Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: August 9, 2024
Facility Name: Ascend Performance Materials Texas Inc.
Permit or Registration No.: 50189

Nature of Correspondence:
☒ Initial/New
☐ Response/Revision to TCEQ Tracking No.: _____ (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

Applications	Reports and Notifications
☐ New Notice of Intent	☐ Alternative Daily Cover Report
☐ Notice of Intent Revision	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Compost Report
☐ New Registration (including Subchapter T)	☐ Groundwater Alternate Source Demonstration
☐ Major Amendment	☐ Groundwater Corrective Action
☐ Minor Amendment	☐ Groundwater Monitoring Report
☐ Limited Scope Major Amendment	☐ Groundwater Background Evaluation
☐ Notice Modification	☐ Landfill Gas Corrective Action
☐ Non-Notice Modification	☐ Landfill Gas Monitoring
☐ Transfer/Name Change Modification	☐ Liner Evaluation Report
☐ Temporary Authorization	☐ Soil Boring Plan
☐ Voluntary Revocation	☐ Special Waste Request
☐ Subchapter T Disturbance Non-Enclosed Structure	☐ Other:
☐ Other:	

Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
☐ New	☐ Annual/Biennial Site Activity Report
☒ Renewal	☐ CPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☐ CCR Registration	☐ Extension Request
☐ CCR Registration Major Amendment	☐ Groundwater Monitoring Report
☐ CCR Registration Minor Amendment	☐ Interim Status Change
☐ Class 3 Modification	☐ Interim Status Closure Plan
☐ Class 2 Modification	☐ Soil Core Monitoring Report
☐ Class 1 ED Modification	☐ Treatability Study
☐ Class 1 Modification	☐ Trial Burn Plan/Result
☐ Endorsement	☐ Unsaturated Zone Monitoring Report
☐ Temporary Authorization	☐ Waste Minimization Report
☐ Voluntary Revocation	☐ Other:
☐ 335.6 Notification	
☐ Other:	

GSI Job No. 6932

9 August 2024

Manisha Poudyal
IHW Permits Section, MC-130
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, TX 78753

Re: RCRA Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas
Hazardous Waste Permit No. 50189

Dear Ms. Poudyal,

On behalf of Ascend Performance Materials Texas Inc. (Ascend), GSI Environmental Inc. (GSI) is submitting this renewal application for Hazardous Waste Permit No. 50189. Please find enclosed an original, one hard copy, and one electronic copy of the application materials requested by the TCEQ application materials as summarized below:

- Form TCEQ-20960 (Public Involvement Plan Form);
- Pre-printed mailing labels for adjacent landowners;
- Form TCEQ-0283 (Part A Application) and associated documents; and
- Form TCEQ-00376 (Part B Application) and associated documents.

Should you have any questions concerning this renewal application, please contact either Kevin Adams of Ascend at [redacted] or 281-228-4975 or me at [redacted] or 832-721-6595.

Sincerely,

James “Jim” McDade, P.E.
Vice President & Principal Engineer

cc: Kevin Adams, Ascend

HAZARDOUS WASTE PERMIT RENEWAL APPLICATION
VOLUME 1

Hazardous Waste Permit No. 50189

Issued: **9 August 2024**

Prepared for: **Ascend Performance Materials Texas Inc.**
Alvin, Texas

Prepared by: **GSI ENVIRONMENTAL INC.**
2211 Norfolk Street, Suite 1000
Houston, Texas 77098
713.522.6300
www.gsienv.com

GSI Job No.: **6932**

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

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Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

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GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part A Application

Contents

- Part A Application Form with Signature Page
- Part A, Attachment A: Core Data Form
- Part A, Attachment B: Site Legal Description
- Part A, Attachment C: Facility Boundaries and Adjacent Waters Maps
- Part A, Attachment D: Photographs
- Part A, Attachment E: Process Flow Diagram / Description

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part A Application Form with Signature Page

Texas Commission on Environmental Quality
Instructions and Procedural Information
for Filing a Permit Application for a
Hazardous Waste Storage, Processing, or Disposal Facility

Part A

[**Form Availability**: This form, along with other Industrial and Hazardous Waste documents, is available online at:
https://www.tceq.texas.gov/permitting/waste_permits/ihw_permits/ihw_permit_forms.html.
The number for this form is 0283. Questions may be e-mailed to [redacted]

General Instructions

1. A person (individual, corporation or other legal entity) who stores, processes or disposes of hazardous waste (except where such storage and/or processing is excluded from permit requirements in accordance with 30 Texas Administrative Code (TAC) Section 335.2) must obtain a permit pursuant to the Texas Health and Safety Code. In applying to the Texas Commission on Environmental Quality, hereafter referred to as the Commission, the applicant shall follow the procedures outlined below, on the application and in the Rules of the Commission.

2. The application (one original plus three (3) complete copies[1]) should be mailed to:

   Texas Commission on Environmental Quality
   Attention: Waste Permits Division, MC126
   P. O. Box 13087
   Austin, Texas 78711-3087

   Note: TCEQ will publish electronic copies of the application and associated documents online. Applicants must provide copy of the administratively complete application and technically complete application. The electronic copy provided would be the current, complete version with revisions and replacements made throughout the document and without redline/strikeout text. TCEQ will also publish electronic versions of NOD responses online.

3. Signature on Application [30 TAC 305.44]. The application shall be signed by the owner and operator or by a duly authorized agent, employee, officer, or representative of the owner or operator and shall be verified before a notary public. When another person signs on behalf of the owner and operator, this person's title or relationship to the owner or operator should be shown. In all cases, the person signing the form should be

[1] The third copy may optionally consist of paper copies of all plans and maps and a computer diskette of the remaining document. The document should be formatted in Word processing software up to and including version 6.1 or a 100% compatible format. Files may be compressed using PKZIP Ver. 2 or a 100% compatible program.

authorized to do so by the owner or operator (the Commission may require a person signing on behalf of an owner or operator to provide proof of authorization). An application submitted for a corporation must be signed by (or the signatory must be authorized by) a responsible corporate officer such as a president, secretary, treasurer, vice-president, or designated manager; or for a partnership or sole proprietorship, by a general partner or the proprietor, respectively. In the case of a municipal, state, federal, or other public facility, the application shall be signed by either a principal executive officer or ranking elected official.

4. An application will not be processed until all information required to properly evaluate the application has been obtained. When an application is severely lacking in detail and/or the applicant fails to submit additionally requested information in a timely manner, the application will not be considered to be "filed in accordance with the rules and regulations of the Commission."

   Please submit any application revisions with a revised date and page numbers at the bottom of the page(s).

5. Fees and Costs

   a. The fee for filing an application is discussed in Section XII of Part B, form number TCEQ-0376.

   b. The applicant for a permit is required to bear the cost of publication of notice of the application in a newspaper as prescribed by 30 TAC Section 39.405(f).

6. A person may not commence operation of a hazardous waste management facility until the Commission has issued a permit to authorize the storage, processing, or disposal of hazardous waste, except with the approval of the Commission.

7. Designation of Material as Confidential

   The designation of material as confidential is frequently carried to excess. The Commission has a responsibility to provide a copy of each application to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the Commission requests that the applicant (1) be prudent in the designation of material as confidential and (2) submit such material only when it might be essential to the staff in their development of a recommendation.

   The Commission suggests that the applicant NOT submit confidential information as part of the permit application. However, if this cannot be avoided, the confidential information should be described in non-confidential terms throughout the application, and submitted as a document or binder, and conspicuously marked "CONFIDENTIAL."

   Reasons of confidentiality include the concept of trade secrecy and other related legal concepts which give a business the right to preserve confidentiality of business information to obtain or retain advantages from its right in the information. This includes authorizations under 18 U.S.C. 1905 and special rules cited in 40 CFR Chapter I, Part 2, Subpart B.

   Section 361.037 of the Texas Health and Safety Code does not allow an applicant for an industrial and hazardous waste permit to claim as confidential any record pertaining to the characteristics of the industrial solid waste.

   The applicant may elect to withdraw any confidential material submitted with the application. However, the permit cannot be issued, amended, or modified if the application is incomplete.

Part II

Procedural Information

After the submittal of Parts A and B of the application, the TCEQ will provide public notice of receipt of the application. The Executive Director's staff will review the application for completeness of information submitted. During the review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, the application or a summary of its contents will be forwarded for review by other state agencies and local governmental entities interested in water quality control and solid waste management. After technical evaluation, opportunity for public hearing will be afforded.

Note that for facilities which had "commenced on-site storage, processing, or disposal of hazardous waste" [see 30 TAC Section 335.43(b)] on or before the date such waste is identified or listed as hazardous by EPA, the Texas Health and Safety Code provides in Section 361.082(f) that these facilities may continue to manage hazardous waste until such time as the Commission approves or denies the application, provided that the applicant has filed the permit application in accordance with the rules and regulations of the Commission.

The Commission may act upon an application for a permit, permit amendment, permit modification, or renewal of a permit without the necessity of holding a public hearing:

1. (a) When notice of the application has been mailed to persons possibly affected by the proposed permit; and

   (b) When notice has been published at least once in a newspaper regularly published or circulated within each county where the proposed facility is located; and

   (c) Within forty-five (45) days following publication of the Commission's notice, a Commissioner, the Executive Director or an affected person has not requested a public hearing; or

2. For a Class 1 or a Class 2 permit modification or a minor amendment to a permit. The Commission may, in certain cases, hold a public hearing for a Class 2 permit modification or a minor amendment.

A public hearing may be scheduled on an application for a RCRA hazardous waste permit when requested by a Commissioner, the Executive Director, or an affected person within forty-five (45) days following the newspaper publication.

Requirements of Giving Notice of the Application:

1. By the Applicant: Every applicant for a permit, permit amendment, permit modification, or permit renewal shall publish notice (see note below) of the application at least once in a newspaper regularly published or circulated within each county where the proposed facility is located. Where a public hearing has been requested, notice will be mailed to the applicant in ample time for publication, which shall be not less than thirty (30) days prior to the date set for the hearing. Except in the case of a notice of a permit modification request, the Commission will mail the appropriate notice and instructions for publication to the applicant.

   NOTE: Additional publication and direct mail notice to affected persons will result if a public hearing is requested following newspaper publication of the notice of application. The cost of providing this additionally required publication and service of notice to affected persons will be assumed by the applicant.

2. By the Texas Commission on Environmental Quality: The Commission will mail notice of

the application (except for permit modifications) to affected persons and certain governmental entities. The notice will be mailed at the same time instructions for newspaper publications are mailed to the applicant.

3. Bilingual Notice Instructions:

   For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location to satisfy the school's obligation to provide such a program.

   If it is determined that a bilingual notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

Bilingual Notice Application Form:

Bilingual notice confirmation for this application:

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

   ☒YES ☐ NO

   (**If NO**, alternative language notice publication not required)

2. **If YES** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ☒ YES ☐ NO

   (**If YES** to questions 1 and 2, alternative language publication is required; **If NO** to question 2, then consider the next question)

3. **If YES** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location?

   ☐ YES ☐ NO

   (**If Yes** to questions 1 and 3, alternative language publication is required; **If NO** to question 3, then consider the next question)

4. **If YES** to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC 89.1205(g)?

   ☐ YES ☐ NO

(**If Yes** to questions 1 and 4, alternative language publication is required; **If NO** to question 4, alternative language notice publication not required)

If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program? **Spanish**

Consideration of the Permit Application by the Commission:

The applicant will be notified by the Commission when the application is set for final consideration. If the Commission issues the permit, the applicant will be mailed a copy of the permit by the TCEQ Office of the Chief Clerk within one (1) month following Commission approval. (NOTE: Only one copy is mailed to the applicant and that copy will be sent to the official mailing address of the applicant as shown on the permit application form.)

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

I. General Information

1. Facility Name: **Ascend Performance Materials Chocolate Bayou Plant**

(Individual, Corporation, or Other Legal Entity Name)

TCEQ Solid Waste Registration No: **30318** EPA I.D. No.: **TXD001700806**

Street Address (If Available): **6610 FM 2917**

City: **Alvin**, State: **Texas** Zip Code: **77511**

County: **Brazoria**

Telephone Number: **281-228-4000** Charter Number: **801573626**

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.

2. 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. Kevin Adams
Environmental Manager
P.O. Box 711
Alvin, Texas 77512-0711
281-228-4975
[redacted]

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.

Corporation Service Company
dba CSC-Lawyers Incorporating Service Co.
211 East 7th Street, Suite 620
Austin, Texas 78701

3. Operator[2]: Identify the entity who will conduct facility operations.

Operator Name: **Ascend Performance Materials Texas Inc.**

Address: **6610 FM 2917**

[2] 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 this application [Section 361.087 Texas Health and Safety Code].

City: **Alvin**, State: **Texas** Zip Code: **77511**

Telephone Number: **281-228-4000** Charter Number: **801573626**

4. Owner

    1. Indicate the ownership status of the facility:

        a. Private ___**X**___

            (1) ___**X**___Corporation
            (2) _____Partnership
            (3) _____Proprietorship
            (4) _____Non-profit organization

        b. Public _____

            (1) _____Federal
            (2) _____Military
            (3) _____State
            (4) _____Regional
            (5) _____County
            (6) _____Municipal
            (7) _____Other (specify)

    2. Does the operator own the facility units and facility property?

        ☒ Yes ☐ No

        If you checked "no",

        a. Submit as "Attachment A" a copy of the lease for use of or the option to buy said facility units and/or facility property, as appropriate; and

        b. Identify the facility units' owner(s) and/or facility property owner(s). Please note that the owner(s) is/are required to sign the application on page 5.

    Owner Name: ___**Same as Operator**_____

    Address: _____

    City: _____, State: _____ Zip Code: _____

    Telephone Number: _____

    Owner Name: _____

    Address: _____

    City: _____, State: _____ Zip Code: _____

    Telephone Number: _____

5. Type of Application Submittal:

Initial _____ or Revision __**X (renewal application)**_____

6. Registration and Permit Information

Indicate (by listing the permit number(s) in the right-hand column below) all existing or pending State and/or Federal permits or construction approvals which pertain to pollution control or industrial solid waste management activities conducted by your plant or at your location. Complete each blank by entering the *permit number*, or the *date of application*, or *"none"*.

	Relevant Program and/or Law	Permit No.	Agency*
1.	Texas Solid Waste Disposal Act	**30138**	**TCEQ**
2.	Wastewater disposal under the Texas Water Code	**WQ0000001000**	**TCEQ**
3.	Underground injection under the Texas Water Code	**WDW-013** **WDW-224** **WDW-318** **WDW-326** **WDW-359**	**TCEQ**
4.	Texas Clean Air Act		
	NTA Facility	**R-2271**	**TCEQ**
	Diphenyl Oxide Facility	**R-3046**	**TCEQ**
	Formalin Blend Tank TK-83T8	**R-5065**	**TCEQ**
	Iminodiacetic Acid Unit	**R-5084**	**TCEQ**
	Linear Alkyl Benzene Mfg. Unit	**R-6534**	**TCEQ**
	Methionine Hydroxy Analog Unit	**R-8372**	**TCEQ**
	Acrylonitrile Mfg. Unit AN 2/3	**R-18251**	**TCEQ**
	Acrylonitrile Mfg. Unit AN 7	**38336**	**TCEQ**
	Formalin Unit	**R-32151**	**TCEQ**
	DIST Loading	**R-39171**	**TCEQ**
	DIST Product Storage	**R-38998**	**TCEQ**
	Title V Permits		
	Formalin	**O-2322**	**TCEQ**
	AN 2/3	**O-2321**	**TCEQ**
	AN 7	**O-2324**	**TCEQ**
	DIST	**O-2323**	**TCEQ**
	DPO	**O-2317**	**TCEQ**
	DPO Vent Line	**S-77079**	**TCEQ**
	DSIDA	**O-2318**	**TCEQ**
	ECU	**O-2325**	**TCEQ**
	LAB	**O-2319**	**TCEQ**
	MHBA	**O-2320**	**TCEQ**
	NTA	**O-1258**	**TCEQ**
	Other Air Permits		
	Cooling Towers CT3 and CT-4	**R-48895**	**TCEQ**
	IWPF Settlers	**SE-34029**	**TCEQ**
	Methanol Storage	**2260**	**TCEQ**
	Butadiene/MTBE	**2261**	**TCEQ**
	Barge Loading	**28694**	**TCEQ**
	Paint Yard	**72689**	**TCEQ**
	Lab Barge Loading	**73707**	**TCEQ**
	Formalin	**74040**	**TCEQ**
	Separations & Product Storage Header	**76211**	**TCEQ**

ECU Unit	**78148**	**TCEQ**
PST Registration	**79885**	**TCEQ**
Ammonia pH Control	**80379**	**TCEQ**
Storage Tank NOS	**80616**	**TCEQ**
Linear Alkyl Benzene Unit	**89881**	**TCEQ**
Organic Chemical Mfg.	**91873**	**TCEQ**
Tank 320T504	**91882**	**TCEQ**
New Heat Transfer Fluid	**91883**	**TCEQ**
Lab Mfg. Unit	**92085**	**TCEQ**
Organic Chemical Mfg.	**93222**	**TCEQ**
Sludge Removal	**94736**	**TCEQ**
Storage Change of Service	**96419**	**TCEQ**
Emissions Increase-Tank 320T831	**101954**	**TCEQ**
Ammonia Component Count Increase	**132844**	**TCEQ**
Additional Fugitive Components	**136585**	**TCEQ**
PBR Registration	**143503**	**TCEQ**
PBR Registration	**148851**	**TCEQ**
PBR Registration	**153161**	**TCEQ**
PBR Registration	**153725**	**TCEQ**
PBR Registration	**154885**	**TCEQ**
PBR Registration	**156045**	**TCEQ**
AN 2/3 Recovery Column Replacement	**156964**	**TCEQ**
AFS Num	**4803900009**	**TCEQ**
Operations	**BL0038U**	**TCEQ**
AN 7 Mfg.	**N011**	**TCEQ**

5. Texas Uranium Surface Mining & Reclamation Act	**None**	**None**
6. Texas Surface Coal Mining & Reclamation Act	**None**	**None**
7. Hazardous Waste Management program under the Resource Conservation and Recovery Act	**50189**	**TCEQ**
8. UIC program under the Safe Drinking Water Act	**WDW-013** **WDW-224** **WDW-318** **WDW-326** **WDW-359**	**TCEQ**
9. TPDES program under the Clean Water Act	**WQ0000001000**	**TCEQ**
10. PSD program under the Clean Air Act	**PSD-TX-910**	**EPA**
11. Nonattainment program under the Clean Air Act	**None**	**None**
12. National Emission Standards for Hazardous Pollutants (NESHAP) Pre-construction approval under the Clean Air Act	**None**	**None**
13. Ocean dumping permits under		

the Marine Protection Research and Sanctuaries Act	**None**	**None**
14. Dredge or fill permits under section 404 of the Clean Water Act	**04817-07**	**Corps**

Other relevant environmental permits

Radioactive Materials License	**RW0219**	**TCEQ**
Radioactive Material License	**L06630**	**TDH**
Stormwater	**TXR05BQ25**	**TCEQ**
Public Water System ID	**00200049**	**TCEQ**
Pollution Prevention Planning	**P07121**	**TCEQ**
Pollution Prevention Planning	**P07123**	**TCEQ**
Wastewater	**TX0003875**	**EPA**

*Use the following acronyms for each agency as shown below:

TCEQ	= Texas Commission on Environmental Quality
TRC	= Texas Railroad Commission
TDH	= Texas Department of Health
TDA	= Texas Department of Agriculture
EPA	= U.S. Environmental Protection Agency
CORPS	= U.S. Army Corps of Engineers

7. Give a brief description of the nature of your business.

   Current plant operations include the manufacture of chemical feedstocks and intermediates in the following manufacturing units: Acrylonitrile (AN), Diphenyl Oxide (DPO), Formalin, Iminodiacetic Acid (IDA), Methionine Hydroxy Butanoic Acid (MHBA), Nitrilotriacetic Acid (NTA), Linear Alkyl Benzene (LAB), and Sodium Cyanide (NaCN).

8. TCEQ Core Data Form

   The TCEQ requires that a Core Data Form (Form 10400) be submitted on all incoming applications. For more information regarding the Core Data Form, call (512) 239-1575 or go to the TCEQ website at http://www.tceq.texas.gov/permitting/central_registry/guidance.html.

   See Attachment A – Core Data Form

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: _____ Date: _____

Name and Official Title (type or print): **Greg Blanchard, Senior Site Director**

Operator Signature: Greg Blanchard Date: 9-4-24

Name and Official Title (type or print): _____

Operator Signature: _____ Date: _____

Name and Official Title (type or print): _____

Owner 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 Greg Blanchard on this 4th day of September, 2024.

My commission expires of the 11th day of March, 2026

JENNIFER KATHLEEN FLOWERS
Notary ID #7796254
My Commission Expires
March 11, 2026

Jennifer Flowers
Notary Public in and for Brazoria County, Texas

II. Facility Background Information

1. Location of Facility for which the application is submitted

    1. Give a description of the location of the facility site with respect to known or easily identifiable landmarks.

        The Ascend Performance Materials Chocolate Bayou Plant is located on FM 2917, approximately 11 miles southeast of the city of Alvin in Brazoria County, Texas. The plant is approximately 35 miles south of Houston, Texas.

    2. Detail the access routes from the nearest U.S. or State Highway to the facility.

        Access to the Ascend Chocolate Bayou Plant is provided by an entrance road with a marker. The Plant entrance road intersects FM 2917 which connects to FM 2004 approximately 2 miles southeast of the Plant. FM 2917 intersects State Highway 35 approximately 7 miles northwest of the Plant.

    3. Enter the geographical coordinates of the facility:

        Latitude: ___**29**___ deg __**15**___ min ___**21**___ sec

        Longitude: __**95**___ deg __**12**_____ min __**37**___ sec

    4. Is the facility located on Indian lands?

        ☐ Yes ☒ No

2. Legal Description of Facility

    Submit as "Attachment B" a legal description(s) of the tract or tracts of land upon which the waste management operations referred to in this permit application occur or will occur. Although a legal description is required, a metes and bounds description is not necessary for urban sites with appropriate "lot" description(s). A survey plat or facility plan drawing which shows the specific points referenced in the survey should also be included in Attachment B.

    See Attachment B.

3. SIC Codes

    List, in descending order of significance, the four digit standard industrial classification (SIC) codes which best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the hazardous wastes.

4-digit SIC Code	Description
2869	**Industrial Organic Chemicals, Not Elsewhere Specified**

    SIC code numbers are descriptions which may be found in the Standard Industrial Classification Manual prepared by the Executive Officer of the President, Office of Management and Budget, which is available from the Government Printing Office,

Washington, D.C. Use the current edition of the manual.

III. Wastes and Waste Management

1. Waste Generation and Management Activities

Is any hazardous waste [see Title 40, Code of Federal Regulations (CFR), Part 261] presently or proposed to be generated or received at your facility?

☒ Yes ☐ No

If no, skip to question Number 2 below.

If yes, answer the following question.

1. Are you presently registered with TCEQ as a solid waste generator?

☒ Yes ☐ No ☐ Pending

If no, contact the Industrial and Hazardous Waste Division of TCEQ in Austin, Texas to obtain registration information. Also, continue with the application form (go to Number 2 below).

If yes, go to Section I of your TCEQ Notice of Registration, determine which of your wastes are hazardous, and list these wastes (and mixtures) in Table III-1 (see Number 2 below).

2. Complete Table III-1, Hazardous Wastes and Management Activities, below, listing all hazardous wastes, all mixtures containing any hazardous wastes, and hazardous debris which were, are presently, or are proposed to be handled at your facility in interim status or permitted units. See 40 CFR 261 and 268.2, attaching additional copies as necessary.

Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes, TCEQ publication RG-22, contains guidance on how to properly classify and code industrial waste and hazardous waste in accordance with 30 TAC 335.501-335.515 (Subchapter R).

If you are not registered with TCEQ, enter "NA" for TCEQ Waste Code Number.

For the EPA Hazardous Waste Numbers, see 40 CFR 261.20-33. For annual quantity, provide the amount in units of pounds (as generated and/or received) for each waste and/or waste mixture.

2. Waste Management Units Summary

1. For each waste and waste mixture listed in Table III-1 that is stored, processed, and/or disposed on-site (except where such storage and/or processing is excluded from permit requirements in accordance with Texas Administrative Code (TAC) Section 335), complete Table III-2, Hazardous Waste Management Unit Checklist, and enter the name of each hazardous waste management unit (Note: Please make copies of Table III-2 if necessary).

Give the design capacity of each hazardous waste management unit in any of the units of measure shown. In the case of inactive or closed units for which

design details are unavailable, an estimate of the design capacity is sufficient.

Please provide a description for each waste management unit described in your own words on the line provided for "Waste Management Unit."

2. Has the applicant at any time conducted the on-site disposal of industrial solid waste now identified or listed as hazardous waste?

   ☒ Yes ☐ No

   If yes, complete Table III-2 indicating the hazardous waste management units which were once utilized at your plant site but are no longer in service (i.e., inactive or closed facility units).

   If no, and if no hazardous waste is presently or proposed to be stored [for longer than 90 days (see 30 TAC Section 335.53)], processed, or disposed of at your facility, then you need not file this permit application. Otherwise proceed with the application form.

3. Provide an estimate of the total weight (lbs) of hazardous waste material that has been disposed of and/or stored within your site boundaries and not removed to another site.

3. Location of Waste Management Units

   1. Submit as "Attachment C" a drawn-to-scale topographic map (or other map if a topographic map is unavailable) extending one mile beyond the facility boundaries, depicting the following:

      a. The approximate boundaries of the facility (described in Section II.B) and within these boundaries, the location and boundaries of the areas occupied by each active, inactive, and proposed hazardous waste management unit (see Table III-2). Each depicted area should be labeled to identify the unit(s), unit status (i.e., active, inactive, or proposed), and areal size in acres.

      b. The overall facility and all surface intake and discharge structures;

      c. All on-site injection wells where liquids are injected underground;

      d. All known monitor wells and boreholes within the property boundaries of the facility; and

      e. All wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within the map area and the purpose for which each water well is used (e.g., domestic, livestock, agricultural, industrial, etc.).

   2. Submit as "Attachment D" photographs which clearly delineate all hazardous waste management storage, processing, and disposal units, as well as sites of future storage, processing and disposal units.

4. Flow Diagram/Description

   Show as "Attachment E" process flow diagrams and step-by-step word descriptions of the process flow, depicting the handling, collection, storage, processing, and/or

disposal of each of the hazardous wastes previously listed in this application.

The flow diagrams or descriptions should include the following information:

1. Originating point of each waste and waste classification code;
2. Means of conveyance utilized in every step of the process flow;
3. Name and function of each facility component through which the waste passes;
4. The ultimate disposition of all wastes (if off-site, specify "off-site") and waste residues.

IV. Index Of Attachments

List and index below all attachments to this application and indicate if included or not included:

Item	Attachments	Attachment	Included	Not Included
I.D.2.a	Lease/Option to buy	A		**X**
II.B	Site legal description	B	**X**	
III.C.1	Facility boundaries and adjacent waters map	C	**X**	
III.C.2	Photographs	D	**X**	
III.D	Process flow diagram/description	E	**X**	

Table III-1 – Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	219H	D002, D003, D007, D010, D018, D038, K011, K013, K014 F003, F039				X	X	X	150,215
Pumpable catalyst sludge from wastewater stripper	609H	K011, K014				X	X	X	18.2
AN wastewater column bottoms stream, continuous	102H	K011				X	X	X	740,861
AN stripper column bottoms stream, continuous	102H	K013				X	X	X	1,589,250
AN stripper column overheads	212H	D003, D018				X	X	X	Sporadic
HCN By-product stream.	212H	D001, D003, D018				X	X	X	1,781
AN wastewater column bottoms,stripper, quencher stripper and re-run column bottoms-AN-2, AN-3, AN-7	102H	K011, K013, K014				X	X	X	Sporadic

[1] "Storage" means the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, or stored elsewhere.

[2] "Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of hazardous waste, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste non-hazardous or less hazardous; safer for transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The "transfer" of solid waste for reuse or disposal as used above, does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the Executive Director determines that regulation of such activity is necessary to protect human health or the environment, the definition of "processing" does not include activities relating to those materials exempted by the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq., as amended.

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Hazardous solids resins or polymerized organics	403H	D001, D002, D003, D004, D005, D007, D018, D038, F003, F039				X		X	7.7
Soil contaminated with organics. Sporadic waste.	301H	D002, D018, D026, D035, F039, K011, K013, K022, P063, U019, U134, U188, U220				X		X	Sporadic
Contaminated inorganic debris mixed with catalyst	319H	D002, D004, D005, D006, D007, D008, D010, D018, K011, K013, K014, F003, F005, F039				X		X	0.03, Sporadic
Soil contaminated with inorganics only.	302H	K011, K013, K014				X		X	Sporadic
Hazardous asbestos solids and debris.	311H	D002, D018				X		X	Sporadic
Refractory, fire brick, ash, slag, or other residue from incineration of wastes	303H	D003, P063				X	X	X	3
Foam pigs, cotton spill pads, cotton filters, snakes, spill clean up material, spill contaminated debris, contaminated filter elements, and other miscellaneous debris	319H	D002, D003, D018, F003, P063, U053, U154, U161, U220				X	X	X	0.4, Sporadic

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Inorganic wastewater from loading arm disconnects, decontamination, spill cleanup, pad runoff, groundwater monitoring wells, surplus and/or out-dated hazardous inorganic chemicals and products, etc. activities (low suspended inorganic solids and low organic content)	119H	D002, D003, D004, D005, D018, D038, F003, F005, F039				X	X	X	52.4
Contaminated product material	119H	D002, D018				X	X	X	1.2
Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	102H	D002, U009, U019, U154, U188				X	X	X	8.4
Inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	105H	D002, D003, D004, D005, D007, D018, D038, F003, F039				X	X	X	890
Pickling for equipment in HCN service.	105H	D002				X	X	X	Sporadic
Pumpable hazardous sludge waste	609H	D002, D003, D004, D007, D018, K011, K013, K014, F003, F039				X	X	X	Sporadic
Contaminated oil-water emulsion or mixture with low inorganic solids content and low-to-moderate water content	205H	D001, D002, D003, D004, D005, D007, D010, D018, D038, K011, K013, K014, F003, F005, F039				X	X		Sporadic

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	114H	D018, K011, K013, K014, F039				X	X	X	Sporadic
Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	219H	D002, D003, D007, D010, D018, D038, K011, K013, K014, F003, F039				X	X	X	3,061,046
Corrosive organic wastewater from loading/unloading activities, spills and drips (low suspended inorganic solids and low-to-moderate water content)	219H	D002				X		X	1.5
Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	102H	D002, D003, D004, D005, D018, D038, F003				X	X	X	26,182
Combined acidic wastewater from chemical mfg. process to deepwell injection. on going generation.	105H	D002, D003, D004, D005, D007, D018, D038, F003, F039, P003, P030, P063, P106, U002, U003, U009, U019, U080, U122, U123, U135, U161, U188				X	X	X	347,406

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Contaminated organic solids (with low-to-moderate inorganic content and water content; not pumpable)	409H	D001, D002, D003, D004, D005, D007, D010, D018, D038, K011, K013, K014, P003, P030, P063, P106, U002, U003, U009, U019, U022, U080, U122, U123, U135, U154, U161, U188, F003, F039				X			6, Sporadic
Landfill leachate	116H	F039				X	X	X	638
Debris from G/W wells operations. Debris include bailers, buckets, PPEs, jars,etc.	319H	F039				X	X	X	Sporadic
Mixed stream of inorganic liquids with high cyanides Contents (Up to 2%) and some benzene (up to 40 ppm) and sulfer dioxide as an inhibitor of cyanide hydrogenpolymerization (pH less than 2).	102H	D002, D003, D018				X	X	X	73
Mixed stream of inorganic liquids with high organic contents (IDAN/MBIDAN up to 25%) cyanides contents (up to 0.5%) and some benzene (up to 10 ppm).	119H	D003, D018				X	X	X	0.9
Corrosive inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	105H	D002				X	X	X	Sporadic

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Industrial wastewater from MHBA Raffinate Stripper Bottoms (RSB)	105H	D002, D018, D038				X	X	X	Sporadic
Wastewater from equipment decontamination	102H	D002, F003				X	X	X	304
Soil contaminated with organics	301H	D002, D005, D007, D008, D018, D026, D035, D038, K011, K013, K014, F003, F039				X		X	4.5
Spent carbon	404H	D002, D018, D038, K011, K013, K014, F039				X	X	X	1.3, Sporadic
Inorganic scrubber water (low suspended inorganic solids and low organic content)	115H	D002, D018				X	X	X	Sporadic
Inorganic caustic aqueous wastewater (with low suspended inorganic solids and low organic content)	110H	D002, D018				X		X	Sporadic
NTA Mother liquor	105H	D002				X			7,350
Inorganic caustic solution with cyanides but no metals (with low suspended inorganic solids and low organic content)	108H	D002, D003				X		X	1,731
Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	102H	D002, D003, D018				X	X	X	Sporadic

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Contaminated inorganic debris	319H	D001, D002, D003, D004, D005, D006, D007, D008, D010, D018, P063, U019, U122, U134, U154, U161, U165, U188, U220, F003, F005				X			0.3, Sporadic
Organic waste, containing phenol and other organics from sample purges, equipment and piping decontamination, and other misc. operations at the DPO process units.	205H	D018, D023, D024, D025, F003, F005, U158, U188				X			62.8
Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	114H	D018				X	X		8597
Debris generated within the formalin unit battery limits, contaminated with methanol, formalin, or other organics. Contents variable; consisting of but not limited to the following: wood, concrete, pipe, plastic sheets & bags, other debris	319H	U122, U154				X			1.3

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing2[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Organic waste containing methanol and formaldehyde, other organics may be present. Generated from sample purges, equipment decontamination, and other miscellaneous operations in Formalin unit.	205H	D001, U122, U154				X			1.8
Inorganic acidic aqueous wastewater (with low suspended inorganic solids and low organic content)	105H	D002, D007, D011, F003				X		X	Sporadic
Organic halogenated/non-halogenated solvent mixture (with low inorganic solids content and low-to-moderate water content)	204H	D001, D002, D018, D038, F003, F005, P003				X			1.2
Pumpable reactive or polymerizable organic sludge (stripper bottoms from Acrylonitrile process)	605H	D003, K011, K013, K014				X	X	X	Sporadic

Table III-2 – Hazardous Waste Management Unit Checklist

Waste Management Unit	TCEQ N.O.R. Unit #	Status[1]	Design Capacity[2]	Number of Years Utilized	Date in Service
Closed Landfill (Permit Unit No. 1)	006	Closed	258,000 cu yd (includes the Closed Class 1 non-haz landfill located immediately adjacent to, and east of, the Closed Landfill)	33	1962 – 1995
Active Landfill (Permit Unit No. 2)	051	Active	54,000 cu yd	33	1991 – present
Closed IWPF Surface Impoundment (Permit Unit No. 3)	005	Closed	20,000,000 gal (when active)	35	1962 – 1997
Oily Water System Forebay (Permit Unit No. 4)	016	Closed (clean closed)	120,000 gal (when active)	27	1962 – 1989
Indoor Container Storage Area (Permit Unit No. 5)	018	Closed	3,960 gal (corresponding to 29 tons)	35	1985 – 2020
Outdoor Container Storage Area (Permit Unit No. 6)	019	Closed (clean closed)	22,000 gal (when active)	13	1985 – 1998
MHBA Tanks 337-T6, 336-T5, and 336-S1 (Permit Unit No. 7)	025	Closed (clean closed under interim status)	4,119 gal (when active)	13	1983 – 1996
IWPF Tank 332T1-1 (Permit Unit No. 8)	059	Active	1,000,000 gal	30	1994 – present
IWPF Tank 332T1-2 (Permit Unit No. 9)	060	Active	1,000,000 gal	30	1994 – present
Thermal Desorption Unit (Permit Unit No. 10)	072	Closed	5 tons/hr	3	1994 – 1997
AN Boiler 30H5 (Permit Unit No. 11)	079	Active	12,250 lb/hr	49	1975 – present
AN Boiler 31H4 (Permit Unit No. 12)	080	Active	12,250 lb/hr	49	1975 – present

[1] Indicate only one of the following: Active, Inactive, Closed, or Proposed
[2] Cubic yards, gallons, pounds, gallons/minute, pounds/hour, BTUs/hour, etc.

Waste Management Unit	TCEQ N.O.R. Unit #	Status[1]	Design Capacity[2]	Number of Years Utilized	Date in Service
Outdoor Container Storage Area (Permit Unit No. 13)	078	Active	1,500 tons	26	1998 – present
IWPF Container Storage Area (Permit Unit No. 15)	103	Closed Never constructed	1,283 cu yd	–	Previously Permitted – Not Constructed
New Landfill (Permit Unit No. 16)	116	Proposed Not yet constructed	60,000 cu yd	–	–
Solids Handling Unit Filtrate Tank 331T11 (Permit Unit No. 17)	125	Active	15,000 gal	3	2021 – present
Solids Handling Unit Decant Tank 1 (Permit Unit No. 18)	–	Proposed Not yet constructed	7,000 gal	–	–
Solids Handling Unit Mix Tank 331T13 (Permit Unit No. 19)	121	Active	20,000 gal	3	2021 – present
Solids Handling Unit Mix Tank 331T14 (Permit Unit No. 20)	122	Active	20,000 gal	3	2021 – present
Solids Handling Unit Mix Tank 331T15 (Permit Unit No. 21)	123	Active	20,000 gal	3	2021 – present
Solids Handling Unit Mix Tank 331T16 (Permit Unit No. 22)	124	Active	20,000 gal	3	2021 – present
Outdoor Container Storage Area 2 (Permit Unit No. 23)	114	Proposed	370 tons	–	–

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part A, Attachment A: Core Data Form

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☒ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 604255158		**RN 100238682**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Ascend Performance Materials Texas Inc.

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0801573626	32047480754		N/A

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:							
P.O. Box 711							
City	Alvin	**State**	TX	**ZIP**	77512	**ZIP + 4**	0711

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
N/A	[redacted]

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(281) 228-4975		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Ascend Performance Materials Chocolate Bayou Plant

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	6610 FM 2917							
	City	Alvin	**State**	TX	**ZIP**	77511	**ZIP + 4**	
24. County	Brazoria							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	N/A				
26. Nearest City			**State**		**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	29.255833		**28. Longitude (W) In Decimal:**	95.210278	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	15	21	95	12	37

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
2869	N/A	325110	N/A

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Manufacture of chemical feedstocks

34. Mailing Address:	**P.O. Box 711**							
	City	**Alvin**	**State**	**TX**	**ZIP**	**77512**	**ZIP + 4**	**0711**
35. E-Mail Address:	**kadams2@ascendmaterials.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(281) 228-4975		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☒ Industrial Hazardous Waste
				50189
☐ Municipal Solid Waste	☒ New Source Review Air	☐ OSSF	☒ Petroleum Storage Tank	☐ PWS
	Multiple		79885	
☐ Sludge	☒ Storm Water	☒ Title V Air	☐ Tires	☐ Used Oil
	TXR05BQ25	Multiple		
☐ Voluntary Cleanup	☒ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☒ Other: RML
	WQ0000001000			TCEQ RML No. RW-0219 TDSHS RML No. L06630

SECTION IV: Preparer Information

40. Name:	Kevin Adams		41. Title:	Environmental Manager
42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**	
(281) 228-4975		( ) -	[redacted]	

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Ascend Performance Materials Chocolate Bayou Plant	**Job Title:**	Senior Site Director
Name *(In Print):*	Greg Blanchard	**Phone:**	(281) 228- **4000**
Signature:	G Blanchard	**Date:**	9-4-24

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part A, Attachment B: Site Legal Description

Attachment B.1 - Legal Description

Attachment B.2 – Plat Map

When recorded, please return to:
Morgan, Lewis & Bockius LLP
502 Carnegie Center
Princeton, NJ 08540-6241
Attn: Meredith Wells Cook, Esq.

Tax Parcel No. _____

SPECIAL WARRANTY DEED

STATE OF TEXAS §
§
COUNTY OF BRAZORIA §

ASCEND PERFORMANCE MATERIALS OPERATIONS LLC, a Delaware limited liability company formerly known as Ascend Performance Materials LLC ("Grantor"), for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) paid to Grantor and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has GRANTED, SOLD, and CONVEYED and does hereby GRANT, SELL, and CONVEY unto ASCEND PERFORMANCE MATERIALS TEXAS INC., a Delaware corporation ("Grantee"), that certain land located in Brazoria County, Texas and being more particularly described in Exhibit A attached hereto and incorporated herein by reference, including without means of limitation any and all surface water, groundwater, sand, gravel, marl, stone, coal, ore, oil, gas and other minerals located in, on or under the surface of such land, or in any manner appurtenant to such land, whether or not subject to active production or appropriation, together with all improvements and appurtenances located on such land (such land, improvements and appurtenances being collectively referred to as the "Property").

This conveyance is expressly made and accepted subject to all matters (the "Permitted Exceptions") set forth in Exhibit B, attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD the Property, together with all and singular the rights and appurtenances pertaining thereto, including all of Grantor's right, title and interest in and to adjacent streets, alleys and rights-of-way, and all rights and privileges to produce and appropriate waters and minerals, subject to the Permitted Exceptions, unto Grantee and Grantee's successors and assigns forever; and Grantor does hereby bind itself and its successors to warrant and forever defend the Property unto Grantee and Grantee's successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, by, through or under Grantor, but not otherwise.

[SIGNATURE PAGE FOLLOWS]

EXECUTED on the date set forth in the acknowledgment attached hereto, TO BE EFFECTIVE as of the 31st day of January, 2013.

GRANTOR:

ASCEND PERFORMANCE MATERIALS OPERATIONS LLC,
a Delaware limited liability company,
f/k/a Ascend Performance Materials LLC

By _____

Name: ANDREW RALSTON

Title: VICE PRESIDENT & GENERAL COUNSEL

Address of Grantee:
c/o Ascend Performance Materials Operations LLC
600 Travis Street
Suite 300
Houston, TX 77002
Attn: General Counsel

ACKNOWLEDGMENT

STATE OF Texas)

COUNTY OF Harris)

On January 31, 2013 before me, Joy KNIGHT, a notary public, personally appeared Andrew Ralston, VP & GC, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that [he/she] executed the same in [his/her] authorized capacity, and that by [his/her] signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of Texas that the foregoing is true and correct.

Witness my hand and official seal.

Signature _____ (Seal)

JOY KNIGHT
Notary Public, State of Texas
My Commission Expires
October 17, 2015

12877121-1

DB1/ 72587774.1

Chocolate Bayou
Alvin, Texas

Exhibit A
Legal Description

TRACT 1

All of that certain 3000.00 acre tract of land out of the Perry and Austin League No. 2, A-107, Brazoria County, Texas, said tract being a portion of the Houston Farms and Development Company lands within said League and being more particularly described as follows:

Beginning at a 6" x 6" concrete monument with a ½ inch iron rod in the center, found 1.00 foot under the surface, the top of said monument having been broken off; said concrete monument being the generally recognized North corner of the Perry and Austin League No. 2, A-107 and the most Southerly West corner of the Perry and Austin League No. 7, A-110 on the Southeast line of the S. F. Austin 1-3/4 League A-37 as established by A. R. Leckie in his March, 1911 survey and found and confirmed by R. C. Wilcox in his May, 1918 survey; thence South 41°21'50" West a distance of 2337.47 feet along the Southeast line of the S. F. Austin 1-3/4 League, A-37 and the Northwest line of the Perry and Austin League No. 2, A-107 as established by A. R. Leckie and confirmed by R. C. Wilcox, to a 2 inch galvanized iron pipe set in concrete to establish the point of intersection of the Northwest line of the Perry and Austin League No. 2 with the East line of an existing private road along the lower or Easterly side of Duck Lake; thence South 05°02'20" West a distance of 889.09 feet along the East line of said private road, as so established, to a 2 inch galvanized iron pipe set for an angle point in same; thence South 16°12'50" West a distance of 2001.53 feet to a 2 inch galvanized iron pipe set to establish another angle point in the East line of said private road; thence South 18°27'40" West a distance of 2650.44 feet to a 2 inch galvanized iron pipe set to establish another angle point in the East line of said private road; thence South 18°38'10" West a distance of 3632.88 feet to a 2 inch galvanized iron pipe set 4 inches under the surface to establish the point of intersection of the East line of private road along Duck Lake with the centerline of a shell topped road running South 37°00' East, commonly known as the "Road to the Bay"; thence South 41°21'50" West a distance of 4772.68 feet parallel to the Northwest line of the Perry and Austin League No. 2 to Chocolate Bayou for the Western corner of the herein described tract; thence down Chocolate Bayou with all of its meanders: North 81°44'20" East 1831.44 feet; South 67°25'50" East 245.27 feet; South 43°56'50" East 271.27 feet; South 14°37'20" East 648.68 feet; South 59°07'50" East 201.12 feet; South 69°18'00" East 196.58 feet; South 85°08'30" East 274.86 feet; South 70°28'40" East 343.20 feet; South 60°07'30" East 216.77 feet; South 46°53'30" East 446.27 feet; South 29°22'30" East 334.12 feet; South 16°52'20" East 237.89 feet; South 10°26'40" East 259.89 feet; South 04°49'00" West 549.47 feet; South 07°05'10" East 299.01 feet; South 41°14'10" East 204.06 feet; South 62°21'20" East 366.77 feet; North 82°22'00" East 341.89 feet; North 64°48'30" East 508.63; North 83°13'50" East 164.33 feet; South 78°24'10" East 270.94 feet; South 67°36'30" East 192.71 feet; South 44°52'30" East 211.41 feet; South 22°08'30" West 311.77 feet; South 03°54'20" East 144.26 feet; South 13°58'40" West 124.21 feet; South 37°27'40" West 309.37 feet; South 46°53'00" West 357.96 feet; South 63°24'20" West 243.41 feet; South 73°19'50" West 408.20 feet; South 53°26'30" West 184.98 feet; South 43°26'30" West 230.23 feet; South 29°08'30" West 453.84 feet; South 09°01'40" West 172.21

feet; South 05°22'10" East 183.13 feet; South 41°07'40" East 228.88 feet to a point for the South corner of the subject tract, said point located South 48°35'40" East a distance of 11,240.38 feet then South 41°21'50" West a distance of 16,581.27 feet from the place of beginning of the herein described tract; thence North 41°21'50" East a distance of 16,581.27 feet parallel to the Northwest line of the Perry and Austin League No. 2, A-107 to a 2 inch galvanized iron pipe set for the East corner of the herein described tract, on the Northeast line of the Perry and Austin League No. 2, said 2 inch galvanized iron pipe being located North 48°35'40" West a distance of 2868.65 feet from a 6" x 6" concrete monument with a ½ inch iron rod in the center, found at the generally recognized East corner of the Perry and Austin League No. 2, A-107, the South corner of the Edmond Andrews League A-5 and on the Northwest line of the Perry and Austin League A-109; said monument established by A. R. Leckie in his March, 1911 survey and found and confirmed by R. C. Wilcox in his May, 1918 survey; thence North 48°35'40" West a distance of 11,240.38 feet with the Northeast line of the Perry and Austin League No. 2, A-107 and the Southwest line of the Edmond Andrews League, A-5 and the lower Southwest line of the Perry and Austin League No. 7, A-110 established by A. R. Leckie and found by R. C. Wilcox to the place of beginning; containing 3,000.00 acres of land, more or less; together with all rights and appurtenances thereto in anywise belonging, including riparian rights incident to the above described land.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

SAVE AND EXCEPT FROM TRACT 1

All that certain 486.0000 acre tract of land lying and situated in the Perry and Austin League No. 2, Abstract 107 Brazoria County, Texas; being a portion of all that certain called 3000.00 acre tract of land conveyed by Special Warranty Deed on September 1, 1997 from Monsanto Company to Solutia, Inc. as recorded in Clerk's File No. 97 030692 of the Brazoria County Official Records, the herein described 486.0000 acre tract hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83) in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.=0.99986786539) as follows:

Commencing at a 6" x 6" concrete monument found marking the North corner of the said Solutia, Inc. called 3000.00 acre tract, same being the recognized North corner of the Perry and Austin League No. 2, Abstract 107, same being the most Southerly West corner of the Perry and Austin League No. 7, Abstract 110 and being located on the Southeastern boundary line of the Stephen F. Austin 1-3/4 League, Abstract 37 as established by A. R. Leckie in his March, 1911 survey, found and confirmed by R. C. Wilcox in his May, 1918 survey, located at Texas State Plane coordinate position X=3177076.95 and Y=13669847.58; thence South 50°27'48" East, along the Northeastern boundary line of said Solutia, Inc. 3000.00 acre tract and the Northeastern boundary line of the Perry and Austin League No. 2, Abstract 107, same being the Southwest boundary line of the Perry and Austin League No. 7, Abstract 110 and the Edmond Andrews League, Abstract 5, a distance of 7879.72 feet to a point from which a 6" x 6" concrete monument found marking the East corner of the Perry and Austin League No. 2, Abstract 107, same being the South corner of the Edmond Andrews League, Abstract 5 and being located on the Northwestern boundary line of the Perry and Austin League, Abstract 109, said monument established by A. R. Leckie in the March, 1911 survey, found and confirmed by R. C. Wilcox in his May 1918 survey, bears South 50°27'48" East, a distance of 6231.13 feet, said 6" x 6" concrete monument located at position X=3187958.03 and Y=13660866.18; thence South

39°32'12" West, a distance of 70.00 feet pass the Southwestern boundary line of all that certain 70 foot wide Missouri Pacific Railroad right-of-way as recorded in Volume 905, page 218 of the Brazoria County Deed Records, same being the Northeastern boundary line of all that certain 80 feet wide H. L. & P. electrical easement, as recorded in Volume 1024, page 180 of the Brazoria County Deed Records, at a distance of 150 feet pass the Northeastern boundary line of the 120 feet wide State Texas Highway F.M. #2917 right-of-way, as recorded in Volume 917, page 484 of the Brazoria County Deed Records; continuing a total distance of 270.00 feet to the POINT OF BEGINNING, at a set 5/8" iron rod with survey cap marked "WPD 4467", located in the Southwestern boundary line of the said 120 foot wide F.M. #2917, for the North corner of the herein described 486.0000 acre tract, at Texas State Plane coordinate position X=3182981.26 and Y=13664624.03; thence South 50°27'48" East coincident, with the Southwestern right-of-way boundary line of the said Texas State Highway F.M. #2917, a distance of 1562.10 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for the most Northerly East corner of the herein described 486.0000 acre tract, at position X=3184185.82 and Y=13663629.76; thence South 39°29'42" West a distance of 3509.41 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", located in the Southwestern top bank of a 100 foot wide drainage ditch, for an interior corner of the herein described 486.0000 acre tract, at position X=3181954.09 and Y=13660921.99; thence South 50°30'18" East, generally along the Southwestern limits of the said top bank of drainage ditch, a distance of 597.23 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described tract at a position X=3182414.90 and Y=13660542.19; thence South 39°29'42" West, a distance of 546.25 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract, at position X=3182067.52 and Y=13660120.72; thence South 50°30'18" East, a distance of 1052.98 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described 486.0000 acre tract, at position X=3182879.98 and Y=13659451.10; thence South 39°29'42" West, a distance of 2234.22 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described 486.0000 acre tract, at position X=3181459.18 and Y=13657727.22; thence North 50°30'18" West, a distance of 1291.31 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract, at position X=3180462.83 and Y=13658548.41; thence South 39°29'42" West, a distance of 392.32 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract, at position X=3180213.34 and Y=13658245.70; thence South 50°30'18" East, a distance of 250.03 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described 486.0000 acre tract, at position X=3180406.26 and Y=13658086.69; thence South 39°29'42" West, a distance of 2303.50 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an angle point of the herein described 486.0000 acre tract, at position X=3178941.40 and Y=13656309.37; thence South 85°38'48" West, a distance of 897.89 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior angle point of the herein described 486.0000 acre tract, at position X=3178046.22 and Y=13656241.22; thence South 39°29'42" West, a distance of 707.55 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described 486.0000 acre tract, at position X=3177596.26 and Y=13655695.29; thence North 50°30'18" West, a distance of 348.47 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract, at position X=3177327.39 and Y=13655916.89; thence South 39°29'42" West, a distance of 1831.03 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior corner of the herein described 486.0000 acre tract, at position X=3176162.99 and Y=13654504.12; thence North 50°30'18" West, a distance of 390.26 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract, at position X=3175861.87 and Y=13654752.30; thence South 39°29'42" West, a distance of 545.80 feet to

a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior angle point of the herein described 486.0000 acre tract, at position X=3175514.78 and Y=13654331.17; thence South 10°30'20" East, a distance of 1214.22 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an exterior angle point of the herein described 486.0000 acre tract, at position X=3175736.14 and Y=13653137.45; thence South 17°33'27" West, a distance of 539.14 feet to a point at the right ascending water's edge of Chocolate Bayou, same being a Southern boundary line of the aforementioned all that certain called 3000.00 acre tract of land conveyed by Special Warranty Deed on September 1, 1997 from Monsanto Company to Solutia, Inc. as recorded in Clerk's File No. 97 030692 of the Brazoria County Deed Records for an exterior angle point of the herein described 486.0000 acre tract, at position X=3175573.53 and Y=13652623.50; thence coincident with the right ascending water's edge of Chocolate Bayou and the Solutia, Inc. barge dock channel and its meanders as follows:

South 69°45'10" West, a distance of 131.08 feet; South 50°48'56" West, a distance of 108.94 feet; South 49°28'39" West, a distance of 84.44 feet; North 49°56'49" West, a distance of 55.73 feet; North 22°36'31" West, a distance of 47.32 feet; North 8°33'57" West, a distance of 40.46 feet; North 4°30'45" West, a distance of 226.62 feet; North 5°32'04" West, a distance of 121.73 feet; North 4°06'09" West, a distance of 234.88 feet; North 13°33'54" West, a distance of 277.77 feet; North 22°00'09" West, a distance of 388.27 feet; North 26°14'30" West, a distance of 127.41 feet; North 36°29'56" West, a distance of 205.68 feet; North 44°31'54" West, a distance of 60.64 feet; thence North 87°34'28" East, a distance of 207.28 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior angle point of the herein described 486.0000 acre tract, at position X=3174999.67 and Y=13654099.25; thence North 39°29'42" East, a distance of 1302.45 feet to a set 5/8" iron rod with survey cap marked "WPD 4467" for an exterior corner of the herein described 486.0000 acre tract at position X=3175827.94 and Y=13655104.19; thence South 50°30'18" East, a distance of 410.30 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for an interior corner of the herein described 486.0000 acre tract at position X=3176144.51 and Y=13654843.27; thence North 39°29'42" East, a distance of 1831.03 feet to a set 5/8" iron rod with survey cap marked "WPD 4467" for an exterior corner of the herein described 486.0000 acre tract at position X=3177308.91 and Y=13656256.05; thence South 50°30'18" East, a distance of 328.47 feet to a set 5/8" iron rod with survey cap marked "WPD 4467" for an interior corner of the herein described 486.0000 acre tract, at position X=3177562.35 and Y=13656047.17; thence North 39°29'42" East, a distance of 244.83 feet to a set 5/8" iron rod with survey cap marked "WPD 4467" for an interior corner of the herein described 486.0000 acre tract at position X=3177718.05 and Y=13656236.07; thence North 50°30'18" West, a distance of 406.52 feet to a set 5/8" iron rod with survey cap marked "WPD 4467" for an exterior corner of the herein described 486.0000 acre tract at position X=3177404.39 and Y=13656494.59; thence North 39°29'42" East, a distance of 1417.98 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for the point of curvature to the left of the herein described 486.0000 acre tract, having a central radius of 600.00 feet, at position X=3178306.12 and Y=13657588.67; thence along said curve to the left having a central radius of 600.00 feet, an arc length of 822.52 feet, a central angle of 78°31'34" and a chord bearing and distance of North 0°13'55" East, 759.46 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for the point of tangency of the herein described 486.0000 acre tract, at position X=3178309.20 and Y=13658348.02; thence North 39°01'52" West, a distance of 130.76 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for point of curvature to the right of the herein described 486.0000 acre tract, having a central radius of 400.00 feet, at a position of X=3178226.86 and Y=13658449.59; thence along said curve to the right having a central radius of 400.00 feet, an arc length of 322.39 feet, a central angle of 46°07'56" and a chord bearing and distance of North 15°57'54" West, 313.43 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for the point in curve of the herein described

486.0000 acre tract, at position X=3178140.66 and Y=13658750.89; thence North 39°29'42" East, a distance of 7611.86 feet to the point of beginning; containing 486.0000 acres of land, more or less.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 2

Easement estate only in and to an easement for a roadway by and between Houston Farms Development Company and Monsanto Chemical Company dated January 3, 1961 and recorded in Volume 782, page 538 of the Deed Records; as amended by Agreement recorded in Volume 825, page 3 of Brazoria County, Texas.

TRACT 3

Easement estate only in and to easements for pipelines granted by Houston Farms Development Company to Monsanto Chemical Company by instrument dated January 3, 1961 and recorded in Volume 782, page 544 of the Deed Records; amended by instrument dated February 27, 1963 and recorded in Volume 843, page 711 of the Deed Records; as assigned to Solutia Inc. by instrument dated September 1, 1997 and recorded under County Clerk's File No. 97030693.

NOTE: The following tracts are subject to a condition subsequent and right of re-entry in favor of Monsanto Company, a Delaware corporation, as set forth in deed from Monsanto Company, a Delaware corporation, to Solutia, Inc., a Delaware corporation, dated November 14, 2008 and recorded under Brazoria County Clerk's File No. 2008056310.

TRACT 4

BEING all that certain 0.004 acre (178.50 square feet) lot, tract or parcel of land situated in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas, and being part of the same land as a called 3000.00 acre tract described in a deed to Solutia, Inc. as recorded in Clerk's File No. 97030692 of Brazoria County, Texas, said 0.004 acre tract being described by metes and bounds as follows:

COMMENCING at a concrete monument found at the generally recognized north corner of said Perry and Austin League No. 2, A-107, and the most southerly west corner of the Perry and Austin League No. 7, A-110, on the southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by RC. Wilcox in his May 1918 survey and at the north corner of said 3000.00 acre tract;

THENCE S 48°35'40" E along the northeast line of said Perry and Austin League No. 2, A-107, and the northeast line of said 3000.00 acre tract a distance of 11240.44 feet to a 1/2" iron rod with cap stamped "Adams" found at the east corner of said 3000.00 acre tract;

THENCE S 41°21'50" W along the southeast line of said 3000.00 acre tract a distance of 7624.66 feet to a point; (Monsanto-Chocolate Bayou Plant Coordinates North 0.00 West 0.00);

THENCE S 41°21'50" W continuing along the southeast line of said 3000.00 acre tract a distance of 588.10 feet to a point; (Plant Coordinates North 0.00 West 588.10);

THENCE N 48°38'10" W a distance of 3743.29 feet to the corner of a concrete wall for the POINT OF BEGINNING; (Plant Coordinates North 3743.29 West 588.10);

THENCE S 41°21'50" W a distance of 15.00 feet to a 60D nail found for a corner; (Plant Coordinates North 3743.29 West 603.10);

THENCE N 48°38'10" W a distance of 11.90 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3755.19 West 603.10);

THENCE N 41°21'50" E a distance of 15.00 feet to the corner of a concrete wall for a corner; (Plant Coordinates North 3755.19 West 588.10);

THENCE S 48°38'10" E a distance of 11.90 feet to the POINT OF BEGINNING and containing 0.004 acres (178.50 square feet) of land, more or less.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 5

BEING all that certain 0.26 acre (11394.00 square feet) lot, tract or parcel of land situated in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas, and being part of the same land as a called 3000.00 acre tract described in a deed to Solutia, Inc. as recorded in Clerk's File No. 97030692 of Brazoria County, Texas, said 0.26 acre tract being described by metes and bounds as follows:

COMMENCING at a concrete monument found at the generally recognized north corner of said Perry and Austin League No. 2, A-107, and the most southerly west corner of the Perry and Austin League No. 7, A-110, on the southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by RC. Wilcox in his May 1918 survey and at the north corner of said 3000.00 acre tract;

THENCE S 48°35'40" E along the northeast line of said Perry and Austin League No. 2, A-107, and the northeast line of said 3000.00 acre tract a distance of 11240.44 feet to a 1/2" iron rod with cap stamped "Adams" found at the east corner of said 3000.00 acre tract;

THENCE S 41°21'50" W along the southeast line of said 3000.00 acre tract a distance of 7624.66 feet to a point; (Monsanto-Chocolate Bayou Plant Coordinates North 0.00 West 0.00);

THENCE S 41°21'50" W continuing along the southeast line of said 3000.00 acre tract a distance of 660.22 feet to a point; (Plant Coordinates North 0.00 West 660.22);

THENCE N 48°38'10" W a distance of 3712.04 feet to a 60D nail set for a corner at the POINT OF BEGINNING; (Plant Coordinates North 3712.04 West 660.22) ;

THENCE S 41°21'50" W a distance of 113.94 feet to a 60D nail found for a corner; (Plant Coordinates North 3712.04 West 774.16);

THENCE N 48°38'10" W a distance of 100.00 feet to an arrow cut in the top of a concrete wall set for a corner; (Plant Coordinates North 3812.04 West 774.16);

THENCE N 41°21'50" E along said concrete wall a distance of 113.94 feet to the corner of said concrete wall; (Plant Coordinates North 3812.04 West 660.22);

THENCE S 48°38'10" E a distance of 100.00 feet to the POINT of BEGINNING and containing 0.26 acres (11394.00 square feet) of land, more or less.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 6

BEING all that certain 0.20 acre (8707.41 square feet) lot, tract or parcel of land situated in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas, and being part of the same land as a called 3000.00 acre tract described in a deed to Solutia, Inc. as recorded in Clerk's File No. 97030692 of Brazoria County, Texas, said 0.20 acre tract being described by metes and bounds as follows:

COMMENCING at a concrete monument found at the generally recognized north corner of said Perry and Austin League No. 2, A-107, and the most southerly west corner of the Perry and Austin League No. 7, A-110, on the southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by R.C. Wilcox in his May 1918 survey and at the north corner of said 3000.00 acre tract;

THENCE S 48°35'40" E along the northeast line of said Perry and Austin League No. 2, A-107, and the northeast line of said 3000.00 acre tract a distance of 11240.44 feet to a 1/2" iron rod with cap stamped "Adams" found at the east corner of said 3000.00 acre tract;

THENCE S 41°21'50" W along the southeast line of said 3000.00 acre tract a distance of 7624.66 feet to a point; (Monsanto-Chocolate Bayou Plant Coordinates North 0.00 West 0.00);

THENCE S 41°21'50" W continuing along the southeast line of said 3000.00 acre tract a distance of 1168.00 feet to a point; (Plant Coordinates North 0.00 West 1168.00);

THENCE N 48°38'10" W a distance of 3606.75 feet to a 1/2" iron rod found for a corner at the POINT OF BEGINNING; (Plant Coordinates North 3606.75 West 1168.00);

THENCE S 41°17'28" W a distance of 228.52 feet to a concrete nail found for a corner; (Plant Coordinates North 3606.46 West 1396.52);

THENCE N 48°41'08" W a distance of 11.95 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3618.41 West 1396.53);

THENCE N 41°17'28" E a distance of 8.97 feet to a 60D nail found for a corner; (Plant Coordinates North 3618.42 West 1387.56);

THENCE N 48°41'08" W a distance of 27.23 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3645.65 West 1387.58);

THENCE N 41°17'28" E a distance of 219.55 feet to a 1/2" iron rod found for a corner; (Plant Coordinates North 3645.92 West 1168.03);

THENCE S 48°41'08" E a distance of 39.17 feet to the POINT OF BEGINNING and containing 0.20 acres (8707.41 square feet) of land, more or less.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 7

BEING all that certain 1.02 acre (44223.65 square feet) lot, tract or parcel of land situated in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas, and being part of the same land as a called 3000.00 acre tract described in a deed to Solutia, Inc. as recorded in Clerk's File No. 97030692 of Brazoria County, Texas, said 1.02 acre tract being described by metes and bounds as follows:

COMMENCING at a concrete monument found at the generally recognized north corner of said Perry and Austin League No. 2, A-107, and the most southerly west corner of the Perry and Austin League No. 7, A-110, on the southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by R.C. Wilcox in his May 1918 survey and at the north corner of said 3000.00 acre tract;

THENCE S 48°35'40" E along the northeast line of said Perry and Austin League No. 2, A-107, and the northeast line of said 3000.00 acre tract a distance of 11240.44 feet to a 1/2" iron rod with cap stamped "Adams" found at the east corner of said 3000.00 acre tract;

THENCE S 41°21'50" W along the southeast line of said 3000.00 acre tract a distance of 7624.66 feet to a point; (Monsanto-Chocolate Bayou Plant Coordinates North 0.00 West 0.00);

THENCE S 41°21'50" W continuing along the southeast line of said 3000.00 acre tract a distance of 1168.00 feet to a point; (Plant Coordinates North 0.00 West 1168.00);

THENCE N 48°38'13" W a distance of 3677.27 feet to a PK nail set for a corner at the POINT OF BEGINNING; (Plant Coordinates North 3677.27 West 1168.06);

THENCE S 41°17'28" W a distance of 149.89 feet to a 60D nail set for a corner; (Plant Coordinates North 3677.08 West 1317.95);

THENCE N 48°42'32" W a distance of 38.88 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3715.96 West 1318.00);

THENCE S 41°17'28" W a distance of 76.64 feet to a point at the corner of a concrete sump for a corner; (Plant Coordinates North 3715.86 West 1394.64);

THENCE N 49°37'23" W a distance of 26.32 feet to a point in Column M-13 (NTA/IDA Unit) for a corner; (Plant Coordinates North 3742.18 West 1395.09);

THENCE S 41°22'06" W a distance of 19.67 feet to a point in Column L-13 (NTA/IDA Unit) for a corner; (Plant Coordinates North 3742.19 West 1414.76);

THENCE S 47°54'18" E a distance of 23.74 feet to a point in Column L-12 (NTA/IDA Unit) for a corner; (Plant Coordinates North 3718.45 West 1415.06);

THENCE S 41°30'28" W a distance of 24.68 feet to a point in Column K-12 (NTA/IDA Unit) for a corner; (Plant Coordinates North 3718.51 West 1439.74);

THENCE N 48°49'02" W a distance of 71.43 feet to a point in Column K-15 (NTA/IDA Unit) for a corner; (Plant Coordinates North 3789.94 West 1439.97);

THENCE S 44°35'09" W a distance of 6.09 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3790.28 West 1446.05);

THENCE N 49°56'30" W a distance of 6.96 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3797.24 West 1446.21);

THENCE N 03°15'44" W a distance of 60.04 feet to a 60D nail found for a corner; (Plant Coordinates North 3839.75 West 1403.48);

THENCE N 41°06'10" E a distance of 11.01 feet to a 60D nail found for a corner; (Plant Coordinates North 3839.80 West 1392.46);

THENCE S 48°34'32" E a distance of 24.06 feet to a 60D nail found for a corner; (Plant Coordinates North 3815.75 West 1392.49);

THENCE N 41°22'39" E a distance of 32.48 feet to a 60D nail found for a corner; (Plant Coordinates North 3815.74 West 1360.00);

THENCE N 48°39'59" W a distance of 132.48 feet to a 60D nail found for a corner; (Plant Coordinates North 3948.22 West 1360.07);

THENCE N 41°44'50" E a distance of 42.91 feet to an "X" cut in concrete set for a corner; (Plant Coordinates North 3947.93 West 1317.16);

THENCE S 48°37'22" E a distance of 157.38 feet to a 60D nail found for a corner; (Plant Coordinates North 3790.56 West 1317.20);

THENCE N 41°12'05" E a distance of 17.12 feet to a 60D nail found for a corner; (Plant Coordinates North 3790.61 West 1300.08);

THENCE N 48°32'49" W a distance of 71.31 feet to a PK nail set for a corner; (Plant Coordinates North 3861.92 West 1299.97);

THENCE N 41°17'28" E a distance of 131.75 feet to a 60D nail found for a corner; (Plant Coordinates North 3862.08 West 1168.22);

THENCE S 48°41'08" E a distance of 184.81 feet to the POINT OF BEGINNING and containing 1.02 acres (44223.65 square feet) of land, more or less.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 8 AUTO/PEDESTRIAN ROUTE

CENTERLINE DESCRIPTION OF A 30.00 FOOT WIDE ACCESS EASEMENT OUT OF A 3000 ACRE TRACT OF LAND OUT OF THE PERRY AND AUSTIN LEAGUE NO. 2, ABSTRACT 107, BRAZORIA COUNTY, TEXAS AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 6" X 6" concrete monument with a 1/2" iron rod in the center, said monument being the generally recognized North corner of the Perry and Austin League No. 2, A-107 and the most Southerly West corner of the Perry and Austin League No. 7, A-110, on the Southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by R.C. Wilcox in his May 1918 survey;

THENCE South 48°35'40" East a distance of 11240.38 feet to the most Northeasterly corner of said 3000 acre tract;

THENCE South 41°21'50" West a distance of 267.55 feet to a point;

THENCE North 48°38'10" West 3712.84 feet to a point for the PLACE OF BEGINNING of the herein described easement; said point being at the intersection of the Southwest right-of-way line of State Farm to Market Highway 2917 with the center line of the existing Monsanto Chocolate Bayou Main Entrance Road; said point being at Monsanto Chocolate Bayou Coordinates North 3712.84 East 7357.00;

THENCE South 40°25'32" West 128.78 feet along the center line of the Monsanto Chocolate Bayou Main Entrance Road, to a point at the beginning of a curve to the left having a radius of 338.43 feet; (Plant Coordinates North 3710.77 East 7228.24);

THENCE along the centerline of the Monsanto Chocolate Bayou Main Entrance Road, around said curve to the left through a central angle of 26°07'06" for a distance of 154.27 feet to a point; (Plant Coordinates North 3673.82 East 7079.83), the chord of said curve bears South 27°23'05" West 152.94 feet;

THENCE South 14°19'26" West along the centerline of said Monsanto Chocolate Bayou Main Entrance Road for a distance of 87.30 feet to a point in the beginning of a curve to the right having a radius of 733.00 feet; (Plant Coordinates North 3634.13 East 7002.08);

THENCE along the centerline of the Monsanto Chocolate Bayou Main Entrance Road around said curve to the right, through a central angle of 27°04'16" for a distance of 346.33 feet to a point (Plant Coordinates North 3554.01 East 6668.44) the chord of the said curve bears South 27°51'36" West 343.12 feet;

THENCE South 41°23'42" West a distance of 5490.45 feet along the centerline of the Monsanto Chocolate Bayou Main Entrance Road to an angle point (Plant Coordinates North 3557.00 East 1178.00);

THENCE South 41°39'46" West 1150.01 feet along the centerline of the Monsanto Chocolate Bayou Main Entrance Road an angle point at intersection of the centerline of the Monsanto Chocolate Bayou Main Entrance Road with the centerline of Monsanto Drive (Plant Coordinates North 3563.00 East 28.00);

THENCE North 48°38'10" West a distance of 1049.00 feet along the centerline of Monsanto Drive, to its intersection with the centerline of "D" Street; (Plant Coordinates North 4612.00 East 28.00);

THENCE South 41°21'50" West a distance of 543.00 feet along the centerline of "D" Street to its intersection with the centerline of First Street in Monsanto Chocolate Bayou Plant, (Plant Coordinates North 4612.00 West 515.00);

THENCE South 48°38'10" East a distance of 1049.00 feet along the centerline of First Street, to its intersection with the centerline of "A" Street; (Plant Coordinates North 3563.00 West 515.00);

THENCE South 41°21'50" West along the centerline of "A" Street in Monsanto Chocolate Bayou Plant, a distance of 1140.00 to its intersection with the centerline of Fifth Street, (Plant Coordinates North 3563.00 West 1655.00);

THENCE North 48°38'10" West along the centerline of Fifth Street a distance of 172.00 feet to a point opposite the NTA/IDA control room, (Plant Coordinates North 3735.00 West 1655.00). Said Easement being 15.00 feet either side of and adjacent to the herein described centerline.

NOTE: The Company does not represent that the above acreage or square footage calculations are correct.

TRACT 9 TRUCK ROUTE

CENTERLINE DESCRIPTION OF A 30.00 FOOT WIDE ACCESS EASEMENT OUT OF A 3000 ACRE TRACT OF LAND OUT OF THE PERRY AND AUSTIN LEAGUE NO. 2, ABSTRACT 107, BRAZORIA COUNTY, TEXAS AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS: COMMENCING at a 6" X 6"

concrete monument with a 1/2" iron rod in the center, said monument being the generally recognized North corner of the Perry and Austin League No. 2, A-107 and the most Southerly West corner of the Perry and Austin League No. 7, A-110, on the Southeast line of the S.F. Austin 1-3/4 League, A-37, as established by A.R. Leckie in his March 1911 survey and found and confirmed by R.C. Wilcox in his May 1918 survey;

THENCE South 48°35'40" East a distance of 11240.38 feet to the most Northeasterly corner of said 3000 Acre Tract;

THENCE South 41°21'50" West a distance of 267.55 feet to a point;

THENCE North 48°38'10" West 3712.84 feet to a point for the PLACE OF BEGINNING of the herein described easement; said point being at the intersection of the Southwest right of way line of state Farm to Market Highway 2917 with the centerline of the existing Monsanto Chocolate Bayou Main Entrance Road; said point being at Monsanto Chocolate Bayou Coordinates North 3712.84 East 7357.00;

THENCE South 40°25'32" West 128.78 feet along the centerline of the Monsanto Chocolate Bayou Main Entrance Road, to a point at the beginning of a curve to the left having a radius of 338.43 feet, (Plant Coordinates North 3710.77 East 7228.24);

THENCE along the centerline of the Monsanto Chocolate Bayou Main Entrance Road around said curve to the left through a central angle of 26°07'06" for a distance of 154.27 feet to a point, (Plant Coordinates North 3673.82 East 7079.83), the chord of said curve bears South 27°23'05" West 152.94 feet;

THENCE South 14°19'26" West along the centerline of said Monsanto Chocolate Bayou Main Entrance Road, for a distance of 87.30 feet to a point in the beginning of a curve to the right having a radius of 733.00 feet, (Point Coordinates North 3634.13 East 7002.08);

THENCE along the center line of the Monsanto Chocolate Bayou Main Entrance Road, around said curve to the right, through a central angle of 27°04'16" for a distance of 346.33 feet to a point (Plant Coordinates North 3554.01 East 6668.44) the chord of the said curve bears South 27°51'36" West 343.12 feet;

THENCE South 41°23'42" West a distance of 5490.45 feet, along the centerline of the Monsanto Chocolate Bayou Main Entrance Road to an angle point (Plant Coordinates North 3557.00 East 1178.00);

THENCE South 41°39'46" West 1150.01 feet, along the centerline of the Monsanto Chocolate Bayou Main Entrance Road an angle point at intersection of the centerline of the Monsanto Chocolate Bayou Main Entrance Road with the centerline of Monsanto Drive (Plant Coordinates North 3563.00 East 28.00);

THENCE South 41°21'50" West 1174.00 feet, along the centerline of the Monsanto Chocolate Bayou Main Entrance Road an angle point at intersection of the centerline of "A" Street and Second Street in Monsanto Chocolate Bayou Plant. (Plant Coordinates North 3563.00 West 1146.00); Said point being the beginning of four optional routes.

Option A: Stores Route

Option B: Control Room Route

Option C: Truck Weigh Scale Route

Option D: Truck Rack to Weigh Scale Route.

OPTION A: STORE ROUTE

THENCE North 48°38'10" West 1049.00 feet, along the centerline of Second Street in Monsanto Chocolate Bayou Plant to an angle point at intersection of the centerline of Second Street and "D" Street (Plant Coordinates North 4612.00 West 1146.00);

THENCE North 41°21'50" East 150.00 feet, along the centerline of "D" Street to a point (Plant Coordinates North 4612.00 West 996.00). Said point being the entrance to the driveway into the Monsanto Stores Building. Said Easement being 15.00 feet either side of and adjacent to the herein described centerline.

OPTION B: CONTROL ROOM ROUTE

THENCE North 48°38'10" West 434.00 feet, along the centerline of Second Street in Monsanto Chocolate Bayou Plant to an angle point at intersection of the centerline of Second Street and "B" Street (Plant Coordinates North 3997.00 West 1146.00);

THENCE South 41°21'50" West, along the centerline of "B" Street in Monsanto Chocolate Bayou Plant, a distance of 509.00 feet to its intersection with the centerline of Fifth street (Plant Coordinates North 3997.00 West 1655.00);

THENCE South 48°38'10" East, along the centerline of Fifth Street a distance of 262.00 feet to a point (Plant Coordinates North 3735.00 West 1655.00). Said point being at the parking area of the NTA/IDA Control Room. Said Easement being 15.00 feet either side of and adjacent to the herein described centerline.

OPTION C: TRUCK WEIGH SCALE ROUTE

THENCE South 41°21'50" West, along the centerline of "A" Street in Monsanto Chocolate Bayou Plant, a distance of 1615.91 feet to a point in the beginning of a curve to the right with a radius of 62 feet (Plant Coordinates North 3563.00 West 2761.91);

THENCE along the centerline of "A" Street, around said curve to the right, through a central angle of 13°45'00" for a distance of 14.88 feet to a point (Plant Coordinates North 3654.80 West 2776.66) the chord of the said curve bears South 48°14'20" West 14.85 feet;

THENCE South 55°06'50" West along the centerline of "A" street a distance of 492.20 feet to a point in the beginning of a curve to the right with a radius of 62 feet (Plant Coordinates North 3681.70 West 3254.75);

THENCE along the centerline of "A" street, around said curve to the right, through a central angle of 76°15'09" for a distance of 82.51 feet to a point (Plant Coordinates North 3742.00 West 3302.00) the chord of the said curve bears North 86°44'50" West 76.60 feet. Said point being the intersection of the centerline of "A" Street and Twelfth Street and the location of the Truck Weigh Scales. Said Easement being 15.00 feet either side of and adjacent to the herein described centerline.

