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November 20, 2025

Mr. Mohammad Khan, Environmental Permit Specialist III, MC 130
Industrial and Hazardous Waste
Waste Permits Division
Texas Commission on Environmental Quality (TCEQ)
12100 Park 35 Circle, Bldg. F
Austin, TX 78753

Re: Response to Technically Complete Email Notification dated November 12, 2025
Air Products LLC
1423 Hwy 225, Pasadena, Harris County, TX
Hazardous Waste Permit/Compliance Plan (HWP/CP) No. 50134
Industrial Solid Waste Number: 30317
EPA Identification No.: TXD990757486
CN602299257 / RN100221324

Dear Mr. Khan:

On behalf of Air Products LLC (APLLC), WSP USA Inc. (WSP) is submitting replacement pages to the Texas Commission on Environmental Quality (TCEQ) for Corrective Action (CA) and Industrial and Hazardous Waste (IHW) Notices of Deficiency (NODs) in response to the declaration of technical completeness email notification dated November 12, 2025 (IHW) and November 13, 2025 (CA/Compliance Plan).

A response to each uniquely identified deficiency listed in the tables "*Application Deficiencies – Technical NOD 1 – Compliance Plan*" (CA/Compliance Plan) and "*IHW Technical NOD 1 – Permit Renewal – Air Products LLC – Permit No. 50134*" (IHW) is addressed in the response columns added to the tables as presented in Attachment 1 for reference. Updated Part A and Part B signature pages are presented in Attachment 2.

Replacement pages for the CA/Compliance Plan NOD sections are presented in Attachment 3. Replacement pages for the IHW NOD sections are presented in Attachment 4. Note, per discussion with Mohammad Khan (TCEQ) on November 17,

2025, Notice of Registration (NOR) 043 has been updated on applicable pages in the permit application as "Inactive" and per TCEQ instruction, have been included in this package. Each replacement page in this document has been noted with their Revision Number and a corresponding Revision Date.

Note, for the CA/Compliance Plan NOD, a full list of CP Attachment A figures was provided separately. These figures are provided again for clarity in Attachment 5. Additionally, for the IHW NOD, Section IX "Releases from Solid Waste Units and Corrective Action" Appendices II (Waste Managed), III (Evidence of Release), and IV (Pollutant Dispersal Pathways) were provided previously as they were omitted from the original permit renewal application. For clarity, these Appendices are provided again in Attachment 6.

Notes:

1. Voluntary Cleanup Program and Corrective Action (VCP-CA) Technical NOD 1 – Compliance Plan – Permit Renewal – Air Products LLC – Permit No. 50134 email from Wyatt Hooks dated September 17, 2025.
2. WSP submitted APLLC 50134 – Technical NOD 1 Response to the TCEQ (Wyatt Hooks) on October 6, 2025.
3. Industrial and Hazardous Waste (IHW) Technical NOD 1 – Permit Renewal – Air Products LLC – Permit No. 50134 email from Mohammad Khan dated October 17, 2025.
4. WSP submitted APLLC 50134 – IHW Technical NOD 1 Response to the TCEQ (Mohammad Khan) on October 31, 2025.
5. Technically complete notification and request for NOD package (responses for IHW and CA NODs) with Part A and B signature pages and a clean copy of the application electronically requested by Mohammad Khan via email dated November 12, 2025.
6. Technically complete notification of the Compliance Plan portion of the Permit Renewal Application email confirmed by Mohammad Khan on November 13, 2025.

If you have any questions or require additional information, please contact me at 210-241-9852 or email at [REDACTED]

Sincerely,



David L. Hartsfield, PG
Assistant Vice President, Geology



Tyler M. Wenzel, MBA
Consultant, Environmental Science

Copies:

Air Products LLC; Attn. Renie Stack
Attachments

ATTACHMENT 1

Application Deficiencies – Technical NOD 1 – Compliance Plan

&

IHW Technical NOD 1 – Permit Renewal – Air Products LLC – Permit No. 50134

Tables with Response Columns

Application Deficiencies – Technical NOD 1 – Compliance Plan

Table with Response Column

Application Deficiencies – Technical NOD 1 - Compliance Plan

ID ¹	App. Part	App. Section	Location ²	Citation	Error Type ³	Deficiency Description/Resolution	AIR PRODUCTS LLC Response
CP1	B	XI.A	XI.A.4	30 TAC §305.45(a)(8)(C)	Format	A. The figures used as the CP Attachment A Sheets should be labeled as “CP Attachment A, Sheet X of Y.” (Topographic maps and cross-sections are provided as supplemental information in the application. These figures should not be labeled “CP Attachment A, Sheet X of Y” because these figures are not included in the Final Draft Permit). B. CP Attachment A Sheets should be presented in the following order: 1. Facility property map(s); 2. RCRA-regulated waste management unit / SWMU / AOC location map(s); and 3. Groundwater monitoring well location map(s) for the RCRA regulated units / SWMU(s)/AOC(s) listed in CP Table I. C. Clearly identify the location of all monitoring wells (point of compliance wells, point of exposure wells, and background wells). Each type of monitoring well should be represented by a different symbol so that the wells are easily distinguished from one another. D. The figures should represent the most up to date monitoring well configuration and any wells that are no longer in use should be removed.	A & B. CP Attachment A Sheet 1 of 6 and Sheet 2 of 6 have been added to the figures included in Section XI.D. Additionally, the Part B Volume 2 Section XI Table of Contents has been revised to reflect the addition of all figures (figures were not listed previously). Per discussion with the TCEQ on 9/24/2025, a combined document of figures, for ease of TCEQ viewing has been provided in addition to the updated Table of Contents page. C. Symbology on existing CP Attachment A figures have been modified to clearly identify each type of monitor well and reduce overlap of symbols. D. Figures documenting up to date monitoring well configuration and wells that are no longer in use were provided in the original submittal, however, for clarity, all CP Attachment A figures (Sheets 1 through 6) are included in this response.
CP2	B	XI.B	CP Table III and CP Table IIIA	30 TAC §335.158-160	Omitted	The Groundwater Protection Standard (GWPS) was not listed for 5-Nitro-o-toluidine in CP Tables III and IIIA. A GWPS must be provided for all the hazardous constituents listed. Please note that 0.028 mg/L was listed as the GWPS for 5-Nitro-o-toluidine in the Class 3 Modification dated September 9th, 2011.	Note the TRRP PCL Tables, under “Summary of Updates to the Tables Accompanying the Texas Risk Reduction Program (TRRP) Rule” 12/16/2015 (date): Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine): Chemical removed from PCL Tables because Sfo (Oral Slope Factor) removed in 2014 and the chemical has no other toxicity factors. Per discussion with TCEQ on 9/24/2025, 5-nitro-o-toluidine has been removed from CP Tables III and IIIA. Revised CP Tables III and IIIA are attached.
CP3	B	XI.C	CP Table VI	30 TAC §335.162	Omitted	Please complete the omitted sections of CP Table VI.	The revised CP Table VI is attached.

CP4	B	XI.E	Table XI.E.2.e	30 TAC §335.156 and §335.179	Inconsistent	The number of point of compliance (POC) and point of exposure (POE) wells listed in CP Table V does not match the number of wells listed in Table XI.E.2.e. Please review the site's groundwater monitoring well network and update Table XI.E.2.e as necessary.	Note there are 21 POC wells listed in CP Table V. Three of those wells (MW24, RW27, and RW28) are also classified as CAS wells, and are counted as CAS wells in Table XI.E.2.e. As such, 18 POC wells are counted in Table XI.E.2.e. There are 25 POE wells listed in CP Table V. One of those wells (RW26) is also classified as a CAS well and is counted as a CAS well in Table XI.E.2.e. Two other wells (MW21, MW28) are also classified as POC wells, and are counted as POC wells in Table XI.E.2.e. As such, 22 POE are counted in Table XI.E.2.e. There are 17 APOE wells listed in CP Table V. Four of those wells (MW8, MW75, MW76, MW77) are also classified as POC wells, and are counted as POC wells in Table XI.E.2.e. As such, 13 APOE wells are counted in Table XI.E.2.e. The sum of 22 POE wells plus 13 APOE wells results in 35 wells counted as POE wells in Table XI.E.2.e. The revised Table XI.E.2.e is attached. In addition, one error on CP Table V has been corrected. In the listing of POC wells, MW27 has been corrected to well ID RW27. The revised CP Table V is attached.
CP5	B	XI.E	Table XI.E.3	30 TAC §335.156 and §335.179	Inconsistent	Please revise the Table based on changes made to address CP4.	The revised Table XI.E.3 is attached.

¹ Deficiency ID – Key: A#=Administrative deficiency (ex. A12); T#=Technical deficiency relating to Sections I-X and Sections XII-XIII of the Part B application (ex. T10); C#=Comment only (ex. C1); CP#=Technical deficiency relating to Section XI-Compliance Plan of the Part B application (ex. CP14); Number in parenthesis (n) = nth instance of same deficiency (ex. T1(2) is the second instance of deficiency T1 originally identified in previous NOD).

² Location of deficiency in submittal/application. Items in square brackets [] refer to applicant's supplemental information submitted as attachments to the application form.

³ Possible Error Types, one of: Ambiguous, Incomplete, Inconsistent, Incorrect, Omitted, Typo, or Format.

IHW Technical NOD 1 – Permit Renewal – Air Products LLC – Permit No.

Table with Response Column

IHW Technical NOD 1 – Permit Renewal - Air Products LLC - Permit No. 50134

ID ¹	App. Part	App. Section	Location ²	Citation	Error Type ³	Deficiency Description/Resolution	AIR PRODUCTS LLC Response
NT1	A	I - General Information	I.A.	-	Incorrect	Correct Facility name to match the name in the Central Registry. Clarify if the facility name changed and revise accordingly.	Per previous TCEQ direction, Air Products Pasadena Plant has been utilized as the facility/regulated entity name in the permit renewal document. Per a meeting held with the TCEQ on 10/28/2025, we understand there are some discrepancies in TCEQ records (Central Registry). The Air Products Pasadena Plant facility/regulated entity name will be utilized unless otherwise directed by the TCEQ. We understand TCEQ is currently evaluating their records.
NT2	A	Core Data Form	[Attachment I.H.]	-	Incorrect	Correct Regulated Entity name to match the name in the TCEQ Central Registry. Clarify if the regulated entity name changed and revise accordingly.	Per previous TCEQ direction, Air Products Pasadena Plant has been utilized as the facility/regulated entity name in the permit renewal document. Per a meeting held with the TCEQ on 10/28/2025, we understand there are some discrepancies in TCEQ records (Central Registry). The Air Products Pasadena Plant facility/regulated entity name will be utilized unless otherwise directed by the TCEQ. We understand TCEQ is currently evaluating their records.
NT3	A, B	Applicable Section in the entire application	-	30 TAC 305.45 (a)(6), 30 TAC 305.50 (a)(7), 40 CFR 270.13(h)	Incomplete	Provide P.E and P.G. firm number as applicable where the reports and drawings are signed and sealed by P.E. and P.G.	Professional Engineer (PE) and Professional Geoscientist (PG) firm registration number's have been added to the Engineering and Geology Report Certification pages. Per a meeting held with the TCEQ on 10/22/2025, only newly stamped pages with the most recent permit renewal were to have registration numbers added.
NT4	B	Table I- General Information	I.A.	Application Instructions	Incorrect	Correct Regulated Entity name to match name in the Central Registry. Clarify if the regulated entity name changed and revise accordingly.	Per previous TCEQ direction, Air Products Pasadena Plant has been utilized as the facility/regulated entity name in the permit renewal document. Per a meeting held with the TCEQ on 10/22/2025, we understand there are some discrepancies in TCEQ records (Central Registry). The Air Products Pasadena Plant facility/regulated entity name will be utilized unless otherwise directed by the TCEQ. We understand TCEQ is currently evaluating their records.
NT5	A	Application	Public Involvement Plan Form	Application Instructions	-	Provide a brief explanation on how the facility’s location is not in the geographical area. Please see attached instructions for PIP form to this email for reference.	The Air Products Pasadena Plant was determined to be within the Houston geographical area. Reiteration of the instructions on the PIP form was also provided to detail that the completion of a PIP for the purposes of the permit renewal was not warranted.
T1	B	V	Table V.A. - Facility Waste Management Handling Units	-	Incorrect	i. Add NOR 010 to table V.A. Table III-2 titled “Hazardous Waste Management Unit Checklist” includes TCEQ NOR Unit 006 and 010, both of which are boilers closed in 1992.Table V.A. includes NOR No 006 but not 010. ii.NOR 001 capacity does not match facility’s NOR. Clarify.	i. NOR 010 (1560 Boiler) was added to Table V.A. - Facility Waste Management Handling Units. ii. Per a meeting held with the TCEQ on 10/22/2025, it was noted that the NOR 001 capacity was not detailed in the publicly available NOR data for the Air Products Pasadena Plant, and that the internal TCEQ dataset was incorrect (detailing that NOR 001 has a 1,000-gallon capacity). As such, based on a historically submitted permit application, the capacity for NOR 001 was changed to 727,000-gallons in Table V.A. - Facility Waste Management Handling Units.
T2	B	VII	Table VII.E.1. - Permitted Unit Closure Cost Summary	-	Incomplete	Add the year for the closer cost estimate. Revise accordingly.	Table VII.E.1. - Permitted Unit Closure Cost Summary was noted to be incorrectly filled out as no units are undergoing closure. This table was modified to reflect it's status as "RESERVED", as it is not applicable. As such, Table VII.E.2 - Permitted Unit Post-Closure Cost Summary was incorrectly labeled "RESERVED" and was modified to replace "RESERVED" with the permitted post-closure unit <i>Former Effluent Impoundment</i> . All other information on Table VII.E.2. remains the same.
T3	B	VIII	-	30 TAC 305.50(a)(4)	Incorrect	Provide evidence of your company’s financial capability, you will need to complete and sign the Financial Disclosure Letter relating to permit renewals located towards the end of the information packet. In accordance with 30 TAC 305.50(a)(4), the applicant must demonstrate the capability to provide sufficient financial resources to construct, safely operate, properly close, and provide adequate closure and liability coverage for the facility. Please see attached letter to this email for reference.	A completed Financial Disclosure Letter relating to the Air Products LLC permit renewal is presented in Attachment 2 of this reponse.

