane Reforming Furnace
S02	Tank - Storage	T90	Pulping Liquor Recovery Furnace
S03	Waste Pile	T91	Combustion Device Used in Recovery of Sulfur Values from Spent Sulfuric Acid
S04	Surface Impoundment - Storage	T92	Halogen Acid Furnace
S05	Drip Pad	T93	Other Industrial Furnaces Listed in 40 CFR 260.10
S06	Containment Building - Storage	T94	Containment Building - Treatment
S99	Other Storage		Miscellaneous (Subpart X)
	Treatment	X01	Open Burning/Open Detonation
T01	Tank - Treatment	X02	Mechanical Processing
T02	Surface Impoundment - Treatment	X03	Thermal Unit
T03	Incinerator	X04	Geologic Repository
T04	Other Treatment	X99	Other Subpart X
T80	Boiler		
T81	Cement Kiln		

- D. Dates of Operation: enter the date the unit was placed into service and any other dates the unit changed status (active, inactive, closed, post-closure) with the appropriate status designation.
- E. Wastes Managed:  
List all solid wastes ever managed in the unit and include the TCEQ NoR waste #, EPA Hazard Codes, and EPA waste codes. For each waste, list any hazardous constituent listed in 40 CFR 261 Appendix VIII and 264 Appendix IX, as appropriate.
- F. Evidence of Release:  
Completely describe the release, including time frame, waste amount, to what media, and any corrective measures taken.
- G. Pollutant Dispersal Pathways:  
Completely describe the possible and actual run-off pathways (i.e., to which tributary, creek, river, and bay or through subsoil to which aquifer with groundwater flow gradient, speed, and direction and any discharge point).
- H. Summary:  
Provide complete unit description including unit type, elements of construction, location, age, condition, dimensions, size, capacity (i.e., gallons, square feet, cubic yards, etc.), and potential for release.
- I. Recommended Action:  
Recommend No Further Action, Stabilization (interim measures), or Further Investigation and justify. Note, corrective action under another authority is justification for No Further Action.

**Preliminary Review Unit Checklist**

Facility: \_\_\_\_\_ City: \_\_\_\_\_

ISW Reg No: \_\_\_\_\_ Date: \_\_\_\_\_

Permit No: \_\_\_\_\_ Reviewer: \_\_\_\_\_

EPA ID No: \_\_\_\_\_

- A. Waste Management Unit:
- B. NoR No:
- C. Description:
- D. Dates of Operation:
- E. Wastes Managed:
- F. Evidence of Release:
- G. Pollutant Dispersal Pathways:
- H. Summary:
- I. Recommended Action:



## B. Appendices to Preliminary Review (PR)

The PR should also include Appendices I-IV to correspond to the Roman numerals in the Unit Checklist:

### Appendix I. FACILITY and SWMU LOCATION MAPS

- Regional Location Map
- Site Location Map
- Facility SWMU Map - Use the Notice of Registration (NoR) number to show the location of each unit on a replicate of the topographic map required in Section V.A.1 of this application. Also, please note that the term “facility” includes the entire contiguous property under the control of the owner or operator, which in most cases is the area shown as the legal description of the site in the facility’s Part A permit application.

### Appendix II. WASTES MANAGED

- List all wastes managed and 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX hazardous constituents. Provide pertinent health, safety, and risk data on each.

### Appendix III. EVIDENCE of RELEASE

- Provide any applicable documentation on a release. Provide a map of release locations, SWMU identification, and paths traveled.

### Appendix IV. POLLUTANT DISPERSAL PATHWAYS

- Provide a facility, local, and regional map identifying all possible and eventual pathways in which a release from any unit could or did travel. Provide a facility general cross-section to illustrate vertical pathways and lateral movements in groundwater, including discharges (i.e., seeps, creeks, etc.).

## C. Preliminary Review Submittal Format

The PR should be bound with a cover page and contain a Table of Contents with the Facility Checklist entered first followed by all the Unit Checklists in unit NoR numerical order and alphabetical order.