OPTION D: TRUCK RACK TO WEIGH SCALE ROUTE

THENCE North 48°38'10" West 434.00 feet, along the centerline of Second Street in Monsanto Chocolate Bayou Plant to an angle point at the intersection of the centerline of Second Street and "B" Street (Plant Coordinates North 3997.00 West 1146.00);

THENCE South 41°21'50" West, along the centerline of "B" Street in Monsanto Chocolate Bayou Plant, a distance of 960.00 feet to an angle point at the intersection with the centerline of Seventh Street and "B" Street (Plant Coordinates North 3997.00 West 2106.00);

THENCE South 48°38'10" East, along the centerline of Seventh Street a distance of 434.00 feet to an angle point at the intersection of Seventh Street and "A" Street (Plant coordinates North 3563.00 West 2106.00);

THENCE South 41°21'50" West, along the centerline of "A" Street in Monsanto Chocolate Bayou Plant, a distance of 655.91 feet to a point in the beginning of a curve to the right with a radius of 62 feet (Plant Coordinates North 3563.00 West 2761.91);

THENCE along the centerline of "A" Street, around said curve to the right, through a central angle of 13°45'00" for a distance of 14.88 feet to a point (Plant Coordinates North 3654.80 West 2776.66) the chord of the said curve bears South 48°14'20" West 14.85 feet;

THENCE South 55°06'50" West, along the centerline of "A" Street a distance of 492.20 feet to a point in the beginning of a curve to the right with a radius of 62 feet (Plant Coordinates North 3681.70 West 3254.75);

THENCE along the centerline of "A" street, around said curve to the right, through a central angle of 76°15'09" for a distance of 82.51 feet to a point (Plant Coordinates North 3742.00 West 3302.00) the chord of the said curve bears North 86°44'50" West 76.60 feet. Said point being the intersection of the centerline of "A" Street and Twelfth Street and the location of the Truck Weigh Scales. Said Easement being 15.00 feet either side of and adjacent to the herein described centerline.

AND, FOR PURPOSES OF REFERENCE ONLY, being that same real property conveyed by Solutia, Inc., a Delaware corporation, as Grantor, to Ascend Performance Materials LLC, a Delaware limited liability company, as Grantee, pursuant to that certain Special Warranty Deed dated as of June 1, 2009 and recorded as of June 5, 2009 as Doc # 2009024556 in the Land Records of Brazoria County, Texas.

Exhibit B
Permitted Exceptions

1. The lien of current taxes and assessments not yet due and payable.

2. Special taxes and assessments becoming a lien on or after the date hereof.

3. The state of facts shown on an accurate survey of the property, but only to the extent valid and enforceable.

4. All matters of record, but only to the extent valid and enforceable, including:

   a. That certain Amended and Restated Deed of Trust, Assignment of Leases and Rents, Security Agreement and Fixture Filing made by Ascend Performance Materials Operations LLC (f/k/a Ascend Performance Materials LLC), as Grantor, in favor of Rebecca Conrad, as Trustee, for the use and benefit of Wells Fargo Capital Finance, LLC (f/k/a Wells Fargo Foothill, LLC), as Beneficiary, recorded as May 16, 2012 as Doc # 2012021305 in the Land Records of Brazoria County, Texas; and

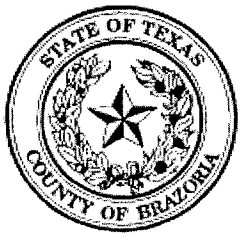
   b. That certain First Deed of Trust, Assignment of Leases and Rents, Security Agreement and Fixture Filing made by Ascend Performance Materials Operations LLC (f/k/a Ascend Performance Materials LLC), as Grantor, in favor of Rebecca Conrad, as Trustee, for the use and benefit of Bank of America, N.A., as Beneficiary, recorded as of May 16, 2012 as Doc # 2012021304 in the Land Records of Brazoria County, Texas.

FILED and RECORDED

Instrument Number: 2013007236

Filing and Recording Date: 02/13/2013 11:08:28 AM Pages: 18 Recording Fee: $85.00

I hereby certify that this instrument was FILED on the date and time stamped hereon and RECORDED in the OFFICIAL PUBLIC RECORDS of Brazoria County, Texas.

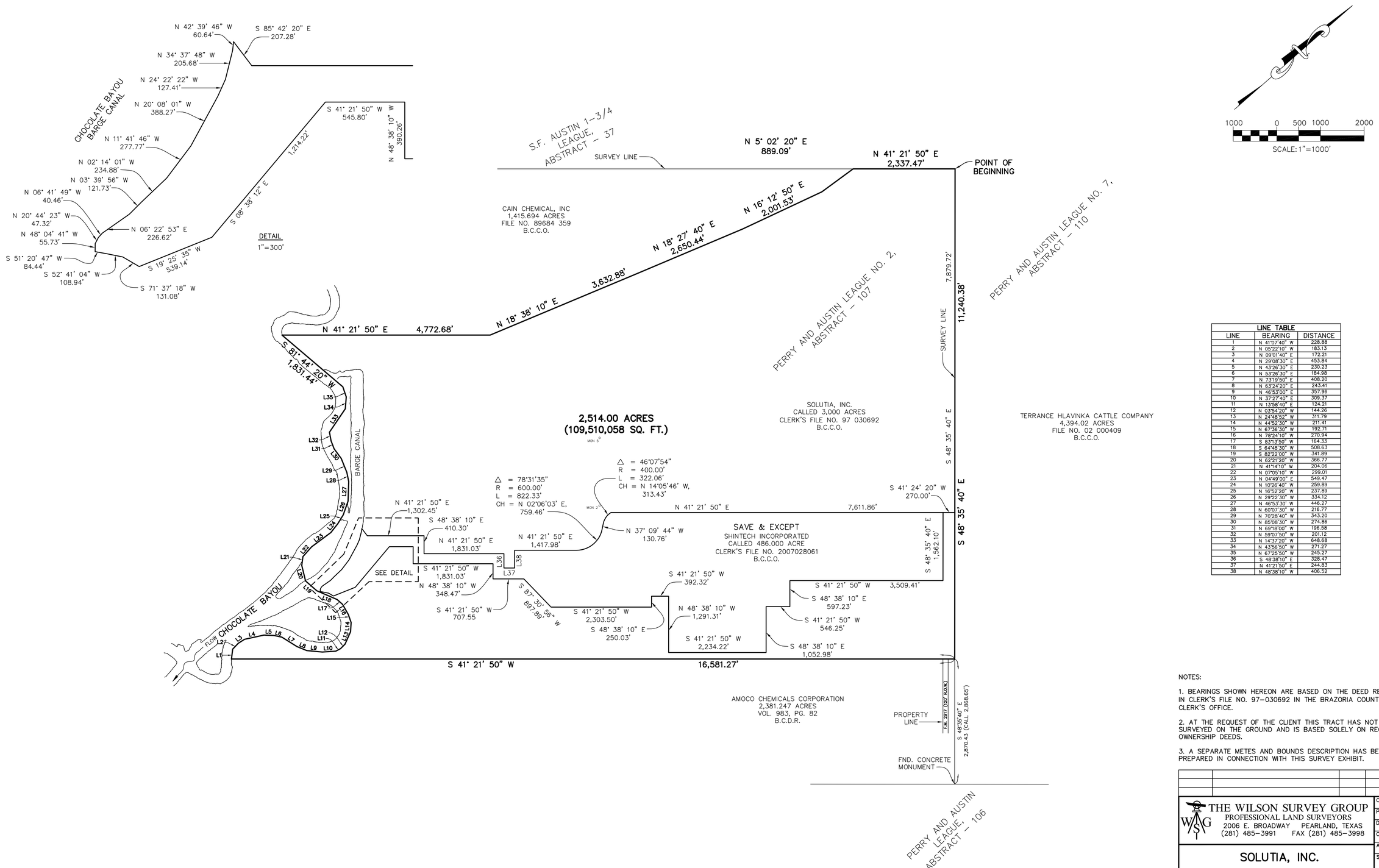


Joyce Hudman, County Clerk
Brazoria County, Texas

ANY PROVISION CONTAINED IN ANY DOCUMENT WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE REAL PROPERTY DESCRIBED THEREIN BECAUSE OF RACE OR COLOR IS INVALID UNDER FEDERAL LAW AND IS UNENFORCEABLE.

DO NOT DESTROY - Warning, this document is part of the Official Public Record.

cclerk-idelma



LINE TABLE		
LINE	BEARING	DISTANCE
1	N 41°07'40" W	228.88
2	N 05°22'10" W	183.13
3	N 09°01'40" E	172.21
4	N 29°08'30" E	453.84
5	N 43°26'30" E	230.23
6	N 53°26'30" E	184.98
7	N 73°19'50" E	408.20
8	N 83°24'20" E	243.41
9	N 46°53'00" E	357.96
10	N 37°27'40" E	309.37
11	N 13°58'40" E	124.21
12	N 03°54'20" W	144.26
13	N 24°48'52" W	311.79
14	N 44°52'30" W	211.41
15	N 67°36'30" W	192.71
16	N 78°24'10" W	270.94
17	S 83°13'50" W	164.33
18	S 64°48'30" W	508.63
19	S 82°22'00" W	341.89
20	N 62°21'20" W	366.77
21	N 41°14'10" W	204.06
22	N 07°05'10" W	299.01
23	N 04°49'00" E	549.47
24	N 10°26'40" W	259.89
25	N 16°52'20" W	237.89
26	N 29°22'30" W	334.12
27	N 46°53'30" W	446.27
28	N 60°07'30" W	216.77
29	N 70°28'40" W	343.20
30	N 85°08'30" W	274.86
31	N 69°18'00" W	196.58
32	N 59°07'50" W	201.12
33	N 14°37'20" W	648.68
34	N 43°56'50" W	271.27
35	N 67°25'50" W	245.27
36	S 48°38'10" E	328.47
37	N 41°21'50" E	244.83
38	N 48°38'10" W	406.52

NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE DEED RECORDED IN CLERK'S FILE NO. 97-030692 IN THE BRAZORIA COUNTY CLERK'S OFFICE.

2. AT THE REQUEST OF THE CLIENT THIS TRACT HAS NOT BEEN SURVEYED ON THE GROUND AND IS BASED SOLELY ON RECORDED OWNERSHIP DEEDS.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SURVEY EXHIBIT.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

CAD FILE 09-135.DWG
PLOT DATE 06/26/09
DWN C.L.H.
CKD M.D.W.
APPD M.D.W.
SCALE 1"=1000'
JOB NO. 09-135
SHEET 1 OF 1

SOLUTIA, INC.

EXHIBIT TO SHOW A 2,514.00 ACRE SOLUTIA TRACT IN THE PERRY AND AUSTIN LEAGUE NO. 2, ABSTRACT NO. 107, IN BRAZORIA COUNTY, TEXAS

GSI Job No. 6932

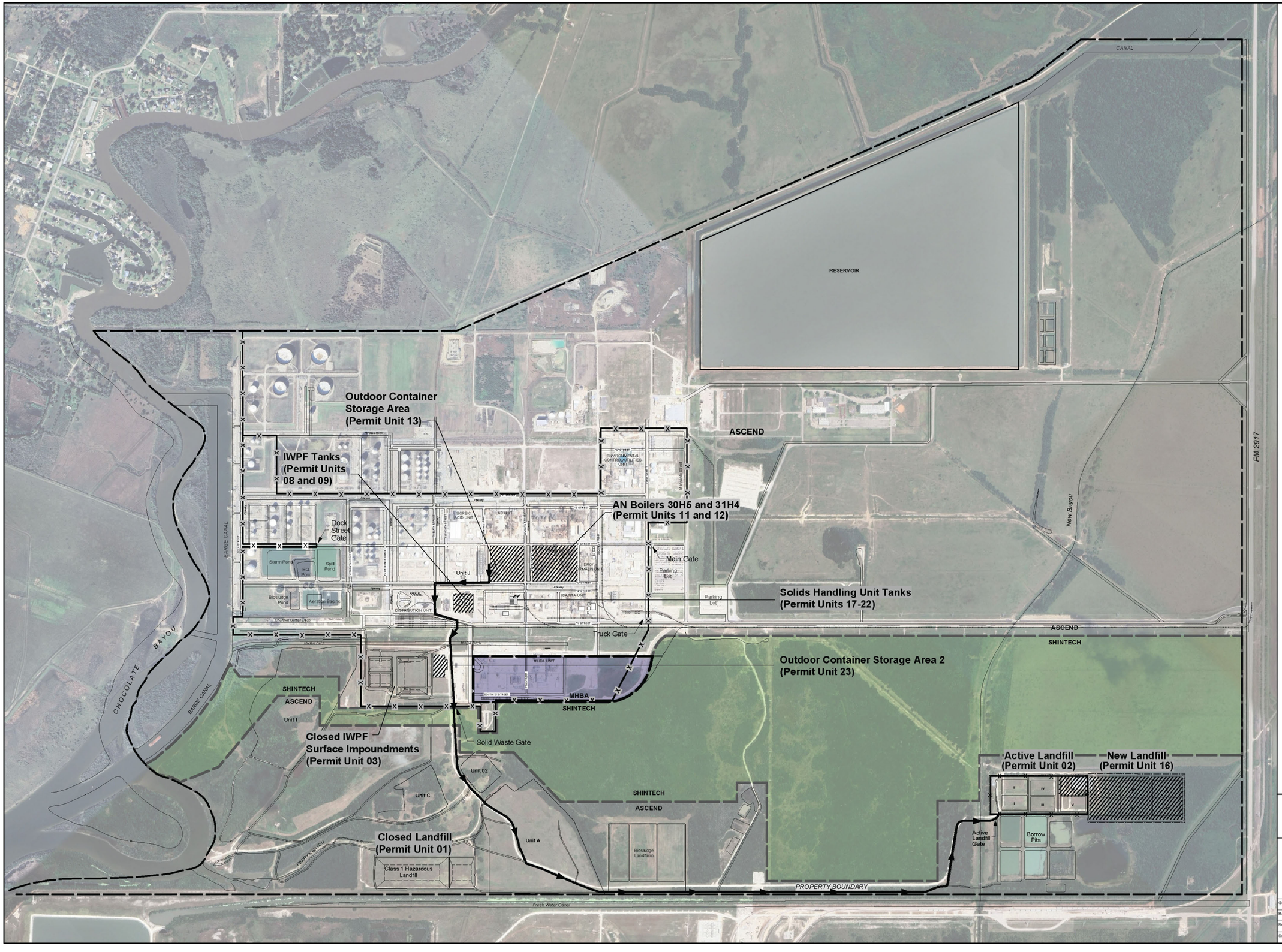
Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part A, Attachment C: Facility Boundaries and Adjacent Waters Maps

Maps and Supporting Information

- Attachment C.1 – Location of Hazardous Waste Management Units
- Attachment C.2 – Regional Site Location Map
- Attachment C.3 – Plant Drainage and Control Structure Map
- Attachment C.4 – Stormwater Drainage Patterns and Location of Injection Wells
- Attachment C.5 – Location of Monitoring and Recovery Wells
- Attachment C.6 – Location of Water Wells
- Attachment C.6a – Summary of Water Well Information
- Attachment C.7 – Facility Sewer System



PLANT NORTH

TRUE NORTH

LEGEND

- Load/unloading areas
- Road to Active Landfill
- Fence line
- Ascend Property Boundary
- MHBA Property Boundary
- Shintech Property Boundary

Notes:

1) Primary roads are 20 ft wide, paved with asphalt or concrete, and designed for a 14,000-lb bearing capacity.
2) Secondary roads are paved with crushed limestone and designed for an 8,000-lb bearing capacity.
3) A 14-mph speed limit applies to all plant roads.
4) Base maps compiled from Solutia drawing No. 340GA2 issued 4-June-1992, and aerial photographs obtained from Aerial Viewpoint, Inc., Negative No. 87B-1922, flight date April-1987, and Negative No. 2, flight date 26-January-1993.
5) Aerial background extracted from Google Earth Pro. Image dated 12/16/2023.

SCALE (ft.)

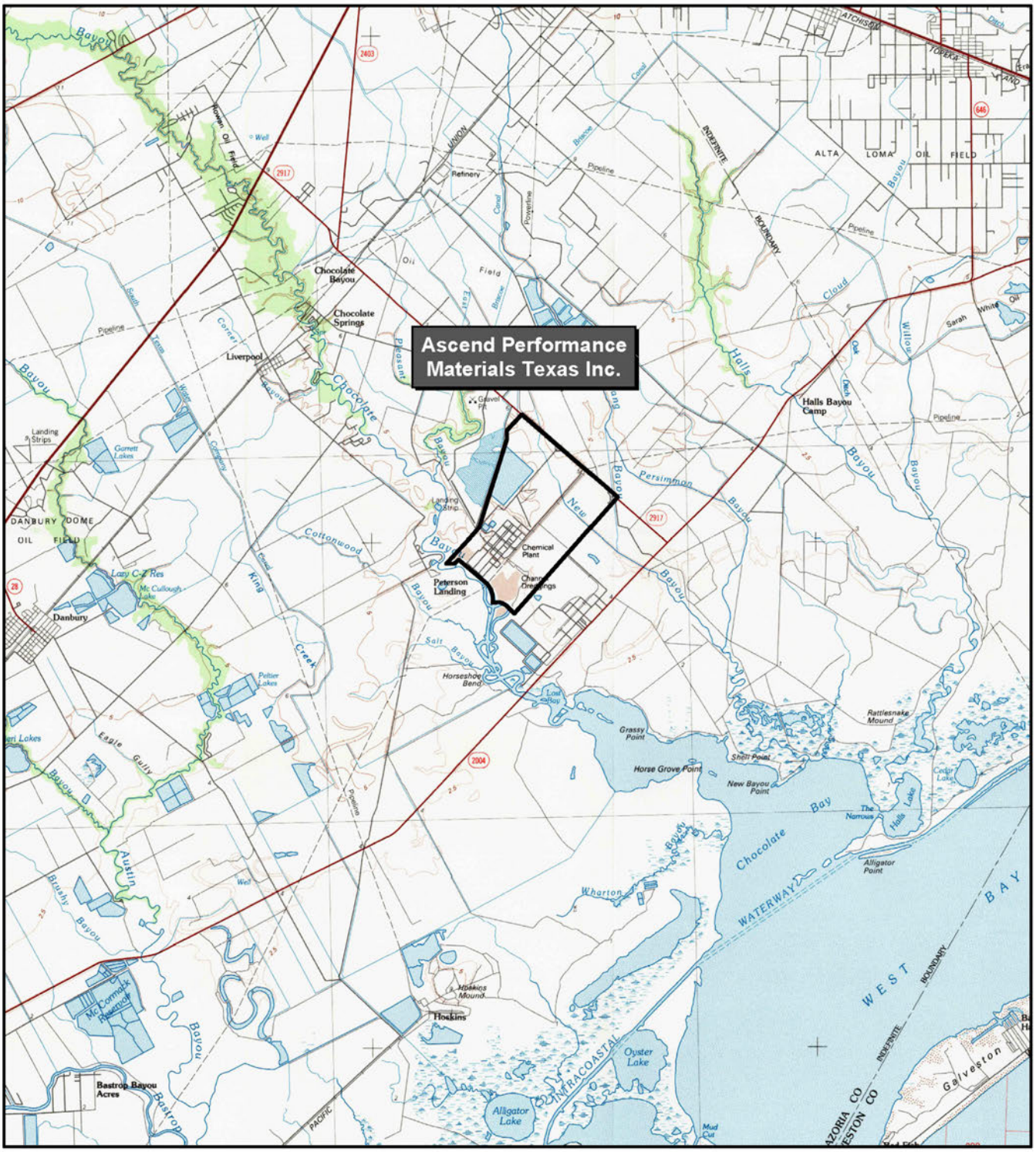
0 600 1200

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

LOCATION OF HAZARDOUS WASTE MANAGEMENT UNITS

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	000_02	Chk'd By:	MW
Revised:	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown		Attachment C.1



U.S. Geological Survey Map
Angleton, Texas 29095-A1-TM-100
1:100,000-Scale Metric Topographic
Date: 1984

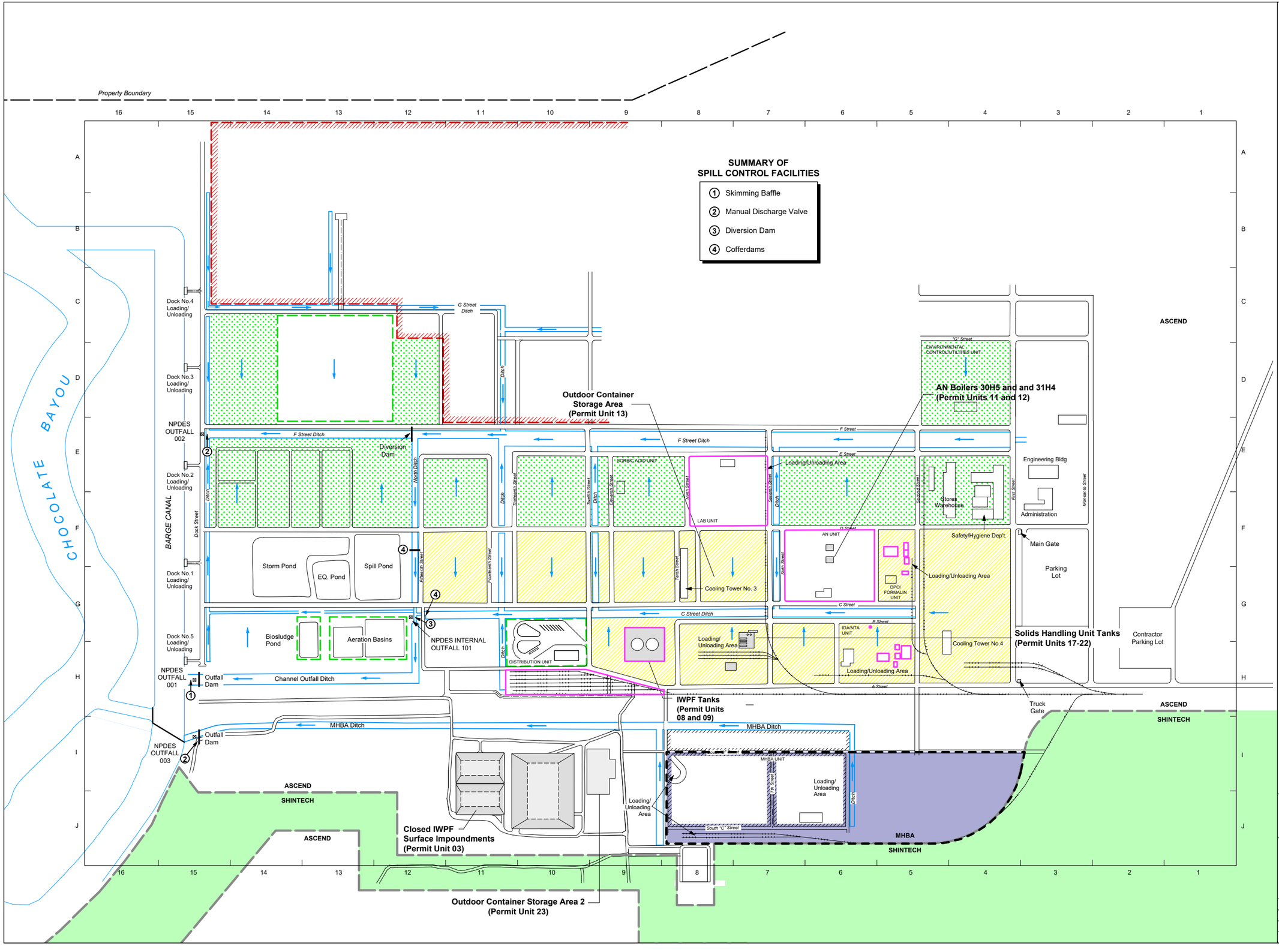
SCALE (mi.)
0 2 4

GSI ENVIRONMENTAL
Texas Geoscience Firm
Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	000_03	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Attachment C.2**	

REGIONAL SITE LOCATION MAP

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas



LEGEND

- Direction of Surface Water Flow
- NPDES Outfall
- Unit Control Room
- Ascend property boundary
- MHBA Property Boundary
- Shintech Property Boundary

Drainage Areas

- C Street Ditch
- F Street Ditch
- G Street Ditch
- Biological Treatment System
- MHBA Ditch
- IWPF Tanks

NOTE:

Base maps compiled from Solutia drawing No. 340GA2 issued 4-June-1992, and aerial photographs obtained from Aerial Viewpoint, Inc., Negative No. 87B-1922, flight date April-1987, and Negative No. 2, flight date 26-January-1993.

SCALE (ft.)

0 300 600

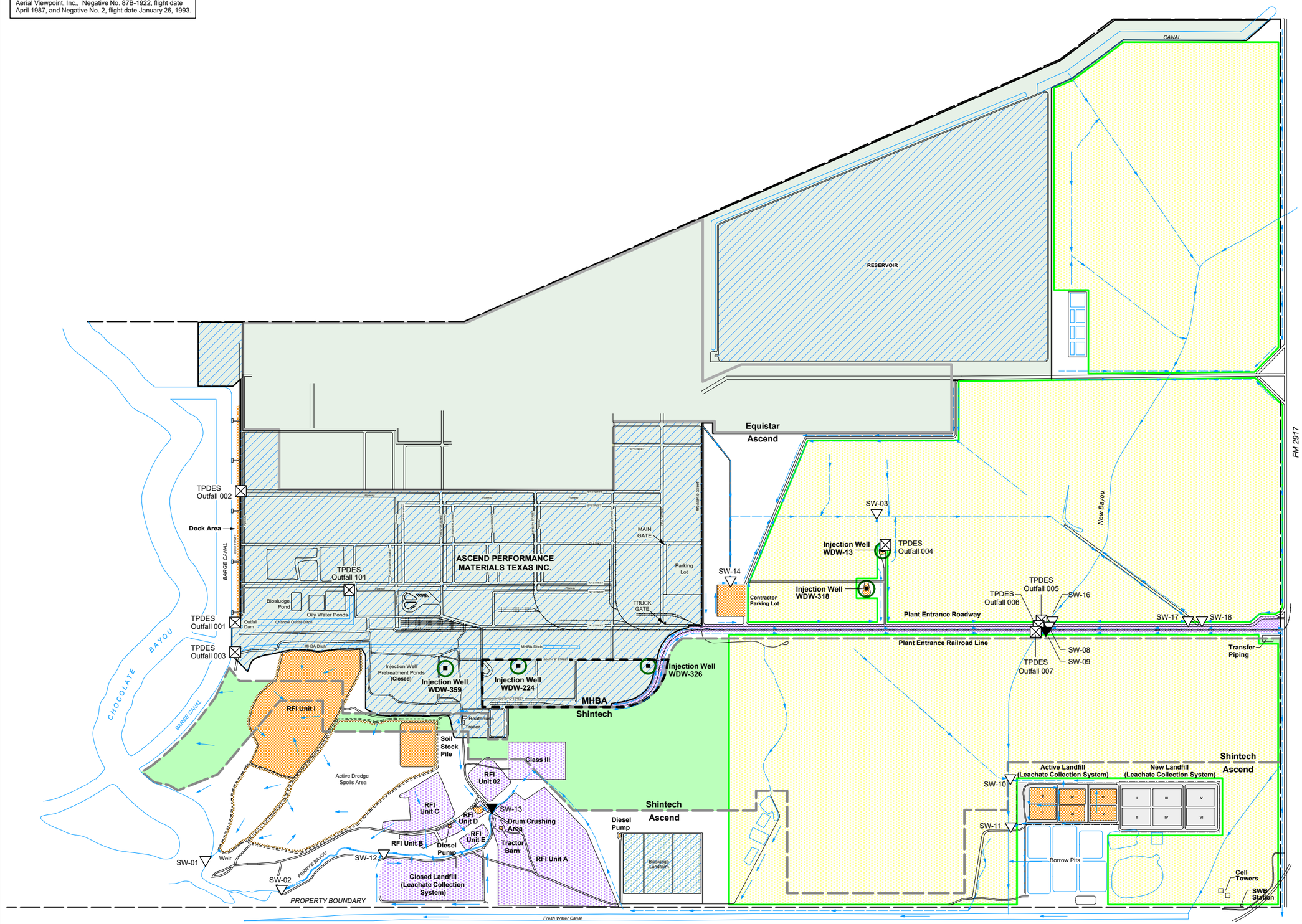
GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

PLANT DRAINAGE AND CONTROL STRUCTURE MAP

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	000_04	Chk'd By:	MW
Issued:	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown	**Attachment C.3**	

Base maps compiled from Monsanto drawing No. 340GA2 issued June 4,1992, and aerial photographs obtained from Aerial Viewpoint, Inc., Negative No. 87B-1922, flight date April 1987, and Negative No. 2, flight date January 26, 1993.



PLANT NORTH

TRUE NORTH

LEGEND

- Facility subject to General Permit for stormwater discharges associated with industrial activity Stormwater sampling required.
- Area of Ascend property draining to outfalls under NPDES Permit No. TX0003875 or to Deep Well Facility (UIC permit Nos. WDW-13, WDW-318, WDW-326, and WDW-224).
- Area leased to cattle rancher, not used for industrial activity.
- Facility subject to General Permit for stormwater discharges associated with industrial activity. No stormwater sampling required if materials kept from contact with precipitation (e.g., cover, within piping surrounding by berms or dikes).
- Surface Runoff Flow Direction
- Drainage Structure or Ephemeral Stream
- Continuous Stream
- SW-10 — Stormwater Discharge Point
- SW-13 — Stormwater Discharge Point to be sampled during annual stormwater monitoring and quarterly visual monitoring.
- Injection Well
- Discharge Point for TPDES Permit.
- Dikes
- Ascend Property Boundary
- MHBA Property Boundary
- Shintech Property Boundary

NOTE:

Surface water flow directions determined from site surveys performed on 8,10,16-March-1993, 11-February-1999, and 4-October-2001.

SCALE (ft.)

0 600 1200

GSI ENVIRONMENTAL

Texas Geoscience Firm Registration Number: 50243

STORMWATER DRAINAGE PATTERNS AND LOCATION OF INJECTION WELLS

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189

Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	000_05	Chk'd By:	MW
Issued:	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown	**Attachment C.4**	

Outdoor Container Storage Area (Permit Unit 13)

IWPF Tanks (Permit Units 08 and 09)

AN Boilers 30H5 and 31H4 (Permit Units 11 and 12)

Solids Handling Unit Tanks (Permit Units 17-22)

Injection Well WDW-13

Injection Well WDW-318

Injection Well WDW-359

Injection Well WDW-224

Injection Well WDW-326

Closed IWPF Surface Impoundments (Permit Unit 03)

Outdoor Container Storage Area 2 (Permit Unit 23)

Active Dredge Spoils Area

Closed Landfill (Permit Unit 01)

Active Landfill (Permit Unit 02)

New Landfill (Permit Unit 16)

Borrow Pits

Biosludge Landfarm

PLANT NORTH

TRUE NORTH

Base maps compiled from Monsanto drawing No. 340GA2 issued June 4, 1992, and aerial photographs obtained from Aerial Viewpoint, Inc., Negative No. 87B-1922, flight date April 1987, and Negative No. 2, flight date January 26, 1993.

SCALE (ft.)

0 400 800

LEGEND

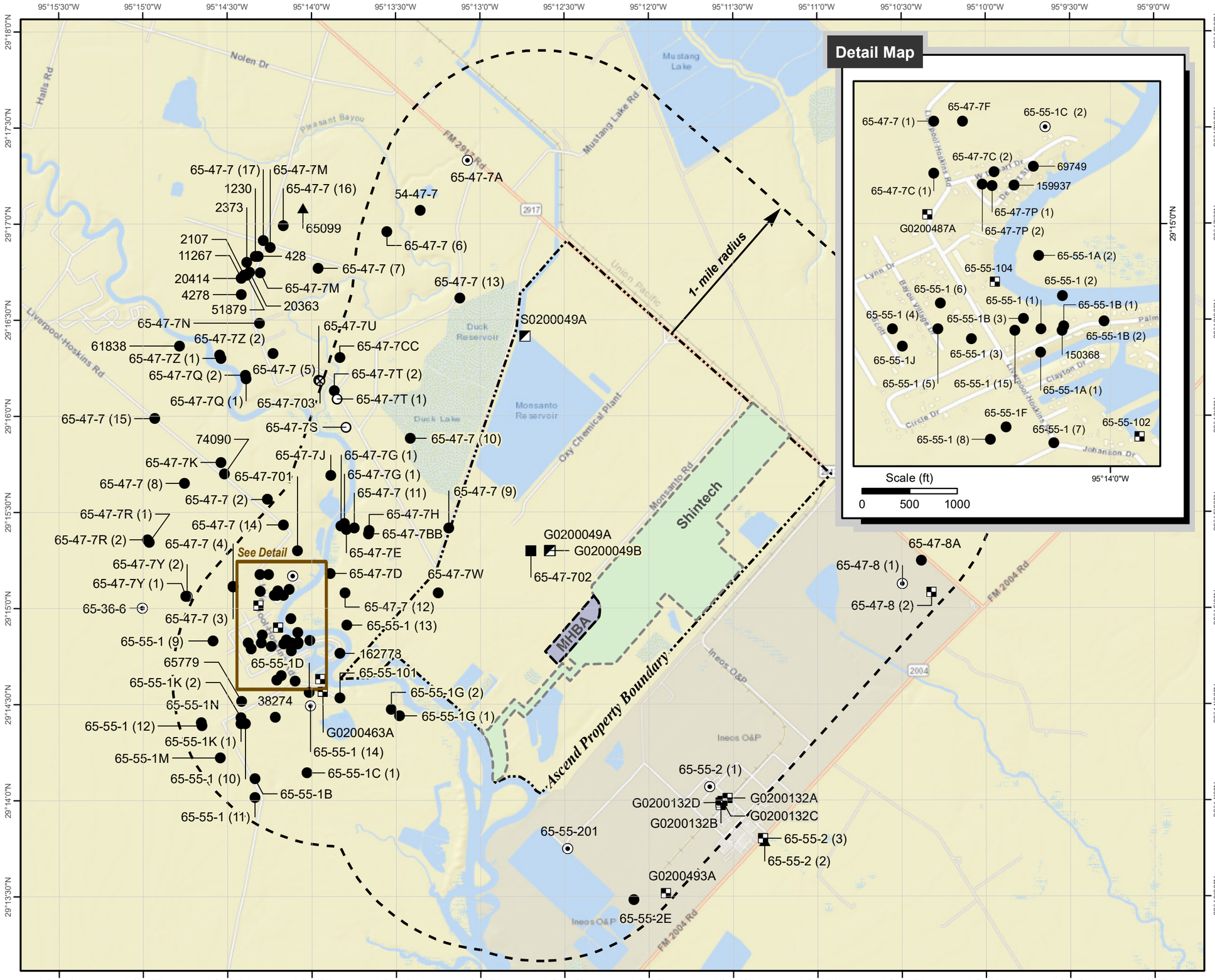
- Monitoring Well Location
- Recovery Well Location (not active)
- Injection Well Location
- Ascend Property Boundary
- MHBA Property Boundary
- Shintech Property Boundary

GSI ENVIRONMENTAL
Texas Geoscience Firm
Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	000_06	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown		**Attachment C.5**

LOCATION OF MONITORING AND RECOVERY WELLS

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas



Notes

1) Well location information provided by Banks Environmental Data, May 17, 2024. Well information provided in Attachment C.7.
2) Background Imagery: Provided by ArcGIS Map Services, World Street Map, 4/26/2017,

Scale (ft): 0 1500 3000

Projected Coordinate System
Datum: NAD 1983
STP: Texas South Central, 4204 (ft)

GSI ENVIRONMENTAL
Texas Registration Number: F-1198

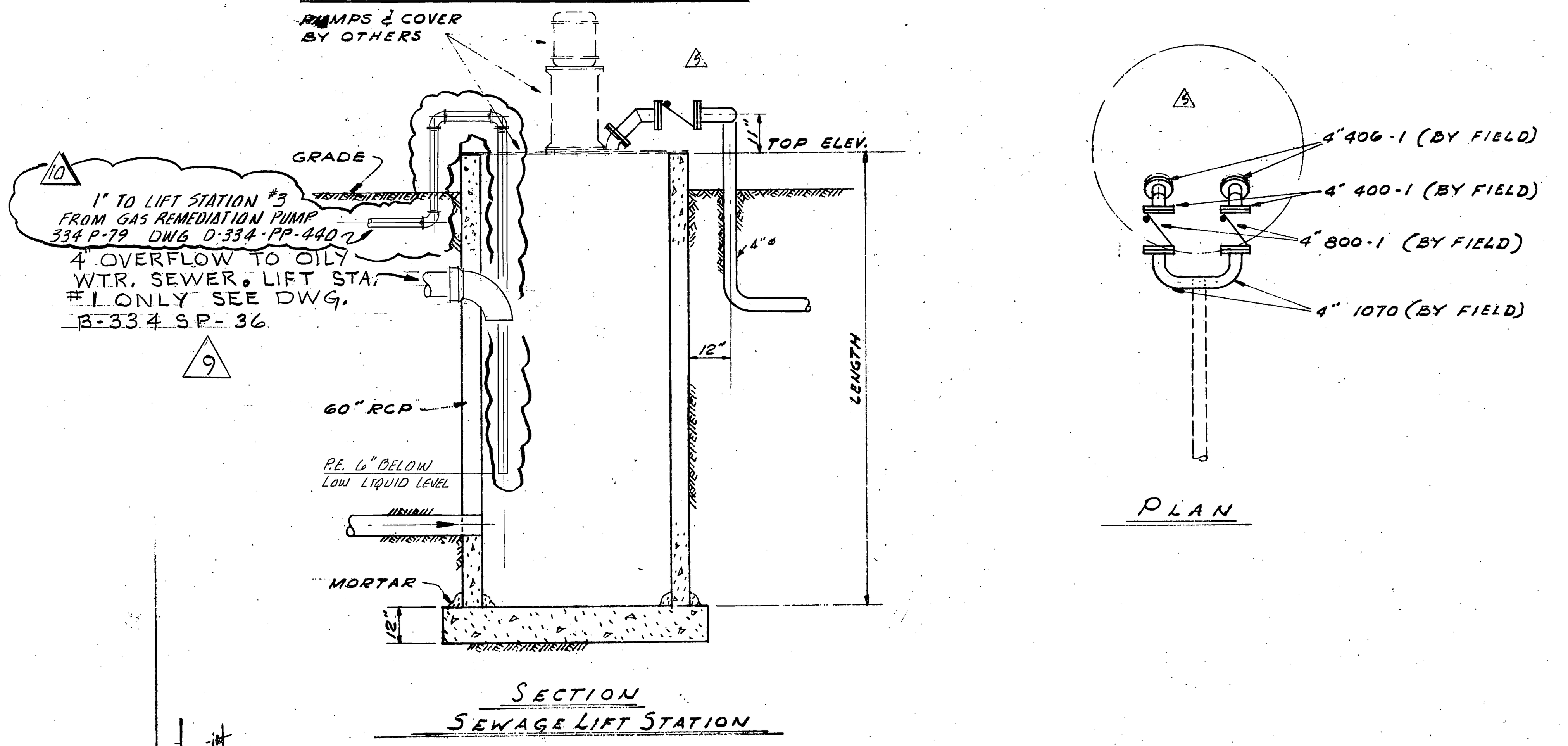
LOCATION OF WATER WELLS

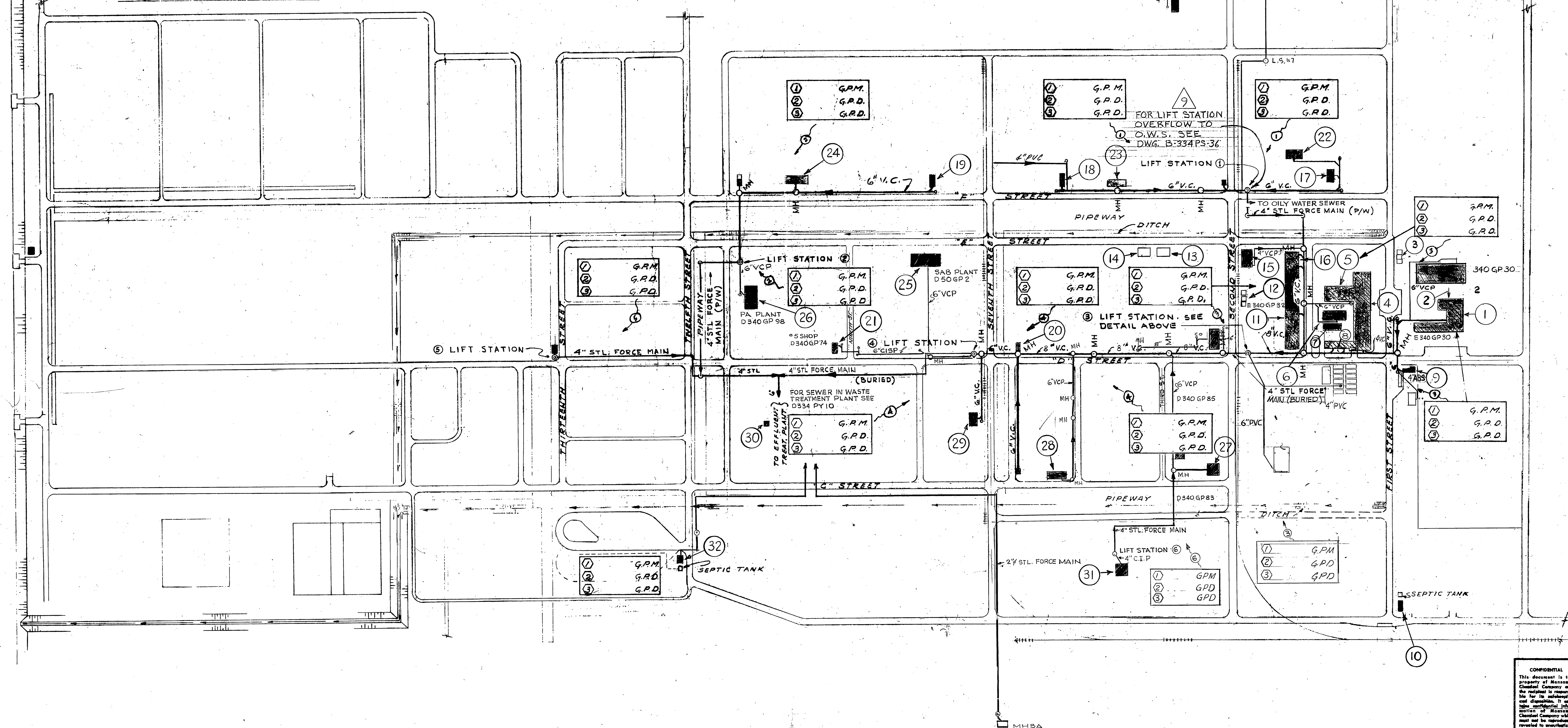
Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Inc., Alvin, Texas

GSI Job No.	6932	Drawn By:	CDM
Issued:	9-Aug-2024	Chk'd By:	MW
Map ID:	**000_07**	Appv'd By:	JMM

ATTACHMENT C.6

No	LOCATION	TOP EL.	LENGTH
1	N5303 - W1083	100.00	12'
2	N5055 - W3115	100.00	12'
3	N4639 · W1095	100.00	12'
4	N4639 · W2192	100.00	12'
5	N4666 · W3829	101.00	8'
6	N3829. - W1616	101.00	9'-6"





NOTES

1. THE ORIGINAL SANITARY SEWAGE SYSTEM WAS BASED UPON THE EXPECTED NUMBER OF PERSONNEL REQUIRED FOR OPERATION AFTER THE COMPLETION OF ALL FUTURE UNITS. THIS INCLUDES OFFICE AND SUPPORT PERSONNEL, OPERATORS AND NORMAL MAINTENANCE CREWS. TURNAROUND MAINTENANCE CREWS AND CONSTRUCTION PERSONNEL ARE NOT INCLUDED.
2. THE MAXIMUM NUMBER OF PERSONNEL REQUIRED FOR THE DAY SHIFT WAS ASSUMED TO BE 525 AND FOR ALL THREE SHIFTS WAS ASSUMED TO BE 775.
3. SEE "PERSONNEL BY AREA" CHART THIS DWG. FOR SOURCES OF CURRENT LOADS

LEGEND

① MAX. GPM/8HR SHIFT
② MAX. GALLONS/8HR SHIFT
③ GALLONS PER DAY

NO.	DATE	REVISIONS	BY	CH'K	DFTG. SUPVR.	ENG'R	CHIEF ENG'R	CLIENT
11	2/01/12	REPLACED MONSANTO WITH ASCEND.						
10	3/13/90	ADDED 1" LINE FROM GAS REMEDIATION PUMP	L.R.					
9	3/15/85	ADD LIFT STA. #1 OVERFLOW	RRH	JS	[illegible]	[illegible]		
8	5/77	ADDED 4" PVC @ SHOP #2	RG					
7	11/69	GENERAL REVISION	[illegible]	WOOD	WOOD			
6	10/1/62	AS BUILT				[illegible]	[illegible]	
5	[illegible]	ADD. PIPING @ LIFT STA.	BL	DVS	[illegible]	[illegible]		
4	[illegible]	REM. HOLD FROM LIFT STA.	BL	DVS	[illegible]	[illegible]		
3	[illegible]	REV. FORCE MAINS REL. TREAT. PLANT	BL	[illegible]	[illegible]	[illegible]		
2	[illegible]	REVISED SEWER LAYOUT	GAL	DVS	[illegible]	[illegible]		[illegible]
1	[illegible]	ISSUED FOR CONSTRUCTION	[illegible]	DVS	RD	[illegible]		[illegible]
0	[illegible]	ISSUED FOR APPROVAL	[illegible]	-	RD	[illegible]		

Ascend
Performance Materials

LOCATION: CHOCOLATE BAYOU | PROJ. NO.

OVERALL PLAN
SANITARY SEWERS

JOB NO. 3375

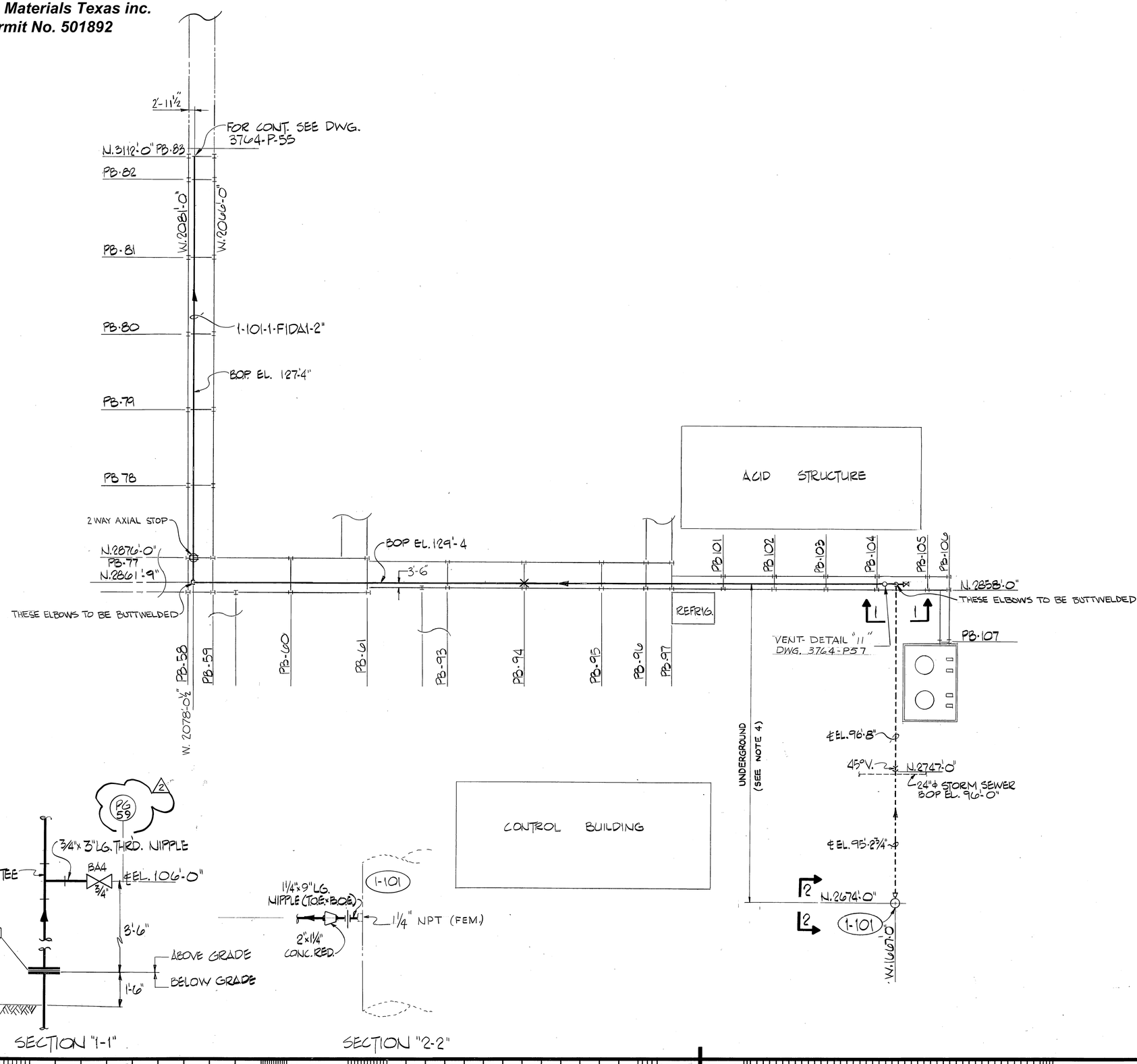
DRAWN: R.H.M.
DESIGN CHK.
DETAILS CHK.
APPD.

BECHTEL

SCALE 1"=200'

DWG. NO. E-334 PS 7 R/11

SCALING RULES



NOTES

1. ABOVE GRADE PIPING TO BE THR'D. GALVANIZED CONSTRUCTION. BELOW GRADE PIPING TO BE BUTTWELD BLACK CONSTRUCTION. COATED AND WRAPED PER K1.3 STD. U1.
2. FOR GENERAL NOTES AND SYMBOLS SEE DWG. 3764 - P - 1.
3. FOR SHOES, GUIDES, STOPS AND ANCHOR DETAILS SEE DWG. 3764 - P - 6.
4. UNDERGROUND PORTION OF LINE TO BE PLACED IN UNDISTRIBUTED EARTH WITH BACKFILL TO BE WELL GRADED EARTH WITH SPECIAL CARE TAKEN NOT TO DAMAGE COATING.
5. PIPE SHOES TO BE LOCATED AT EVERY SUPPORT UNLESS NOTED. GUIDES TO BE LOCATED AT EVERY OTHER SUPPORT.
6. FOR BILL OF MATERIAL SEE DWG. 3764 P-18 & P.19.
7. SEE DWG. 3764-D-34 FOR E.F.D.

REV	CEA	BY / DATE	DESCRIPTION	CHKD / APPD
3	2291	DMZ 2-02-12	REPLACED MONSANTO WITH ASCEND.	
2	3764	SWINHART	ADDED PRESSURE GAUGE	JLO
			CALLOUT NUMBER	MWS
1	3764	SWINHART 8-6-82	ADDED CALLOUT SHOWING UNDERGROUND PORTION OF LINE	JLO MWS
0	3764	N 7-16-82	APPROVED FOR CONST	N MWS

Ascend Performance Materials — CORPORATE ENGINEERING DEPT. ST. LOUIS, MISSOURI

COMPANY M.C.I. PLANT CHOC. BAYOU

PIPING PLAN SANITARY SEWER LINE

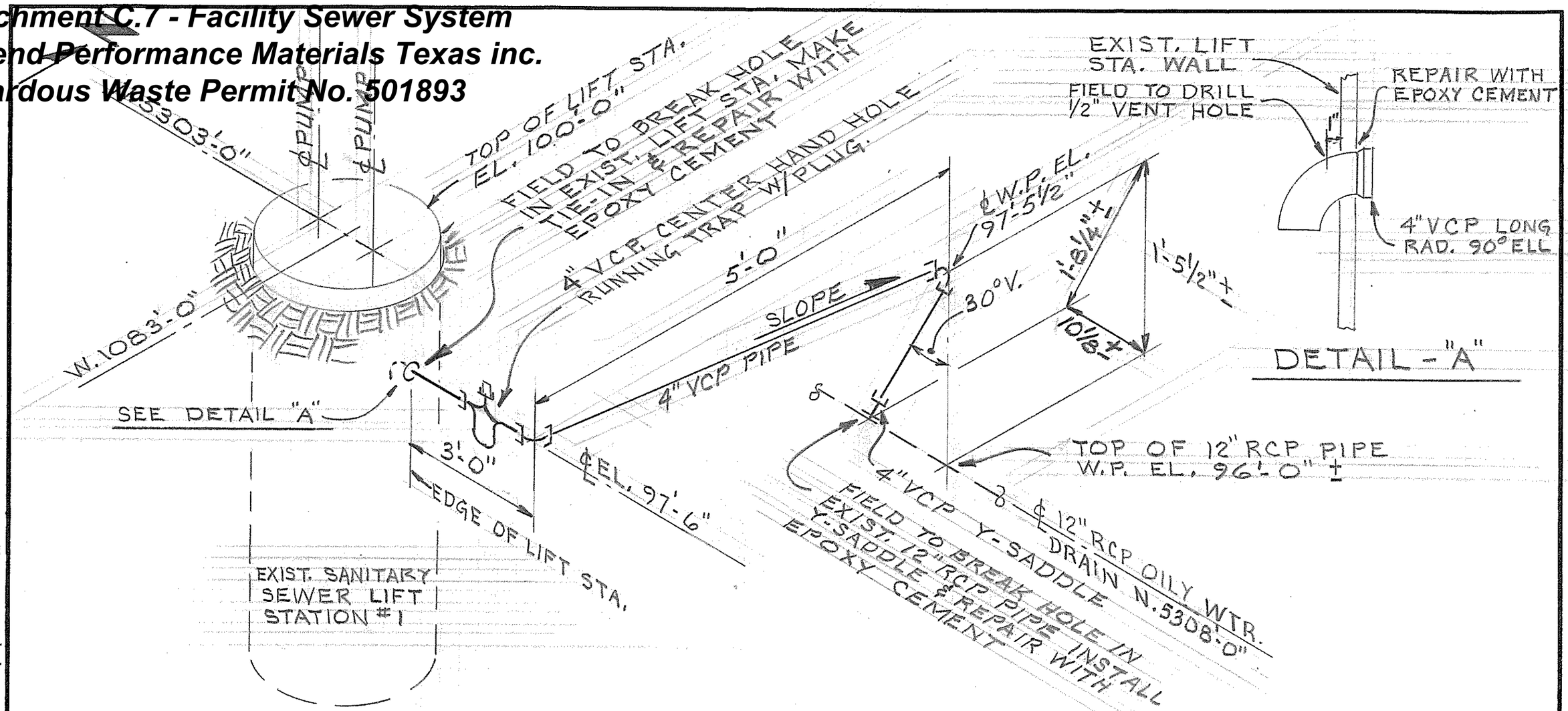
	BY	DATE	APPROVED	DATE	APPROVED	DATE
DRAWN	LEEBOLT	6-8-82	SCHOEDER	7-16-82		
CHECKED	HARGROVE	7-12-82				
DESIGNED			SCALE 1" = 30'			

C.E.A. NO.	PLANT	SIZE	ZONE	TYPE	NUMBER	REV
3764	46	D	26.001 334	P PS	60 28	3

SCALING RULES

PRINTS ISSUED TO FIELD BY SCHOEDER DATE 12-17-82 REV. 2 CSTD

CE-316



REF. DWGS.

E-334PS-7	PLAN SANITARY SEWER
E-340GP-10	PLAN UNDERGROUND

00

NO.	W.O. NO.	DATE	REVISION	DR.	CK'D.	DRAFT. SUPV.	ENG'R.	PROCESS	PROD.
1		2-1-12	REPLACED MONSANTO WITH ASCEND	DM2					

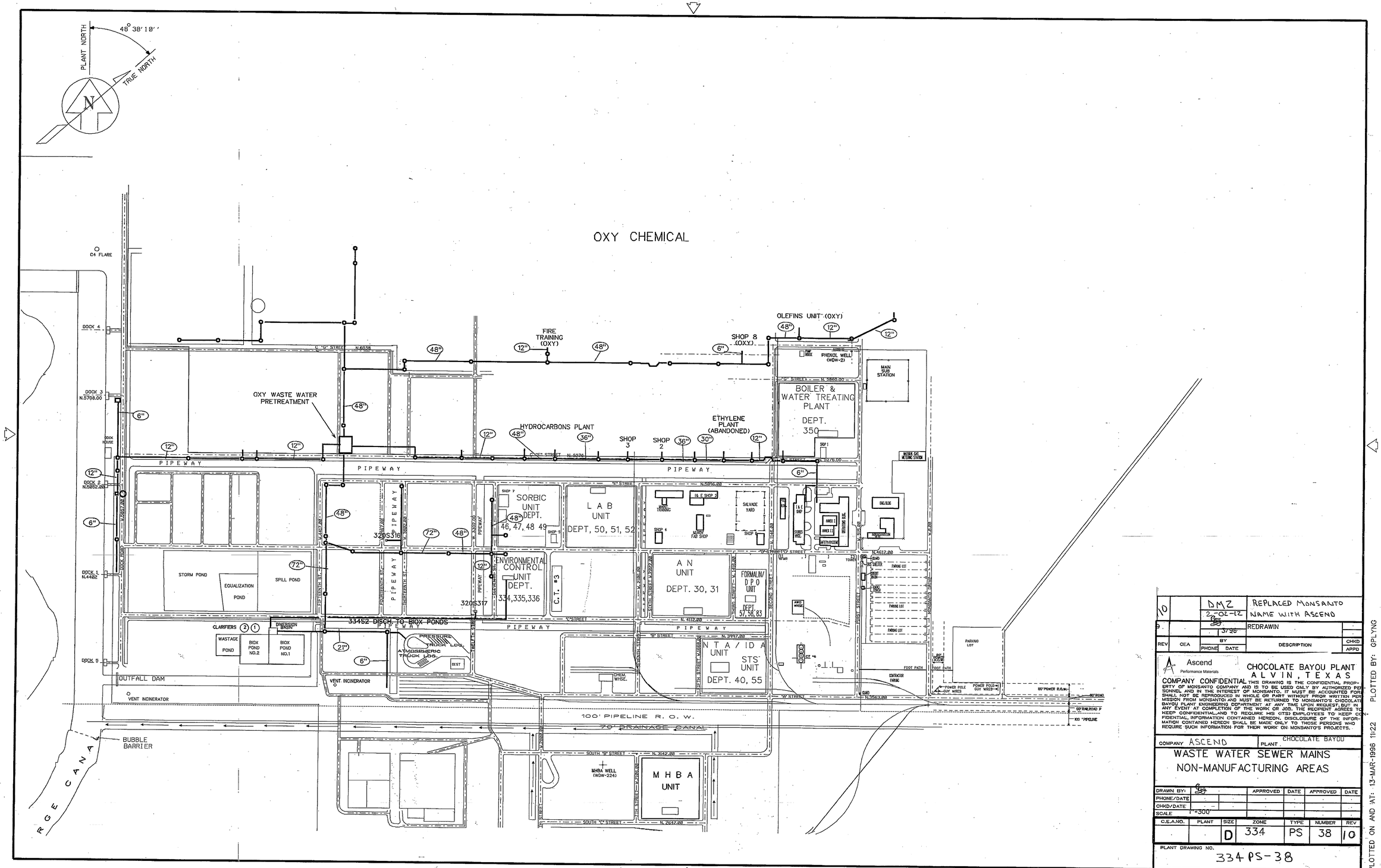
DRAWN RRH DATE 3-14-85	
CHECKED SPURLOCK 3-20-85	
DRAFT. SUPV. 5-23-85	
ENG'R. VAL CANIER 5/23/85	
PROCESS	
PROD.	
SCALE NONE	

Ascend Performance Materials
PLANT ENGINEERING
Chocolate Bayou
ALVIN, TEXAS

SANITARY SEWER LIFT STATION #1 OVERFLOW

W.O. NO. 678278
DEPT. ENV. CONTROL
AREA UTILITIES
DWG. NO. B-334PS-36 R/1

N32653



REV	CEA	PHONE	DATE	DESCRIPTION	CHKD	APPD
10		DMZ	2-02-12	REPLACED MONSANTO NAME WITH ASCEND		
9		3796		REDRAWN		

Ascend Performance Materials

CHOCOLATE BAYOU PLANT
ALVIN, TEXAS

COMPANY ASCEND PLANT CHOCOLATE BAYOU

WASTE WATER SEWER MAINS NON-MANUFACTURING AREAS

DRAWN BY:		APPROVED	DATE	APPROVED	DATE
PHONE/DATE					
CHKD/DATE	" "				
SCALE	1"=500'				

C.E.A.NO.	PLANT	SIZE	ZONE	TYPE	NUMBER	REV
		D	334	PS	38	10

PLANT DRAWING NO. 334 PS-38

DESIGN FILE NAME: PRINTS ISSUED TO FIELD BY: DATE REV

PLOTTED ON AND AT: 13-MAR-1996 11:22 PLOTTED BY: GPLYNG

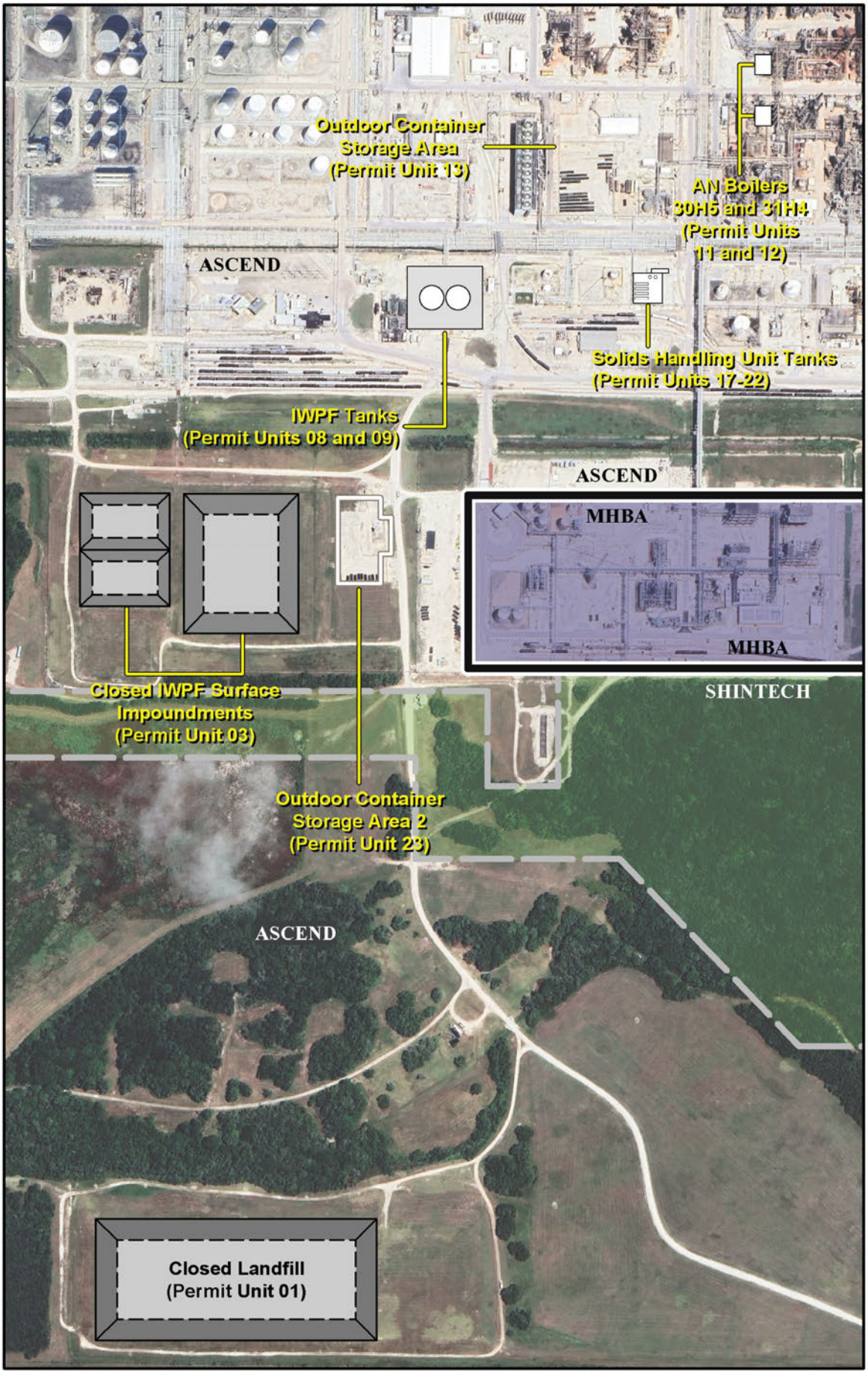
Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

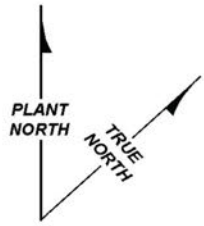
Hazardous Waste Permit No. 50189

Part A, Attachment D: Photographs

Maps and Supporting Information

- Attachment D.1 – Hazardous Waste Management Unit Photographs: Units 01, 03, 08, 09, 11, 12, 13, 17 – 22, and 23
- Attachment D.2 – Hazardous Waste Management Unit Photographs: Units 02 and 16





LEGEND

- MHBA Property Boundary
- Shintech Property Boundary

Notes:

1) Aerial photograph obtained from Google Earth Pro. Historical imagery 12/2023.
2) See Attachment C.1 for hazardous waste management unit locations map.
3) Features drawn on photo depict current site conditions.

Approx. Scale (ft)

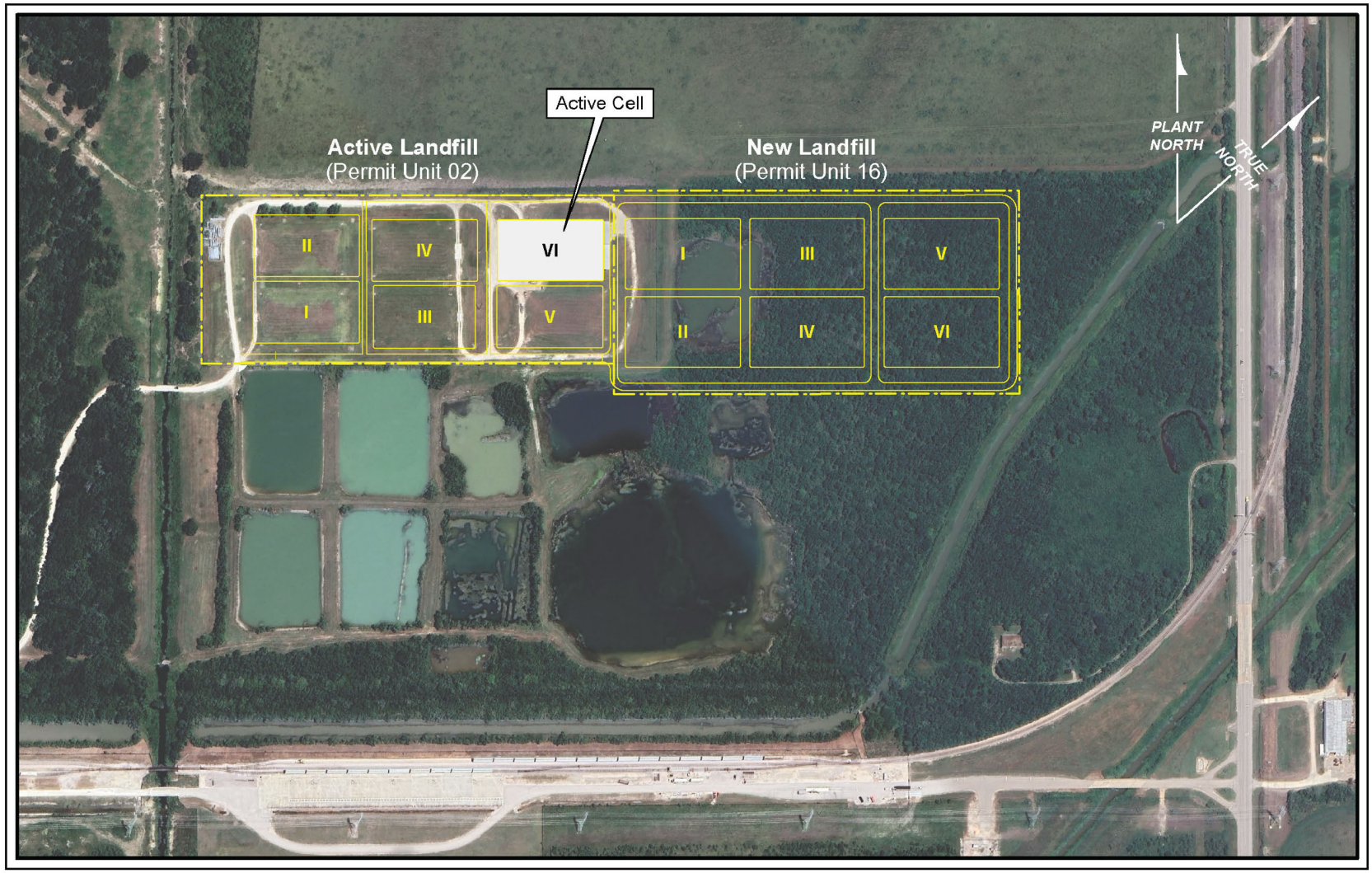
0 250 500

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Issued:	000_08	Chk'd By:	MW
Revised:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown		Attachment D.1

HAZARDOUS WASTE MANAGEMENT UNIT PHOTOGRAPHS: Units 01, 03, 08, 09, 11, 12, 13, 17-22, and 23

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas



Approx. Scale (ft)

0 250 500

Notes:

1) Aerial photograph obtained from Google Earth Pro. Historical imagery 12/2023.
2) See Attachment C.1 for hazardous waste management unit locations map.
3) Features drawn on photo depict current site conditions.

GSI ENVIRONMENTAL

Texas Geoscience Firm Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	000_09	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Attachment D.2**	

HAZARDOUS WASTE MANAGEMENT UNIT PHOTOGRAPHS: Units 02 and 16

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Inc., Alvin, Texas

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

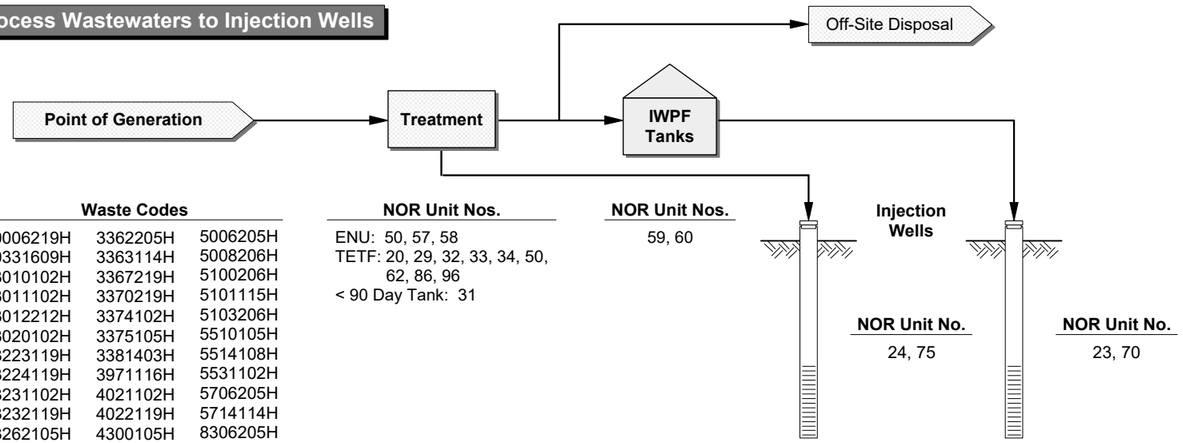
Hazardous Waste Permit No. 50189

Part A, Attachment E: Process Flow Diagram / Description

Waste Flow Diagrams

- Attachment E.1 - Hazardous Waste Flow Diagram
- Attachment E.2 - Notes to Hazardous Waste Flow Diagram

Process Wastewaters to Injection Wells



Waste Codes

0006219H	3362205H	5006205H
0331609H	3363114H	5008206H
3010102H	3367219H	5100206H
3011102H	3370219H	5101115H
3012212H	3374102H	5103206H
3020102H	3375105H	5510105H
3223119H	3381403H	5514108H
3224119H	3971116H	5531102H
3231102H	4021102H	5706205H
3232119H	4022119H	5714114H
3262105H	4300105H	8306205H
3270105H	4302105H	9143105H
3361609H	4303102H	9193605H

NOR Unit Nos.

ENU: 50, 57, 58
TETF: 20, 29, 32, 33, 34, 50, 62, 86, 96
< 90 Day Tank: 31

NOR Unit Nos.

59, 60

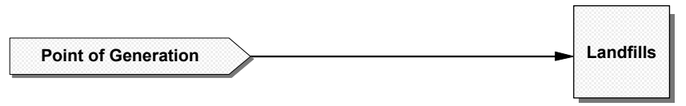
NOR Unit No.

24, 75

NOR Unit No.

23, 70

Solids to On-Site Landfill



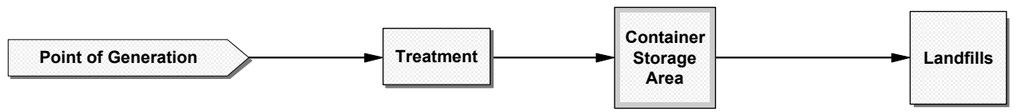
Waste Codes

0006219H	3224119H	5001301H
0331609H	3231102H	5006205H
3010102H	3232119H	5100206H
3011102H	3361609H	5101115H
3012212H	3362205H	5103206H
3020102H	3363114H	5531102H
3032403H	3367219H	5706205H
3076301H	3370219H	8304319H
3079302H	3971116H	8306205H
3081311H	3977319H	9193605H
3170303H	4021102H	
3223119H	4022119H	

NOR Unit No.

51
104

Spent Carbon, Catalyst Sludge, and Centrifuged Process Cake to On-Site Landfills



Waste Codes

0331609H	3362205H
3077319H	5705319H
3361609H	

NOR Unit Nos.

Filtration and < 90 Day Tank: 71

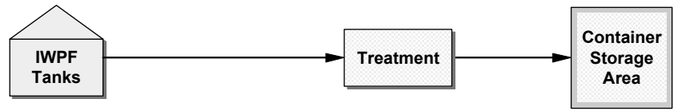
NOR Unit Nos.

78, 114

NOR Unit Nos.

51, 116

IWPF Tank Solids to Container Storage Area



Waste Codes

3361609H

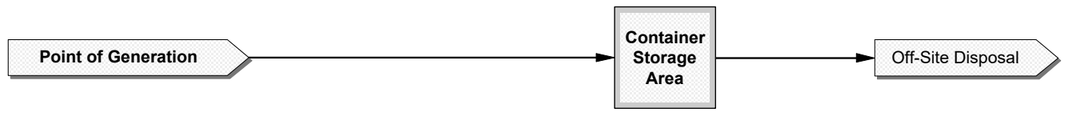
NOR Unit Nos.

121, 122, 123, 124, 125

NOR Unit Nos.

78, 114

Solids, Liquids, and Sludges to Off-Site Disposal



Waste Codes

0005309H	3224119H	5003404H
0006219H	3232119H	5004319H
0015319H	3262105H	5006205H
0026001H	3361609H	5100206H
0028319H	3362205H	5101115H
0029319H	3366310H	5103206H
0039801H	3370219H	5105110H
0092211H	3374102H	5514108H
0103209H	3381403H	5531102H
0331609H	3384407H	5705319H
3032403H	3602313H	5706205H
3076301H	3603409H	8304319H
3077319H	3691310H	8306205H
3079302H	3735409H	9141003H
3081311H	3977319H	9143105H
3161609H	4022119H	9151204H
3170303H	4300105H	9193605H
3220319H	4307203H	9198107H
3223119H	5001301H	9199105H

NOR Unit Nos.

61, 64

HCN By-Product to BIF Units

Waste Codes

3013212H

NOR Unit Nos.

79, 80

Notes:

1) NOR Unit Nos. 78 and 114 (Outdoor Container Storage Area, Permit Unit 13 & Outdoor Container Storage Area 2, Permit Unit 23) manage only waste solids that contain no free liquids.
2) All wastes to be land disposed are treated to meet the requirements of 40 CFR Part 268 and the Paint Filter Liquids Test (SW-846 Method 9095) prior to disposal.
3) ENU = Elementary Neutralization Unit; TETF = Totally Enclosed Treatment Facility; NOR = Notice of Registration; BIF = Boiler and Industrial Furnace; WWTU = Wastewater Treatment Unit; CWA = Clean Water Act.