T4	B	-	Preliminary Review Facility Checklist	-	Incorrect	Please revise preliminary review facility checklist. The status of following NOR’s in the checklist does not match facility’s NOR. 004, 008, 009, 042, 012, 016, 017,018, 022, 023, 024, 027, 028, 029, 030, 032, 035, 036, 037, and 041.	1. The Preliminary Review Checklist and waste management unit descriptions have been revised to update the current status of each of the waste management units and Areas of Concern. 2. Appendices I, II, III, and IV have also been updated to reflect current conditions: a) Appendix I, Figure I.2 has been updated. b) Appendix II now provides updated Safety Data Sheets for 2,4- and 2,6-Dinitrotoluene, 2,4- and 2,6-Toluenediamine, o-Toluidine, and Toluene. c) Appendix III now provides additional soil data summary tables from the Dinitrotoluene and Toluenediamine manufacturing area assessments completed during their decommissioning and deconstruction. In addition, the most recent (2025) Historical Groundwater Results summary table, Results of Analysis of Groundwater summary table (April/May 2025 event), and the April/May 2025 Chemical of Concern maps are provided. d) Appendix IV now provides the April/May 2025 potentiometric surface maps.
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^[1] Deficiency ID – Key: A#=Administrative deficiency (ex. A12); NT#=Non-Technical deficiency relating to more administrative in nature such as typo, format, etc. (ex. NT7); T#=Technical deficiency relating to Sections I-X and Sections XII-XIII of the Part B application (ex. T10); C#=Comment only (ex. C1); CP#=Technical deficiency relating to Section XI-Compliance Plan of the Part B application (ex. CP14); **Number in parenthesis (n) = n th instance of same deficiency** (ex. T1(2) is the second instance of deficiency T1 originally identified

^[2] Location of deficiency in submittal/application. Items in square brackets [] refer to applicant's supplemental information submitted as attachments to the application form.

^[3] Possible Error Types: Ambiguous, Incomplete, Inconsistent, Incorrect, Omitted, Typo, or Format.

ATTACHMENT 2

Updated Part A and Part B Signature pages

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: Enrique Millan Date: 11/18/25

Name and Official Title (type or print): Enrique Millan - Vice President

Operator Signature: _____ Date: _____

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

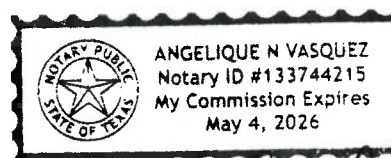
(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said Enrique Millan on this

18 day of November, 2025.

My commission expires of the May day of 4, 2026

Notary Public in and for Harris County, Texas



Angelique N. Vasquez
832-433-5661

Signature Page

I, Enrique Millan, Vice President
(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: Enrique Millan Date: 11/18/25

To be completed by the Operator if the application is signed by an Authorized Representative for the Operator

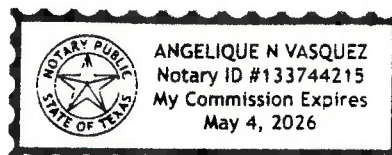
I, _____, hereby designate _____
[Print or Type Name] [Print or Type Name]

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 Enrique Millan
On this 18 day of November 4 2025
My commission expires on the May day of 4, 2026
Notary Public in and for Harris County, Texas
[Note: Application Must Bear Signature & Seal of Notary Public]



Angelique N. Vasquez
832-433-5661

ATTACHMENT 3

Replacement pages for CA/Compliance Plan NOD permit sections

VOLUME 2

Tab		Content	TCEQ Form Page#
B	XI	Compliance Plan	86-116
		Compliance Plan Response	
		Table XI.A.1. – Facility History for Waste Management Units	
		Table XI.E. – General Information	
		Table XI.E.1 – Corrective Action Program Cost Estimate	
		Table XI.E.2.e – Groundwater Monitoring Cost Estimate	
		Table XI.E.3 – Financial Assurance Summary	
		CP Table I – Waste Management Units and Areas Subject to Corrective Action and Compliance Monitoring	
		CP Table II – Solid Waste Management Units and/or Areas of Concern	
		CP Table III – Corrective Action Program Table of Detected Hazardous and Solid Waste Constituents and the Groundwater Protection Standard	
		CP Table IV – Compliance Monitoring Program Table of Detected Hazardous Constituents and Quantitation Limits	
		CP Table IVA - Compliance Monitoring Program Table of Detected Hazardous Constituents and the Groundwater Protection Standard	
		CP Table V - Designation of Wells	
		CP Table VI: Compliance Period and Post Closure Period for RCRA-Regulated Units	
		CP Table VII - Reporting Requirements	
		CP Table VIII - Compliance Schedule	
		CP Table IX - Description of Uppermost Aquifer	
		Attachment XI.A.4 - Site Geology and Hydrogeologic Conditions Report	
		Attachment XI.A.4.d - Water Well Report	
		Attachment XI.A.4.i - Well Logs and Cone Penetrometer Test Logs	
		Attachment XI.A.4.j.1 - Tier 1 Exclusion Criteria Checklist	
		Attachment XI.A.4.j.2 - Tier 2 Exclusion Criteria Checklist	
		Attachment XI.B.1 - Results of Appendix 8 Analyses	
		Attachment XI.D Addendum (August 2025)	
		Attachment XI.D - Corrective Action Program	
		Attachment XI.D.2 - Recovery/Control Well Area of Influence and Pumping Rates	
		CP Attachment A Sheet 1 of 6	
		CP Attachment A Sheet 2 of 6	
		CP Attachment A Sheet 3 of 6	

HW 50134
AIR PRODUCTS LLC

		CP Attachment A Sheet 4 of 6	
		CP Attachment A Sheet 5 of 6	
		CP Attachment A Sheet 6 of 6	
		Figure XI.D.3.a1	
		Figure XI.D.3.a2	
		Figure XI.D.6	
		Figure XI.D.6.c.(3).1	
		Figure XI.D.6.c.(3).2	
		Attachment XI.D.3.c(1) - Sampling and Analysis Plan	
		Attachment XI.D.3.c.(2) - Well Certification Report	

CP Table III: Corrective Action Program Table of Detected Hazardous and Solid Waste Constituents and the Groundwater Protection Standard

Unit Name	Column A Hazardous Constituents	Column B Groundwater Protection Standards (mg/L) at the POC ^{1,3}		Column C Groundwater Protection Standards (mg/L) at the POE, APOE, or FBOC ^{2,3}	
Waste Management Area 1, Waste Management Area 2, and TDA Loading Area	Benzene	0.005	GWGWIng	0.005	GWGWIng
	Chloroform	0.080	GWGWIng	0.080	GWGWIng
	1,2-Dichloroethane	0.005	GWGWIng	0.005	GWGWIng
	Trichloroethylene	0.005	GWGWIng	0.005	GWGWIng
	Methyl Ethyl Ketone [2-Butanone]	15	GWGWIng	15	GWGWIng
	Methylene Chloride	0.005	GWGWIng	0.005	GWGWIng
	Toluene	1.0	GWGWIng	1.0	GWGWIng
	m-Nitrotoluene	0.240	GWGWIng	0.240	GWGWIng
	o-Nitrotoluene	0.0041	GWGWIng	0.0041	GWGWIng
	p-Nitrotoluene	0.057	GWGWIng	0.057	GWGWIng
	2,4-Dinitrotoluene	0.0013	GWGWIng	0.0013	GWGWIng
	2,6-Dinitrotoluene	0.0013	GWGWIng	0.0013	GWGWIng
	1,3-Dichlorobenzene	0.730	GWGWIng	0.730	GWGWIng
	4,6-Dinitro-o-cresol [Dinitro-2-methylphenol, 4,6]	0.0024	GWGWIng	0.0024	GWGWIng
	Nitrobenzene	0.049	GWGWIng	0.049	GWGWIng
	o-Toluidine	0.057	GWGWIng	0.057	GWGWIng
	p-Toluidine	0.030	GWGWIng	0.030	GWGWIng
	2,4-Toluenediamine	0.00029	GWGWIng	0.00029	GWGWIng
	2,6-Toluenediamine	0.73	GWGWIng	0.73	GWGWIng
	Aroclor 1242	0.0005	GWGWIng	0.0005	GWGWIng
	Strontium	15	GWGWIng	15	GWGWIng
	Zinc	7.3	GWGWIng	7.3	GWGWIng

Notes:

- If the Corrective Action Program (Provision XI.E.) does not apply to the RCRA-regulated units, SWMUs, or AOCs at the facility, delete the contents of the table and add "Reserved" to the first row of CP Table III.
- CP Table III represents the long list of hazardous constituents that are reasonably

expected to be in, or derived from, the waste placed in each RCRA-regulated unit, SWMU, and/or AOC listed in the table. CP Table III also lists the hazardous constituents that have been historically detected in the groundwater for each RCRA-regulated unit, SWMU, and/or AOC. These hazardous constituents are monitored in accordance with Provision XI.F.3.c.(1).

- c) In accordance with Provision XI.D.6., the Groundwater Protection Standards (GWPS) must be met before the Corrective Action Program can be terminated for the RCRA-regulated unit, SWMU, and/or AOC.
- d) If applicable, "Appendix IX" can be used in Column A for a unit instead of listing each chemical of concern (COC). The Permittee may petition the Executive Director for the deletion of a specific COC from the Appendix IX analysis if the Permittee can demonstrate that the COC was never used in the facility's operations nor was disposed of in the unit.
- e) Attenuation monitoring point (AMP) wells, corrective action system (CAS) wells, and corrective action observation (CAO) wells should not be listed in CP Table III. These wells should only be depicted in the CP Attachment A maps. Once an AMP, CAS, or CAO well meets its respective attenuation action levels (AALs) or GWPS, then the Permittee may propose to discontinue monitoring that well without modification to the Permit. If the AMP, CAS, or CAO well is listed in CP Table III, then any proposed change to the well would require modification to the Permit. Changes to the wells depicted in the CP Attachment A maps can be approved in the Groundwater Monitoring Report required by CP Table VII and Provision XI.G.3 and become a part of the Permit by reference.
- f) POC = point of compliance; POE = point of exposure; APOE = alternate point of exposure (only applicable for an authorized plume management zone [PMZ]); and FBOC = Facility Operation Area (FOA) Boundary of Compliance (only applicable for an authorized FOA).

Footnotes:

- 1. Use Column B to specify the GWPS assigned at the POC for a RCRA-regulated unit subject to Corrective Action or for a SWMU/AOC subject to the Risk Reduction Rules. Put "N/A" if not applicable.
- 2. Use Column C to specify the GWPS assigned at the POE, APOE (PMZ only), or FBOC (authorized FOA only). Put "N/A" if not applicable.
- 3. For each COC, include the appropriate GWPS designation to demonstrate that the Corrective Action Program objectives are being achieved either under the Risk Reduction Rules (RRR) pursuant to 30 TAC Chapter 335 or the Texas Risk Reduction Program (TRRP) pursuant to 30 TAC Chapter 350. The RRR and TRRP GWPS designations and definitions may not be combined pursuant to 30 TAC Section 350.2(m).

ACL = alternative concentration limit; PCL = protective concentration level; RSA = Remedy Standard A; RSB = Remedy Standard B

RRR GWPS Designations and Definitions

MSC	ACL pursuant to 30 TAC Section 335.160(b) based upon the groundwater Medium-Specific Concentration (MSC), Residential (or Industrial) Risk Reduction Standard No. 2 (or No. 3) specified in 30 TAC Section 335 Subchapter S.
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MCL	ACL pursuant to 30 TAC Section 335.160(b) based upon the Groundwater Maximum Contaminant Level (MCL) specified in 40 CFR Part 141, National Primary Drinking Water Regulations Subparts B and G.
SMCL	ALC pursuant to 30 TAC Section 335.160(b) based upon the Groundwater Secondary Maximum Contaminant Level (SMCL) specified in 40 CFR Part 143, National Secondary Drinking Water Regulations.
AL	ACL pursuant to 30 TAC Section 335.160(b) based upon the Action Level (AL) specified in 40 CFR Part 141, National Primary Drinking Water Regulations Subpart I.
BKG	Background as determined in accordance with <u>Provision XLF.1</u> .
ND	Non-detectable at the practical quantitation limit (PQL) as determined by the analytical methods of the most recent edition of EPA SW-846, and as listed in the July 8, 1987, edition of the Federal Register and later editions. The PQL is the lowest concentration of an analyte in groundwater that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions.

TRRP GWPS Designations and Definitions

^{GW} GW _{Ing}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater ingestion PCL determined under RSA or RSB (Residential or Commercial/Industrial) for Class 1 or Class 2 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table. In accordance with 30 TAC Section 350.72(b), ^{GW} GW _{Ing} PCLs may need to be adjusted to lower concentrations to meet the cumulative carcinogenic risk level (less than or equal to 1x10E-4) and hazard index criteria (less than or equal to 10) when there are more than 10 carcinogenic and/or more than 10 noncarcinogenic chemicals of concern within a source medium.
^{GW} GW _{Class3}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater PCL determined under RSA or RSB (Residential or Commercial/Industrial) for Class 3 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{Air} GW _{Inh-V}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the inhalation of volatile constituents from groundwater PCL determined under RSA or RSB (Residential or Commercial/Industrial) for Class 1, 2, or 3 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{SW} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater-to-surface water PCL determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.

^{SED} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater-to-sediment PCL determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{ECO} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater PCL protective of ecological receptor(s) determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
BKG	Background as determined in accordance with <u>Provision XI.F.1.</u>
ND	Non-detectable at the method quantitation limit (MQL) as determined by the analytical methods of the most recent edition of EPA SW-846 and as listed in the July 8, 1987, edition of the Federal Register and later editions. The MQL is defined in 30 TAC Section 350.4(54) as the lowest non-zero concentration standard in the laboratory's initial calibration curve and is based on the final volume of extract (or sample) used by the laboratory.

CP Table IIIA: Corrective Action Program Table of Indicator Parameters and the Groundwater Protection Standard

Unit Name	Column A Hazardous Constituents	Column B Groundwater Protection Standards (mg/L) at the POC ^{1, 3}		Column C Groundwater Protection Standards (mg/L) at the POE, APOE, or FBOC ^{2, 3}	
Waste Management Area 1, Waste Management Area 2, TDA Loading Area	2,4-Dinitrotoluene	0.0013	GWGWIng	0.0013	GWGWIng
	2,6-Dinitrotoluene	0.0013	GWGWIng	0.0013	GWGWIng
	o-Nitrotoluene	0.0041	GWGWIng	0.0013	GWGWIng
	m-Nitrotoluene	0.240	GWGWIng	0.240	GWGWIng
	p-Nitrotoluene	0.057	GWGWIng	0.057	GWGWIng
	2,4-Toluenediamine	0.00029	GWGWIng	0.00029	GWGWIng
	2,6-Toluenediamine	0.73	GWGWIng	0.73	GWGWIng
	o-Toluidine	0.057	GWGWIng	0.057	GWGWIng
	p-Toluidine	0.030	GWGWIng	0.030	GWGWIng
	Nitrobenzene	0.049	GWGWIng	0.049	GWGWIng
	1,3 Dichlorobenzene	0.730	GWGWIng	0.730	GWGWIng

Notes:

- If the Corrective Action Program (Provision XI.E.) does not apply to the RCRA-regulated units, SWMUs, or AOCs at the facility, delete the contents of the table and add “Reserved” to the first row of CP Table IIIA.
- CP Table IIIA represents the short list of hazardous constituents (i.e., indicator parameters) developed from CP Table III and are monitored on a frequency specified in CP Table VIII to verify that the ground water protection standards (GWPS) are met.
- In accordance with Provision XI.D.6, the GWPS must be met before the Corrective Action Program can be terminated for the RCRA-regulated unit, SWMU and/or AOC.
- If applicable, “Appendix IX” can be used in Column A for a unit instead of listing each chemical of concern (COC). The Permittee may petition the Executive Director for the deletion of a specific COC from the Appendix IX analysis if the Permittee can demonstrate that the COC was never used in the facility’s operations nor was disposed of in the unit.
- Attenuation monitoring point (AMP) wells, corrective action system (CAS) wells, and corrective action observation (CAO) wells should not be listed in CP Table IIIA. These wells should only be depicted in the CP Attachment A maps. Once an AMP, CAS, or CAO well meets its respective attenuation action levels (AALs) or GWPS, then the Permittee may propose to discontinue monitoring that well without modification to the Permit. If the AMP, CAS, or CAO well is listed in CP Table IIIA, then any proposed change to the

well would require modification to the Permit. Changes to the wells depicted in the CP Attachment A maps can be approved in the Groundwater Monitoring Report required by CP Table VII and Provision XI.G.3 and become a part of the Permit by reference.