GSI ENVIRONMENTAL
Texas Geoscience Firm
Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	000_10	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Attachment E**	

HAZARDOUS WASTE FLOW DIAGRAM

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT E.2
NOTES TO HAZARDOUS WASTE FLOW DIAGRAM

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

Overview of Wastes Generated at Ascend Chocolate Bayou Facility

Current plant operations at the Ascend Chocolate Bayou plant include the manufacture of chemical feedstocks and intermediates including Acrylonitrile (AN), Diphenyl Oxide (DPO), Formalin, Iminodiacetic Acid (IDA), Methionine Hydroxy Butanoic Acid (MHBA), Nitriloacetic Acid (NTA), Linear Alkyl Benzene (LAB), and Sodium Cyanide (NaCN). Wastes generated at the Chocolate Bayou facility consist of the following general waste types:

- inorganic liquids (e.g., aqueous wastes, leachate, decontamination wastewater, etc.)
- organic liquids (e.g., solvent mixtures, oil-water emulsions, waste oils, reactive liquids, etc.)
- inorganic solids (e.g., contaminated soils, spent filters/absorbents, etc.)
- organic solids (e.g., resins/polymerized organics, spent carbon, etc.)
- organic sludges e.g., reactive/polymerizable organics, etc.)
- lab packs (e.g., mixed wastes, chemicals from the plant laboratories)

These wastes are non-hazardous or classified as hazardous because of listing, characteristics, or both. Ascend does not receive wastes from offsite locations.

Hazardous waste flow is described below and depicted on Attachment E.1.

1. Process Wastewater to Injection Wells
2. Catalyst Sludge, Sludge Waste, and IWPF Tank Solids to Landfill
3. Solids (Contaminated Soil and Debris, Spent Filters, Refractory, Polymers, and Spent Carbon) to Landfills
4. Waste to Offsite Disposal
5. HCN By-Product to BIF Units

1. Process Wastewaters to Injection Wells

Hazardous inorganic and organic liquids are primarily generated as process wastewater from manufacturing units producing chemical feedstocks and intermediates. Within manufacturing units, totally enclosed treatment facilities (TETFs), elementary neutralization units (ENUs), and less than 90-day tanks are used to treat the process wastewater prior to management in the IWPF tanks (NOR Nos. 59 and 60/ Permit Nos. 8 and 9) and final disposal in the on-site injection wells (NOR Nos. 23 and 70). The MHBA

manufacturing unit treats its process wastewater in TETFs and ENUs prior to disposal in separate on-site injection wells (NOR Nos. 24 and 75). Process wastewaters are conveyed from points of generation to treatment, IWPF tanks, and injection wells via dedicated piping.

Treatment in TETFs (NOR Nos. 20, 29, 30, 32, 33, 34, 50, 62, 86, and 96) include filtration of solids, temperature and pH control, chemical treatment, benzene stripping, and/or coagulators and flocculators for safer storage and transportation of waste to injection wells. Acidic wastewater is neutralized with caustic and pH is controlled in the ENUs (NOR Nos. 57 and 58). Permit-exempt (less than 90-day) tanks (NOR Nos. 109-113) manage process wastewater primarily composed of process condensate, equipment decontamination, wash water, and rainwater from the NaCN manufacturing unit that is conveyed to IWPF tanks for final disposal in the injection wells.

Hazardous inorganic and organic liquid wastes are also collected by vacuum trucks and transported directly to hazardous management tanks (NOR Nos. 31, 104, 105, and 106) where oily waste is removed for offsite disposal and remaining liquid waste is conveyed to IWPF Tanks for final disposal in injection wells.

2. Catalyst Sludge, Sludge Waste, and IWPF Tank Solids to Landfill

Hazardous catalyst sludge, reactive sludge, and sludge waste (TCEQ form codes 605 and 609) are generated in campaigns, generally several times per year. Accumulated solids from the IWPF tanks are generated in campaigns every 8-10 years.

Currently, sludges are primarily generated in the AN units where wastewater column bottoms are treated in a TETF (NOR No. 62). The recently (2021) permitted Solids Handling Unit Tanks replaced NOR No. 71 filtration (used for filtration to remove free liquids) and permit-exempt (less than 90-day) tanks. During each campaign, sludge/solids will be collected from settling tanks from the NOR No. 62 TETF or the IWPF tanks and piped to the solids handling unit tanks (NOR Nos. 121 through 125 / Permit Nos. 17, 19-22) to be processed in mix tanks, filtrate tank, and decant tank (proposed – not yet constructed). Residual liquid waste will be disposed in the injection wells with process wastewater and solids are stored in container storage areas (NOR Nos. 78 and 114 / Permit Nos. 13 and proposed 23) before final disposal into the on-site active landfill (NOR No. 51 / Permit No. 2).

3. Solids (Contaminated Soil and Debris, Spent Filters, Refractory, Polymers, and Spent Carbon) to Landfills

Hazardous inorganic and organic solids are generated periodically from the filtration of process wastewaters in the manufacturing units producing chemical feedstocks and intermediates. Hazardous inorganic and organic solids are also generated sporadically from soil and debris that have been contaminated with organics from spills, leaks, or maintenance operations. Hazardous solid waste is collected in containers at the point of generation and stored in permitted and permit-exempt container storage areas prior to disposal in the on-site landfill (NOR No. 51/ Permit No. 2).

4. Waste to Offsite Disposal

Waste disposed offsite includes lab packs, inorganic and organic liquids, inorganic and organic solids, organic sludges, and organic gases. Waste designated for offsite disposal is generated throughout the facility, collected in containers at the point of generation, and stored in permitted and permit-exempt container storage areas until transported offsite for disposal.

5. HCN By-Product to BIF Units

A single hazardous reactive organic liquid (TCEQ form code 212) waste stream consisting of nearly pure hydrogen cyanide (HCN) is generated as a by-product of the AN manufacturing process. The HCN by-product is primarily used in the manufacture of other products in the Ascend Chocolate Bayou plant and is maintained in a totally enclosed system within each of the AN manufacturing units. On an annual basis, approximately 1% to 10% of the HCN by-product stream will be burned in an AN boiler for the production of steam when one of the Ascend Chocolate Bayou manufacturing units cannot accept the raw material HCN by-product stream. The HCN waste stream is managed in the on-site AN boilers (NOR Nos. 79 and 80/ Permit Nos. 11 and 12). When used in the boilers, the HCN by-product stream is conveyed via dedicated piping to the boiler equipment.

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B - Application Information

Contents

- TCEQ Administrative and Technical Evaluation Checklist for the RCRA Part B Application (electronic only on USB)
- Bilingual Notice Confirmation Form
- Plain Language Summary – English
- Plain Language Summary – Spanish
- Public Involvement Plan

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

TCEQ Administrative and Technical Evaluation Checklist for the RCRA Part B Application (electronic only on USB)

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Ascend Performance Materials Texas Inc., Alvin, Texas

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Bilingual Notice Confirmation Form

Bilingual Notice Instructions:

For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location to satisfy the school's obligation to provide such a program.

If it is determined that a bilingual notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

Bilingual notice confirmation for this application:

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

   ■ Yes ☐ No

   (**If No**, alternative language notice publication not required)

2. **If Yes** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ■ Yes ☐ No

   (**IF Yes** to questions 1 and 2, alternative language publication is required; **If No** to question 2, then consider the next question)

3. **If Yes** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location? ☐ Yes ☐ No

   (**If Yes** to questions 1 and 3, alternative language publication is required; **If No** to question 3, then consider the next question)

4. **If Yes** to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC 89.1205(g)?

   ☐ Yes ☐ No

   (**If Yes** to questions 1 and 4, alternative language publication is required; **If No** to question 4, alternative language notice publication not required)

If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program?

Spanish

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Hazardous Waste Permit Renewal Application

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Plain Language Summary - English

Texas Commission on Environmental Quality

Plain Language Summary

Industrial and Hazardous Waste Permit Applications

Instructions: Complete this form and submit with any industrial hazardous waste, or industrial solid waste, permit application that is subject to 30 Texas Administrative Code §39.405(k) [applications for a Class 3 permit modification, permit amendment, permit renewals, and for a new permit]. Please be concise.

Application Information

Purpose of application: ☐New ☒Renewal ☒Modification/Amendment	
Date Submitted to TCEQ: 6 September 2024	
Customer Name: Ascend Performance Materials Texas Inc.	
Facility Name: Ascend Performance Materials Chocolate Bayou Plant	
CN: 604255158	**RN:** 100238682
Permit Number: 50189	**Solid Waste Registration Number:** 30138
Facility Street Address: 6610 FM 2917, Alvin, Texas	
Weblink to Street Address: https://www.google.com/maps/place/Ascend+performance/@29.2624373,-95.224536	

Facility Information *(check all that apply)*

What is the primary type of business?	☒Chemical manufacturing ☐ Oil refinery ☐ Treatment, storage or disposal facility plant ☐Other **If other, enter description:**
What does the facility produce?	☒Chemicals ☐Fuels / lubricants ☐No products ☐Other **If other, enter description:**

Waste Management Information *(check all that apply)*

What types of wastes are managed?	☒Nonhazardous industrial ☒Hazardous ☒Other **If other, enter description:** Radioactive
Where does the waste come from?	☐Off-site source ☒On-site source
How is the waste managed?	☒Storage ☒Process / Treatment ☒Disposal ☐Other **If other, enter description:**
What type of units manage the waste?	☒Active ☒Post-Closure **Type and count:** 1 active landfill (Active Landfill) and one closed landfill (Closed Landfill) 1 proposed unit: New Landfill (not yet constructed)
What happens to waste managed at the facility?	☒Transported off-site ☒Disposed on-site ☐Other **If other, enter description:**

Pollution Control Methods *(check all that apply)*	
How will the facility prevent spills, leaks, and releases?	☒Routine inspections ☒Engineered liner systems ☒Spill containment ☒Proper waste handling ☐Operations in enclosed buildings ☒Groundwater monitoring ☐Other **If other, enter description:**
How will the facility clean up spills, leaks, and releases?	☒Spill clean-up supplies ☒Decontamination equipment ☐Other **If other, enter description:**
How will the facility prevent / minimize air emissions?	☒Air monitoring / control systems ☐Filters / scrubbers ☒Routine inspections ☒Proper waste handling ☐Operations in enclosed buildings ☐Other **If other, enter description:**

Description of Update *(for Class 3 Modifications and Amendments only)*

List and explain any changes this modification or amendment would make to the two sections above—**Waste Management Information** and **Pollution Control Methods**.

This permit renewal application includes a Class 2 permit modification to add one container storage area.

Clear Form

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Plain Language Summary - Spanish

Comisión de Calidad Ambiental de Texas

Resumen en Lenguaje Sencillo

Solicitudes de Permisos de Desechos Industriales y Peligrosos

Instrucciones

Complete este formulario y envíe con cualquier solicitud de permiso de desechos industriales peligrosos, o desechos sólidos industriales, que esté sujeta al Código Administrativo de Texas 30 §39.405 (k) [es decir, solicitudes para una modificación de permiso de Clase 3, enmienda de permiso, renovaciones de permisos y para un nuevo permiso].

Sea conciso: toda la información debe caber en dos páginas.

Información de la Solicitud

Propósito de la solicitud:	☐Nuevo	☒Renovación	☒Modificación/Enmienda

Sometido a TCEQ: 6 de septiembre de 2024

Nombre del Cliente: Ascend Performance Materials Texas Inc.

Nombre de la Instalación: Ascend Performance Materials Chocolate Bayou Plant

CN: 604255158	**RN:**100238682
Número de Permiso:RW-0219	**Número de Registro de Desechos Sólidos:** 30138

Dirección de la Instalación: 6610 FM 2917, Alvin, Texas

Enlace Web a la Dirección Postal:
https://www.google.com/maps/place/Ascend+performance/@29.2624373,-95.224536

Información de la Instalación *(marque todas lo que correspondan)*

¿Cuál es el tipo principal de negocio?	☒Planta de manufactura química ☐Refinería de aceite ☐ Instalación de tratamiento, almacenamiento o eliminación ☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción
¿Qué produce la instalación?	☒Químicos ☐Combustibles / lubricantes ☐Sin productos ☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción

Información sobre la Gestión de Desechos *(marque todas las que correspondan)*

¿Qué tipos de desechos se gestionan?	☒Industrial no peligroso ☐Peligroso ☒Otro **Si es otro, introduzca la descripción:** Radiactivo
¿De dónde provienen los desechos?	☐Fuente externa ☒Fuente interna
¿Cómo se gestionan los desechos?	☒Almacenar ☒Procesar / Tratar ☒Eliminación ☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción

¿Qué tipo de unidades gestionan los desechos?	☒ Activo ☒ Postcierre **Teclee y cuente:** 2 unidades activas o cerradas: Vertedero Activo y Vertedero Cerrado. 1 unidad propuesta: Vertedero Nuevo (aun no construido).
¿Qué sucede con los desechos gestionados en la instalación?	☒Transportados fuera del sitio ☒Eliminado en el sitio ☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción

Métodos de Control de la Contaminación *(marque todos los que correspondan)*			
¿Cómo evitará la instalación derrames, fugas y liberaciones?	☒Inspecciones de Rutina	☒Sistemas de revestimiento de ingeniería	☒Contención de derrames
	☒Manejo adecuado de desechos	☐Operaciones en edificios cerrados	☒Monitoreo de aguas subterráneas
	☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción		
¿Cómo limpiará la instalación los derrames, fugas y liberaciones?	☒Suministros de limpieza de derrames	☒Equipos de descontaminación	
	☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción		
¿Cómo evitará / minimizará la instalación las emisiones atmosféricas?	☒Sistemas de monitoreo / control de aire	☐Filtros / depuradores	☐Inspecciones de rutina
	☒Manejo adecuado de desechos	☐Operaciones en edificios cerrados	
	☐Otro **Si es otro, introduzca la descripción:** Introduzca la descripción		

Descripción de la Actualización (*solo para Modificaciones y Enmiendas de Clase 3)*

Liste y explique cualquier cambio que esta modificación o enmienda haría a las dos secciones anteriores: **Información de Gestión de Desechos** y **Métodos de Control de la Contaminación**.

Esta aplicación de renovación de permiso incluye una modificación del permiso de Clase 2 para agregar un área de almacenamiento de contenedores.

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Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Public Involvement Plan

Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

The Public Involvement Plan is intended to provide applicants and the agency with information about how public outreach will be accomplished for certain types of applications in certain geographical areas of the state. It is intended to apply to new activities; major changes at existing plants, facilities, and processes; and to activities which are likely to have significant interest from the public. This preliminary screening is designed to identify applications that will benefit from an initial assessment of the need for enhanced public outreach.

All applicable sections of this form should be completed and submitted with the permit or registration application. For instructions on how to complete this form, see TCEQ-20960-inst.

Section 1. Preliminary Screening

☐ New Permit or Registration Application

☒ New Activity – modification, registration, amendment, facility, etc. (see instructions)

If neither of the above boxes are checked, completion of the form is not required and does not need to be submitted.

Section 2. Secondary Screening

☒ Requires public notice,

☐ Considered to have significant public interest, **and**

☒ Located within any of the following geographical locations:

- Austin
- Dallas
- Fort Worth
- Houston
- San Antonio
- West Texas
- Texas Panhandle
- Along the Texas/Mexico Border
- Other geographical locations should be decided on a case-by-case basis

If all the above boxes are not checked, a Public Involvement Plan is not necessary. Stop after Section 2 and submit the form.

☐ Public Involvement Plan not applicable to this application. Provide **brief** explanation.

Section 3. Application Information

Type of Application (check all that apply):

Air ☐ Initial ☐ Federal ☐ Amendment ☐ Standard Permit ☐ Title V

Waste ☐ Municipal Solid Waste ☒ Industrial and Hazardous Waste ☐ Scrap Tire
☐ Radioactive Material Licensing ☐ Underground Injection Control

Water Quality

☐ Texas Pollutant Discharge Elimination System (TPDES)

☐ Texas Land Application Permit (TLAP)

☐ State Only Concentrated Animal Feeding Operation (CAFO)

☐ Water Treatment Plant Residuals Disposal Permit

☐ Class B Biosolids Land Application Permit

☐ Domestic Septage Land Application Registration

Water Rights New Permit

☐ New Appropriation of Water

☐ New or existing reservoir

Amendment to an Existing Water Right

☐ Add a New Appropriation of Water

☐ Add a New or Existing Reservoir

☐ Major Amendment that could affect other water rights or the environment

Section 4. Plain Language Summary

Provide a brief description of planned activities.

This application is for a permit renewal to the facility's Hazardous Waste permit (Permit No. 50189). Modifications include addition of a container storage area. Minor amendments are proposed to reformat the application to meet TCEQ's current administrative requirements. The application addresses a variety of topics including engineering designs, closure cost estimates, and facility management plans such as inspection and contingency plans. These measures will prevent, and clean up as needed, spills, leaks, and releases. Operations will comply with state and federal requirements.

Please see Part B Application Information for Plain Language Summary in English and Spanish.

Section 5. Community and Demographic Information

Community information can be found using EPA's EJ Screen, U.S. Census Bureau information, or generally available demographic tools.

Information gathered in this section can assist with the determination of whether alternative language notice is necessary. Please provide the following information.

Alvin

(City)

Brazoria

(County)

6617

(Census Tract)

Please indicate which of these three is the level used for gathering the following information.

☒ City ☐ County ☒ Census Tract

(a) Percent of people over 25 years of age who at least graduated from high school

82%

(b) Per capita income for population near the specified location

$35,084

(c) Percent of minority population and percent of population by race within the specified location

White (64%), African American (3%), Hispanic (30%), Other (1%), two or more races (1%)

(d) Percent of Linguistically Isolated Households by language within the specified location

Data not available for Tract 6617

(e) Languages commonly spoken in area by percentage

Data not available for Tract 6617 (likely English and Spanish)

(f) Community and/or Stakeholder Groups

None

(g) Historic public interest or involvement

None

Section 6. Planned Public Outreach Activities

(a) Is this application subject to the public participation requirements of Title 30 Texas Administrative Code (30 TAC) Chapter 39?

☒ Yes ☐ No

(b) If yes, do you intend at this time to provide public outreach other than what is required by rule?

☐ Yes ☒ No

If Yes, please describe.

If you answered "yes" that this application is subject to 30 TAC Chapter 39, answering the remaining questions in Section 6 is not required.

(c) Will you provide notice of this application in alternative languages?

☒ Yes ☐ No

Please refer to Section 5. If more than 5% of the population potentially affected by your application is Limited English Proficient, then you are required to provide notice in the alternative language.

If yes, how will you provide notice in alternative languages?

☐ Publish in alternative language newspaper
☐ Posted on Commissioner's Integrated Database Website
☐ Mailed by TCEQ's Office of the Chief Clerk
☐ Other (specify)

(d) Is there an opportunity for some type of public meeting, including after notice?

☐ Yes ☐ No

(e) If a public meeting is held, will a translator be provided if requested?

☐ Yes ☐ No

(f) Hard copies of the application will be available at the following (check all that apply):

☐ TCEQ Regional Office ☐ TCEQ Central Office
☐ Public Place (specify)

Section 7. Voluntary Submittal

For applicants voluntarily providing this Public Involvement Plan, who are not subject to formal public participation requirements.

Will you provide notice of this application, including notice in alternative languages?

☒ Yes ☐ No

What types of notice will be provided?

☒ Publish in alternative language newspaper
☐ Posted on Commissioner's Integrated Database Website
☐ Mailed by TCEQ's Office of the Chief Clerk
☐ Other (specify)

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Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Section I – General Information

Contents

- Part B Application Form, Section I
- Part B, Section I: Signature Page
- Part B, Section I: Table I.1
- Part B, Section I: Figure and Adjacent Property Owner Mailing Labels

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Application Form, Section I

Table I: General Information

A. Applicant: Facility Operator

Name[1]	Ascend Performance Materials Texas Inc.
Address[2]	P.O. Box 711
City, State[2]	Alvin, Texas
Zip Code[2]	77512-0711
Telephone Number	281-228-4000
Alternate Telephone Number	
TCEQ Solid Waste Registration No.	30138
EPA I.D. No.	TXD001700806
Permit No.	50189
County	Brazoria
Regulated Entity Name	Ascend Performance Materials Chocolate Bayou Plant
Regulated Entity Reference Number (RN)	100238682
Customer Name[2]	Ascend Performance Materials Texas Inc.
Customer Reference Number:	604255158
Charter Number[3]	801573626
Previous or Former Names of the Facility (if applicable)	Solutia Inc., Monsanto

B. Facility Owner: Identify the Facility Owner if different than the Facility Operator[4]

☑ Same as Facility Operator?

Name	
Address	
City, State	
Zip Code	
Telephone Number	
Alternate Telephone Number	

C. Facility Contact

1. Persons or firms who will act as primary contact:

Name, Title:	Kevin Adams, Environmental Manager
Address	P.O. Box 711
City, State:	Alvin, Texas
Zip Code	77512-0711
Telephone Number	281-228-4975
Alternate Telephone Number	
E-mail	[redacted]

Persons or firms who will act as primary contact (if more than one):

Name, Title:	
Address	
City, State:	
Zip Code	
Telephone Number	
Alternate Telephone Number	
E-mail	

2. Agent in Service or Agent of Service (if you are an out-of-state company)[5]:

Name, Title:	Corporation Service Company
Address	211 East 7th Street, Suite 620
City, State:	Austin, Texas
Zip Code	78701

3. Individual responsible for causing notice to be published:

Name:	Kevin Adams, Environmental Manager
Address	P.O. Box 711
City, State:	Alvin, Texas
Zip Code	77512-0711
Telephone Number	281-228-4975
Alternate Telephone Number	
E-mail	[redacted]

4. Public place in county where application will be made available[6]:

Name	Alvin Public Library
Address	105 South Gordon Street
City, State	Alvin, Texas
Zip Code	77511

D. Application Type and Facility Status

1. Application Type

☑ **Permit**	☑ **Amendment**	☐ **Modification**
☐ New	☐ Major	☐ Class 3
☑ Renewal	☑ Minor	☐ Class 2
☐ Interim Status		☐ Class 1[1]
☑ Compliance Plan		☐ Class 1
☐ RD&D		

2. Part of a Consolidated Permit Processing request? [30 TAC Chapter 33] No

3. Does the application contain confidential material?[7] No

4. Facility Status. Check all that apply

☐ Proposed	☑ On-Site
☑ Existing	☐ Off-site
	☐ Commercial
	☐ Recycle
	☑ Land Disposal
	☑ Areal or capacity expansion
	☑ Compliance plan

5. Is the facility within the Coastal Management Program boundary? Yes

6. Description of Application Changes

Complete Table I.1 - Description of Proposed Application Changes

Note: List all changes requested in Table. Unlisted requests risk remaining unaddressed or possibly denied if brought to the permit application reviewer's attention at a later time.

7. Total acreage of the facility being permitted: 2472

8. Identify the name of the drainage basin and segment where the facility is located[8]

River Segment	Chocolate Bayou Tidal - Segment 1107
River Basin	San Jacinto-Brazos Coastal Basin

E. Facility Siting Summary:

Is the facility located or proposed to be located:

1. Within a 100-year floodplain?	Yes
2. in wetlands?	No
3. In the critical habitat of an endangered species of plant or animal?	No
4. On the recharge zone of a sole-source aquifer?	No
5. In an area overlying a regional aquifer?	Yes
6. Withing 0.5 mile (2,640 feet) of an established residence, church, school , day care center, surface water body used for public drinking water supply, or dedicated public park?[9] [30 TAC 335.202] If Yes: the TCEQ shall not issue a permit for this facility.	No
7. In an area in which the governing body of the country or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste? If yes: provide a copy of the ordinance or order.	No

F. Wastewater and Stormwater Disposition

1. Is the disposal of any waste to be accomplished by a waste disposal well at this facility?	Yes
If Yes: List WDW Permit No(s):	013, 224, 318, 326, 359
2. Will any point source discharge of effluent or rainfall runoff occur as a result of the proposed activities?	Yes

3. If Yes, is this discharge regulated by a TPDES or TCEQ permit?

☑ Yes

TCEQ Permit No.	WQ00000010000
TDPES Permit No.	TXR05BQ25

☐ No

Date TCEQ discharge permit application filed:	
Date TPDES discharge application filed:	

G. Information Required to Provide Notice

State Officials List [30 TAC 39]

State Senator

Name:	Joan Huffman [Joan.Huffman@senate.texas.gov]
Address	129 Circle Way, Suite 101
City, State:	Lake Jackson, TX
Zip Code:	77566

State Representative

Name:	Ed Thompson [Ed.Thompson@house.texas.gov]
Address	2341 N. Galveston Ave., Suite 120
City, State:	Pearland, TX
Zip Code	77581

Local Officials List [30 TAC 39]

Mayor

Name:	Gabe Adame [gadame@cityofalvin.com]
Address	216 W Sealy St
City, State:	Alvin, TX
Zip Code	77511

Local Health Authority

Name:	Shelley Crist [scrist@cityofalvin.com]
Address	1100 West Highway 6
City, State:	Alvin, TX
Zip Code	77511

County Judge

Name:	L.M. "Matt" Sebesta, Jr. [MattS@brazoriacountytx.gov]
Address	237 East Locust Street, Suite 401
City, State:	Angleton, TX
Zip Code	77515

County Health Authority

Name:	Cathy Sbrusch, RN [CathyS@brazoriacountytx.gov]
Address	434 E. Mulberry St
City, State:	Angleton, TX
Zip Code	77515

Based on the questions in the Bilingual Notice Instructions for this form, are you required to make alternate (Bilingual) notice for this application?	Yes
Bilingual Language(s):	Spanish
TCEQ Core Data Form Submitted?(Required)	Yes
Has any information changed on the TCEQ Core Data Form since the last submittal?	No
Signature on Application Submitted? (see Section I Instructions, Item c)	Yes

1. Individual, Corporation, or Other Legal Entity Name on the Permit - must match the Secretary of State's database records for the Facility).
2. The legal name and address must match the Core Data Form.
3. 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.
4. 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].
5. If the application is submitted by a corporation or by a person residing out of state, the applicant 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.
6. 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.
7. For confidential information 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".
8. Use the segments line map created by TCEQ GIS Team to find the Segment Name and Basin Name.
9. Use only for a new commercial hazardous waste management facility or areal expansion of an existing hazardous waste management facility or unit of that facility as defined in 30 TAC 335.202.

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section I: Signature Page

Signature Page

I, Greg Blanchard, Senior Site Director,
(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: Greg Blanchard Date: 9-4-24

- -

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 Greg Blanchard
On this 4th day of September, 2024
My commission expires on the 11th day of March, 2026
Notary Public in and for Brazoria County, Texas
*[**Note**: Application Must Bear Signature & Seal of Notary Public]*

Jennifer Flowers

NOTARY PUBLIC STATE OF TEXAS
JENNIFER KATHLEEN FLOWERS
Notary ID #7796254
My Commission Expires
March 11, 2026

NOT APPLICABLE

Interim Status Land Disposal Unit(s) Certification

For all land disposal units managing wastes which are newly listed or identified as hazardous wastes, the following certification must be executed by or on the date 12 months after the effective date of the rule identifying or listing the waste as hazardous. If the operator fails to certify compliance with these requirements, the operator shall lose authority to operate under interim status. [40 CFR 270.73(d)]

I,_____, _____

(operator) *(title)*

certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete.

I further certify that in accordance with Section 3005(e)(3) of the Resource Conservation and Recovery Act, as amended, the subject land disposal unit(s) are in compliance with all applicable groundwater monitoring and financial responsibility requirements of 30 TAC Sections 335.112, 335.116, and 335.117. I am aware there are significant penalties for submitting false information, including the possibility of civil penalty, criminal fines, and imprisonment.

Signature:_____ Date: _____

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section I: Table I.1

Table I.1-Description of Proposed Application Changes

Permit/Compliance Plan Application Appendix/Section	Brief Description of Proposed Change	Modification or Amendment Type	Supporting Regulatory Citation
All	Renewal of permit for Haz Waste Permit No. 50189; administrative and information changes; reformat application per TCEQ Part B application form and current TCEQ guidelines. Additional changes are described below:	Renewal / Minor Amendment	30 TAC 305.65
Section I Appendices	Administrative changes to update general facility information; update contact information	Minor	30 TAC 305.69(k)(A)(1)
Section II Appendices	Information changes to update facility siting criteria (e.g., update the format and figures in the Site Selection Report)	Minor	30 TAC 305.69(k)(A)(1)
Section III Appendices	Administrative changes to reformat facility operating plans; information changes (e.g., correct references to other sections of application)	Minor	30 TAC 305.69(k)(A)(1)
Section IV - Appendix IV.D	Administrative changes to reformat facility WAP and information changes (e.g., correct references to other section of the application)	Minor	30 TAC 305.69(k)(A)(1)
Section V - Appendices	Administrative changes to reformat the Engineering Reports and information changes (e.g., correct references to the correct figure numbers and	Minor	30 TAC 305.69(k)(A)(1)

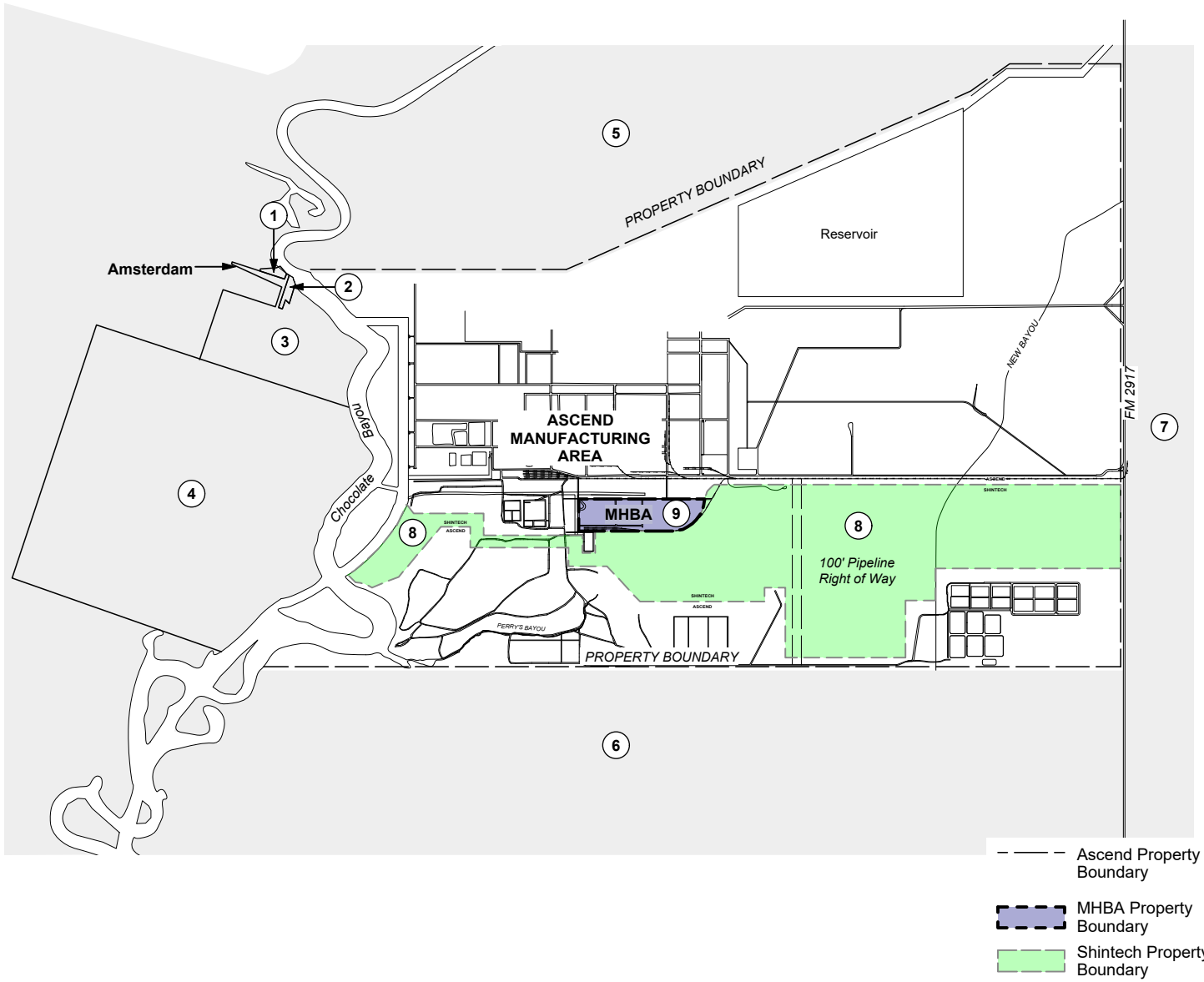
Permit/Compliance Plan Application Appendix/Section	Brief Description of Proposed Change	Modification or Amendment Type	Supporting Regulatory Citation
	references to other sections of the application). IWPF Container Storage Area was proposed, but never constructed, so removed from the Engineering Report.		
Appendix V.B.2	Propose new container storage area - total increase in the facility's capacity less than 25%	Minor	30 TAC 305.69(k)(F)(1)(b)
Section VI - Appendices	Informational changes (e.g., update geology report, information, maps,)	Minor	30 TAC 305.69(k)(A)(1)
Section VII	Update closure and post-closure costs to 2024 costs and include costs for new proposed unit	Minor	30 TAC 305.69(k)(A)(1)
Section VIII	Provide updated financial information. See also Section XIII - Confidential Material	Minor	30 TAC 305.69(k)(A)(1)
Section IX	Provide previously submitted information and provided information on the PDH Unit, which will be handled under a separate regulatory program (i.e., TRRP)	Minor	30 TAC 305.69(k)(A)(1)
Section X	Provide updated tables in new format	Minor	30 TAC 305.69(k)(A)(1)
Section XI	Update the Compliance Plan to include new format and updates the groundwater Corrective Action Program to propose discontinued sampling for several SWMU observation wells	Minor	30 TAC 305.69(k)(C)(8)(b)

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section I: Figure and Adjacent Property Owner Mailing Labels



LEGEND

1. Kenneth Mimms
   P.O. Box 36
   Liverpool, Texas 77577-0036
2. Darrell N & Katie D Barber
   13912 Patricia LN
   Alvin, Texas 77511-7388
3. Galveston Bay Foundation
   1100 Hercules Ave., Suite 200
   Houston, Texas 77058-2759
4. The Texas A&M University System
   Real Estate Office
   301 Tarrow St., Fl.6
   College Station, Texas 77840-7896
5. Equistar Chemicals LP
   Property Tax Department
   P.O. Box 3646
   Houston, Texas 77253-3646
6. INEOS Olefins & Polymers
   2600 S. Shore Blvd., Suite 500
   League City, Texas 77573-2944
7. Terrance Hlavinka Cattle Co.
   P.O. Box 1188
   East Bernard, Texas 77435-1188
8. Shintech Inc.
   3 Greenway Plaza, Suite 1150
   Houston, Texas 77046-0325
9. MHBA CB LLLP
   NOVUS International
   20 Research Park Dr.
   St. Charles, Missouri 63304-5633

SCALE (ft.)
0 1500 3000

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	000_11	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Figure I.1**	

ADJACENT LANDOWNERS

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

KENNETH MIMMS
PO BOX 36
LIVERPOOL TX 77577-0036

DARRELL N & KATIE D BARBER
13912 PATRICIA LN
ALVIN TX 77511-7388

GALVESTON BAY FOUNDATION
1100 HERCULES AVE
SUITE 200
HOUSTON TX 77058-2759

THE TEXAS A&M UNIVERSITY SYSTEM
REAL ESTATE OFFICE
301 TARROW ST, FLOOR 6
COLLEGE STATION TX 77840-7896

EQUISTAR CHEMICALS LP
PROPERTY TAX DEPARTMENT
PO BOX 3646
HOUSTON TX 77253-3646

INEOS OLEFINS & POLYMERS
2600 S SHORE BLVD
SUITE 500
LEAGUE CITY TX 77573-2944

TERRANCE HLAVINKA CATTLE CO
PO BOX 1188
EAST BERNARD TX 77435-1188

SHINTECH INC
3 GREENWAY PLAZA
SUITE 1150
HOUSTON TX 77046-0325

MHBA CB LLLP
NOVUS INTERNATIONAL
20 RESEARCH PARK DR
ST CHARLES MO 63304-5633

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Section II – Facility Siting Criteria

Contents

- Part B Application Form, Section II
- Part B, Section II: Tables
- Part B, Section II: Appendix II.1 – Site Selection Report

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Application Form, Section II

II. Facility Siting Criteria

Provide all Part B responsive information in Appendix II. When preparing the physical format organize your submittal using the Format of Hazardous Waste permit Application and Instructions.

For all new hazardous waste management facilities or areal expansions of existing hazardous waste management facilities provide a report which includes all applicable information regarding Unsuitable Site Characteristics found in 30 TAC Chapter 335, Subchapter G. The report must address each requirement applicable to the type of activity submitted in the application. Reference specific rule numbers whenever possible. Supporting information may be cross-referenced to other parts of this application such as Section V - Engineering Report or Section VI - Geology Report, but information submitted in previous applications must be fully reproduced herein. In addition, provide the information in Table II, as applicable.

For permit renewals provide a report which includes all applicable information regarding Unsuitable Site Characteristics found in 30 TAC Chapter 335, Subchapter G. In addition, provide the information in Table II, as applicable. The applicant may resubmit the information submitted with the original permit application provided this information has not changed. For a renewal this information is necessary to ensure a complete application is received.

For capacity expansions of existing facilities, please provide information in Table II, as applicable. Please note however, that additional technical information may be requested to address any facility siting characteristics noted in Table I, under Facility Siting Summary.

> **NOTE:** The standards contained in §335.204(a)(6) - (9), (b)(7) - (12), (c)(6) - (11), (d)(6) - (11), and (e) (8) - (13) are not applicable to facilities that have submitted a notice of intent to file a permit application pursuant to §335.391 of this title (relating to Pre-Application Review) prior to May 3, 1988, or to facilities that have filed permit applications pursuant to §335.2(a) of this title which were submitted in accordance with Chapter 305 of this title and that were declared to be administratively complete pursuant to §281.3 of this title (relating to Initial Review) prior to May 3, 1988.[30 TAC 335.201(b)]

A. Requirements for Storage or Processing Facilities, Land Treatment Facilities, Waste Piles, Storage Surface Impoundments, and Landfills.

   Complete Table II.A-Requirements for Storage or Processing Facilities, Land Treatment Facilities, Waste Piles, Storage Surface Impoundments, and Landfills.

B. Additional Requirements for Land Treatment Facilities [30 TAC 335.204(b)]

   Complete Table II.B.-Additional Requirements for Land Treatment Facilities [30 TAC 335.204(b)

C. Additional Requirements for Waste Piles [30 TAC 335.204(c)]

   Complete Table II.C.-Additional Requirements for Waste Piles [30 TAC 335.204(c)]

D. Additional Requirements for Storage Surface Impoundments [30 TAC 335.204(d)]

   Complete Table II.D.- Additional Requirements for Storage Surface Impoundments [30 TAC 335.204(d)]

E. Additional Requirements for Landfills (and Surface Impoundments Closed as Landfills with

wastes in place)

Complete Table II.E. - Additional Requirements for Landfills (and Surface Impoundments Closed as Landfills with wastes in place)

F. Flooding

1. Identify whether the facility is located within a 100-year flood plain [40 CFR 270.14(b)(11)(iii)]. This identification must indicate the source of data for such determination and include a copy of relevant documentation (e.g., flood maps, if used and/or calculations). The boundaries of the hazardous waste management facility must be shown on the flood plain map. If the facility is not subject to inundation as a result of a 100-year flood event, indicate that the facility is not within the 100-year flood plain, and do not complete the remainder of the Flooding section in Table II. An applicant for a proposed hazardous waste landfill, areal expansion of a hazardous waste landfill, or a commercial hazardous waste land disposal unit may not rely solely on flood plain maps prepared by the Federal Emergency Management Agency (FEMA) or a successor agency for this determination.

2. If the facility is located within the 100-year flood plain the applicant must provide information detailing the specific flooding levels and other events (e.g., Design Hurricane projected by Corps of Engineers) which impact the flood protection of the facility. Information shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action) which must be considered in designing, construction, operating, or maintaining the facility to withstand washout from a 100-year flood.

3. State whether any flood protection devices exist at the facility (e.g., flood walls, dikes, etc.), designed to prevent washout from the 100-year flood.

   a. If Yes: provide in Section V an engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)]

   Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]

   b. If No: the applicant shall provide in Section V a plan for constructing flood protection devices and a schedule including specific time frames for completion. Provide engineering analyses to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)]

   Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]

4. If applicable, and in lieu of the flood protection devices from above, provide a detailed description of the procedures to be followed to remove hazardous waste to safety before the facility is flooded. [40 CFR 270.14(b)(11)(iv)(c)] The

procedures should include:

a. Timing of such movement relative of flood levels, including estimated time to move the waste, to show that such movement can be completed before flood waters reach the facility. Indicate which specific events shall be use to begin waste movement (e.g., Hurricane warning, Flash Flood watch, etc.);

b. A description of the location(s) to which the waste will be moved and a demonstration that these facilities will be eligible to receive hazardous waste in accordance with appropriate regulations (i.e., a permitted facility);

c. The planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be available in time for use; and

d. The potential for accidental discharges of the waste during movement and precautions taken to preclude accidental discharges.

G. Additional Information Requirements

1. For a new hazardous waste management facility, include a map of relevant local land-use plans and descriptions of the major routes of travel in the vicinity of the facility to be used for the transportation of hazardous waste to and from the facility covering at least a five (5)-mile radius from the boundaries of the facility. [30 TAC 305.50(a)(10)(A)&(D)]

2. For a new commercial hazardous waste management facility as defined in 30 TAC 335.202 or the subsequent areal expansion of such a facility or unit of that facility, indicate on the map the nearest established residence, church, school, day care center, surface water body used for a public drinking water supply, and dedicated public park.

3. For new commercial hazardous waste management facilities, submit the following: [30 TAC 305.50(a)(12)(A)]

   a. the average number, gross weight, type, and size of vehicles used to transport hazardous waste;

   b. the major highways nearest the facility irrespective of distance; and

   c. the public roadways used by vehicles traveling to and from the facility within a minimum radius of 2.5 miles from the facility.

4. Include the names and locations of industrial and other waste-generating facilities within 0.5 miles for a new on-site hazardous waste management facility and the approximate quantity of hazardous waste generated or received annually at those facilities. [30 TAC 305.50(a)(10)(B)&(C)]

5. Include the names and locations of industrial and other waste-generating facilities within 1.0 miles for a new commercial hazardous waste management facility and the approximate quantity of hazardous waste generated or received annually at those facilities. [30 TAC 305.50(a)(10)(B)&(C)]

6. For existing land disposal facility units provide documentation that the information required by 30 TAC 335.5 has been placed in the county deed records. If previously submitted, please reference the submittal by date and registration number.

7. If a surface impoundment or landfill (including post-closure) is to be permitted, provide exposure information to accompany this application and in accordance

with 30 TAC 305.50(a)(8) and 40 CFR 270.10(j). This information will be considered separately from the TCEQ application completeness determination.

8. For a hazardous waste management facility requesting a capacity expansion of an existing hazardous waste management facility, please provide in Section VI.A.1.a the requested fault delineation information. [30 TAC 305.50(a)(4)(D)]

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section II: Tables

Table II

Table II contains the following: Table II.A, Table II.B, Table II.C, Table II.D, Table II.E and Flooding from Section II. F of the Part B Application

Table II.A - Requirements for Storage or Processing Facilities, Land Treatment Facilities, Waste Piles, Storage Surface Impoundments, and Landfills

Is the facility located or proposed to be located[1]:

In wetlands? [as applicable: 30 TAC 335.204(a)(2), (b)(2), (c)(2), (d)(2), and/or (e)(2)	Yes, See Below
If Yes: the TCEQ shall not issue a permit for a new hazardous waste management facility or areal expansion of an existing facility into wetlands, pursuant to 30 TAC 335.205(a)(1).	
In the critical habitat of an endangered species of plant or animal?[6] [as applicable: 30 TAC 335.204(a)(8), (b)(10), (c)(9), (d)(9), and/or (e)(11)]	No
If Yes: submit in Section V information demonstrating that design, construction, and operational features will prevent adverse effects on such critical habitat.	
On the recharge zone of a sole-source aquifer?2 [30 TAC 335.204(a)(3), (b)(3), (c)(3), (d)(3), and/or (e)(3)]	No
If Yes: then for storage and processing facilities (excluding storage surface impoundments), submit in Section V information demonstrating that secondary containment is provided to preclude migration to groundwater from spills, leaks, or discharges.	
In an area overlying a regional aquifer? [as applicable: 30 TAC 335.204(a)(4), (b)(4), (c)(4), (d)(4), and/or (e)(4)]	Yes, See Below
If Yes: submit site-specific information in Section V and/or Section VI demonstrating compliance with 30 TAC 335.205(a)(1).	
In areas where soil unit(s) are within five feet of the containment structure, or treatment zone, as applicable, that have a Unified Soil Classification of GW, GP, GM, GC, SW, SP, or SM, or a hydraulic conductivity greater than 10-5 cm/sec? [as applicable: 30 TAC 335.204(a)(5), (b)(5), (c)(5), (d)(5), and/or (e)(5)]	No
If Yes: provide additional information in Sections V and/or Section VI demonstrating compliance with 30 TAC 335.205(a)(1)	
In areas of direct drainage within one mile of a lake at its maximum conservation pool level, if the lake is used to supply public drinking water through a public water system?[6] [as applicable: 30 TAC 335.204 (a)(6), (b)(7), (c)(6), and/or (e)(8)].	No
If Yes: provide information in Section V demonstrating compliance with 30 TAC 335.205(a)(1).	

In areas of active geologic processes, including but not limited to erosion, submergence, subsidence, faulting, karst formation, flooding in alluvial flood wash zones, meandering river bank cuttings, or earthquakes?[6] [as applicable: 30 TAC 335.204(a)(7), (b)(8) ,(c)(7), (d)(7), and/ or (e)(9)]	Yes, See Below
Within 30 feet of the upthrown side or 50 feet of the downthrown side of the actual or inferred surface expression of a fault that has reasonably been shown to have caused displacement of shallow Quaternary sediments or of man-made structures?[6] [as applicable: 30 TAC 335.204(a)(9), (b)(12) ,(c)(11), (d)(11), and/or (e)(13)]	No

If Yes: specify in Section V the design, construction, and operational features that will prevent adverse effects resulting from any fault movement.

If a fault is found to be present, the width and location of the actual or inferred surface expression of the fault, including both the identified zone of deformation and the combined uncertainties in locating a fault trace, must be determined by a qualified geologist or geotechnical engineer and reported in Section VI.

Table II.B. - Additional Requirements for Land Treatment Facilities [30 TAC 335.204(b)]:

Is the land treatment facility located or proposed to be located:

Within 1000 feet of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park which is in use at the time the notice of intent to file a permit application is filed with the commission, or which is in use at the time the permit application is filed with the commission?
If Yes: the TCEQ shall not issue a permit for a new hazardous waste land treatment unit or an areal expansion of an existing land treatment unit, pursuant to 30 TAC 335.204(b)(6) and 335.205(a).
Within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?
If Yes: submit in Section V.F design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
Within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula.
If Yes: submit Section V.F design, construction and operational features, which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
On a barrier island or peninsula?
If Yes: the TCEQ shall not issue a permit for a new hazardous waste land treatment unit or an areal expansion of an existing land treatment unit, pursuant to 30 TAC 335.204(b)(11) and 335.205(a)(1).

Table II.C. - Additional Requirements for Waste Piles [30 TAC 335.204(c)]

Is the waste pile located or proposed to be located:

Within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?
If Yes: submit in Section V.E design, construction, and operational features on the facility which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
Within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula.
If Yes: submit Section V.E design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
On a barrier island or peninsula?[6]
If Yes: the TCEQ shall not issue a permit for a new hazardous waste pile or an areal expansion of an existing waste pile, pursuant to 30 TAC 335.204(c)(10) and 335.205(a)(1).

Table II.D. - Additional Requirements for Storage Surface Impoundments [30 TAC 335.204(d)]

Is the land treatment facility located or proposed to be located:

Within 1000 feet of an area of active coastal shoreline erosion even though the area is protected by a barrier island or peninsula
If Yes: submit in Section V.D design, construction, and operational features of the facility which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
Within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula.
If Yes: then submit in Section V.D design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.
On a barrier island or peninsula?[6]
If Yes: the TCEQ shall not issue a permit for a new hazardous waste storage surface impoundment or an areal expansion of an existing storage surface impoundment, pursuant to 30 TAC 335.204(d)(10) and 335.205(a)(1).

Table II.E. - Additional Requirements for Landfills (and Surface Impoundments Closed as Landfills with wastes in place)

Is the landfill located or proposed to be located:

Within 1000 feet of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park which is in use at the time the notice of intent to file a permit application is filed with the commission, or which is in use at the time the permit application is filed with the commission?	No
If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(6) and 335.205(a)(1).	
(For commercial hazardous waste landfills) in the 100-year flood plain of a perennial stream that is delineated on a flood map adopted by the Federal Emergency Management Agency after September 1, 1985, as zone A1-99, VO, or V1-30?	
If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(7) and 335.205(a)(1).	
Within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?	No
If Yes: then submit in Section V.G design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.	
Within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barriers island or peninsula.	No
If Yes: then submit in Section V.G design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.	
On a barrier island or peninsula?	No
If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(12) and 335.205(a)(1).	

Flooding (see Section II Instructions, Item F)

Is the facility within a 100-year flood plain?	Yes
Has a flood plain map been provided?	Yes
Has information about flooding levels and events, and other special flooding factors, been provided?[3]	Yes
Do any flood protection devices exist at the facility (e.g., flood walls, dikes, etc.) designed to prevent washout from the 100-year flood?[3]	Yes, See Below
If Yes: provide in Section V an engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)][4]	
If No: the applicant shall provide in Section V a plan for constructing flood protection devices and a schedule including specific time frames for completion. Provide engineering analyses to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)][5]	
If applicable, and in lieu of the flood protection devices from above, was a detailed description of the procedures to be followed to remove hazardous waste to safety before the facility is flooded provided?[3, 6]	Not Applicable
Additional Information Requirements (see Section II instructions, Item G): Submitted?	No

1. Provide the source of information for all questions in the appendix.
2. Note: Land treatment facilities, waste piles, storage surface impoundments, and landfills may not be located on the recharge zone of a sole-source aquifer.
3. Only required to be submitted if the facility is subject to inundation as a result of a 100-year flood event.
4. Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]
5. Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]
6. The standards contained in §335.204(a)(6) - (9), (b)(7) - (12), (c)(6) - (11), (d)(6) - (11), and (e) (8) - (13) are not applicable to facilities that have submitted a notice of intent to file a permit application pursuant to §335.391 of this title (relating to Pre-Application Review) prior to May 3, 1988, or to facilities that have filed permit applications pursuant to §335.2(a) of this title which were submitted in accordance with Chapter 305 of this title and that were declared to be administratively complete pursuant to §281.3 of this title (relating to Initial Review) prior to May 3, 1988.[30 TAC 335.201(b)]

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section II: Appendix II.1 - Site Selection Report

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

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Attachment II.1.4 Proof of Deed Recordation: Closed IWPF Surface Impoundments
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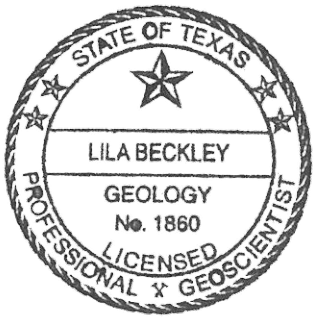
SITE SELECTION REPORT CERTIFICATION STATEMENT

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

I, Lila Beckley, a registered professional geoscientist in the State of Texas, certify that the Siting Selection Report in the Hazardous Waste Permit Renewal Application for Ascend Performance Materials Texas Inc. facility in Alvin, Texas, has been prepared under my direction and supervision. Geoscience-related material was prepared in accordance with generally accepted geoscience principles and practices. The report was prepared to address requirements of the TCEQ RCRA Permit Application (TCEQ-00376 Revised 1 March 2023).



9 Aug 2024

Lila M. Beckley, P.G.
State of Texas Registration No. 1860
GSI Environmental Inc.
Registered Geoscience Firm No. 50243

1.0 SCOPE AND OBJECTIVES

This site selection report for the Ascend Performance Materials Texas Inc. (Ascend) facility in Alvin, Texas, has been prepared to document that the facility meets the site location criteria specified in 30 TAC 335 Subchapter G for the safe management of hazardous wastes. Provisions of 30 TAC 335.204 establish factors to be evaluated for the location of facilities used for the storage or processing of hazardous waste, including the proximity of the facility to the following:

- Floodplains;
- Wetlands;
- Recharge zones of sole-source aquifers;
- Areas overlying regional aquifers;
- Shallow soil characteristics;
- Direct drainage to lakes used to supply public drinking water;
- Active geologic processes, including faulting;
- Critical habitat of endangered plant or animal species;
- Established residences and other public areas;
- Coastal shoreline erosion; and
- Barrier islands and peninsulas.

The following sections provide information to demonstrate that the Ascend facility is in compliance with applicable regulatory requirements of 30 TAC 335 Subchapter G with regard to site selection.

2.0 GENERAL SITE DESCRIPTION

2.1 Overview of the Ascend Facility

The Ascend facility is located on road FM 2917, approximately 11 miles southeast of the City of Alvin in Brazoria County. The plant is a chemical manufacturing facility situated on approximately 2,500 acres of the Coastal Prairie portion of the Gulf Coast Physiographic Province. The area is characterized by tall grasslands and/or woods. Regional topography in the facility area is typical of the Gulf Coastal Plain, a nearly flat terrain sloping gently to the southeast across this region. The annual rainfall for Brazoria County is 52 inches and the mean annual temperature is 69°F (The Texas State Handbook Online, 2018).

The Ascend plant is bordered on the north by agricultural areas, to the east by agricultural areas, and to the south by industrial facilities. The western boundary of the site borders Chocolate Bayou, a stream that discharges into Chocolate Bay. Chocolate Bay is an arm of West Bay, located approximately 3 miles southeast of the Ascend property. Shintech Inc., a manufacturer of polyvinyl chloride, owns approximately 500 acres south of the Ascend manufacturing area adjacent to FM 2917 (see Figure II.1.5). The MHBA property lies between the Ascend manufacturing area and Shintech (Figure II.1.5) and is owned by MHBA CB LLLP, but operated by Ascend.

The central portion of the Ascend facility, encompassing approximately 1000 acres, includes the areas of active plant operations which involve the manufacture of chemical

feedstocks and intermediates. The developed area of the plant contains pavement, buildings, roadways, equipment storage, pipelines, railways, and manufacturing units. Waste processing and storage units (i.e., Indoor, Outdoor and IWPF Container Storage Areas; IWPF Tanks; Thermal Desorption Unit; and AN Boilers) are located among or near the manufacturing areas within the developed central portion of the facility. Waste disposal areas (i.e., Closed Landfill, Active Landfill, and New Landfill) are located south of both the Ascend manufacturing area and the Shintech property, in areas that are mainly undeveloped and characterized by grasses and immature woods.

Manufacturing operations at the Ascend facility began in 1962 and continue to present day. The Ascend facility was initially permitted as a hazardous and nonhazardous industrial solid waste management site in October 1987. Originally permitted at 3,000 acres, the current Ascend facility is 2,472 acres, following a sale of 486 acres to Shintech Inc. in 2007 and 42 acres to MHBA CB LLLP in 2014.

2.2 Hazardous Waste Management Units at Ascend

This site selection report addresses the hazardous waste storage, processing, and disposal units, including active and post-closure care units at the Ascend facility, as follows:

Exhibit 1: Summary of Active and Post-Closure Hazardous Waste Management Areas

Hazardous Waste Management Unit	Permit Unit No.	Service Life (years)
Closed Landfill	01	1962 – 1995
Active Landfill	02	1991 – present
Closed IWPF Surface Impoundments	03	1962 – 1997
IWPF Tank 332T1-1	08	1994 – present
IWPF Tank 332T1-2	09	1994 – present
AN Boiler 30H5	11	1975 – present
AN Boiler 31H4	12	1975 – present
Outdoor Container Storage Area	13	1998 – present
New Landfill	16	Proposed
Solids Handling Unit Filtrate Tank 331T11	17	2021-present
Solids Handling Unit Decant Tank 1	18	Proposed
Solids Handling Unit Filtrate Tank 331T13	19	2021-present
Solids Handling Unit Filtrate Tank 331T14	20	2021-present
Solids Handling Unit Filtrate Tank 331T15	21	2021-present
Solids Handling Unit Filtrate Tank 331T16	22	2021-present
Outdoor Container Storage Area 2	23	Proposed

3.0 FLOODPLAIN

3.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in the 100-year floodplain unless it is designed, constructed, operated, and maintained to prevent physical transport of any hazardous waste by a 100-year flood event." (30 TAC 335.204(a)(1))

"Except as provided in subparagraphs (A) and (B) of this paragraph, a landfill may not be located in the 100-year floodplain existing prior to site development except in areas with flood depths less than three feet. Any landfill within the 100-year floodplain must be designed, constructed, operated, and maintained to prevent physical transport of any hazardous waste by a 100-year flood event." (30 TAC §335.204(e)(1)).

3.2 Flood Elevations

Ground surface elevations on the Ascend facility property average approximately 10-15 ft mean sea level (MSL). The maximum elevation at the facility is approximately 30 feet MSL, and the minimum elevation is approximately 5 feet MSL along the eastern bank of Chocolate Bayou.

Base flood elevations corresponding to a 100-yr flood event on the property range from 11 to 16 ft MSL in locations where base flood elevations have been determined as indicated on Flood Insurance Rate Maps obtained from the Federal Emergency Management Agency for Brazoria County (i.e., Map Numbers 48039C0480K, 48039C0315K, and 48039C0320K dated 30 December 2020; FEMA, 2020). An overlay of these elevations on the Ascend facility indicates that a portion of the Ascend facility lies within the 100-yr floodplain (see Figure II.1.1). As shown on Figure II.1.1., dark gray zones correspond to Zone AE which shows areas within the 100-year floodplain. Light gray zones correspond to Zone X which shows areas outside of the 100-year floodplain.

Areas of the 100-yr floodplain subject to a coastal flood with velocity hazard from wave action are designated as Zone VE. None of the Ascend facility property lies within Zone VE (see Figure II.1.1).

3.3 Flood Protection Measures for Hazardous Waste Management Units

Ascend has designed and installed flood protection measures for hazardous waste storage and processing units and has developed a flood management program to prevent transport of hazardous waste in the event of a 100-yr flood event. A summary of flood protection measures for active hazardous waste management storage and processing units follows below.

- *Closed Landfill (Permit Unit 01), Active Landfill (Permit Unit 02), Closed IWPF Surface Impoundments (Permit Unit 03), and New Landfill (Permit Unit 16):* Ascend's hazardous waste landfills and the Closed IWPF Surface Impoundments are located in areas where predicted flood depths are less than 1 ft, and therefore, meet the criterion specified in 30 TAC 335.204(e)(1), that require such units be located in areas within

the 100-ft floodplain where the predicted flood depths are less than 3 ft. In addition, perimeter dikes at the Active Landfill (Permit Unit 02) and New Landfill (Permit Unit 16) have a minimum nominal height of 8 ft above natural grade around each active landfill cell. The predicted 100-yr flood elevation is 14 ft MSL in the vicinity of this unit, and top-of-dike elevations range from 20 to 21 ft MSL. Therefore, the dikes are a minimum of 5 ft higher than expected water levels during a 100-yr flood event.

- *IWPF Tanks 332T1-1 and 332T1-2 (Permit Units 08 and 09):* These aboveground tanks are located in an area where the predicted base elevation of the 100-yr flood is 11 to 13 ft MSL. The top of the reinforced concrete secondary containment dike surrounding the tanks has been constructed to an approximate elevation of 19 ft MSL, providing a minimum freeboard of 6 ft in the event of a 100-yr flood event.

- *AN Boilers 30H5 and 31H4 (Permit Units 11 and 12):* Flood protection for the AN boilers has been provided by entirely containing the hazardous waste managed in these units. Process piping is elevated, and therefore, no potential exists for rising flood waters to contact the wastes managed in the boilers. Additionally, the AN boilers in Permit Units 11 and 12 are located outside of the 100-year floodplain.

- *Outdoor Container Storage Area (Permit Unit 13):* Ground surface elevations in this unit average 14.5 ft MSL. In portions of this area, the estimated elevation of the 100-yr flood is 11 ft MSL. To prevent transport of hazardous waste or damage to containers from floating debris, protective measures (i.e., emptying, securing, or elevating the containers) will be implemented if a significant weather event and potential flooding are imminent.

- *Solids Handling Unit Tanks (Permit Units 17-22):* All tanks and associated equipment for the Solids Handling Unit (SHU) have been installed within a concrete secondary containment. The aboveground tanks in the SHU are located in an area where the predicted depth of the 100-yr flood is less than 1 ft. The reinforced concrete secondary containment dike surrounding the tanks is approximately 2.5 ft high, thereby providing a minimum freeboard of 1.5 ft in the event of a 100-yr flood event.

- *Outdoor Container Storage Area 2 (Permit Unit 23):* Ground surface elevations in this proposed unit are approximately 14 ft MSL. In portions of this area, the estimated elevation of the 100-yr flood is 13 ft MSL. To prevent transport of hazardous waste or damage to containers from floating debris, protective measures (i.e., emptying, securing, or elevating the containers) will be implemented if a significant weather event and potential flooding are imminent

Finding: Ascend meets the criterion of 30 TAC §335.204(a)(1) and 335.204(e)(1) regarding flood protection measures for waste management units located within the 100-yr floodplain.

4.0 WETLANDS

4.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in wetlands." (30 TAC 335.204(a)(2))

"A landfill may not be located in wetlands." (30 TAC §335.204(e)(2))

4.2 Wetland Locations at the Ascend Facility

4.2.1 Wetlands Adjacent to Chocolate Bayou

Wetlands have been identified along the historic meander belt of Chocolate Bayou adjacent to the Ascend facility during the Galveston Bay National Estuary Program investigation (GBNEP, 1992). No hazardous waste management units have been located along the meander belt of Chocolate Bayou adjacent to the Ascend plant. An up-to-date wetland map for the Ascend facility with data from the U.S. Fish and Wildlife Service (USFWS, 2024a) is provided in Figure II.1.2.

4.2.2 Wetlands Near Proposed New Landfill

A jurisdictional determination has been obtained from the U.S. Army Corps of Engineers (USACE) regarding four borrow pits in the vicinity of the New Landfill. The USACE has determined that these borrow pits do not contain waters of the United States, including adjacent wetlands. Therefore, the four borrow pits are not subject to Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act, and a permit from the USACE is not required to fill or work in these pits (USACE, 2009; and Attachment II.1.1).

Finding: Current hazardous waste permitted units are not located in wetlands. Prior to construction of proposed new units, Ascend will obtain updated jurisdictional determinations, as applicable.

5.0 RECHARGE ZONE OF SOLE-SOURCE AQUIFER

5.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located on the recharge zone of a sole-source aquifer unless secondary containment is provided to preclude migration to groundwater from spills, leaks or discharges." (30 TAC 335.204(a)(3))

"A landfill may not be located on the recharge zone of a sole-source aquifer." (30 TAC §335.204(e)(3))

5.2 Chicot Aquifer Recharge Zone

No recharge zones of sole-source aquifers are located near the Ascend facility. The nearest sole-source aquifer to the Ascend facility is the portion of the Chicot Aquifer located in southwest Louisiana (USEPA, 2024). The recharge zone for this portion of the Chicot Aquifer occurs more than 80 miles east of the Ascend facility, extending from the Texas-Louisiana state line eastward to Alexandria, Louisiana.

Finding: The Ascend facility is not in the recharge zone of a sole-source aquifer.

6.0 AREA OVERLYING REGIONAL AQUIFERS

6.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in areas overlying regional aquifers unless (A) the regional aquifer is separated from the facility by a minimum of ten feet of material with a hydraulic conductivity toward the aquifer not greater than 10-7 centimeters per second (cm/sec), or a thicker interval of more permeable material which provides equivalent or greater retardation to pollutant migration; or (B) secondary containment is provided to preclude migration to groundwater from spills, leaks or discharges." (30 TAC 335.204(a)(4))

"A landfill may not be located in areas overlying regional aquifers unless: (A) it is in an area where the average annual evaporation exceeds average annual rainfall by more than 40 inches and the depth to the regional aquifer is greater than 100 feet from the base of the containment structure; or (B) the regional aquifer is separated from the base of the containment structure by a minimum of ten feet of material with a hydraulic conductivity toward the aquifer not greater than 10-7 cm/sec or a thicker interval of more permeable material which provides equivalent or greater retardation to pollutant migration." (30 TAC §335.204(e)(4))

6.2 Aquifers Underlying the Ascend Facility

The Gulf Coast Aquifer is the only regional aquifer underlying the Ascend facility. In the vicinity of the Ascend facility in Brazoria County, the Gulf Coast Aquifer is subdivided into two aquifers capable of producing fresh water: the Chicot Aquifer and the Evangeline Aquifer. Together, the Chicot and Evangeline aquifers extend from the surface to a depth of approximately 4,300 feet below ground surface (bgs) in the vicinity of the Ascend facility (see Figure II.1.3; Young et al., 2012).

Beneath the Ascend facility, the Chicot Aquifer is composed of two distinct water-producing units, separated by a clayey bed, designated the Upper and Lower Chicot Aquifers (Sandeen and Wesselman, 1973). The Chicot extends from the surface to a depth of approximately 1,600 feet bgs in the vicinity of the Ascend facility (Young et al., 2012). The Chicot is dominantly a confined aquifer in the vicinity of the Ascend facility, although locally the uppermost portion can be unconfined (Sandeen and Wesselman, 1973).

The Evangeline Aquifer, corresponding to the Goliad and Upper Lagarto formations, is a series of alternating sands and clays occurring within the approximate depth interval of 1,600 to 4,500 feet bgs. In the vicinity of the Ascend facility, no fresh water, as defined by a total dissolved solids (TDS) content of less than 1,000 mg/L, is present within the Evangeline Aquifer. Less than 20% of the groundwater in the Evangeline aquifer has TDS content of less than 3,000 mg/L in the proximity of the Ascend facility (Young et al., 2012). The Evangeline is a confined aquifer in the Ascend Chocolate Bayou plant area.

6.3 Prevention of Releases to Groundwater

6.3.1 Prevention of Releases to Groundwater from Storage and Processing Units

Hazardous waste storage and processing units at the Ascend facility have been constructed with secondary containment in accordance with federal and Texas regulatory requirements for container storage areas, tanks, and miscellaneous units to prevent release of hazardous constituents to groundwater. These units are inspected on a regular basis for evidence of spills, leaks, and deterioration as required by the provisions of the Ascend Hazardous Waste Permit.

Ascend remedies any deterioration or malfunction of equipment or structures, which the inspection reveals on a schedule that ensures the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action will be taken as soon as practicable.

6.3.2 Prevention of Releases to Groundwater from Disposal Units

The Ascend landfills (Closed Landfill, Active Landfill, and proposed New Landfill) have been designed and/or constructed with bottom liners, leachate collections systems, and engineered cover systems that effectively contain the wastes within each unit and prevent release of hazardous constituents to groundwater. The Active Landfill and proposed New Landfill have been constructed in accordance with Minimum Technological Requirements (MTR) and have a double liner with leachate collection and detection systems. Each of the Ascend landfills has a groundwater detection monitoring program designed in accordance with applicable regulatory requirements and the Ascend Hazardous Waste Permit. No release of hazardous constituents to shallow groundwater has occurred from these units.

Stratum II represents the uppermost groundwater-bearing unit (GWBU) beneath the Ascend property. Stratum II is separated from the Ascend landfills by a clay layer (Stratum I) that is approximately 10-15 ft thick below the Closed Landfill, and 20-25 ft thick beneath the Active Landfill and proposed New Landfill.

6.3.3 Response to Release to Groundwater from Closed IWPF Surface Impoundments

A groundwater corrective action program has been implemented at the Closed IWPF Surface Impoundments based on a confirmed detection of hazardous organic and inorganic constituents exceeding background levels within shallow groundwater (Stratum II) beneath the unit. Based on an evaluation of concentration trends and hydrogeologic conditions, plume constituent concentrations were found to have stabilized at relatively low levels within the boundaries of the Ascend facility, and with no free phase-product detected. A groundwater corrective action program using Monitored Natural Attenuation (MNA) has been implemented for this unit in accordance with the Compliance Plan provisions of the Ascend Hazardous Waste Permit.

Finding: Hazardous waste management units at the Ascend facility have been designed and/or constructed with secondary containment or liners and leachate collection systems designed to prevent the release of hazardous constituents to groundwater, are separated

from the uppermost GWBU by a clay layer at least 10-ft thick, and meet the criterion of 30 TAC §335.204(e)(4). A groundwater corrective action program has been successfully implemented to address a release to groundwater from the Closed IWPF Surface Impoundments.

7.0 SHALLOW SOIL CHARACTERISTICS

7.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in areas where soil unit(s) within five feet of the containment structure have a Unified Soil Classification of GW, GP, GM, GC, SW, SP, or SM, or a hydraulic conductivity greater than 1E-05 cm/sec unless: (A) secondary containment is provided to preclude migration to groundwater or surface water from spills, leaks or discharges; or (B) the soil unit is not sufficiently thick and laterally continuous to provide a significant pathway for waste migration." (30 TAC 335.204(a)(5))

"A landfill may not be located in areas where soil unit(s) within five feet of the containment structure have a Unified Soil Classification of GW, GP, GM, GC, SW, SP, or SM, or a hydraulic conductivity greater than 1E-05 cm/sec unless: (A) it is in an area where the average annual evaporation exceeds average annual rainfall by more than 40 inches; or (B) the soil unit is not sufficiently thick and laterally continuous to provide a significant pathway for waste migration." (30 TAC §335.204(e)(5))

7.2 Waste Storage and Processing Units

Waste storage and processing units (i.e., Outdoor Container Storage Area, proposed Outdoor Container Storage Area 2, IWPF Tanks, AN Boilers, and SHU) are located among or near the manufacturing areas within the developed central portion of the facility. These units have been constructed with secondary containment that precludes the migration of hazardous constituents to groundwater or surface water from potential leaks or spills. In addition, the container storage areas, tanks, and thermal desorption unit have all been designed and constructed to comply with federal (40 CFR Part 264) and state (30 TAC Chapter 335 Subchapter F) regulatory requirements for secondary containment for collecting and holding spills, leaks, and precipitation.

7.3 Land-Based Waste Management Units

7.3.1 Shallow Stratigraphy beneath the Ascend facility

The Ascend facility is underlain by a sequence of unconsolidated sediments consisting of low-permeability clays interbedded with more permeable water-bearing silts and sands. Shallow stratigraphy from 0 to 140 ft bgs beneath the waste disposal units consists generally of the following stratigraphic units:

Exhibit 2: Shallow stratigraphy beneath land-based units.

Stratigraphic Unit	Lithologic Description	Active Landfill and New Landfill		Closed Landfill		Closed IWPF Surface Impoundments	
		Depth Interval (ft bgs)	Hydraulic Conduc-tivity (cm/sec)	Depth Interval (ft bgs)	Hydraulic Conduc-tivity (cm/sec)	Depth Interval (ft bgs)	Hydraulic Conduc-tivity (cm/sec)
I. Surface Clay	Mottled brown and gray CLAY (CH, CL)	0 - 45	7.50E-08	0 - 40	8.2E-08	0 - 30	2.7E-05
II. Upper Sand	Tan to gray, silty, fine SAND (SM, SC)	10 - 60	2.00E-06	5 - 60	1.1E-04	20 - 85	6.8E-04
III. Lower Clay	Gray CLAY, silty in part (CH, CL)	60 - 70	–	50-125+	1.4E-08	85 - 115	7.1E-10
IV. Lower Sand	Gray, silty, fine SAND (SM)	70 - 110	–	NP	–	115 - 140	–
V. Base Clay	Gray CLAY (CH)	85 -125	–	NP	–	140+	3.2E-09
VI. Silty Sand	Silty SAND (SM)	97+	–	NP	–	NP	–

Notes:
1. Stratigraphic data summarized from information provided in Monsanto, 1985, and Section VI Geology Report of this application. Depth intervals for each stratum represent the maximum and minimum depths of these strata as observed in soil borings located in the general vicinity of the units.
2. Geotechnical values are mean values of datasets.
3. NP = Not penetrated. bgs = Below ground surface. – No data available.

None of the stratigraphic units underlying the Ascend landfill units are classified as gravel soils (i.e., USCS designations of GW, GP, GM, or GC). Sand-dominant soils (i.e., USCS designations of SM, SC) are present at depths of greater than 5 ft beneath the base of the waste in the land-based units. (See cross-sections for the Active Landfill, Closed Landfill, and New Landfill in the Section VI Geology Report and cross-sections for the Closed IWPF Surface Impoundments in Attachment XI.2 of the Section XI Compliance Plan).

Finding: Waste storage processing and storage units have been constructed with secondary containment that precludes the migration of hazardous constituents to groundwater or surface water from potential leaks or spills, thereby meeting the criteria of 30 TAC §335.204(e)(5). In general, units are underlain by at least 5 feet of surficial clay. Moreover, land-based units are constructed or designed with at least a 5-ft separation between the base of the waste and the shallowest unit having a USCS classification of SM or SC, thereby meeting the criteria of 30 TAC §335.204(e)(5).

8.0 LAKES USED FOR PUBLIC WATER SUPPLIES

8.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in areas of direct drainage within one mile of a lake at its maximum conservation pool level, if the lake is used to supply public drinking water through a public water system, unless the design, construction, and operational features of the facility will prevent adverse effects resulting from a release in such areas." (30 TAC 335.204(a)(6))

"A landfill may not be located in areas of direct drainage within one mile of a lake at its maximum conservation pool level, if the lake is used to supply public drinking water through a public water system, unless the design, construction, and operational features of the facility will prevent adverse effects resulting from a release in such areas." (30 TAC §335.204(e)(8))

8.2 Public Water Supplies Near the Ascend Facility

No lakes or other surface water bodies used for public drinking water supply are located within one mile of the Ascend facility. Public water supply systems in Brazoria County, Texas obtain drinking water from groundwater and purchased surface water systems including the Brazos River, Chocolate, Mustang, and Hall bayous, and the Gulf Coast Aquifer (Region H WPG, 2020). In addition, drainage from the Ascend facility is discharged to Chocolate Bayou under the Texas Pollutant Discharge Elimination System (TPDES) Permit Nos. TXR05BQ25 and WQ0000001000. Chocolate Bayou discharges into Chocolate Bay, and neither Chocolate Bayou nor Chocolate Bay are used for public water supply downstream of the Ascend facility (TCEQ, 2024).

Finding: The Ascend facility is not located within one mile of a lake used to supply public drinking water, and therefore the hazardous waste units meet the criterion of 30 TAC 335.204(a)(6) and 335.204(e)(6).

9.0 ACTIVE GEOLOGIC PROCESSES

9.1 Regulatory Requirements

"A storage or processing facility (excluding storage surface impoundments) may not be located in areas of active geologic processes unless the design, construction, and operational features of the facility will prevent adverse effects resulting from the geologic processes." (30 TAC 335.204(a)(7))

"A landfill may not be located in areas of active geologic processes unless the design, construction, and operational features of the facility will prevent adverse effects resulting from the geologic processes." (30 TAC §335.204(e)(9))

"A storage or processing facility may not be located within 30 feet of the upthrown side or 50 feet of the downthrown side of the actual or inferred surface expression of a fault that has reasonably been shown to have caused displacement of shallow Quaternary sediments or of man-made structures, unless the design, construction, and operational features of the facility will prevent adverse effects resulting from fault movement." (30 TAC §335.204(a)(9))

"A landfill may not be located within 30 feet of the upthrown side or 50 feet of the downthrown side of the actual or inferred surface expression of a fault that has reasonably been shown to have caused displacement of shallow Quaternary sediments or of man-made structures, unless the design, construction, and operational features of the facility will prevent adverse effects resulting from fault movement." (30 TAC §335.204(e)(13))

Active geological processes in the region that could hypothetically impact the hazardous waste management units at the Ascend facility include the following: erosion, subsidence and submergence, faulting associated with sediment loading/gravity tectonics or salt domes, and earthquakes. As documented below, none of these geologic processes will adversely impact the capacity of the Ascend hazardous waste management units to prevent a release of hazardous constituents.

9.2 Erosion

9.2.1 Erosion Due to Rainfall

The potential for erosion by surface runoff is considered negligible, since the surface in the vicinity of and within the hazardous waste units is covered by concrete surfaces, roads, vegetation, and/or clayey soils that diminish the effects of erosion. Regular maintenance of protective measures along Chocolate Bayou, concrete surfaces, roads, and secondary containment areas ensure that erosion continues to be negligible. The surface relief is nearly flat except for the area directly adjacent to Chocolate Bayou, so surface runoff will not have the velocity to cause erosion.

An evaluation of the engineered covers of the Ascend disposal units has determined that the potential for erosion is negligible for the Active Landfill, Closed Landfill, Closed IWPF Surface Impoundments, and the proposed New Landfill. Calculations completed using the Universal Soil Loss Equation (USLE; USDA, 1976) to estimate the erosion potential for the covers determined a maximum erosion rate of 3.3E-04 feet per year (GSI, 2001). The USLE estimates erosion rates as a function of cover area, materials of construction, rainfall, and surface vegetation. Based on calculated erosion rates, the disposal unit covers will maintain adequate thickness (i.e., ≥2 ft) for the 30-year post-closure care period (GSI, 2001). Ascend manages erosion of the final disposal unit covers and the side slopes by design of the covers with a 2 – 5% grade to minimize erosion effects, visual inspection of the disposal units, repair of identified problems, and provision of financial assurance for long-term control and maintenance of the disposal units.