- f) POC = point of compliance; POE = point of exposure; APOE = alternate point of exposure (only applicable for an authorized plume management zone [PMZ]); FBOC = Facility Operations Area (FOA) Boundary of Compliance (only applicable for an authorized FOA).

Footnotes:

1. Use Column B to specify the GWPS assigned at the POC for a RCRA-regulated unit subject to Corrective Action or for a SWMU/AOC subject to the Risk Reduction Rules. Put "N/A" if not applicable.
2. Use Column C to specify the GWPS assigned at the POE, APOE, or FBOC. Put "N/A" if not applicable.
3. For each COC, include the appropriate GWPS designation to demonstrate that the Corrective Action Program objectives are being achieved either under the Risk Reduction Rules (RRR) pursuant to 30 TAC Chapter 335 or the Texas Risk Reduction Program (TRRP) pursuant to 30 TAC Chapter 350. The RRR and TRRP GWPS designations and definitions may not be combined pursuant to 30 TAC Section 350.2(m).

ACL = alternative concentration limit; PCL = protective concentration level; RSA = Remedy Standard A; RSB = Remedy Standard B

RRR GWPS Designations and Definitions

MSC	ACL pursuant to 30 TAC Section 335.160(b) based upon the groundwater Medium-Specific Concentration (MSC), Residential (or Industrial) Risk Reduction Standard No. 2 (or No. 3) specified in 30 TAC Section 335 Subchapter S.
MCL	ACL pursuant to 30 TAC Section 335.160(b) based upon the groundwater Maximum Contaminant Level (MCL) specified in 40 CFR Part 141, National Primary Drinking Water Regulations Subparts B and G.
SMCL	ALC pursuant to 30 TAC Section 335.160(b) based upon the groundwater Secondary Maximum Contaminant Level (SMCL) specified in 40 CFR Part 143, National Secondary Drinking Water Regulations.
AL	ACL pursuant to 30 TAC Section 335.160(b) based upon the Action Level (AL) specified in 40 CFR Part 141, National Primary Drinking Water Regulations Subpart I.
BKG	Background as determined in accordance with <u>Provision XI.F.1.</u>
ND	Non-detectable at the practical quantitation limit (PQL) as determined by the analytical methods of the most recent edition of EPA SW-846 and as listed in the July 8, 1987, edition of the Federal Register and later editions. The PQL is the lowest concentration of an analyte in groundwater that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions.

TRRP GWPS Designations and Definitions

^{GW} GW _{Ing}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater ingestion PCL determined under RSA or RSB (Residential or Commercial /Industrial) for Class 1 or Class 2 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table. In accordance with 30 TAC Section 350.72(b), ^{GW} GW _{Ing} PCLs may need to be adjusted to lower concentrations to meet the cumulative carcinogenic risk level (less than or equal to 1x10E-4) and hazard index criteria (less than or equal to 10) when there are more than 10 carcinogenic and/or more than 10 noncarcinogenic chemicals of concern within a source medium.
^{GW} GW _{Class3}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater PCL determined under RSA or RSB (Residential or Commercial /Industrial) for Class 3 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{Air} GW _{Inh-V}	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the inhalation of volatile constituents from groundwater PCL determined under RSA or RSB (Residential or Commercial /Industrial) for Class 1, 2, or 3 groundwater. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{SW} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater-to-surface water PCL determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{SED} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater-to-sediment PCL determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
^{ECO} GW	ACL pursuant to 30 TAC Section 335.160(b) and 30 TAC Chapter 350 which is based upon the groundwater PCL protective of ecological receptor(s) determined under RSA or RSB (Residential or Commercial/Industrial). The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.
BKG	Background as determined in accordance with <u>Provision XLF.1</u> .
ND	Non-detectable at the method quantitation limit (MQL) as determined by the analytical methods of the most recent edition of EPA SW-846 and as listed in the July 8, 1987, edition of the Federal Register and later editions. The MQL is defined in 30 TAC Section 350.4(54) as the lowest non-zero concentration standard in the laboratory's initial calibration curve and is based on the final

volume of extract (or sample) used by the laboratory.

CP Table V: Designation of Wells

Point of Compliance (POC) Wells

Unit Name	Well Numbers
WMA1: Shallow Zone	MW8, MW75, MW76, MW77
WMA1: Intermediate Zone	MW36, MW37, MW40, MW41
WMA1: Deep Zone	MW21, MW38
WMA2: Shallow Zone	MW7, MW24, MW26, RW27
WMA2: Intermediate Zone	MW32, RW23, RW28
WMA2: Deep Zone	MW31, MW96
TDA Rail Car Loading Area: Shallow Zone	MW65, MW66
TDA Rail Car Loading Area: Intermediate Zone	None
TDA Rail Car Loading Area: Deep Zone	None

Point of Exposure (POE) Wells

Unit Name	Well Numbers
WMA1: Shallow Zone	MW53, MW54, MW55, MW56, MW58, MW59, MW61, MW73
WMA1: Intermediate Zone	MW67, MW68, MW72, MW81, RW26
WMA1: Deep Zone	MW21, MW38, MW63
WMA2: Shallow Zone	MW69, MW71, MW82R, MW84R, MW87, MW88
WMA2: Intermediate Zone	MW30, MW95, MW98
WMA2: Deep Zone	None
TDA Rail Car Loading Area	None

Alternate Point of Exposure (APOE) Wells

Unit Name	Well Numbers
-----------	--------------

WMA1: Shallow Zone	MW8, MW74, MW75, MW76, MW77, MW97
WMA1: Intermediate Zone	MW43, MW44, MW70, MW80
WMA 1: Deep Zone	None
WMA2: Shallow Zone	MW11, MW85, MW86, MW89, MW91, MW93, MW94
WMA2: Intermediate Zone	None
WMA2: Deep Zone	None
TDA Rail Car Loading Area	None

Background Wells

Unit Name	Well Numbers
Shallow Zone	MW10
Intermediate Zone	MW27
Deep Zone	MW28

FOA Boundary of Compliance (FBOC) Wells

Unit Name	Exposure Pathway	Well Numbers

Note:

Attenuation monitoring point (AMP) wells, corrective action system (CAS) wells, and corrective action observation (CAO) wells required by Permit Section XI.B.2. should not be listed in CP Table V. These wells should only be depicted in the CP Attachment A maps. Once an AMP, CAS, or CAO well meets its respective attenuation action levels (AALs) or GWPS, then the Permittee may propose to discontinue monitoring that well without modification to the Permit. If the AMP, CAS, or CAO well is listed in CP Table V, then any proposed change to the well would require modification to the Permit. Changes to the wells depicted in the CP Attachment A maps can be approved in the Groundwater Monitoring Report required by Provision XI.G.3. and CP Table VII and become a part of the Permit by reference.

CP Table VI: Compliance Period and Post Closure Period for RCRA-Regulated Units

[*Unit name*]	Year or Number of Years
Year Waste Management Activities Initiated	1972
Year Closed	1988
Compliance Period	16 Years
Compliance Period Begin Date	1988
Compliance Period End Date	2004
Post Closure Care Period	30 years
Post Closure Care Period Begin Date	2004
Post Closure Care Period End Date	2034

Table XIE.2.e - Groundwater Monitoring Cost Estimate

Task	Cost
1. Annual Sampling and Analysis Cost	
A. Background Wells	
(1) Number of wells	3
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	0.5 /yr
(4) Sampling cost (1 x 2 x 3)	566 \$/yr
B. Point of Compliance Wells	
(1) Number of wells	18
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	1.75/yr
(4) Sampling cost (1 x 2 x 3)	11,876 \$/yr
C. Recovery Wells	
(1) Number of wells	7
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	2/yr
(4) Sampling cost (1 x 2 x 3)	5,278 \$/yr
D. Corrective Action Observation Wells	
(1) Number of wells	12
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	0.625 /yr
(4) Sampling cost (1 x 2 x 3)	2,828 \$/yr
E. Point of Exposure Wells	
(1) Number of wells	35
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	1.3571 /yr
(4) Sampling cost (1 x 2 x 3)	17,907 \$/yr
F. Supplemental Wells	
(1) Number of wells	

(2) Sample analysis cost per well	\$/well
(3) Number of sampling events per year	/yr
(4) Sampling cost (1 x 2 x 3)	
G. Field Quality Control Sampling	
(1) Number of wells	4
(2) Sample analysis cost per well	377 \$/well
(3) Number of sampling events per year	1.625 /yr
(4) Sampling cost (1 x 2 x 3)	2,450 \$/yr
2. Sampling Labor Cost:	
A. Hours of sampling per well	1 hrs/well
B. Number of sampling technicians per well	1 /yr
C. Charge per hour	120 \$/hr
D. Total number of wells to be sampled annually	16 (32 wells biennial)
E. Total number of wells sampled semi-annually	43
F. Total number of wells sampled quarterly	
G. Total number of wells sampled monthly	
H. Total number of wells sampled per year (2D) + (2E x 2) + (2F x 4) + (2G x 12)	102
I. Sampling Labor Cost (2A x 2B x 2C x 2H)	12,240 \$/yr
Annual Groundwater Monitoring Cost (Annual Sampling and Analysis Cost + Sampling Labor Cost)	53,145 \$/yr
3. Well Installation (typical cost):	
A. Monitor well installation cost per well	\$/well
B. Number of monitor wells to be installed	
C. Cost of monitor well system (3A x 3B)	
D. Recovery well installation cost per well	\$/well
E. Number of Recovery Wells to be installed	
F. Cost of Recovery well system (3D x 3E)	
Total Well Installation Cost (3C + 3F)	
4. Administrative Cost:	
A. Annual cost for record-keeping and report preparation	

Annual Administrative Cost (4A)	21,000 \$/yr
5. Inspection and Maintenance Cost for the Monitoring Program:	
A. Operator's time (hours) on-site for inspections and maintenance per year	47 hr/yr
B. Charge or salary per hour	120 \$/hr
C. Annual cost of labor (4A x 4B)	5,640 \$/yr
D. Replacement of parts and equipment per year	4,250 \$/yr
Annual Inspections / Maintenance Cost for the Groundwater Monitoring Program (5C + 5D)	\$9,890

Notes: Number of Sampling Events Per Year Calculated as follows:

Background Wells - One sampling event every 2 years for 3 wells = 0.5 sampling events per well per year.

Point of Compliance Wells - Two sampling events per year for 15 wells; one sampling event per 2 years for 3 wells = $(2 \times 15) + (0.5 \times 3) = 31.5$ samples. 31.5 samples/18 wells = 1.75 sampling events per well per year.

Recovery Wells - Two sampling events per year for 7 wells. 14 samples/7 wells = 2 sampling events per well per year.

Corrective Action Observation Wells - Two sampling events per year for 1 well; one sampling event per 2 years for 11 wells = $(2 \times 1) + (0.5 \times 11) = 7.5$ samples/12 wells = 0.625 sampling events per well per year.

Point of Exposure Wells - Two sampling events per year for 20 wells; one sampling event per 2 years for 15 wells = $(2 \times 20) + (0.5 \times 15) = 47.5$ samples/ 35 wells = 1.3571 sampling events per well per year.

Field Quality Control Sampling - One sample per 20 wells; four sampling events with 3 QC samples; one sampling event every two years adds one extra sample = $(2 \times 3) + (0.5 \times 1) = 6.5$ samples/4 wells = 1.625 sampling events per well per year.

Table XIE.3. - Financial Assurance Summary

Task	Cost
Annual Off-Site Liquid Treatment / Disposal Cost	\$ 16,205
Annual On-Site Treatment / Disposal Cost	
Annual Inspection / Maintenance / Operation Cost for the Corrective Action Program	\$ 27,464
Annual Groundwater Monitoring Cost	\$ 53,145
Annual Administrative Cost	\$ 21,000
Annual Inspection and Maintenance Cost for the Groundwater Monitoring Program	\$ 9,890
Annual Subtotal	\$ 127,704
Total Years Used for Calculating Financial Assurance for Corrective Action and/or Compliance Monitoring Program	16 Years
Remediation Cost (Annual Subtotal x Total Years Used)	\$ 2,043,264
On-Site Wastewater Treatment System Capital Cost Total	
Total Well Cost	
10% Contingency	\$ 204,326
Grand Total Cost (round to nearest \$1000)	\$ 2,248,000

ATTACHMENT 4

Replacement pages for IHW NOD permit sections

Permit No. 50134
Permittee: Air Products LLC

Engineering Report Certification

The hazardous waste management units subject to this permit, i.e., Unit 001 Effluent Impoundment and Unit 002 Acid Spill Impoundment were closed in accordance with a Closure and Post-Closure Plan approved by the Texas Water Commission (TWC) a predecessor agency to the Texas Commission on Environmental Quality (TCEQ). A closure certification report was presented to the TWC upon completion of closure activities for each impoundment as documented in the TWC letters contained herein. The closure certification for the "Effluent Pond" was July 14, 1988 and for the "Acid Spill Pond" was November 18, 1988. The certifications were made by Alan D. Husak, a registered professional engineer. The certification reports are reportedly not available from either Air Products LLC or TCEQ files. Without opportunity to review the certification reports, the current certification is based solely on the TWC letters statements that the "Ponds" were each closed in accordance with the respective approved closure plans as attested by Samuel B. Pole, Chief Hazardous and Solid Waste Enforcement Section.

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 is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Randall L. Rosengarten
7/23/2025

Randall L. Rosengarten, P.E.

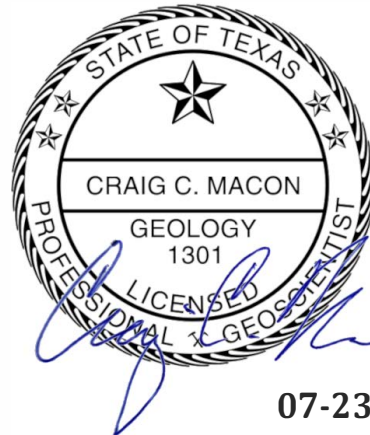
WSP USA Inc.

TX Engineering Firm Registration #: 2263

PART B - SECTION VI

Revision No.
Revision Date

GEOLOGY REPORT



07-23-2025

TX Geoscience Firm Registration: 50127

The affixed seal covers the entire content of this section.

Revision No. 1

Revision Date Oct 24, 2025



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.

Per the above instructions, "If all the above boxes are not checked, a Public Involvement Plan is not necessary. Stop after Section 2 and submit the form.", the completion of a Public Involvement Plan was not warranted.

Table V.A. - Facility Waste Management Handling Units

TCEQ Permit Unit No. ¹	Unit Name	NOR No. ¹	Unit Description ³	Capacity	Unit Status ²
1	Effluent Impoundment	001	Surface Impoundment	727,000 gallons	Post-Closure
2	Acid Spill Impoundment	002	Surface Impoundment	335,000 gallons	Post-Closure
	Container Storage Area	003	Container Storage (Surface)	27,500 gallons	Closed
	TDA Byproducts Tank	005	Storage Tank (Aboveground)	17,500 gallons	Closed
	1520 Boiler	006	Combustion Unit (Boiler)		Closed
	1560 Boiler	010	Combustion Unit (Boiler)		Closed

1. Permitted Unit No. and NOR No. cannot be reassigned to new units or used more than once and all units that were in the Attachment D of a previously issued permit must be listed.

2. Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.

3. If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column of Table V.A.

Table VII.E.1. - Permitted Unit Closure Cost Summary

Existing Unit Closure Cost Estimate		
Unit		Cost
RESERVED		
Total Existing Unit Closure Cost Estimate ¹		Year

Proposed Unit Closure Cost Estimate		
Unit		Cost
Total Proposed Unit Closure Cost Estimate Footnote		

1 As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

Table VII.E.2. - Permitted Unit Post-Closure Cost Summary

Existing Unit Closure Cost Estimate	
Unit	Cost
Former Effluent Impoundment	\$176,700
Former Acid Spill Impoundment	\$133,390
Total Existing Unit Post-Closure Cost Estimate ¹	\$310,090 ² (in 2025 dollars)

Proposed Unit Post-Closure Cost Estimate	
Unit	Cost
Reserved RESERVED	
Total Proposed Unit Post-Closure Cost Estimate	

1. As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

2. Per 30 TAC 37.131 inflation is only applied to costs during the "active life" of a unit.

October 30, 2025

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

Re: Financial Disclosure Letter for Air Products LLC
Permit Renewal
Hazardous Waste Permit No. / Compliance Plan No. 50134
Industrial Solid Waste Registration No. 30317
EPA ID No. TXD990757486
RN 100221324 ; CN 602299257

Dear Mr. Torres:

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

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

Air Products LLC currently provides a corporate guarantee under the parent company Air Products and Chemicals, Inc (APCI) as the financial assurance mechanism as set out in 30 TAC, Chapter 37, Subchapter C to meet Air Products LLC's financial assurance obligations.

I am authorized to make these statements on behalf of Air Products LLC. I understand that the TCEQ may request additional information as part of their review.

Sincerely,


Enrique Millan
Vice President
US Hyco

SECTION IX

PRELIMINARY REVIEW OF SOLID WASTE UNITS AND CORRECTIVE ACTION

AIR PRODUCTS LLC
PASADENA, TEXAS

Prepared
by

WSP USA Inc.
San Antonio, Texas

October 2025

Revision No. 1

Revision Date Oct 30, 2025

PRELIMINARY REVIEW OF SOLID WASTE MANAGEMENT UNITS
PART B - SECTION IX

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Preliminary Review Facility Checklist_____	1
Preliminary Review Unit Checklists_____	6
001 Effluent Impoundment_____	6
002 Acid Spill Impoundment_____	9
003 Container Storage Area_____	12
004 Used Oil Storage Tank_____	18
005 TDA Byproducts Tank_____	20
006 15.20 Boiler_____	22
007 15.30 Boiler_____	24
008 Miscellaneous Storage Containers (Non-Hazardous)	26
009 Miscellaneous Storage Containers (Hazardous, <90-day storage)	27
010 15.60 Boiler_____	28
011 TDA Wastewater Surge Tank_____	30
012 Total Plant Wastewater Tank_____	32
013 Parts Cleaner_____	35
014 Spent Carbon Storage Tank_____	37
015 Spent Carbon Pulse Tank (V-4)_____	39
016 Nitric Acid Truck Loading Area_____	41
017 Nitric Acid Sump_____	43
018 MEA and Carbonate Truck Unloading Area_____	45
019 MEA/Sodium Carbon Sump_____	47
020 DNT Wastewater/Red Water Sump_____	49
021 Ammonia Spill Sump_____	51
022 DNT Tank Car Loading Area_____	53
023 DNT Truck Loading Area_____	56
024 DNT Spill Load-Off Pond_____	59
025 TDA Tank Car Loading Area_____	62
026 TDA Truck Loading Area_____	64
027 Neutralization Pit_____	66
028 Distillation/Solvent recovery unit	69
029 Hazardous Waste Bins_____	70
030 PVOH Equalization Tank	72
031 Neutralization Tank_____	73

032 Contaminated Wastewater Tank_____	75
033 Pulsed Bed Adsorber (V-1)_____	77
034 Pulsed Bed Adsorber (V-2)_____	79
035 Contaminated Wastewater Adsorber_____	81
036 Contaminated Wastewater Surge Adsorber_____	83
037 Carbon Filter _____	85
038 Collection Container for Medical Waste_____	87
039 Collection Area for Used Batteries_____	89
040 Pilot Wastewater Bioremediation Unit_____	91
041 PMD Organic Waste Tank_____	93
042 Construction Project Stockpile of Soils_____	95
043 Container Storage Area_____	96
AOC 1 DNT Product Storage Area_____	97
AOC 2 Northwest Storage Area_____	99
AOC 3 DNT Manufacturing Area_____	101

APPENDIX I. Facility and Solid Waste Management Unit Location Maps

APPENDIX II. Wastes Managed

APPENDIX III. Evidence of Release

APPENDIX IV. Pollutant Dispersal Pathways

PRELIMINARY REVIEW FACILITY CHECKLIST

Facility:	Air Products LLC	City:	Pasadena, Texas
ISW Reg No:	30317	Date:	October 21, 2025
Permit No:	HW-50134	Reviewer:	Owner
EPA ID No:	TXD 990757486		

A. Waste Management Units:

1. RCRA Regulated Units:

NOR No.	Description	Status
001	Effluent Impoundment	Post Closure
002	Acid Spill Impoundment	Post Closure
003	Container Storage Area	Closed
005	TDA Byproducts Tank	Closed

2. Solid Waste Management Units:

NOR No.	Description	Status
004	Used Oil Storage Tank	Closed
006	15.20 Boiler	Closed
007	15.30 Boiler	Closed
008	Non-Haz Storage Bins	Active
009	Haz Storage Bins (<90-day)	Active
010	15.60 Boiler	Closed
011	TDA Wastewater Surge Tank	Closed
012	Total Plant Wastewater Tank	Closed
013	Parts Cleaner	Never Built
014	Spent Carbon Storage Tank (V-8)	Closed
015	Spent Carbon Pulse Tank (V-4)	Closed
016	Nitric Acid Truck Loading Area	Closed
017	Nitric Acid Sump	Closed
018	MEA and Carbonate Truck Unloading Area	Closed

019	MEA/Sodium Carbonate Sump or “Toluene Sump	Closed
020	DNT Wastewater/Red Water Sump	Closed
021	Ammonia Spill Sump	Closed
022	DNT Tank Car Loading Area	Closed
023	DNT Truck Loading Area	Closed
024	DNT Spill Load-Off Pond	Closed
025	TDA Tank Car Loading Area	Closed
026	TDA Truck Loading Area	Closed
027	Neutralization Pit	Closed
028	Distillation/Solvent Recovery Unit	Closed
029	Hazardous Waste Bins	Closed
030	PVOH Equalization Tank	Closed
031	Neutralization Tank (V-16.155)	Closed
032	Contaminated Wastewater Tank (V-16.153)	Closed
033	Pulsed Bed Adsorber (V-1)	Closed
034	Pulsed Bed Adsorber (V-2)	Closed
035	Contaminated Wastewater Adsorber (V-3)	Closed
036	Contaminated Wastewater Surge Adsorber	Closed
037	Carbon Filter (V-9)	Closed
038	Collection Container for Medical Waste	Closed
039	Collection Area for Used Batteries	Closed
040	Pilot Wastewater Bioremediation Unit	Closed
041	PMD Organic Waste Tank	Closed
042	Construction Project Stockpile of Soils	Active
043	Container Storage Area	Inactive
AOC 1	DNT Product Storage Area	Inactive/ Corrective Action
AOC 2	Northwest Storage Area	Inactive/ Corrective Action
AOC 3	DNT Manufacturing Area	Inactive/ Corrective Action

B. Reviewed Documents:

1. RCRA: Part A x

Part B x Part B Permit application, IT Corporation, June, 1985.
Compliance Plan Application, October, 1985.
BIF Class 3 Permit Modification, Radian Corporation,
February 17, 1992; July 30, 1993 and May 22 1998 CP
modifications; Class 3 CP modification dated September 14,
2011; Part B Permit Application, Amec, May 3, 2012; Class 1
ED Modification Application, Amec Foster Wheeler, April
13, 2018.

Permit x Class 1 ED Permit Modification, dated July 2, 2018
Permit HW 50134, issued January 7, 2016;
Permit/Compliance Plan HW/CP-50134, dated November
13, 2002; Permit HW-50134 dated November 10, 1993;
Permit/Compliance Plan issued September 17, 1990

2. CERCLA: Not Applicable

3. Inspection Reports: On file at the Texas Commission on Environmental Quality

4. Enforcement Actions: None

5. Exposure Information: RCRA Facility Assessment, TWC, January 25, 1990.

6. Other Information:

Notice of Registration dated March 3, 2025.
Compliance Plan Annual Reports (2016-2025).
Compliance Plan Semiannual Reports (2007-2015).
Class 3 Compliance Plan Modification, issued September 14, 2011.
Class 3 Compliance Plan Modification Application, dated March 29, 2010.
Draft Response Action Plan, DNT Manufacturing Area, February 2008.
Affected Property Assessment Report, DNT Manufacturing Area, December 2007.
Draft Response Action Plan, Former Acid Spill Impoundment, November 2006.
Affected Property Assessment Report, Former Acid Spill Impoundment, January 2006.
Compliance Plan dated November 13, 2002.
APAR/RFI at the TDA Loading Area, Compliance Plan Renewal, January 2001.
APAR/RFI Addendum for Soils at DNT Loading Area Neutralization Pit, DNT Storage
Area, and Northwest Storage Area, Compliance Plan Renewal, January 2001.
RCRA Facility Investigation Report, DNT Loading Area and Neutralization Pit,
Geomatrix Consultants, Inc., September, 1998.
Compliance Plan dated September 17, 1990.
Major Amendment Application to the Compliance Plan dated June 1997.
RCRA Facility Investigation Report, TDA Loading Areas, IT Corporation, February,
1997.
RCRA Facility Investigation, IT Corporation, July, 1992.

RCRA Facility Assessment, DNT Product Storage Area, October, 1999.
 RCRA Facility Assessment, Texas Water Commission, January 25, 1990.
 Container Storage Area Certification of Closure, IT Corporation, April, 1990.
 Effluent Impoundment Closure and Post-Closure Plans, IT Corporation, August, 1987.
 Acid Spill Impoundment Closure and Post-Closure Plans, IT Corporation, August, 1987.
 Closure Certification Effluent Impoundment Pond, IT Corporation, July, 1988.
 Closure Certification Acid Spill Pond, IT Corporation, November, 1988.

C. Summary:

A total of 43 solid waste management units and three Areas of Concern (AOC) are included in this Preliminary Review (PR) prepared for the Air Products LLC Pasadena (APLLC) Facility. For each unit or area a PR was prepared which includes a summary of the wastes managed and their hazardous constituents, a description of the evidences of releases, a summary of the construction and operation, and a statement of current and recommended actions.

D. Recommended Action:

RCRA Facility Investigations (RFIs) have previously been conducted pursuant to 30 TAC 335.167 at the following solid waste management units (SWMUs) and Areas of Concern (AOC) at the APLLC facility under the terms of the facilities existing Compliance Plan CP 50134 (CP):

1. TDA Tank Car Loading Area (NOR No. 25);
2. DNT Storage Area (AOC1);
3. Northwest Storage Area (AOC2);
4. DNT Loading Area (NOR Nos. 022, 023, and 024);
5. Former Neutralization Pit (NOR No. 027);
6. Former MEA and Sodium Carbonate Sump (NOR 019);
7. Former DNT Wastewater "Red Water" Sumps (NOR 020); and,
8. DNT Manufacturing Area (AOC3).

RFI Units/AOCs listed in 1-8 (above) have been captured in CP Table II of Section XI of the renewal application.

A site-wide groundwater corrective action program (30 TAC 335.166 and/or 30 TAC 335.167) is also currently in place at the APLLC facility under the terms of the facility's existing Compliance Plan CP 50134 (CP) to address releases from the following SWMUs and AOCs:

1. Waste Management Area 1 (consisting of the following 5 SWMUs and AOCs):
 - a. Former Effluent Impoundment (NOR 001);
 - b. Former Neutralization Pit (NOR No. 027);
 - c. DNT Loading Area [consisting of the DNT Tank Car Loading Area (NOR No. 022), DNT Truck Loading Area (NOR 023), DNT Spill-Off Pond (NOR No. 024)];
 - d. DNT Storage Area (AOC1); and
 - e. Northwest Storage Area (AOC2).
2. Waste Management Area 2 (consisting of the following 2 SWMUs and AOCs):

- a. Former Acid Spill Impoundment (NOR 002); and
- b. DNT Manufacturing Area (AOC3).

3. TDA Tank Car Loading Area (NOR No. 025).

Final response actions to address impacts to soil and groundwater from the SWMUs and AOCs in WMA1, WMA2, and the TDA Tank Car Loading Area are currently being conducted in accordance with 30 TAC 350. Corrective Actions for the facility consist of the use of groundwater recovery/control to manage affected groundwater, primarily within the established Plume Management Zones (PMZs) to address releases from Waste Management Area No. 1, Waste Management Area No. 2, and groundwater monitoring at the TDA Tank Car Loading Area. These units/areas have been captured in CP Table I.A and I.C. of Section XI of the renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring).