Finding: The potential for surficial erosion of the Ascend disposal unit covers by rainfall runoff is considered negligible; therefore, these units meet the criterion of 30 TAC §335.204(e)(9).

9.2.2 Erosion from Alluvial Flooding and Meandering Rivers

Hazardous waste management units at the Ascend facility have not been impacted by alluvial flooding and stream meandering. Although the Ascend facility lies adjacent to Chocolate Bayou, erosion associated with fluvial processes (i.e., meandering and bank undercutting) is not expected, as meandering of the Chocolate Bayou channel has been curtailed by routine maintenance dredging by the USACE (USACE, 2012). Maintenance dredging of the channel occurs approximately every four years to ensure navigability of the waterway (USACE, 2012).

Distances from the disposal units to Chocolate Bayou range from approximately 2,400 ft for the Closed IWPF Surface Impoundments to almost two miles for the Active and New Landfills. Given these distances, potential erosion of the disposal units as a result of stream meandering and bank undercutting is negligible.

Finding: The potential for erosion of the Ascend disposal unit covers by the fluvial processes of flooding and stream meandering is considered negligible; therefore, these units meet the criterion of 30 TAC §335.204(e)(9).

9.3 Subsidence and Submergence

Investigations conducted near the Ascend facility suggest that little subsidence has occurred in the vicinity of the plant. The subsidence reported in the area of the Ascend facility was approximately 1 foot in the 73-year period from 1906 to 1978. Furthermore, between 1978 and 2020, subsidence was reported to be less than 0.5 feet (Ellis et al., 2023; see Figures VI.A.2 and VI.A.3 in Section VI.A of this application). Effects from subsidence are not expected to impact the hazardous waste management units at the Ascend facility.

Land surface subsidence in the broader Gulf Coast Region has primarily been a consequence of the groundwater pumping and withdrawal that began mostly in the early twentieth century, as well as from the withdrawal of oil and gas and associated groundwater. The approximate subsidence reported from the region ranges from less than 1 ft to a maximum of over 10 ft for the period of 1906 to 1921 (Ellis et al., 2023). The maximum reported subsidence was in the Pasadena Ship Channel area, 40 miles northeast of the Ascend facility. However, regional subsidence has slowed significantly following reduction of groundwater withdrawal in the areas of greatest subsidence (Ellis et al., 2023); therefore, regional subsidence is not anticipated to impact the Ascend facility's hazardous waste management units.

Finding: Subsidence is not expected to impact the Ascend facility's hazardous waste management units.

9.4 Faulting

As discussed in Section VI.A.1.a of Section VI.A of this application, no evidence of surface or near-surface faulting has been identified at the Ascend facility. Available evidence pertaining to faulting in the area includes both published studies and site-specific data collection efforts regarding both salt domes and faults (Everett and Reid, 1981; St. Clair et al., 1975; Monsanto, 1985).

Faulting in the Texas Gulf Coast region are products of either i) the upward movement of salt or shale diapirs (domes), or ii) growth faults associated with depositional loading of older, poorly consolidated strata and gulfward creep of the sediment mass.

The Ascend plant is located approximately 7 miles north of the Hoskins Mound salt dome and approximately 7 miles east of the Danbury Dome. No other salt domes or their associated faulting are present near the Ascend facility.

Active or potentially active faults or lineaments have been mapped crossing the Ascend facility within or near the Ascend facility based on lineament or grain displayed on available aerial photographs (See Figure II.1.4; Fisher et al., 1972). In order to confirm the presence or absence of such faults, investigations were conducted at the Ascend facility that consisted of: i) reviewing electric logs and previous faulting studies conducted in the area;

ii) reviewing aerial photographs; and iii) field inspections of the plant area for evidence of faulting. These investigations concluded that there is no evidence of surface or near-surface faulting at the Ascend facility (Everett and Reid, 1981; Monsanto, 1985). The closest fault found to the Ascend site is located approximately 6,200 feet south of the facility; however, no displacement has been demonstrated to exist for this fault shallower than 2,000 feet depth (Envirocorp, 1996).

Finding: No evidence of active faulting has been identified sufficiently close to the Ascend facility to adversely affect the hazardous waste management units.

9.5 Earthquakes

The Texas coastal plain is classified as a Seismic Design Category A (i.e., lowest hazard) per the American Society of Civil Engineers Code (ASCE, 2024). Although over 300 surface faults have been identified in the nearby Houston, Texas, metropolitan area (Engelkemeir and Khan, 2008), the Houston metropolitan area (including Brazoria County) is located in a very low seismic potential zone (USGS, 2022). Faults in the Texas coastal plain generally do not release measurable amounts of seismic energy due to the lack of stress build-up in the rocks on opposing sides of faults. Consequently, there is little potential energy to be released in an earthquake, and consequently low seismic hazard risk. Engelkemeir and Khan (2008) note that fault motion by aseismic creep is inferred on active faults since there are no recorded earthquake epicenters in the Houston area. A review of seismic activity from 1 January 1976 through 30 May 2024, confirmed that no earthquakes above magnitude 2.5 were detected in Brazoria County during this historical period (USGS, 2024).

Finding: There is little or no potential energy to be released when movement occurs along Gulf Coast faults in the vicinity of the Ascend facility; therefore, no earthquake risk is present to the Ascend disposal units.

10.0 CRITICAL HABITAT

10.1 Regulatory Requirements

"A storage or processing facility may not be located in the critical habitat of an endangered species of plant or animal unless the design, construction, and operational features of the facility will prevent adverse effects on the critical habitat of the endangered species." (30 TAC 335.204(a)(8))

"A landfill may not be located in the critical habitat of an endangered species of plant or animal unless the design, construction, and operational features of the facility will prevent adverse effects on the critical habitat of the endangered species." (30 TAC §335.204(e)(11))

10.2 Critical Habitat at the Ascend Facility

No critical habitat has been identified on the Ascend facility (USFWS, 2024b). Critical habitats are areas identified by the U.S. Fish & Wildlife Service as specific geographic

areas that contain features essential for the conservation of a threatened or endangered species, and that require special management and protection.

As described above, waste processing and storage units (i.e., Outdoor Container Storage Area, Outdoor Container Storage Area 2, IWPF Tanks, AN Boilers, and Solids Handling Unit) are located among or near the manufacturing areas within the developed central portion of the facility. Waste disposal areas are located south of the central manufacturing area, in areas that are characterized as Gulf Coast Prairies and Marshes (TPWD, 2011). No threatened or endangered species have been observed in this area.

Finding: No critical habitat has been identified on the Ascend facility. The hazardous waste storage, processing, and landfill units present at the Ascend facility are not located in critical habitat and therefore meet the criterion of 30 TAC §335.204(a)(8) and 30 TAC §335.204(e)(11).

11.0 PUBLIC AREAS

11.1 Regulatory Requirements

"A landfill may not be located within 1,000 feet of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park which is in use at the time the notice of intent to file a permit application is filed with the commission, or if no such notice is filed, at the time the permit application is filed with the commission. The measurement of distances required for a new hazardous waste landfill shall be taken from a perimeter around the proposed new hazardous waste landfill. The perimeter shall be not more than 75 feet from the edge of the proposed new hazardous waste landfill unit." (30 TAC §335.204(e)(6))

11.2 Residential and Public Developments Near the Ascend Facility

The Ascend facility encompasses approximately 2,500 acres and is bordered on the north by agricultural areas, to the east by agricultural areas, to the south by industrial facilities, and to the west by Chocolate Bayou. The undeveloped portions of the facility consist of approximately 1500 acres of pasture and woods, much of which is leased for cattle grazing.

The nearest residential development (i.e., Amsterdam) is located northwest of the Ascend property, across Chocolate Bayou, a distance of approximately 2 miles from the manufacturing area. According to The Texas State Handbook Online (2018), the population of Amsterdam was 193 in 2014. The nearest incorporated community is Liverpool, Texas, approximately 5 miles northwest of the Ascend facility, with a population of 404 residents in 2000 (Texas State Handbook Online, 2018). Several churches are located in Liverpool. Schools and daycare centers are located in Danbury (8.3 miles from Ascend) and Alvin (11 miles from Ascend).

Finding: The Ascend facility meets the criteria of 30 TAC §335.204(e)(6) pertaining to landfills not being located within 1,000 ft of established residences, churches, schools, day care centers, and surface water bodies used for a public drinking water supply (see also Section 8.2 above).

12.0 COASTAL SHORELINE EROSION

"A landfill may not be located within 1,000 feet of an area subject to active coastal shoreline erosion, if the area is protected by a barrier island or peninsula, unless the design, construction, and operational features of the facility will prevent adverse effects resulting from storm surge and erosion or scouring by water." (30 TAC §335.204(e)(10))

The Ascend facility is located on approximately 2,500 acres in Brazoria County, Texas. The Gulf of Mexico is approximately 12 miles from the Ascend facility. Chocolate Bay is located about five to six miles from the Ascend facility.

Finding: The Ascend facility is located at a distance greater than 1,000 ft of an active coastal shoreline erosion area and meets the criterion of 30 TAC §335.204(e)(10).

13.0 BARRIER ISLANDS AND PENINSULAS

"A landfill may not be located on a barrier island or peninsula." (30 TAC §335.204(e)(12))

The Ascend facility is located on approximately 2,500 acres of land in Brazoria County, Texas. The hazardous waste management units owned and operated by Ascend are located on the plant property and not on a barrier island or peninsula.

Finding: Landfills at the Ascend facility are not located on a barrier island or peninsula, and therefore meet the criterion of 30 TAC §335.204(e)(12).

14.0 ADDITIONAL INFORMATION

14.1 Land Disposal Unit Documentation

"For existing land disposal facility units provide documentation that the information required by 30 TAC 335.5 has been placed in the county deed records. If previously submitted, please reference the submittal by date and registration number." (TCEQ Part B Application Rev. 3/1/2023, II. Facility Siting Criteria, Item G.6)

Information has been filed in the Brazoria County deed records for each hazardous waste management unit that has been used for land disposal of wastes at the Ascend facility (i.e., the Closed Landfill, the Active Landfill, the Closed IWPF Surface Impoundments, and Solid Waste Management Units (SWMUs); see Attachments II.1.2 – II.1.5 in this application). The information placed in the county deed records includes: i) a metes and bounds description of the land on which disposal occurred; ii) a description of the wastes disposed; and iii) contact information where further information may be obtained.

14.2 Exposure Information: Landfills

"If a surface impoundment or landfill (including post-closure) is to be permitted, provide exposure information to accompany this application and in accordance with 30 TAC 305.50(a)(8) and 40 CFR 270.10(j). This information will be considered separately from

the TCEQ application completeness determination." (TCEQ Part B Application Rev. 3/1/2023, II. Facility Siting Criteria, Item G.7)

14.2.1 General Exposure Prevention

As a primary means of preventing on-site public exposure, Ascend has implemented procedures to prevent unauthorized access to the facility (see the Security Plan in Section III of this application). Access to the facility is monitored and controlled on a 24-hour basis by on-site security personnel. Perimeter fencing prevents unauthorized access to the active portion of the plant. The Closed Landfill (Permit Unit 01) and Closed IWPF Surface Impoundments (Permit Unit 03) are located in plant operating areas that require persons entering these areas to pass through the unit/department control room. The Active Landfill (Permit Unit 02) and New Landfill (Permit Unit 16) are surrounded by secured perimeter fencing, including a gate with a lock.

14.2.2 Air and Soil Exposure Prevention

No surface soils containing hazardous constituents are exposed at the Ascend landfills. Final disposal unit soil covers or caps and side slopes have been designed to minimize erosion effects, and are visually inspected on a monthly basis for evidence of deterioration, cracks, cave-ins, and ponding. As described in Section 14.1 of this report above, closed disposal areas have been deed recorded to indicate the location and dimensions of the closed landfill area with respect to permanently surveyed benchmarks.

During disposal operations, unit procedures to minimize exposure include: i) operating only one cell at a time to limit the area of potential waste exposure; ii) managing wastes to avoid producing particulates or vapors; and iii) excluding wastes containing free liquids from the landfill. Standard operating procedures prevent on-site or off-site exposures to hazardous constituents via inhalation of volatile vapors or ingestion of windborne dust or particulates resulting from spills or releases of waste materials. Preventive measures include: i) a long distance to the nearest residence (i.e., more than 2 miles); ii) unit operating procedures that provide for precautions to limit the number of spills or releases; and iii) emergency response procedures that call for immediate clean-up of any releases.

14.2.3 Groundwater Exposure Prevention

The Ascend landfills (Closed Landfill, Active Landfill, and proposed New Landfill) have been designed and/or constructed with bottom liners, leachate collections systems, and/or engineered cover systems that effectively contain the wastes within each unit and prevent release of hazardous constituents to groundwater. The Active Landfill has been constructed in accordance with MTR and has a double liner with leachate collection and detection systems. Comparable plans are in place for the proposed New Landfill. Each of the Ascend landfills, including the Closed Landfill, has a groundwater detection monitoring program designed in accordance with applicable regulatory requirements and the Ascend hazardous waste permit. No release of hazardous constituents to shallow groundwater has occurred from these units.

A groundwater corrective action program has been implemented at the Closed IWPF Surface Impoundments pursuant to a confirmed detection of hazardous organic and inorganic constituents exceeding background levels within shallow groundwater (Stratum

II) beneath the unit. Based on an evaluation of concentration trends and hydrogeologic conditions, plume constituent concentrations were found to have stabilized at relatively low levels within the boundaries of the Ascend facility and with no free phase-product detected. A groundwater corrective action program using MNA has been implemented for this unit in accordance with the Compliance Plan provisions of the Ascend Hazardous Waste Permit No. 50189.

14.2.4 Surface Water Exposure Prevention

The potential for release of wastes or waste constituents to surface water as a result of facility operations is low due to the facility's operating practices and its location. Surface water and flood protection is provided by the diversion of run-on and run-off to prevent inundation during periods of intense precipitation. Stormwater management and run-on and run-off controls utilized by the facility are described further in the engineering reports for each hazardous waste management unit included in Section V of this application.

As described in Section 3.3 of this report, Ascend has implemented flood control protection measures to prevent transport of hazardous waste in the event of a 100-yr flood event. Ascend's hazardous waste landfills and the Closed IWPF Surface Impoundments are located in areas where predicted flood depths are less than 1 ft. In addition, perimeter dikes at the Active Landfill (Permit Unit 02) and New Landfill (Permit Unit 16) have a minimum nominal height of 8 ft above natural grade around each active landfill cell. The predicted 100-yr flood elevation is 14 ft MSL in the vicinity of this unit, and top-of-dike elevations range from 20 to 21 ft MSL. Therefore, the dikes are a minimum of 5 ft higher than expected water levels during a 100-yr flood event.

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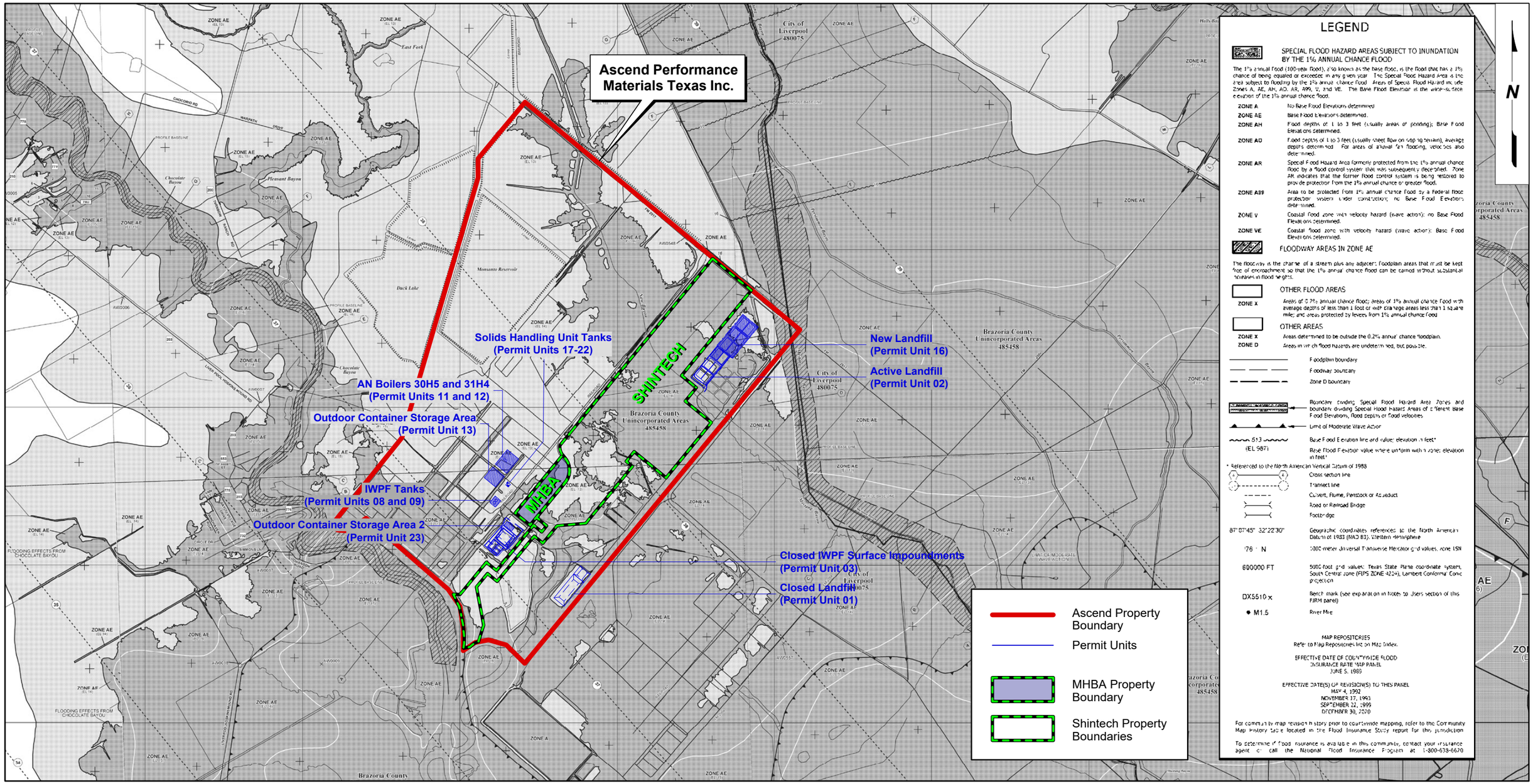
APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

FIGURES

Figure II.1.1 Location of 100-Year Floodplain
Figure II.1.2 Location of Wetlands and Surface Water Bodies
Figure II.1.3 Hydrogeologic Dip Cross-Section: A – A'
Figure II.1.4 Regional Sediment Characteristics and Fault Map
Figure II.1.5 Land Use in the Vicinity of Ascend Chocolate Bayou Plant



Notes:

1. Zone A = Base floodplain where no base flood elevation has been determined.
   Zone AE = Base floodplain where base flood elevations are provided.
   Zone X (shaded) = Area of moderate flood hazard, usually between the 100-yr and 500-yr floods,
   Zone X (unshaded) = Area of minimal flood hazard, usually above 500-yr floods.
2. Map Reference: FEMA, 2020. Flood Insurance Rate Maps, Brazoria County, Texas, and Incorporated Areas, Panels 315, 320, and 480, Map Numbers 48039C0315K, 48039C0320K, and 48039C0480K, Federal Emergency Management Agency, 30 December 2020.

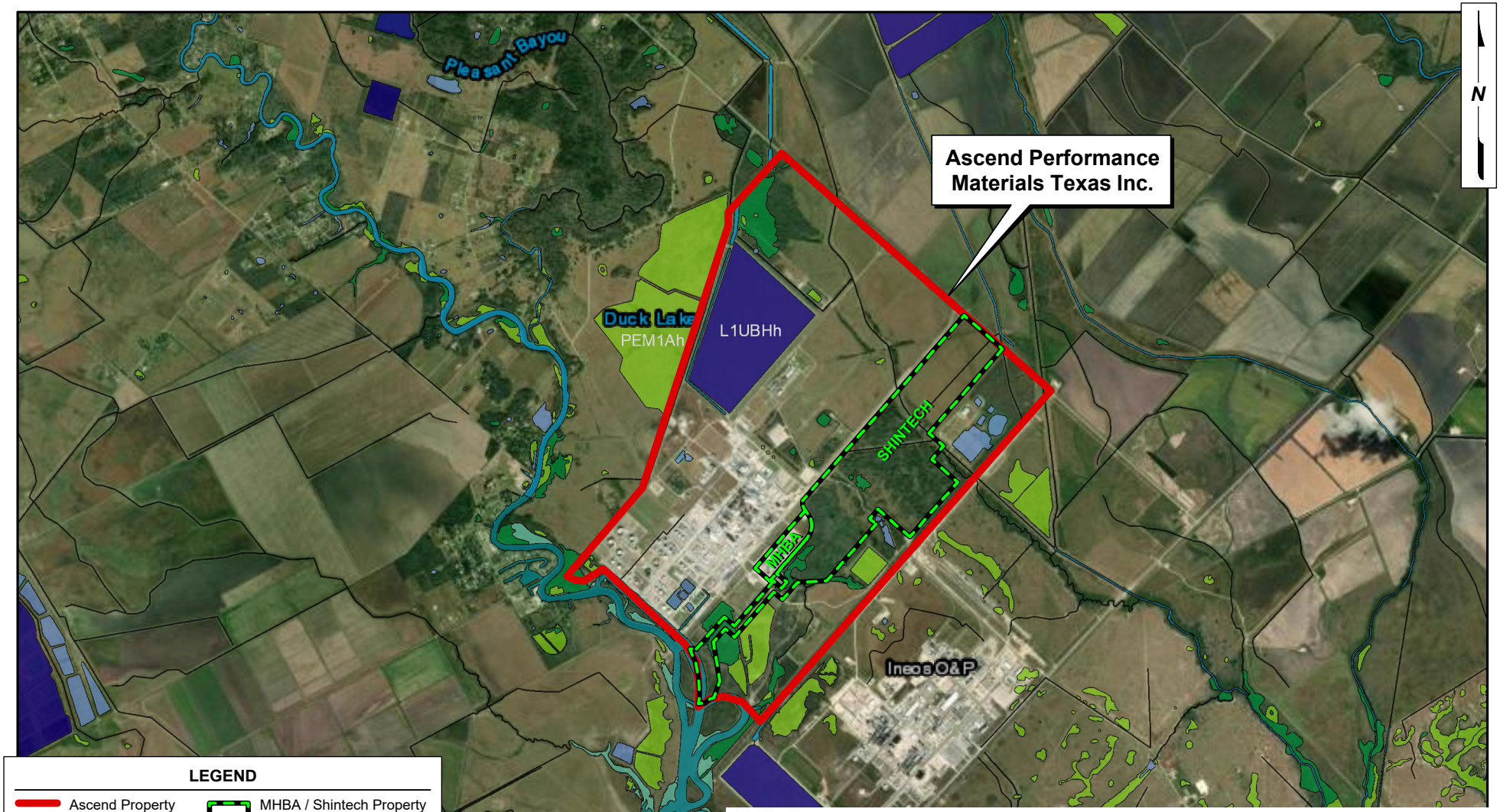
SCALE (ft.)
0 1500 3000

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

LOCATION OF 100-YEAR FLOODPLAIN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	002_01	Chk'd By:	WMC
Issued	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown	**Figure II.1.1**	



LEGEND

- Ascend Property Boundary
- MHBA / Shintech Property Boundaries

PEM1Ah	Palustrine Emergent Persistent Temporary Flooded Diked/Impounded
L1UBHh	Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded Diked/Impounded

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

SCALE (mi.)
0 0.5 1.0

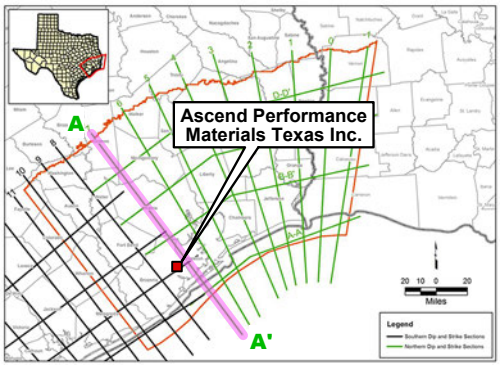
Map Reference: USFWS, 2024. National Wetlands Inventory, U.S. Fish and Wildlife Survey, Internet, https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/, accessed by Banks Environmental Data 13 May 2024.

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

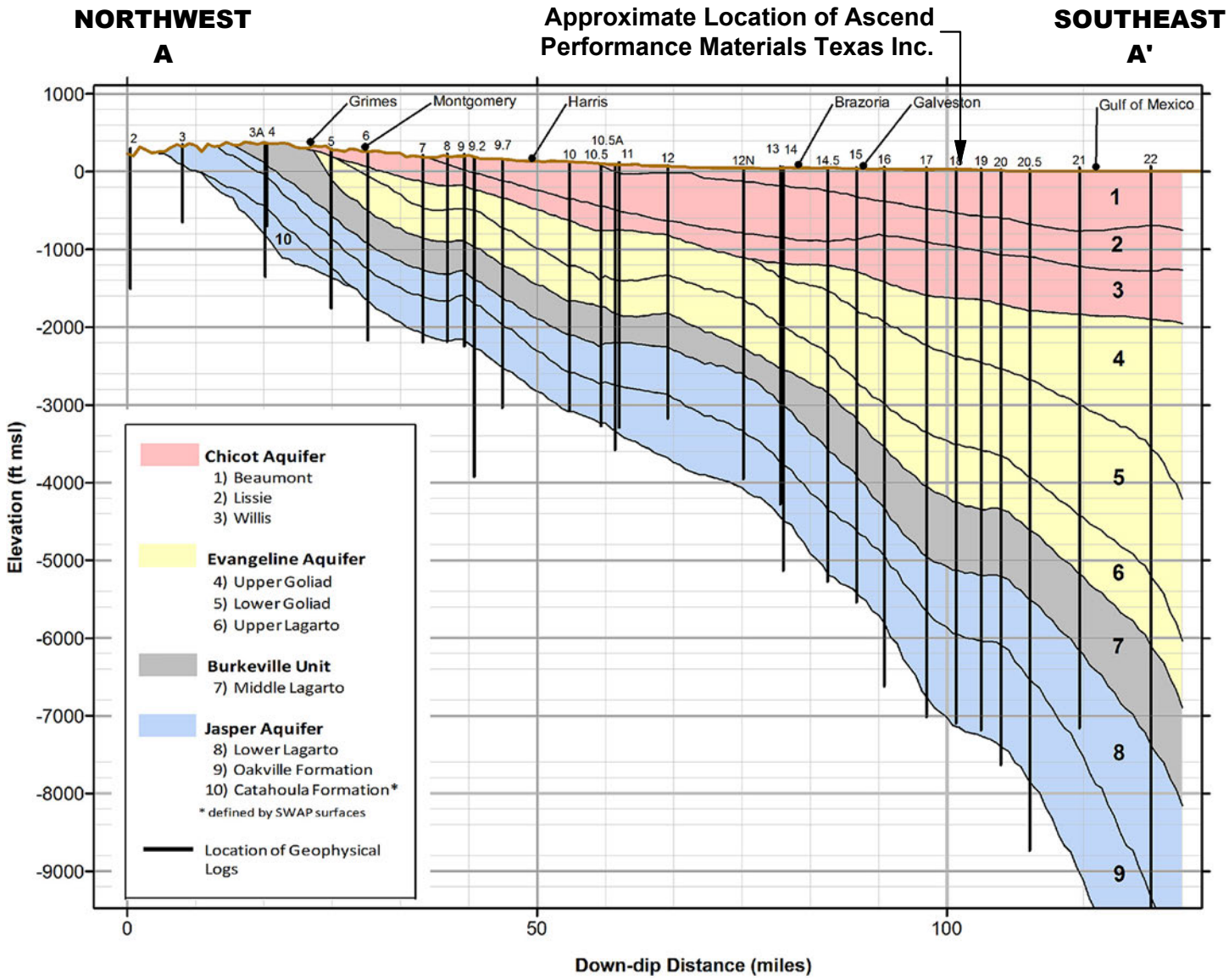
GSI Job No.	6932	Drawn By:	CDM
Map ID:	002_02	Chk'd By:	WMC
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Figure II.1.2**	

LOCATION OF WETLANDS AND SURFACE WATER BODIES

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas



(modified from Young et al., 2012)



(modified from Young et al., 2012)

GSI ENVIRONMENTAL

Texas Geoscience Firm Registration Number: 50243

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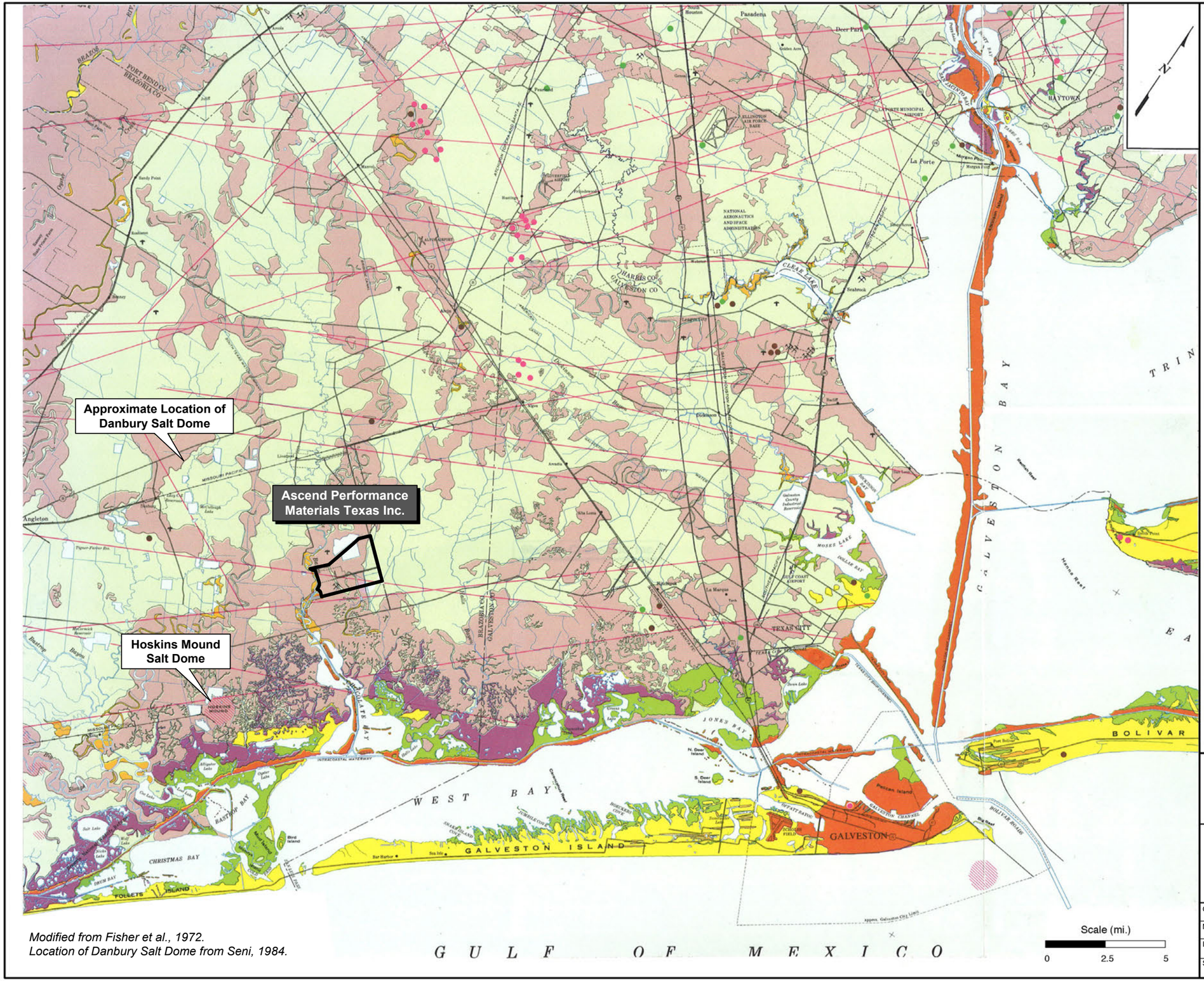
Map ID:	002_03	Chk'd By:	WMC
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**Figure II.1.3**	

HYDROGEOLOGIC DIP CROSS-SECTION

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas



Modified from Fisher et al., 1972.
Location of Danbury Salt Dome from Seni, 1984.

EXPLANATION

CATEGORIES

GROUP I.

Dominantly clay and mud, low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, high plasticity
Geologic units include interdistributary muds, barrier-strandplain-chenier swales, abandoned channel-fill muds, overbank fluvial muds, mud-filled coastal lakes and tidal creeks

GROUP II.

Dominantly sand, high to very high permeability, low water-holding capacity, low compressibility, low shrink-swell potential, good drainage, low ridge and depressed relief, high shear strength, low plasticity
Geologic units include beach, foredunes, barrier-strandplain-chenier vegetated flats, Pleistocene barrier and strandplain sands

GROUP III

Dominantly clayey sand and silt, moderate permeability and drainage, moderate water-holding capacity, low to moderate compressibility, and shrink-swell potential, level relief with local mounds and ridges, high shear strength
Geologic units include meanderbelt sands, alluvium, levee, crevasse splay, distributary sands, bay-margin sand and mud, Pleistocene fluvial, distributary, delta front sands

GROUP IV

Coastal marsh, fresh to brackish, very low permeability, high water-holding capacity, very poor drainage, depressed relief, low shear strength, high plasticity, high organic content, subject to salt-water flooding
Geologic units include fresh to brackish and closed brackish marsh, marsh-filled abandoned coastal lakes and tidal creeks

GROUP V.

Inland swamp and marsh, permanently high water table, very low permeability, high water-holding capacity, very poor drainage, very poor load-bearing strength, high organic content, subject to frequent flooding
Geologic units include swamp, inland marsh, marsh-filled channels

GROUP VI.

Tidal flat and salt marsh, subject to frequent tidal inundations, properties similar to Group V
Geologic units include tidal flat, salt marsh

GROUP VII.

Made land and spoil, properties highly variable, mixed mud, silt, and sand, reworked spoil commonly sandy and moderately sorted with properties similar to Group III
Geologic units include subaerial spoil heaps or mounds, subaerial reworked spoil, subaqueous spoil, made land

Refer to tables in text for land-use evaluation such as engineering, solid waste disposal, and other functional categories based on physical properties and other parameters

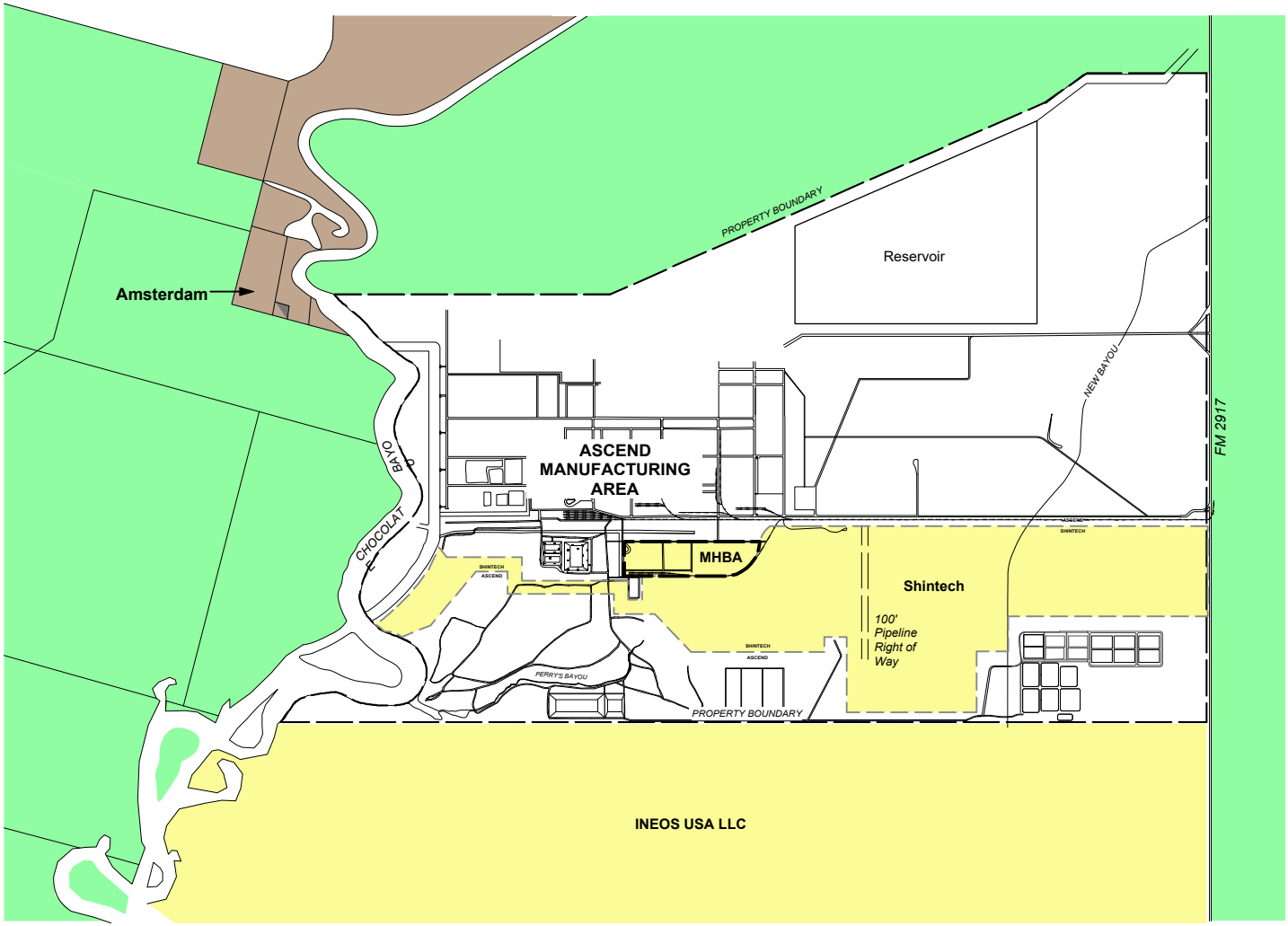
- Pit or quarry, commonly in fluvial deposits
- Sludge pit or miscellaneous waste disposal site, may be abandoned
- Sewage disposal site, liquid effluent, normally treated
- Solid waste disposal site, sanitary landfills, and open dumps
- Salt dome, shallow piercement, projected outline (approximate) of dome, normally surface expression
- Active or potentially active fault, based on lineament or grain displayed on aerial photographs, some faults near Houston from published sources

GSI ENVIRONMENTAL
Texas Geoscience Firm Registration Number: 50243

REGIONAL SEDIMENT CHARACTERISTICS AND FAULT MAP

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No.:	6932	Drawn By:	CDM
Map ID:	002_04	Chk'd By:	WMC
Issued:	9-Aug-2024	Apprv'd:	JMM
Scale:	As Shown	**FIGURE II.1.4**	



PLANT NORTH

TRUE NORTH

LEGEND

- Agricultural Land Use
- Residential Land Use
- Industrial Land Use
- Ascend Property Boundary

SCALE (ft.)

0 1500 3000

GSI ENVIRONMENTAL
Texas Geoscience Firm
Registration Number: 50243

GSI Job No.	6932	Drawn By:	CDM
Map ID:	002_05	Chk'd By:	MW
Issued:	9-Aug-2024	Aprv'd By:	JMM
Scale:	As Shown	**FIGURE II.1.5**	

LAND USE IN VICINITY OF ASCEND CHOCOLATE BAYOU PLANT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENTS

Attachment II.1.1	US Army Corps of Engineering Wetlands Determination
Attachment II.1.2	Proof of Deed Recordation: Closed Landfill
Attachment II.1.3	Proof of Deed Recordation: Active Landfill
Attachment II.1.4	Proof of Deed Recordation: Closed IWPF Surface Impoundments
Attachment II.1.5	Proof of Deed Recordation (Draft): Solid Waste Management Units

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT 1

US Army Corps of Engineering Wetlands Determination

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON TX 77553-1229

July 7, 2009

REPLY TO
ATTENTION OF:

Compliance Section

SUBJECT: **SWG-2006-01980**; Jurisdictional Determination, Four Active Borrow Pits, Solutia Incorporated, Solutia Chocolate Bayou Facility, Southern Brazoria County, Texas

Ms. Gina Bradley
Solutia Incorporated
P.O. Box 711
Alvin, Texas 77512

Dear Ms. Bradley:

This office received the request for a jurisdictional determination dated May 22, 2008, on four active borrow pits numbered 5, 7 and 8, 9 as indicated on attachment A (see attached). This tract is located on the Solutia Chocolate Bayou Facility on Farm-to-Market Road (FM) 2917, approximately two miles northwest of the intersection of FM Road 2004 and FM 2917 in Brazoria County, Texas. We have determined the four borrow pits numbered 5, 7, 8 and 9 do not contain waters of the United States, including adjacent wetlands. Therefore, these four borrow pits are **not subject to Section 404 of the Clean Water Act (CWA) or Section 10 of the Rivers and Harbors Act and the discharge of fill material and/or work into these four borrow pits does not require a Department of the Army permit**. If at any time these borrow pits become abandoned, they may be subject to jurisdiction.

This determination has been conducted to identify the limits of the United States Army Corps of Engineers (USACE) CWA jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

This letter contains an approved jurisdictional determination for your subject site, which is valid for 5 years from the date of this letter unless new information warrants a revision prior to the expiration date. If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeals Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA form to the Southwest Division Office at the following address:

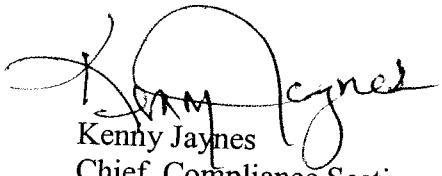
Mr. James Gilmore
Appeal Review Officer, CESWD-ETO-R
U.S. Army Corps of Engineer Division, Southwestern
1100 Commerce Street, Suite 831
Dallas, Texas 75242-1317
Telephone: 469-487-7061; FAX: 469-487-7190

Mr. James Gilmore
Appeal Review Officer, CESWD-ETO-R
U.S. Army Corps of Engineer Division, Southwestern
1100 Commerce Street, Suite 831
Dallas, Texas 74242-1317
Telephone: 469-487-7061; FAX: 469-487-7190

In order for an RFA to be accepted by USACE, USACE must determine it is complete, meets the criteria for appeal under 33 CFR Part 331.5, and has been received by the Division Office within **60 days** of the date of the NAP. It is not necessary to submit an RFA from to the Division office if you do not object to the determination in the letter.

If you have questions concerning this matter, please reference file number **SWG-2006-01980** and contact Ms. Andria Davis at the letterhead address or by telephone at 409-766-6389.

Sincerely,



Kenny Jaynes
Chief, Compliance Section

Enclosures

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Ms Gina Bradley		File Number: **SWG-2006-01980**	Date: **07/07/09**
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I – The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Andria Davis
Project Manager, Compliance Section
CESWG-PE-RC
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
409-766-6389; FAX: 409-766-3931

If you only have questions regarding the appeal process you may also contact:

Mr. James Gilmore
Appeal Review Officer, CESWD-ETO-R
U.S. Army Corps of Engineers
1100 Commerce Street, Room 8E9
Dallas, Texas 75242-1317
Telephone: 469-487-7061; FAX: 469-487-7190

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or authorized agent.	Date:	Telephone number:

ATTACHMENT A

MAY 27 2008

Source: Google Earth, 2006

SCALE (ft.)
0 250 500

GROUNDWATER SERVICES, INC.

BORROW PIT AREA CURRENT AERIAL PHOTO

Solutia Inc., Alvin, Texas

GSI Job No.	G-3014	Scale	As Shown
Drawn By	CDM	Approved	TEM
Checked		Date	10/23/06

Attachment B.3

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT 2

Proof of Deed Recordation: Closed Landfill

STATE OF TEXAS

BRAZORIA COUNTY

INDUSTRIAL SOLID WASTE
DISPOSAL SITE DEED RECORDATION

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Water Commission pertaining to Industrial Solid Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas in compliance with the recordation requirements of said rule:

I

Monsanto Chemical Company will permanently deposit industrial waste on the land described herein. A copy of Notice of Registration No. 6, including a description of wastes to be disposed of and a description of the waste disposal facility, is attached hereto and is made a part of this filing.

II

To set forth one parcel of land encompassing Monsanto's Chocolate Bayou Landfill.

Being a 16.5239 acre tract of land, out of the Monsanto Chemical Company 3000 acre tract in the Perry and Austin League Number 2, Abstract 107, Brazoria County, Texas, recorded in Volume 782, Page 538, Deed Records, Brazoria County, Texas, said 16.5289 acre tract being more particularly described as follows:

COMMENCING at a concrete monument found marking the North corner of said Monsanto 3000 acre tract, also being the North corner of the aforesaid Perry and Austin League No. 2; THENCE South 48 deg. 35 min. 40 sec. East along and with the Northeast line of said Perry and Austin

League, a distance of 11241.09 feet to a point for the East corner of said Monsanto Chemical Company 3000 acre tract;
THENCE South 41 deg. 20 min. 28 sec. West along and with the Southeast line of Monsanto Chemical Company 3000 acre tract, a distance of 10425.43 feet to a 1 inch iron pipe found; THENCE North 48 deg. 39 min. 32 sec. West a distance of 25.0 feet to a 3/4 inch iron pipe set for the East corner of the herein described tract for the PLACE OF BEGINNING;

THENCE South 41 deg. 20 min. 28 sec. West a distance of 1300.0 feet to a 3/4 inch iron pipe set for south corner of the herein described tract;

THENCE North 48 deg. 39 min. 32 sec. West a distance of 500.00 feet to a 3/4 inch iron pipe set for the lower west corner of the herein described tract;

THENCE 41 deg. 20 min. 28 sec. East a distance of 900.00 feet to a 3/4 inch iron pipe set for an interior corner of the herein described tract;

THENCE North 48 deg. 39 min. 32 sec. West a distance of 175.00 feet to a 1 inch iron pipe found for the upper West corner of the herein described tract;

THENCE North 41 deg. 20 min. 28 sec. East a distance of 400.0 feet to a 3/4 inch iron pipe set for the north corner of the herein described tract;

THENCE South 48 deg. 39 min. 32 sec. East a distance of 675.00 feet to the PLACE OF BEGINNING and containing 16.5289 acres of land.

Wastes deposited hereon have been classified by the Texas Water Commission as Class I. Class I waste is defined as "Any industrial solid waste or mixture of industrial solid wastes which because of its concentration, or physical or chemical characteristics, is toxic, corrosive, flammable, a strong sensitizer or irritant, a generator of

sudden pressure by decomposition, heat, or other means, and may pose a substantial present or potential danger to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed, including hazardous industrial waste."

III

The owner of the site is the Chocolate Bayou Plant, Monsanto Chemical Company, a Delaware Corporation, and its address is P. O. Box 711, Alvin, Texas 77512-9888, where more specific information may be obtained from the plant manager.

EXECUTED this the 30th day of October, 1985.

Monsanto Chemical Company
a Delaware Corporation

R. N. Jones
Plant Manager

STATE OF TEXAS
BRAZORIA COUNTY

BEFORE ME, on this the 30th day of October, 1985, personally appeared R. N. Jones, Plant Manager of the Chocolate Bayou Plant, Monsanto Chemical Company, a Delaware Corporation, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30th day of October, 1985.

Gayle M. Krenek
Notary Public in and for the
State of Texas, County of
Brazoria

My commission Expires
February 15, 1989

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT 3

Proof of Deed Recordation: Active Landfill

Randy L. Stroud, P.E.

COUNTY SURVEYOR
201 East Mulberry, Suite 100
Angleton, Texas 77515
(409) 849-5711 Ext. 1497

Registered Professional Land Surveyor License #2112

Professional Engineer License #50839

LANDFILL AREA
MONSANTO
CHOCOLATE BAYOU

FIELD NOTES OF A 35.52 ACRE TRACT OUT OF THE MONSANTO 3000 ACRE TRACT OF LAND OUT OF THE PERRY AND AUSTIN LEAGUE NO. 2, ABSTRACT 107, BRAZORIA COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 6" X 6" concrete monument with a 1/2" iron rod in the center, said monument being the generally recognized North corner of Perry and Austin League No. 2, Abstract 107, and the most Southerly West corner of the Perry and Austin League, No. 7, Abstract 110, on the Southeast line of the S.F. Austin 1-3/4 League, Abstract 37, as established by A.R. Leckie in his March 1911, Survey and found and confirmed by R.C. Wilcox in his May 1918 Survey;

THENCE; South 48°35'40" East, a distance of 11240.38 feet to the most Northeasterly corner of said 3000 Acre Tract;

THENCE; South 41°21'50" West, a distance of 2124.65 feet to a point (Monsanto Plant Coordinates North 0.00, East 5500.00);

THENCE; North 48°38'10" West a distance of 553.5 feet to a point for the place of beginning of the herein described tract; (Monsanto Plant Coordinates North 553.50, East 5500.00;)

THENCE; South 41°21'50" West 1500.00 feet to a point, for corner (Monsanto Plant Coordinates North 553.50, East 4000);

THENCE; North 48°38'10" West 1031.50 feet to a point, for corner; (Monsanto Plant Coordinates, North 1585, East 4000);

Randy L. Stroud, P.E.

COUNTY SURVEYOR
201 East Mulberry, Suite 100
Angleton, Texas 77515
(409) 849-5711 Ext. 1497

Registered Professional Land Surveyor License #2112

Professional Engineer License #50839

FIELD NOTES CONT'
LANDFILL AREA:

THENCE; North 41°21'50" East, 1500.00 feet to a point, for corner, (Monsanto Plant Coordinates, North 1585, East 5500.00);

THENCE; South 48°38'10" East 1031.50 feet to the Place of Beginning;

Said tract therein containing 35.52 Acres of Land.

Certified Correct: Randy L Stroud

Randy L. Stroud, Registered Professional Land Surveyor, License #2112

STATE OF TEXAS
REGISTERED
RANDY L. STROUD
2112
PROFESSIONAL
LAND SURVEYOR

7/15/92
4T 15,815.A
Revised 7-21-92
(FN11)

96-014491

STATE OF TEXAS
BRAZORIA COUNTY

HAZARDOUS WASTE CELL 1
CERTIFICATION OF CLOSURE

FOR ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Natural Resource Conservation Commission pertaining to Hazardous Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas in compliance with the recordation requirements of said rules:

I

MONSANTO Company has performed a hazardous waste cell closure on the land described herein. A description of the facility, is attached hereto and is made part of this filing. A list of the hazardous waste constituents, which have been left in place is attached hereto and is made part of this filing. Further information concerning this matter may be found by an examination of company records or the owner's Hazardous Waste Landfill Permit No. HW-50189-001.

II

Cell 1 being a 1.05 acre tract, more or less, out of the Monsanto 3000 acre tract in the Perry and Austin League No. 2, Abstract 107, recorded in the Deed of Records Brazoria County, Texas, said 1.05 acre tract being more particularly described by the attached hereto metes and bounds description and survey plat is made part of this filing.

III

The owner/operator of the site is Monsanto Company, and its address is P.O. Box 711, Alvin, Texas 77512-9888, where more specific information may be obtained from the owner.

EXECUTED this the 26 day of April, 1996.

J. C. Ochsner

J. C. Ochsner, Plant Manager

JOHN E. CHANCE & ASSOCIATES, INC.

6100 Hillcroft
P.O. Box 740010
Houston, Texas 77274
Phone : 713-773-5670
Fax : 713-773-5698

Cell No. 1
Monsanto
Chocolate Bayou

Being 1.0486 acres of land (45,676 square feet), situated in the Perry and Austin League No. 2, Abstract 107, Brazoria County, Texas, and being out of the Monsanto 3000 acre tract of land, said 1.0486 acre tract of land, being more particularly described by metes and bounds as follows, to-wit:

COMMENCING at a 6"X6" Concrete Monument found at the generally recognized North corner of Perry and Austin League no. 2, Abstract 107, and the most Southerly West corner of the Perry and Austin League, no. 7, Abstract 110, on the Southeast line of the S.F. Austin 1-3/4 League, Abstract 37, as established by A.R. Leckie in his March 1911 Survey and found and confirmed by R.C. Wilcox in his May 1918 Survey;

THENCE, South 48°35'40" East, a distance of 11,234.44 feet to the most Northeasterly corner of said 3000 acre tract;

THENCE, South 41°21'50" West, a distance of 3,152.66 feet to a point (Monsanto Plant Coordinates North 0.00, East 4476.81);

THENCE, North 48°38'10" West, a distance of 1,112.24 feet to the **POINT OF BEGINNING** of the tract herein described (Monsanto Plant Coordinates North 1112.24, East 4476.81);

THENCE, South 41°16'37" West, a distance of 274.37 feet to a 5/8-inch iron rod set for corner (Monsanto Plant Coordinates North 1111.82, East 4202.46);

THENCE, North 47°50'55" West, a distance of 166.29 feet to a 5/8-inch iron rod set for corner (Monsanto Plant Coordinates North 1278.09, East 4204.73);

THENCE, North 41°06'08" East, a distance of 273.70 feet to a 5/8-inch iron rod set for corner (Monsanto Plant Coordinates North 1279.34, East 4478.43);

THENCE, South 48°04'54" East, a distance of 167.11 feet to the **POINT OF BEGINNING** and containing 1.0486 acre (45,676 square feet) of land, more or less.

STATE OF TEXAS
REGISTERED
J. TREVOR CARNEGIE
4043
PROFESSIONAL
LAND SURVEYOR

JOHN E. CHANCE & ASSOCIATES, INC.

By _____
Trevor Carnegie

Registered Professional Land Surveyor No. 4043, Texas

HAZARDOUS WASTE CELL 1
CERTIFICATION OF CLOSURE
Page 2

STATE OF TEXAS
Brazoria COUNTY

BEFORE ME, on this the 26th day of April, personally appeared Mr. J.C. Ochsner, Plant Manager of Monsanto Company, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 26th day of April, 1996.

Gayle A. Madere
Notary Public in and for the
State of Texas, County of Brazoria

GAYLE A. MADERE

My Commission expires

Oct. 19, 1997

GAYLE A. MADERE
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES
OCT. 19, 1997

HAZARDOUS WASTE CELL 1
CERTIFICATION OF CLOSURE ATTACHMENTS

1. Cell 1 contains approximately 9000 cubic yards of hazardous waste consisting mainly of mixed waste with EPA waste codes K011 & K013. These waste codes are defined by US EPA to contain traces of acetonitrile, acrylonitrile, acrylamide, benzene, and cyanide compounds.

2. A 5/8-inch iron rod was installed in each corner of Cell 1. A plan view of the iron rod locations are provided with the attached survey plat.

3. Hazardous waste has been deposited in this waste management area and its future use is restricted under 40 CFR, Part 264, Subpart N regulations.

92-29999

STATE OF TEXAS
BRAZORIA COUNTY

HAZARDOUS WASTE CELL 2
CERTIFICATION OF CLOSURE

FOR ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Water Commission pertaining to Hazardous Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas in compliance with the recordation requirements of said rules:

I

MONSANTO Company has performed a hazardous waste cell closure on the land described herein. A description of the facility, is attached hereto and is made part of this filing. A list of the hazardous waste constituents, which have been left in place is attached hereto and is made part of this filing. Further information concerning this matter may be found by an examination of company records or the owner's Hazardous Waste Landfill Permit No. HW-50189-001.

II

Cell 2 being a 1.66 acre tract, more or less, out of the Monsanto 3000 acre tract in the Perry and Austin League No. 2, Abstract 107, recorded in the Deed of Records Brazoria County, Texas, said 1.66 acre tract being more particularly described by the attached hereto metes and bounds description and survey plat is made part of this filing.

III

The owner/operator of the site is Monsanto Company, and its address is P.O. Box 711, Alvin, Texas 77512-9888, where more specific information may be obtained from the owner.

EXECUTED this the 10TH day of September, 1992.

M.B. Gray

M.B. Gray, Plant Manager

HAZARDOUS WASTE CELL 2
CERTIFICATION OF CLOSURE
Page 2

STATE OF TEXAS
BRAZORIA COUNTY

BEFORE ME, on this the 10TH day of SEPTEMBER, personally appeared Mr. M.B. Gray, Plant Manager of Monsanto Company, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10TH day of SEPTEMBER, 1992

Brenda G. Greenough
Notary Public in and for the
State of Texas, County of
BRAZORIA

My Commission Expires
1-21-96

HAZARDOUS WASTE CELL 2
CERTIFICATION OF CLOSURE ATTACHMENTS

1. Cell 2 contains approximately 9000 cubic yards of hazardous waste consisting mainly of mixed waste with EPA waste codes K011 & K013. These waste codes are defined by US EPA to contain traces of acetonitrile, acrylonitrile, acrylamide, benzene, and cyanide compounds.

2. Permanent benchmarks were installed in each corner of Cell 2. A plan view of the benchmark locations and elevations are provided with the attached survey plat.

3. Hazardous waste has been deposited in this waste management area and its future use is restricted under 40 CFR, Part 264, Subpart N regulations.

STATE OF TEXAS)
) ss
COUNTY OF BRAZORIA)

HAZARDOUS WASTE CELL III
Certification of Closure

FOR ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality pertaining to Hazardous Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas, in compliance with the recordation requirements of said rules:

I

Solutia Inc. has performed a hazardous waste cell closure on the land described herein. A description of the hazardous waste cell is attached hereto and is made part of this filing. A list of the hazardous waste constituents, which have been left in place, is attached hereto and is made a part of this filing. Further information containing this matter may be found by an examination of company records or Hazardous Waste Landfill Permit No. HW-50189-000.

II

Cell III being a 1.616 acre tract, more or less, out of the Solutia 3000 acre tract in the Perry and Austin League No. 2, Abstract 107, recorded in the Deed of Records, Brazoria County, Texas, said 1.616 acre tract being more particularly described by the attached hereto metes and bounds description and survey plat is made part of this filing.

III

Solutia Inc. is the owner/operator of the site, and its address is P.O. Box 711, Alvin, Texas 77512-9888, where more specific information on the disposal may be obtained.

Executed this 28th day of February, 2005.

SOLUTIA INC.

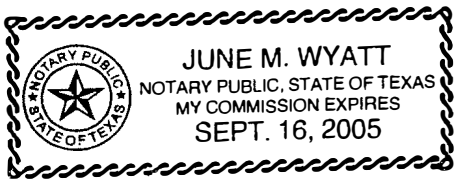
By: _____
David Cain
Plant Manager

HAZARDOUS WASTE CELL III
CERTIFICATION OF CLOSURE
Page 2

STATE OF TEXAS)
)
COUNTY OF BRAZORIA)

BEFORE ME, on this the 28th day of February, 2005, personally appeared David Cain, Plant Manager of Solutia Inc. Chocolate Bayou Plant, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 28th day of February, 2005.



June M. Wyatt

Printed Name: June M. Wyatt
Notary Public in and for the State of Texas

My commission expires: September 16, 2005

HAZARDOUS WASTE CELL III
CERTIFICATION OF CLOSURE
Page 3

HAZARDOUS WASTE CELL III
Certification of Closure Attachments

1. Hazardous Waste Disposal Cell III contains approximately 9,000 cubic yards of mixed waste, hazardous waste (primarily K011 & K013), and class 1 and 2 non-hazardous waste, consisting of bulk and containerized organic and inorganic sludge from industrial and waste treatment processes, and other organic and inorganic solids such as contaminated soil and debris. These wastes contain traces of acetonitrile, acrylonitrile, acrylamide, benzene, cyanide compounds, and other organic and inorganic compounds.

2. The attached survey plat shows the dimensions of Hazardous Waste Disposal Cell III.

3. Hazardous waste has been deposited in this waste management disposal area and its future use is restricted under 40 CFR, Part 264, Subpart G.

CELL III, RCRA PERMIT UNIT 02

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 1.616 acre landfill site in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas. Said 1.616 acre tract is in a 3,000 acre tract described in a deed to Solutia, Inc. as recorded in File No. 97 030692 of the Brazoria County Clerk's Office and is more particularly described by metes and bounds as follows:

COMMENCING at concrete monument found for the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 48º 35' 40" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to 5/8-inch iron rod found for the east corner of said 3,000 acre tract (Plant Coordinates North 0.00, East 7,624.7);

THENCE, South 41º 21' 50" West (Plant West), along the southeasterly line of said 3,000 acre tract for a distance of 2,734.91 feet to a point for corner;

THENCE, North 48º 38' 10" West, at right angles to said southeasterly line, for a distance of 1,092.37 feet to the POINT OF BEGINNING and east corner of the herein described 1.616 acre landfill site (Plant Coordinates: North 1,092.37, East 4,889.75);

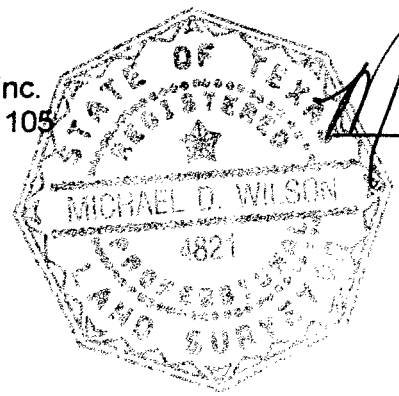
THENCE, South 41°21'50" West, along the southeasterly line of said 1.616 acre tract for a distance of 339.91 feet to the south corner of the herein described tract;

THENCE, North 48°38'10" West, along the southwesterly line of the herein described tract for a distance of 207.14 feet to the west corner of the herein described 1.616 acre landfill site;

THENCE, North 41°21'50" East, along the northwesterly line of said 1.616 acre landfill site for a distance of 339.91 feet to the north corner of the herein described tract;

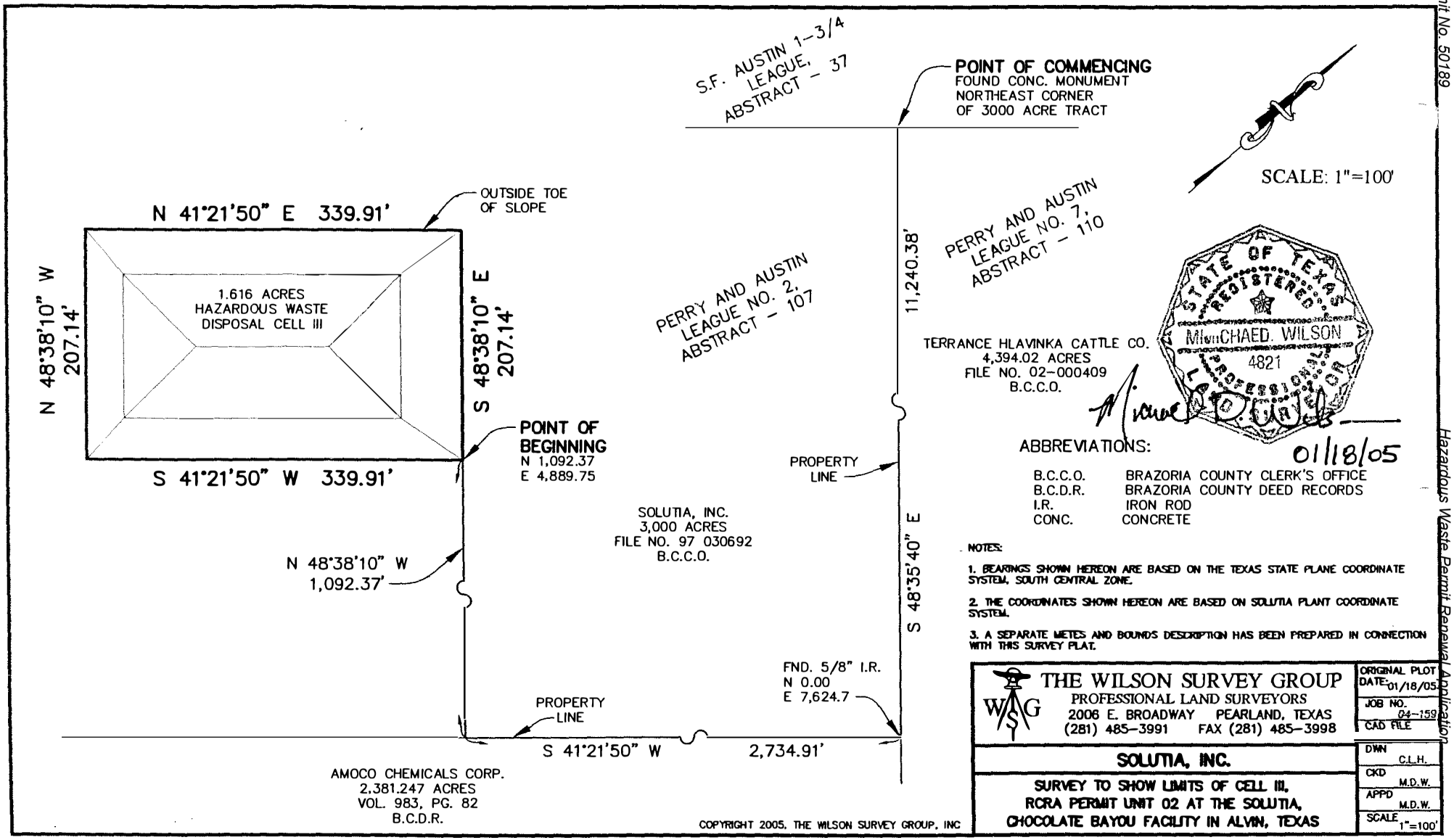
THENCE, South 48°38'10" East, along the northeasterly line of said 1.616 acre landfill site for a distance of 207.14 feet to the POINT OF BEGINNING, containing a computed area of 1.616 acres (70,410 square feet).

NOTE: The coordinates shown hereon are based on the Solutia Plant Coordinate System. The bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone. Distances are surface.



Michael D. Wilson, R.P.L.S.
Registration No. 4821
01/18/05

The Wilson Survey Group, Inc.
2006 East Broadway, Suite 105
Pearland, Texas 77588
Job No. 04-159
(281) 485-3991
January 18, 2005



ABBREVIATIONS:

B.C.C.O.	BRAZORIA COUNTY CLERK'S OFFICE
B.C.D.R.	BRAZORIA COUNTY DEED RECORDS
I.R.	IRON ROD
CONC.	CONCRETE

NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE.
2. THE COORDINATES SHOWN HEREON ARE BASED ON SOLUTIA PLANT COORDINATE SYSTEM.
3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SURVEY PLAT.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

ORIGINAL PLOT DATE	01/18/05
JOB NO.	04-159
CAD FILE	
DWN	C.L.H.
CKD	M.D.W.
APPD	M.D.W.
SCALE	1"=100'

SOLUTIA, INC.

SURVEY TO SHOW LIMITS OF CELL III, RCRA PERMIT UNIT 02 AT THE SOLUTIA, CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS

STATE OF TEXAS

COUNTY OF BRAZORIA

NOTICE

Ascend Performance Materials Texas Inc., owner of the property legally described on Exhibit A, attached hereto, and more fully depicted on the Survey, attached hereto as Exhibit B, (the "Property"), hereby gives notice that the Property has a waste disposal unit, known as Disposal Cell V, containing depleted uranium, a low-level radioactive waste.

The number of pounds and curies of depleted uranium stored in the disposal unit is as follows:

Disposal Unit	Pounds	Curies
Disposal Cell V (RCRA Permit Unit 02)	621,041	101.49

Disposal Cell V status is "closed," not active, according to License No. RW-0219, Amendment No. 7, issued by the Texas Commission on Environmental Quality (TCEQ), on 3 November 2020. The contents of Disposal Cell V should not be disturbed without the approval of the TCEQ.

Executed on this 25th day of March 2022.

ASCEND PERFORMANCE MATERIALS TEXAS INC.

By: _____
Greg Blanchard
Sr. Site Director

STATE OF TEXAS

COUNTY OF BRAZORIA

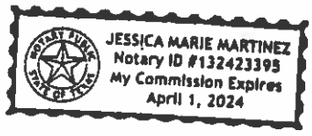
BEFORE ME, on this the 25th day of March 2022, personally appeared Greg Blanchard, Sr. Site Director of Ascend Performance Materials Texas Inc., known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 25th day of March 2022.

Jessica Marie Martinez

Printed Name: Jessica Marie Martinez
Notary Public in and for the State of Texas

My commission expires: April 1st 2024



STATE OF TEXAS

COUNTY OF BRAZORIA

HAZARDOUS WASTE CELL V
Certification of Closure

FOR ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality pertaining to Hazardous Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas, in compliance with the recordation requirements of said rules:

I

Ascend Performance Materials Texas Inc. has performed a hazardous waste cell closure on the land described herein. A description of the hazardous waste cell is attached hereto and is made part of this filing. A list of the hazardous waste constituents, which have been left in place, is attached hereto and is made part of this filing. Further information containing this matter may be found by an examination of company records or Hazardous Waste Permit No. 50189.

II

Cell V being a 1.488 acre tract more or less, out of the Ascend 3,000 acre tract in the Perry and Austin League No. 2, Abstract 107, recorded in the Deed Records, Brazoria County, Texas, said 1.488 acre tract being more particularly described by the attached hereto metes and bounds description and survey plat is made part of this filing.

III

Ascend Performance Materials Texas Inc. is the owner/operator of the site, and its address is FM 2917 Rd, Alvin, Texas 77511, where more specific information of the disposal may be obtained.

Executed this 25th day of March 2022.

ASCEND PERFORMANCE MATERIALS
TEXAS INC.

By: _____
Greg Blanchard
Sr. Site Director

HAZARDOUS WASTE CELL V
CERTIFICATION OF CLOSURE
Page 2

STATE OF TEXAS

COUNTY OF BRAZORIA

BEFORE ME, on this the 25th day of March 2022, personally appeared Greg Blanchard, Sr. Site Director of Ascend Performance Materials Texas Inc., known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 25th day of March 2022.

Jessica Marie Martinez

Printed Name: Jessica Marie Martinez
Notary Public in and for the State of Texas

My commission expires: April 1st 2024

JESSICA MARIE MARTINEZ
Notary ID #132423395
My Commission Expires
April 1, 2024

HAZARDOUS WASTE CELL V
CERTIFICATION OF CLOSURE
Page 3

HAZARDOUS WASTE CELL V
Certification of Closure Attachments

1. Hazardous Waste Disposal Cell V contains approximately 8,600 cubic yards of mixed waste, hazardous waste (primarily K011, K013, and K014), and class 1 and 2 non-hazardous wastes, consisting of bulk and containerized organic and inorganic sludge from industrial and waste treatment processes, and other organic and inorganic solids such as contaminated soil and debris. These wastes contain traces of acetonitrile, acrylonitrile, acrylamide, benzene, cyanide compounds, and other organic and inorganic compounds.

2. The attached survey plat shows the dimensions of Hazardous Waste Disposal Cell V.

3. Hazardous waste has been deposited in this waste management disposal area and its future use is restricted under 40 CFR, Part 264, Subpart G.

Ascend Performance Materials, LLC
1.488 Acres

Perry and Austin League No. 2
Abstract No. 107

CELL 5, RCRA PERMIT UNIT 02

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 1.488-acre landfill site in the Perry and Austin League No. 2, Abstract No. 107, Brazoria County, Texas. Said 1.488-acre tract is in a 3,000 acre tract described in a deed to Ascend Performance Materials, LLC as recorded in Clerk's File No. 2009024556 in the Brazoria County Clerk's Office and is more particularly described by metes and bounds as follows:

COMMENCING at concrete monument found for the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 48° 35' 40" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to 5/8-inch iron rod found for the east corner of said 3,000 acre tract (Plant Coordinates North 0.00, East 7,624.7);

THENCE, South 41° 21' 50" West (Plant West), along the southeasterly line of said 3,000 acre tract for a distance of 2,266.59 feet to a point for corner;

THENCE, North 48° 38' 10" West, at right angles to said southeasterly line, for a distance of 1,098.35 feet to the POINT OF BEGINNING and east corner of the herein described 1.488-acre landfill site (Plant Coordinates: North 1,098.35, East 5,358.07);

THENCE, South 41°21'50" West, along the southeasterly line of said 1.488-acre tract for a distance of 333.94 feet to the south corner of the herein described tract;

THENCE, North 48°38'10" West, along the southwesterly line of said 1.488-acre tract for a distance of 194.09 feet to the west corner of the herein described tract;

THENCE, North 41°21'50" East, along the northwesterly line of said 1.488-acre landfill site for a distance of 333.94 feet to the north corner of the herein described tract;

THENCE, South 48°38'10" East, along the northeasterly line of said 1.488-acre landfill site for a distance of 194.09 feet to the POINT OF BEGINNING, containing a computed area of 1.488-acres (64,815 square feet).

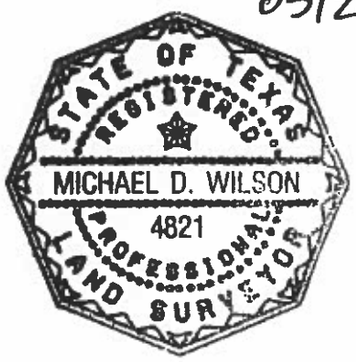
NOTES:

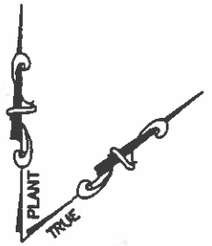
1. The bearings shown hereon are based on the Texas State Plane Coordinate System of 1983, South Central Zone. Distances are surface. Scale factor: 0.99987.
2. The coordinates shown hereon are based on the Ascend Performance Materials, LLC plant coordinate system (assumed).
3. A separate exhibit map has been prepared in connection with this metes and bounds description.

The Wilson Survey Group, Inc.
2006 East Broadway, Suite 103
Pearland, Texas 77581
Job No. 22-117
TBPELS Firm No. 10014900
(281) 485-3991
March 24, 2022

Michael D. Wilson, R.P.L.S.
Registration No. 4821

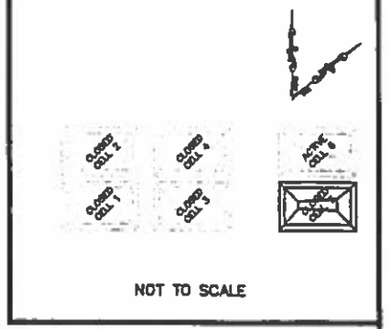
03/24/22





S.F. AUSTIN 1-3/4 LEAGUE, ABSTRACT – 37

POINT OF COMMENCING
FOUND CONC. MONUMENT
NORTHEAST CORNER
OF 3000 ACRE TRACT



OUTSIDE TOE OF SLOPE

N 41°21'50" E 333.94'

N 48°38'10" W 194.09'

1.488 ACRES
HAZARDOUS WASTE
DISPOSAL CELL 5

S 48°38'10" E 194.09'

PERRY AND AUSTIN LEAGUE NO. 2, ABSTRACT – 107

11,240.38'

PERRY AND AUSTIN LEAGUE NO. 7, ABSTRACT – 110

0 25 50 100
SCALE: 1"=100'

TERRANCE HLAVINKA CATTLE CO.
4,394.02 ACRES
FILE NO. 02-000409
B.C.C.O.

ABBREVIATIONS:

B.C.C.O.	BRAZORIA COUNTY CLERK'S OFFICE
B.C.D.R.	BRAZORIA COUNTY DEED RECORDS
I.R.	IRON ROD
CONC.	CONCRETE

POINT OF BEGINNING
N 1,098.35
E 5,358.07

PROPERTY LINE

S 41°21'50" W 333.94'

3,000 ACRES
ASCEND PERFORMANCE MATERIALS, LLC
CLERK'S FILE NO. 2009024556
B.C.C.O.

N 48°38'10" W 1,098.35'

S 48°35'40" E

STATE OF TEXAS
REGISTERED
MICHAEL D. WILSON
4821
PROFESSIONAL
LAND SURVEYOR

03/24/22

FND. 5/8" I.R.
N 0.00
E 7,624.7

PROPERTY LINE

S 41°21'50" W 2,266.59'

AMOCO CHEMICALS CORP.
2,381.247 ACRES
VOL. 983, PG. 82
B.C.D.R.

NOTES:

1. THE BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE. DISTANCES ARE SURFACE. SCALE FACTOR: 0.99987.

2. COORDINATES SHOWN HEREON ARE BASED ON THE ASCEND PERFORMANCE MATERIALS PLANT COORDINATES SYSTEM (ASSUMED).

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS EXHIBIT MAP.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 T.B.P.L.S. FIRM NO. 10014900

ASCEND PERFORMANCE MATERIALS

EXHIBIT TO SHOW LIMITS OF CELL 5 RCRA PERMIT UNIT 02 AT THE ASCEND PERFORMANCE MATERIALS CHOCOLATE BAYOU PLANT IN BRAZORIA COUNTY, TEXAS

ORIGINAL PLOT DATE:	03/24/22
JOB NO.	22-117
CAD FILE	22-117 (Cell 5).dwg
DWN	C.L.H.
CKD	M.D.W.
SCALE	1"=100'

FILED and RECORDED

Instrument Number: 2022018356

Filing and Recording Date: 03/25/2022 12:10:01 PM Pages: 9 Recording Fee: $54.00

I hereby certify that this instrument was FILED on the date and time stamped hereon and RECORDED in the OFFICIAL PUBLIC RECORDS of Brazoria County, Texas.

STATE OF TEXAS COUNTY OF BRAZORIA

Joyce Hudman, County Clerk
Brazoria County, Texas

ANY PROVISION CONTAINED IN ANY DOCUMENT WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE REAL PROPERTY DESCRIBED THEREIN BECAUSE OF RACE OR COLOR IS INVALID UNDER FEDERAL LAW AND IS UNENFORCEABLE.