APLLC will continue to conduct response actions to address releases from existing SWMUs and AOCs in WMA1, WMA2 and the TDA Tank Car Loading Area in accordance with the Corrective Action Program requirements stipulated in the Compliance Plan. No additional RCRA Facility Investigations are recommended for units or areas in this current renewal application based on one or more of the following factors:

- the absence of any newly suspected sources of releases based upon a visual inspection of units, the construction and operation of the units and/or the types of wastes managed;
- the implementation of on-going, site-wide remedial corrective action to address existing releases to soils and groundwater discovered as a result of the previous site investigations and RCRA Facility Investigations (RFIs) previously conducted by APLLC.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Former Effluent Impoundment

B. NOR No: 001

C. Description: Surface Impoundment - Storage (S04)
Surface Impoundment – Disposal (D83)

D. Dates of Operation: 1972 - Active
1986 - Inactive
1988 – Closed
1988 to present - Post Closure Care

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	Texas Waste Code No.	EPA Waste Code	EPA Hazard Code
Mixed Acid	0020105H	D002, D030	C R
DNT Wastewater	0190105H	K111	C,T
Monoethanolamine in Water	03801021	None	None
TDA Wastewater	0580102H	K112	T

F. Evidence of Release:

Releases to soils were identified in soils collected from the overexcavated base of the impoundment during closure of the unit in 1987. Concentrations of 2,4-DNT were measured at 190 to 1,800 mg/kg. Concentrations of 2,6-DNT were detected at 370 to 5,700 mg/kg. Isomers of mononitrotoluene (MNT) ranged from <1.0 to 130 mg/kg.

Monitoring wells were installed at the perimeter of the unit in 1981. The TWC agency (predecessor to TCEQ) noted impacts to monitoring wells down gradient of the unit in its RFA dated January 25, 1990. Groundwater has historically been pumped from a 10-well system (RW-11 through RW-20) completed in the Upper Shallow Zone at

the perimeter of the impoundment since January 1991. Recovery from the Lower Shallow was begun in October 1993. Recovery from the Intermediate Zone was begun in September 1998. A summary of the groundwater analyses for WMA1 (including the Former Effluent Impoundment) are included in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The RCRA-regulated, effluent impoundment consisted of a below-grade earthen impoundment that was used from approximately 1972 to 1986 for storage of the plant wastewaters prior to treatment off-site at the Washburn Tunnel Facility. The primary purpose of the impoundment was to collect organic precipitate from the DNT wastewater formed when mixed with the alkaline washwaters. The effluent impoundment was also used to store TDA wastewaters during TDA process upsets. The original dimensions of the unit were 175 feet by 139.5 feet, and 8 feet deep, with an operating capacity of 730,000 gallons. The impoundment was originally constructed to a depth of approximately 6 feet below natural grade. Dikes were constructed at the perimeter of the impoundment to a height of approximately 2 feet above grade. A four percent lime material was placed on the lower inside section of the dikes and the edge of the bottom of the impoundment to stabilize these surfaces. A dike constructed of lime-stabilized earth was constructed through the middle of the impoundment in 1973 and subsequently removed.

The impoundment was closed in accordance with state and federal regulation governing closure of hazardous waste surface impoundments. Waters previously managed in the impoundment are now managed in tanks including the Total Plant Wastewater Tank (Facility 012). The closure activities were initiated in January, 1987 and completed in February, 1988. The impoundment was certified closed on July 14, 1988. As part of the closure, the liquid and sludge waste materials were removed from the impoundment. Solids which precipitated in the impoundment were removed to the level of the natural clay liner below the impoundment. In addition, the clay liner and underlying clay were removed from the impoundment and disposed off-site. Eight soil samples were collected from the excavated base of the impoundment. The impoundment was backfilled with a clean clay fill material placed in maximum 9-inch lifts. A three-foot compacted clay liner was constructed over the fill material. A 12-inch thick sand drainage layer was placed over the clay liner. The sand drainage layer was overlain by 18-inches of topsoil. The surface of the impoundment was seeded with Bermuda grass. The side slopes of the capped impoundment were covered with a 0.5-foot thick layer of gravel to minimize long term maintenance and for erosion control.

I. Recommended Action:

Releases associated with the former Effluent Impoundment (NOR No. 1), DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)],

Former Neutralization Pit (NOR Unit No. 027), DNT Storage Area (AOC1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the Former Effluent Impoundment has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to this RCRA-regulated unit) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring).

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: October 21, 2025
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

A. Waste Management Unit: Former Acid Spill Impoundment

B. NOR No: 002

C. Description: Surface Impoundment - Disposal (D83)
Surface Impoundment – Storage (SO4)

D. Dates of Operation: 1972 - Active
1986 - Inactive
1988 – Closed
1988 to present - Post Closure Care

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	Texas Waste Code No.	EPA Waste Code	EPA Hazard Code
Mixed Acid	0020105H	D002, D030	C T

F. Evidence of Release:

Releases to soils were identified in soils collected from the overexcavated base of the RCRA-regulated impoundment during closure of the unit in 1988. Concentrations of 2,4-DNT were measured at 24 mg/kg in one of eight samples collected from the base of the unit. Concentrations of 2,6-DNT ranged from <10 to 71 mg/kg in the eight bottom samples. Concentrations of MNT isomers were measured at <2 to 104 mg/kg.

Due to the residual impacts to soils monitoring wells were installed at the perimeter of the unit in 1981. The TWC (predecessor agency to the TCEQ) noted impacts to monitor wells down-gradient of the unit in its RFA dated January 25, 1990 and recommended continued implementation of the Corrective Action Pilot Plan in its RFA dated January 25, 1990. The Corrective Action Pilot Plan was approved in December, 1987. Groundwater has been pumped from a 10-well system (RW-1 through RW-10) completed in the Upper Shallow Zone (SZ) at the perimeter of the

impoundment since October 1988, recovery from the Intermediate Zone (IZ) was begun in October 1993. Concentrations in monitoring wells in this area have decreased as a result of pumping. In the late 1990's constituents believed to originate from the Acid Spill Impoundment were detected in monitoring well MW-25 located east of the impoundment. These results promoted an investigation of the Lower Shallow Zone in the area east of the Acid Spill Impoundment. Results of the additional groundwater assessment were provided in an APAR for the Acid Spill Impoundment (ASI) dated January 2006. A RAP dated November 2006 was subsequently developed to address impacts to the SZ and IZ. A summary of the groundwater analyses for WMA2 (including the Former Acid Spill Impoundment) are included in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The acid spill impoundment was used to contain mixed acid waste in the case of a rupture in one or more acid storage tanks located north of the impoundment. The impoundment received rainfall runoff from the Acid Tank Farm, runoff from other nonprocess plant areas, and occasional leakage from the pumps, tanks and piping within the acid tank farm. Collected waters were pumped to the neutralization sump which drained by gravity flow to the on-site Washburn Tunnel POTW collection pumps.

A 1984 survey of the impoundment showed the outer dimensions of the pond as 90 feet by 152 feet. Construction drawings from 1972 show the design depth to have been approximately 6 feet. In 1977, the impoundment was excavated to a depth of approximately 8 feet to provide additional capacity. Final capacity of the impoundment was approximately 335,000 gallons. Rainfall events that exceeded the capacity of the impoundment were diverted by headwalls and a dike located north of the impoundment. The diverted run-on flowed to the plant's south ditch, which flowed east then north to Cotton Patch Bayou and into Buffalo Bayou.

The impoundment was closed in 1987 in accordance with state and federal regulation governing closure of hazardous waste surface impoundments. Waters previously managed in the impoundment are now routed directly to the plant's wastewater treatment system. Since closure and lining of the unit, the impoundment is used to manage materials from a tank rupture and uncontaminated stormwater runoff.

Closure activities were initiated in October, 1987 and completed in June, 1988. The impoundment was certified closed on November 18, 1988. Liquids and solids were removed from the impoundment as part of closure. In addition, the 2-foot thick clay liner was removed from the four sides and base of the unit. An additional 1 to 2 feet of soil was removed from the base of the unit and disposed off-site. Soil samples were taken from the base of the impoundment. A 2-foot thick layer of compacted clay was placed over the bottom and sidewalls of the excavated acid spill impoundment. A double liner and leak detection system was placed over the

compacted clay liner. Components of the liner system included a 60 mil HDPE secondary liner, a synthetic drainage net, and a 100 mil HDPE primary liner.

I. Recommended Action:

Releases associated with the former Acid Spill Impoundment (ASI), and DNT Manufacturing Area (AOC3) have previously been incorporated into the site-wide groundwater corrective action program for WMA2 established under the terms of the facility's existing Compliance Plan CP 50134. WMA2 generally encompasses the eastern portion of the Plant. The area contains the former ASI, located near the east property line of the Plant in the eastern part of PMZ1, and AOC3 located in the north-central part of the Plant. Groundwater conditions in this area were described in an Affected Property Assessment Report (APAR), in January 2006, and a remedy was detailed in a Response Action Report (RAP), in November 2006. PMZ1 in WMA2 was previously controlled by a system of 10 recovery wells (RW1 through RW10), collectively referred to as RWC1, which was activated in 1988, and operated until January 2010. In early 2010, recovery well RW27 was installed and activated near the southeast corner of the former ASI to control the SZ PCLE Zone, and RWC1 was inactivated. From 1993 to 2008, groundwater having PCL exceedances in the IZ was controlled by recovery well RW22. However, RW22 was removed in July 2008 due to construction of a new facility structure. Following construction, this well was replaced by RW28, which was activated in April 2010. RW28 is currently the only IZ well in the former ASI area where PCL exceedances are observed. As such, a PMZ has not been established in the IZ for this area. Final response actions for WMA2 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA2 (including reference to AOC3) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring).

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: November 21, 2017
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Container Storage Area

B. NOR No: 003

C. Description: Container - Storage (S01)

D. Dates of Operation: 1980 – Active
2015 - Closed

E. Wastes Managed: (hazardous constituents listed in Appendix II)

Waste Name	Texas Waste Code No.	EPA Waste Code	EPA Hazard Code
Spent Carbon from Common Oil Adsorber	00013101	None	None
Acetic Acid Cation Exchange Resin	00104031	None	None
Asbestos Insulation	00603111	None	None
Brinks Filters	0080310H	D007	E
Chloride Removal Anion Exchange Resin	01104031	None	None
Chromium Oxide Catalyst	0120393H	D007	E
Demin Ion Exchange Resin	01404031	None	None
Diesel Waste	0150219H	D001	I
DNT Contaminated Debris	0160319H	D030	E
DNT Contaminated Soil	0170301H	D030	E
Parts Cleaner/Spent Solvent	0172211H	D030	E
DNT Filters	0180310H	D030	E
DNT Wastewater Contaminated Debris	0200319H	K111	C,T

DNT Wastewater Contaminated Soils	0210301H	K111	C,T
DNT Wastewater Spent Carbon Contaminated Debris	0230404H	K111	C,T
Dryer Dessicant	02403101	None	None
Industrial Waste	02713191	None	None
Lab Packs	0280001H	D001, D002, D004 - D011, D018, D030, F001 - F005, U221	I, C, E, E, I,T, T
Lead Tetracetate	0300316H	_____	_____
Lube Oil Contaminated Debris	03103191	None	None
Used Lube Oil Filters	03203101	None	None
Used Lubricating Oil	03302061	None	None
Methanol/Vinyl Acetate	0370219H	D001	I
Rechargeable Ni Cd Batteries	0382309H	D006	E
Rechargeable Ni C Batteries	03833091	None	None
Paint Solvent Waste	0400211H	D001, D035, F003	I, E, I
Precious Metals Recovery Material	04513931	None	None
Debris Contaminated w/PVOH Lab Reagents	0453319H	D004, D008, D011	E, E, E
PVOH Analytical Test Reagents	0456219H	D002, D004, D008, D011	C, E, E, E
Polyvinyl Alcohol Wastewater Tank Sludge Filter Cake	04633191	None	None
Spent Nickel Catalyst	05203931	None	None

TDA By-Products	0530409H	K113, K114, K115	T, T, T
TDA Contaminated Debris	0550319H	U221	T
Toluenediamines	0573219H	K113, K114	T, T
TDA Wastewater Contaminated Debris	0590409H	K112	T
Toluene Contaminated Debris	0600319H	U220	T
Toluene Contaminated Soils	0601301H	U220	T
Toluene Lab Waste	0610409H	D001, D009, D018, D030, F002, F005	I, E, E, T, I,T
Filters Used to Filter Toluene Product	0613310H	D001 U220	I, T
Total Plant Effluent Contaminated Debris	0620409H	K111, K112	C,T, T
Total Plant Effluent Contaminated Soils	0630301H	K111, K112	C,T, T
Vinyl Recovery Still Bottoms	06506021	None	None
Boiler Ash	0072303H	K113, K114, K115	T, T, T
DNT Wastewater	0190105H	K111	C,T
TDA Lab Waste	0290409H	D008	E
Mercury Contaminated Solids	0350117H	D009	E
Orthodichlorobenzene	0390219H	U070	T
TDA Wastewater	0580102H	K112	T
TDA contaminated debris/materials	0550319H	K113 K114 K115	T, T, T
Medical Waste/materials	03419992	None	None

Sludge accumulated on the bottom of the DNT Wastewater Tank	0232609H	D030, K111	T, C,T
Pyrophoric catalysts	0148393H	D001	I
Hi Glow cleaner	06792191	None	None
Miscellaneous obsolete electronic equipment	06843192	None	None
Chemically contaminated containers	01003081	None	None
Polyvinyl acetate/polyvinyl	04404031	None	None
Railroad ties/wood slabs	04704881	None	None
TDA by-products	0540319H	K113 K114 K115	T, T, T
TDA product waste/TDA	0570219H	U221	T
Activated Nickel Catalyst	0485393H	D001	I
Condensed liquid light ends from TDA purification	0614219H	K113	T
Soils excavated due to	02753011	None	None
Debris, rock, wood, sand, clothing, insulation, other materials contaminated with DNT, TDA	0680319H	D030 K111 K112 K113 K114 K115 U221	T, C,T T T T T T
Used or expired cylinders	0687701H	D001	I
Spent alumina	05003931	None	None
Solids and debris generated	0402319H	D007 D008 D030	E, E, T
Spent Floor Sealer used to	0677210H	D001	I
Non-friable asbestos from	06813112	None	None

Used or expired cylinders	06887011	None	None
Containers, chemical	0130308H	U105 U106 U221	T
Ash Generated from combustion	0072303H	K113 K114 K115	T T T
Used Zinc Oxide Catalysts	00423931	None	None
Ignitable used and reduced copper zinc catalyst	0043393H	D001	I
Citrus Solv floor cleaner- excess	0678203H	D001	I
Miscellaneous electrical that may contain mineral oil	06832191	None	None
Methanol contaminated soils	0360301H	U154	T
Spent fluorescent light bulbs	0263319H	D009	E

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) noted only small spot staining on the concrete pad of the storage area during its VSI completed on August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 9, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit. The unit was decontaminated and received TCEQ closure on December 23, 2015.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Container Storage was used from approximately 1980 through 2015, to store drummed and containerized wastes prior to off-site treatment and/or disposal. Until 2015, wastes were stored on pallets in metal or fiber drums with capacities of typically 30- to 55-gallons. Wastes were segregated for storage by type. No incompatible wastes were stored in the area.