DO NOT DESTROY - Warning, this document is part of the Official Public Record.

cclerk-cynthia

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT 4

Proof of Deed Recordation: Closed IWPF Surface Impoundments

STATE OF TEXAS

BRAZORIA COUNTY

INDUSTRIAL SOLID WASTE
DISPOSAL SITE DEED RECORDATION

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Water Commission pertaining to Industrial Solid Waste Management, this document is hereby filed in the Deed Records of Brazoria County, Texas in compliance with the recordation requirements of said rule:

I

Monsanto Chemical Company currently uses the land described herein for the storage and treatment of industrial waste. A copy of Notice of Registration No. 5, including a description of wastes to be disposed of and a description of the waste disposal facility, is attached hereto and is made a part of this filing.

II

To set forth one parcel of land encompassing Monsanto's Chocolate Bayou Injection Well Pretreatment Surface Impoundment System.

COMMENCING at a 6 inch X 6 inch Concrete Monument with a 1/2 inch iron rod in the center, the top of said monument having been broken off; said Concrete Monument being the generally recognized North corner of the PERRY and AUSTIN LEAGUE NO. 2, A-107 and the most Southerly West corner of the PERRY and AUSTIN LEAGUE NO. 7, A-110 on the Southeast line of the S.F. AUSTIN 1 3/4 LEAGUE, A-37 as established by A.R. LECKIE in his March 1911 survey and found and confirmed by R.C. WILCOX in his May 1918 survey;

THENCE S 41° 21' 50" W a distance of 2337.47 feet to a point for corner;

THENCE S 05° 02' 20" W a distance 889.09 feet to a point for corner;

THENCE S 16° 12' 50" W a distance of 2001.53 feet to a point for corner;

THENCE S 18° 27' 40" W a distance of 2650.44 feet to a found 2 inch iron pipe in concrete for corner;

THENCE S 18° 38' 10" W a distance of 3634.13 feet to a found 2 inch iron pipe in concrete for corner;

THENCE S 85° 50' 10" E a distance of 479.30 feet to the point of beginning of the herein described tract;

THENCE N 42° 01' 54" E a distance of 559.20 feet to a point;

THENCE S 48° 28' 01" E a distance of 565.76 feet to a point;

THENCE S 41° 30' 41" W a distance of 567.30 feet to a point;

THENCE N 47° 39' 07" W a distance of 570.90 feet to the point of beginning.

Said tract containing 7.348 acres more or less.

Wastes deposited hereon have been classified by the Texas Water Commission as Class I. Class I waste is defined as "Any industrial solid waste or mixture of industrial solid wastes which because of its concentration, or physical or chemical characteristics, is toxic, corrosive, flammable, a strong sensitizer or irritant, a generator of sudden pressure by decomposition, heat, or other means, and may pose a substantial present or potential danger to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed, including hazardous industrial waste."

III

The owner of the site is the Chocolate Bayou Plant, Monsanto Chemical Company, a Delaware Corporation, and its address is P. O. Box 711, Alvin, Texas 77512-9888, where more specific information may be obtained from the plant manager.

EXECUTED this the 30th day of October, 1985.

Monsanto Chemical Company
a Delaware Corporation

R. N. Jones
Plant Manager

STATE OF TEXAS

BRAZORIA COUNTY

BEFORE ME, on this the 30th day of October, 1985, personally appeared R. N. Jones, Plant Manager of the Chocolate Bayou Plant, Monsanto Chemical Company, a Delaware Corporation, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30th day of October, 1985.

Notary Public in and for the
State of Texas, County of
Brazoria

My commission Expires
February 15, 1989

APPENDIX II.1
SITE SELECTION REPORT

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT 5

Proof of Deed Recordation (Draft): Solid Waste Management Units

DRAFT
SUBJECT TO REVISION

Texas Risk Reduction Standards
Deed Notice

STATE OF TEXAS

COUNTY OF BRAZORIA

This notice is filed to provide information concerning certain environmental conditions and/or use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Rules found at 30 Texas Administrative Code (TAC), Chapter 335, and affects the real property (Property) described as follows:

> All of that certain 3000.00-acre tract of land out of the Perry and Austin League No. 2, A-107, Brazoria County, Texas, said tract being a portion of the Houston Farms and Development lands within said League, as recorded in Volume 782, Page 511 of the Brazoria County Official Records (BCOR) and being more particularly described in Exhibit A attached hereto and incorporated herein by reference less that certain 486-acre tract of land lying and situated in the Perry & Austin League No.2, Abstract 107 Brazoria County, Texas, conveyed by Special Warranty Deed on May 17, 2007 from Solutia Inc. to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the BCOR, and being more particularly described in Exhibit A attached hereto and incorporated herein by reference.

Portions of the surface soil of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered Affected Property as that term is defined by Risk Reduction Standard (RRS) No. 3. The portions considered to be Affected Property are described as follows:

> *Solid Waste Management Unit (SWMU) A, Phenolic Tar Pits Closure Area*: A 34.499 acre area known as "Unit A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 34.499-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the Brazoria County Official Records, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 34.499-acre portion of land contains trichloroethene and vinyl chloride in surface soil at concentrations exceeding TCEQ-approved Medium-Specific Concentration (MSC) limits for Residential land use.
>
> *SWMU C, Area A, Phthalic Anhydride Area*: A 0.199-acre area known as "Unit C, Area A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.199-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the BCOR, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 0.199-acre portion of land contains benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene in surface soil at concentrations exceeding TCEQ-approved MSC limits for Residential land use.

SWMU C, Area B, Phthalic Anhydride Area: A 0.151-acre area known as "Unit C, Area B" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.151-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the BCOR, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 0.151-acre portion of land contains benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene in surface soil at concentrations exceeding TCEQ-approved MSC limits for Residential land use.

SWMU C, Area C, Phthalic Anhydride Area: A 0.203-acre area known as "Unit C, Area C" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.203-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the Brazoria County Official Records, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 0.203-acre portion of land contains benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene in surface soil at concentrations exceeding TCEQ-approved MSC limits for Residential land use.

SWMU I, Area A, Emergency Runoff Surface Impoundment Area: A 1.898-acre area known as "Unit I, Area A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 1.898-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the BCOR, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 1.898-acre portion of land contains benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene in surface soil at concentrations exceeding TCEQ-approved MSC limits for Residential land use.

SWMU I, Area B, Emergency Runoff Surface Impoundment Area: A 1.132-acre area known as "Unit I, Area B" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 1.132-acre tract is in a 3,000-acre tract described in a deed to Monsanto Company as recorded in Volume 782, page 511 of the BCOR less that certain 486-acre tract of land described in a deed to Shintech Incorporated, as recorded in Clerk's File No. 2007028061 of the BCOR, and is more particularly described in Exhibit B attached hereto and incorporated herein by reference. The 1.132-acre portion of land contains benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene in surface soil at concentrations exceeding TCEQ-approved MSC limits for Residential land use.

This notice is required for the following reasons:

Commercial/Industrial Land Use: The Affected Property currently meets standards for commercial/industrial use. Based on the reports, the chemicals of concern pose no significant present or future risk to humans or the environment. No further remediation of the Affected Property is required by the TCEQ as long as the Affected Property is not to be used for residential purposes as the Property may not be protective for residential use. If any person desires in the future to use the Affected Property for residential purposes, the TCEQ must be notified at least 60 days in advance of such use and additional response actions may be necessary before the property may be used for residential purposes. Persons contemplating a change in land use for the Affected Property are encouraged to review the definitions for commercial/industrial and residential land use contained in the Texas Risk Reduction Program (TRRP) as the definition of residential land use is broad.

Use of Physical Control on Soil: The Affected Property is subject to the RRS No. 3 requirements for properties containing concentrations of chemicals of concern in soil and is subject to the requirements in 30 TAC 335.561-.566 to prevent exposure to soils that contain chemicals in excess of the RRS 2 MSC concentrations. The attached Exhibit B describes and provides the location of the physical control (1-ft capillary barrier overlain by 2-ft soil cover for Unit A and 2-ft soil cover for Units C and I) and extent of the soil that exceeds the TCEQ-approved MSC concentrations. The attached Exhibit C describes the required maintenance and monitoring required for the physical control. This program must be implemented unless and until TCEQ approves any modification. This deed notice must not be removed or modified without prior approval from TCEQ.

As of the date of this Notice, the record owner of fee title to the Property is Solutia Inc. with an address of P.O. Box 711, Alvin, TX 77512.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle, Building E
Austin, Texas 78753

Mail: TCEQ – MC-199
P.O. Box 13087
Austin, Texas 78711-3087

TCEQ Program Identifier No.: Solid Waste Registration (SWR)
SWR No. 30138

This Notice may be rendered of no further force or effect only by a superseding deed notice executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Deed Notice is filed.

Executed this _____ day of October, 2008

Solutia Inc.

By: _____

Name: _____

Title: _____

STATE OF TEXAS
BRAZORIA COUNTY

BEFORE ME, on this the _____ day of _____, personally appeared [name], [title], of [company], known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, _____.

Notary Public in and for the State of Texas,
County of _____

My Commission Expires: _____

EXHIBIT A

PROPERTY DESCRIPTION

DRAFT
SUBJECT TO REVISION

EXHIBIT A

PROPERTY DESCRIPTION

SOLUTIA INC
CHOCOLATE BAYOU FACILITY
HIGHWAY 2917
ALVIN, TEXAS 77511

All of that certain 3000.00 acre tract of land out of the Perry and Austin League No. 2, A-107, Brazoria County, Texas, said tract being a portion of the Houston Farms and Development Company lands within said League and being more particularly described as follows:

BEGINNING at a 6" x 6" Concrete Monument with a 1/2" Iron Rod in the center, found 1.00 foot under the surface, the top of said monument having been broken off; said Concrete Monument being the generally recognized north corner of the Perry and Austin Lge. No. 2, A-107 and the most southerly west corner of the Perry and Austin Lge. No. 7, A-110 on the southeast line of the S.F. Austin 1 3/4 Lge. A-37 as established by A. R. Leckie in his March 1911 survey and found and confirmed by R.C. Wilcox in his May 1918 survey;

THENCE South 41 deg. 21 min. 50 sec. West at a distance of 2337.47 feet along the southeast line of the S.F. Austin 1 3/4 Lge., A-37 and the northwest line of the Perry and Austin Lge. No. 2, A-107 as established by A.R. Leckie and confirmed by R.C. Wilcox, to a 2" Galv. Iron Pipe set in concrete to establish the point of intersection of the northwest line of the Perry and Austin Lge. No. 2, with the east line of an existing private road along the lower or easterly side of Duck Lake;

THENCE South 5 deg. 02 min. 20 sec. West a distance of 889.09 feet along the east line of said private road, as so established, to a 2" Galv. Iron Pipe set for an angle point in same;

THENCE South 16 deg. 12 min. 50 sec. West a distance of 2001.53 feet to a 2" Galv. Iron Pipe set to establish another angle point in the east line of said private road;

THENCE South 18 deg. 27 min. 40 sec. West a distance of 2650.44 feet to a 2" Galv. Iron Pipe set to establish another angle point in the east line of said private road;

THENCE South 18 deg. 38 min. 10 sec. West a distance of 3632.88 feet to a 2" Galv. Iron Pipe set 4" under the surface to establish the point of intersection of the east line of the private road along Duck Lake with the centerline of a shell topped road running South 37 deg. 00 min. East, commonly known as the "Road to the Bay".;

THENCE South 41 deg. 21 min. 50 sec. West a distance of 4772.68 feet parallel to the northwest line of the Perry and Austin Lge. No. 2, to Chocolate Bayou for the western corner of the herein described tract;

THENCE down Chocolate Bayou with all of its meanders.

North 81 deg. 44 min. 20 sec. East	1831.44 feet
South 67 deg. 25 min. 50 sec. East	245.27 feet
South 43 deg. 56 min. 50 sec. East	271.27 feet
South 14 deg. 37 min. 20 sec. East	648.68 feet
South 59 deg. 07 min. 50 sec. East	201.12 feet
South 69 deg. 18 min. 00 sec. East	196.58 feet
South 85 deg. 08 min. 30 sec. East	274.86 feet
South 70 deg. 28 min. 40 sec. East	343.20 feet
South 60 deg. 07 min. 30 sec. East	216.77 feet
South 46 deg. 53 min. 30 sec. East	446.27 feet
South 29 deg. 22 min. 30 sec. East	334.12 feet
South 16 deg. 52 min. 20 sec. East	237.89 feet
South 10 deg. 26 min. 40 sec. East	259.89 feet
South 04 deg. 49 min. 00 sec. West	549.47 feet
South 07 deg. 05 min. 10 sec. East	299.01 feet
South 41 deg. 14 min. 10 sec. East	204.06 feet
South 62 deg. 21 min. 20 sec. East	366.77 feet
North 82 deg. 22 min. 00 sec. East	341.89 feet
North 64 deg. 48 min. 30 sec. East	508.63 feet
North 83 deg. 13 min. 50 sec. East	164.33 feet
South 78 deg. 24 min. 10 sec. East	270.94 feet
South 67 deg. 36 min. 30 sec. East	192.71 feet
South 44 deg. 52 min. 30 sec. East	211.41 feet
South 22 deg. 08 min. 30 sec. West	311.77 feet
South 03 deg. 54 min. 20. sec. East	144.26 feet
South 13 deg. 58 min. 40 sec. West	124.21 feet
South 37 deg. 27 min. 40 sec. West	309.37 feet
South 46 deg. 53 min. 00 sec. West	357.96 feet
South 63 deg. 24 min. 20 sec. West	243.41 feet
South 73 deg. 19 min. 50 sec. West	408.20 feet
South 53 deg. 26 min. 30 sec. West	184.98 feet
South 43 deg. 26 min. 30 sec. West	230.23 feet
South 29 deg. 08 min. 30 sec. West	453.84 feet
South 09 deg. 01 min. 40 sec. West	172.21 feet
South 05 deg. 22 min. 10 sec. East	183.13 feet
South 41 deg. 07 min. 40 sec. East	228.88 feet

to a point for the south corner of the subject tract, said point located South 48 deg. 35 min. 40 sec. East a distance of 11,240.38 feet then South 41 deg. 21 min. 50 sec. West a distance of 16,581.27 feet from the place of beginning of the herein described tract;

THENCE North 41 deg. 21 min. 50 sec. East a distance of 16,581.27 feet parallel to the northwest line of the Perry and Austin Lge. No. 2, A-107 to a 2" Galv. Iron Pipe set for the east corner of the herein described tract, on the northeast line of the Perry and Austin Lge. No. 2., said 2" Galv. Iron Pipe being located North 48 deg. 35 min. 40 sec. west a distance of 2868.65 feet from a 6" x 6" Concrete Monument with a 1/2" Iron Rod in the center, found at the generally recognized east corner of the Perry and Austin Lge. No. 2, A-107, the south corner of the Edmond Andrews Lge. A-5 and on the northwest line of the Perry and Austin Lge. A-109; said monument established by A.R. Leckie in his March 1991 survey and found and confirmed by R.C. Wilcox in his May 1918 survey;

THENCE North 48 deg. 35 min. 40 sec. West a distance of 11,240.38 feet with the northeast line of the Perry and Austin Lge. No. 2, A-107 and the southwest line of the Edmond Andrews Lge. No. 7, A-100 established by A.R. Leckie and found by R.C. Wilcox, to the place of beginning and containing 3,000.00 acres of land, more or less, together with all rights and appurtenances thereto in anywise belonging, including riparian rights incident to the above-described land.

Less all that certain 486.0000-acre tract of land lying and situated in the Perry & Austin League No.2, Abstract 107 Brazoria County, Texas, being a portion of all that certain called 3000.00 acre tract of land conveyed by Special Warranty Deed on September 1, 1997 from Monsanto Company to Solutia, Inc., as recorded in Clerk's File No. 97 030692 of the Brazoria County Official Records (B.C.O.R.), the herein described 486.0000 acre tract hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99986786539) as follows:

COMMENCING at a 6 inch x 6 inch concrete monument found marking the North corner of the said Solutia, Inc. called 3000.00 acre tract, same being the recognized North corner of the Perry and Austin League No.2, Abstract 107, same being the most Southerly West corner of the Perry and Austin League No.7, Abstract 110, and being located on the Southeastern boundary line of the Stephen F. Austin 1 ¾ League, Abstract 37 as established by A. R. Leckie in the March 1911 survey, found and confirmed by R. C. Wilcox in his May 1918 survey, located at Texas State Plane coordinate position X=3177076.95 and Y=13669847.58;

THENCE South 50°27'48" East, along the Northeastern boundary line of said Solutia, Inc. 3000.00-acre tract and the Northeastern boundary line of the Perry & Austin League No. 2, Abstract 107, same being the Southwest boundary line of the Perry and Austin League No.7, Abstract 110 and the Edmond Andrews League, Abstract 5, a distance of 7879.72 feet to a point, from which a 6 inch x 6 inch concrete monument found marking the East corner of the Perry and Austin League No.2, Abstract 107, same being the South corner of the Edmond Andrews League, Abstract 5, and being located on the Northwestern boundary line of the Perry and Austin League, Abstract 109, said monument established by A. R. Leckie in the March 1911 survey, found and confirmed by R. C. Wilcox in his May 1918 survey, bears South 50°27'48" East, a distance of 6231.13 feet, said 6 inch x 6 inch concrete monument located at position X=3187958.03 and Y=13660866.18;

THENCE South 39°32'12" West, at a distance of 70.00 feet pass the Southwestern boundary line of all that certain 70 foot wide Missouri Pacific Railroad right-of-way, as recorded in Volume 905, Page 218 of the Brazoria County Deed Records (B.C.D.R.), same being the Northeastern boundary line of all that certain 80 feet wide H. L. & P. electrical easement, as recorded in Volume 1024, Page 180 of the B.C.D.R., at a distance of 150 feet pass the Northeastern boundary line of the 120 feet wide State Texas Highway F.M. #2917 right-of-way, as recorded in Volume 917, Page 484 of the B.C.D.R., continuing a total distance of 270.00 feet to the **POINT OF BEGINNING**, at a set 5/8" iron rod with survey cap marked "WPD 4467", located in the Southwestern boundary line of the said 120 foot wide F.M. #2917, for the North corner of the herein described 486.0000 acre tract, at Texas State Plane coordinate position X=3182981.26 and Y=13664624.03;

THENCE South 50°27'48" East, coincident with the Southwestern right-of-way boundary line of the said Texas State Highway F.M. #2917, a distance of 1562.10 feet to a set 5/8" iron rod with survey cap marked "WPD 4467", for the most Northerly East corner of the herein described 486.0000 acre tract, at position X=3184185.82 and Y=13663629.76;

THENCE South 39°29’42” West, a distance of 3509.41 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, located in the Southwestern top bank of a 100 foot wide drainage ditch, for an interior corner of the herein described 486.0000 acre tract, at position X=3181954.09 and Y=13660921.99;

THENCE South 50°30’18” East, generally along the Southwestern limits of the said top bank of drainage ditch, a distance of 597.23 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described tract at a position X=3182414.90 and Y=13660542.19;

THENCE South 39°29’42” West, a distance of 546.25 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3182067.52 and Y=13660120.72;

THENCE South 50°30’18” East, a distance of 1052.98 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3182879.98 and Y=13659451.10;

THENCE South 39°29’42” West, a distance of 2234.22 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3181459.18 and Y=13657727.22;

THENCE North 50°30’18” West, a distance of 1291.31 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3180462.83 and Y=13658548.41;

THENCE South 39°29’42” West, a distance of 392.32 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3180213.34 and Y=13658245.70;

THENCE South 50°30’18” East, a distance of 250.03 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3180406.26 and Y=13658086.69;

THENCE South 39°29’42” West, a distance of 2303.50 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an angle point of the herein described 486.0000 acre tract, at position X=3178941.40 and Y=13656309.37;

THENCE South 85°38’48” West, a distance of 897.89 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior angle point of the herein described 486.0000 acre tract, at position X=3178046.22 and Y=13656241.22;

THENCE South 39°29’42” West, a distance of 707.55 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3177596.26 and Y=13655695.29;

THENCE North 50°30’18” West, a distance of 348.47 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3177327.39 and Y=13655916.89;

THENCE South 39°29’42” West, a distance of 1831.03 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3176162.99 and Y=13654504.12;

THENCE North 50°30’18” West, a distance of 390.26 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3175861.87 and Y=13654752.30;

THENCE South 39°29’42” West, a distance of 545.80 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior angle point of the herein described 486.0000 acre tract, at position X=3175514.78 and Y=13654331.17;

THENCE South 10°30’20” East, a distance of 1214.22 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior angle point of the herein described 486.0000 acre tract, at position X=3175736.14 and Y=13653137.45;

THENCE South 17°33’27” West, a distance of 539.14 feet to a point at the right ascending water's edge of Chocolate Bayou, same being a Southern boundary line of the aforementioned all that certain called 3000.00 acre tract of land conveyed by Special Warranty Deed on September 1, 1997 from Monsanto Company to Solutia, Inc., as recorded in Clerk’s File No. 97 030692 of the B.C.O.R., for an exterior angle point of the herein described 486.0000 acre tract, at position X=3175573.53 and Y=13652623.50;

THENCE coincident with the right ascending water’s edge of Chocolate Bayou and the Solutia, Inc. barge dock channel and its meanders as follows:

South 69°45’10” West, a distance of 131.08 feet;
South 50°48’56” West, a distance of 108.94 feet;
South 49°28’39” West, a distance of 84.44 feet;
North 49°56’49” West, a distance of 55.73 feet;
North 22°36’31” West, a distance of 47.32 feet;
North 8°33’57” West, a distance of 40.46 feet;
North 4°30’45” West, a distance of 226.62 feet;
North 5°32’04” West, a distance of 121.73 feet;
North 4°06’09” West, a distance of 234.88 feet;
North 13°33’54” West, a distance of 277.77 feet;
North 22°00’09” West, a distance of 388.27 feet;
North 26°14’30” West, a distance of 127.41 feet;
North 36°29’56” West, a distance of 205.68 feet;
North 44°31’54” West, a distance of 60.64 feet;

THENCE North 87°34’28” East, a distance of 207.28 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior angle point of the herein described 486.0000 acre tract, at position X=3174999.67 and Y=13654099.25;

THENCE North 39°29’42” East, a distance of 1302.45 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3175827.94 and Y=13655104.19;

THENCE South 50°30’18” East, a distance of 410.30 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3176144.51and Y=13654843.27;

THENCE North 39°29’42” East, a distance of 1831.03 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3177308.91 and Y=13656256.05;

THENCE South 50°30’18” East, a distance of 328.47 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3177562.35 and Y=13656047.17;

THENCE North 39°29’42” East, a distance of 244.83 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an interior corner of the herein described 486.0000 acre tract, at position X=3177718.05 and Y=13656236.07;

THENCE North 50°30’18” West, a distance of 406.52 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for an exterior corner of the herein described 486.0000 acre tract, at position X=3177404.39 and Y=13656494.59;

THENCE North 39°29’42” East, a distance of 1417.98 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for the point of curvature to the left of the herein described 486.0000 acre tract, having a central radius of 600.00 feet, at position X=3178306.12 and Y=13657588.67; **THENCE** along said curve to the left, having a central radius of 600.00 feet, an arc length of 822.52 feet, a central angle of 78°31’34”, and a chord bearing and distance of North 0°13’55” East, 759.46 feet, to a set 5/8" iron rod with survey cap marked “WPD 4467”, for the point of tangency of the herein described 486.0000 acre tract, at position X=3178309.20 and Y=13658348.02;

THENCE North 39°01’52” West, a distance of 130.76 feet to a set 5/8" iron rod with survey cap marked “WPD 4467”, for point of curvature to the right of the herein described 486.0000 acre tract, having a central radius of 400.00 feet, at a position of X=3178226.86 and Y=13658449.59;

THENCE along said curve to the right, having a central radius of 400.00 feet, an arc length of 322.39 feet, a central angle of 46°07’56”, and a chord bearing and distance of North 15°57’54” West, 313.43 feet, to a set 5/8" iron rod with survey cap marked “WPD 4467”, for the point in curve of the herein described 486.0000 acre tract, at position X=3178140.66 and Y=13658750.89;

THENCE North 39°29’42” East, a distance of 7611.86 feet to the **POINT OF BEGINNING.**

EXHIBIT B-1

METES AND BOUNDS DESCRIPTION OF AFFECTED PROPERTY

Unit 'A'
Phenolic Tar Pits Closure Area
34.499 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 34.499 acre Phenolic Tar Pits Closure Area known as "Unit A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 34.499 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50º29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39º28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 8,756.39 feet to an angle point;

THENCE, North 50º31'43" West, at right angles to said southeasterly line for a distance of 39.91 feet to the POINT OF BEGINNING and east corner of the herein described 34.499 acre tract (Plant Coordinates: North 43.00, West 1,131.00);

THENCE, South 39°30'35" West, along the southeasterly line of the herein described tract for a distance of 1,157.00 feet to a point for corner;

THENCE, South 59°10'57" West, for a distance of 337.82 feet to the most southerly corner of the herein described tract;

THENCE, North 50°29'15" West, along the southwesterly line of the herein described tract for a distance of 1,099.00 feet to the most westerly corner of the herein described tract;

THENCE, North 03°15'58" East, along a westerly line of the herein described tract for a distance of 315.24 feet a point for corner;

THENCE, North 43°23'06" East, for a distance of 125.36 to a point for corner;

THENCE, North 89°50'34" East, for a distance of 151.79 feet to a point for corner;

THENCE, North 24°40'54" East, for a distance of 94.95 feet to a point for corner;

THENCE, North 47°17'57" East, for a distance of 56.06 feet to a point for corner;

THENCE, North 82°38'14" East, for a distance of 693.05 feet to a point for corner;

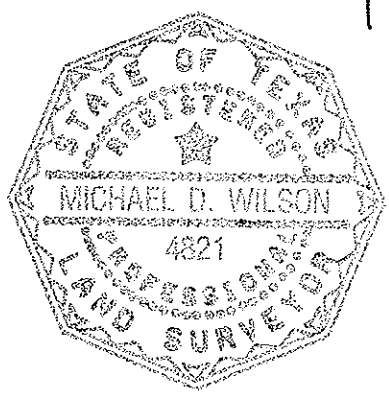
THENCE, South 76°58'22" East, for a distance of 777.26 feet to a point for corner;

THENCE, South 50°03'58" East, for a distance of 121.00 feet to the POINT OF BEGINNING, containing a computed area of 34.499 acres (1,502,785 square feet).

Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

The Wilson Survey Group, Inc.
2006 East Broadway, Suite 105
Pearland, Texas 77581
(281) 485-3991
Job No. 08-177



Michael D. Wilson, R.P.L.S.
Registration No. 4821

09/09/08

Unit 'C'
Phthalic Anhydride Area
(Area A)
0.199 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 0.199 acre Phthalic Anhydride Area known as "Unit C, Area A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.199 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50º29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39º28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 11,239.65 feet to an angle point;

THENCE, North 50º31'43" West, at right angles to said southeasterly line for a distance of 1,376.42 feet to the POINT OF BEGINNING and east corner of the herein described 0.199 acre tract (Plant Coordinates: North 1,380.00, West 3,614.00);

THENCE, South 39°27'37" West, along the southeasterly line of the herein described tract for a distance of 93.00 feet to the south corner of the herein described tract;

THENCE, North 50°32'23" West, along the southwesterly line of the herein described tract for a distance of 93.00 feet to the west corner of the herein described tract;

THENCE, North 39°27'37" East, along the northwesterly line of the herein described tract for a distance of 93.00 feet to the north corner of the herein described tract;

THENCE, South 50°32'23" East, along the northeasterly line of the herein described tract for a distance of 93.00 feet to the POINT OF BEGINNING, containing a computed area of 0.199 acres (8,649 square feet).

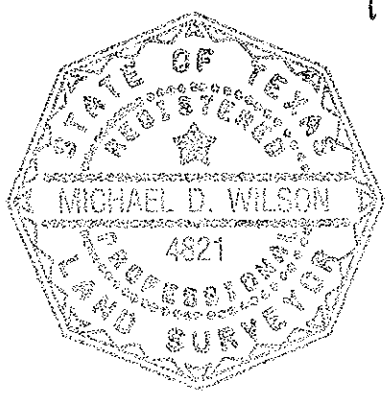
Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

The Wilson Survey Group, Inc.
2006 East Broadway, Suite 105
Pearland, Texas 77581
(281) 485-3991
Job No. 08-177

Michael D. Wilson, R.P.L.S.
Registration No. 4821

09/09/08



Unit 'C'
Phthalic Anhydride Area
(Area B)
0.151 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 0.151 acre Phthalic Anhydride Area known as "Unit C, Area B" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.151 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50º29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39º28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 11,201.58 feet to an angle point;

THENCE, North 50º31'43" West, at right angles to said southeasterly line for a distance of 1,044.43 feet to the POINT OF BEGINNING and east corner of the herein described 0.151 acre tract (Plant Coordinates: North 1,048.00, West 3,576.00);

THENCE, South 39°27'37" West, along the southeasterly line of the herein described tract for a distance of 81.00 feet to the south corner of the herein described tract;

THENCE, North 50°32'23" West, along the southwesterly line of the herein described tract for a distance of 81.00 feet to the west corner of the herein described tract;

THENCE, North 39°27'37" East, along the northwesterly line of the herein described tract for a distance of 81.00 feet to the north corner of the herein described tract;

THENCE, South 50°32'23" East, along the northeasterly line of the herein described tract for a distance of 81.00 feet to the POINT OF BEGINNING, containing a computed area of 0.151 acres (6,561 square feet).

Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

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2006 East Broadway, Suite 105
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Michael D. Wilson, R.P.L.S.
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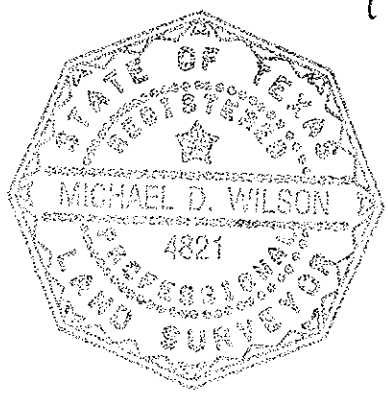
09/09/08



Unit 'C'
Phthalic Anhydride Area
(Area C)
0.203 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 0.203 acre Phthalic Anhydride Area known as "Unit C, Area B" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 0.203 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50º29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39º28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 10,894.61 feet to an angle point;

THENCE, North 50º31'43" West, at right angles to said southeasterly line for a distance of 1,188.49 feet to the POINT OF BEGINNING and east corner of the herein described 0.203 acre tract (Plant Coordinates: North 1,192.00, West 3,269.00);

THENCE, South 39°27'37" West, along the southeasterly line of the herein described tract for a distance of 94.00 feet to the south corner of the herein described tract;

THENCE, North 50°32'23" West, along the southwesterly line of the herein described tract for a distance of 94.00 feet to the west corner of the herein described tract;

THENCE, North 39°27'37" East, along the northwesterly line of the herein described tract for a distance of 94.00 feet to the north corner of the herein described tract;

THENCE, South 50°32'23" East, along the northeasterly line of the herein described tract for a distance of 94.00 feet to the POINT OF BEGINNING, containing a computed area of 0.203 acres (8,836 square feet).

Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

The Wilson Survey Group, Inc.
2006 East Broadway, Suite 105
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Job No. 08-177

Michael D. Wilson, R.P.L.S.
Registration No. 4821

09/09/08

Unit 'I'
Emergency Runoff Surface Impoundment
(Area A)
1.898 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 1.898 acre Emergency Runoff Surface Impoundment known as "Unit I, Area A" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 1.898 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50°29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39°28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 12,476.85 feet to an angle point;

THENCE, North 50°31'43" West, at right angles to said southeasterly line for a distance of 2,379.18 feet to the POINT OF BEGINNING and east corner of the herein described 1.898 acre tract (Plant Coordinates: North 2,383.00, West 4,851.00);

THENCE, South 22°54'38" West, along the southeasterly line of the herein described tract for a distance of 403.73 feet to the southeast corner of the herein described tract;

THENCE, North 87°51'39" West, for a distance of 127.00 feet to the southwest corner of the herein described tract;

THENCE, North 01°38'15" East, along the southwesterly line of the herein described tract for a distance of 288.64 feet to the most westerly corner of the herein described tract;

THENCE, North 39°27'37" East, along the northwesterly line of the herein described tract for a distance of 236.00 feet to the north corner of the herein described tract;

THENCE, South 50°32'23" East, for a distance of 163.00 feet to the POINT OF BEGINNING, containing a computed area of 1.898 acres (82,673 square feet).

Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

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Michael D. Wilson, R.P.L.S.
Registration No. 4821

09/09/08

Unit 'I'
Emergency Runoff Surface Impoundment
(Area B)
1.132 Acres

Perry and Austin League No. 2
Abstract No. 107

STATE OF TEXAS §

COUNTY OF BRAZORIA §

METES AND BOUNDS DESCRIPTION of the location of a 1.132 acre Emergency Runoff Surface Impoundment known as "Unit I, Area B" in the Perry and Austin League No. 2, Abstract No. 107 in Brazoria County, Texas. Said 1.132 acre tract is in a 3,000 acre tract described in a deed to Monsanto Company as recorded in Volume 782, Page 511 of the Brazoria County Deed Records and is more particularly described by metes and bounds as follows:

COMMENCING at the most northerly corner of said Perry and Austin League No. 2, Abstract No. 107, same being the most northerly corner of said 3,000 acre tract and is also the most southerly west corner of the Perry and Austin League No. 7, Abstract No. 110 and is on the southeasterly line of the Perry and Austin 1-3/4 League, Abstract No. 37;

THENCE, South 50°29'13" East, along the northeasterly line of said 3,000 acre tract, same being the northeasterly line of said Perry and Austin League No. 2, Abstract No. 107, for a distance of 11,240.38 feet to the east corner of said 3,000 acre tract;

THENCE, South 39°28'17" West, along the southeasterly line of said 3,000 acre tract for a distance of 12,593.76 feet to an angle point;

THENCE, North 50°31'43" West, at right angles to said southeasterly line for a distance of 1,927.16 feet to the POINT OF BEGINNING and south corner of the herein described 1.132 acre tract (Plant Coordinates: North 1,931.00, West 4,968.00);

THENCE, South 83°08'36" West, along the southwesterly line of the herein described tract for a distance of 123.07 feet to the southwest corner of the herein described tract;

THENCE, North 50°32'23" West, for a distance of 212.00 feet to the west corner of the herein described tract;

THENCE, North 39°27'37" East, along the northwesterly line of the herein described tract for a distance of 222.00 feet to the most northerly corner of the herein described tract;

THENCE, South 50°32'23" East, along the northeasterly line of the herein described tract for a distance of 104.00 feet to a point for corner;

THENCE, South 15°58'06" East, for a distance of 234.39 feet to the POINT OF BEGINNING, containing a computed area of 1.132 acres (49,317 square feet).

Note:

1. Bearings shown hereon are based on the Texas State Plane Coordinate System, South Central Zone (NAD83).
2. A separate plat has been prepared in connection with this description.

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Michael D. Wilson, R.P.L.S.
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09/09/08

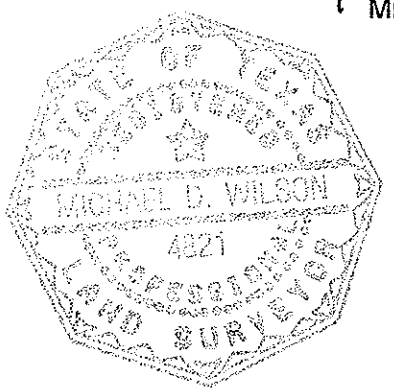
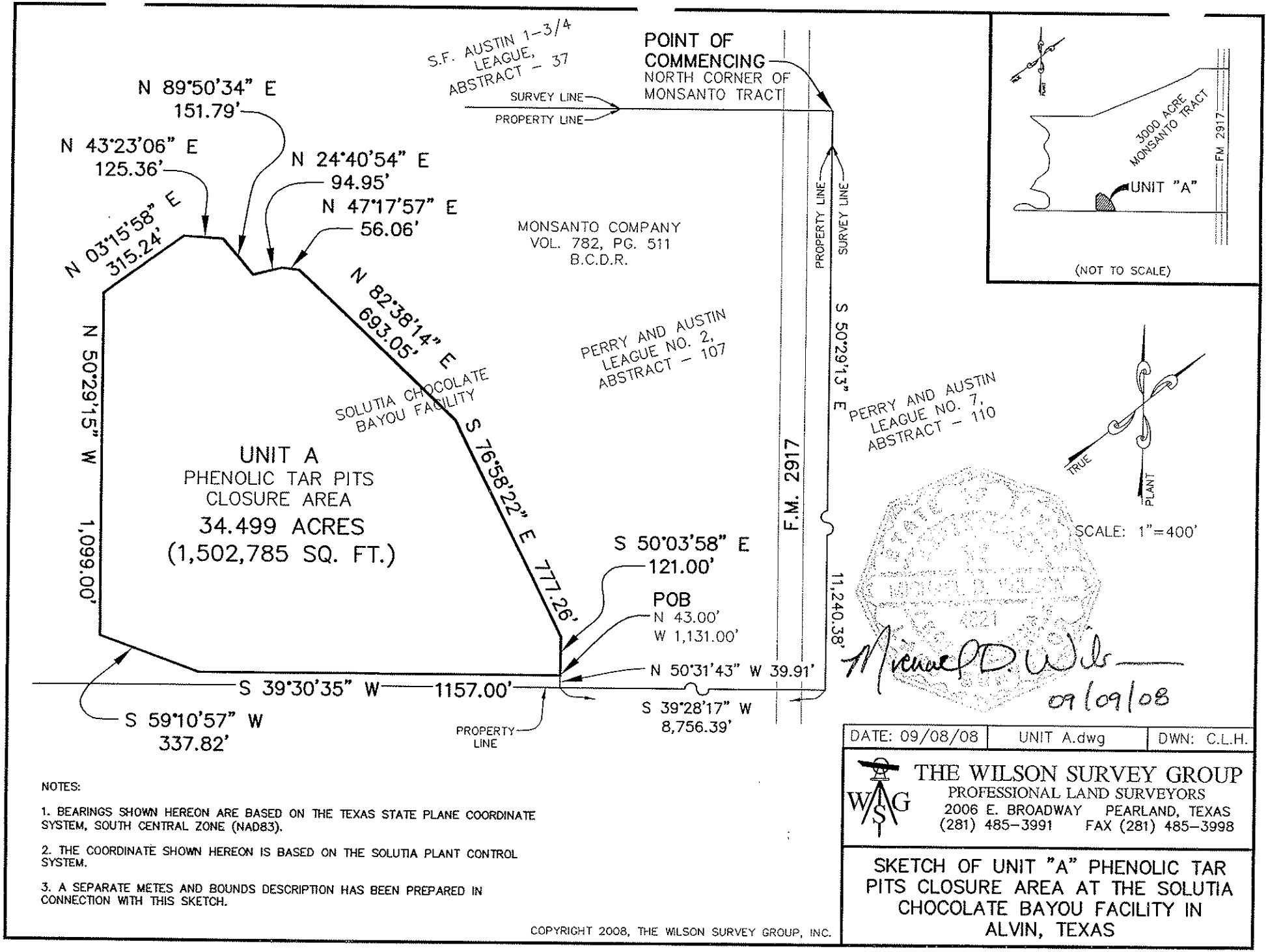


EXHIBIT B-2

PLAT MAP OF AFFECTED PROPERTY



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

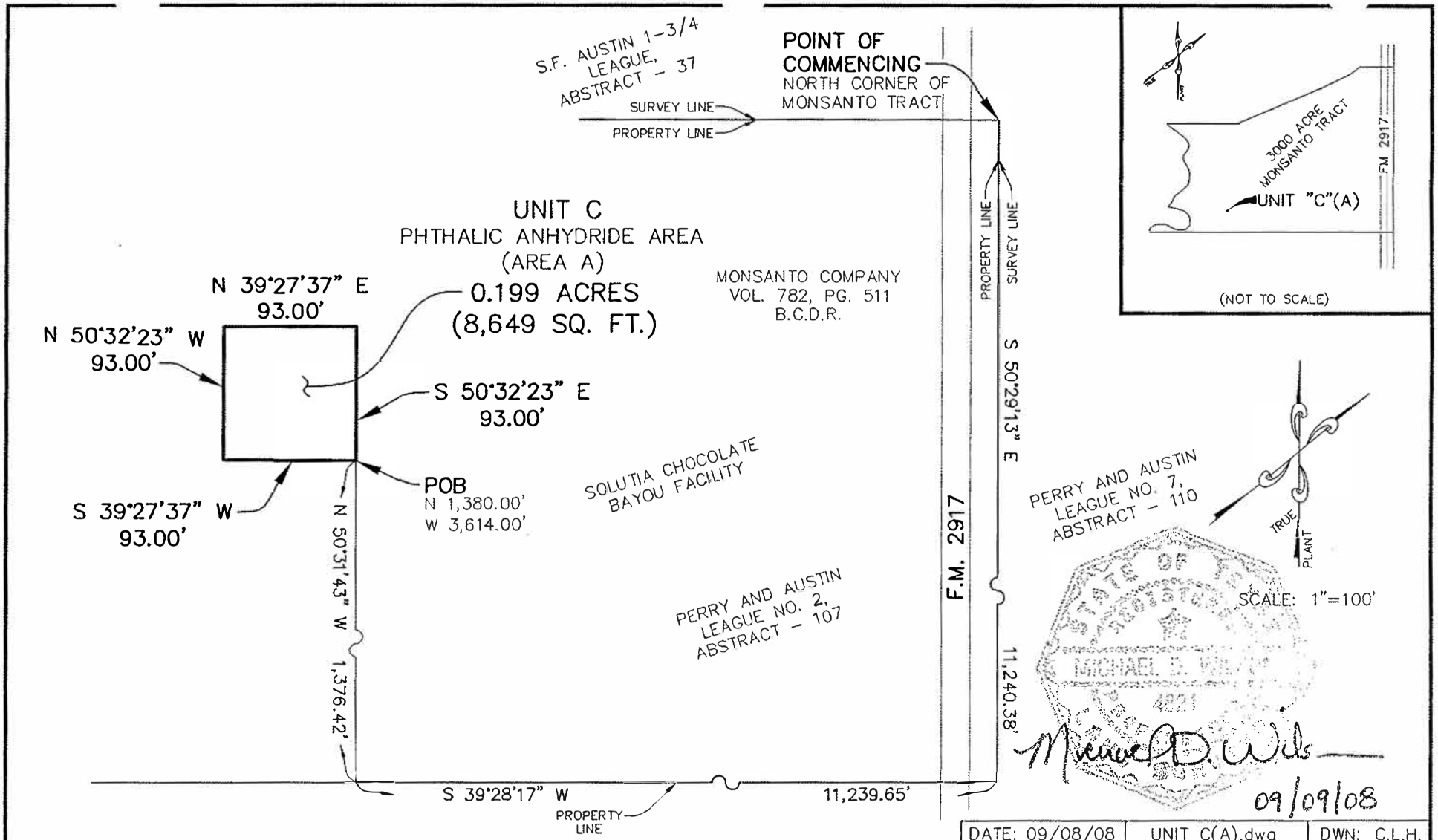
2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT A.dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "A" PHENOLIC TAR PITS CLOSURE AREA AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

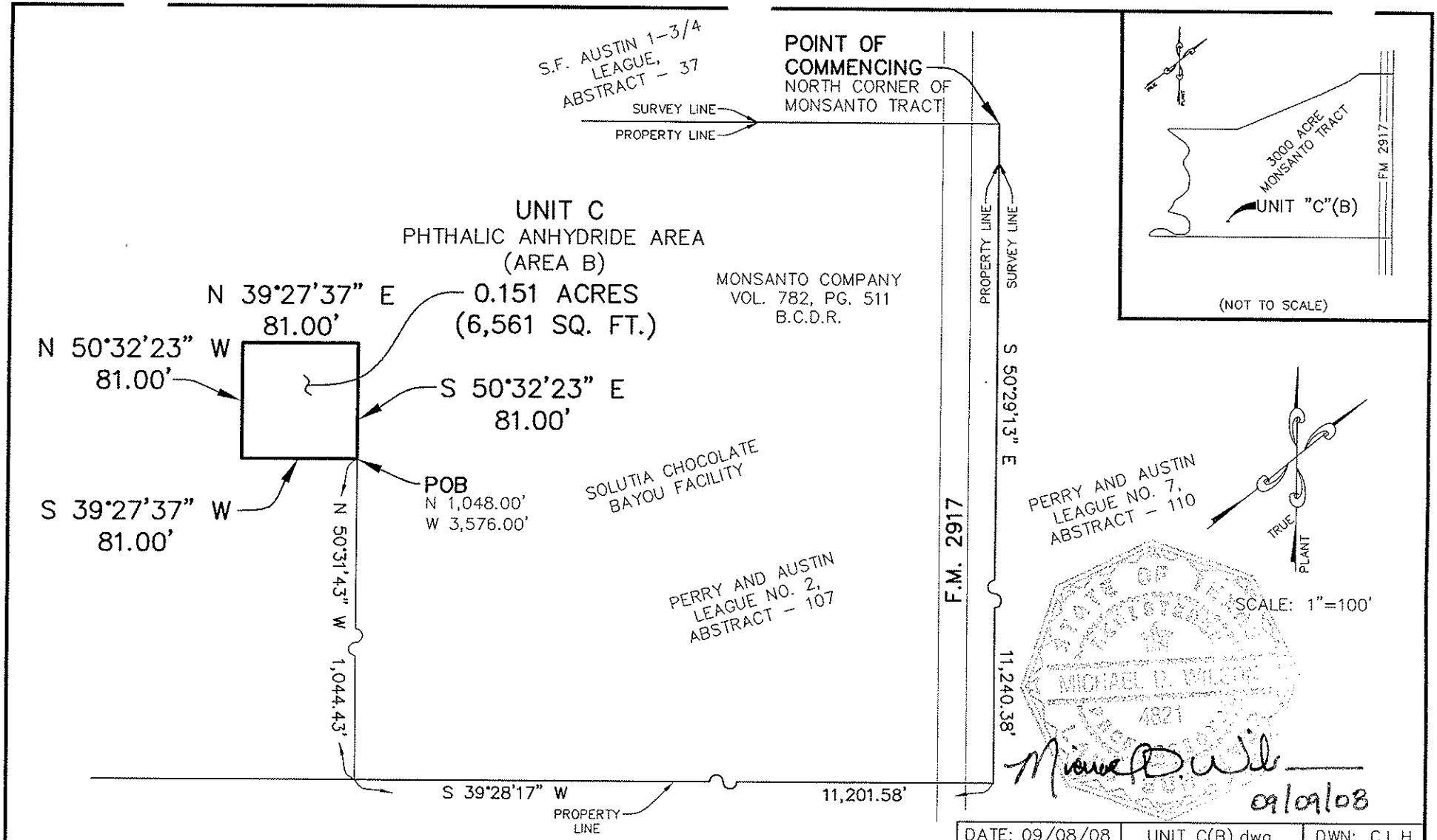
2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT C(A).dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "C" PHTHALIC ANHYDRIDE AREA (AREA A) AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

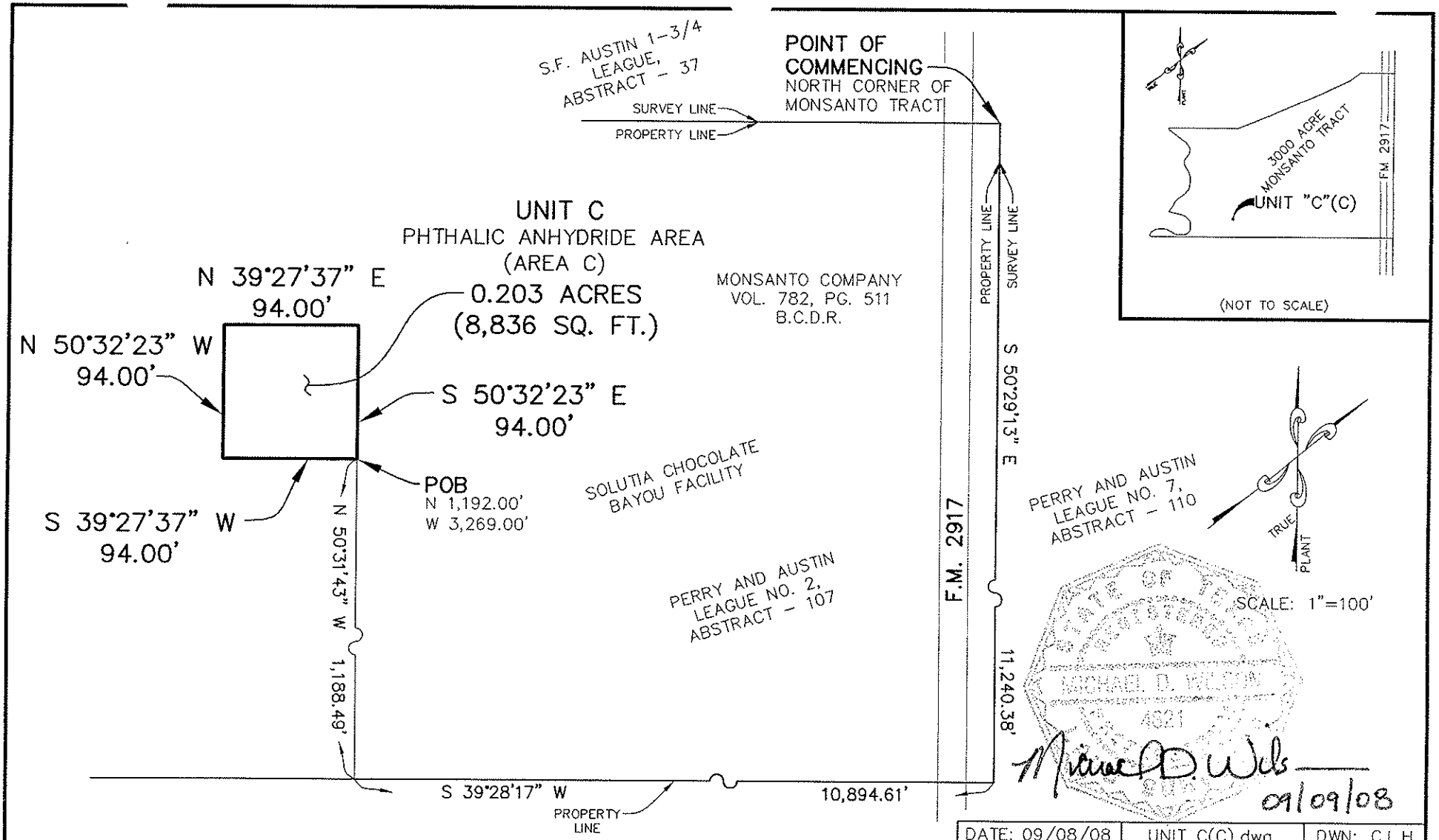
2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT C(B).dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "C" PHTHALIC ANHYDRIDE AREA (AREA B) AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

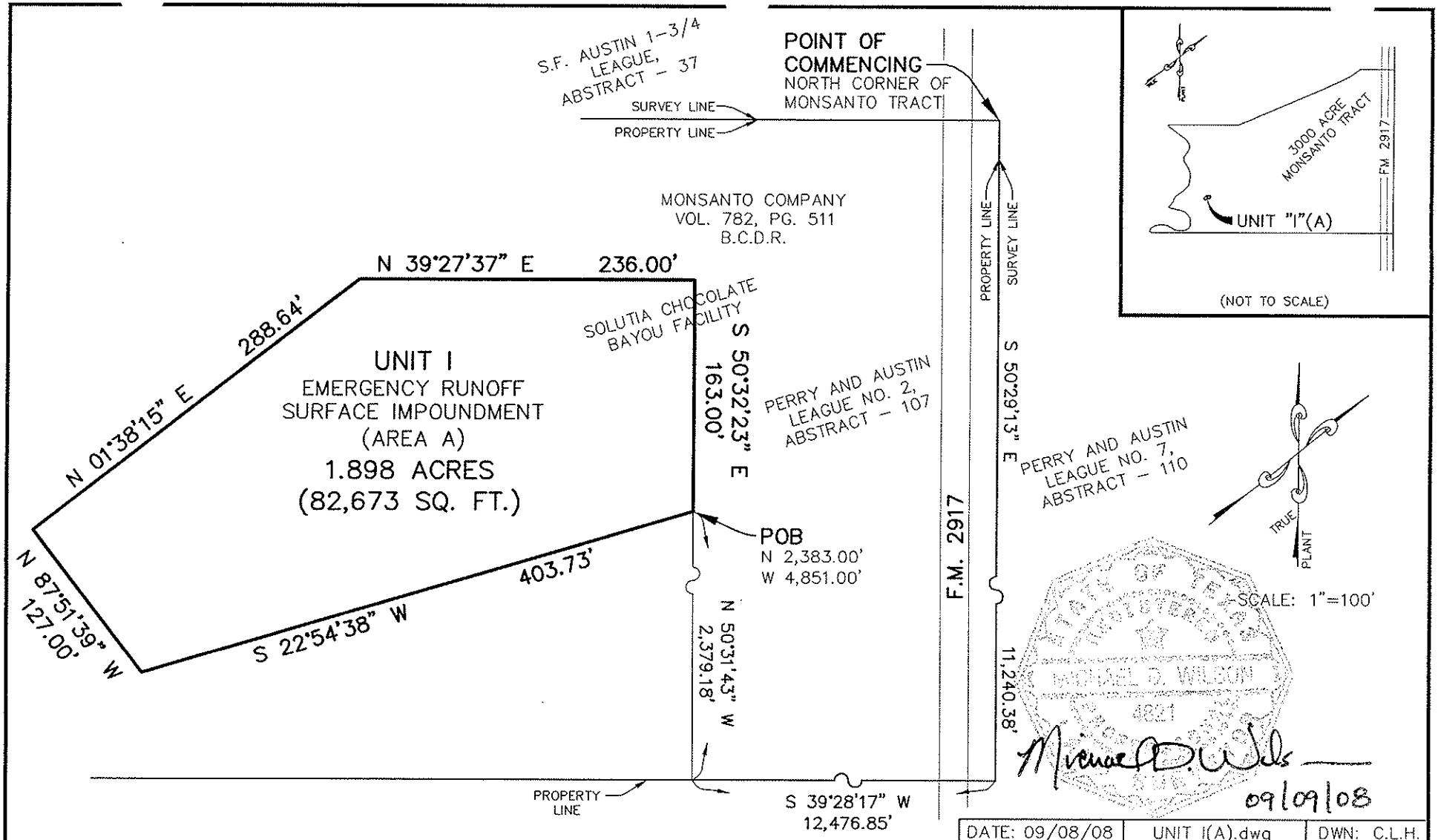
2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT C(C).dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "C" PHTHALIC ANHYDRIDE AREA (AREA C) AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

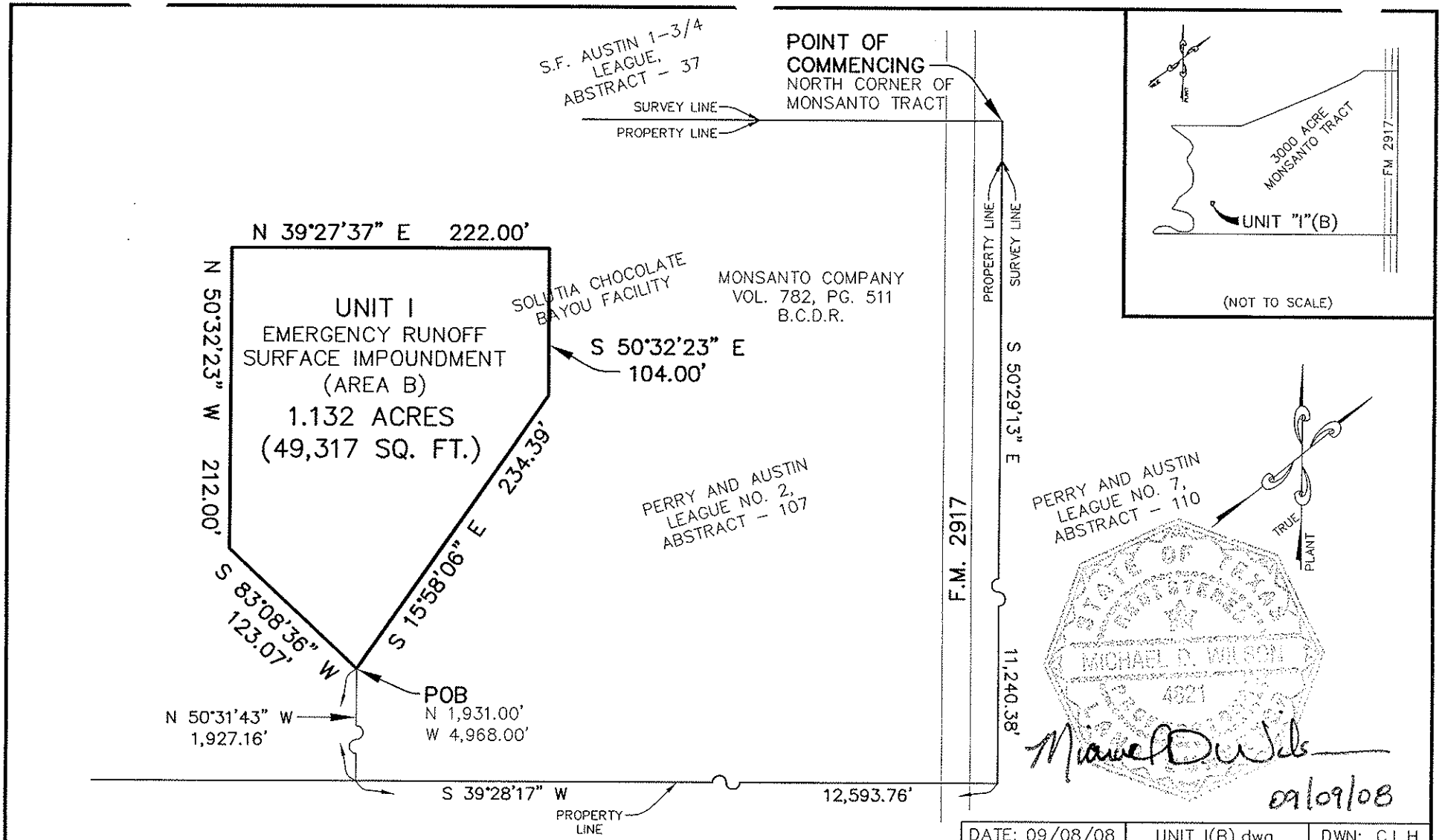
2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT I(A).dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "I" EMERGENCY RUNOFF SURFACE IMPOUNDMENT (AREA A) AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS



NOTES:

1. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83).

2. THE COORDINATE SHOWN HEREON IS BASED ON THE SOLUTIA PLANT CONTROL SYSTEM.

3. A SEPARATE METES AND BOUNDS DESCRIPTION HAS BEEN PREPARED IN CONNECTION WITH THIS SKETCH.

DATE: 09/08/08	UNIT I(B).dwg	DWN: C.L.H.

THE WILSON SURVEY GROUP
PROFESSIONAL LAND SURVEYORS
2006 E. BROADWAY PEARLAND, TEXAS
(281) 485-3991 FAX (281) 485-3998

SKETCH OF UNIT "I" EMERGENCY RUNOFF SURFACE IMPOUNDMENT (AREA B) AT THE SOLUTIA CHOCOLATE BAYOU FACILITY IN ALVIN, TEXAS

EXHIBIT C

MONITORING AND MAINTENANCE REQUIREMENTS FOR PHYSICAL CONTROL

EXHIBIT C

MONITORING AND MAINTENANCE REQUIREMENTS FOR PHYSICAL CONTROL

The soil covers for areas described in Exhibit B-1 and illustrated in Exhibit B-2 of this Deed Notice will be inspected on a semi-annual basis. The semi-annual inspection shall consist of examining the soil covers for any significant damage that could lead to failure of the soil cover such that potential exposure to the underlying soil could occur. Any significant soil cover damage noted during the inspections shall be repaired immediately.

The inspection shall be documented on a field log and representative photographs of the soil covers shall be taken. Results of the semi-annual inspection shall be provided to the TCEQ in the form of an Annual Progress Report for Corrective Measures Implementation as required by Solutia's Compliance Plan No. 50189, issued by the TCEQ.

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Section III – Facility Management

Contents

- Part B Application Form, Section III
- Part B, Section III: Appendix III.A - Compliance History and Applicant Experience
- Part B, Section III: Appendix III.B - Personnel Training Plan
- Part B, Section III: Appendix III.C - Security Plan
- Part B, Section III: Appendix III.D - Inspection Plan
- Part B, Section III: Appendix III.E - Contingency Plan

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Application Form, Section III

III. Facility Management

Provide all Part B responsive information in Appendix III. When preparing the physical format organize your submittal using the Format of Hazardous Waste permit Application and Instructions.

A. Compliance History and Applicant Experience

1. Provide listings of all solid waste management sites in Texas owned, operated, or controlled by the applicant as required by 30 TAC 305.50(a)(2).

2. For a new commercial hazardous waste management facility, provide a summary of the applicant's experience in hazardous waste management as required by 30 TAC 305.50(a)(12)(F).

B. Personnel Training Plan

Provide an outline of the facility training plan which includes all the information required by 40 CFR 264.16. Indicate which training will be repeated annually.

C. Security

Describe how the facility complies with the security requirements of 40 CFR 264.14 or submit a justification demonstrating the reasons for requesting a waiver of these requirements.

D. Inspection Schedule

Describe summary of inspection schedule and Table III.D in Appendix III.D in accordance with instructions below.

Provide an inspection schedule summary for the facility which reflects the requirements of 40 CFR 264.15(b), 264.33 and, where applicable, the specific requirements in 40 CFR 264.174, 264.193(i), 264.195, 264.226, 264.254, 264.273, 264.303, 264.347, 264.552, 264.574, 264.602, 264.1033(f), 264.1034, 264.1052, 264.1053(e), 264.1057, 264.1058, 264.1063, 264.1084, 264.1085, 264.1086, 264.1088, 264.1101(c)(4) and 270.14(b)(5). The inspection schedule should reflect the requirements described below. The schedule should encompass each type of hazardous waste management (HWM) unit (i.e., facility component) and its inspection requirements. For incorporation into a permit, complete Table III.D. - Inspection Schedule for all units to be permitted.

The owner or operator must inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing or may lead to the release of hazardous waste constituents to the environment or which may pose a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

The owner or operator must develop and follow a written schedule for inspecting other basic elements such as monitoring equipment, safety and emergency equipment, security devices, the presence of liquids in leak detection systems, where installed, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

If the owner or operator of a facility which contains a waste pile wishes to pursue an exemption from the groundwater monitoring requirements for that waste management unit, the inspection schedule must include examination of the base for cracking,

deterioration, or other conditions that may result in leaks. The frequency of inspection 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).

E. Contingency Plan (Not Applicable to Permits for Post-Closure Care Only)

If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section. Provide a Contingency Plan which includes all the information required by 40 CFR Part 264 Subparts C and D, except for 40 CFR 264.56(d)(1) and 30 TAC 335.153(2). This plan must also include a drawing of the facility which shows the location of all emergency equipment. In addition, complete the following tables to summarize information expressed in more detail in the plan.

1. Arrangements with Local Authorities
Complete Table III.E.1. - Arrangements With Local Authorities to indicate arrangements (if made) with local authorities to familiarize local fire and police departments, local hospitals, equipment suppliers, and local and State emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes. Provide documentation of the attempts and any arrangements made with local authorities and emergency response teams.

2. Emergency Coordinator's List
For inclusion into a permit, list in Table III.E.2. - Emergency Coordinators the persons qualified to act as emergency coordinator. List the alternates in the order in which they will assume responsibility.

3. Emergency Equipment List
For inclusion into a permit, list in Table III.E.3. - Emergency Equipment all types of emergency equipment at the facility [such as fire-extinguishing systems, spill-control equipment, communications and alarm systems (internal and external), and decontamination equipment], if this equipment is required. Briefly outline the equipment capabilities.

4. Waiver from Preparedness and Prevention Requirements
If the owner or operator wishes to request a waiver from any of the preparedness and prevention requirements, he must submit a justification demonstrating the reasons for requesting the waiver, as discussed below.

F. Emergency Response Plan

For a new commercial hazardous waste management facility, the application shall contain evidence sufficient to demonstrate that emergency response capabilities are available or will be available before the facility first receives waste. An emergency response plan must be provided which satisfies the requirements of 30 TAC 305.50(a)(12)(C) and (D). This plan must show that the proposed facility has sufficient emergency response capabilities for managing a reasonable worst-case emergency condition associated with the operation of the facility. (For financial assurance requirements associated with the emergency response activities, please see Section

VIII.C.3.)

1. Practice Drills

   In addition to the contingency plan required under 40 Code of Federal Regulations Part 270.14(b)(7), provisions specifying procedures and timing of practice facility evacuation drills are required. Provide a description and a frequency for facility evacuation drills.

2. If a private corporation, municipality or county group will provide emergency response actions at the proposed facility, include a copy of the contract for this type of agreement with this application or state that documentation will be submitted before the facility accepts wastes.

3. Historical weather data for the area should be documented and submitted. Information regarding how emergency response operations may be affected by weather conditions should be included. (Local rainfall extremes, average rainfall amounts, average wind speeds and directions, potential for major weather events such as hurricanes, tornados, icy conditions, flash flooding etc., should be addressed.)

4. A definition of a worst-case emergency for the proposed facility should be described in the application. This worst-case emergency should take into account the possible complications involved with a facility emergency compounded by adverse weather conditions. It should also detail spills, fires, explosions, etc. This worst case scenario should be developed with the help of local governmental entities where possible. Emergency planning should include both unexpected emergencies and emergencies occurring as a result of a predictable event such as a flood or hurricane. For areas which are prone to hurricanes and flash flooding, the worst case which allows for a realistic situation should be used. For example, response teams should be well versed in reacting to events such as a 100-year flood.

5. A training program for personnel who will respond to these types of emergencies must be provided and must include the requirements described in OSHA Federal Register 1910 and EPA Federal Register 311, the Texas Hazard Communication Act, SARA Title III 302, 304, 311, 312, and 313. If emergency response actions are contracted out, the contracted employees must be properly trained and documentation of this training must be maintained on-site. All responders to emergencies at the proposed facility must be involved in training and drills at the facility in order to be thoroughly familiar with the facility and its operations.

6. The application must include a description and identification of first-responders (i.e. all pertinent facility personnel, local responders, and contractors). The duties of the facility employee who is to be the on-scene coordinator (OSC) must be described. Additional information must be provided detailing the OSC's role in the emergency response activities. This person must have the authority to commit the resources needed to carry out the Emergency Response Plan. His duties must be thoroughly described so that it is clear whether he will remain in control once the emergency response team arrives or whether he will relinquish control to another incident commander upon that person's arrival on the scene. Additionally, there must be a qualified OSC on-site or on call 24 hours a day. The name, address and phone numbers (home and work) of the OSC(s) must be listed in the Emergency Response Plan. Where more than one person is listed, one must be named as the primary OSC and others must be listed in the order

in which they will assume responsibility as alternates.

7. Local or regional emergency medical services or hospitals which have experience in hazardous materials training must be identified in the application. The names, addresses and phone numbers of the hospitals or medical centers should be listed here and updated as necessary. Additionally, maps showing the quickest routes to the medical services must be provided. A description of decontamination procedures for injured personnel prior to transport to medical services must also be provided. The decontamination and transport of injured people to appropriate medical centers must be included in the emergency evacuation training and drills.

8. A pre-disaster plan which includes training drills must be included in the application. This plan should include a schedule for staging evacuations of the facility and for emergency response training drills. At least two evacuations and two emergency response drills should occur annually. The plan should also include additional drills for responding to "predictable" emergencies such as floods and hurricanes. The plan must include the following (or must reference applicable sections of the Contingency Plan): a description of arrangements already in place with local authorities; emergency phone numbers; internal communication or alarm systems and proper alarm codes; a list of all types of emergency equipment at the facility, including a physical description and the capabilities of each item on the list, and the location of each item (a map would be useful here); a description of decontamination equipment; an evacuation plan including signals, evacuation routes and alternate evacuation routes; listing of pertinent first responder emergency phone numbers, and codes for other types of communication devices; and a description of actions that will be performed in the event that a "predictable" emergency occurs.

9. Describe the mechanism which will be used to notify first responders and appropriate local governmental entities that an emergency has occurred. Also describe the mechanism which will be used to notify all applicable governmental agencies when an incident occurs (i.e., TCEQ, Texas Parks and Wildlife, General Land Office, TCEQ Office of Air Quality, Texas Department of Health, and the Texas Railroad Commission).

10. Evidence must be provided that shows coordination with the Local Emergency Planning Committee (LEPC) and any local comprehensive emergency management plan. The applicants should be able to show compliance with SARA Title III.

11. Any medical response capabilities proposed for the facility property must be detailed in the application.

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Part B, Section III: Appendix III.A - Compliance History and Applicant Experience

APPENDIX III.A
COMPLIANCE HISTORY AND APPLICANT EXPERIENCE

Hazardous Waste Permit Renewal Application
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Ascend Performance Materials Texas Inc. (Ascend) has been the owner and operator of the Chocolate Bayou facility since May 31, 2009. Ascend does not own any other solid waste management sites in Texas. Note that the Chocolate Bayou facility was previously owned and operated by Solutia Inc. and Monsanto Company.

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Hazardous Waste Permit Renewal Application

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Hazardous Waste Permit No. 50189

Part B, Section III: Appendix III.B - Personnel Training Plan

APPENDIX III.B
PERSONNEL TRAINING PLAN

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

APPENDIX III.B
PERSONNEL TRAINING PLAN

Hazardous Waste Permit Renewal Application
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APPENDIX III.B
PERSONNEL TRAINING PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

1.0 INTRODUCTION

As both a hazardous waste generator and a treatment, storage, and disposal facility, the Ascend Performance Materials Texas Inc. (Ascend) Chocolate Bayou facility must maintain a Resource Conservation and Recovery Act (RCRA) personnel training plan. Ascend has developed a training program that meets the regulatory requirements of 40 CFR 264.16 and 40 CFR 262.34(a)(4). The plan also meets the requirements of 30 TAC 335.152, which incorporates these federal regulations into the Texas Administrative Code. This training plan describes the following:

- Type and frequency of the training,
- Content of the training
- Job functions requiring training,
- Method of documentation, and
- Procedure for modifying the training plan.

Through this program, personnel who have responsibilities for managing hazardous waste receive the training needed to comply with the state and federal hazardous waste regulations. This training teaches the appropriate personnel to perform their duties in a manner that ensures regulatory compliance.

In conjunction with the Training Coordinator for the Plant, an individual in the Environmental Safety and Health (ESH) Department with responsibility for hazardous and solid waste compliance has the accountability to direct/manage the RCRA personnel training program for the facility. To ensure the effectiveness of the training program and compliance with 40 CFR 264.16(a)(2), this individual is qualified through experience in the area of hazardous waste management, including current federal and state regulations. This individual performs the following tasks:

- Manages the facility RCRA permit, including the coordination of permit updates, amendments, and renewals;
- Attends various annual RCRA regulatory seminars and workshops. These include those sponsored by Ascend for all their environmental personnel, as well as those sponsored by TCEQ, USEPA, and contractors to Ascend;
- Networks with other environmental professionals through the Texas Chemical Council (TCC) and other such organizations;
- Develops and maintains an appropriate training program in coordination with the Ascend corporate environmental personnel, ensuring the program meets current regulations;

- Implements the required training using the facility training coordinator network. Each training coordinator is accountable and responsible for administering the required training and to maintain training compliance and records. These individuals are normally experienced unit/department personnel skilled in effective management training programs.
- Receives annual RCRA training, and participates in the development, review, and implementation of the training program; and
- Works closely with each of the facility training coordinators to ensure proper administration of the required training program and participates in specific classroom training sessions as required.

The Ascend Chocolate Bayou Plant requires individuals subject to RCRA training to receive such training (as defined herein) regardless of job position.

Ascend employees are required to have annual medical evaluations and assessments to ensure they are physically fit to perform their duties. Plant medical personnel have the accountability and responsibility to impose work related limits for specific health issues.

The Ascend Chocolate Bayou Plant employs an around-the-clock volunteer crew of first responders composed of firefighters, medical personnel (including emergency care attendants and emergency medical technicians), and rescue personnel. Ascend ensures that first responder personnel maintain their skills through specialized training which includes RCRA and HAZWOPER training.

2.0 TRAINING APPROACH

This training program applies to operating personnel in units/departments that treat, store, or dispose of hazardous waste at the Ascend Chocolate Bayou Plant in accordance with a:

- Hazardous waste permit; or
- Hazardous waste permit exemption (i.e., operations that are excluded from permitting because of the less than 90-day hazardous waste storage requirement).

Ascend utilizes various techniques for hazardous waste training including the use of a computer based training (CBT) system, classroom instruction, and/or on-the-job training. As such, the specific training and education programs employed to satisfy the RCRA training requirements are as follows:

- New employee orientation;
- Annual refresher training;
- Safety and emergency response training, including response to fire or explosions, communications and alarm systems; and use of emergency procedures and equipment (i.e., fire extinguishers, fire monitors, escape masks, etc.);

- Manufacturing unit training programs, including shutdown of operations and waste feed cut-off systems, monitoring and inspection, and spill/containment response; and
- Emergency drills.

Other RCRA training program approaches at the Ascend Chocolate Bayou Plant may include:

- Attendance at an annual seminar for management and professional employees regarding RCRA and other environmental regulations;
- Participation in annual manufacturing unit training on specific wastes, waste management facilities, and plant procedures; and
- Attendance at non-routine training programs regarding regulatory changes as needed to maintain effective regulatory compliance.

Every operating unit/department employee who must be trained in hazardous waste management successfully completes:

- An initial training course designed to teach him/her the necessary hazardous waste management procedures required for the completion of his/her job assignment (40 CFR 264.16(a)(1)); and
- An annual training refresher course.

Training requirements for various Ascend Chocolate Bayou job descriptions are presented in Section 4.0 of this document. To ensure training competency, the training program requires testing of all training course attendees. Documentation of training completion is discussed in Section 5.0 of this training program.

2.1 Initial Training

Initial training applies to each new employee who will have the responsibility for managing hazardous waste at one of the units described above. The term “new employee” includes new hires, Ascend employees transferred from other units, or Ascend employees re-assigned within one of the designated units.

New Ascend employees attend a general orientation within six months of their date of employment. This orientation covers such topics as Safety Procedures, Environmental Training (including RCRA training), and an Operations Overview.

Employees managing hazardous waste do not work in unsupervised positions until they have completed the required training (40 CFR 264.16(b)). The overall initial training program has been developed to comply with the requirements for the RCRA permitted facility 24-hour HAZWOPER course (29 CFR 1910.120(a)(2)(ii) and (p)(7)(i)) for those individuals who will be assigned to such a facility. A typical outline of the RCRA training course is provided on Table III.B.1.

2.2 Annual Training

Ascend employees identified in Section 2.1 also receive an annual RCRA training update. To comply with 40 CFR 264.16(c), the same basic outline as the initial training is used with the regulations updated as needed (see Table III.B.1). For overall efficiency, this training can be integrated with the required annual 8-hour HAZWOPER refresher (29 CFR 1910.120(p)(7)(ii)) for these same employees.

3.0 TRAINING CONTENTS

This training program is designed, at a minimum, to ensure that facility personnel can respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems. Each qualified employee must be familiar with the hazardous waste contingency plan. The example RCRA training outline on Table III.B.1 indicates topics that may be included in hazardous waste training for individual units.

To ensure that Ascend Chocolate Bayou personnel can effectively respond to hazardous waste emergencies and comply with 40 CFR 264.16(a)(3), the training requires specific emphasis in several significant areas, including:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- Key parameters for automatic waste feed cut-off systems;
- Communication and alarm systems;
- Response to fire or explosions;
- Response to groundwater contamination incidents; and
- Shutdown of operations.

In addition, certain plant personnel undergo a review of applicable Ascend Chocolate Bayou safety procedures, including:

- Fire training;
- Emergency procedures;
- Emergency drills;
- Hazard communications;
- HAZWOPER;
- Contractor safety;
- Hearing conservation; and
- Respiratory protection.

4.0 JOB POSITION REQUIREMENTS

At Ascend, formal classroom training, on-the-job training, CBT, and routine safety meetings are the primary instructional methods for process operations involving hazardous waste management and emergency response.

4.1 Unit Environmental Contacts

Unit environmental contacts function as environmental resource personnel and understand how RCRA applies to the group they represent. They are accountable and/or responsible for day-to-day RCRA compliance and specific RCRA training for their unit/group.

4.2 Department/Unit Personnel

Processors are qualified department/unit personnel who operate the various manufacturing units which are staffed in shifts around the clock. Processors are trained in the day-to-day handling of hazardous waste. Each processor progresses through a qualification program specific to the operating unit to which he/she is assigned. The processors must maintain competency in each job function and attend safety training, as well as attend the annual RCRA training. Related or support personnel, such as maintenance, engineering, and technology personnel, either attend the required RCRA training or perform their work under the supervision of a RCRA-trained individual.

4.3 Department/Unit Training Coordinator

Department/Unit training coordinators are experienced RCRA-trained individuals chosen to interact with their local environmental contacts and the ESH Department to ensure that effective training is conducted. These individuals have the accountability and responsibility to administer the required training, maintain the training records, and ensure compliance with the training requirements.

4.4 Emergency Response Personnel

Emergency response personnel are individuals from various areas of the plant trained to respond to the different types of emergencies encountered at the plant. In addition to the required safety training, these personnel receive annual training on the RCRA Contingency Plan if they are assigned to respond to an emergency in a hazardous waste management unit. Alternatively, they perform their duties under the supervision of a RCRA-trained individual.

4.5 Management Personnel

Management personnel at the Chocolate Bayou Plant are the superintendents or other such supervisory personnel of the departments or units designated in Section 2.0. These individuals directly manage those who handle hazardous waste. Such management personnel must attend the initial hazardous waste training orientation and the annual RCRA training.

5.0 TRAINING DOCUMENTATION

Ascend maintains job titles, job descriptions, training descriptions, and training records at the facility in compliance with 40 CFR 264.16(d). The training records may include written sign-in sheets or electronic records for each RCRA training session. These training records are kept and managed as required by each unit/department training coordinator.

The contents and format of the training records vary depending on the type of training and unit/department specific procedures. At a minimum, records include training session, date, and employee name and identification number. Written documentation includes the employee's printed name and signature.

The ESH Department is accountable for ensuring that departments and units impacted by the RCRA training requirements maintain the required records.

In addition, Ascend maintains RCRA training records for the plant to comply with 40 CFR 264.16(e) as follows:

- For current employees, records are kept for the duration of facility operation, and
- For former employees, records are kept for three years after their last day of employment.

Personnel training records may accompany personnel who transfer within the company.

6.0 TRAINING PROGRAM MODIFICATIONS

To ensure that the training program is current, the ESH staff will document revisions to the plan by tracking any additions, deletions, or other modifications. The sample documentation form is provided on Table III.B.2.

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APPENDIX III.B
PERSONNEL TRAINING PLAN

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Table III.B.2 Example RCRA Training Program Modification Log Sheet

TABLE III.B.1
EXAMPLE RCRA TRAINING PROGRAM OUTLINE

Hazardous Waste Permit Renewal Application
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Ascend Performance Materials Texas Inc., Alvin, Texas

I. Introduction - Why We Train

II. Overview of the Regulations

- A. Glossary
- B. Environmental Agencies
- C. Chocolate Bayou Plant Environmental Permits

III. Introduction to RCRA

- A. Definitions
  1. Definition of Solid Waste
  2. Definition of Hazardous Waste
  3. Generator Requirements - Hazardous Waste
     - a. Determination
     - b. Activity Notification
     - c. Storage Requirements
     - d. Transportation Requirements
     - e. Minimization'
     - f. Recordkeeping and Reporting Requirements
  4. Treatment, Storage, and Disposal Facility Management Plans
     - a. Waste Analysis Plan
     - b. Security Plan
     - c. Training Plan
     - d. Closure and Post Closure

- B. Container Storage
  1. Container Definitions
  2. Container Requirements
  3. Storage Area Requirements
  4. Inspections
  5. Satellite Accumulation

- C. Tank Storage
  1. Tank System Definition
  2. Tank Requirements
  3. Secondary Containment
  4. Inspections

- D. Landfills
  1. Operations

TABLE III.B.1
EXAMPLE RCRA TRAINING PROGRAM OUTLINE

Hazardous Waste Permit Renewal Application
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2. Inspections
3. Emergency Response

E. Burning in Furnaces/Industrial Boilers
   1. Permit Conditions
   2. Emissions Limits
   3. Continuous Emissions Monitoring System
   4. Inspections

IV. Management of Closed and Corrective Action Units

V. Preparedness, Prevention, and Emergency Response

A. Preparedness and Prevention Plan
B. Contingency Plan Implementation
C. Emergency Response Procedures
   1. Duties of Emergency Response Personnel
   2. Plant Alarms
   3. Evacuation Plan
D. Hazards of Managing Waste

VI. Regulatory Update

TABLE III.B.2
EXAMPLE RCRA TRAINING
PROGRAM MODIFICATION LOG SHEET

Hazardous Waste Permit Renewal Application
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Date	Section(s) of the Plan Involved	Description of Change
1 Apr 1997	Overall revision.	Updated general language throughout to include changes in management practices and to include the use of computer base training (CBT).
26 Mar 1998	Overall revision	Updated in response to Permit Renewal NOD.
16 Oct 1998	Minor revisions	Corrected typographical errors for submittal of Class 3 permit modification.
31 Dec 2009	Minor revisions	Updated for consistency with 2009 RCRA Permit Renewal Application.

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Hazardous Waste Permit Renewal Application

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Part B, Section III: Appendix III.C - Security Plan

APPENDIX III.C
SECURITY PLAN

Hazardous Waste Permit Renewal Application

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APPENDIX III.C
SECURITY PLAN

Hazardous Waste Permit Renewal Application
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1.0 BASIS FOR SECURITY PLAN

This plan provides a description of the security plan for the Ascend Performance Materials Texas Inc. (Ascend) facility as required by 40 Code of Federal Regulation (CFR) 270.14(b)(4). Subpart B of the 40 CFR Part 264 regulations establishes minimum permitting standards for the management and operation of facilities that process, store, or dispose of hazardous waste. Requirements of 40 CFR 270.14 and 30 Texas Administrative Code (TAC) 335.152(a) stipulate the information to be included in the Resource Conservation and Recovery Act (RCRA) application regarding plans and procedures to be implemented to protect public health, safety, and the environment. Plans must be in place at each hazardous waste management facility to prevent access of unauthorized persons to the facility.

2.0 SECURITY PROCEDURES

Access to the Ascend Chocolate Bayou Plant is monitored and controlled on a 24-hour basis by on-site security personnel. Perimeter fencing prevents unauthorized access to the active portion of the plant. As required, selected areas are marked with signs reading "Danger - Unauthorized Personnel Keep Out" to discourage inadvertent trespass onto the plant property.

The perimeter fence is interrupted with gates on the land side of the plant for vehicular access. These gates, the "Truck Gate" and the "Main Gate," as well as access to the plant through the administration building and along the Chocolate Bayou dock, are monitored by plant and security personnel, thus preventing unauthorized entry into the active portion of the plant.

Security personnel have available hand-held radios to facilitate the communication of and response to potential security problems. This response may include contacting other personnel as required or activating a plant-wide information alert system, as appropriate to the situation.

Units/Departments within the Chocolate Bayou Plant require personnel to enter operating areas through the area control room (see Figure III.2). Signs posted throughout the plant alert personnel of this requirement. Control rooms are also clearly marked. Control room personnel will clear non-operating personnel for entry using a standard “badge in/badge out” process. This ensures that only authorized personnel safely enter these operating areas.

Permitted hazardous waste management units are located within operating areas; therefore, access to these hazardous waste management units requires the same security measures. Active permitted hazardous waste management units are inspected on a regular basis per 40 CFR 264.14. Security devices are included in this regular inspection as provided on Table III.D of this application.

The Active Landfill (Permit Unit 02) and New Landfill (Permit Unit 16) are located away from the plant’s operating cluster; consequently, these units are surrounded by secure perimeter fencing, including a gate with lock. The landfills are also marked with the required signs noted above. The post-closure care plans for the landfills include

provisions for inspection and maintenance of the security fencing and signs for the duration of the post-closure care period.

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Part B, Section III: Appendix III.D - Inspection Plan

Contents

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- Table III.D - Inspection Schedule

APPENDIX III.D
INSPECTION PLAN

Hazardous Waste Permit Renewal Application

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APPENDIX III.D
INSPECTION PLAN

Hazardous Waste Permit Renewal Application
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1.2 Overview of Inspection Plan 1
2.0 Inspection Plan 1

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Attachment III.D.2 Example Repair and Remedial Action Log (RARAL)

APPENDIX III.D
INSPECTION PLAN

Hazardous Waste Permit Renewal Application
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1.0 SCOPE AND OBJECTIVES

1.1 Basis for Inspection Plan

Permitted hazardous waste management units on the Ascend Performance Materials Texas Inc. (Ascend) facility are inspected on a regular basis in accordance with the requirements of 40 CFR 264.15 for malfunctions and deterioration, operator errors, and discharges, which have the potential for release of hazardous waste constituents to the environment or may pose a threat to human health. Ascend has also developed a written schedule for inspecting other plant systems, such as monitoring equipment, safety and emergency equipment, and security devices. In addition to these general inspection requirements, the schedule incorporates inspection requirements applicable to specific unit types (i.e., Container Storage Areas, Tank Systems, and Landfills) as required by 40 CFR Part 264 Subparts I, J, and N. An inspection schedule and summary of facility units; possible errors, malfunctions, and evidence of deterioration reviewed during inspections; and the frequency of inspections is provided on Table III.D of this application.

1.2 Overview of Inspection Plan

The purpose of the inspection plan is to identify operator oversights, structure or equipment malfunctions and deterioration, and discharges which may be causing or lead to a release of hazardous waste constituents to the environment or a threat to human health or the environment.

2.0 INSPECTION PLAN

Plant personnel inspect active permitted hazardous waste management units for malfunction, deterioration, operator errors, and discharges, which may be causing or pose a potential to cause a release of hazardous waste constituents to the environment or a threat to human health. These inspections are conducted at the frequencies required by applicable regulations referenced in 40 CFR Part 264. Components of the Ascend Chocolate Bayou inspection plan are as follows.

The site landfills are inspected for the general areas of wind dispersal, bank area, run-on/runoff control systems, leachate collection/removal and security structures. Container storage areas are inspected for condition of containers, secondary containment, spills during loading/unloading, labels dated within the right timeframe, approved TCEQ/EPA codes, closure and access. Tanks are checked for evidence of leakage, checked for proper operation, corrosion and mechanical integrity and tank levels.

- *Recordkeeping:* Each periodic inspection is conducted in accordance with an inspection checklist and the results recorded on an inspection log. The inspection checklists contain a list of the components of each unit as well as indicators for each component which may be indicative of a non-compliant condition. The inspection logs and records of responses taken are kept at the Ascend Chocolate Bayou Plant for at least three years following the date of inspection. An example inspection log is provided as Attachment III.D.1.

- *Fire Equipment Inspection:* Ascend Chocolate Bayou Plant maintains other fire safety and emergency response equipment not explicitly regulated under RCRA. This equipment is inspected in accordance with Ascend Chocolate Bayou procedures.

- *Personnel Training:* Personnel assigned the duty of performing inspections under this plan are trained in the skills necessary to conduct inspections which meet the requirements of this section and prevent releases and threats to human health or the environment. Plant inspection procedures require that if an inspector observes a condition which may indicate a potential for a release, he or she must indicate this on the inspection checklist, make a note in the repair log for the unit, and initiate a Ascend work order to address the problem. Section 3 of this application describes the RCRA Training Program in further detail.

- *Response to Findings:* Ascend remedies any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action will be taken as soon as practicable. Any problems noted during inspections are recorded on the appropriate log sheet and further described on a Repair and Remedial Action Log (see Attachment III.D.2 for an example). Maintenance work orders are initiated immediately.

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APPENDIX III.D
INSPECTION PLAN

Hazardous Waste Permit Renewal Application
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TABLE

Table III.D Inspection Schedule

Table III.D – Inspection Schedule

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Closed Landfill (Permit Unit 01)	• Access and Perimeter Roads: Impeded access to groundwater monitoring wells and cap • Signs: Missing or illegible • Final Cover: Erosion, burrows, settlement/subsidence, ponded water, deep-rooted plans growing on cap • Site Drainage: Perimeter ditches contain blockages, slope not routing run-off off cap • Groundwater Monitoring Wells: Damage to well caps, surface casings, protective pads, or guard posts; wells not secured, wells deteriorating (e.g., silting in) • Elevation Benchmarks: Settlement or subsidence of landfill cap	Semiannually
	• Leachate Collection System: Evidence of excess leachate presence, evidence of malfunction	Monthly
Active Landfill (Permit Unit 02)	• Wind Dispersal Control: Deterioration, erosion • Run-On/Run-Off Control Systems: Deterioration, obstructions, erosion, slumping, animal burrows • Leachate Collection and Leak Detection Systems: Evidence of malfunction, amount of liquids removed greater than Action Leakage Rate (ALR).	Weekly and after storm events (active cell only)
	• Cap: Deterioration, cracks, cave-in, ponding • Banks: Deterioration, cracks, cave-in • Leachate Collection and Leak Detection Systems: Evidence of malfunction, amount of liquids removed greater than ALR	Weekly (closed cells only)

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Closed IWPF Surface Impoundment (Permit Unit 03)	• Access and Perimeter Roads: Impeded access to groundwater monitoring wells and cap • Security Fencing and Signs: Missing or illegible • Final Cover: Erosion, burrows, settlement/subsidence, ponded water, deep-rooted plans growing on cap • Site Drainage: Perimeter ditches contain blockages, slope not routing run-off off cap • Groundwater Monitoring Wells: damage to well caps, surface casings, protective pads, or guard posts; wells not secured, wells deteriorating (e.g., silting in) • Elevation Benchmarks: settlement or subsidence of landfill cap	Semiannually
IWPF Tanks (Permit Units 08 and 09)	• Overfill Control Equipment: Malfunction • Above Ground Tank Exterior: Corrosion, leaks • Data Gathered from Monitoring and Leak Detection Equipment: tank system malfunction • Tank Construction Materials and Area Immediately Surrounding Externally Accessible Portion of Tank System: Corrosion, erosion or signs of release (e.g., wet spots) • Secondary Containment: Cracks, corrosion, deterioration • Secondary Containment Area: Accumulated precipitation • Piping and Valves: Leaks, corrosion	Daily
	• Corrosion Protection System: Readings from electrical resistance probes indicate corrosion rate has exceeded allowable rate for tank design thickness	Monthly
AN Boilers 30H5 and 31H4 (Permit Units 11 and 12)	• Boilers, Pumps, Valves, and Piping: Presence of leaks, spills, fugitive emissions, evidence of tampering • CO and O_2 CEMS: Calibration check and system audit	Daily
	• Automatic Waste Feed Cutoff and Alarms: Operation malfunction	Weekly (when burning hazardous waste)
	• CO and O_2 CEMS: Calibration error test	Quarterly
	• CO and O_2 CEMS: Calibration drift test, response time test, and alternative relative accuracy test per 40 CFR Part 266, Appendix IX, Sections 2.1.9, 2.1.10.1, 2.1.4.2, and 2.1.4.5	Annual

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Outdoor Container Storage Area (Permit Unit 13)	• Loading/Unloading Areas: Spills • Secondary Containment Area: Spills • Secondary Containment Area: Accumulated precipitation	Daily (during loading/unloading)
	• Storage Areas: Leaking containers • Containers: Deterioration, labels illegible	Weekly
New Landfill (Permit Unit 16; proposed)	• Wind Dispersal Control: Deterioration, erosion • Run-On/Run-Off Control Systems: Deterioration, obstructions, erosion, slumping, animal burrows • Leachate Collection and Leak Detection Systems: Evidence of leachate presence, evidence of malfunction, amount of liquids removed greater than Action Leakage Rate (ALR)	Weekly and after storm events (active cell only)
	• Cap: Deterioration, cracks, cave-in, ponding • Banks: Deterioration, cracks, cave-in • Leachate Collection and Leak Detection Systems: Evidence of malfunction, amount of liquids removed greater than ALR	Weekly *(closed cells only)*
Solids Handling Unit Filtrate Tank 1; Decant Tank 2; Mix Tanks 3, 4, 5, and 6 (Permit Unit Nos. 17-22)	• Overfill Control Equipment: Malfunction • Tank Exteriors: Corrosion, leaks • Data Gathered from Monitoring and Leak Detection Equipment: tank system malfunction • Tank Construction Materials and Area Immediately Surrounding Externally Accessible Portion of Tank System: Corrosion, erosion or signs of release (e.g., wet spots) • Secondary Containment: Cracks, corrosion, deterioration • Secondary Containment Area: Accumulated precipitation • Piping and Valves: Leaks, corrosion • Loading/Unloading Areas: Spills	Daily (when waste is being processed)
Outdoor Container Storage Area 2 (Permit Unit 23; proposed)	• Loading/Unloading Areas: Spills • Secondary Containment Area: Spills • Secondary Containment Area: Accumulated precipitation	Daily (during loading/unloading)
	• Storage Areas: Leaking containers • Containers: Deterioration, labels illegible	Weekly

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Emergency Response/Safety Equipment	• Alarm Systems: Power failure, verified • Emergency Eyewash/Showers: Water pressure, leakage, drainage	Monthly
	• Fire Protection Equipment: Fire extinguishers.	Monthly
	• Spill Control Equipment, Stores Location: Absorbent socks/snakes, absorbent pads, and absorbent booms.	• Consumables are checked at least monthly and after each use • Equipment checked per manufacturer's specifications
	• Spill Control Equipment, Manufacturing and Process Areas (as needed for each area): Booms, absorbent material (kitty litter), absorbent socks/snakes, spill kits (comprised of Overpacks, plastic and metals drums, spill booms and pads, soda ash, vermiculite and kitty litter), soda ash (for neutralization), vacuum trucks, HAZMAT suits, PPE, caustic (for neutralization), water supply for removing neutralization agents.	• Consumables are checked at least monthly and after each use • Equipment checked per manufacturer's specifications
	• Decontamination Equipment: HAZMAT decon stations (comprised of water, scrubbers, collection vessels/buckets), soda ash/caustic for neutralization, soap, water supply, steam source, and high-pressure water.	• Consumables are checked at least monthly and after each use • Equipment checked per manufacturer's specifications
	• Self-Contained Breathing Apparatus: Tank empty, delivery system, quantity	Monthly/after use
	• Respirators/Gas Masks: Seals, valves, appropriate quantity and sizes	Annually, after use
Security	• Fence: Breach, damage • Gates: Damage, operable • Warning Signs: Deterioration, missing, illegible	Monthly

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APPENDIX III.D
INSPECTION PLAN

Hazardous Waste Permit Renewal Application
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ATTACHMENT

Attachment III.D.1	Example RCRA Inspection Log Sheet
Attachment III.D.2	Example Repair and Remedial Action log

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APPENDIX III.D
INSPECTION PLAN

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ATTACHMENT III.D.1

Example RCRA Inspection Log Sheet

RCRA INSPECTION LOG SHEET

332T1-1 & 2 TANK SYSTEM

RCRA Containment Area to 336P13-1&2 (including the 332S1 settlers Seal Port only)

INSTRUCTIONS

(Refer to ECU unit work practices LOG-144.05 and LOG-144.06 for RCRA log details)

(1) Complete form daily.
(2) Visually observe each item on the check list.
(3) If no problem is observed, check (✓) the appropriate section. If a problem is noted, indicate with "PN" (problem noted).
(4) Describe the problem noted (PN) using the Repair and Remedial Action Log (RARAL).
(5) Indicate the corrective actions and timing necessary to repair the PN in the proper section of the RARAL. Initiate SAP notifications (Priority 1) immediately.
(6) Indicate date and status of corrective action in the proper section of the RARAL.

GENERAL	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
NAME OF INSPECTOR (First initial & full last name)							
DATE							
TIME (Military)							
CHECK FOR EVIDENCE OF LEAKAGE							
INSTRUMENTATION							
PIPING, VALVES, FLANGES (332T1-1)							
PIPING, VALVES, FLANGES (332T1-2)							
PIPING, VALVES, FLANGES (from tank to 332P1's)							
PIPING, VALVES, FLANGES (from 332P1's to north dike wall)							
PIPING, VALVES, FLANGES (from north dike wall to 336P13's)							
PUMP (336P13-1)							
PUMP (336P13-2)							
TANK SHELL (332T1-1)							
TANK SHELL (332T1-2)							
DIKE (includes walls, flooring & sumps)							
CHECK FOR PROPER OPERATION, CORROSION, & MECHANICAL INTEGRITY							
PIPING, VALVES, FLANGES (332T1-1)							
INSTRUMENTATION							
PIPING, VALVES, FLANGES (332T1-2)							
PIPING, VALVES, FLANGES (from 332P1's to north dike wall)							
PIPING, VALVES, FLANGES (from north dike wall to 336P13's)							
PUMP (336P13-1)							
PUMP (336P13-2)							
OVERFLOW PROTECTION							
LEVELS							
332T1-1							
332T1-2							
332S1s Tank Cover, Tank Flanges, Manways, Seals							
332S1s Seal Pot water level at required level? If not add water							

RCRA/RML INSPECTION LOG SHEET
HAZARDOUS WASTE LANDFILL-PERMIT UNIT #2
(Active) MTR FML/Clay-Lined Landfill
NOR FACILITY NO. 51 **CELL #5** (Opened)

INSTRUCTIONS

(Refer to ECU unit work practices LOG-144.05 and LOG-144.06 for RCRA log details)

(1) Complete form weekly and Monday after a weekend storm.
(2) Visually observe each item on the check list.
(3) If no problem is observed, check (☒) the appropriate section. If a problem is noted, indicate with PN.
(4) Describe the problem noted (PN) using the Repair and Remedial Action Log (RARAL).
(5) Indicate the corrective actions and timing necessary to repair the PN in the proper section of the RARAL. Initiate MWO's immediately.
(6) Indicate date and status of corrective action in the proper section of the RARAL.

GENERAL	Week 1	Week 2	Week 3	Week 4	Week 5	Description of PN
NAME OF INSPECTOR (First initial & full last name)						
Date						
Time (Military)						
Rainfall in last 24 hrs. (Y/N)						
WIND DISPERSAL						
Deterioration/erosion						
BANK AREA						
Deterioration						
Cracks						
Cave-ins						
Grass cover/vegetative cover						
Other (note)						
RUNON/RUNOFF CONTROL SYSTEM						
Deterioration/erosion						
Slumping						
Animal Burrows						
Grass cover/vegetative cover						
Improper operation						
LEACHATE COLLECTION/REMOVAL						
Evidence of Leachate Presence						
Evidence of Malfunction						
Other (note)						
SECURITY STRUCTURES(Monthly Only)						
Fence - Breach, Damage						
Gates - Damage, Operable						
Warning Signs -Deterioration, Missing, Legible						

<90 day

RCRA INSPECTION LOG SHEET
HAZARDOUS WASTE CONTAINER STORAGE AREA
LESS THAN 90 DAYS STORAGE
NOR FACILITY NO. 61

MONTH_____

INSTRUCTIONS

(Refer to ECU unit work practices LOG-144.05 and LOG-144.06 for RCRA log details)

(1) Complete form weekly.
(2) Visually observe each item on the check list.
(3) If no problem is observed, check (✓) the appropriate section. If a problem is noted, indicate with PN.
(4) Describe the problem noted (PN) using the Repair and Remedial Action Log (RARAL).
(5) Indicate corrective actions and timing needed to repair the PN in the proper section of the RARAL. Initiate notifications immediately.
(6) Indicate date and status of corrective action in the proper section of the RARAL.

GENERAL	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5
NAME OF INSPECTOR (First initial & full last name)					
DATE					
TIME (Military)					
CONDITION OF CONTAINERS					
Deterioration					
Bulging/Dents					
Leaks, seeps, wet spots					
Labels present & legible					
Leaking Containers					
OTHER REQUIREMENTS					
Labels dated within 90 days					
Approved TCEQ/EPA codes					
Containers are closed					
Access to all containers (at least 30" between pallets)					
SECONDARY CONTAINMENT					
Container Integreity					
Deterioration					
LOADING/UNLOADING					
Spills - Daily					

ECU Satellite Accumulation Areas
HAZARDOUS WASTE CONTAINER STORAGE AREA
SAAs: COD/Hg waste; NAPLs from RFI; PPE contaminated with NAPLs from RFI, aerosol cans, fluorescent bulbs
336 T1s - Spent filters, 336T2s - Solids and debris, 328 area (east of fin fans)

INSTRUCTIONS

(Refer to ECU unit work practices LOG-144.05 and LOG-144.06 for RCRA log details)

(1) Complete form weekly.
(2) Visually observe each item on the check list.
(3) If no problem is observed, check (▤) the appropriate section. If a problem is noted, indicate with PN.
(4) Describe the problem noted (PN) using the Repair and Remedial Action Log (RARAL).
(5) Indicate corrective actions and timing needed to repair the PN in the proper section of the RARAL. Initiate notifications immediately.
(6) Indicate date and status of corrective action in the proper section of the RARAL.

GENERAL	Week 1	Week 2	Week 3	Week 4	Week 5
NAME OF INSPECTOR (First initial & full last name)					
DATE					
TIME (Military)					
CONDITION OF CONTAINERS					
Corrosion					
Bulging/Dents					
Leaking/Seeping					
Labels present & legible					
All full containers removed & replaced					
Other observations (note)					
OTHER REQUIREMENTS					
Approved TCEQ/EPA codes					
TCEQ numbers listed on labels					
Containers are closed					
Area clean of all trash & debris					
Access to all containers (at least 30" between pallets)					

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APPENDIX III.D
INSPECTION PLAN

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ATTACHMENT III.D.2

Example Repair and Remedial Action log

Repair And Remedial Action Log (RARAL)

INSTRUCTIONS

1. **Fill out completely for each event, in black ink.**
2. **Attach/Secure to appropriate inspection log when the proper actions are completed.**
3. **Logs and RARAL's are filed in the ECU Department for 3 years.**

DATE PROBLEM NOTED _____

AREA IDENTIFICATION or EQUIPMENT NO. _ _____

DESCRIPTION OF PROBLEM(S) NOTED

_____

_____

_____

_____

_____

_____

REPAIRS OR REMEDIAL ACTION REQUIRED

_____

_____

_____

_____

_____

_____

Date Repairs Completed	Description of Action Taken	Name of Person Responsible for Repairs (Print & Signature)

AMF 7/6/05

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Part B, Section III: Appendix III.E - Contingency Plan

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APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application

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APPENDIX III.E
CONTINGENCY PLAN

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Attachment III.E.2 Integrated Contingency Plan

APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application
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1.0 SCOPE AND OBJECTIVES

1.1 Basis for Contingency Plan

This Contingency Plan provides information on emergency response plans and capabilities at the Ascend Performance Materials Texas Inc. (Ascend) facility as required under 40 Code of Federal Regulation (CFR) 270.14(b)(7). Requirements of 40 CFR 270.14 and 30 Texas Administrative Code (TAC) 335.152(a) stipulate the information to be included in the Hazardous Waste Permit application regarding plans and procedures to be implemented to protect public health, safety, and the environment. Plans must be in place at each hazardous waste management facility to prevent releases of hazardous wastes or waste constituents to the environment.

1.2 Overview of Contingency Plan

This Contingency Plan summarizes emergency preparedness measures and outlines actions to be taken in response to fires, explosions, or unplanned sudden or non-sudden releases of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. In addition, this plan summarizes the obligations of individuals having primary responsibility for implementation and coordination of emergency response activities.

Detailed written emergency response and notification procedures (e.g., the Spill Prevention Control and Countermeasure Plan, SPCC) are maintained at the Ascend Chocolate Bayou Plant and updated as required. The SPCC and the Contingency Plan are part of an overall plant Integrated Contingency Plan (ICP) which incorporates hazardous waste management provisions. This plan, like many key plant procedures, contains information which requires frequent updates, consequently, updated plans and procedures are kept at the plant site and are available for review at any time.

1.3 Contingency Plan Distribution

Copies of the Contingency Plan and revision history are maintained in the Ascend plant files and will be made available to authorized representatives of the Texas Commission on Environmental Quality (TCEQ) and U.S. Environmental Protection Agency (EPA) upon request. Copies have been supplied to those local authorities with whom arrangements have been made to provide support during hazardous waste emergencies (see Table III.E.1 of this application).

1.4 Amendment of Contingency Plan

Each time this Contingency Plan is amended, the change is noted on a log sheet maintained at the Ascend Chocolate Bayou Plant. Copies of the revised document are sent to affected local authorities. The Contingency Plan is reviewed and revised, if necessary, per 40 CFR 264.54.

2.0 PERSONNEL

2.1 Emergency Response Personnel

In order to respond effectively to an emergency situation at the Ascend Chocolate Bayou Plant, responsibilities have been defined for persons who may be on the plant. Responsibilities of principal plant personnel active in responding to an emergency are summarized below:

- *Incident Commander (IC):* The IC manages response activities in the immediate vicinity of the emergency and is in charge of actions taken until the event no longer poses a threat to facility operations or personnel. The IC also directs the relocation of standby personnel such that they are not in a danger area.

- *Emergency Operations Coordinator (EOC)*: The EOC provides a communication link between the IC and other personnel on the facility and in the neighboring community. Individuals who serve as the EOC are familiar with the RCRA Contingency Plan, operations and activities at the facility, the location and characteristics of waste handled, the location of facility records, and the facility layout. The EOC has the authority to commit the resources needed to carry out the Contingency Plan and emergency procedures. This includes the authority to shut down and restart production facilities and evacuate plant personnel if necessary to effectively respond to an emergency condition. Names, addresses and telephone numbers for the personnel who may act as the EOC are maintained in the plant records.

- *Emergency Response Team (ERT)*: The Chocolate Bayou Plant employs an around-the-clock volunteer crew of first responders known as the ERT. This crew is composed of processors who are trained as firefighters. In addition, the ERT includes Emergency Care Attendants (ECAs), Emergency Medical Technicians (EMTs), and rescue personnel. The ERT is also trained in hazardous materials and hazardous waste management. ERT members report to the scene of an emergency to perform duties assigned in the plant ICP. The ERT operates under the direction of the plant's IC.

- *Plant Security Personnel*: During an emergency, plant security personnel provide direction and communication support to the IC and perform other duties as described in the Facility Security Plan (FSP).

2.2 Arrangements with Local Authorities

The Ascend Chocolate Bayou Plant is located in a remote area with a relatively low population density. The plant is equipped with fire and ambulance equipment, personnel trained in the use of this equipment, and communications and alarm systems. Owing to the on-site response capabilities of the plant, the need for outside assistance is unlikely in the event of an emergency. However, if additional response capabilities are needed, assistance is available through the Brazoria County Mutual Aid Organization, a group consisting of local municipal departments coordinated by the Brazoria County Sheriff's Department (see Attachment III.E.1). Table III.E.1 identifies the various organizations that have agreed to provide emergency assistance.

In addition, the plant is an active member of the Chocolate Bayou Mutual Aid System, a local industrial group which provides for the sharing of emergency response equipment and manpower during emergencies. Neighboring manufacturing facilities and Ascend ERTs all participate in this joint endeavor. A copy of the Mutual Aid Overview is maintained in the plant records.

2.3 Emergency Response Training

Hazardous waste and emergency response training of plant personnel are detailed in the plant RCRA Training Outline. Topics covered in this outline include emergency response equipment and procedures, communications systems, and inspection requirements. Additional details regarding RCRA training materials can be found in Section 2 of this application. In addition, Ascend Chocolate Bayou Plant ERT members attend annual HAZMAT training. Copies of the training materials are kept in the plant files of the Ascend Chocolate Bayou Plant.

3.0 EMERGENCY RESPONSE PROCEDURES

Facility procedures provide for notification of Ascend personnel, contractor personnel, and visitors in the event of a hazardous waste emergency (e.g., a release, fire, or explosion). In addition, procedures have been established to respond to such an emergency (see Attachment III.E.2).

Established Ascend Chocolate Bayou Contractor and Guest Environmental Safety Health (ESH) guidelines require that any person entering the plant receives a minimum level of training pertaining to the plant's safety practices. At a minimum, all visitors will be given:

- A site orientation that specifies the site emergency plans, minimum protective equipment, and other general safety rules pertinent to emergency response and personnel protection.
- An orientation and proficiency verification repeated at least annually.
- A facility pass to indicate complete site orientation and proficiency verification.
- A certified plant representative contact. This contact authorizes site entry.

Plant security personnel maintain records of all visitors to the site, including name, company, date of visit, and certified site representative authorizing site entry. These records are stored in the plant's ESH Department.

The plant employs a telephone or radio-activated coded emergency alarm system to alert plant personnel to the existence of an emergency condition and provide additional information regarding response and evacuation (see Figure III.E.1). When the alarm sounds, the IC takes charge of actions implemented until the event is no longer a threat to plant operations or personnel, and the EOC reports to a central location to coordinate emergency efforts. Other personnel report to designated assembly areas, which are equipped with information alert radio systems (see Figure III.E.1). A response crew composed of designated personnel (e.g., safety technicians, and fire crew from operating units) reports to the scene.

The nature and location of the emergency and any actions necessary to deal with the emergency are broadcast over plant radio systems. If evacuation is necessary, appropriate instructions are given to affected areas regarding precautions to be taken and evacuation routes for each assembly area. Evacuation routes are determined after considering the location of the emergency relative to each assembly area and wind direction and speed. The plant radio system is used to sound the all-clear signal after the emergency situation is resolved.

4.0 NOTIFICATION PROCEDURES

If assessment indicates that evacuation of areas adjacent to the plant may be advisable, affected local authorities are immediately notified by telephone or other effective method. The EOC remains available to help appropriate officials decide whether local areas should be evacuated.

The TCEQ, EPA, and other agencies are notified of hazardous waste releases in accordance with applicable plant procedures and regulatory provisions set forth in 40 CFR Part 302, 40 CFR 264.56(a) and (d), 30 TAC 335.153, and 30 TAC 327.3. Ascend submits written reports to the appropriate regulatory agencies in accordance with the requirements of 40 CFR 264.56(j) and 30 TAC 335.153.

5.0 EMERGENCY EQUIPMENT

5.1 Fire-Protection Equipment

The Ascend Chocolate Bayou Plant has a fire pumping station with a total capacity of at least 20,000 gallons per minute (gpm). Mobile plant firefighting equipment includes a pumper truck, two foam trucks, and a utility truck. Two ambulances, meeting Texas State Firemen and Fire Marshals requirements, are maintained on-site to treat and transport injured personnel. Fire protection equipment currently maintained on site is listed on Table III.E.3 of this application, and the equipment locations are shown on Figure III.E.2. The plant has been designed with sufficient aisle space between plant components to allow emergency equipment ready access to major areas of the plant.

5.2 Spill Control Equipment

Spills or releases of hazardous wastes which may enter drainage ditches are managed by containment structures in the ditches (e.g., valved dams). Collected materials are removed by vacuum trucks or other appropriate means for subsequent treatment or disposal in a permitted hazardous waste management facility. Sudden releases of hazardous wastes to the air are controlled with foam or with fog spray.

Table III.E.4 describes possible emergency situations associated with the hazardous management facilities within the plant and gives guidelines for appropriate response measures. The responses shown are only a general guide and should not be a substitute for clear logical decision-making during a hazardous waste emergency.

5.3 Decontamination Equipment

The ERT has a high side delivery type van which has been equipped with shelving and compartments for carrying various decontamination equipment. The available equipment is sufficient to implement an effective “zone type” decontamination. The ERT van is equipped at a minimum with the following decontamination equipment:

- Scrub brushes - long and short handle;
- Shovel;
- Various plastic containers;
- Portable sprayer;
- Various plastic materials (i.e., bags, roll of plastic liner, booms, tubs and wading pools);
- Drying materials (i.e., towels, paper);
- Coveralls;
- HAZMAT chemicals for alkaline and acid spills; and
- Detergent.

Equipment or vehicles that have come into contact with hazardous waste are decontaminated to avoid transferring hazardous waste to other areas of the plant. Methods of decontamination include, but are not limited to, dry removal of solids, steam cleaning, and pressure washing. Solid waste residues generated by the decontamination process are managed as industrial solid or hazardous wastes and placed in the on-site landfill for disposal. Decontamination rinsate is collected and disposed in the on-site underground injection wells or transferred off-site for disposal at a permitted facility.

5.4 Communications and Alarms

Personnel involved in the handling of hazardous waste have immediate access to an alarm or emergency communications device, either directly or through visual or voice contact with another employee. Each operating unit has access to a communication system. Phones are located throughout the plant and are labeled with instructions for reporting a Fire or Spill Alarm.

Safety showers are located throughout the plant and designated with a green light. Use of any safety shower activates an alarm in one of the processing or support unit control rooms, triggering an incident investigation by trained personnel.

6.0 WASTE MANAGEMENT

Records relating to hazardous waste and hazardous waste emergencies are maintained at the Ascend Chocolate Bayou Plant and are readily accessible to the EOC and to TCEQ and EPA representatives upon request.

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APPENDIX III.E
CONTINGENCY PLAN

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TABLES

Table III.E.1 Arrangements with Local Authorities
Table III.E.2 Emergency Coordinators
Table III.E.3 Emergency Equipment
Table III.E.4 Example Emergency Response Scenarios

Table III.E.1- Arrangements with Local Authorities

Police

Address	Brazoria County Sheriff's Department 111 East Locust Street, Angleton, TX 77515
Person Contacted	Sheriff Bo Stallman
Phone Number	(979) 849-5711
Agreed Arrangements	The Sheriff's Department will handle traffic control and emergency evacuation of areas outside of the plant boundaries.

Fire

Address	Chocolate Bayou Plant Emergency Response Team (on-site)
Person Contacted	Greg Blanchard, Senior Site Director
Phone Number	(281) 228-4201
Agreed Arrangements	The plant Emergency Response Team provides 24-hour emergency response services.

Hospital

Address	Memorial Hermann Southeast Hospital 11800 Astoria Blvd, Houston, TX 77089
Person Contacted	Emergency Room Manager
Phone Number	(281) 929-6100
Agreed Arrangements	The hospital has agreed to administer prompt medical attention to injured personnel.

Other

Organization Name	UTMB Health Angleton Danbury Hospital Campus
Address	132 East Hospital Drive, Angleton, TX 77515
Person Contacted	Hospital Director
Phone Number	(979) 849-7721
Agreed Arrangements	The medical center has agreed to administer prompt medical attention to injured personnel.

Table III.E.2 - Emergency Coordinators

Name	Home Address	Office Phone(s) and/or Pager	Home Phone(s)
Primary			
Primary Kevin Adams	6610 FM 2917 Alvin, TX 77512	281-228-4975 (office) 979-349-9194 (cell)	No home phone

Name	Home Address	Office Phone(s) and/or Pager	Home Phone(s)
Alternate Kenny Polston	6610 FM 2917 Alvin, TX 77512	281-228-4970 (office) 979-864-0745 (cell)	No home phone
Alternate			

Table III.E.3- Emergency Equipment

Equipment	Location	Physical Description	Capability
Emergency Communications System	Plant-wide	Code horns accessed by plant phone systems	Alerts personnel of location of fire or spill
Plant Firewater System	Plant-wide	Storage, pumping, distribution systems	1.2M gal water; 20,500 gpm; 125 psi + reverse
Pumper Truck	Fire station	1,500 gpm pumper	Will mix foam concentrate with water to extinguish fires
Foam Truck	Fire station	2,000 gpm pump; 1000 gal foam concentrate	Will mix foam concentrate with water to extinguish fires
Foam Ladder Truck	Fire Station	2,000 gpm pump; 500 gal foam concentrate aerial ladder	Will mix foam concentrate with water to extinguish fires
Emergency Rescue Truck	Fire Station	Heavy-duty truck with rescue equipment	Transport of personnel, emergency and rescue equipment
Two Ambulances	Medical department	Box-type units equipped in accordance with trade association standards	For emergency medical treatment and transport
Alcohol-Type Foam	Safety Storage Area	> 4,000 gal (stable over alcohol)	For fighting any chemical fire, especially polar materials (i.e., acrylonitrile, hydrogen cyanide, alcohol)
Fire Extinguishers	Plant-wide	10, 20, 30-lb, Class ABC	Extinguish small fires
Fire Extinguishers	Plant-wide	Carbon Dioxide	Extinguish electrical fires
Safety Shower/Eye Wash	Plant-wide	Emergency shower and eye wash stations	Personnel decontamination
Self-Contained Breathing Air Packs	Plant-wide	Cylinder with 30 min. of air supply	Entry to specific areas and located on all fire trucks

Equipment	Location	Physical Description	Capability
Plant Radio System	Plant-wide	--	Communication with personnel
Portable Phones	Plant-wide	--	Communication with internal personnel and outside agencies
Fax Machines	Plant-wide	--	Receive and send any data on or off-site that may be useful when responding to a release
Portable, Hand-Held Equipment	Plant-wide	--	For communication purposes
Decontamination Equipment	Emergency Rescue Truck	Scrub brushes; shovel; plastic containers; portable sprayer; liner materials (i.e., bags, tubs and wading pools); absorbent materials (i.e., towels, paper); coveralls; detergent.	To clean up and/or decontaminate spills.
Spill Control Materials	Warehouse	Spill pads, booms, and chemicals for acid spills	To clean up spills

TABLE III.E.4
EXAMPLE EMERGENCY RESPONSE SCENARIOS

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

Tanks: Fire or Explosion

Emergency	• Fire or explosion
Detection	• Witness
Alarm	• Report fire and spill alarm. If personnel outside affected area are endangered, Incident Commander (IC) will activate Integrated Contingency Plan (ICP).
Response	• Identify contents of tank. • Extinguish fire using procedures appropriate to the contents. • Suppress hazardous vapors with foam or fog if necessary. • Transfer contents of tanks as appropriate to stop spillage. • If release not held within diked containment, build temporary dikes, trenches or sumps to prevent spread of waste.
Clean up	• Clean up options for liquid wastes depend on the nature and characteristic of the material. First priority is to remove the material back to the process or temporary storage if possible. Second priority is to remove the material by vacuum truck to on-site treatment facilities or, if necessary, manifest to off-site facilities. • Collect solid wastes, contaminated soil with earth moving equipment. Sample and analyze wastes and residues for hazardous waste characterization, if appropriate. Evaluate disposal options for waste materials. Decontaminate equipment by appropriate methods.
Correction	• Depends on type of damage.
Report	• Report as necessary to the appropriate regulatory agencies.

Tanks: Major Rupture or Overflow

Emergency	• Sudden release of hazardous waste to soil.
Detection	• Witness, level alarm, pooling within diked containment, or unusual flow in ditches.
Alarm	• Evacuate area of personnel endangered, stop work in area. • If held in diked containment, not releasing fumes, report to manufacturing personnel. • If large, uncontrollable, or fuming release, report using fire and spill alarm. If personnel outside affected area are endangered, IC will activate ICP.
Response	• Identify contents of tank. • Suppress hazardous vapors with foam or fog if necessary. • Remove tank from service.

TABLE III.E.4
EXAMPLE EMERGENCY RESPONSE SCENARIOS

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

		• If release not held within containment dikes, build temporary dikes, trenches, or sumps to prevent spread of waste.
	Clean up	• Clean up options for liquid wastes depend on the nature and characteristics of the material. First priority is to remove the material back to the process or temporary storage if possible. Second priority is to remove the material by vacuum truck to on-site treatment facilities. Collect solid wastes, contaminated soil with earth moving equipment. Sample and analyze wastes and residues for hazardous waste characterization, if appropriate. Evaluate disposal options for waste materials. Clean up equipment, collect wastes generated, and transport to appropriate disposal/treatment facilities.
	Correction	• If structural failure, decontaminate, repair, and test. • If mechanical or control failure, repair or replace component and test. • If overflow, correct cause of overflow and test.
	Report	• Internally evaluate cause, detection, response, clean up, and corrections. • Internally evaluate adequacy of contingency plan and emergency procedures; amend if necessary. • Report as necessary to the appropriate regulatory agencies.
Tanks:	**Minor Leak**	
	Emergency	• Non-sudden release of hazardous waste to soil.
	Detection	• Routine inspection, pooling or soft spots in soil.
	Alarm	• Report to manufacturing personnel. • Stop work in area.
	Response	• Remove tank from service. • Stop leak or empty tank.
	Clean up	• Clean up options for liquid wastes depend on the nature and characteristics of the material. First priority is to remove the material back to the process or temporary storage if possible. Second priority is to remove the material by vacuum truck to on-site treatment facilities or if necessary, manifest to off-site facilities. • Collect contaminated soil with earth moving equipment. Sample and analyze wastes and residues for hazardous waste characterization, if appropriate. Evaluate disposal options for waste materials. Clean up equipment, collect wastes generated, and transport to appropriate disposal/treatment facilities.
	Correction	• If structural failure, decontaminate, repair, and test. • If mechanical failure (i.e., leaking valve or fitting) repair or replace component.

TABLE III.E.4
EXAMPLE EMERGENCY RESPONSE SCENARIOS

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

	Report	• Report as necessary to the appropriate regulatory agencies.

Tanks: On-site Transportation Accident

	Emergency	• Sudden release of hazardous waste to soil.
	Detection	• Witness.
	Alarm	• Report to manufacturing personnel.
	Response	• Confirm contents of tank. • Suppress hazardous vapors with foam or fog if necessary. • Stop leak or empty truck. • Build temporary dikes, trenches or sumps to prevent spread of waste.
	Clean up	• Collect liquid waste with vacuum truck, manifest, and haul to off-site hazardous waste treatment facility or manage on-site. • Collect contaminated soil with earth moving equipment. Sample and analyze wastes and residues for hazardous waste characterization, if appropriate. Evaluate disposal options for waste materials.
	Report	• Report as necessary to the appropriate regulatory agencies.

Tanks: Loading/Unloading Spill

	Emergency	• Sudden release of hazardous waste to soil.
	Detection	• Witness.
	Alarm	• Report to manufacturing personnel.
	Response	• If spill is outside containment, build temporary dikes or trenches to prevent spread of waste.
	Clean up	• If spilled on non-pavement surface, remove all contaminated soil. Sample and analyze wastes and residues for hazardous waste characterization, if appropriate. Evaluate disposal options for waste materials.
	Report	• Record in operating log. • Report as necessary to the appropriate regulatory agencies.

Tanks: Major Vapor Escape

	Emergency	• Sudden release of hazardous wastes to air.
	Detection	• Odor, alarm, witness.

TABLE III.E.4
EXAMPLE EMERGENCY RESPONSE SCENARIOS

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

	Alarm	• Evacuate immediate and affected area. • Report using fire and spill alarm. If personnel outside affected are endangered, IC will active ICP.
	Response	• Confirm contents of tank. • If vapor released due to mechanical failure, suppress vapor with fog, stop release by isolating mechanical element. • If vapor release from liquid surface, cover surface with foam, determine cause of release, and correct. • Remove tank from service.
	Correction	• If structural failure, decontaminate, repair, and test. • If mechanical or control failure, repair or replace component and test.
	Report	• Internally evaluate cause, detection, response, clean up, and correction. • Internally evaluate adequacy of contingency plan and emergency procedures; amend if necessary. • Report as necessary to the appropriate regulatory agencies.
Tanks:	**Minor Vapor Escape**	
	Emergency	• Non-sudden release of hazardous wastes to air.
	Detection	• Odor, routine inspection.
	Alarm	• Report to manufacturing personnel. • Stop work in immediate area affected downwind areas.
	Response	• Stop leak or empty tank.
	Correction	• If structural failure, decontaminate, repair, and test tank. • If mechanical or control failure, repair or replace component. • Resume operations.
	Report	• Report as necessary to the appropriate regulatory agencies.
Process Upset:	**Management of Deluge Water**	
	Emergency	• Deluge water becomes contaminated
	Detection	• Witness
	Alarm	• Report to manufacturing personnel • Report to wastewater treatment personnel
	Response	• Isolate contaminated wastewater to ensure it doesn't reach the diversion pond or spill pond

TABLE III.E.4
EXAMPLE EMERGENCY RESPONSE SCENARIOS

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

Correction	• If structural failure, decontaminate, repair, and test tank. • If mechanical or control failure, repair or replace component. • Resume operations.
Report	• Report as necessary to the appropriate regulatory agencies.

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APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

FIGURES

Figure III.E.1 Plant Alarm Code
Figure III.E.2 Emergency Equipment Locations

Property Boundary

CHOCOLATE BAYOU

BARGE CANAL

1–2-1
1–1–4
1–1–3
1–1–2
1–1–1
1–1–5
2–1–5
2–3–4
4–1–5
4–2–5
4–3–3
5–3–4
5–3–2
5–3–1
3–3–3
5–5–5
5–3–3
2–1–4
2–2–4
3–1–4
4–1–4
4–2–4
5–2–5
2–1–3
2–2–3
2–3–3
3–1–3
3–2–3
4–1–3
4–2–3
5–1–2
5–1–3
5–1–1
5–2–2
5–1–5
5–1–4
5–2–3
2–2–2
2–3–2
3–1–2
3–2–2
4–1–2
4–2–2
4–3–2
4–4–2
4–4–3
2–2–1
2–3–1
3–2–5
3–2–1
4–1–1
4–2–1
4–3–1
2–1–2
2–1–1
3–2–4
3–1–1
4–4–1
5–2–4
5–2–1

EQUISTAR
ASCEND
5–3–3

"G" Street Ditch
F Street Ditch
North Ditch
Ditch
Dock Street
Thirteenth Street
Twelfth Street
Eleventh Street
Tenth Street
Ninth Street
Eighth Street
Seventh Street
Sixth Street
Monsanto Street
F Street
E Street
D Street
C Street
B Street
"A" Street
G Street
South B Street
South C Street

Dock No.4 Loading/ Unloading
Dock No.3 Loading/ Unloading
Dock No.2 Loading/ Unloading
Dock No.1 Loading/ Unloading
Dock No.5 Loading/ Unloading

ENVIRONMENTAL CONTROL/UTILITIES UNIT
SORBIC ACID UNIT
SAB UNIT
FORMER ENVIRONMENTAL CONTROL UNIT
ORMER PHENOL UNIT
AN UNIT
DPO/ FORMALIN UNIT
IDA/INTA UNIT
DISTRIBUTION UNIT
MHBA UNIT

Loading/Unloading Area
Underground Storage Tank Location
Cooling Tower No. 3
Cooling Tower No.4
IWPF Tanks
Storm Pond
EQ. Pond
Spill Pond
Biosludge Pond
Aeration Basins
Channel Outfall Ditch
Outfall Dam
MHBA Ditch
Stores Warehouse
Safety/Hygiene Dept'l.
Engineering Bldg
Administration
Main Gate
Parking Lot
Contractor Parking Lot
Truck Gate
Loading/ Unloading Area
MHBA
SHINTECH

PLANT NORTH
TRUE NORTH

LEGEND

- Unit Boundary
- 5–2–5 Plant Alarm Code for Unit
- Unit Control Room
- Ascend Property Boundary
- MHBA Property Boundary
- Shintech Property Boundary
- Site Evacuation Assembly Point
- Outdoor Emergency Assembly Point

Notes:

1) In the event of a spill or fire, the 3-digit alarm codes will be sounded by air horns located throughout the plant.
2) Base map is compiled from Ascend drawing No. 340GA-14C issued 2 December 2011.

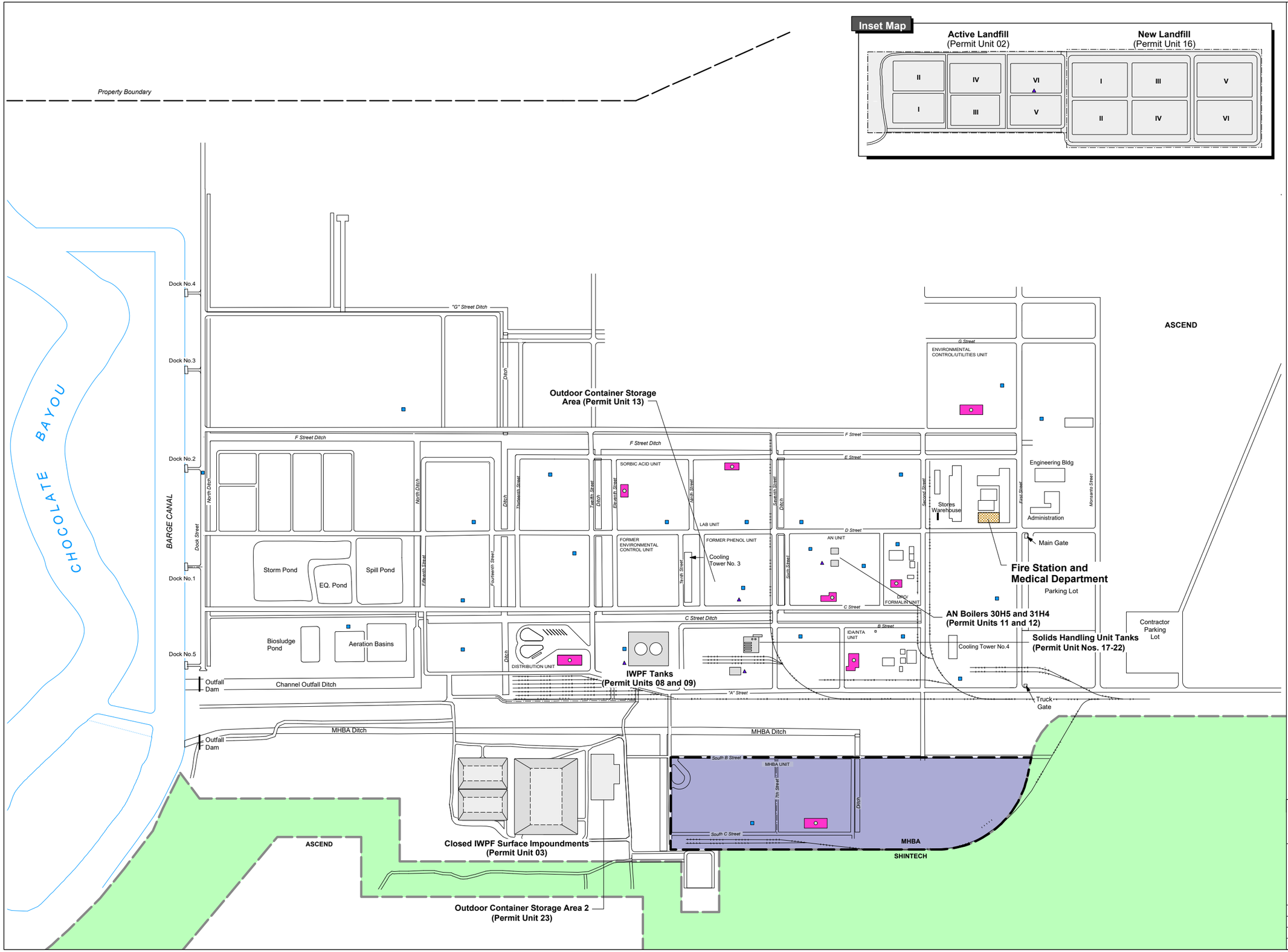
SCALE (ft.)
0 600 1200

GSI ENVIRONMENTAL
Texas Registration Number: F-1198

PLANT ALARM CODES

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	000_14	Chk'd By:	MW
Issued:	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown	**FIGURE III.E.1**	



GSI ENVIRONMENTAL
Texas Registration Number: F-1198

EMERGENCY EQUIPMENT LOCATIONS

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

GSI Job No:	6932	Drawn By:	CDM
Map ID:	000_15	Ch'k'd By:	MW
Issued:	9-Aug-2024	Appv'd By:	JMM
Scale:	As Shown	**FIGURE III.E.2**	

GSI Job No. 6932
Issued: 9 August 2024

APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas Inc., Alvin, Texas

ATTACHMENT

Attachment III.E.1	Agreements with Local Authorities
Attachment III.E.2	Integrated Contingency Plan

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APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application
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ATTACHMENT III.E.1

Agreements with Local Authorities

ATTACHMENT XVIII.1.01 Agreement with Local Authorities

Authority Contacted:	**Nature of Agree Arrangements:**
Brazoria County Sheriff's Department	LEPC Notification
Southeast Memorial Hospital	Contract in place with Memorial Herman
Ascend Chocolate Bayou Fire Department	Annual review
Local Emergency Planning Committee	Annual ICP Review last review 9/2020

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APPENDIX III.E
CONTINGENCY PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
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ATTACHMENT III.E.2

Integrated Contingency Plan

Section II. Core Response Plan (Emergency Event Detection & Response)

II.1 Purpose and Content of the Core Response Plan

This Core Response Plan is intended to be used as a concise reference for essential emergency response information at the ASCEND Chocolate Bayou Plant. The following topics are covered:

- Organizational structures used for emergency response management at the ASCEND Chocolate Bayou Plant;
- Resources available for emergency response including on-site response teams, emergency equipment, and off-site response organizations;
- Notification instructions for all parties that may need to be contacted during an emergency (including a complete telephone directory);
- Assembly areas and evacuation; and
- Emergency response flowcharts and action plans (included as attachments) showing the sequence of steps for alerting personnel, establishment of the management structure, and mobilization of resources.

II.2 Overview of Emergency Management at ASCEND Chocolate Bayou

ASCEND employs the National Incident Management System (NIMS) Incident Command System (ICS) as a comprehensive approach to respond to all size of incidents. ASCEND utilizes the roles and responsibilities as well as the hierarchal structure in accordance with the NIMS ICS. The ICS is designed to expand and shrink as necessary.

II.2.a Responsibility for Overall Coordination of On-Site Incidents

ASCEND'S Qualified Individual or Alternate Qualified Individual will meet the following requirements:

- Is available on a 24 hour basis and able to arrive at the facility in a reasonable time
- A minimum of one will located in the United States at all times
- Can speak fluent English
- Is familiar with the implementation of the facility response plan
- Is trained in the responsibilities of the qualified individual, or alternate under the response plan.

ASCEND's signed ICP grants each qualified or alternate qualified individual identified in this plan full authority to:

- Activate and engage in contracting with oil spill removal organization(s)
- Act as a liaison with the predesignated Federal On-Scene Coordinator (OSC); and
- Obligate funds required to carry out response activities including clean-up activities.

The Qualified Individual is not necessarily the individual who actively manages response activities. The Qualified Individual at the ASCEND Chocolate Bayou Plant will be Emergency Response Manager/Fire Chief the Emergency Response Specialist/Assistant Fire Chief, or his designated alternate. The Emergency Response Directory in Attachment II.4.3 Table 2 of this Core Response Plan contains the list of persons authorized to act as The Qualified Individual and Alternate Qualified Individual.

The paragraphs below introduce the emergency management structures used at the ASCEND Chocolate Bayou Plant. Sections V discuss the roles of each position in detail.

II.2.b On-Site Locally-Controlled Fires and Spills

On-site fires, spills, and leaks whose response can be adequately managed by the staff of the Unit or Department responsible for the area where the incident occurred are referred to as Locally-Controlled. [NOTE: "adequately managed" means that alerting of potentially impacted parties and supervision of response activities are accomplished in a manner that minimizes the threat to life, health, or property.] The management structure for Locally-Controlled incidents will generally be limited to the individual directing the field response typically the acting supervisor of the Unit or Operating Department. This is considered a Level I incident.

II.2.c On-Site Emergencies Requiring Activation of Plant-Wide Alarms

For fires, spills, leaks, and explosions whose response cannot be adequately managed by the staff of the Unit or Department responsible for the area in which the incident occurred or the incident is impacting outside the department's battery limits, the plant–wide alarm system (referred to as the Fire/Spill Alarm) will be activated. This is considered a Level III incident. All traffic is to pull to the side of the road, stop, and turn off their engines except for responding ERT members Personnel should assemble at the nearest Information Assembly Area for information. Affected departments should activate their department emergency plans.

The ERT member designated as the Incident Commander is responsible for the following:

- Notify and provide information to the spill phone –ensures notification of appropriate Federal, State and local authorities
- Identify character, exact source, amount, and extent of the release
- Assess interaction of spilled substance with water and/or other substances stored at facility and notify on-scene response personnel of assessment
- Assess possible hazards to human health and the environment
- Assess and implement prompt removal actions
- Coordinate rescue and response actions
- Access company funding to initiate cleanup activities
- Direct cleanup activities

At Ascend, QIs and the IC as have the same responsibilities. IC will maintain control of a response and utilizes the QI for support.

When the Fire/Spill Alarm is sounded, the facility will implement an Incident Command System management system as shown in Attachment II.2.1. The Incident Commander will manage all response activities.

The facility has two access routes off of FM2917, the primary main entrance (Ascend Drive) and the north entrance (North Facility Drive). There are no access routes. The access routes will serve as the arrival routes for off-site emergency response personnel and response equipment routes. The access routes also serve as evacuation routes.

II.2.d Other On-Site Emergencies

Other emergencies that may occur at the facility include medical emergencies, utilities-related emergencies (nitrogen in instrument air, steam curtailment, electrical power interruption/curtailment), weather-related emergencies (tornado, flood, freeze, hurricane), and bomb threat. Specific procedures have been developed for these situations. In general, the actions taken in response to such incidents will be managed within the normal plant organizational structure. However, the Fire/Spill Alarm may be sounded and the Incident Command System activated for other on-site emergencies if the Site Manager determines that doing so is necessary to adequately manage the situation.

Persons needing medical care would be transported via one of the facility ambulances or via outside emergency medical services. The nearest medical facility is Angleton /Danbury Hospital.

II.3 Overview of Response Resources

II.3.a On-Site Response Personnel

The ASCEND Chocolate Bayou Plant has an Emergency Response Team (ERT) made up of personnel that have been trained in various emergency response skills. The skills possessed by ERT members include firefighting, hazardous material control, emergency medical services, and rescue. There are at least 7 ERT members on-site (1/unit) at any given time. Of the ERT members on-site, one is pre-designated to be the Incident Commander should the need arise. Since there are ERT members on-site at all times, response time is minimal. Current contact information for the ERT members is maintained in our electronic database, Virtual Emergency Operation Center I (VOECI). This is accessible to the main gate personnel, Fire Chief, and EOC personnel.

The ERT member acting at as the current designated on-site Incident Commander is tracked through the Main Gate. A list of active ERT members is maintained by the emergency management team in the safety department. Attachment II.3.1 show example of current roster.

In addition to those in the ERT, basic spill and fire training has been given to operations personnel throughout the facility (including those working in the Dock Area). Response to locally-controlled incidents is often handled by persons assigned to the Unit or Department.

II.3.c Emergency Equipment

A wide variety of emergency equipment is kept on-site at the ASCEND Chocolate Bayou Plant. Refer to Section IX for a complete listing of emergency equipment including information on location, capability, and inspection.

II.3.d Outside Response Organizations

ASCEND has entered into agreements with several outside response organizations that, if needed, can supply manpower and/or equipment to aid in response efforts These organizations include:

- Horizon Environmental – USCG- Oil Spill Removal Organization #154
- Chocolate Bayou Mutual Aid System – an organization created by formal agreement between ASCEND and surrounding plants.

The Emergency Response Directory in Attachment II.4.3 provides numbers for contacting the outside response organizations.

Section X.3.c contains information regarding capability of outside response organizations. Section XVIII contains copies of agreements with the outside response organizations.

II.4 Overview of Notification

The initial mechanism for ensuring safety of persons on-site and in the surrounding community is an effective process for making these potentially-affected parties aware that an emergency has occurred. In addition, various regulations require that governmental agencies receive information regarding an incident, both immediately after and in periods subsequent to the time of occurrence. This section addresses timely communication to on-site personnel, the surrounding community, and government agencies. Additional information on notification is provided in Section IV.

ASCEND has also prepared a set of guidelines for communication of emergency-related information to the families of employees, ASCEND corporate staff, and the public-at-large. The tasks are handled by the Crisis Management Team whose responsibilities are discussed in Section V.

II.4.a Notification of On-Site Personnel for On-Site Emergencies

Notification of on-site personnel must include contacting those that will be involved in response and alerting those stand-by personnel that may need to move or

evacuate.

Plant-wide communication of emergencies to all parties is accomplished by the Fire/Spill Alarm System. The Fire/Spill Alarm System consists of pneumatically operated horns located strategically throughout the plant and chimes or bells in plant buildings. The Fire/Spill Alarm System is coded so that the pattern of sounds indicates the location of the alarm. The Index of Fire/Spill Codes is presented in Attachment II.4.1. **Every person in the facility should be familiar with the following mechanisms for activating the Fire/Spill Alarm:**

- **BY PHONE -** dial -xxx (where xxx corresponds to the area in which the emergency has occurred) **OR** dial 4301 and verbally report to the Main Gate

- **BY RADIO** - contact the Main Gate or a Control Room via radio

- **BY PERSONAL CONTACT**- verbally report the situation to a Control Room, a member of management, or a Safety Department representative

The plant also has a public address system that is used in conjunction with Fire/Spill Alarm System to deliver Informational Alerts or on-going emergency information to the plant. An Informational Alert is preceded by a 65-second series of short blasts of the horns (or chimes/bells in building).
Persons who will not be involved in response activities or emergency management should refer to Section II.5 for instructions on where to go when an Informational Alert or a Fire/Spill Alarm sounds.

For locally-controlled fires and spills, notification of persons in the area is typically accomplished using hand-held radios.

The existence of certain area-specific emergency conditions (i.e., chemical release) will be communicated by Departmental Alerting Sirens. These Departmental Alerting Sirens are located in the Control Lab, LAB, MHBA, AN, DPO/Formalin, DSIDA/NTA, NaCN, and Distribution Areas. These alarms are typically activated automatically by gas detection systems. However, they can also be manually triggered from Control Rooms.

Control rooms throughout the plant are equipped with Utility Curtailment Alarms that are activated by ECU to warn of curtailment of steam or curtailment/interruption of electrical power.

II.4.b Community Notification

Parties in the general vicinity of the Chocolate Bayou Plant that may need to be notified in the event of an emergency include adjacent plants and people in surrounding community.

The primary means for notification of people in the surrounding community is accomplished via:

1) the Community Awareness & Emergency Alert (CAER) horn
2) the Community Awareness & Emergency Alert (CAER) line to post status messages
3) capability of the CAER line to be used to send outbound phone messages to Liverpool, Amsterdam and Horseshoe Bend communities. **NOTE:** The CAER line is managed and coordinated through an agreement with the INEOS Chocolate Bayou plant. Contact the INEOS Emergency Services Manager to request this function.

The CAER horn is activated from the guard house by any of the three plants. A series of codes alerts residents to shelter, evacuate or the all clear. The horn is tested each Monday at 1 pm.

CAER horn codes:

Take Shelter	- 5 minute wail
Evacuate	- 5 minute hi/lo horn
All Clear	- 2 minute air horn
Test	- 1 minute steady siren

The CAER line provides capabilities to provide automatic telephone dialing to nearby residents. Recorded messages can be provided to inform residents of necessary actions needed to be taken. Only the Qualified Individual, or in his absence, the acting Alternate Qualified Individual, can activate the outbound call function through the the INEOS Emergency Services Manager.

The task of notifying persons in the surrounding area will also be shared by the Brazoria County Sheriff's Office, acting as the Local Emergency Planning Committee (LEPC). Regulations require that the LEPC receive prompt notification for certain emergencies. See Section II.4.c. below.

Adjacent plants will be contacted via telephone at the direction of the Qualified Individual, or in his absence, the Alternate Qualified Individual. Refer to the Emergency Response Directory in Attachment II.4.3 for numbers of contacts in adjacent plants.

Other events that are deemed necessary for community notification but do not require community action to be taken, such as flare events and drills, shall also use the CAER line. Community members can call this number to receive information via a recorded message explaining the nature of the event. The responsibility for CAER line activation will be determined on a case-by-case basis by the ESSH Lead.

Should it be necessary for the community to be evacuated, Ascend would coordinate the evacuation through the LEPC and local jurisdictions.

II.4.c Government Agency Reporting

The ASCEND Chocolate Bayou Plant has prepared a comprehensive set of instructions for reporting incidents to government agencies. These instructions, including call-out forms, are presented in Attachments IV.2.01 through IV.2.17.

II.5. Assembly and Evacuation of Non-Responders (In Plant)

When either the Information Alert signal or the Fire/Spill alarm sounds, all personnel that are not directly involved in response should proceed to the nearest Emergency Assembly (EA) point. . All visitors will be guided to an Emergency Assembly point. All personnel and visitors will present their access control badge to the EA reader and remain near the EA point. You must remain at the EA point until the all clear alarm is sounded or until further instructions are received.

Depending upon the emergency event , the strategy may be shelter-in place at an EA point., or move to EA points away from affected zones, or evacuation to off-site locations. Exact instructions will be communicated over the plant-wide radio channels system. A map showing the locations of EA points is provided as Attachment II.5.1. This same diagram is posted at numerous locations throughout the facility.

II.6 Emergency Response Action Plans

The ASCEND Chocolate Bayou Plant uses action plans to list the sequence of steps to be taken in emergency situations. Please refer to Attachments V.1.01 through V.2.16.

II.7 Document Control Dates

Issue Date: 10/31/01
Effective Date: 11/15/01
Review Frequency: 3 Years
Last Revision Date: 12/06/22
Next Review Date: 12/06/25

DOCUMENT HISTORY:	DESCRIPTION of UPDATES
8/13/07	Replaced Person In Charge with Qualified Individual and Alternate Qualified Individual Added instructions for the Qualified Individual and Alternate in accordance with USCG 33CFR 127 and 154 Added Document History Table Added Approval Table
11/15/07	Updated OSC phone ext. 4345 pg 4 Updated section II.4a main gate phone number 4301pg 8 Updated section II.4c with the addition of the CAER line paragraph pg 10
09/10/13	Updated ESH Lead to Lynda Green
02/17/17	Pg. 6 – revised titles to Pipeline Coordinators and Pipeline Emergency Response Plan to II.2.f Off-site Pipeline Emergencies.
02/17/17	II.3.b Off-Site Response Personnel – revised title to Pipeline Coordinator
03/08/2017	3 year review
06/30/2021	Update procedure to include ALL CLEAR system, removed references to off-site emergencies, and updated titles
6/20/2022	Updated in Response to EPA review- Clarification statements added.
12/06/2022	Updated CAER line information

APPROVALS

Role	Title	Name	Date
Owner	Emergency Response Manager	Charles Nuttall	12/06/2022
Approver	Sr. ESH Lead	William Chidester	12/06/2022

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Section IV – Wastes and Waste Analysis

Contents

- Part B Application Form, Section IV
- Part B, Section IV: Tables
- Part B, Section IV: Appendix IV.D - Waste Analysis Plan

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B Application Form, Section IV

IV. Wastes and Waste Analysis

Provide all Part B responsive information in Appendix IV. When preparing the physical format organize your submittal using the Format of Hazardous Waste permit Application and Instructions.

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).

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 must include 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.

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.

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 Part 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 Part 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 §260.21, will be considered by the TCEQ to be acceptable.

GSI Job No. 6932

Hazardous Waste Permit Renewal Application
Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section IV: Tables

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- Table IV.B – Wastes Managed in Permitted Units
- Table IV.C – Sampling and Analytical Methods

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
1	Contaminated inorganic debris	On-site	0.3, Sporadic
5	Spent carbon, construction debris, concrete, lumber	On-site	Sporadic
6	Nonhazardous sandblasting waste.	On-site	49.8
7	Pumpable catalyst sludge from wastewater stripper	On-site	18.2
8	Process Decon Wastewaters	On-site	Sporadic
9	Non-Hazardous Pad Run-Off & Other Miscellaneous wash / Wastewaters from IDA unit 18 activities. Mixed stream of inorganic liquids with some ammonia contents (up to 100 ppm) phosphoric acid (up to 1.1%)	On-site	0.8, Sporadic
10	AN wastewater column bottoms, stripper, quencher stripper and re-run column bottoms- AN-2, AN-3, AN-7	On-site	Sporadic
12	AN stripper column overheads	On-site	Sporadic
13	HCN By-product stream.	On-site	1,781
14	Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	On-site	150,215
15	Solids resins or polymerized organics	On-site	51.0
16	Hazardous solids resins or polymerized organics	On-site	7.7
17	Pumpable waste mixed with catalyst	On-site	39.2
18	Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	On-site	3,061,046
19	Spent carbon	On-site	Sporadic
20	Spent carbon	On-site	1.3, Sporadic
21	Hazardous asbestos solids and debris	On-site	Sporadic
22	Soil contaminated with organics	On-site	4.5

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
23	Contaminated inorganic debris mixed with catalyst	On-site	0.03, Sporadic
24	Lab Packs - Waste no longer generated	On-site	Sporadic
25	Refractory, fire brick, ash, slag, or other residue from incineration of wastes	On-site	3.0
27	Inorganic wastewater from loading arm disconnects, decontamination, spill cleanup, pad runoff, groundwater monitoring wells, surplus and/or out-dated non-hazardous inorganic chemicals and products, etc. activities (low suspended inorganic solids and low organic content)	On-site	52.4
28	Pumpable non-hazardous sludge waste	On-site	4.1
29	Biological Waste Treatment Sludge - Waste no longer generated	On-site	Sporadic
31	Pumpable hazardous sludge waste	On-site	Sporadic
32	Contaminated oil-water emulsion or mixture with low inorganic solids content and low-to-moderate water content	On-site	Sporadic
33	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	On-site	8,597
34	Inorganic aqueous wastewater from the 336 tanks with low dissolved solids (with low suspended inorganic solids and low organic content)	On-site	Sporadic
35	Spent Solid Filters or Adsorbents	On-site	Sporadic
36	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	On-site	26,182
37	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	On-site	Sporadic
40	Water treatment sludge	On-site	Sporadic
41	Landfill leachate	On-site	638.2
42	Recovered Groundwater - Waste no longer generated	On-site	Sporadic
43	Non-hazardous asbestos solids and debris	On-site	4.9

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
44	Inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	On-site	890.0
45	Spent Carbon - Waste no longer generated	On-site	Sporadic
46	Non-pumpable catalyst waste	On-site	296.1
47	Zinc Filters - Waste no longer generated	On-site	Sporadic
48	Sodium (meta) Bisulfite - Waste no longer generated	On-site	Sporadic
50	Liquid organic compounds that are not RCRA hazardous. Stream may contain trace quantities of benzene, metal compounds characteristic of metal-corrosion processes, water or other impurities.	On-site	Sporadic
51	Lab packs containing mixed waste from laboratory analyses or Surplus and outdated laboratory chemicals	On-site	3.0
52	Pumpable reactive or polymerizable organic sludge (stripper bottoms from Acrylonitrile process)	On-site	Sporadic
53	Non-process stormwater. Inorganic aqueous waste with low solvents (low suspended inorganic solids and low organic content)	On-site	40.2
54	Soil contaminated with organics	On-site	7.2
55	Inorganic scrubber water (low suspended inorganic solids and low organic content)	On-site	28.098
56	Contaminated inorganic debris	On-site	0.3, Sporadic
57	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	On-site	Sporadic
58	Inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	On-site	25.0
59	Inorganic caustic aqueous wastewater (with low suspended inorganic solids and low organic content)	On-site	12,769
60	Inorganic scrubber water (low suspended inorganic solids and low organic content)	On-site	Sporadic
61	Leachate from non-hazardous landfill	On-site	Sporadic

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
62	Soil contaminated with inorganics only.	On-site	Sporadic
63	Soil contaminated with inorganics only.	On-site	Sporadic
64	Contaminated organic solids (with low-to-moderate inorganic content and water content; not pumpable)	On-site	6.0
65	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	On-site	8,597
66	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	On-site	8.4
67	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	On-site	8.4
68	Corrosive inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	On-site	Sporadic
69	Inorganic acidic aqueous wastewater (with low suspended inorganic solids and low organic content)	On-site	Sporadic
70	Corrosive organic wastewater from loading/unloading activities, spills and drips (low suspended inorganic solids and low-to-moderate water content)	On-site	1.5
71	Off specification NaCN	On-site	Sporadic
73	Inorganic wastewater from loading arm disconnects, decontamination, spill cleanup, pad runoff, groundwater monitoring wells, surplus and/or out-dated non-hazardous inorganic chemicals and products, etc. activities (low suspended inorganic solids and low organic content)	On-site	704.7
74	AN wastewater column bottoms stream, continuous	On-site	740,861
75	Soil contaminated with organics. Sporadic waste.	On-site	0.8, Sporadic
76	Foam pigs, cotton spill pads, cotton filters, snakes, spill clean up material, spill contaminated debris, contaminated filter elements, and other miscellaneous debris	On-site	0.4, Sporadic
77	Contaminated product material	On-site	1.2

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
78	Pickling for equipment in HCN service.	On-site	Sporadic
79	Combined acidic wastewater from chemical mfg. process to deepwell injection. on going generation; A new hazardous waste determination has been performed on this waste.	On-site	347,406
80	Debris from G/W wells operations. Debris include bailers, buckets, PPEs, jars,etc.	On-site	Sporadic
81	Mixed stream of inorganic liquids with high cyanides Contents (Up to 2%) and some benzene (up to 40 ppm) and sulfer dioxide as an inhibitor of cyanide hydrogen-polymerization (pH less than 2); A new hazardous waste determination has been performed on this waste.	On-site	73.4
82	Mixed stream of inorganic liquids with high organic contents (IDAN/MBIDAN up to 25%) cyanides contents (up to 0.5%) and some benzene (up to 10 ppm).	On-site	0.9, Sporadic
83	Industrial wastewater from MHBA Raffinate Stripper Bottoms (RSB)	On-site	Sporadic
84	Wastewater from equipment decontamination	On-site	303.7
85	Inorganic caustic aqueous wastewater (with low suspended inorganic solids and low organic content)	On-site	12,769
86	NTA Mother liquor	On-site	7,350
87	Inorganic caustic solution with cyanides but no metals (with low suspended inorganic solids and low organic content)	On-site	1,731
88	Organic waste, containing phenol and other organics from sample purges, equipment and piping decontamination, and other misc. operations at the DPO process units.	On-site	62.8
89	Debris generated within the formalin unit battery limits, contaminated with methanol, formalin, or other organics. Contents variable; consisting of but not limited to the following: wood, concrete, pipe, plastic sheets & bags, other debris	On-site	1.3
90	Organic waste containing methanol and formaldehyde, other organics may be present. Generated from sample purges, equipment decontamination, and other miscellaneous operations In Formalin unit.	On-site	1.8

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
91	Contaminated asbestos insulation. Various plant processes.	On-site	Sporadic
92	Contaminated soil with organics	On-site	41.3
93	Debris that may be contaminated with organic compounds but is not RCRA hazardous. The contents varies and may contain, but is not limited to: construction wastes, used pipe, scrap material, plastic sheets, miscellaneous debris.	On-site	3.5
94	Effluent from TETF Nor Facility Nos. 32 and 33. Total effluent from TETF ,mixed stream of inorganic liquids after benzene stripping, cyanides detoxification and after neutralization	On-site	197.7
95	Foam pigs, spill clean up material, spill contaminated debris	On-site	9.8
96	Inorganic liquid with some ammonia (ammonia up to 0.5%)	On-site	12,806
97	Inorganic liquid with some organics (NTAN) 0.7%, HCN 0.02%, HCHO 9.02%)	On-site	4,270
98	Inorganic solids, may include contaminated soils and/or other solids not otherwise classified	On-site	1.6
99	Mixed stream of inorganic liquids with high organic contents (IDAN up to 6%), cyanides contents (up to 140 ppm) and some NH4CI (up to 4%)	On-site	481.4
100	Mixed stream of inorganic liquids with some organic contents (HMTA up to 2%), ammonia contents (up to 1%) and some methanol (up to 2.5%)	On-site	427.0
101	Non-hazardous refractory debris generated from the AN Departments 30, 31, and 70 (Reactors, air heaters, and incinerators)	On-site	0.4, Sporadic
102	Non-process wastewater from 337MCS.	On-site	36,788
103	NTA Flextrac 100 Sporadic Waste	On-site	Sporadic
104	NTA totally enclosed treatment facilities effluent to plant environmental control facilities for final pH adjustment and disposal via deep well injection	On-site	122,501

Table IV.A. - Waste Management Information

Waste No.	Waste Type(s)	Source	Volume (tons/year)
105	Organic waste generated from sample purges, equipment and piping decontamination and other miscellaneous operations in the Formalin process unit.	On-site	14,523
106	Process equipment maintenance debris; A new hazardous waste determination has been performed on this waste.	On-site	Sporadic
107	Scrap pipe and materials from demolition, including piping constructed of metal or plastic, lined (with glass, plastic, etc.), clay, concrete, etc.	On-site	Sporadic
108	Soil contaminated by organic or inorganic compounds that are not RCRA hazardous waste. Waste normally generated during construction or maintenance activities. The waste may be generated by spills.	On-site	Sporadic
109	Soil contaminated with organics. Sporadic waste.	On-site	Sporadic
110	Spent adsorbents/Unit clean-up	On-site	Sporadic
111	The firebrick, refractory, and debris were removed/replaced in shutdown. The waste is generated sporadically.; A new hazardous waste determination has been performed on this waste.	On-site	Sporadic
112	Wastewater to/from the IWPF Settling Tanks	On-site	Sporadic
113	AN Stripper column bottoms stream, continuous	On-site	1,589,250

Notes:
1. No wastes are received from offsite.
2. Sporadic = waste is generated intermittently.
3. Annual volumes based on 2023 annual waste summary.
4. Waste data provided above obtained from the TCEQ Notice of Registration dated 1 March 2024 for the Ascend Performance Materials Chocolate Bayou facility in Alvin, Texas.