The storage area is constructed with an approximate 54-foot by 74-foot concrete slab. A polyethylene vapor barrier is installed between the concrete and the subgrade. The slab is constructed with a 6-inch perimeter concrete curb for run-on and run-off control. The slab is sloped to drain liquids to a epoxy-coated collection trench inside the curbed area. The entire pad is chemical-resistant epoxy coated. Collected fluids drained to a sump at the east end of the collection trench. During the unit's active status period, fluids were pumped from the sump to the Total Plant

Wastewater Tank for storage prior to treatment and disposal. The capacity of the sump was sufficient to contain 10 percent of all containers stored.

Drums and containers were stored on wooden pallets in the Container Storage Area. A ramp provides forklift access to the storage area. The Container Storage Area was closed as a permitted facility in 1990 (closure certification dated May 3, 1990) in order to operate the unit as a less-than-90 day accumulation facility. As part of this closure, the storage pad was pressure washed and rinsed. Analysis of the pad final rinsate water showed constituents of concern to be below background, allowing clean closure of the Container Storage Area. APLLC reopened the area as a permitted facility in 1993 in order to allow for longer storage periods of hazardous wastes. As of 2015, the Container Storage no longer manages waste, and decontamination and closure of the unit was completed in December 2015.

I. Recommended Action:

No further action had previously been recommended by the TWC in its RFA dated January 25, 1990, based upon the construction and operation of the unit, and the absence of visual evidence of releases beyond the pad.

Based upon the construction and operation of the unit, review of current and historic inspection records, no reportable spills from the unit, and based upon the clean closure results from 1990, no releases to soils are anticipated from the unit. APLLC also continues to conduct regular inspections of the unit. No further action with respect to the current RFA evaluation for the unit is recommended by APLLC.

As described above, the unit has been decontaminated, and received TCEQ closure on December 23, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Used Oil Storage Tank

B. NOR No: 004

C. Description: Tank - Storage (SO₂)

D. Dates of Operation: 1983 - Active
2003 – Inactive
2015 – Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Lubricating Oil	03302061	None	None

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) identified minor stains of the concrete pad underlying the unit as a result of the VSI completed on August 30, 1989. The TWC noted that it appeared that any spills were cleaned up in a timely manner, and that there was no visual evidence of spills beyond the concrete pad. No further action was recommended at the time. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. As the unit manages only used oil that is to be recycled, the unit was inactivated on the Notice of Registration list in 2003 (per the 30TAC Chapter 324 regulations for used oil), and modified to “Not Required” status in 2015. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Used Oil Storage Tank consists of a closed top, carbon steel vertical tank used to store waste lubricating oils from motor vehicles, compressors, and pumps and other internal combustion engines, prior to transfer off-site for recycling. Capacity of the tank is approximately 500 gallons. The tank is operated at atmospheric pressure. Dimensions of the tank are approximately 4 feet in diameter by 6 feet tall. The tank is raised aboveground on steel supports. A concrete containment pad underlies the tank. The pad provides secondary containment for the tank, with a volume capacity of 1100 gallons.

I. Recommended Action:

In its RFA dated January 25, 1990, the TWC had previously recommended no further action for this unit due to the presence of the containment pad. Based upon the construction of the tank and operation of the tank, review of current and historic inspection records, and the absence of reportable spills, no further action with respect to the current RFA evaluation for the unit is recommended by APLLC.

This unit received TCEQ closure on February 6, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: March 26, 2015

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Toluenediamine By-Products Storage Tank

B. NOR No: 005

C. Description: Tank - Storage (SO₂)

D. Dates of Operation: 1976 - Active
2015 - Closed

E. Wastes Managed: (*hazardous constituents listed in Appendix II*)

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
TDA By-Products/TDA Distillation Residue	0530409H	K113 K114 K115	T T T

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) noted that there was no visual evidence of spills beyond the containment pad during its VSI completed on August 30, 1989. The TWC noted that it appeared that spills were cleaned up in a timely manner at the time. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Toluenediamine (TDA) By-Products Storage Tank, now removed and disposed, and has received TCEQ closure on November 6, 2015. The unit was formerly used to store by-product tars from the distillation of toluenediamine. The TDA Tars were transferred from the tank to vehicles for transportation off site for disposal. The above grade tank consisted of a closed top, vertical, carbon steel jacketed tank.

Dimensions of the tank were 12-foot diameter and 17-feet tangent-to-tangent. Approximate total volume of the tank was 17,680 gallons. Maximum operating capacity was 16,600 gallons. The tank was operated at atmospheric pressure. The tank was vented through a scrubber to the atmosphere.

Secondary containment for the tank was constructed in July 1992. The secondary containment consists of epoxy-sealed concrete walls and base surrounding the tank. The containment area measures approximately 35 feet by 28 feet, with perimeter walls approximately 3.5 feet high. The containment system provides sufficient volume to contain the volume of the tank and the precipitation from a 24-hour, 25-year rainfall event. The concrete base is sloped in order to facilitate draining of liquids. Precipitation from the secondary containment area is piped to the Total Wastewater Tank for storage prior to being piped off-site for treatment at the Washburn Tunnel POTW.

All ancillary equipment to the tank, now removed and disposed, was located above-ground and was inspected daily. The feed system piping to the tank was equipped with fail-safe control valves and standard cut off valves to prevent overflow of the tank. In addition, the tank itself was equipped with a high level alarm to prevent overfilling.

In 1998 a truck loading pad was constructed. The truck loading pad is constructed of epoxy coated concrete. A 4,700 gallon capacity containment structure is designed to contain spills.

APLLC has removed and disposed the tank and ancillary equipment. Prior to closure, the Executive Director was notified at least 45 days prior to the initiation of the closure plan. Closure of this unit has been completed, with TCEQ closure received on November 6, 2015.

I. Recommended Action:

The TWC had previously recommended no further action for this unit in its RFA dated January 25, 1990. The tank has been exclusively used to store TDA by-product tars which solidify upon cooling. No spills or overfills have been known to occur from the tank aside from minor spills to the containment pad. Based upon the construction of the tank, review of current and historic inspection records, the absence of reportable spills and the solid nature of the waste material, releases associated with the tank are considered unlikely. No further action with respect to the current RFA evaluation for the unit is recommended by APLLC.

As described above, this unit received TCEQ closure on November 6, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: 15.20 Boiler

B. NOR No: 006

C. Description: Boiler (T80)

D. Dates of Operation: 1973 - Active
1998 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Toluenediamine Residues	0530409H	K113 K114 K115	T, T, T

F. Evidence of Release:

None. The TWC (predecessor agency to the TCEQ) indicated that there were no reports of spills and no evidence of a spill in its VSI on August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of records indicates no reportable spills or other outstanding environmental issues associated with the unit while in operation.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Boiler 15.20 consists of a natural gas-fired steam boiler used to generate steam for the APLLC Facility. The steam generated by this boiler, along with Boiler 15.60, is used for heating process equipment. The boiler is 3.5 feet in diameter and 40 feet high. The boiler was used from 1976 to 1995 to burn toluenediamine distillation

residues. The distillation residues were transferred by pump from the TDA By-Products Storage Tank via 2-inch diameter piping encased in a 3-inch diameter steam jacketing. The waste fuel feed system was controlled by an automatic cutoff. Actuators for the control valves were tested weekly to ensure proper operation.

APLLC originally intended to permit the boiler for operation as a hazardous waste boiler. In August 1991, APLLC submitted certification of precompliance with 40 CFR 266.103(b). Because of a change in the company's plans, the boilers were not permitted. The boiler was subsequently clean closed to RRS No. 1 as a hazardous waste management unit in 1998.

I. Recommended Action:

No further action had previously been recommended by the TWC in its RFA dated January 25, 1990. Based upon the limited use of the boilers for burning waste, the controlled method of transfer of the wastes to the boiler, the absence of spills, and achievement of RRS No. 1 closure, no further action with respect to the current RFA evaluation for the unit is recommended by APLLC.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: 15.30 Boiler

B. NOR No: 007

C. Description: Boiler (T80)

D. Dates of Operation: 1973 - Active
1986 - Inactive
1989 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
TDA By-Products/TDA Distillation Residue	0530409H	K113, K114, K115	T, T, T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection completed on March 7, 2000 of the area where the boiler was located to support the prior renewal. A review of records indicates no reportable spills or other outstanding environmental issues associated with the unit while in operation.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Boiler 15.30 was used as a backup boiler to Boiler 15.20. The design of the unit is identical to Boiler 15.20. The boiler was shut down in 1986 due to age. In September 1989 the boiler was physically demolished and removed. As part of the closure the boiler was emptied of wastes and steam cleaned.

I. Recommended Action:

No further action with respect to the current RFA evaluation for the former boiler unit is recommended by APLLC based upon the absence of spills or evidence of spills.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 23, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Non-Hazardous Waste Storage Bins

B. NOR No: 008

C. Description: Paved surface area used for staging of waste storage bins.
Located adjacent to Steam Methane Reformer Facility.

D. Dates of Operation: 1986 - Active

E. Wastes Managed: (constituents are listed in current Notice of Registration document)

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its routine facility inspections. A review of records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Active non-hazardous waste bin staging area. There have never been reported releases associated with this unit.

I. Recommended Action:

No further action is recommended by APLLC based upon the absence of evidence of spills.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 23, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Hazardous Waste Storage Bins (Less than 90-day storage)

B. NOR No: 009

C. Description: Paved surface used for staging of waste storage bins, located adjacent to Steam Methane Reformer Facility

D. Dates of Operation: 1973 - Active

E. Wastes Managed: (constituents are listed in current Notice of Registration document)

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its routine facility inspections. A review of records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Active hazardous waste bin staging area (less than 90-day storage). There have never been reported releases associated with this unit.

I. Recommended Action:

No further action is recommended by APLLC based upon the absence of evidence of spills.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: 15.60 Boiler

B. NOR No: 010

C. Description: Boiler (T80)

D. Dates of Operation: 1977 - Active
1998 - Closure as Waste Unit (Clean Closure)

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Toluenediamine Residues	0530409H	K113 K114 K115	T, T, T

F. Evidence of Release:

None. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of records indicates no reportable spills or other outstanding environmental issues associated with the unit while in operation.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Boiler 15.60 consists of a natural gas-fired steam boiler used to generate steam for the APLLC Facility. The steam generated by this boiler is used for heating process equipment. The boiler is 4 feet in diameter and 45 feet high. The boiler has been in operation as a stand-by, natural gas-fired boiler since 1977. Beginning in 1977, the boiler was used to occasionally burn toluenediamine distillation residues. The distillation residues were transferred by pump from the TDA By-Products Storage Tank via 2-inch diameter piping encased in a 3-inch diameter steam jacketing. The

waste fuel feed system was controlled by an automatic cutoff. Actuators for the control valves were tested weekly to ensure proper operation.

APLLC originally intended to permit the boiler for operation as a hazardous waste boiler. In August 1991, APLLC submitted certification of precompliance with 40 CFR 266.103(b). Because of a change in the company's plan the boilers were not permitted. The boiler was subsequently closed to RRS No. 1 as a hazardous waste management unit in 1998.

I. Recommended Action:

Based upon the limited use of the boilers for burning hazardous waste, the controlled method of transfer of the wastes to the boiler, the absence of spills, and achievement of RRS No. 1 closure, no further action with respect to the current RFA is recommended for the former boiler unit by APLLC.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: October 21, 2025
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

A. Waste Management Unit: TDA Wastewater Surge Tank

B. NOR No: 011

C. Description: Tank - Storage (S02)

D. Dates of Operation: 1986 - Active
2017 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
TDA Wastewater	0580102H	K112	T
Toluenediamine wastewater tank sludge	0595319H	K112	T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 9, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit. The unit was decontaminated, and received TCEQ closure on July 28, 2017.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The TDA Wastewater Tank consists of a 140,000-gallon, vertical carbon steel tank used to manage TDA wastewater prior to transfer to the Total Plant Wastewater Tank (Facility 012). Wastewaters are transferred to the tank via overhead pipeline. Secondary containment is provided for the tank by a concrete containment pad. The tank is operated as component of a POTW.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of inspection and spill reporting records, and the construction and operation of the unit. As discussed above, the unit was decontaminated, and received TCEQ closure on July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Total Plant Wastewater Tank

B. NOR No: 012

C. Description: Tank - Storage (S02)

D. Dates of Operation: 1986 – Active
 2017 - Unit was transferred to SWR 96611, and is a component of the RCRA Part-B Permit-Exempt Wastewater Treatment System.
 2019 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Mixed Acid	0020105H	D002	C,
		D030	E
Acid Spill Pit	0030116H	D030	E
Contaminated Groundwater			
Water and ammonia from ammonia spill sump	00551191	None	None
Water/Dinitrotoluene Mixture from loading spills	0175102H	D030	E
DNT Wastewater	0190105H	K111	C,T
Effluent Impoundment	0250116H	K111	C,T
Contaminated Groundwater		K112	T
Nitric Acid and water	0385105H	D002	C
Wastewater from the manufacturing process of polyvinyl alcohol and acetic acid	04601021	None	None

Mixture of settled solids contaminated with toluenediamine and dinitrotoluene	0525609H	D030 U221	E
TDA Wastewater/Distillation Washwater	0580102H	K112	T
Wastewater mixture of total plant units effluents including dinitrotoluene	0615105H	D030 K111 K112	E, C,T T
Wastewater generated by the drainage of process water from utility units	06351141	None	None
Monoethanolamine in water	03801021	None	None
Spent solvent from parts cleaner	05222031	None	None

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 9, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Total Plant Wastewater Tank consists of a 20,000-gallon horizontal, closed stainless steel tank used to manage wastewater from process units prior to transfer to the Washburn Tunnel POTW. Specific process wastewaters received by the tank include waters from the DNT process unit, the PVOH unit, and the TDA process unit. The tank is raised aboveground by supports consisting of concrete saddles. Secondary containment is provided by the concrete containment pad that underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of inspection and spill reporting records, and the construction and operation of the tank. The Unit was transferred to SWR 96611, and is a component of the RCRA Part-B Permit –exempt Wastewater Treatment System.