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
1	Contaminated inorganic debris.	–	3191
5	Spent carbon, construction debris, concrete, lumber	–	3192
6	Nonhazardous sandblasting waste.	–	3891
7	Pumpable catalyst sludge from wastewater stripper	K011, K014	609H
8	Process Decon Wastewaters	–	1191
9	Non-Hazardous Pad Run-Off & Other Miscellaneous wash / Wastewaters from IDA unit 18 activities. Mixed stream of inorganic liquids with some ammonia contents (up to 100 ppm) phosphoric acid (up to 1.1%)	–	1191
10	AN wastewater column bottoms, stripper, quencher stripper and re-run column bottoms- AN-2, AN-3, AN-7	K011, K013, K014	102H
12	AN stripper column overheads	D003, D018	212H
13	HCN By-product stream.	D001, D003, D018	212H
14	Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	D002, D003, D007, D010, D018, D038, K011, K013, K014, F003, F039	219H
15	Solids resins or polymerized organics	–	4031
16	Hazardous solids resins or polymerized organics	D002, D004, D005, D007, D018, D038, F003, F039	403H
17	Pumpable waste mixed with catalyst	–	6971
18	Organic wastewater (low suspended inorganic solids and low-to-moderate water content)	D002, D003, D007, D010, D018, D032, D033, D038, K011, K013, K014, F003, F039	219H
19	Spent carbon	–	4041

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
20	Spent carbon	D002, D018, D038, K011, K013, K014, F039	404H
21	Hazardous asbestos solids and debris	D018	311H
22	Soil contaminated with organics	D002, D005, D007, D008, D018, D026, D035, D038, K011, K013, K014, F003, F039	301H
23	Contaminated inorganic debris mixed with catalyst	D002, D004, D005, D006, D007, D008, D010, D018, K011, K013, K014, F003, F005, F039	319H
24	Lab Packs - Waste no longer generated	–	0021
25	Refractory, fire brick, ash, slag, or other residue from incineration of wastes	D003	303H
27	Inorganic wastewater from loading arm disconnects, decontamination, spill cleanup, pad runoff, groundwater monitoring wells, surplus and/or out-dated non-hazardous inorganic chemicals and products, etc. activities (low suspended inorganic solids and low organic content)	D002, D003, D004, D005, D018, D038, F003, F039	119H
28	Pumpable non-hazardous sludge waste	–	6091
29	Biological Waste Treatment Sludge - Waste no longer generated	–	3912
31	Pumpable hazardous sludge waste	D002, D003, D004, D007, D018, K011, K013, K014, F003, F039	609H
32	Contaminated oil-water emulsion or mixture with low inorganic solids content and low-to-moderate water content	D001, D002, D003, D004, D005, D007, D010, D018, D038, K011, K013, K014, F003, F005, F039	205H
33	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	D018, K011, K013, K014, F039	114H

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
34	Inorganic aqueous wastewater from the 336 tanks with low dissolved solids (with low suspended inorganic solids and low organic content)	–	1141
35	Spent Solid Filters or Adsorbents	D008, D018, K011, K013, K014, F039	310H
36	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	D002, U009, U019, U154, U188	102H
37	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	–	1141
40	Water treatment sludge	–	5192
41	Landfill leachate	F039	116H
42	Recovered Groundwater - Waste no longer generated	D018, F039, K011, K013	119H
43	Non-hazardous asbestos solids and debris	–	3111
44	Inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	D002, D003, D004, D005, D007, D018, D038, F003, F039	105H
45	Spent Carbon - Waste no longer generated	–	4041
46	Non-pumpable catalyst waste	–	3931
47	Zinc Filters - Waste no longer generated	–	3102
48	Sodium (meta) Bisulfite - Waste no longer generated	–	3192
50	Liquid organic compounds that are not RCRA hazardous. Stream may contain trace quantities of benzene, metal compounds characteristic of metal-corrosion processes, water or other impurities.	–	2051

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
52	Pumpable reactive or polymerizable organic sludge (stripper bottoms from Acrylonitrile process)	D003, K011, K013, K014	605H
53	Non-process stormwater. Inorganic aqueous waste with low solvents (low suspended inorganic solids and low organic content)	–	1011
54	Soil contaminated with organics	–	3011
55	Inorganic scrubber water (low suspended inorganic solids and low organic content)	–	1151
56	Contaminated inorganic debris	D001, D002, D003, D004, D005, D006, D007, D008, D010, D018, P063, U019, U122, U134, U154, U161, U165, U188, U220, F003, F005	319H
57	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	–	1021
58	Inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	–	1051
59	Inorganic caustic aqueous wastewater (with low suspended inorganic solids and low organic content)	–	1101
60	Inorganic scrubber water (low suspended inorganic solids and low organic content)	D002, D018	115H
61	Leachate from non-hazardous landfill	–	1161
62	Soil contaminated with inorganics only.	–	3021
63	Soil contaminated with inorganics only.	K011, K013, K014	302H

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
64	Contaminated organic solids (with low-to-moderate inorganic content and water content; not pumpable)	D001, D002, D003, D004, D005, D007, D010, D018, D038, K011, K013, K014, P003, P030, P063, P106, U002, U003, U009, U019, U022, U080, U122, U123, U135, U154, U161, U188, F003, F039	409H
65	Inorganic aqueous wastewater with low dissolved solids (with low suspended inorganic solids and low organic content)	D018	114H
66	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	D002, D003, D004, D005, D018, D038, F003	102H
67	Inorganic aqueous wastewater with low other toxic organics (low suspended inorganic solids and low organic content)	D002, D003, D018	102H
68	Corrosive inorganic acidic aqueous wastewater (low suspended inorganic solids and low organic content)	D002	105H
69	Inorganic acidic aqueous wastewater (with low suspended inorganic solids and low organic content)	D002, D007, D011, F003	105H
70	Corrosive organic wastewater from loading/unloading activities, spills and drips (low suspended inorganic solids and low-to-moderate water content)	D002	219H
71	Off specification NaCN	D003, P106	313H

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
73	Inorganic wastewater from loading arm disconnects, decontamination, spill cleanup, pad runoff, groundwater monitoring wells, surplus and/or out-dated non-hazardous inorganic chemicals and products, etc. activities (low suspended inorganic solids and low organic content)	–	1191
74	AN wastewater column bottoms stream, continuous	K011	102H
75	Soil contaminated with organics. Sporadic waste.	D002, D018, D026, D035, F039, K011, K013, K022, P063, U019, U134, U188, U220	301H
76	Foam pigs, cotton spill pads, cotton filters, snakes, spill clean up material, spill contaminated debris, contaminated filter elements, and other miscellaneous debris	D002, D003, D018, F003, P063, U053, U154, U161, U220	319H
77	Contaminated product material	D002, D018	119H
78	Pickling for equipment in HCN service.	D002	105H
79	Combined acidic wastewater from chemical mfg. process to deepwell injection. on going generation; A new hazardous waste determination has been performed on this waste.	D002, D003, D004, D005, D007, D018, D038, F003, F039, P003, P030, P063, P106, U002, U003, U009, U019, U080, U122, U123, U135, U161, U188	105H
80	Debris from G/W wells operations. Debris include bailers, buckets, PPEs, jars,etc.	F039	319H

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
81	Mixed stream of inorganic liquids with high cyanides Contents (Up to 2%) and some benzene (up to 40 ppm) and sulfur dioxide as an inhibitor of cyanide hydrogenpolymerization (pH less than 2); A new hazardous waste determination has been performed on this waste.	D002, D003, D018	102H
82	Mixed stream of inorganic liquids with high organic contents (IDAN/MBIDAN up to 25%) cyanides contents (up to 0.5%) and some benzene (up to 10 ppm).	D003, D018	119H
83	Industrial wastewater from MHBA Raffinate Stripper Bottoms (RSB)	D002, D018, D038	105H
84	Wastewater from equipment decontamination	D002, F003	102H
85	Inorganic caustic aqueous wastewater (with low suspended inorganic solids and low organic content)	D002, D018	110H
86	NTA Mother liquor	D002	105H
87	Inorganic caustic solution with cyanides but no metals (with low suspended inorganic solids and low organic content)	D002, D003	108H
88	Organic waste, containing phenol and other organics from sample purges, equipment and piping decontamination, and other misc. operations at the DPO process units.	D018, D023, D024, D025, F003, F005, U158, U188	205H

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
89	Debris generated within the formalin unit battery limits, contaminated with methanol, formalin, or other organics. Contents variable; consisting of but not limited to the following: wood, concrete, pipe, plastic sheets & bags, other debris	U122, U154	319H
90	Organic waste containing methanol and formaldehyde, other organics may be present. Generated from sample purges, equipment decontamination, and other miscellaneous operations In Formalin unit.	D001, U122, U154	205H
91	Contaminated asbestos insulation. Various plant processes.	–	3111
92	Contaminated soil with organics	–	3011
93	Debris that may be contaminated with organic compounds but is not RCRA hazardous. The contents varies and may contain, but is not limited to: construction wastes, used pipe, scrap material, plastic sheets, miscellaneous debris.	–	3191
94	Effluent from TETF Nor Facility Nos. 32 and 33. Total effluent from TETF ,mixed stream of inorganic liquids after benzene stripping, cyanides detoxification and after neutralization	–	1191
95	Foam pigs, spill clean up material, spill contaminated debris	–	3191

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
96	Inorganic liquid with some ammonia (ammonia up to 0.5%)	–	1191
97	Inorganic liquid with some organics (NTAN) 0.7%, HCN 0.02%, HCHO 9.02%)	–	1191
98	Inorganic solids, may include contaminated soils and/or other solids not otherwise classified	–	3191
99	Mixed stream of inorganic liquids with high organic contents (IDAN up to 6%), cyanides contents (up to 140 ppm) and some NH4CI (up to 4%)	–	1191
100	Mixed stream of inorganic liquids with some organic contents (HMTA up to 2%), ammonia contents (up to 1%) and some methanol (up to 2.5%)	–	1191
101	Non-hazardous refractory debris generated from the An Departments 30, 31, and 70 (Reactors, air heaters, and incinerators)	–	3191
102	Non-process wastewater from 337MCS.	–	1011
103	NTA Flextrac 100 Sporadic Waste	–	3192
104	NTA totally enclosed treatment facilities effluent to plant environmental control facilities for final pH adjustment and disposal via deep well injection	–	1191
105	Organic waste generated from sample purges, equipment and piping decontamination and other miscellaneous operations in the Formalin process unit. determination has been performed on this waste.	–	2051

Table IV.B. - Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
106	Process equipment maintenance debris; A new hazardous waste determination has been performed on this waste.	–	3191
107	Scrap pipe and materials from demolition, including piping constructed of metal plastic, lined (with glass, plastic, etc.), clay, concrete, etc.	–	3191
108	Soil contaminated by organic or inorganic compounds that is not RCRA hazardous waste. Waste normally generated during construction or maintenance activities. The waste may be generated by spills.	–	3011
109	Soil contaminated with organics. Sporadic waste.	–	3011
110	Spent adsorbents/Unit clean-up	–	3101
111	The firebrick, refractory, and debris were removed/replaced in shutdown. The waste is generated sporadically.; A new hazardous waste determination has been performed on this waste.	–	3191
112	wastewater to/from the IWPF Settling Tanks	–	1141
113	AN Stripper column bottoms stream, continuous	K013	102H

Notes:
1. Waste data provided above obtained from the TCEQ Notice of Registration dated 1 March 2024 for the Ascend Performance Materials Chocolate Bayou facility in Alvin, Texas.
2. All waste streams containing EPA Hazardous Waste Number D001 contain less than 10% total organic carbon.

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
7	catalyst settling unit	grab	review when process changes or every 3 years, re-analyze if necessary	Acetonitrile	8033	MDL
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene	8260	
				Cyanides (total)	335.2/9010	
				Reactivity	40 CFR 261.23	
10	sample point/cabinet on mfg. unit column	composite	review when process changes or every 3 years, re-analyze if necessary	Acetonitrile	8033	MDL
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene	8260	
				Cyanides (total)	335.2/9010	
				Reactivity	40 CFR 261.23	
12	sample point/cabinet on mfg. unit column	composite	review when process changes or every 3 years, re-analyze if necessary	Reactivity	40 CFR 261.23	MDL
				Benzene	8260 (TCLP)	
13	chilled water sample cabinet on AN purification structure	grab	review when process changes or every 3 years, not re-sampled due to extreme toxicity	Ignitability	40 CFR 261.21	MDL
				Reactivity	40 CFR 261.23	
				Benzene	8260 (TCLP)	
				BIF Constituents: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury, Silver, Thallium, Chloride, Ash, Heat Content	*BIF Constituents*: 6010, 7060, 7471, 300.0, ASTM D482, ASTM D240-76	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
14	sample point/cabinet on mfg. unit column	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene/ VOCs	8260	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Ignitability	40 CFR 261.21	
				SVOCs	8270	
				Metals	6010	
16	point of generation	grab or composite	initially to characterize, thereafter re-analyzed if necessary	Corrosivity	40 CFR 261.22	MDL
				Arsenic, Barium, Chromium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				Ignitability	40 CFR 261.21	
				SVOCs	8270	
				Metals	6010	
				Acetonitrile	8033	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
18	injection well effluent pump system	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Chromium, Selenium	6010 (TCLP)	
				Hexachlorobenzene	8270 (TCLP)	
				Benzene, Hexachlorobutadiene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				Ignitability	40 CFR 261.21	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				SVOCs	8270	
				Metals	6010	
20	point of generation	grab or composite	initially to characterize, thereafter re-analyzed if necessary	Corrosivity	40 CFR 261.22	MDL
				Benzene, Pyridine	8260 (TCLP)	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				SVOCs	8270	
				VOCs, Benzene	8260	
				Metals	6010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
21	N/A	–	–	Benzene	8260 (TCLP)	MDL

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
22	point of generation	grab or composite	initially to characterize, thereafter re-analyzed if necessary	Corrosivity	40 CFR 261.22	MDL
				Barium, Chromium, Lead	6010 (TCLP)	
				Benzene, Methyl ethyl ketone, Pyridine	8260 (TCLP)	
				Cresol	8270 (TCLP)	
				Ignitability	40 CFR 261.21	
				Acrylonitrile	8031, 8316	
				SVOCs	8270	
				Benzene, VOCs	8260	
				Acetonitrile	8033	
				Acrylamide	8032	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Metals	6010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
23	point of generation	grab	initially to characterize, thereafter re-analyzed if necessary	Corrosivity	40 CFR 261.22	MDL
				Arsenic, Barium, Cadmium, Chromium, Lead, Selenium	6010 (TCLP)	
				Benzene	8260 (TCLP)	
				Ignitability	40 CFR 261.21	
				VOCs, Benzene	8260	
				SVOCs	8270	
				Acrylonitrile	8031, 8316	
				Acetonitrile	8033	
				Acrylamide	8032	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Metals	6010	
25	AN BIF Unit	grab or composite	initially to characterize, thereafter re-analyzed if necessary	Reactivity	40 CFR 261.23	MDL
27	injection well effluent pump system	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				Ignitability	40 CFR 261.21	
				VOCs	8260	
				Acrylonitrile	8031, 8316	
				SVOCs	8270	
				Acetonitrile	8033	
				Metals	6010	
				Cyanides (total and amenable)	335.1/335.2/ 9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
31	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Ignitability	40 CFR 261.21	MDL
				Corrosivity	40 CFR 261.22	
				Reactivity	40 CFR 261.23	
				Arsenic, Chromium	6010 (TCLP)	
				Benzene	8260 (TCLP)	
				Benzene, VOCs	8260	
				Acetonitrile	8033	
				Acrylamide	8032	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Acrylonitrile	8031, 8316	
				SVOCs	8270	
				Metals	6010	
32	point of generation	composite	initially to characterize, thereafter re-analyzed if necessary	Ignitability	40 CFR 261.21	MDL
				Corrosivity	40 CFR 261.22	
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs, Benzene	8260	
				SVOCs	8270	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Metals	6010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
33	injection well effluent pump system	composite	review when process changes or every 3 years, re-analyze if necessary	Benzene	8260 (TCLP)	MDL
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				VOCs, Benzene	8260	
				SVOCs	8270	
				Metals	6010	
35	point of generation	grab or composite	initially to characterize, thereafter re-analyzed if necessary	Lead	6010 (TCLP)	MDL
				Benzene	8260 (TCLP)	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				VOCs, Benzene	8260	
				SVOCs	8270	
				Metals	6010	
36	injection well effluent pump system	composite	review when process changes or every 3 years, re-analyze if necessary	Phenol	8270	MDL
41	landfill collection sumps	composite	Initially to characterize, thereafter re-analyzed if necessary	VOCs	8260	MDL
				Cyanides (total and amenable)	335.1/335.2/ 9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
42	point of generation	grab	initially to characterize, thereafter re-analyzed if necessary	Ignitability, VOCs, metals	40 CFR 261.21, Methods 6010, 8260, TCLP, or other USEPA or SW-846 Methods	MDL
44	sample point/cabinet on mfg. unit column	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				SVOCs	8270	
				Ignitability	40 CFR 261.21	
				Acetonitrile	8033	
				Acrylonitrile	8031	
				Metals	6010	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Corrosivity	40 CFR 261.22	
				Benzene	8260 (TCLP)	
52	point of generation	grab	initially to characterize, thereafter re-analyzed if necessary	Ignitability	40 CFR 261.21	MDL
				Reactivity	40 CFR 261.23	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene	8260	
				Cyanides (total)	335.2/9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
56	point of generation	composite	initially to characterize, thereafter re-analyzed if necessary	Ignitability	40 CFR 261.21	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Cadmium, Chromium, Lead, Selenium	6010 (TCLP)	
				Benzene	8260 (TCLP)	
				Hydrocyanic acid	335.1, 335.2, 9010	
				Benzene, Methanol, Methyl isobutyl ketone, Naphthalene, Toluene, VOCs	8260	
				Corrosivity	40 CFR 261.22	
				Phenol	8270	
60	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Benzene	8260 (TCLP)	
63	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Acetonitrile	8033	MDL
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene	8260	
				Cyanides (total)	335.2/9010	
				Reactivity	40 CFR 261.23	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
64	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Ignitability	40 CFR 261.21	MDL
				Corrosivity	40 CFR 261.22	
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				Acrolein, Acetone, Benzene, Methylene chloride, Methanol, Methyl isobutyl ketone, VOCs	8260	
				Cyanides (total and soluble cyanide salts), Hydrocyanic acid, Sodium cyanide	335.1, 335.2, 9010	
				Acrylonitrile	8031, 8316	
				Benzo[a]pyrene, Phenol, SVOCs	8270	
				Formaldehyde	8315	
				Hydrogen sulfide	9040/9045, SM2510, SM4500/9034	
				Acetonitrile	8033	
				Acrylamide	8032	
				Metals	6010	
65	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Benzene	8260 (TCLP)	MDL

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
66	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				Ignitability	40 CFR 261.21	
67	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Benzene	8260 (TCLP)	
68	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
69	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Chromium, Silver	6010 (TCLP)	
				VOCs	8260	
				Ignitability	40 CFR 261.21	
				Benzene	8260 (TCLP)	
70	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
71	point of generation	composite	review when process changes or every 3 years, re-analyze if necessary	Reactivity	40 CFR 261.23	MDL
				Sodium cyanide	335.1, 335.2, 9010	
				Ignitability	40 CFR 261.21	
74	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Acetonitrile	8033	MDL
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene	8260	
				Cyanides (total)	335.2/9010	
				Reactivity	40 CFR 261.23	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
75	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Barium, Chromium, Lead	6010 (TCLP)	
				Benzene, Methyl ethyl ketone, Pyridine	8260 (TCLP)	
				Cresol	8270 (TCLP)	
				Ignitability	40 CFR 261.21	
				Acrylonitrile	8031, 8316	
				SVOCs	8270	
				Benzene, VOCs	8260	
				Acetonitrile	8033	
				Acrylamide	8032	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Metals	6010	
76	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Barium, Chromium, Lead	6010 (TCLP)	
				Benzene, Methyl ethyl ketone, Pyridine	8260 (TCLP)	
				Cresol	8270 (TCLP)	
				Ignitability	40 CFR 261.21	
				Acrylonitrile	8031, 8316	
				SVOCs	8270	
				Benzene, VOCs	8260	
				Acetonitrile	8033	
				Acrylamide	8032	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Metals	6010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
77	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Ignitability	40 CFR 261.21	MDL
				Corrosivity	40 CFR 261.22	
				Benzene	8260 (TCLP)	
78	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Ignitability	40 CFR 261.21	MDL
				Reactivity	40 CFR 261.23	
				Benzene	8260 (TCLP)	
				BIF Constituents: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury, Silver, Thallium, Chloride, Ash, Heat Content	*BIF Constituents*: 6010, 7060, 7471, 300.0, ASTM D482, ASTM D240-76	
79	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				SVOCs	8270	
				Ignitability	40 CFR 261.21	
				Acetonitrile	8033	
				Acrylonitrile	8031	
				Metals	6010	
				Cyanides (total and amenable)	335.1/335.2/ 9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
80	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	VOCs	8260	MDL
				Cyanides (total and amenable)	335.1/335.2/ 9010	
81	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Benzene/ VOCs	8260	MDL
				Corrosivity	40 CFR 261.22	
				Reactivity	40 CFR 261.23	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
82	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Benzene/ VOCs	8260	MDL
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				SVOCs	8270	
83	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Ignitability	40 CFR 261.21	MDL
				Corrosivity	40 CFR 261.22	
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs, Benzene	8260	
				SVOCs	8270	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Metals	6010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
84	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene/ VOCs	8260	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Ignitability	40 CFR 261.21	
				SVOCs	8270	
				Metals	6010	
85	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
86	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Arsenic, Barium, Chromium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				VOCs	8260	
				SVOCs	8270	
				Ignitability	40 CFR 261.21	
				Acetonitrile	8033	
				Acrylonitrile	8031	
				Metals	6010	
				Cyanides (total and amenable)	335.1/335.2/ 9010	

Table IV.C - Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameters	Test Methods[2]	Desired Accuracy Level[3]
87	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Cyanides (total and amenable)	335.1/335.2/ 9010	
88	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Corrosivity	40 CFR 261.22	MDL
				Reactivity	40 CFR 261.23	
				Chromium, Selenium	6010 (TCLP)	
				Benzene, Pyridine	8260 (TCLP)	
				Acetonitrile	8033	
				Acrylamide	8032	
				Acrylonitrile	8031	
				Benzene/ VOCs	8260	
				Cyanides (total and amenable)	335.1/335.2/ 9010	
				Reactivity	40 CFR 261.23	
				Ignitability	40 CFR 261.21	
				Phenol, SVOCs	8270	
				Metals	6010	
89	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Methanol, VOCs	8260	MDL
				SVOCs	8270	
				Metals	6010	
90	point of generation	grab or composite	review when process changes or every 3 years, re-analyze if necessary	Methanol, VOCs	8260	MDL
				Formaldehyde	8315	
				SVOCs	8270	
				Ignitability	40 CFR 261.21	
113	sample point/cabinet on mfg. unit column	composite	review when process changes or every 3 years, re-analyze if necessary	Reactivity	40 CFR 261.23	MDL
				Benzene	8260 (TCLP)	

Table IV.C - Sampling and Analytical Methods

1 from Table IV.B, first column.

2 Sampling and Test/Analysis methods should be specified in enough detail to allow determination of whether they are suitable and correct for the purpose indicated while allowing flexibility in selection and future updates to the specified method. Standard methods, such as those from SW-846, will generally require no further submittal. Non-standard and proprietary methods may require additional information to determine suitability. ASTM methods may require submittal of a copy of the specified method.

3 Desired Accuracy Level should provide a specified numeric minimum performance level (maximum acceptable reporting limit) for method detection and quantitation limits that will be accepted from the laboratory performing the analysis and must ensure that reported data will allow determinations of compliance with regulatory limits for the parameter tested.

Additional Notes:

MDL = Method Detection Limit
SVOCs = Semi-Volatile Organic Compounds
VOCs = Volatile Organic Compounds
If USEPA or SW-846 analytical methods are unable to achieve the desired accuracy level, Ascend may use ASTM or Standard Methods for examination of Wastes and Wastewater as appropriate.

GSI Job No. 6932

Hazardous Waste Permit Renewal Application

Ascend Performance Materials Texas Inc., Alvin, Texas

Hazardous Waste Permit No. 50189

Part B, Section IV: Appendix IV.D - Waste Analysis Plan

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application

Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

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APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

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1.0 SCOPE AND OBJECTIVES

In accordance with the requirements of the Texas Solid Waste Disposal Act, 30 TAC 305.50(9), owners and operators of facilities seeking hazardous waste management permits must address sampling and analysis requirements for wastes managed in permitted storage, processing, or disposal units at a facility. These requirements are fulfilled by the establishment of a written Waste Analysis Plan (WAP) per 40 CFR 264.13 and 268.7. The purpose of conducting waste analysis is to determine whether the wastes managed at the facility are defined as hazardous under the Resource Conservation and Recovery Act (RCRA), to classify the waste according to RCRA provisions, and to ensure that hazardous wastes are properly managed by the facility.

This waste analysis plan for the Ascend Performance Materials Texas Inc. (Ascend) Chocolate Bayou facility has been prepared to document how Ascend analyzes waste, debris, and materials from process upsets and spills to be managed in permitted hazardous waste management units. All of the information required by state and federal regulations and guidance concerning waste management (e.g., sample collection, analysis, waste classification, and land disposal requirements) is provided in this section.

2.0 OVERVIEW OF ASCEND CHOCOLATE BAYOU WASTES

Current plant operations at the Ascend Chocolate Bayou plant include the manufacture of chemical feedstocks and intermediates including Acrylonitrile (AN), Diphenyl Oxide (DPO), Formalin, Iminodiacetic Acid (IDA), Methionine Hydroxy Butanoic Acid (MHBA), Nitriloacetic Acid (NTA), Linear Alkyl Benzene (LAB), and Sodium Cyanide (NaCN). Wastes generated at the Chocolate Bayou facility consist of the following general waste types:

- inorganic liquids (e.g., aqueous wastes, leachate, decontamination wastewater, etc.)
- organic liquids (e.g., solvent mixtures, oil-water emulsions, waste oils, reactive liquids, etc.)
- inorganic solids (e.g., contaminated soils, refractory brick, spent filters/absorbents, asbestos solids and debris, groundwater sampling debris, etc.)
- organic solids (e.g., resins/polymerized organics, spent carbon, etc.)
- organic sludges e.g., reactive/polymerizable organics, etc.)
- lab packs (e.g., mixed wastes, chemicals from the plant laboratories)

These wastes are non-hazardous or classified as hazardous because of listing, characteristics, or both. Ascend does not receive wastes from off-site locations.

The AN boilers (Permit Units 11 and 12) manage a hazardous waste stream consisting of nearly pure hydrogen cyanide (HCN). The HCN stream is a by-product of the AN manufacturing process, and is primarily used in the manufacture of other products in the Ascend Chocolate Bayou plant. On an annual basis, approximately 1% to 10% of the HCN by-product stream will be burned in an AN boiler for the production of steam when one of the Ascend Chocolate Bayou customer plants cannot accept the raw material HCN by-product stream.

3.0 HAZARDOUS WASTE DETERMINATION

Prior to treating or disposing of any hazardous wastes, Ascend will either: i) obtain a chemical analysis of a representative sample of the waste; ii) use process knowledge to identify hazardous

constituents that may be present in the waste; iii) review existing published or documented data; or iv) use a combination of waste identification methods. In accordance with the requirements of 40 CFR 262.11, Ascend determines whether a solid waste is classified as a hazardous waste by evaluating the following factors.

Regulatory Exclusions: Determination of whether the waste is excluded from regulation per 40 CFR 261.4.

Listed Wastes: Determination of whether the waste fulfills the description of a listed hazardous waste under 40 CFR Part 261 Subpart D.

Characteristic Wastes: Determination of whether test results of the waste fulfill the definitions of characteristic hazardous waste per 40 CFR Part 261 Subpart C.

The HCN by-product stream from AN manufacturing is an example of hazardous waste classification based on process knowledge. Due to the highly reactive nature of HCN when combined with other chemicals, including water, determination of the hazardous waste codes was based primarily on process knowledge and published data (e.g., Material Safety Data Sheets).

4.0 TCEQ NONHAZARDOUS WASTE CLASSIFICATION

In accordance with the requirements of 30 TAC 335.505 and 335.508, Ascend has evaluated all nonhazardous wastes to determine the appropriate TCEQ classification. Factors evaluated in making this determination include physical and chemical properties, and the form of the waste.

5.0 WASTE SAMPLING

5.1 Sampling Equipment

Sample collection activities are coordinated by Ascend Chocolate Bayou personnel in conjunction with the selected contract laboratory. Contract laboratories are chosen based on the results of periodic laboratory audits conducted by the Ascend corporate office with plant personnel. Samples will be analyzed at a laboratory accredited by Texas in accordance with 30 TAC 25.

After identifying the analytical methods to be used in testing a given sample, prepared sample kits are obtained from the contract laboratory. The sample kits contain necessary sample containers, appropriate preservatives, wet ice coolers, waterproof labels, and analysis request forms. Information recorded at the time of sample collection includes: i) sample identification number and/or name; ii) dates and times of sample collection; and iii) analyses to be performed, container types and preservatives. Chain-of-custody forms are used with any samples to be shipped off-site for analysis by a contract laboratory.

Waste samples are collected using equipment made from inert, non-reactive materials appropriate for the chemical and physical properties of the waste to be sampled. Equipment is selected on the basis of: i) the physical state of the waste (i.e., solid, liquid, or sludge); ii) volume of sample needed for analysis; and iii) known hazardous properties of the waste (e.g., corrosivity, reactivity, etc.). Sampling devices include Coliwasas, weighted bottles, bailers and dippers for wastewaters; and triers, thieves, and augers for sludges and solids. Selected equipment is

inspected to ensure the devices are thoroughly cleaned prior to sample collection to minimize cross-contamination. Cleaning methods may include application of hot steam; a non-phosphate detergent wash followed by fresh and/or deionized water rinses; or other equivalent methods.

5.2 Sample Collection and Management

Samples are collected in clean, USEPA method-specified containers, with appropriate preservatives, supplied by the laboratory. Representative samples are collected using the methods described in 40 CFR Part 261, Appendix I. Wastewaters are collected from in-line sample ports, from pipe discharge points, or other openings located downstream of the point of waste generation. Containers (e.g., drums, tanks, roll-off boxes, etc.) are sampled individually or collectively depending on the quantity of waste of the same composition. Liquid samples are collected as "grab samples" (i.e., at a random discrete time interval) because the streams are generally of known physical/chemical properties with minimal variability in composition. Soils and sludges are collected as composite samples when the average concentration of waste constituents is needed. Composite samples are obtained by collecting a number of individual samples that are combined into a single sample for subsequent analysis. Samples to be analyzed for volatile organic compounds (VOCs) and non-wastewaters with numerical treatment standards under 40 CFR 268.40 will not be composited.

Collected samples are preserved and stored pending transport to the laboratory. Preservation methods (including chilling collected samples to 4°C) ensure sample integrity is maintained and sample degradation is prevented.

The HCN by-product stream is sampled via a chilled water sample cabinet located on the AN Purification Structure. Samples are obtained directly from the sample line into a clean designated insulated container fitted with inner and outer screw caps. The piping and valves in the sample line are sized to allow only a specific amount of HCN to be drained into the container. After collection, samples are immediately delivered to the Ascend Chocolate Bayou Plant laboratory for analysis.

5.3 Sample Quality Assurance/Quality Control (QA/QC)

Waste samples are collected and managed in a manner that minimizes the potential for cross-contamination, loss of volatile constituents, or other interferences. Sampling personnel follow established Ascend Health and Safety procedures concerning appropriate personal protective equipment when handling sampling equipment, sampling containers, and collected samples.

Ascend uses qualitative measures to ensure collected samples are properly documented. These measures include securing the sample container with a tight-fitting lid and attaching a waterproof adhesive label. The label includes information such as sample identification, time and date of collection, initials of the sampling personnel, and other information, as appropriate.

Samples to be shipped for off-site laboratory analysis are accompanied by chain-of-custody/analysis request forms. Such forms are completed in legible handwriting and accompany the samples throughout all phases of shipment and handling. Upon delivery of the samples to the off-site laboratory, Ascend retains a copy of the chain-of-custody form, signed by the sampling and laboratory personnel indicating the date and time the sample was relinquished and received.

Completed chain-of-custody forms (i.e., forms containing all signatures from the sampler to the laboratory) are retained in Ascend records.

Quality control measures used to ensure the integrity of the sampling program include collection of i) field blanks; ii) trip blanks; iii) equipment blanks; and iv) duplicate samples, as needed. Preparation and use of these samples is completed as follows:

Field Blanks: Field blanks are prepared at the time of waste sample collection by filling a clean container with distilled water and adding preservatives for the specific analytical method. Should contaminants be found in the field blank upon analysis, cross-contamination of samples or contaminated equipment will be suspected.

Trip Blanks: Trip blanks are sample containers filled with distilled water and carried into and out of the field unopened during the waste sampling event. If the trip blank tests detectable levels of volatile organic contaminants, the containers are suspected to be the source of the contamination.

Equipment Blanks: Equipment blanks are prepared by pouring distilled water over the sampling equipment after decontamination procedures are complete and collecting the runoff into clean sample containers. Should analysis of these blanks detect contamination, the sampling equipment is assumed to have been improperly decontaminated prior to obtaining the waste sample.

Duplicate Samples: Duplicate samples are independent waste samples collected from the same location and at the same time as the original waste sample. Duplicate samples measure the precision or reproducibility of the analytical data.

6.0 WASTE ANALYSIS

6.1 Analytical Parameters

The Ascend Chocolate Bayou plant has manufactured the same products using the same raw materials for over 30 years. As a result, the hazardous wastes generated at the plant have minimal variability in composition and are generally of known physical and chemical properties. In selecting analytical parameters for testing hazardous waste streams, debris and materials from process upsets and spills, Ascend employs process knowledge of the manufacturing activity from which the waste or debris originated, knowledge of the composition of the raw materials, and analytical results of previously tested similar wastes, debris and materials from process upsets and spills.

Analytical parameters used to characterize specific hazardous waste streams generated at the Ascend Chocolate Bayou facility were selected for inclusion from the following waste groups:

Listed Wastes: Hazardous constituents were selected from listed wastes generated by the acrylonitrile manufacturing process. These listed wastes are K011 (acrylonitrile wastewater stripper bottom stream) and K013 (acetonitrile column bottom stream). The constituents associated with these streams include acetonitrile, acrylonitrile, acrylamide, benzene, and cyanides.

Discarded Commercial Chemical Products: Hazardous constituents were selected from specific discarded or off-specification commercial chemical products used at the Chocolate Bayou facility such as benzene (U019), acrylonitrile (U009), crotonaldehyde (U053), methanol (U154), and phenol (U188).

Toxicity Characteristic Test Results: Hazardous constituents were selected on the basis of previous analyses of Chocolate Bayou waste streams using the Toxicity Characteristic Leaching Procedure (TCLP). These constituents include arsenic, barium, cadmium, chromium, lead, mercury, and others.

Measures of Ignitability, Corrosivity, and Reactivity: Flash point, pH, and cyanide content were selected to determine whether the waste meets the definition of ignitable, corrosive, or reactive as specified in 40 CFR Part 261 Subpart C. In addition, pH and flash point are used to identify wastes that require special storage conditions (e.g., isolation from ignition sources to prevent fires, or isolation from strongly acidic or basic materials to prevent adverse waste reactions).

BIF Constituents: The HCN by-product stream burned in the AN boilers has been sampled and analyzed for the BIF constituents of concern (i.e., BIF constituents and physical parameters such as ash, density, and heat content).

6.2 Analytical Methods

Analytical methods used to test Ascend Chocolate Bayou waste streams were selected based on i) waste identification requirements per 40 CFR Part 261; ii) land disposal restriction requirements per 40 CFR Part 268; iii) generator knowledge of the waste stream; and iv) EPA analytical methods included in SW-846. Analyses of waste samples are conducted primarily to: i) aid in classifying the waste per USEPA and TCEQ guidelines; ii) evaluate potential treatment, recycling, and reclamation options; iii) evaluate disposal options; iv) determine the applicability of Land Disposal Restriction (LDR) requirements; and v) determine the applicability of organic air emission standards per 40 CFR 264 Subpart CC.

The HCN stream burned in the AN boilers is a high purity by-product used as a raw ingredient in three Ascend Chocolate Bayou manufacturing units, including an animal feed production unit. The stream is monitored for HCN purity twice per week by analyzing a small sample (<100 mL) in the Ascend Chocolate Bayou Plant laboratory per US Food and Drug Administration (FDA) requirements.

6.3 Frequency of Analysis

6.3.1 Initial Characterization of Waste Streams

Ascend Chocolate Bayou waste streams were initially characterized in 1985. Samples of process wastewaters, process and treatment sludges, spent catalysts, spent filter cartridges, and miscellaneous organic liquids were collected. Tests for waste characteristics (ignitability, corrosivity, reactivity, and toxicity) were conducted along with analyses for volatile and semi-volatile organic constituent concentrations. Waste streams were also evaluated to determine if particular listing descriptions were met (e.g., K011, K013, etc.).

Process wastewaters were also sampled and tested in 1990 when the Toxicity Characteristic regulations were established for organic constituents. Ignitability, corrosivity, and reactivity tests were also conducted on these waste streams.

Both plant-wide and process wastewaters managed in the Injection Well Pretreatment Facility (IWPF) were sampled and tested in 1992 when in-plant changes were proposed for the deepwell disposal system. Plant-wide wastewaters consisted of landfill leachate, decontamination rinsates, stormwater, and recovered groundwater. Wastewaters were analyzed for all four waste characteristics (ignitability, corrosivity, reactivity, and toxicity) as well as for volatile organic and semivolatile organic constituent content by USEPA SW-846 methods.

The HCN by-product stream has been sampled and analyzed for the BIF constituents of concern (i.e., BIF metals and physical parameters such as ash, density, and heat content). Results of the BIF constituent analysis conducted in accordance with EPA SW-846 and ASTM methods how that all of the BIF metals and chlorine were non-detectable in the HCN by-product stream (see Section V Engineering Reports).

Feedstocks in the AN manufacturing process consist of propylene, ammonia, and air. There are no BIF metals used as catalysts or reactants in the process generating the HCN by-product stream. The HCN by-product stream is produced in the form of a vapor and because metals do not vaporize at the relatively low temperatures associated with AN production, no metals are carried in the condensed HCN by-product stream. In addition, no chlorine is present in the feedstocks in the AN production process due to adverse effects of chlorine on the manufacturing equipment.

6.3.2 Waste Re-Analysis

New waste streams are sampled and analyzed, as needed, for the purposes of ensuring proper waste characterization and safe waste management practices. Existing waste streams have a very low potential for varying in composition; therefore, waste streams are evaluated for potential re-analysis when one of the following conditions occurs:

- Processes generating the wastes have changed such that the characteristics of the waste streams may have been significantly altered;
- Waste streams disposed in land disposal units on-site are due for a periodic (typically 3 year) review;
- Regulations are promulgated that result in existing nonhazardous wastes being identified as hazardous; or
- Regulations are promulgated that affect the disposal options for existing wastes at the facility.

Due to the high degree of hazards associated with re-sampling and analyzing the HCN by-product stream for the BIF constituents, TCEQ granted Ascend a waiver from sampling and analytical requirements for the Ascend Recertification of Compliance and Trial Burn for the AN boilers (30H5 and 31H4) (see Attachment IV.D.1). Supplemental information concerning the hazards associated with HCN is provided in Attachment IV.D.2. Information concerning the testing of the boiler stack effluent stream is provided in the Trial Burn Plan and Trial Burn Reports for the AN boilers as submitted to TCEQ on 14 February 1997 and 6 February 1998 (see Attachment IV.D.3). More updated testing for trace elements in the by-product HCN was conducted and submitted to

TCEQ on 30 June 2010 (see Attachment IV.D.4). Note that the first page of Attachment IV.D.4 has a typographical error, stating that the document date is 30 June 2009.

Due to the extreme hazards to human health associated with sampling and analyzing the large sample quantities (1,000 mL or greater) typically required by EPA SW-846 methods, Ascend does not sample and analyze the HCN by-product stream for the BIF constituents on a regular basis. Ascend is confident that the composition of this stream has remained unchanged based on process knowledge, the FDA purity monitoring, and the previously conducted BIF constituent testing of the HCN by-product stream.

The AN manufacturing process generating the HCN by-product stream is periodically reviewed to determine if any changes have occurred that would significantly alter the composition of the HCN by-product stream. In addition, the characterization of this stream is reviewed whenever new regulations are promulgated that affect the safe management of this stream in the AN boilers.

6.4 Laboratory QA/QC

Ascend requires the laboratory to apply QA/QC procedures consistent with USEPA and/or American Public Health Association/American Water Works Association/Water Environment Federation (APHA/AWWA/WEF) guidance (e.g., Standard Methods for the Examination of Water and Wastewater). Such procedures may include the quantitative analysis of method blanks, matrix spikes, and surrogate spikes. Preparation and use of these quality control techniques are as follows:

Method Blanks: Method blanks are used to identify potential contamination resulting from the analytical equipment or process. These samples are prepared by placing distilled water into containers for analysis of the same constituents as the waste sample. If contaminants are found to be present in the method blanks, laboratory contamination is suspected.

Matrix Spikes and Duplicates: Matrix spikes and matrix spike duplicates are used to evaluate the precision and accuracy of the analytical method used to test the waste sample. Compounds of interest are added (spiked) to the waste sample prior to sample preparation. The recoveries of the spiked compounds are used to evaluate the ability of the analytical method to detect the waste constituents of interest.

Surrogate Spikes: Surrogate spikes are used to evaluate the accuracy of the analytical method. Known concentrations of compounds similar to the analytes of interest (i.e., similar in chemical composition, extraction properties, and chromatographic properties) are added to the waste sample prior to sample preparation. The recoveries of the spiked compounds are used to evaluate the ability of the analytical method to detect the waste constituents of interest.

Analysis of laboratory QA/QC samples is conducted at a frequency recommended by EPA and/or APHA guidelines. Results of the QA/QC analyses are compared to the control limits for precision and accuracy established in the analytical method (e.g., matrix spikes) or utilized to monitor potential contamination in the laboratory (e.g., blanks).

Laboratories utilized for waste analysis are subject to routine facility inspections and data audits conducted by the Ascend corporate office in conjunction with plant personnel. Each laboratory

evaluation consists of an assessment of the adequacy of the laboratory facility, including an evaluation of the following items:

- Types of equipment and appropriateness for a given test method;
- Adequacy of laboratory space;
- Training and competency of personnel;
- Capability to perform specific procedures at the request of Ascend;
- Defensibility of the data;
- Support of laboratory management to provide adequate resources and oversight; and,
- Presence of quality control systems and quality assurance procedures.

Data audits ensure that adequate procedures and practices are implemented by the laboratory. Such procedures and practices include verification of analytical methods, instrumentation calibration and maintenance, and recordkeeping. Additional items evaluated during the audit include chain-of-custody records, defensibility of laboratory standards, and personnel training records for the laboratory staff conducting analyses.

7.0 IGNITABLE, REACTIVE AND INCOMPATIBLE WASTES IN CONTAINERS, TANKS, AND LANDFILLS

7.1 Ignitable and Reactive Wastes

Ascend Chocolate Bayou hazardous waste streams are evaluated for potential ignitability and reactivity using the procedures specified in USEPA SW-846. Measures to prevent ignition of wastes or fume generation include a prohibition against the use of matches or lighters except in designated smoking locations, and requirements for issuance of hot work permits for any plant activities involving the use of a flame, arc, or other sources of ignition near ignitable or reactive waste management areas. Air monitoring in the work zone may also be conducted to ensure that adequate oxygen is available and no flammable gases are present.

Provisions of 40 CFR 264.176 require that containers holding ignitable or reactive wastes to be located at least 50 ft from the plant property line. The distance from the Outdoor Container Storage Area (Permit Unit 13) to the nearest property lines is approximately 3,200 ft. After construction, the IWPF Container Storage Area (Permit Unit 15) will also not be located near a property line. Thus, storage of ignitable and reactive wastes in containers in the on-site CSAs meets the requirements of 40 CFR 264.176.

Ascend Chocolate Bayou manufactures large quantities of hydrogen cyanide as a by-product of the Acrylonitrile manufacturing operation. Facility personnel are highly experienced and trained in safely managing all cyanide-containing products and wastes. Safe management of reactive wastes containing cyanide is achieved by maintaining an appropriate pH level to prevent conditions favorable to the generation of cyanide gas.

The HCN waste stream managed in the AN boilers is generated as a by-product of the AN manufacturing process and is maintained in a totally enclosed system within each of the AN manufacturing units. The HCN by-product stream is conveyed via dedicated piping to the combustion equipment in the boilers and all valves are lethal service rated. The HCN stream is therefore protected from open flames, cutting and welding, hot surfaces, frictional heat, sparks,

spontaneous reactions, radiant heat and other sources of ignition and/or reaction. In addition, no smoking is allowed in either AN manufacturing unit except in designated smoking areas within the unit control rooms.

Hydrogen cyanide may become unstable in the presence of alkaline materials or water, and may react violently with strong mineral acids. To prevent these reactions from occurring, Ascend conducts daily inspections of the boilers and piping systems for signs of deterioration or tampering. In addition, area monitors detect any HCN in the ambient air and alarms are sounded to evacuate personnel until the source of the HCN leakage is located and repaired.

The AN boilers manage a single waste stream from the manufacturing processes in the AN manufacturing units. Therefore, no potential exists for mixing of incompatible wastes within the boilers. In addition, piping, valves, mechanical components, and refractory lining of the combustion chamber of the AN boilers have been selected for compatibility with the HCN waste stream.

Process wastewaters classified as D001 (ignitable) or D003 (reactive) at the point of generation undergo treatment in Elementary Neutralization Units (ENUs), Totally Enclosed Treatment Facilities (TETFs), or other similar units prior to entering the permitted hazardous waste management units. Wastewaters inside the IWPF tanks therefore do not meet the definition of ignitable or reactive wastes. Similarly, hazardous waste solids and sludges that are characteristically hazardous for ignitability or reactivity at the point of generation are treated to meet Land Disposal Restriction requirements prior to disposal in the Active Landfill and New Landfill, and are therefore no longer ignitable or reactive inside the disposal units.

7.2 Incompatible Wastes

In order to prevent a potential adverse waste reaction or release, Ascend completes a waste compatibility determination. Determinations of waste incompatibility are conducted on the basis of: i) hazardous waste characteristic test results; ii) comparison to known waste incompatibilities listed in 40 CFR Part 264 Appendix V; and iii) an internal policy requiring bench scale qualitative tests be conducted by the Ascend laboratory to evaluate solids formation, temperature changes, pH changes, and vapor emissions. If a waste is determined to be incompatible with other wastes or materials, the waste is either treated on-site or the process is modified to eliminate the incompatible property. Alternatively, if the incompatible waste cannot be treated on-site, it will be kept physically isolated during storage and shipped off-site for treatment and disposal.

8.0 WASTES MANAGED IN CONTAINERS

8.1 Container Management

Hazardous wastes will be stored only in containers that are in good condition and constructed of materials that are both compatible and non-reactive with the wastes being stored, as required under 40 CFR 264.171-.172. Waste materials will be promptly removed from any container found to exhibit severe rusting, visually apparent defects, or leaks. If such a defect is observed, the waste will be transferred to an acceptable container meeting the requirements of 40 CFR 264.171-.172, or managed in another manner in accordance with applicable regulations (e.g., placed within an overpack drum).

8.2 Waste Incompatibility

To avoid adverse reactions of incompatible wastes stored in containers, the following measures are implemented per 40 CFR 264.177:

- No incompatible wastes are mixed in the same container.
- Containers are re-used for waste storage only after undergoing a three-step reconditioning process consisting of: i) removal of wastes and waste residues; ii) triple rinsing the container with a solvent capable of eliminating the waste residue; and iii) inspection of the container to verify the container remains in good condition for waste storage.
- Containers used for waste storage are “emptied” as defined in 40 CFR 261.7.
- Containers of incompatible wastes are stored physically segregated from other waste containers.

8.3 Secondary Containment for Containers

Ascend has one permitted container storage areas (CSAs) for hazardous waste, Outdoor CSA (Permit Unit 13), and one proposed CSA (Outdoor CSA 2; Permit Unit 23). The Outdoor CSA (Permit Unit 13) provides storage of containerized wastes in the central portion of the manufacturing area of the facility. The area allocated for storage encompasses an approximate 206 ft by 178 ft area with a surface cover of crushed rock, shell, or similar material. Wastes are managed in roll-off boxes, drums, overpacks, pails, or other suitable containers prior to disposal in the onsite permitted landfill or offsite landfill. The Outdoor CSA is used solely for the storage of containerized wastes containing no free liquids; no secondary containment is required per 40 CFR 264.175(c)(1). As discussed in further detail below, Ascend initially screens all wastes to be landfilled for free liquids by visual inspection. Wastes containing liquids are further evaluated as needed using the Paint Filter Liquids Test (USEPA Method 9095) to determine if hazardous wastes hold free liquids. The proposed Outdoor CSA 2 (Permit Unit 23) will be of similar size (323 ft x 182 ft) and construction, and will manage the same wastes in the same containers as the Outdoor CSA (Permit Unit 13).

9.0 BULK AND CONTAINERIZED LIQUIDS IN THE ACTIVE AND NEW LANDFILLS

In accordance with the provisions of 40 CFR 264.314 and 30 TAC 335.175, Ascend does not dispose of bulk or containerized liquid hazardous wastes or hazardous wastes containing free liquids into the Active Landfill (Permit Unit 02) and New Landfill (Permit Unit 16). Ascend screens all wastes to be placed in the landfills for free liquids by visual inspection. Wastes containing liquids are further evaluated using the Paint Filter Liquids Test (USEPA Method 9095) to determine if hazardous wastes hold free liquids. Waste materials such as pipe or solid pieces of metal with no free liquids as determined by visual inspection will not subject to the Paint Filter Liquids Test. If the waste is found to contain free liquids, Ascend will eliminate the free liquids by one or more of the following methods:

- Decanting or other removal methods;
- Addition of a nonbiodegradable sorbent;
- Solidification/stabilization;

- Chemical treatment; and/or
- Thermal treatment.

10.0 LAND DISPOSAL RESTRICTIONS

For all wastes to be disposed of in non-exempt land-based units either on-site or off-site, Ascend conducts a Land Disposal Restriction (LDR) determination per 40 CFR Part 268 requirements. This determination consists of the following elements:

Waste Classification: Following the procedures outlined above for hazardous waste determination, Ascend determines the applicable USEPA Waste Codes for each land-disposed waste stream. Wastes classified as listed per 40 CFR Part 261 Subpart D are also evaluated to identify any potential waste characteristics defined in 40 CFR Part 261 Subpart C.

LDR Waste Analysis: Prior to disposal, wastes to be land-disposed are either analyzed using USEPA test methods or evaluated using process knowledge to determine if the waste meets the treatment standards of 40 CFR Part 268 Subpart D. Treatment standards are specified as concentration-based standards or specific treatment technologies. Only grab samples will be analyzed for non-wastewaters with numerical treatment standards.

Waste Treatment Standards: Treatment standards for Ascend Chocolate Bayou hazardous wastewater and non-wastewaters for land-disposed wastes are specified in 40 CFR Part 268. No wastes are land-disposed unless these treatment standards have been met.

Hazardous Debris: Hazardous debris will only be land disposed following the treatment methods presented in 40 CFR 268.45, unless a determination is made that the debris is no longer contaminated with hazardous waste.

Materials from Process Upsets or Spills: Material from process upsets or spills will be assumed to be prohibited from land disposal until they are characterized.

Documentation: Per 40 CFR 268.7, Ascend maintains all LDR-related notices, certifications, demonstrations, waste analysis data, and related LDR documentation for a minimum of five years. Certification that wastes meet or do not meet the applicable LDR treatment standards is also sent with each waste shipment to any off-site land disposal facility receiving Ascend wastes.

GSI Job No. 6932
Issued: 9 August 2024

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

ATTACHMENTS

Attachment IV.D.1 Waiver for Not Re-Sampling and Analyzing the HCN By-Product Stream for BIF Constituents

Attachment IV.D.2 Material Safety Data Sheets for HCN

Attachment IV.D.3 Analytical Results for BIF Constituents in HCN By-Product Stream

Attachment IV.D.4 Determination of Selected Trace Elements in By-Product HCN

GSI Job No. 6932
Issued: 9 August 2024

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

ATTACHMENT IV.D.1

Waiver for Not Re-Sampling and Analyzing the HCN By-Product Stream for BIF Constituents

Hydrogen Cyanide Production Data (USFDA)

(Production Analysis 2-1-96 through 8-9-97)

Constituent	Average Concentration * Weight Percent (%)
Hydrogen Cyanide	99.20
Water	0.53
Acetic Acid	0.20
Propionitrile	0.025
SO2 (Inhibitor)	0.024
Benzene	0.017
Acrylonitrile	0.012
Propylene Oxide	0.008
Other Trace Hydrocarbons	0.012

* Based on 96/97 Production QA/QC Analysis of product stream taken from Tanks 327-T3-1/2, from 2-1-96 through 8-9-97. In these analyses, 1 cc samples are injected into two GCs with: (1) FID, and (2) TCD.

8/20/97

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

July 24, 1995

Mr.Thomas M. Moran
Senior Environmental Specialist
Monsanto Company
P.O. Box 711
Alvin, Texas 77512-2161

Re: Monsanto Company - Chocolate Bayou Complex
Industrial Hazardous Waste Registration No. 30138
Hazardous Waste Permit No. HW-50189-001
Cyanide Sampling for Recertification of Compliance

Dear Mr. Moran:

We have reviewed your letter dated May 1, 1995, in which you request the use of previous stream constituent data in lieu of new testing for an HCN stream fed to your 30H5 and 31H5 boilers located at your Acrylonitrile Plant. You state that these boilers are primarily used to burn an excess HCN stream, and that the sampling and analysis of this particular stream, liquid HCN, presents significant safety and liability concerns. You also state that neither the stream nor the process generating the stream have changed since the performance of your previous Certification of Compliance testing. As you stated in a telephone conversation on June 30, 1995, the HCN is monitored by the U.S. Food and Drug Administration (FDA) because the HCN is used as a raw material in an animal feed production unit.

This letter represents a one-time waiver pursuant to 40 CFR 266.103(j)(1)(i). We are granting this waiver based on your representation that the stream and the process generating it have not changed, the extreme hazard of the stream, and the data showing the lack of metals and chlorine in the stream. Please submit, with your Certification of Compliance, such data as necessary to document that the HCN stream has not changed. This letter does in no way preclude the Executive Director's ability to request sampling of this stream in the future. If you have questions, please contact William J. Shafford at (512) 239-6621, MC 130.

Sincerely,

Kari Bourland

Kari Bourland, P.E., Acting Manager
Permits Section
Industrial and Hazardous Waste Division

WRH/BS/bs

Monsanto

THE CHEMICAL GROUP
P.O. Box 711
Alvin, Texas 77512-9888
Phone: (713) 581-2161

May 1, 1995

CERTIFIED MAIL - Z 032 114 103
RETURN RECEIPT REQUESTED

Mr. William Shafford
Texas Natural Resource Conservation Commission
Industrial & Hazardous Waste - Mail Code 130
P.O. Box 13087
Austin, Texas 78711-3087

RE: Monsanto Company Chocolate Bayou Plant
EPA Permit No. TXD001700806
RCRA Permit No. 50189-001
BIF Recertification Testing

Dear Mr. Shafford:

The Monsanto Chocolate Bayou Plant currently operates two boilers in its AN Unit under the interim status standards of the BIF Rule to burn Hydrogen Cyanide (HCN). The purpose of this letter is to request confirmation that waste HCN sampling will not be required as part of the BIF Recertification Testing for the AN Plant BIF units.

We previously requested a waiver from section 266.103 (j) of the BIF Rule not to sample our highly toxic HCN waste stream on January 8, 1992. Actual stack sampling results from the AN plant boilers were submitted which showed non-detectable concentrations of all ten metals and levels of HCl, Chlorine, and particulate matter which were well below the limits stipulated in the BIF Rule. We would not expect any of the BIF constituents to be present in the HCN stream since these constituents are not present in the Acrylonitrile process.

The by-product HCN stream is separated from the crude Acrylonitrile product stream and exits the top of the Hydrogen Cyanide Purification Column in vapor form. The HCN vapors are then condensed and sent to three other chemical manufacturing units as a raw material. By-product HCN that is not used by the other manufacturing units is burned in the two AN BIF units.

We were informed by Mr. Ruben Casso of EPA Region 6 that a waiver to totally avoid sampling the HCN could not be granted. Therefore, we agreed with Ruben Casso that the HCN would have to be sampled "at least once" for the BIF constituents. In spite of significant safety and liability concerns, we completed the required analysis of the HCN waste stream in January 1993 just prior to the submittal of our Certification of Compliance on April 14, 1993. The HCN laboratory results confirmed the earlier stack sampling results which showed non-detectable concentrations of all ten BIF metals and levels of HCl, Chlorine, and particulate matter which were well below the limits stipulated in the BIF Rule.

The HCN sampling results are shown in the attached Table 1 and Table 4-6. Table 1 compares the maximum allowable and actual waste feed concentrations, based on the January 1993 HCN sampling results. Table 4-6 from our last Certification of Compliance (4-14-93) shows that the particulate concentrations are more than two orders of magnitude below the 0.08 grains/dscf EPA limit.

Since the EPA required HCN sampling has been completed and there have not been any changes in the HCN waste stream, we wish to confirm that sampling of the highly toxic Hydrogen Cyanide will not be required as part of our BIF Recertification testing. Instead, the previous benchmark Hydrogen Cyanide analysis would be used in the Recertification of Compliance to address the BIF constituents in the HCN waste feed stream.

Please send us written confirmation of your decision on this proposal by 6-1-95 so we can finish planning our upcoming BIF Recertification Testing. If you have any questions or need additional information, please contact me at (713) 393-4762.

Sincerely,

Thomas M. Moran

Thomas M. Moran
Sr. Environmental Specialist

TMM/jw
Enclosure

bcc:

Table 1. Comparison of Maximum Allowable and Actual Waste Feed Concentrations for BIF Metals and Chlorine

Constituent	RAC or RSD(a) (ug/m3)	Adjusted Tier 1 Feed Rate Limit (g/hr)	Waste Feed Concentrations Maximum Allowable(b) (mg/kg)	Actual (mg/kg)
Arsenic	0.0023	118.3	26.1 (c)	<0.057
Antimony	0.3	15,429	3401	<0.057
Barium	50	2,571,000	566,900	<1.43
Beryllium	0.0042	216	47.6 (c)	<0.43
Cadmium	0.0056	288	63.5 (c)	<1.43
Chromium	0.00083	42.7	9.41 (c)	<1.43
Lead	0.09	4,629	1020	<1.43
Mercury	0.08	4,114	907	<0.014
Silver	3	154,300	34,010	<0.29
Thallium	0.3	15,429	3401	<0.057
Chlorine	0.4	20,570	4535	<715

NOTES:

(a) RAC = Reference Air Concentration
RSD = Risk Specific Dose

(b) Facility Dilution Factor = 0.035 + 0.035 = 0.070 ug/m3/g/s
Maximum Waste Feed Rate = 10,000 lb/hr for each of two AN BIF units. The SAB BIF Unit 51H5 is assumed to be closed by 10-1-95 leaving only the two identical AN BIF Units in operation.

(c) The total feed rate of carcinogenic metals assumes 100% of the allowable rate since the analytical results indicate concentrations below detect levels.

Feed Rate Limit = (RAC/DF)*3600

Maximum Allowable Concentration = (F.R.L.)*1,000,000 / (453.6*10,000)

TABLE 4-6

Particulate Matter Results
(grains/dscf @ 7% O_2)

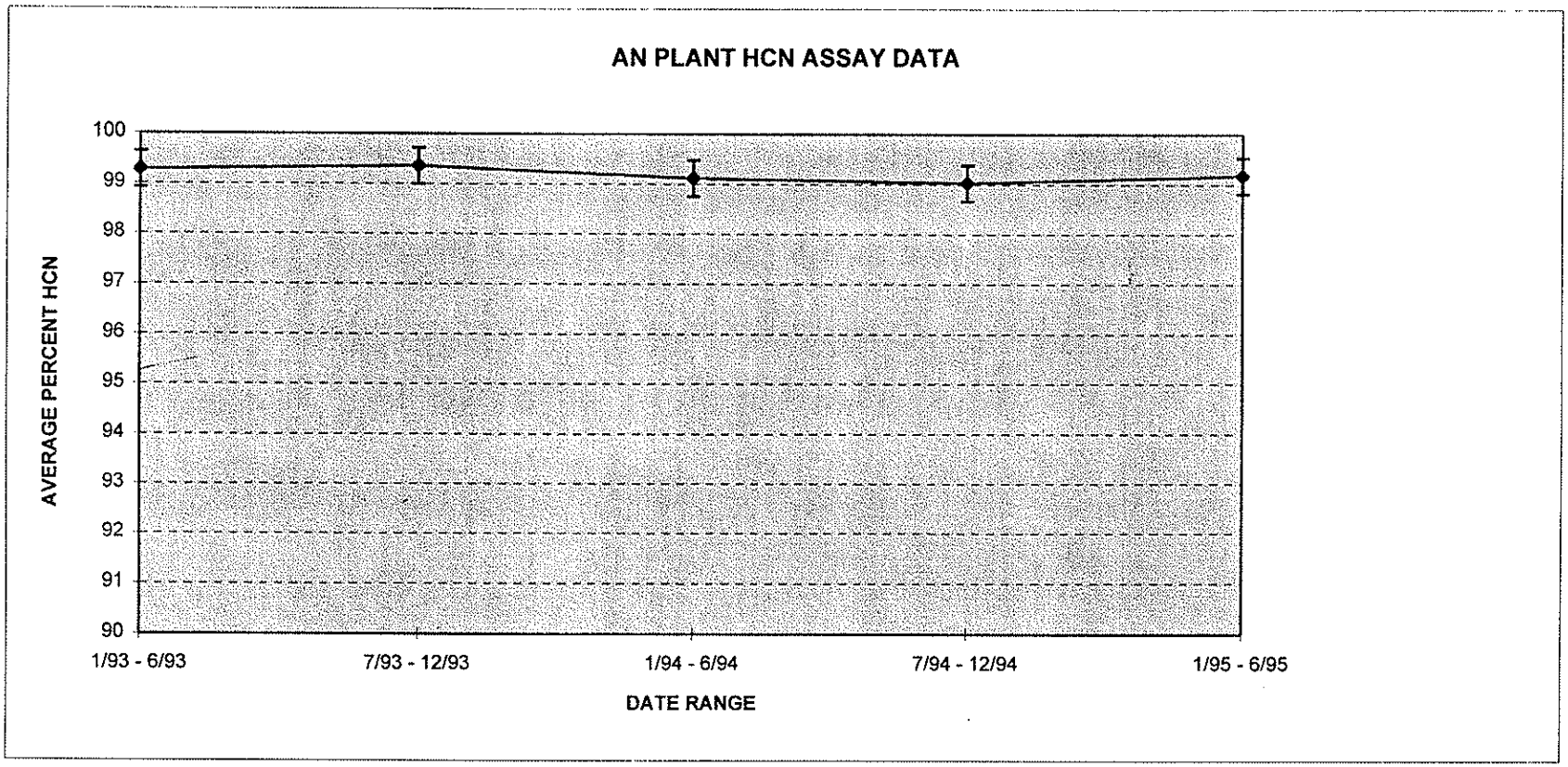
Test Condition	Run No.	EPA/TWC[a]	TACB[b]
1	1	0.00000	0.00000
	2	0.00041	0.00041
	3	0.00026	0.00026
	Average	0.00022	0.00022
2	1	0.00004	0.00008
	2	0.00000	0.00000
	3	0.00004	0.00004
	Average	0.00003	0.00004

[a] EPA/TWC defined particulate (includes "front-half" catch only)
[b] TACB defined particulate emissions (includes "front-half" plus first impinger catch)

AN PLANT HYDROGEN CYANIDE ANALYSIS DATA
PERCENT HCN ASSAY

DATE RANGE:	1/93 - 6/93	7/93 - 12/93	1/94 - 6/94	7/94 - 12/94	1/95 - 6/95
MEAN % HCN:	99.28	99.36	99.12	99.03	99.18

OVERALL AVERAGE: 99.22% STANDARD DEVIATION: 0.36%



GSI Job No. 6932
Issued: 9 August 2024

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

ATTACHMENT IV.D.2

Material Safety Data Sheets for HCN

ORIGINAL
DO NOT REMOVE FROM FILE

MONSANTO HAZARD DETERMINATION
OSHA HAZARD COMMUNICATION STANDARD
29 CFR 1910.1200 (d)

COMPOUND: HYDROGEN CYANIDE (HYDROCYANIC ACID)

CAS NO.: 74-09-8

MSDS INFORMATION

Supplier: MONSANTO

Date: 4-86

EVALUATION INFORMATION

Plant: CHOCOLATE BAYOU

Date: 4-86

Evaluator: KAL

HEALTH HAZARD CRITERIA

1. CARCINOGENIC	
2. TOXIC	
3. HIGHLY TOXIC	✓
4. REPRODUCTIVE TOXIN	
5. IRRITANT	
6. CORROSIVE	
7. SENSITIZER	
8. LIVER EFFECTS	
9. KIDNEY EFFECTS	
10. NERVE EFFECTS	✓
11. BLOOD EFFECTS	
12. LUNG EFFECTS	
13. SKIN EFFECTS	
14. EYE EFFECTS	
15. MUCOUS MEMB. EFFECTS	

PHYSICAL HAZARD CRITERIA

16. COMBUSTIBLE LIQUID	
17. FLAMMABLE	✓
18. COMPRESSED GAS	
19. EXPLOSIVE	
20. ORGANIC PEROXIDE	
21. OXIDIZER	
22. PYROPHORIC	
23. UNSTABLE (REACTIVE)	
24. WATER REACTIVE	

OSHA HAZARDOUS? ✓

MONSANTO PRODUCT NAME

HYDROCYANIC ACID

MONSANTO COMPANY
800 N. LINDBERGH BLVD.
ST. LOUIS, MO 63167
EMERGENCY PHONE NO.
(CALL COLLECT)
314-694-1000

PRODUCT IDENTIFICATION

Synonyms: Hydrogen cyanide, prussic acid
Chemical Name: Hydrocyanic acid
Chemical Family: Nitrile
CAS No.: 74-90-8
DOT Proper Shipping Name: Hydrocyanic Acid, liquified
DOT Hazard Class/I.D. No.: Poison A, Flammable Gas 49 STC Code 4920125
UN No. 1051, IMCO Class 2
DOT Label: Not Applicable
U.S. Surface Freight Classification: Not Applicable
Reportable Quantity (RQ) (40 CFR Part 117)
Under Clean Water Act Regulations: Not Applicable

This product contains, as components, the substances listed below which are identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200):

Hydrocyanic acid, CAS No. 74-90-8
Benzene, CAS No. 71-43-2, a National Toxicology Program (NTP) and International Agency for Research on Cancer (IARC) listed carcinogen

WARNING STATEMENTS

(Proposed label, DMEH)

DANGER!
EXTREMELY HAZARDOUS LIQUID AND GAS
EXTREMELY FLAMMABLE
MAY BE FATAL IF INHALED, SWALLOWED OR ABSORBED THROUGH SKIN. If exposed, take first aid action immediately.
USE ONLY IN CLOSED SYSTEM

PRECAUTIONARY MEASURES

(Proposed label, DMEH)
AMYL NITRITE IS AN ANTIDOTE. Always have a cyanide first aid kit on hand.
Keep away from heat, sparks and flame.
Do not breathe gas or vapor.
Do not get in eyes, on skin or on clothing.

PRECAUTIONARY MEASURES (continued)

Use only with adequate ventilation.
Keep container closed.
Wash thoroughly after handling.

Wear protective equipment, including gloves, rubber aprons, rubber footwear, goggles and face shield. Wash protective equipment with water after each use.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

EMERGENCY AND FIRST AID PROCEDURES

POISON - CALL A PHYSICIAN

Carry patient to fresh air, have him lie down. Remove contaminated clothing but keep patient warm. Start treatment immediately. Call a physician. Rescuers must use care to prevent contact with the material.

FIRST AID: IF IN EYES OR ON SKIN, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. Repeat 5 times at about 15 second intervals. Wash clothing before reuse. Destroy contaminated shows.

IF INHALED, immediately remove to fresh air. Break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. Repeat 5 times at about 15 second intervals. If not breathing, give artificial respiration, preferably mouth-to-mouth.

IF SWALLOWED, break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. If patient is conscious, or when consciousness returns, induce vomiting immediately by giving 2 glasses of water and sticking finger down throat. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Repeat inhalation of amyl nitrite 5 times at about 15 second intervals. If not breathing, give artificial respiration, preferably mouth-to-mouth.

NOTE TO PHYSICIANS: If patient has not responded to amyl nitrite, inject intravenously 10 milliliters of a 3 percent solution of sodium nitrite at a rate not greater than 2.5 to 5.0 milliliters per minute. Follow directly with 50 milliliters of a 25 percent solution of sodium thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear, repeat nitrite and thiosulfate injections 1 hour later in one-half the original doses.

IN CASE OF:
FIRE, do not extinguish. Because of toxicity, allow to burn.
SPILL OR LEAK, Keep upwind, Evacuate until has has dispersed. Set on fire to destroy strongly toxic material if conditions warrant extreme action (see "Spill, Leak & Disposal Information" section).

OCCUPATIONAL CONTROL PROCEDURES

Eye Protection: Wear chemical goggles and have eye baths immediately available where there is potential for eye contact.

Skin Protection: Wear appropriate chemical resistant gloves and clothing to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application. Wear chemical goggles, a full face shield and a chemical resistant apron when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Respiratory Protection: Avoid breathing gas, vapor and/or mist. When airborne exposure limits (see below) are exceeded, use NIOSH/MSHA approved full facepiece positive pressure air supplied equipment or self-contained breathing apparatus in pressure demand mode. This equipment, when used, replaces the need for full face shield and chemical goggles. An emergency escape pack respirator must be immediately available when there is potential for hydrogen cyanide (HCN) release. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

Ventilation: Provide ventilation to control exposure levels below airborne exposure limits (see below). Use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

Airborne Exposure Limits:

Product: Hydrocyanic acid (Skin)*

OSHA PEL/8-hour Time-weighted average:	10 ppm
ACGIH TLV/8-hour Time-weighted average:	10 ppm

* Skin notation means that skin absorption of this material may add to the overall exposure. Avoid skin contact.

Component: Benzene (<0.2% by weight of product)

OSHA PEL/8-hour Time-weighted average:	10 ppm
Acceptable ceiling concentration:	25 ppm
Acceptable maximum peak above the ceiling concentration for a maximum of 10 minutes:	50 ppm
ACGIH TLV/8-hour Time-weighted average:	10 ppm
Short-term Exposure Limit:	25 ppm

FIRE PROTECTION INFORMATION

Flash Point: -178°C (0°F) Method: Closed Cup

Autoignition Temperature:

Flammable Limits in air % by volume: Lower 6
Upper 41

Extinguishing Media: Do not extinguish. Because of toxicity, allow to burn.

Special Firefighting Procedures: Cool tanks with water. Allow hydrogen cyanide to burn. Quench water should be contained and detoxified with dilute solution of sodium or calcium hypochlorite. Wear chemical suit with self-contained breathing apparatus. Avoid contact with liquid or vapor.

Unusual Fire and Explosion Hazards: Will produce dangerous quantities of hydrogen cyanide when heated.

REACTIVITY DATA

Materials to Avoid: Do **NOT** mix with alkalies. Do **NOT** add excess acid (e.g., over 15% sulfuric acid). Do **NOT** contaminate with water.

Conditions to Avoid: Do **NOT** store wet HCN.

Hazardous Decomposition Products:

Hazardous Polymerization: Can occur violently. Do **NOT** heat, Polymerization is autocalotytic since heat and alkalinity (NH_3) are produced.

HEALTH EFFECTS SUMMARY

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of hydrocyanic acid on the health of industrially exposed individuals and to support the Precautionary Measures and Occupational Control Procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

Human Experience

Inhalation and dermal contact are expected to be the primary routes of occupational exposure to hydrocyanic acid. Both liquid and vapor hydrocyanic acid (hydrogen cyanide) are highly toxic following contact, by inhalation and by ingestion. Hydrocyanic acid is a potent and rapidly acting metabolic asphyxiant.

HEALTH EFFECTS SUMMARY (continued)

Acute overexposure to high concentrations of hydrogen cyanide may produce rapid collapse, loss of consciousness, convulsions and death. Investigators have reported that 180 ppm is fatal after 10 minutes exposure and that 135 ppm is fatal after 30 minutes. Symptoms of intoxication from low-level exposure include weakness, headache, confusion, increased salivation, nausea, giddiness, vertigo, convulsions, variations in heart rate and pulse, coma and respiratory failure. Headache and vertigo have been reported following exposure to hydrogen cyanide concentrations as low as 4.5 to 18 ppm. It is reported that workers exposed chronically to hydrogen cyanide may have the following findings: irritation of the throat, vomiting, headache, weakness, excessive salivation, shortness of breath upon exertion, giddiness, tremors, precordial pain, mental instability and thyroid enlargement. Individuals exposed by any route to hydrogen cyanide may have a "bitter-almond" odor on their breath.

Toxicological Data

Monsanto has not conducted acute toxicity studies with hydrocyanic acid. However, data from the available scientific literature indicate the following:

Oral LD_{50} (Mouse): 3.7 to 4.17 mg/kg, Highly Toxic
Inhalation 5-minute LC_{50} (Rat): 484 ppm (~534 mg/m^3)
Inhalation 1-minute LC_{50} (Dog): 616 mg/m^3
Inhalation 1-minute LC_{50} (Rabbit): 980 mg/m^3
Inhalation 1-minute LC_{50} (Mouse): 750 mg/m^3

Numerous publications in the scientific literature report the acute toxicity of hydrogen cyanide. Hydrogen cyanide is highly toxic to a variety of species by intravenous, intramuscular, intraperitoneal or subcutaneous routes of exposure. The LD_{50} values reported range from less than 1 mg/kg to approximately 4 mg/kg. For additional data, the reader is referred to the EPA publication "Hydrogen Cyanide Health Effects," September 1981, EPA 46013-81-026.

Clinical signs of toxicity, increased mortality, and central nervous system lesions were reported in groups of four dogs given 30 minute exposures to 45 ppm hydrogen cyanide at 2 or 8 day intervals.