This unit received TCEQ closure on September 5, 2019.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Maintenance Solvent Degreaser Unit

B. NOR No: 013

C. Description: Container - Storage (S01)

D. Dates of Operation: 1984 to 2003 - Active
2003 to present – Inactive/Never Built (not fully constructed as a unit)

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Parts Cleaner	0172211H	D030	E
Spent Naphtha	0510203H	D001	I
		D018	E
		D039	E
		F005	I,T
Spent Solvent	05222031	None	None

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. The unit was never fully constructed.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Parts Cleaner has been removed from service (inactive status) since 2003. While in operation, the Parts Cleaner consisted of two 80-gallon steel drums containing degreasing solvent used during maintenance operations. The spent solvent was

replaced with fresh solvent approximately every two weeks by Service Contractor. The spent solvent was recycled off site. The final construction of the unit was never completed.

I. Recommended Action:

No further action with respect to the current RFA evaluation for the unit is recommended by APLLC based upon the method of waste management, and review of current and historic inspection records, and no reportable spills from the unit, which was never fully constructed.

This unit received TCEQ acknowledgement as 'Never Built' on April 14, 2014.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: March 26, 2015
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

A. Waste Management Unit: Spent Carbon Storage Tank (V-8)

B. NOR No: 014

C. Description: Container - Storage (S01)

D. Dates of Operation: 1992 - Active
2015 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0220404H	K111	C,T
Spent solvent from parts cleaner	05222031	None	None

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 9, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Spent Carbon Storage Tank consisted of an aboveground stainless steel tank used for the temporary storage of spent carbon generated from the carbon treatment of DNT wastewaters. Dimensions of the tank were approximately 11.5 feet in diameter by 13 feet high. A epoxy coated concrete containment pad underlay the

tank. The tank was operated as a less-than-90-day accumulation tank. The tank system was inspected daily.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of inspection and spill reporting records, and the construction and operation of the tank. The tank contents have been evacuated and the unit received Closure status on February 6, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: March 26, 2015

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Spent Carbon Pulse Tank (V-4)

B. NOR No: 015

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2015 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0220404H	K111	C,T
DNT Wastewater	0190105H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 9, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Spent Carbon Pulse Tank consisted of an aboveground stainless steel cylindrical tank used to manage spent carbon slurry transferred from the Pulsed Bed Adsorbers (Facility 033, 034). The spent carbon was rinsed with utility water or treated wastewater to remove salts. The drained water was transferred to the Contaminated Wastewater Tank (Facility 032), and the spent carbon was transferred to the Spent Carbon Storage Tank (Facility 014). Dimensions of the tank were approximately 5 feet in diameter and 12 feet in height. Operating capacity of the tank was 5,000 lbs. A epoxy coated concrete containment pad

underlaid the tank. The tank was operated as a less-than-90-day accumulation unit. The tank was inspected on a twice daily basis.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of inspection and spill reporting records, and the construction and operation of the tank. The tank contents have been evacuated and the unit received Closure status on February 6, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Nitric Acid Truck Loading Area

B. NOR No: 016

C. Description: Other Storage S99 - Sump (Product Loading Area)

D. Dates of Operation: 1972 - Active
2015 – Inactive
2019 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Nitric Acid/Nitric Acid Wastewater	0385105H	D002	C

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted no evidence of spills from the area during its VSI completed on August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Nitric Acid Truck Loading Area is used to off-load nitric acid from incoming transport vehicles. Vehicles are rinsed at the loading area prior to leaving the site. The base of the loading area is constructed of concrete and covered with acid brick. In addition, the concrete base is coated with an acid resistant asphalt coating. A concrete curb surrounding the loading area serves to contain liquids from the loading area. The sloping of the concrete surface allows immediate drainage of the

liquids to a stainless steel basin. Fluids in the Truck Loading Area basin drain to the Nitric Acid Sump (Facility 017).

I. Recommended Action:

In its RFA dated January 25, 1990, the TWC had previously recommended no further action for this unit based upon the absence of spills or reports of spills. No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills from the area, and construction and operation of the unit. The unit was removed during facility infrastructure modifications in 2015.

This unit received TCEQ closure on May 15, 2019.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2015

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Nitric Acid Sump

B. NOR No: 017

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
2015 – Inactive
2019 - Closed

E. Wastes Managed: (hazardous constituents listed in Appendix II)

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Nitric Acid/Nitric Acid Wastewater	0385105H	D002	C

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted no evidence of releases during its VSI dated August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Nitric Acid Sump is a concrete-lined, below-grade sump used to collect fluids from the Nitric Acid Loading Area (Facility 016). The concrete surface is coated with an acid resistant asphalt and overlain by acid bricks. Acids collected in the sump

are transferred to the Facility's wastewater treatment system for processing prior to off-site disposal.

I. Recommended Action:

In its RFA dated January 25, 1990, the TWC had previously recommended no further action for this sump based upon the absence of spills or reports of spills. No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit. The unit was removed during facility infrastructure modifications in 2015.

This unit received TCEQ closure on May 15, 2019.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: MEA and Carbonate Truck Unloading Area

B. NOR No: 018

C. Description: Materials Loading Area

D. Dates of Operation: 1972 - Active
2015 – Inactive
2019 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Monoethanolamine in water/wastewater contaminated with MEA	03801021	None	None

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted no evidence of releases during its VSI dated August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The MEA and Carbonate Truck Unloading Area is used to off load monoethanolamine and carbonate. The unloading area is covered with concrete. The area is constructed with perimeter curbs to collect minor spills that may occur within the unloading area. The concrete pad is sloped to allow drainage to the MEA and Sodium Carbonate Sump.

I. Recommended Action:

In its RFA dated January 25, 1990, the TWC had previously recommended no further action for this sump based upon the absence of spills or reports of spills. No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit. The unit was removed during facility infrastructure modifications in 2015.

This unit received TCEQ closure on May 15, 2019.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: MEA/Sodium Carbonate Sump or Toluene Sump

B. NOR No: 019

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
2003 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Monoethanolamine in water/wastewater contaminated with MEA Toluene	03801021	None	None

F. Evidence of Release:

In its RFA dated January 25, 1990, the TWC (predecessor agency to the TCEQ) had previously recommended a RCRA Facility Investigation be completed for this unit due to the possibility of toluene once having been managed in this sump, and due to presence of liquids in the sump during the TWC VSI. Soil and groundwater screening samples were collected in December 1991 as part of the RCRA Facility Investigation required for this unit. Four soil borings were completed underneath the sump by drilling at an angle of 75 degrees at the perimeter. A fifth sample was collected at the center of the sump. Soil samples were collected at 2.5, 5, 6, 7.5 and 10-foot depth intervals. Collected samples were analyzed for toluene. Of the twenty-one soil samples collected, toluene was detected in one boring at the 2.5- and 5-foot depth intervals only. No detectable levels ($<1.0 \mu\text{g/kg}$) of toluene were detected at low concentrations ($<6\mu\text{g/kg}$) in the 6-, 7.5- or 10-foot depth intervals at this soil core, or in the three groundwater samples collected at points hydraulically down-gradient from the unit. Soil results are summarized in Appendix III (Evidence of Release).

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The MEA and Sodium Carbonate Sump was used from 1972 to 1992 to collect fluids from the MEA and Carbonate truck unloading area (Facility 018) prior to pumping to the Washburn Tunnel POTW. From approximately 1972 to 1992 the sump was also used as an overflow for the toluene tank unloading spill sump. The sump was taken out of service in 1992 due to the lack of loading/unloading toluene and MEA trucks.

The sump was 25 feet long by 25 feet wide and approximately 3 to 4 feet deep. The base and side walls were constructed with 6-inch thick concrete. A 4-mil polyethylene vapor barrier separated the concrete base and the soil subgrade.

The MEA sump was closed in 1992. As part of closure the sump was removed, underlying soils were excavated, and the area backfilled with clean soils.

I. Recommended Action:

Based upon the detection of only minor concentrations of toluene at one soil boring location during the Phase 1 RFI, no further action was recommended by APLLC. The decision for no further action was agreed upon with the TNRCC (predecessor agency to the TCEQ) in a letter dated February 26, 1998 based upon the concentrations of toluene (5.5 ug/kg) detected in the boring being statistically equivalent to the PQL (5 ug/kg). Formal approval of the decision of no further action (NFA) for the unit by the TCEQ remains contingent on public notice of the proposed NFA determination by APLLC.

This unit received TCEQ closure on July 23, 2003.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: March 26, 2015
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: DNT Wastewater/Red Water Sump

B. NOR No: 020

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
2015 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/dinitrotoluene mixture	0175102H	D030	E
Boiler/Cooling Tower Wastewater	06351141	None	None
DNT Wastewater	0190105H	K111	C,T

F. Evidence of Release:

Because the sump once managed DNT wastewater, a RCRA Facility Investigation was recommended by the TWC (predecessor agency to the TCEQ) as a result of its January 25, 1990 RFA. The RCRA Facility Investigation was initiated in December, 1991. As part of the RFI, two soil cores were completed to a depth of 20 feet at the perimeter of the unit. The soil samples were collected at 4, 5.5, 6, 9, 10, 12, 15, 16, 19 and 20 feet. Collected samples were analyzed for 2,4-DNT, 2,6-DNT, o-MNT, m-MNT, p-MNT and 4,6-DNOC. None of the constituents of concern were detected (<0.33 mg/kg for NT species, <1.7 mg/kg for 4,6-DNOC). Soil results for the Former DNT Wastewater "Red Water" Sumps are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The DNT Wastewater Sumps, also referred to as the “Red Water” Sumps were used from approximately 1972 to 1986 to collect wastewater generated from the DNT process area. Since 1986, the sumps had been used to collect rainfall runoff from the DNT process area, and utility line wastewaters, prior to transfer off site for treatment at the Washburn Tunnel POTW. Each of the two sumps consisted of a stainless steel box within a below-grade concrete vault. A 2-inch annular space between the concrete and the stainless steel box was filled with clean sand. Each sump had an operating capacity of approximately 3,560 gallons.

I. Recommended Action:

Based upon the absence of detectable levels of the constituents of concern in the soil samples collected during the Phase 1 RFI, no further action was recommended by APLLC. The conclusion of no further action was agreed upon with the TNRCC (predecessor agency to the TCEQ) in correspondence dated January 18, 1995. Formal approval of the decision of no further action (NFA) for the unit by the TCEQ remains contingent on public notice of the proposed NFA determination by APLLC.

Soils adjacent to the unit were sampled and analyzed in 2014, following termination of use of the unit. The TCEQ approved closure of this unit on January 29, 2015.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: October 21, 2025
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

A. Waste Management Unit: Ammonia Spill Sump

B. NOR No: 021

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
2017 – Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water and ammonia	00551191	None	None

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted no evidence of releases during its VSI dated August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Ammonia Spill Sump was used to collect spills from the adjacent ammonia equipment. Collected fluids were transferred to the Total Plant Wastewater Tank (Facility 012) where they are mixed with other site wastewaters prior to transfer off-site for treatment and disposal at the Washburn Tunnel POTW. The sump has an operating capacity of approximately 3,560 gallons and is constructed with a 10-inch thick concrete base and any eight-inch thick sidewalls. The sump was equipped with

an automatic foam suppressant system to control vapors from ammonia captured by the sump.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and type of waste managed. The unit was decontaminated, and received TCEQ closure on July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

- A. Waste Management Unit: DNT Tank Car Loading Area and Sump
- B. NOR No: 022
- C. Description: Other Storage (S99)-Product Loading Area Sump
- D. Dates of Operation: 1972 - Active
2017 – Unit transferred to SWR 96611, and is a component of RCRA Part B Permit-Exempt Wastewater Treatment System.
2018 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/dinitrotoluene mixture	0175102H	D030	E

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted impact to Well MW6 located down-gradient of the DNT Loading Area, during its RFA completed January 25, 1990. Due to this impact an RFI was recommended by the Agency for the loading area. For the purpose of the RFI, the DNT Tank Car Loading Area, the DNT Truck Loading Areas (Facility 023) and the DNT Spill-off Pond (Facility 024) were lumped together and investigated as a single unit. The RFI was initiated in December, 1991. Six soil cores (AP6, AP7, AP8, AP9, MW60, and SB-X) were completed and Three screening groundwater samples (HP4, HP5 and HP12) were collected near the Tank Car Loading Area. Based upon the groundwater screening results, two monitoring wells (MW58 and MW59) were installed at the southeast corner of the loading area pad. Soil samples were collected from the borings at approximate two-foot depth intervals to depths of eight feet. Collected samples were analyzed for 2,4-DNT and 2,6-DNT. The two DNT isomers were detected in all but four of the soil samples, at concentrations ranging from 0.33 to 7,200 mg/kg. Analysis of the three screening groundwater samples collected during the RFI identified impacts to groundwater, with detected concentrations of 2,6-DNT measured at 280 to 2,400 µg/l, and concentrations of 2,4-DNT measured at 12 to 1,600 µg/l. Largest concentrations of the e,4 and 2-6 DNT isomers measured in

samples collected from the completed monitoring wells were at 500 and 1,100 µg/l, respectively, in the Upper Shallow Zone (MW59) and 9,700 and 23,000 µg/l, respectively, in the lower shallow zone (MW58).

Due to the apparent impacts to soils and groundwater, a Phase II RFI was conducted in 1998 to define the extent of the release to soils and groundwater. Under the Phase II RFI, five shallow soil samples (APL21, APL22, APL23, APL25, and APL26) were collected at 1.5 feet below grade near the perimeter of the Tank Car Loading Area. Three groundwater samples were collected (HP15, HP16, HP20) at points within and immediately down-gradient from the area. Soil and groundwater samples confirmed the loading area as a source of impacts. Soil and groundwater results are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The DNT Tank Car Loading Area was used to load product in rail tanker cars for delivery off-site until September 2005. The base of the loading area is covered with a concrete pad. The concrete pad was extended northward in 1995 in order to create a second loading area of the pad extension, 40 yards of soil were excavated and disposed of at a permitted facility the loading area. Six-inch high curbs surround the pad and serve to catch and direct minor volumes of spilled product to the sump located beneath the western part of the loading area. Fluids in the sump are pumped to the Total Plant Wastewater Tank (Facility 012) where they are mixed with other facility wastewaters prior to transfer off-site to the Washburn Tunnel POTW.

I. Recommended Action:

Releases associated with the former DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)], Former Effluent Impoundment (NOR No. 1), Former Neutralization Pit (NOR Unit No. 027), DNT Storage Area (AOC1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the DNT Loading Area has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going

and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to this unit) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The DNT Loading Area (including NOR Unit Nos. 22, 23, and 24) are also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the units pursuant to 30 TAC 335.167 remains on-going.

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon the implementation and continuation of the Corrective Action and Compliance Monitoring Program. The unit has been transferred to SWR96611, and is a component of the RCRA Part-B Permit-Exempt facility.