Rats were exposed by inhalation to hydrogen cyanide concentrations of 10.7, 29.4 and 57.7 ppm 6 hours per day, 5 days per week for 4 weeks. Body weights were decreased in the high-dose group. A concentration-dependent increase in urinary thiocyanate levels was observed in rats from the mid- and high-exposure groups. No treatment-related hematological, biochemical or histopathological changes were noted. The no-effect level was 29.4 ppm.

Hydrogen cyanide was administered to a limited number of rats at dietary concentrations of approximately 100 and 300 ppm for 2 years. No clinical signs of toxicity and no adverse hematologic, gross pathologic or histopathologic effects were reported.

Hydrogen cyanide was evaluated for mutagenic potential in microbial assays with two Salmonella strains (TA98 and TA100), with and without mammalian microsomal activation. A positive response was reported in the TA100 strain, both with and without an activation system.

HEALTH EFFECTS SUMMARY (continued)

Components

Data from Monsanto studies and from the available scientific literature on benzene, a minor component of hydrocyanic acid, which has been identified as a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200) are discussed below:

Benzene

Hydrocyanic acid may contain up to 0.2% benzene. Benzene is an eye, skin and respiratory tract irritant. Benzene has narcotic-like properties; exposure may result in headache, dizziness, incoordination, nausea, loss of appetite and loss of consciousness. Aspiration of liquid benzene into the lungs may cause pneumonitis, with edema and hemorrhage of lung tissue. Positive mutagenic responses and fetotoxic and teratogenic responses have been reported in animal studies. Long term exposures have been reported to cause bone marrow toxicity (myelotoxocity) which is manifested by a decrease in circulating blood cells leading to leukopenia, anemia, thrombocytopenia and, eventually, aplastic anemia. Benzene is listed as a substance that is "known to be carcinogenic" by the National Toxicology Program (NTP) in their Third Annual Report on Carcinogens and is classified as "causally associated with cancer in humans" by the International Agency for Research on Cancer (IRAC Monographs, Vol. 29). The NTP and IARC listings are based on their determination that there is sufficient evidence for the carcinogenicity of benzene in humans on the basis of case histories and cohort studies which suggest a potential relationship between chronic benzene exposure and leukemia. Studies have suggested that aplastic anemia observed in workers exposed to high concentrations of benzene may progress to leukemia. However, the suggestion that benzene produces leukemia is not universally accepted and is currently under considerable debate in the scientific community. Benzene is proposed (Dec. 1985) for regulation under 29 CFR 1910, Subpart Z.

Additional Information

Threshold Limit Values (TLVs) have been established by the American Conference of Governmental Industrial Hygienist for hydrogen cyanide and for benzene. For further information on these materials, please refer to the current edition of the Documentation of Threshold Limit Values.

PHYSICAL DATA

Appearance: Water-white liquid
Odor: Faint bitter almond odor
Boiling Point: 26°C (79°F).
Vapor Pressure @ 21°C: 48 mm Hg
Specific Gravity (H_2O = 1): 0.687

PHYSICAL DATA (continued)

Percent Volatile by volume: 100
Evaporation Rate (Ether = 1): <1
Melting Point: -13.2°C (8.2°F)

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

SPILL, LEAK & DISPOSAL INFORMATION

Waste Disposal: Dispose of in accordance with all applicable local, state and federal laws and regulations. Incinerate, if approved.

Spill and Leak Procedures: Keep upwind. Evacuate until gas has dispersed. Set on fire to destroy strongly toxic material if conditions warrant extreme action. Dike spill. Flush with water spray to wastewater treatment system.

ADDITIONAL COMMENTS

Environmental Toxicity Information:

Hydrocyanic acid is highly toxic to fish. The 96-hr LC_{50} for different life stages of a variety of fish is less than 1 mg/l. The LC_{50} for invertebrates ranges from less than 1 mg/l to approximately 2.4 mg/l. For additional data, the reader is referred to the EPA publication "Acute and Chronic Toxicity of HCN to Fish and Invertebrates," January 1979, EPA 600/3-70-009.

DATE 4/86 SUPERSEDES

MSDS NUMBER 000074908

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

Manager, Product Safety
Monsanto Chemical Company
An operating unit of Monsanto Company
(314) 694-1000

Hydrogen Cyanide

MATERIAL IDENTIFICATION

Corporate Number	DU000022	
Manufacturer/Distributor	Du Pont 1007 Market Street Wilmington, DE 19898	
Phone Numbers	Product Information Transport Emergency Medical Emergency	1-800-441-9442 CHEMTREC: 1-800-424-9300 1-800-441-3637
Grade	TECHNICAL	
Chemical Family	CYANIDE	
Trade Names and Synonyms	HCN HYDROCYANIC ACID PRUSSIC ACID FORMONITRILE	
CAS Name	HYDROCYANIC ACID	
CAS Number	74-90-8	
Formula	HCN	
Molecular Weight	27.03	
TSCA Inventory Status	Reported/Included	
NFPA Ratings	Health: 4 Flammability: 4 Reactivity: 2	
NPCA-HMIS Ratings	Health: 4 Flammability: 4 Reactivity: 2 Personal Protection rating to be supplied by user depending on use conditions.	

(continued)

COMPONENTS

Material	CAS Number	Percent
*HYDROGEN CYANIDE	74-90-8	100

* Regulated as a Toxic Chemical under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

PHYSICAL DATA

Boiling Point	25.7°C (78.3°F) at 760 mm Hg.
Vapor Pressure	750 mm Hg at 25°C (77°F) 1,200 mm Hg at 36°C (100°F)
Vapor Density	0.947 (Air = 1.0)
Melting Point	-13.2°C (8.2°F)
Evaporation Rate	(Butyl Acetate = 1.0) Greater than 1
Water Solubility	100 WT %
pH	Acidic--stabilized with acid
Form	Clear liquid
Color	Colorless to slight bluish
Specific Gravity	0.69 at 18°C (64°F)
Odor	: Bitter almond--very mild, non-irritating

HAZARDOUS REACTIVITY

Decomposition	See Polymerization.
Instability	: Unstable with heat, alkaline materials, and water. (See Polymerization below.) DO NOT STORE WET HCN. May react violently with strong mineral acids. Experience shows mixtures with about 20% or more sulfuric acid will explode. Effects with other acids are not quantified, but strong acids like hydrochloric or nitric would probably react similarly.
Polymerization	: Can occur violently in the presence of heat, alkaline materials, or moisture. Once initiated, polymerization becomes uncontrollable since the reaction is autocatalytic, producing heat and alkalinity (NH_3). Confined polymerization can cause a violent explosion. HCN is stabilized with small amounts of acid to prevent polymerization. HCN should not be stored for extended periods unless routine testing confirms product quality.
Incompatibility	: See Instability and Polymerization.

(continued)

FIRE AND EXPLOSION DATA

Flash Point	-18°C (0°F)
Method	TCC
Flammable Limits in Air, % by Volume	LEL 6 UEL 41
Autoignition	538°C (1,000°F)
	Autodecomposition: Polymerizes with heat. (See Polymerization above.)
Fire and Explosion Hazards	Extremely flammable; follow National Fire Protection Association (NFPA) codes.
Extinguishing Media	Allow escaping HCN to burn, if practical. Since HCN is highly toxic, it is usually safer to let it burn to non-toxic CO2 and N2. If necessary, water may be used to extinguish fires.
Special Fire Fighting Instructions	Cool tanks with water to avoid violent polymerization/ decomposition, but allow escaping HCN to burn if practical. Stay upwind. Consider downwind evacuation. Wear chemical suit with breathing air supply; avoid contact with liquid or vapor. Water that has been used to absorb HCN should be contained and detoxified with a dilute calcium or sodium hypochlorite solution.

HEALTH HAZARD INFORMATION

Hydrogen cyanide is a fast acting, highly poisonous material. May be fatal if inhaled, swallowed, or absorbed through the skin. Extremely hazardous liquid and vapor under pressure. With prompt treatment following overexposure, recovery is normally quick and complete.

ANIMAL DATA:

Inhalation 40-minute LC50	:	63 ppm in rats
Skin absorption ALD	:	~1,500 mg/kg in rabbits
Oral ALD	:	10 mg/kg in rats
Ocular LD50	:	~2 mg in rabbits

The compound is untested for skin and eye irritancy, and for animal sensitization. Toxic effects described in animals from exposure by contact include possible systemic toxicity and death. By inhalation, effects include shortness of breath, tremors, incoordination, coma, and cardiac abnormalities. Retinal and optic nerve damage have been observed following acute, near-lethal or lethal exposure; these effects have not been observed following chronic administration. Effects of administering the compound in drinking water include a tendency for decreased enzyme levels in the blood. Animals administered an HCN-fumigated diet for two years had increased thiocyanate concentration in examined tissues which were otherwise normal.

(continued)

HEALTH HAZARD INFORMATION (continued)

Tests in animals demonstrate no carcinogenic activity. No animal test reports are available to define mutagenic, developmental, or reproductive effects.

HUMAN HEALTH EFFECTS:

In most cases, cyanide poisoning causes a deceptively healthy pink to red skin color. However, if physical injury or lack of oxygen is involved, the skin color may be bluish.

Human health effects of overexposure by inhalation, ingestion, or skin contact may include nonspecific symptoms such as reddening of the eyes, flushing of the skin, nausea, headache, dizziness, rapid respiration, vomiting, drowsiness, drop in blood pressure, rapid pulse, weakness, and loss of consciousness; central nervous system stimulation followed by central nervous system depression, hypoxic convulsions, and death due to respiratory arrest; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, and inadequate circulation.

Higher cyanide inhalation exposures may lead to fatality from gross overexposure. In a few cases, disturbances of vision or damage to the optic nerve or retina have been reported, but the exposures have been acute and at lethal or near-lethal concentrations. Skin permeation can occur in amounts capable of producing systemic toxicity. There are no reports of human sensitization. There have been few, all unverified, reports of chronic cyanide poisoning from occupational exposures.

Individuals with preexisting diseases of the central nervous system may have increased susceptibility to the toxicity of excessive exposures.

Carcinogenicity	None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.
# Exposure Limits	
Hydrogen Cyanide	
AEL * (Du Pont)	10 ppm - 8 Hr. TWA 5 ppm - 12 Hr. TWA - Skin
TLV (ACGIH)	10 ppm, 11 mg/m3 (Ceiling) - Skin
PEL (OSHA)	10 ppm, 11 mg/m3, 8 Hr TWA, skin - Skin
Other	SEE ADDITIONAL INFORMATION AND REFERENCES SECTION FOR DEFINITION OF "SKIN" NOTATION.

* AEL is Du Pont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

Safety Precautions	Emergency pre-planning and training is needed before beginning to work with hydrogen cyanide since prompt treatment is essential in cases of cyanide poisoning. Use HCN detectors and have Cyanide Antidote Kits on hand. Do not breathe vapor. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. NEVER WORK ALONE - PERSONS DOING PHYSICAL

(continued)

AND
MAINTENANCE WORK WITH HCN EQUIPMENT SHOULD USE THE BUDDY
SYSTEM AND NEVER WORK ALONE. Always have at least two people on the job, both (all) trained for HCN work. While one performs the task, the other observes from upwind or crosswind, far enough away (20-30 ft.; 6-9 m) so that in the event of an HCN release, the observer will not be overcome and can start alarm and rescue procedures. Both should have the same personal safety equipment, and the observer should have a working two way radio or P.A. system for calling help in an emergency. Both should be well trained in cyanide first aid and emergency procedures. (Refer to the Du Pont Hydrogen Cyanide Storage and Handling bulletin for more information.)

FIRST AID

Treatment for cyanide poisoning can be provided in two ways, "First Aid" and "Medical Treatment". Both require immediate action to prevent further harm or death. First aid using amyl nitrite and oxygen is generally given by a layman before medical help arrives. Medical treatment is aggressive treatment involving intravenous injections of sodium nitrite and sodium thiosulfate, and must be administered by qualified medical personnel. Even if a doctor or nurse is present, the need for fast treatment dictates using first aid treatment with amyl nitrite and oxygen while medical treatment materials for intravenous injection are being prepared. Experience shows that first aid given promptly is usually the only treatment needed for typical accidental poisonings. Larger cyanide intake increases the need for medical treatment.

Medical treatment is given if the patient does not respond to first aid. It provides a large quantity of antidote including sodium thiosulfate to chemically destroy cyanide in the body. However, even under optimum conditions, amyl nitrite can be administered faster and should be used even if medical treatment follows.

Always have on hand the materials listed below in sections FIRST AID and MEDICAL TREATMENT KITS. Actions to be taken in case of cyanide exposure should be planned and practiced before beginning work with cyanides. In most cases, cyanide poisoning causes a deceptively healthy pink to red skin color; however, if a physical injury or lack of oxygen is involved, the skin color may be bluish. Reddening of the eyes and pupil dilation are also symptoms of cyanide poisoning. Workers should be trained to provide immediate first aid using oxygen and amyl nitrite resuscitators.

In case of cyanide poisoning, start first aid treatment immediately, then call a physician.

FIRST AID SUPPLIES

(continued)

Adequate first aid supplies for cyanide poisoning should be conveniently placed throughout cyanide areas and should be immediately accessible at all times. They should be routinely inspected (typically daily) by people who would use them in an emergency. The total number of each item listed below should be adequate to handle the largest number of exposure cases reasonably anticipated, taking into account that some supplies may be wasted, destroyed, or inaccessible in the emergency.

1. Oxygen Resuscitators- The Flynn Series III Model by O-Two Systems (800-387-3405) has performed well in Du Pont use. It is lightweight, rugged, and easy to use.

2. Amyl Nitrite Ampules (antidote)- One box of one dozen ampules per station is usually satisfactory. Locate stations throughout the cyanide area.

   CAUTION: Amyl Nitrite is not stable and must be replaced every 1 to 2 years. Store in the original dated box, away from heat. A common Du Pont practice is to use the resuscitator as the storage point for the amyl nitrite ampules. Avoid storage on vehicles where temperatures can reach 60-66 deg C (140-150 deg F) or more.

3. A set of cyanide first aid instructions should be located at each amyl nitrite storage location. Workers should be fully trained since in a real emergency there will be insufficient time to "read the book".

*CONTINUED IN THE NOTES TO PHYSICIAN SECTION

Notes to Physician

*CONTINUED FROM THE FIRST AID SECTION

4. Two 1-pint bottles of 1% sodium thiosulfate solution for use in case of cyanide ingestion or plain water can be used. In many HCN areas, the low probability of HCN ingestion does not warrant distribution of thiosulfate if water is available.

MEDICAL TREATMENT KITS

Medical Treatment Kits for cyanide poisoning should be conveniently located for easy access by medical people. Materials for intravenous injection are intended for use only by a physician or fully qualified medical personnel. The location of kits should be carefully planned as part of the emergency preplan. Suggested locations for kits include:

- in or near the cyanide area
- plant medical station
- entrance guard house
- local hospital
- doctor's office and residence

CAUTION: Do not store amyl nitrite or Medical Treatment Kits on vehicles as heat build-up may ruin the amyl nitrite.

(continued)

Kits and amyl nitrite should be accessible but secured against tampering. They should be inspected regularly and the amyl nitrite ampules replaced every 1-2 years. Medical Treatment Kits should contain the following:

1. One box containing one dozen amyl nitrite ampules.

2. Two sterile ampules of sodium nitrite solution (10 mL of a 3% solution in each).

3. Two sterile ampules of sodium thiosulfate solution (50 mL of a 25% solution in each).

4. One 10 mL sterile syringe. One 50 mL sterile syringe. Two sterile intravenous needles. One tourniquet.

5. One stomach tube.

6. One dozen gauze pads.

7. A set of cyanide instructions on first aid and medical treatment.

NOTE: "Amyl Nitrite" and "Medical Treatment Kits" can be purchased through local pharmacies with a physician's prescription. As a help, you can inform the pharmacist that Eli Lilly and Co. produces the kit.

FIRST AID

1. Directions for Giving Amyl Nitrite Antidote and Oxygen:

   a. Conscious: For inhalation and/or absorption if the patient is alert, oxygen may be all that is needed. But if the patient is not fully conscious or shows signs of poisoning, follow section 1b below. For swallowing, see section 3 of FIRST AID, "Swallowing Cyanide".

   b. Unconscious but Breathing: Break an amyl nitrite ampule in a cloth and hold lightly under the patient's nose for 15 seconds, then take away for 15 seconds. Repeat 5-6 times. If necessary, use a fresh ampule every 3 minutes until the patient regains consciousness (usually 1-4 ampules). Give oxygen simultaneously to aid recovery. Where more severe poisoning has occurred, consider holding the amyl nitrite under the nose continuously for the first ampule or more.

   c. Not Breathing:

      1. Give artificial respiration (100% oxygen), preferably with an oxygen resuscitator. Give amyl nitrite antidote by placing a broken ampule inside the resuscitator face piece, being careful that the ampule does not enter the patient's mouth and cause choking. Give oxygen simultaneously.

(continued)

FIRST AID (continued)

2. If using manual artificial respiration, give amyl nitrite antidote as in section 1b of FIRST AID above, except keep the first amyl nitrite ampule under the nose with replacement every 3 minutes.

d. Amyl Nitrite Notes:

1. Amyl nitrite is highly volatile and flammable; do not smoke or use around source of ignition.

**CONTINUED IN THE PROTECTION INFORMATION SECTION

PROTECTION INFORMATION

Generally Applicable Control Measures and Precautions

Use only in closed systems and with ventilation adequate to keep vapor concentrations below exposure limits. Evacuate area immediately if HCN fumes are detected and put on protective clothing before re-entry. Open construction is usually best for HCN processes.

Personal Protective Equipment

Recommended Minimum Protection - Chemical splash goggles and rubber gloves (butyl or neoprene preferred). Have available and use as appropriate:*

- Rubber suits and boots.
- Full-body chemical suit.
- Self-contained breathing air supply.
- HCN detector.
- First Aid and Medical Treatment supplies, including oxygen resuscitators.

*This is only a partial list. See Du Pont Hydrogen Cyanide Storage and Handling bulletin for more information.

**CONTINUED FROM THE NOTES TO PHYSICIAN SECTION

2. If treating poison patient in a windy or drafty area, provide something--a rag, shirt, wall, drum, cupped hand, etc., to prevent the amyl nitrite vapors from being blown away. Keep the ampule upwind from the nose. The objective is to get amyl nitrite into the patient's lungs.

3. Rescuers should avoid amyl nitrite inhalation so they won't become dizzy and lose competence.

4. Lay the patient down for treatment to maintain a good blood supply to the patient's head. Since amyl nitrite dilates the blood vessels and lowers blood pressure, lying down will help prevent unconsciousness.

5. Do not overuse; excessive use might put the patient in shock. This has not occurred in practice at Du Pont plants and we are not aware of any death or serious aftereffects from treatment with amyl nitrite. (See MEDICAL TREATMENT section.)

(continued)

2. Inhalation of Cyanide

Carry patient to fresh air. Lay patient down. Administer oxygen and amyl nitrite (section 1 of FIRST AID). Keep patient quiet and warm. Even with inhalation poisoning, thoroughly check clothing and skin to assure no cyanide is present. If cyanide is found on clothing or skin, proceed as in section 4b of FIRST AID. Call a physician. Rescuers of patients in an HCN environment should wear SCBA equipment.

3. Swallowing Cyanide

a. Conscious: Immediately give patient one pint of 1% sodium thiosulfate solution (or plain water) by mouth and induce vomiting by having patient stick finger into the throat. Repeat until vomit fluid is clear. Never give anything by mouth to an unconscious person. Call a physician. Give oxygen.

b. Unconscious: Follow first aid procedures as in sections 1b and 1c of FIRST AID (and/or medical procedures in MEDICAL TREATMENT section) and call a physician. When the patient revives, proceed with section 3a of FIRST AID.

4. Eye or Skin Contact (Skin Absorption)

a. Eye Contact: Immediately flush eyes with plenty of water, remove contaminated clothing, and keep patient quiet and warm. Call a physician.

b. Skin Contact: Wash skin promptly to remove the cyanide while removing all contaminated clothing, including shoes. Do not delay. Skin absorption can occur from cyanide dust, solutions, or HCN vapor. Absorption is slower than inhalation, usually measured in minutes compared to seconds for inhalation.

HCN is absorbed much faster than metal cyanides from solutions such as sodium, potassium, or copper cyanide solutions.

Follow first aid procedures in FIRST AID section if treatment is needed, but even severe skin contact usually will not require treatment if (1) no inhalation or swallowing has occurred and (2) the cyanide is promptly washed from the skin and contaminated clothing and shoes are removed. If skin contact is prolonged, HCN poisoning may occur with nausea, unconsciousness; death is possible if the source of cyanide is not removed and treatment provided. Even after washing the skin, patient should be watched for at least 1 to 2 hours because absorbed cyanide can continue to work into the bloodstream. Wash clothing before reuse and destroy contaminated shoes.

***CONTINUED IN THE TITLE III HAZARD CLASSIFICATIONS SECTION

(continued)

DISPOSAL INFORMATION

Aquatic Toxicity	Hydrogen cyanide is extremely toxic; 96-hour LC50 values range from 0.05 mg/L to 0.310 mg/L (several species). Based on concentration (air versus water), HCN is more toxic to aquatic life than terrestrial life.
Spill, Leak, or Release	NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Stay upwind. Evacuate area until gas has dispersed. Set on fire if conditions warrant; burning will detoxify HCN. Dike spill. Flush with water spray to containment pond or wastewater treatment system. Sodium hypochlorite or calcium hypochlorite are frequently used for cyanide destruction. Wear full protective clothing with breathing air supply. Comply with Federal, State, and local regulations on reporting releases. The EPA Reportable Quantity is 10 lbs.
Waste Disposal	This material may be a RCRA Hazardous Waste. Comply with Federal, State, and local regulations on disposal methods used to achieve the constituent concentration based treatment standard, if permitted; or transfer to a licensed disposal contractor.

SHIPPING INFORMATION

DOT	
Proper Shipping Name	HYDROCYANIC ACID, LIQUIFIED
Hazard Class	POISON A
UN/NA No.	NA 1051
DOT Labels(s)	POISON GAS, FLAMMABLE GAS
DOT Placard	POISON GAS
DOT/IMO	
Proper Shipping Name	HYDROGEN CYANIDE, ANHYDROUS, STABILIZED
Hazard Class	POISON A, 6.1
UN No.	1051
Special Information	FLASH POINT: -18 deg C (64 deg F)
Subsidiary Risk	FLAMMABLE LIQUID
Packaging Group	I
Shipping Containers	Railroad Tank Cars Reportable Quantity : 10 lb/4.54 kg

(continued)

STORAGE CONDITIONS

Store only high quality, dry, HCN unless careful monitoring is done. Keep away from heat, sparks, and flame and do not contaminate. Keep container closed and use only in a closed system.

TITLE III HAZARD CLASSIFICATIONS

Acute	Yes
Chronic	No
Fire	Yes
Reactivity	Yes
Pressure	No

LISTS:

Extremely Hazardous Substance	-Yes
CERCLA Hazardous Substance	-Yes
Toxic Chemicals	-Yes

***CONTINUED FROM THE PERSONAL PROTECTIVE EQUIPMENT SECTION

MEDICAL TREATMENT

Medical treatment is normally provided by a physician, but might be provided by a professionally trained "qualified medical person" where a need exists and where state and local laws permit. Specific training for handling cyanide poisoning emergencies is essential as well as being "in practice" for giving intravenous injections. Du Pont trains all personnel working with cyanide to use the first aid procedures, but not the medical treatment procedure.

While preparing for sodium nitrite and sodium thiosulfate injections, use amyl nitrite and oxygen as outlined in paragraph 1 of FIRST AID. When ready and if the patient is not responding to first aid, first inject the solution of sodium nitrite (10 mL of a 3% solution) intravenously at the rate of 2.5 mL/minute, then immediately inject the sodium thiosulfate (50 mL of a 25% solution) at the same rate, taking care to avoid extravasation. This is a fairly lengthy treatment (24 minutes) since a total of 10 + 50, or 60 mL, is injected at a rate of 2.5 mL per minute.

Consideration should be given to the size and condition of the patient as treatment is proceeding. The above sodium nitrite injection is about 1/3 of a lethal dose (see below), so care should be taken to avoid excessive use. It is not essential that full quantities be given, just because treatment was started. Injections can be stopped at any point if recovery is evident, but be sure to keep track of quantities administered in case treatment needs to be restarted. Relapse is abnormal if cyanide intake is not continuing, unless a large intake from swallowing occurred.

(continued)

Don't overreact. While prompt treatment is essential where poisoning has occurred, treatment of a lucid, conscious patient would rarely be necessary. The effects of cyanide poisoning are immediate, not delayed, and a conscious person that can communicate does not have significant cyanide poisoning.

For most accidental poisoning, complete recovery occurs within 1-2 hours. If cyanide exposure was severe, watch patient continuously for 24-48 hours. If there is any return of symptoms during this period, consider repeating this treatment using one half the amounts of sodium nitrite and sodium thiosulfate solutions. Blood chemistry should be monitored during prolonged treatment. Caution should be used to prevent overuse of medical treatment chemicals as the prescribed dose is about 1/3 the lethal dose for an average individual. The nitrite converts hemoglobin to methemoglobin which reduces the oxygen carrying capacity of the blood. This is done purposely as methemoglobin attracts cyanide away from the body cells, but nitrite use must be limited to prevent hemoglobin deficiency. Du Pont has not experienced nitrite overdose problems; but being alert to this is important information to medical personnel.

If signs of excess methemoglobinemia develop (i.e., blue skin and mucous membranes, vomiting, shock and coma), 1% methylene blue solution should be given intravenously. Administering up to a 1 to 2 mg/kg of body weight over a period of five to ten minutes should be considered and repeated in one hour if necessary.

NOTE: This procedure can free cyanide from cyanomethemoglobin. The free cyanide can again bind with cytochrome oxidase and therefore, repoison the patient. If methylene blue is used, it must be used very carefully. It is best to avoid overuse of nitrite so corrective action is not needed. Historically, Du Pont has not had to use methylene blue to counter excess nitrite use. In addition, oxygen inhalation will be helpful. Transfusion of whole fresh blood may be considered if there has been mechanical injury with external or internal bleeding and simultaneous cyanide exposure.

When handling potential cyanide poisoning emergencies, keep in mind:

1. Cyanide acts rapidly, usually within seconds once it enters the bloodstream. Delayed effects would only be expected during brief periods (e.g., up to about 20 minutes) when (a) cyanide was absorbed into the bloodstream from the stomach after ingestion or (b) absorption through the skin occurred prior to skin washing, but entry into the blood was not complete. In treatment, therefore, treat what you see; don't overreact. It's rare when "preventive" use of the antidotes would be warranted. If you can converse normally with the patient, cyanide intake is limited and no action is called for other than to closely monitor the patient and keep him calm by reassurance of his condition

(continued)

TITLE III HAZARD CLASSIFICATIONS (continued)

during the following 20-30 minute period.

2. The half-life of cyanide in the body is estimated at 20-90 minutes. The body routinely destroys cyanides from foods, cigarette smoke, etc. so cyanide is not a cumulative poison. In case of accidental cyanide intake, normal body action quickly begins cyanide destruction. In diagnosis and monitoring as mentioned in item 1, the critical period is therefore short. Normally what happens in the initial few minutes after exposure will indicate the degree of poisoning.

Du Pont's experience in treating cyanide poison cases is that first aid procedures using oxygen and amyl nitrite were effective and the only treatment needed in most cases. Medical treatment, using intravenous injections, was used in a few cases. Both procedures have been successful. (Reread paragraph 1 of FIRST AID.)

ADDITIONAL INFORMATION AND REFERENCES

The "Skin" notation in the Exposure Limits section indicates that hydrogen cyanide may penetrate the skin; therefore, control of vapor inhalation alone may not be sufficient to prevent cyanide poisoning.

For further information, see Du Pont Hydrogen Cyanide, Storage and Handling bulletin.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS:

W. J. Brock
Du Pont Chemicals
P. O. Box 80709, Chestnut Run
Wilmington, DE 19880-0709
302-999-4946

# indicates updated section

End of MSDS

GSI Job No. 6932
Issued: 9 August 2024

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

ATTACHMENT IV.D.3

Analytical Results for BIF Constituents in HCN By-Product Stream

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT DALLAS HOUSTON

January 11, 1993

Mr. Thomas M. Moran, P.E.
Monsanto Chemical Company
FM 2917
P.O. Box 711
Alvin, Texas 77512-9888

NDRC Quotation #H93-015

NDRC Laboratories, Inc. is pleased to have the opportunity to provide analytical services to Monsanto Chemical Company. We respectfully submit the following proposal in response to the BIF Compliance HCN Analysis.

Parameter	Method	Price Per Sample
Ash	ASTM D482	$20.00
BTU	ASTM D240	$45.00
Inorganic Chloride via Parr Bomb	EPA 325.3	$15.00
Total Chloride by IC	EPA 300.0	$30.00
Metal Analysis; Sb, Be, Pb, As, Cd, Ag, Ba, Cr, Ti, Hg	EPA 6010/7060/7470	$175.00
Treatment of HCN sample into a virtually nontoxic cyanate state, utilizing Sodium Hypochlorite in an alkaline medium (on-site).		$250.00/hr portal to portal

NDRC will provide all sample containers, labels, coolers, and chain of custody forms at no charge. This pricing includes a discount which can only be applied on payments received within thirty days of our invoice date.

Please reference quotation number on all correspondence. This quotation will be valid for six months from date of quotation.

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

Please contact me or De Anne Dolman at (713) 661-8150 when we can be of further service. NDRC Laboratories, Inc. appreciates the opportunity to be of service to Monsanto Chemical Company. We are dedicated to the needs of our clients, and we look forward to working together in the near future.

Respectfully Submitted,

NDRC LABORATORIES, INC.

Robert B. (Bob) Allred

RBA/DD

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT DALLAS HOUSTON

January 22, 1993

Client: Monsanto
Location: Chocolate Bayou
RE: On site treatment of HCN for
in house metals analysis

Overview of Treatment:

High toxicity cyanides are converted into virtually nontoxic cyanates by the action of a strong oxidant (Sodium Hypochlorite) in an alkaline medium.

Overall reaction:

$$NaCN + NaClO \longrightarrow NaOCN + NaCl$$

--The reaction is practically instantaneous at pH levels above 12, but falls rapidly as the pH is reduced. The critical threshold pH is 10.5.

--Whatever the pH, the first compound formed is cyanogen chloride CNCl, which is just as dangerous as hydrocyanic acid:

$$NaCN + NaClO + water \longrightarrow CNCl + 2NaOH$$

From pH 10.5, however, cyanogen chloride is hydrolysed as soon as it forms, by the reaction:

$$CNCl + 2NaOH \longrightarrow NaCl + NaCN + water$$

--The cyanides have now been converted into cyanates.

Calculations:

For commercial practices 1 gram of CN requires 21 milliliters of 15% NaClO or 63 milliliters of 5% NaClO for complete oxidation to occur.

Further Treatment (optional):

The transition of cyanate to nitrogen, sodium bicarbonate, NaCl, and water is possible (at the same pH), but requires three (3) times the amount of reagent and a reaction time of 5 to 90 minutes.

$$2NaOCN + 3Cl_2 + 6NaOH \longrightarrow 2NaHCO_3 + N_2 + 6NaCl + water$$

Due to the low toxicity of cyanates, this procedure is not normally required.

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BEAUMONT DALLAS HOUSTON

HYDROGEN CYANIDE BIF CONSTITUENT DATA

DATE RECEIVED : 28-JAN-1993

REPORT NUMBER : H93-658-1
REPORT DATE : 10-FEB-1993

SAMPLE SUBMITTED BY : Monsanto Co.
ADDRESS : P.O. Box 711
: Alvin, TX 77512
ATTENTION : Mr. Thomas Moran

SAMPLE MATRIX : Liquid HCN
ID MARKS : BIF #1,2,3,4,BTU Cup,Control
: Composite
DATE SAMPLED : 28-JAN-1993

TOTAL METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Silver	0.20 mg/L	< 0.20 mg/L
Arsenic	0.0400 mg/L	< 0.0400 mg/L
Barium	1.00 mg/L	< 1.00 mg/L
Beryllium	0.300 mg/L	< 0.300 mg/L
Cadmium	1.00 mg/L	< 1.00 mg/L
Chromium	1.00 mg/L	< 1.00 mg/L
Mercury	0.010 mg/L	< 0.010 mg/L
Lead	1.00 mg/L	< 1.00 mg/L
Antimony	0.0400 mg/L	< 0.0400 mg/L
Thallium	0.04 mg/L	< 0.04 mg/L

NDRC Laboratories, Inc. David R. Godwin Ph.D.

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-JAN-1993

REPORT NUMBER : H93-658-1
REPORT DATE : 10-FEB-1993

SAMPLE SUBMITTED BY : Monsanto Co.
ADDRESS : P.O. Box 711
: Alvin, TX 77512
ATTENTION : Mr. Thomas Moran

SAMPLE MATRIX : Liquid
ID MARKS : BIF #1,2,3,4,BTU Cup,Control
: Composite
DATE SAMPLED : 28-JAN-1993

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DETECTION LIMIT		RESULTS	
Ash	1.0	mg/L	10.5	mg/L
BTU	100	BTU/lb	9180	BTU/lb
Chloride	500	mg/L	< 500	mg/L

NDRC Laboratories, Inc. David R. Godwin Ph.D.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 28-JAN-1993

REPORT NUMBER: H93-658:1-1
REPORT DATE: 10-FEB-1993

SAMPLE SUBMITTED BY: Monsanto Co.

ATTENTION: Mr. Thomas Moran

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Silver	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 7760
Sample Extracted:	04-FEB-1993	MS/MSD RPD:	8%
QC Extracted:	04-FEB-1993	Average Spike Recovery:	97%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 0.2 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Arsenic	Analysis Method:	EPA 7060
Technician:	JAI	Extraction Method:	EPA 7060
Sample Extracted:	04-FEB-1993	MS/MSD RPD:	8.4%
QC Extracted:	04-FEB-1993	Average Spike Recovery:	92%
Sample Analyzed:	8-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	8-FEB-1993	Method Blank:	< 0.04 mg/L
QC Sample Number:	658-1	LCS Recovery:	88%
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Barium	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 3010
Sample Extracted:	04-FEB-1993	MS/MSD RPD:	10%
QC Extracted:	04-FEB-1993	Average Spike Recovery:	97%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 1.0 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Beryllium	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 3010
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	9%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	103%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 0.3 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

NDRC Laboratories, Inc. David R. Godwin Ph.D.

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 28-JAN-1993

REPORT NUMBER: H93-658:1-1
REPORT DATE: 10-FEB-1993

SAMPLE SUBMITTED BY: Monsanto Co.

ATTENTION: Mr. Thomas Moran

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Cadmium	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 3010
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	9%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	96%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 1.0 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Chromium	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 3010
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	7%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	97%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 1.0 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Mercury	Analysis Method:	EPA 7470
Technician:	JAI	Extraction Method:	EPA 7470
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	1.7%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	98%
Sample Analyzed:	8-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	8-FEB-1993	Method Blank:	< 0.01 mg/L
QC Sample Number:	658-1	LCS Recovery:	99%
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Lead	Analysis Method:	EPA 6010
Technician:	VLR	Extraction Method:	EPA 3010
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	7%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	100%
Sample Analyzed:	9-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	9-FEB-1993	Method Blank:	< 1.0 mg/L
QC Sample Number:	658-1	LCS Recovery:	---
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

NDRC Laboratories, Inc. David R. Godwin Ksw

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

A member of Inchcape Environmental

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 28-JAN-1993

REPORT NUMBER: H93-658:1-1
REPORT DATE: 10-FEB-1993

SAMPLE SUBMITTED BY: Monsanto Co.

ATTENTION: Mr. Thomas Moran

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Antimony	Analysis Method:	EPA 7041
Technician:	JAI	Extraction Method:	EPA 3020
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	12.3%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	87%
Sample Analyzed:	8-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	8-FEB-1993	Method Blank:	< 0.04 mg/L
QC Sample Number:	658-1	LCS Recovery:	93%
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

ANALYSIS:	Thallium	Analysis Method:	EPA 7481
Technician:	JAI	Extraction Method:	EPA 3020
Sample Extracted:	4-FEB-1993	MS/MSD RPD:	1.7%
QC Extracted:	4-FEB-1993	Average Spike Recovery:	89%
Sample Analyzed:	8-FEB-1993	Duplicate RPD:	0%
QC Analyzed:	8-FEB-1993	Method Blank:	< 0.04 mg/L
QC Sample Number:	658-1	LCS Recovery:	91%
TCLP Leachate Date:	---	TCLP Spike Recovery:	---

David R. Godwin Kgw

CHAIN CUSTODY RECORD

NDRC LABORAT(:S, INC.

11155 South Main, Houston, TX 77025 661-8150

Submitted by		Bill to	
Name:	Thomas Moran	Name:	Monsanto Co.
Address:	Monsanto Co P.O. Box 711 ALVIN, TX 77512	Address:	P.O. Box 711 Alvin, TX 77512
Contact:	Tom Moran	Contact:	Tom Moran
Phone:	713-393-4762	Phone:	713-393-4762
Fax:	713-393-4578	Fax:	713-393-4578

Lab use only
Due Date: 2-1-93
QC
RCRA ☐
NPDES ☐
Section / Date

Proj. No.	Project Name	No. of Containers
	HCN BIF ANALYSIS	2

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	Lab. Sample ID
L	1-28				BIF #1		X			
L	1-28				#2		X			
L	1-28				#3		X			6587
L	1-28				#4		X			
S	1-28				BTU cup					
L	1-28				Control		X			

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: 4

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	Remarks
Thomas M Moran	1-28	4:00PM	[signature]	1-28	4:00P	QA/QC
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	

[1] Matrix W Water S Soil SD Solid L Liquid A Air Bag C Charcoal Tube

NDRC cannot accept verbal changes

GSI Job No. 6932
Issued: 9 August 2024

APPENDIX IV.D
WASTE ANALYSIS PLAN

Hazardous Waste Permit Renewal Application
Hazardous Waste Permit No. 50189
Ascend Performance Materials Texas, Inc., Alvin, Texas

ATTACHMENT IV.D.4

Determination of Selected Trace Elements in By-Product HCN

Chocolate Bayou Development Laboratory
Results Report

CBDLRR0907

Determination of Selected Trace Elements in By-Product HCN

Requested By: Narayan Dave **Date: June 30, 2009**

Scope: Initial sampling of the HCN waste stream was performed in the mid-1990's in support of the RCRA trial burn. Since that time, new sampling methods with lower detection limits for metals have been developed. Although from a safety stand point re-sampling of HCN was a very difficult task, Ascend elected to re-sample the HCN waste stream in 2009 in order to more accurately characterize the metals content of the HCN waste stream. However, due to the safety considerations associated with sampling the HCN and appropriately preparing the sample for shipping, and also in consideration of the lack of variability of Ascend's waste stream (99.9% HCN produced as a byproduct in our Acrylonitrile units), Ascend does not propose to routinely retest the composition of the waste stream.

To support compliance with environmental regulations related to the HCN waste heat boiler, the actual content of the metals cadmium, chromium, lead, and mercury as well as chlorine in the by-product HCN were targeted for determination. In addition to the targeted elements, results from 16 additional elements were also obtained.

Since the needed levels of quantitation were beyond in-house capabilities, the analysis had to be performed by an outside laboratory. Due to the hazards of shipping and handling HCN, the samples were prepared by replacing the HCN with a dilute nitric acid solution. The final results are based on the analysis of six samples; triplicates aliquots, two spikes and a blank.

In addition the results, this report focuses on the sample preparation that took place at the Chocolate Bayou plant.

Samples Submitted:

By-product HCN sampled from HCN storage tank on 15 September, 2009.

Results Summary

Conclusion

For the components of special interest, cadmium, chromium, lead, mercury, and chlorine, none was detected above the concentrations of concern.

	Cadmium	Chromium	Lead	Mercury	Chlorine
Results	0.15 ppb	0.2 ppb	<0.15 ppb	0.31 ppb	<8 ppm

Also none of the results for other elements reported were at concentrations of concern.

Discussion

One aspect of the air emission permit for the HCN waste heat boiler is the level of metals released. Previous analysis of by-product HCN had found that there was no controlled element detected at unacceptable levels. However the detection limits for some of the elements obtained in that work were high enough to be problematic to meet new

regulations. In lieu of a stack test, it was decided to re-analyze the by-product HCN for specific elements of concern with a technique that would have detection limits of less than 100 ppb for Cd, Cr, Pb and less than 10 ppb for Hg. It was determined that Inductively Couple argon Plasma/Mass Spectrometry (ICP/MS) could meet these criteria. Since there isn't an ICP/MS capability within Ascend an outside laboratory, DuPont Analytical Solutions, was found that had the capability and experience working at these trace concentrations. The use of an outside laboratory necessitated a sample preparation regiment that substituted a non-toxic matrix for the HCN. The use of an outside laboratory necessitated a sample preparation regiment that lowered the amount of HCN in shipped sample. This requirement could be accomplished by evaporating most HCN and adjusting the total volume for analysis with a non-toxic matrix (aqueous nitric acid).

Due to the need to manipulate milliliter quantities of neat HCN, extensive safety reviews were conducted prior to any samples being prepared. The result of these safety reviews is the JSA listed in Appendix C.

There were concerns that the stainless steel Dewar normally used for handling HCN within the plant might provide an unacceptable background. To test this and the sample handling procedure in general, a procedure blank was prepared and sent to the outside lab for testing. On June 12, 2009 a 3.5% HNO_3 solution was used to rinse the HCN sample Dewar three times. An aliquot of the forth rinse was placed in a treated 20 mL PFA[3] sample vial and sent to the DuPont laboratory for analysis. The results showed the presence of chromium and lead at 13 and 11 ppb respectively. Also iron was found to be 440 ppb. Cadmium and mercury were not significantly above background. These results indicated that the HCN sample needed to be collected in a container that does not leach metals. An LDPE[Error! Bookmark not defined.] bottle which previously contained ultra-pure water was used. For safety this bottle was transported in a stainless steel Dewar that was large enough to accommodate it.

On July 15, 2009 the initial set of samples were prepared as described below using 20 mL snap top sample vials. When the samples were received at the DuPont labs it was observed that several of the snap top vials had leaked thus nullifying the any results obtained. The nitric acid solution used for preparations was about 3.5% instead of the targeted 5%.

On September 15, 2009 a second set of samples were prepared as described below except the sample vials used were the 15 mL screw top sample vials provided by DuPont. The vials were pre-treated by DuPont. The laboratory received these samples in good order and issues a preliminary summary on October 1, 2009. The final report was issued on December 3, 2009 (See Appendix A).

The results reported by DuPont were for the solutions as received. DuPont was not provided with dilution factors and spiking levels. The values reported by DuPont were used to calculate the final results by adjusting for dilution. Even though the volume of an HCN aliquot and the resultant nitric acid solution was about the same, the density of the

liquid HCN was 70% of the aqueous nitric acid solution. Therefore on a weight bases the analytes in the HCN were diluted in the aqueous solution. Tables 1 and 2 summarized the final results. The results of the four targeted metals were at least an order of magnitude less than the levels of concern, 100 ppb for Cd, Cr, and Pb, and 10 ppb for Hg. For chlorine the reported value of < 8 ppm was about 37 times less than the maximum acceptable level of 300 ppm.

Given in the DuPont report (Appendix A, Page 3) is a summary of the levels of detection (LOD) and limits of quantitation (LOQ) for each element analyzed by ICP/MS. Appendix D summarizes the LOD an LOQ levels for the ICP/MS results analyzed and adjusted for a nominal dilution factor of 1.5. These performance matrices are based on triplicate analyses of 5% HNO_3 blanks. This work did not report any values less than 0.1 ppb (<0.1) which was significantly higher than any of the calculated LOD values.

The HCN sample was spiked at 1.5X and 3X the target levels. The percent recoveries for all results were about 120%.

Results

Listed in Appendix B are the detailed reported results (see Appendix A) for the targeted elements and the corresponding dilution corrected results and percent recoveries for two spikes. Table 1 summarizes these results. All results are on a weight/weight bases.

Table 1
Summary of Results for Targeted Elements
Results are corrected for dilution

	Cd	Cr	Pb	Hg	Cl
	ppb	ppb	ppb	ppb	ppm
Liquid HCN (n=3)	**0.15+/-0.02**	**0.20+/-0.07**	**<0.15**	**0.31+/-0.03**	**<8**
Low Spike, ppb	160.9	163.1	166.3	15.9	
% Recovery	**123%**	**121%**	**123%**	**119%**	
High Spike, ppb	299.5	303.7	309.7	29.6	
% Recovery	**123%**	**120%**	**121%**	**116%**	
Blank	<0.1	<0.1	<0.1	0.1	8

+/- values are calculated 95% confidence limit

To estimate the cadmium average, a value of 0.14 (accounting for dilution) was used for the one replicate that was reported as <0.1.

While the main focus of the ICP/MS analysis was on the 4 metals, cadmium, chromium, lead and mercury, the analyses did determine sixteen other elements. The results from these analyses are summarized in Table 2. Of these sixteen elements, only five showed levels above the minimal reported level.

Table 2
Results for Other Reported Elements
Results are corrected for dilution

		Be	Sb	Ag	Zr	Nb	Mo	Sn	W
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Blank		<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
HCN	ave	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15

		V	MN	Fe	Co	Ni	Zn	Cu	As
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Blank		<0.15	<0.15	0.15	<0.15	0.15	2.8	1.2	<0.15
HCN	ave	<0.15	0.15	0.31	<0.15	0.31	6.62	2.10	<0.15
	std		0.01	0.01		0.01	2.87	0.42	
	95% CL (n=3)		0.01	0.03		0.03	5.28	0.78	

Results reported as <0.1 ppb were adjusted for the dilution. The average of the triplicate preparations and related 95% confidence limits were calculated from the average of the duplicate determinations of each preparation.

Experimental

Analysis of Prepared Sample: The prepared samples were shipped to DuPont Analytical Services in Wilmington, Delaware for analysis. Except for the chlorine analysis all of the other elements were determined by an ICP/MS technique. Chlorine was determined by an Ion Chromatography (IC) method. Appendix A contains the Adobe file of the DuPont report which includes a detailed description of the analytical procedures.

Sample Preparation

Supplies & Equipment

The following were used to prepare the HCN samples. Equivalent items could also be used.

1. Labware
    a. 400 mL PTFE[1] Beaker, VWR 89026-026
    b. 250 mL PTFE Beaker, VWR 89026-022
    c. 8 cm PTFE Watch glass, VWR 89026-442
    d. 10 cm PTFE Watch glass, VWR 89026-446
    e. 1 liter LDPE[2] bottle (An empty bottle of ultrapure water)
    f. 20 mL PFA[3] Vial, snap top, Savillex 201-020-13-031-88
    g. 15 mL Vial, screw top, supplied by DuPont Analytical Solutions
2. Equipment
    a. Oven, VWR model 1330FM
    b. Balance, Analytical, Sartorius model CP224S
    c. Block heater Baxter Scientific Equipment, model H2025-1A
    d. Utility sand to make a sand bath
    e. All metal Dewar capable of containing the 1 liter LDPE bottle
    f. "Dräger PAC III" HCN monitor

[1] Polytetrafluoroethylene
[2] Low density polyethylene
[3] Perfluoroalkoxy copolymer resin

   i. XS HCN sensor
   ii. PN 6809150
g. Water, Ultrex II ultrapure J.T. Baker Cat # 6906-01
h. Nitric Acid (~70%), Aristar@ Ultra BDH Cat # 87003-226
i. Chromium, 100 µg/mL standard, Aristar@ Plus BDH Cat # 82026-156
j. Cadmium, 100 µg/mL standard, Aristar@ Plus BDH Cat # 82026-148
k. Lead, 100 µg/mL standard, Aristar@ Plus BDH Cat # 82026-212
l. Mercury, 10 µg/mL standard, Aristar@ Plus BDH Cat # 82026-174

Pre-Treatment of Labware

1. Prepare the following treating solutions from the ultrapure nitric acid and water. Prepare enough to treat all of the labware that will come in contact with the HCN samples.
   a. ~20% HNO_3 (wt/wt)
   b. ~10% HNO_3 (wt/wt)
   c. ~2% HNO_3 (wt/wt)
2. Fill each vessel to be treated with 20% HNO_3.
3. Heat for 2 hours at 40 °C in the laboratory oven.
4. Rinse 3 times with ultrapure water.
5. Fill each vessel to be treated with 10% HNO_3.
6. Heat for 2 hours at 40 °C in the laboratory oven.
7. Rinse 3 times with ultrapure water.
8. Store treated labware filled with 2% HNO_3 and covered.

Sample Preparation Procedure

Due to the ultra trace nature of this work, the sample preparation procedure was formulated to minimize the number of surfaces the sample and related solutions will contact.

1. Prepare a ~5% HNO_3 solution
   a. Into a tared, treated 400 mL PTFE beaker add about 20 grams of the ultrapure ~70% nitric acid.
   b. Bring the total weight to about 300 grams with ultrapure water.
   c. Mix well by transferring the solution back and forth with another treated 400 mL beaker.
   d. Cover solution with PTFE watch glass until needed.
2. Prepare a Spiking Solution (~10 ppm each Cd, Cr, Pb, & ~1 ppm Hg).
   a. Into a tared, treated 250 mL PTFE beaker add the following components recording the weights after each addition.
   b. About 25 grams of each of the ultrapure elemental standards.
      i. ~100 ug/mL cadmium
      ii. ~100 ug/mL chromium
      iii. ~100 ug/mL lead
      iv. ~10 ug/mL mercury
   c. Add about 19 grams of ultrapure HNO_3.
   d. Add about 140 grams of ultrapure water.

e. Mix well by transferring the solution back and forth with another treated 250 mL beaker.
f. Cover solution with PTFE watch glass until needed.
g. Calculate the actual concentration of the spiking solution based on the actual concentration and density of the standards as listed on the individual labels.

3. Label and record the tare weights of six treated sample vials.
4. Prepare a sand bath by replacing the block from the block heater with utility sand and establishing a temperature of 40 °C.
5. The HCN sample will be delivered to the laboratory in accordance with SP-03 with the following deviations.
    a. The HCN sample will be collected in a 1 liter ultra-clean LDPE bottle
    b. The LDPE bottle will be contained in an all metal Dewar during transport.
6. Done proper PPE as per JSA and receive the HCN sample in a class A hood.
7. Fill five (5) tared sample vials with HCN directly from the collection bottle.
8. Cap
9. Obtain and record the gross weight of each vial
10. Uncap all vials and place in 40 °C sand bath along with the 6th empty sample vial (preparation blank).
11. Allow samples to weather away until there is less than 1 mL of HCN in each vial.
12. Add ~1 ml of ~5% HNO_3 solution to each vial.
13. Raise the sand bath to 60 °C.
14. Allow samples to remain at 60 °C for at least 30 minutes.
15. Prepare the "Low Spike".
    a. After removing from the sand bath and cooling, place one of the sample vials on the balance and tare.
    b. Add about 0.12 grams of spiking solution directly from the 250 mL beaker.
    c. Record the weight of the spiking solution added.
    d. Bring the final volume in the vial to about 10 mL with the 5% HNO_3 solution.
16. Prepare the "High Spike".
    a. After removing from the sand bath and cooling, place one of the sample vials on the balance and tare.
    b. Add about 0.24 grams of spiking solution directly from the 250 mL beaker.
    c. Record the weight of the spiking solution added.
    d. Bring the final volume in the vial to about 10 mL with the 5% HNO_3 solution.
17. Bring the final volume in the remaining four vials to about 10 mL with the 5% HNO_3 solution.
18. Cap each vial with its lid and heat samples overnight at 60°C.
19. After heating overnight, remove samples from sand bath and allow to cool, to room temperature.
20. Remove the lids and check the headspace above the samples with the Dräger monitor to insure that no HCN is detected above 10 ppm (v/v).

21. Recap vials, obtain and record final gross weights of the vials.
22. Samples are ready to ship using a 5% nitric acid MSDS.

Acknowledgements: The author would like to acknowledge Dimitri Khramov for his assistance and expertise in developing the sample preparation procedure and his assistance during the sample preparation.

References: DL09-040
Ascend Notebook TWH2009-01 pages 4 -19

Reported By: Terry Hunter **Date:** May 21, 2010

Appendix A
Final Report from DuPont Analytical Solutions

The method LOD (3σ) and LOQ (10σ) are presented in Table 2 below.

Table 2. Method Detection Limit (LOD) and Method Limit of Quantitation (LOQ) Calculations

Element	Isotope	Slope, m	Correlation coefficient, r	Blank 01	Blank 02	Blank 03	Standard Deviation	Limit of Detection ppb	Limit of Quantitation ppb
Cr	52	36182.72	1.00000	119.4	131.7	90.0	21.435	0.0018	0.0061
Cr	53	4137.84	0.99998	16.7	6.9	8.5	5.300	0.0038	0.0128
Cd	111	75919.11	0.99998	143.5	133.3	75.5	37.858	0.0014	0.0048
Cd	113	57508.18	0.99999	116.4	108.6	102.6	6.912	0.0003	0.0010
Hg	201	54888.37	1.00000	1013.9	1044.0	1053.9	15.319	0.0015	0.0044
Hg	202	80894.88	1.00000	2171.8	2136.4	2161.7	17.128	0.0006	0.0021
Pb	206	332988.1	0.99918	1471.1	1224.1	1207.4	147.668	0.0013	0.0044
Pb	207	305577.89	0.99916	1240.8	1117.4	1059.8	90.722	0.0008	0.0030
Pb	208	711617.62	0.99970	2882.5	2456.4	2582.2	253.196	0.0011	0.0036
Be	9	51605.62	1.00000	628.7	563.4	673.4	45.011	0.0026	0.0087
Sb	121	228943.14	0.99976	757.0	653.7	680.4	56.912	0.0009	0.0030
Ag	107	541503.04	0.99726	27455.5	25701.8	25057.2	1238.985	0.0068	0.0229
Zr	90	686651.34	0.99983	19823.5	15201.6	16540.1	2096.984	0.0090	0.0301
Nb	93	1225795.48	0.99977	3498.8	2982.7	2702.2	394.908	0.0008	0.0031
Mo	95	187286.5	1.00000	1267.5	1157.5	1254.1	65.450	0.0010	0.0033
Sn	118	313192.15	0.99979	40670.9	35045.9	31523.9	4611.788	0.0461	0.1538
W	182	401682.81	0.99995	1808.0	1786.0	1881.6	112.221	0.0008	0.0026
V	51	36148.51	1.00000	82.2	98.4	102.2	10.050	0.0008	0.0028
Mn	55	48080.69	1.00000	756.3	766.1	747.2	19.473	0.0015	0.0049
Fe	56	40043.81	0.99995	4853.1	4766.0	4572.0	57.014	0.0043	0.0142
Co	59	41469.69	1.00000	24.4	23.9	20.9	2.408	0.0002	0.0008
Ni	60	9293.1	0.99999	107.8	95.0	116.3	11.089	0.0036	0.0120
Zn	66	2408.25	0.99994	512.2	453.9	530.8	38.928	0.0455	0.1512
Cu	63	20711.09	0.99970	3281.9	3180.7	3189.3	58.534	0.0082	0.0275
As	75	1038.51	0.99995	7.8	2.9	21.0	9.392	0.0271	0.0904

For the heavy metals of interest, multiple isotopes were used for quantitation to ensure no isobaric interferences. The major isotope was used for reporting purposes and is indicated in bold in Table 2. The LOD and LOQ values in Table 2 were calculated by taking 3 and 10 times, respectively, the standard deviation of the blank divided by the slope of the calibration curve. Each blank value listed in Table 2 represents the average of 10 replicate analyses of the blank 5% HNO_3 solution. The slope was calculated automatically by plotting a best-fit line through the calibration standards. Examples of the calibration curves obtained are provided in the appendix. The calculated LOD for each isotope is well below the 0.1 ppb reporting limit used in this analysis. The correlation coefficient, a measure of linearity of the calibration curve, was also >0.999 for each element.

Table 3 below shows the external spike recovery data for these samples. This represents a lab prepared 5% HNO3 sample spiked with a known concentration of each element of interest. As can be seen from the table, the spike recoveries (obtained both before and after the analysis of the six samples) are within the accepted range of 70-120%.

Appendix B

Calculated Results Based on Result from Final Report

LIMS #	Designation		Cd ppb	Cr ppb	Pb ppb	Hg ppb	Cl ppm	
Reported Results		rep						
850127	DL09-040-007	1	122	121	125	11.6	40	
		2	123	122	128	11.8		
850128	DL09-040-008	1	0.1	0.1	<0.1	0.2	<5	
		2	0.1	0.1	<0.1	0.2		
850129	DL09-040-009	1	<0.1	0.2	<0.1	0.2	<5	
		2	<0.1	0.1	<0.1	0.2		
850130	DL09-040-010	1	242	238	245	22.4	77.5	
		2	240	236	245	22.4		
850131	DL09-040-011	1	0.1	0.1	<0.1	0.2	<5	
		2	0.1	0.2	<0.1	0.2		
850132	DL09-040-012	1	<0.1	<0.1	<0.1	0.1	8	
		2	<0.1	<0.1	<0.1	0.1		
								Dil Fact
low spk	DL09-040-007	ave	122.5	121.5	126.5	11.7	40	1.62
	DL09-040-007	std	0.71	0.71	2.12	0.14		
	DL09-040-007	rsd	0.58%	0.58%	1.68%	1.21%		
Prep 1	DL09-040-008	ave	0.1	0.1	<0.1	0.2	<5	1.62
	DL09-040-008	std	0.00	0.00		0.00		
	DL09-040-008	rsd	0.00%	0.00%		0.00%		
Prep 2	DL09-040-009	ave	<0.1	0.15	<0.1	0.2	<5	1.49
	DL09-040-009	std		0.07		0.00		
	DL09-040-009	rsd		47.14%		0.00%		
high spk	DL09-040-010	ave	241	237	245	22.4	77.5	1.53
	DL09-040-010	std	1.41	1.41	0.00	0.00		
	DL09-040-010	rsd	0.59%	0.60%	0.00%	0.00%		
Prep 3	DL09-040-011	ave	0.1	0.15	<0.1	0.2	<5	1.50
	DL09-040-011	std	0.00	0.07		0.00		
	DL09-040-011	rsd	0.00%	47.14%		0.00%		
prep blk	DL09-040-012	ave	<0.1	<0.1	<0.1	0.1	8	1
	DL09-040-012	std				0.00		
	DL09-040-012	rsd				0.00%		
Corrected for Dilution								
Prep 1	DL09-040-008	ave	**0.16**	**0.16**	**<0.16**	**0.32**	**<8.1**	
		std	0.00	0.00		0.00		
		rsd	0.00%	0.00%		0.00%		
Prep 2	DL09-040-009	ave	**<0.15**	**0.22**	**<0.15**	**0.30**	**<7.5**	
		std		0.11		0.00		
		rsd		47.14%		0.00%		
Prep 3	DL09-040-011	ave	**0.15**	**0.22**	**<0.15**	**0.30**	**<7.5**	
		std	0.00	0.11		0.00		
		rsd	0.00%	47.14%		0.00%		

HCN average	**0.15**	**0.20**	**<0.15**	**0.31**	**<8**
std	**0.011**	**0.036**		**0.014**	
95% CL (n=3)	**0.02**	**0.07**		**0.03**	

Calculated Results Based on Result from Final Report

LIMS #	Designation		Cd	Cr	Pb	Hg	Cl
low spk	DL09-040-007	ave	198	197	205	19	65
		std	1.14	1.14	3.43	0.23	
		rsd	0.58%	0.58%	1.68%	1.21%	
		%rec	123%	121%	123%	119%	
high spk	DL09-040-010	ave	370	364	376	34	119
		std	2.17	2.17	0.00	0.00	
		rsd	0.59%	0.60%	0.00%	0.00%	
		%rec	123%	120%	121%	116%	
prep blk	DL09-040-012	ave	<0.10	<0.10	<0.10	0.10	8
		std				0.00	
		rsd				0.00%	

Appendix C
JSA for Sample Preparation of Liquid HCN for Trace Analysis of Selected Elements

ATTACHMENT 2

JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable): HCN Sample preparation in Control Lab

NAME OF COMPANY DOING JOB: Ascend

SUPERVISOR(S): [illegible]

DATE: April [illegible], 2009

DEPARTMENT/UNIT: Development Lab

■ NEW ☐ REVISED

ANALYSIS BY: [illegible]

REQUIRED PPE: Standard PPE consists of hardhat, chemical goggles attached to hardhat, safety glasses, FRC if unit required, safety shoes. Additional PPE identified in job steps.

EQUIPMENT TO BE USED: Low density polypropylene bottle

REVIEWED BY: [illegible]

APPROVED BY: Department Supervisor [illegible]

REQUIRED DOCUMENTS: Confined Space Permit | Hot Work Permit | Excavation Permit | Special | SP069 | Job Plan
(Check appropriate box(s))

If any conditions not covered in this JSA or other hazards arise, STOP work and immediately contact the supervisor.

WARNING

Potential for injury, equipment damage or environmental release may exist if job steps are not followed.

INITIATED	SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE
1	Obtain weights on sample vials	none	
2	Obtain sample of HCN from 327 [illegible]	Personal and Collateral exposure to HCN. The normal sample container will not be used: a Low Density Polypropylene bottle will be used to control any contamination from the Stainless Steal container. Ice must be used to cool the sample for transport.	1. Perform operation off hours after 5PM 2. Backup person 3. Only principles in unit 4. Use proper PPE throughout the entire procedure. Breathing air chemical gloves and chemical suit. 5. Bottle will be carried from sample cabinet to the truck in a 5 gallon pail with a handle with ice and then the sample will be placed into a steinless steel sample container holder that is in another 5 gallon pail that is tied down to the truck with a handle fully packed with ice for transport to the control lab to maintain temperature and pressure.
3	Receive HCN sample in control lab	Personal and Collateral exposure to HCN	1. Perform operation off hours after 5PM

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Appendix D

Summary of LOD and LOQ for as Analyzed by ICP/MS and Corrected for Dilution

		As Reported			Calculated Based on 1.5 Dilution Factor		
Element	Isotope	Limit of Detection LOD	Limit of Quantitation LOQ	Minimum Reported Value	Limit of Detection LOD	Limit of Quantitation LOQ	Minimum Reported Value
		ppb	ppb	ppb	ppb	ppb	ppb
Cr	52	0.0018	0.0061	0.1	0.0027	0.0092	0.15
Cd	113	0.0003	0.0010	0.1	0.0005	0.0015	0.15
Hg	202	0.0006	0.0021	0.1	0.0009	0.0032	0.15
Pb	208	0.0011	0.0035	0.1	0.0017	0.0053	0.15
Be	9	0.0026	0.0087	0.1	0.0039	0.0131	0.15
Sb	121	0.0009	0.0030	0.1	0.0014	0.0045	0.15
Ag	107	0.0069	0.0229	0.1	0.0104	0.0344	0.15
Zr	90	0.0090	0.0301	0.1	0.0135	0.0452	0.15
Nb	93	0.0009	0.0031	0.1	0.0014	0.0047	0.15
Mo	95	0.0010	0.0033	0.1	0.0015	0.0050	0.15
Sn	118	0.0461	0.1536	0.1	0.0692	0.2304	0.15
W	182	0.0008	0.0028	0.1	0.0012	0.0042	0.15
V	53	0.0009	0.0028	0.1	0.0014	0.0042	0.15
Mn	55	0.0013	0.0042	0.1	0.0020	0.0063	0.15
Fe	56	0.0043	0.0142	0.1	0.0065	0.0213	0.15
Co	59	0.0002	0.0006	0.1	0.0003	0.0009	0.15
Ni	60	0.0038	0.0126	0.1	0.0057	0.0189	0.15
Zn	66	0.0453	0.1512	0.1	0.0680	0.2268	0.15
Cu	63	0.0082	0.0273	0.1	0.0123	0.0410	0.15
As	75	0.0271	0.0904	0.1	0.0407	0.1356	0.15

DuPont Analytical Solutions
P. O. Box 80302
Wilmington, DE 19880-0302

Date: 03-December-2009

CC: L. M. Ryan
J. V. Woodward

To: Narayan Dave, Solutia Inc.

From: C. S. Westphal, CCAS, DuPont

Analysis of HCN Process Samples for Heavy Metals for Solutia

Summary

DAS customer Solutia requested analysis of heavy metals (Cd, Cr, Pb, Hg) and Chlorine in HCN. A previous report ("Analysis of Process Blank for Heavy Metals for Solutia") details the feasibility of this study based on the initial analysis of a process blank. In this report, six samples were submitted blind for IC and ICP-MS analysis, including one process blank, three HCN samples, and 2 spiked HCN samples. The ICP-MS method detection limits calculated using a lab prepared 5% HNO_3 solution were found to be <0.1 ppb for the heavy metals. The IC method detection limit for Cl was found to be <5 ppm. For the 6 samples, four were found to have negligible amounts (<1 ppb) of the metals of interest. For the remaining two samples, one was found to have approximately 125 ppb and the second 240 ppb (12 and 22 ppb Hg) of the metals of interest.

Request / Need

Analysis of heavy metals in hydrogen cyanide (HCN) was requested by DAS customer Solutia. An extraction using HNO_3 would be performed by Solutia, with the CCAS Metals group analyzing the acid extracts for the heavy metals of interest (Cd, Cr, Pb, and Hg) and total Chlorine. An analytical procedure was discussed previously between CCAS and Solutia to design this test to meet current and future EPA requirements. Before proceeding to analysis of actual samples, a process blank sample was previously obtained and analyzed, demonstrating the feasibility of this approach. This analysis was performed on 26-June-2009 and detailed in a separate report ("Analysis of Process Blank for Heavy Metals for Solutia"). This report focuses on the analysis of six samples, blindly submitted, that include one process blank, three HCN samples, and two spiked HCN samples for IC and ICP-MS analysis.

Results and Discussion

Six samples containing 5% HNO_3 were submitted for analysis by Solutia for heavy metals and total Chlorine analysis. The samples were analyzed in duplicate against a lab prepared blank 5% HNO3 sample against a 5-point external calibration curve. Table 1 below lists the results in ppb obtained for this analysis for the heavy metals of interest (Cd, Cr, Pb, Hg), total Chlorine, and selected other metals that may be of future interest to Solutia.

Table 1. ICP-MS results for Solutia 5% HNO_3 process blank sample.

LIMS #	Designation	Cd	Cr	Pb	Hg	Cl	Be	Sb	Ag	Zr	Nb
		ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb
850127	DL09-040-007	122	121	125	11.6	40.0	<0.1	<0.1	0.5	<0.1	<0.1
850127	DL09-040-007 repeat	123	122	128	11.8		<0.1	<0.1	<0.1	<0.1	<0.1
850128	DL09-040-008	0.1	0.1	<0.1	0.2	<5	<0.1	<0.1	<0.1	<0.1	<.01
850128	DL09-040-008 repeat	0.1	0.1	<0.1	0.2		<0.1	<0.1	<0.1	<0.1	<0.1
850129	DL09-040-009	<0.1	0.2	<0.1	0.2	<5	<0.1	<0.1	<0.1	<0.1	<0.1
850129	DL09-040-009 repeat	<0.1	0.1	<0.1	0.2		<0.1	<0.1	<0.1	<0.1	<0.1
850130	DL09-040-010	242	238	245	22.4	77.5	<0.1	<0.1	<0.1	<0.1	<0.1
850130	DL09-040-010 repeat	240	236	245	22.4		<0.1	<0.1	<0.1	<0.1	<0.1
850131	DL09-040-011	0.1	0.1	<0.1	0.2	<5	<0.1	<0.1	<0.1	<0.1	<0.1
850131	DL09-040-011 repeat	0.1	0.2	<0.1	0.2		<0.1	<0.1	<0.1	<0.1	<0.1
850132	DL09-040-012	<0.1	<0.1	<0.1	0.1	8.0	<0.1	<0.1	<0.1	<0.1	<0.1
850132	DL09-040-012 repeat	<0.1	<0.1	<0.1	0.1		<0.1	<0.1	<0.1	<0.1	<0.1

LIMS #	Designation	Mo	Sn	W	V	Mn	Fe	Co	Ni	Zn	Cu	As
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
850127	DL09-040-007	<0.1	<0.1	<0.1	<0.1	0.1	2.4	0.1	0.3	3.6	1.2	<0.1
850127	DL09-040-007 repeat	<0.1	<0.1	<0.1	<0.1	<0.1	2.4	0.1	0.3	3.6	1.2	<0.1
850128	DL09-040-008	<0.1	<0.1	<0.1	<0.1	0.1	13.4	0.1	0.2	4.4	1.6	<0.1
850128	DL09-040-008 repeat	<0.1	<0.1	<0.1	<0.1	0.1	13.1	<0.1	0.2	4.4	1.6	<0.1
850129	DL09-040-009	0.1	<0.1	<0.1	<0.1	0.1	11.7	<0.1	0.2	6.1	1.3	<0.1
850129	DL09-040-009 repeat	0.1	<0.1	<0.1	<0.1	0.1	11.8	<0.1	0.2	6.2	1.3	<0.1
850130	DL09-040-010	<0.1	<0.1	<0.1	<0.1	0.1	4.2	0.1	0.3	4.6	1.3	<0.1
850130	DL09-040-010 repeat	<0.1	<0.1	<0.1	<0.1	0.1	4.1	0.1	0.4	4.6	1.3	<0.1
850131	DL09-040-011	<0.1	<0.1	<0.1	<0.1	0.1	3.1	<0.1	0.2	2.4	1.2	<0.1
850131	DL09-040-011 repeat	<0.1	<0.1	<0.1	<0.1	0.1	3.0	<0.1	0.2	2.3	1.2	<0.1
850132	DL09-040-012	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	<0.1	0.1	1.8	0.8	<0.1
850132	DL09-040-012 repeat	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	<0.1	0.1	1.8	0.8	<0.1

NOTE: All results for Cl were obtained by IC analysis

Each concentration listed in Table 1 represents the average of three consecutive measurements of that particular sample. Each sample was also analyzed (non-consecutively) in duplicate, thereby ensuring maximum variability within the method. Based on the results, samples -007 and -010 are likely the spiked samples, with the remaining four samples comprising the process blank and three HCN samples. Excellent agreement is observed both within a single analysis (RSD <3% for spiked samples) and in comparing the duplicate analyses. This agreement holds true for the heavy metals of interest as well as the secondary metals. Because the known values for the two spiked samples are unknown (to this analyst), no calculations can be done to determine internal spike recovery.

The method LOD (3σ) and LOQ (10σ) are presented in Table 2 below.

Table 2. Method Detection Limit (LOD) and Method Limit of Quantitation (LOQ) Calculations

Element	Isotope	Slope, m	Correlation coefficient, r	Blank 01	Blank 02	Blank 03	Standard Deviation	Limit of Detection ppb	Limit of Quantitation ppb
Cr	**52**	35192.72	1.00000	119.4	131.7	90.0	21.426	0.0018	0.0061
Cr	53	4127.94	0.99998	16.7	6.9	8.3	5.300	0.0039	0.0128
Cd	111	79313.11	0.99998	143.3	133.3	73.3	37.859	0.0014	0.0048
Cd	**113**	67306.18	0.99999	116.4	108.8	102.6	6.912	0.0003	0.0010
Hg	201	34889.37	1.00000	1013.9	1044.0	1033.9	15.319	0.0013	0.0044
Hg	**202**	80694.89	1.00000	2171.8	2138.4	2161.7	17.129	0.0006	0.0021
Pb	206	332686.1	0.99918	1471.1	1224.1	1207.4	147.663	0.0013	0.0044
Pb	207	305577.89	0.99916	1240.8	1117.4	1063.9	90.722	0.0009	0.0030
Pb	**208**	711617.82	0.99970	2932.5	2455.4	2562.2	250.384	0.0011	0.0035
Be	9	51605.62	1.00000	626.7	583.4	673.4	45.011	0.0026	0.0087
Sb	121	226840.14	0.99978	757.0	653.7	890.4	68.912	0.0009	0.0030
Ag	107	541303.04	0.99726	27455.3	26701.8	25067.2	1236.965	0.0069	0.0229
Zr	90	696651.34	0.99983	19523.5	16201.0	15640.1	2098.964	0.0090	0.0301
Nb	93	1225756.49	0.99977	3489.8	2992.7	2732.2	384.908	0.0009	0.0031
Mo	95	197295.5	1.00000	1287.5	1157.3	1234.1	65.450	0.0010	0.0033
Sn	118	313192.15	0.99979	40870.6	35045.9	31323.9	4811.789	0.0461	0.1536
W	182	401892.81	0.99955	1808.0	1788.0	1991.6	112.221	0.0008	0.0028
V	51	38148.51	1.00000	82.2	99.4	102.2	10.830	0.0009	0.0028
Mn	55	46080.63	1.00000	768.3	786.1	747.2	19.473	0.0013	0.0042
Fe	56	40043.31	0.99993	4663.1	4766.0	4672.0	57.014	0.0043	0.0142
Co	59	41499.89	1.00000	24.4	23.9	20.0	2.409	0.0002	0.0006
Ni	60	9293.1	0.99999	107.6	95.0	118.3	11.669	0.0038	0.0126
Zn	66	2403.25	0.99994	512.2	453.9	520.6	36.328	0.0453	0.1512
Cu	63	20711.09	0.99970	3281.3	3180.7	3186.3	56.534	0.0082	0.0273
As	75	1039.51	0.99995	7.6	2.9	21.0	9.392	0.0271	0.0904

For the heavy metals of interest, multiple isotopes were used for quantitation to ensure no isobaric interferences. The major isotope was used for reporting purposes and is indicated in **bold** in Table 2. The LOD and LOQ values in Table 2 were calculated by taking 3 and 10 times, respectively, the standard deviation of the blank divided by the slope of the calibration curve. Each blank value listed in Table 2 represents the average of 10 replicate analyses of the blank 5% HNO_3 solution. The slope was calculated automatically by plotting a best-fit line through the calibration standards. Examples of the calibration curves obtained are provided in the appendix. The calculated LOD for each isotope is well below the 0.1 ppb reporting limit used in this analysis. The correlation coefficient, a measure of linearity of the calibration curve, was also >0.999 for each element.

Table 3 below shows the external spike recovery data for these samples. This represents a lab prepared 5% HNO3 sample spiked with a known concentration of each element of interest. As can be seen from the table, the spike recoveries (obtained both before and after the analysis of the six samples) are within the accepted range of 70-120%.

Table 3. Spike Recovery Results.

Element	Isotope	Spike Recovery 5 ppb	10 ppb	20 ppb
Cr	**52**	100%	101%	102%
Cr	53	102%	100%	101%
Cd	111	100%	101%	102%
Cd	**113**	102%	101%	102%
Hg	201	100%	n/a	n/a
Hg	**202**	100%	n/a	n/a
Pb	206	108%	110%	105%
Pb	207	108%	110%	104%
Pb	**208**	112%	104%	106%
Be	9	98%	103%	104%
Sb	121	102%	104%	104%
Ag	107	70%	97%	104%
Zr	90	100%	104%	104%
Nb	93	106%	105%	104%
Mo	95	102%	101%	102%
Sn	118	104%	106%	104%
W	182	108%	108%	104%
V	51	100%	102%	102%
Mn	55	100%	102%	102%
Fe	56	108%	102%	102%
Co	59	100%	102%	102%
Ni	60	100%	101%	102%
Zn	66	100%	102%	104%
Cu	63	98%	104%	105%
As	75	98%	97%	102%

It should be noted that only one set of spike recovery data is listed for Mercury. This was due to the well-known memory effects and wash-in/wash-out times associated with Hg. Therefore, it was decided to minimize the number of high concentration Hg samples in order to ensure accurate and reproducible blank values.

Experimental

Inductively coupled plasma mass spectrometry (ICP-MS) is a multielement analysis technique capable of measuring trace and ultratrace metal concentrations in liquid samples down to the sub-part-per-trillion (ppt, pg/g) level. A 5% HNO_3 sample was prepared in-house using concentrated ultrapure HNO_3 and distilled deionized water. The sample was spiked with known concentrations of a multielement concentration to yield calibration standards at 0, 0.1, 0.5, 1.0, and 1.5 ppb. The standards and samples were analyzed using a high resolution ICP-MS operated in low, medium and high mass resolution modes. Whenever possible, multiple isotopes and/or resolutions were used to verify results and the absence of polyatomic isobaric

interferences. The standards and samples were introduced to the ICP-MS using an SC-FAST flow injection system coupled to a PFA nebulizer and PFA cyclonic spray chamber, which provided minimal dead volume and reproducible background levels. Each sample and standard was analyzed at least in duplicate. The calibration curves used to provide quantitative results all had r^2 values > 0.995. The Solutia process blank sample was analyzed against an external calibration curve.

Ion chromatography (IC) is a useful analytical technique for the separation and quantitation of ions in solution based on their coulombic interactions with a stationary phase. The 5% HNO_3 samples were diluted with water (1:500) immediately prior to analysis. The HNO_3 levels had a minimal effect on the levels of chloride retained on the column at the dilution analyzed as demonstrated through >99% average spike recovery for two separate spiked samples. The samples had a lower blank value than the system blank, and the lowest chloride level detected in a sample was substituted for the actual blank. The exact conditions used for the IC analysis are listed below:

IC Conditions:

Column:	Dionex AS17
Eluent:	0.5 – 50 mM KOH
Flow:	1.0 mL/min
Sample Loop:	100 µL
Suppression:	Elec 100 uA
Method:	EG1_AS17_AS50_SH

Work Order Number: D094221448 and D094221468

Appendix