This unit received TCEQ administrative closure on September 21, 2018.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

- A. Waste Management Unit: DNT Truck Loading Area
- B. NOR No: 023
- C. Description: Other Storage (S99) - Product Loading Area
- D. Dates of Operation: 1972 - Active
2017 – Unit transferred to SWR 96611, and is a component of RCRA Part B Permit-Exempt Wastewater Treatment System.
2018 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/dinitrotoluene mixture	0175102H	D030	E

F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously noted impact to Well MW6 located down-gradient of this unit, during its RFA completed January 25, 1990. Due to this impact, an RFI was recommended by the Agency for the loading area. The RFI was initiated in December, 1991. Three soil cores (AP4, AP5 and MW52) were completed in the vicinity of the Truck Loading Area. In addition, three groundwater monitoring wells (MW52, MW55, and MW56) were installed and sampled. Soil samples were collected from the borings at one to two-foot depth intervals to total depths of nine feet. Collected samples were analyzed for 2,4-DNT and 2,6-DNT. The two DNT isomers were detected in the uppermost depth interval (1.5 feet) and at 6.0 feet in one of the borings only. Groundwater samples from the three monitoring wells installed down-gradient of the truck loading area showed concentrations of 2,4-DNT and 2,6-DNT at 4,500 and 4,600 µg/l, respectively, in the Upper Shallow Zone (MW56). Minor impacts from NT isomers (11 to 21 µg/l) were detected in the lower shallow zone (MW52, MW55).

The DNT Truck Loading Area was included in a Phase II RFI initiated in 1998 to define the extent of the release to soils and groundwater in conjunction with the

other Facility's (NOR Unit Nos. 022 and 024) located in the immediate vicinity of the DNT Truck Loading Area. Soil and groundwater results for the DNT Loading Area (incorporating DNT Truck Loading Area) are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The DNT Truck Loading Area was used until September 2005 to load finished product into transport vehicles prior to delivery off-site. The base of the loading area is covered with a concrete pad. Six-inch high curbs surround the pad and serve to catch and direct minor volumes of spilled product to an adjacent concrete trench. The fluids in the trench drain to the DNT Spill Load-Off Pond (Facility 024) which empties into to the Tank Car Loading Area Sump. Fluids collected in the Tank Car Loading Area sump are pumped to the Total Plant Wastewater Tank (Facility 012) where they are mixed with other wastewaters prior to transfer off-site to the Washburn Tunnel POTW.

I. Recommended Action:

Releases associated with the DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)], Former Effluent Impoundment (NOR No. 1), Former Neutralization Pit (NOR Unit No. 027), DNT Storage Area (AOC1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the DNT Loading Area has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to this unit) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The DNT Loading Area (including NOR Unit Nos. 22, 23, and 24) are also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective

Action program requirements to address releases from the units pursuant to 30 TAC 335.167 remains on-going.

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon the implementation and continuation of the Corrective Action and Compliance Monitoring Program. The unit has been transferred to SWR96611, and is a component of the RCRA Part-B Permit-Exempt facility. Administrative Closure pending.

This unit received TCEQ administrative closure on September 21, 2018.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: DNT Spill Off Pond

B. NOR No: 024

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
 2017 – Unit transferred to SWR 96611, and is a component of RCRA Part B Permit-Exempt Wastewater Treatment System.
 2018 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/Dinitrotoluene Mixture	0175102H	D030	E

F. Evidence of Release:

Due to impact to Well MW6 located down-gradient of this unit noted by the Agency during its RFA completed January 25, 1990, an RFI was recommended by the Agency for the Spill-Off Pond. The RFI was initiated in December, 1991. Four soil cores (AP1, AP2, AP3 and MW-51) were completed at the perimeter of the pond. Three monitoring wells (MW51, MW53, MW54) were installed in the immediate vicinity of the Pond. Soil samples were collected from the borings at approximate two-foot depth intervals to total depths of nine to twelve feet. Collected samples were analyzed for 2,4-DNT and 2,6-DNT. The two DNT isomers were detected in two of the four borings, at concentrations ranging from 0.35 to 51 mg/kg. Analysis of groundwater samples indicated maximum concentrations of 2,4-DNT and 2,6-DNT in the upper shallow zone (MW54) at 1,800 and 4,500 µg/l, respectively, and in the lower shallow zone (MW53) at 1,600 and 3,700 µg/l, respectively.

A Phase II RFI was conducted in 1998 to define the extent of the release to soils and groundwater in the DNT Loading Area. Under the Phase II RFI, additional soil samples (APL27, APL28, APL37) were collected at the perimeter and in the immediate vicinity of the Spill Off Pond. In addition the three monitoring wells installed during Phase I of the RFI were sampled. Samples were analyzed for DNT

and MNT isomers. 2,6-DNT was detected in one of the soil samples from APL28 at 1.5 feet only. None of the other individual isomers were detected (<0.33 mg/kg) in soil. Groundwater samples collected from wells completed during the Phase I RFI showed increased concentrations of 2,4-DNT and 2,6-DNT in the upper shallow zone (MW54) and in the lower shallow zone at MW51 and MW53. Soil and groundwater results for the DNT Loading Area (incorporating the DNT Spill-Off Pond) are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Spill-Off Pond is used to contain spill material from the DNT Truck Loading Area prior to transferring to the facility's wastewater treatment system. The pond is approximately 2 feet deep and has an operating capacity of approximately 6,000 gallons. The Pond empties by gravity flow into the DNT Tank Car Loading Area sump. Fluids collected in the Tank Car Loading Area sump are pumped to the Total Plant Wastewater Tank (NOR Unit No. 012) where they are mixed with other wastewaters prior to transfer off-site to the Washburn Tunnel POTW.

I. Recommended Action:

Releases associated with the DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 022), DNT Truck Loading Area (NOR Unit No. 023), and DNT Spill-Off Pond (NOR Unit No. 024)], Former Effluent Impoundment (NOR No. 001), Former Neutralization Pit (NOR Unit No. 027), DNT Storage Area (AOC1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the DNT Loading Area has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to this unit) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring).

The DNT Loading Area (including NOR Unit Nos. 22, 23, and 24) are also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the units pursuant to 30 TAC 335.167 remains on-going.

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon the implementation and continuation of the Corrective Action and Compliance Monitoring Program. The unit has been transferred to SWR96611, and is a component of the RCRA Part-B Permit-Exempt facility.

This unit received TCEQ administrative closure on September 21, 2018.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: TDA Tank Car Loading Area

B. NOR No: 025

C. Description: Other Storage (S99)-Product Loading Area Sump

D. Dates of Operation: 1976 - Active
2017 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Mixture of settled solids contaminated with toluenediamine and dinitrotoluene	0525609H	D030 U221	E T
TDA Product Waste	0570219H	U221	T

F. Evidence of Release:

On June 19, 1992, discolored soil and water were observed in a shallow excavation at the Tank Car Loading Area. In October, 1992 an RFI Work Plan was prepared for a subsurface investigation to determine the nature and extent of the apparent release. The RFI was performed in a phased approach with sampling events in May, August, October and December 1996. Soils were tested for isomers of toluenediamine (TDA) and o-toluidine. A total of seventy-six samples were collected at the TDA Tank Car Loading Area including twenty samples collected below a depth of seven feet. TDA was not detected in soils deeper than two feet except at Boring AP31 where TDA was detected (9.2 to 25 mg/kg) as deep as the 5.5-foot depth but not at the 9-foot depth. The RFI report delineated the area of affected soils at this unit (IT, 1997). After review of the RFI report, TCEQ requested that additional investigation be performed to determine if COCs were present in groundwater beneath the unit. An additional investigation was performed in 2000, including installation of two new wells in the upper part of the SZ (MW65 and MW66). The results of the additional investigation are described in Geomatrix (2001a). Although it was determined that COCs had been released to the

groundwater, concentrations of the COCs were below their GWPS for residential groundwater ingestion (i.e, Tier 1 Residential PCLs). No affected groundwater has been confirmed in this area. Soil and groundwater results for the TDA Tank Car Loading Area are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The TDA Tank Car Loading Area consists of two rail car loading pads. Molten TDA product was delivered to these areas through an overhead piping system. The product was transferred to rail tank cars parked over the pads. The pads are constructed of concrete with six-inch high curbing. Wash waters generated from steam cleaning the tank interiors and any spillage during loading operations were drained through metal grating within the pad to one of two sumps located at the southeast corner of each pad. Water from the sumps was transferred to the plant wastewater treatment system prior to routing to the Washburn Tunnel POTW.

I. Recommended Action:

Although no affected groundwater has been confirmed in the area of the TDA Tank Car Loading Area, the unit is retained in the groundwater Corrective Action Program (CAP) currently in place at the APLLC facility under the terms of the facility's existing Compliance Plan CP-50134 (CP) issued November 13, 2002. Final response actions for the TDA Tank Car Loading Area include on-going groundwater monitoring to verify compliance with existing Groundwater Protection Standards (GWPS) based on Tier 1 Residential Protective Concentration (PCLs) associated with 30 TAC 350 (Texas Risk Reduction Program Rule). Two Shallow Zone (SZ) wells, MW65 and MW66, are currently monitored on a semi-annual basis in the TDA Tank Car Loading Area pursuant to the CAP requirements. Concentrations of COCs in these wells are very low, and the groundwater has been in compliance with the GWPS for several groundwater monitoring events [i.e., there is no groundwater Protective Concentration Level Exceedance (PCLE) Zone]. Although the groundwater is not considered affected at this time, analysis of groundwater samples collected from MW65 and MW66 have identified detections of some of the COCs. APLLC will continue to monitor wells within the TDA Tank Car Loading Area on a semi-annual basis in accordance with CAP requirements.

The TDA Tank Car Loading Area has been retained in CP Table I.A (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring) and CP Table III (SWMUs and AOCs for which Corrective Action applies pursuant to 30 TAC 335.167) of Section XI of the current renewal application as response actions for the area are on-going.

The unit itself has been decontaminated, and closed as of July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: October 21, 2025
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

- A. Waste Management Unit: TDA Truck Loading Area
- B. NOR No: 026
- C. Description: Other Storage (S99) - Product Loading Area Sump
- D. Dates of Operation: 1976 - Active
2017 - Closed

- E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
TDA Product Waste	0570219H	U221	T

- F. Evidence of Release:

The TWC (predecessor agency to the TCEQ) had previously indicated that there were no reports of spills and no evidence of a spill during its VSI completed on August 30, 1989. No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

- G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

- H. Summary:

The TDA Truck Loading Area was a pad used to collect minor spillage that may occur during filling trucks with TDA. The base of the loading area is an engineered concrete pad. Six-inch high perimeter curbs served to collect spill material or washwaters. The concrete pad is sloped to promote drainage of the fluids to a concrete-lined sump. Waters are pumped from the sump to the wastewater treatment system prior to transfer off-site to the Washburn Tunnel POTW.

I. Recommended Action:

In its RFA dated January 25, 1990, the TWC recommended no further action for this sump based upon the absence of spills or reports of spills. No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

The unit itself has been decontaminated, and closed as of July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Neutralization Pit

B. NOR No: 027

C. Description: Other Storage (S99)

D. Dates of Operation: 1972 - Active
1986 - Inactive/Post Closure
2021 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Waste Water	0190105H	K111	CT
TDA Waste Water	0580102H	K112	T
Mixed Acid	0020105H	D002 D030	C E

F. Evidence of Release:

APLLC initiated an RFI for the Former Neutralization Sump in conjunction with the RFI performed at the DNT Loading Area. The RFI was initiated in December, 1991. Five soil cores (AP17, AP18, AP19, MW48, and MW50) were completed at the perimeter or in the immediate vicinity of the pit. Three monitoring wells (MW4B, MW50, and MW61) were installed at the perimeter and in the immediate vicinity of the pit. Two monitoring wells (MW48, MW49) were installed at points southwest of the pit. Soil samples were collected from the borings at approximate two-foot depth intervals to total depths of eleven feet. Collected samples were analyzed for 2,4-DNT and 2,6-DNT, 4,6-dinitro-ortho-cresol (4,6 DNOC) o-,m-,p-MNT and o-toluidine. The two DNT isomers were detected at each depth interval sampled from boring AP17, at concentrations ranging from 56 to 880 mg/kg. Lesser concentrations (0.37 to 19 mg/kg) were detected at some depth intervals in boring AP18 and AP19. None of the other compounds were detected except for the one isolated detection of o-toluidine at 0.66 mg/kg in Boring AP18. No constituents were detected in the soil samples collected from the borings from MW48 and

MW50. Impacts to groundwater from the neutralization pit were detected in samples collected from monitoring wells. Samples from MW61, screened in the Upper Shallow Zone and located at the southeast corner of the pit contained 2,4-DNT and 2,6-DNT at 130,000 and 110,000 µg/l, respectively. Samples from MW4B, also screened in the Upper Shallow Zone and located within approximately 40 feet of MW61 showed 2,4-DNT and 2,6-DNT at 48,000 and 55,000 µg/l, respectively. Impacts to the Lower Shallow Zone were also detected (590 µg/l, 1,000 µg/l) at MW50, located adjacent to MW61.

A Phase II RFI was conducted in 1998 to define the extent of the release to soils and groundwater at the Former Neutralization Pit. Under the Phase II RFI, additional soil cores (APN35, APN36, APN39, APN40, APN41) were collected in the immediate vicinity of the Neutralization Pit. Additional screening groundwater samples (HP31, PH32, HP33, HP34, HP35, HP36, HP37, HP38, HP39, HP42) were collected out from the Former Neutralization Pit. In addition, the existing monitoring wells installed during Phase I of the RFI were sampled. Samples were analyzed for DNT and MNT isomers, as well as 4,6-DNOC, and o-toluidine. Impacts to soils were largely confined to one boring, APN 39 located north of the neutralization pit. Concentrations of 2,4-DNT and 2,6-DNT were detected in two of the screening groundwater samples (HP33, HP37) at concentrations ranging from 22 to 140 µg/l. Groundwater samples collected from wells completed during the Phase I RFI showed concentrations of 2,4-DNT and 2,6-DNT had decreased (to 45,000 and 453000 µg/l respectively) in the Upper Shallow Zone at points closest to the Neutralization Pit (MW61) and increases (to 3,900 and 5,000 µg/l respectively) at a distance of 40 ft (MW4B) from the pit. Concentrations of the DNT isomers exhibited decreases in the Lower Shallow Zone at MW48 and MW50. Soil and groundwater results for the Former Neutralization Pit are summarized in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Neutralization Pit was used until 1986 to manage DNT and TM Waste Water. The pit was concrete lined with dimensions of approximately 7-foot by 14-foot by 6-feet deep. In 1986 the pit was closed. As part of closure the pit was hydroblasted, filled with sand and covered with a concrete cap.

I. Recommended Action:

Releases associated with the Former Neutralization Pit (NOR Unit No. 027), DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)], Former Effluent Impoundment (NOR No. 1), DNT Storage Area (AOC1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the

vicinity of the former Neutralization Pit has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to this unit) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The Former Neutralization Pit is also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the unit pursuant to 30 TAC 335.167 remains on-going.

This unit received TCEQ administrative closure on August 31, 2021.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Distillation/Solvent Recovery Unit

B. NOR No: 028

C. Description: Tank (80-gallon capacity)

D. Dates of Operation: 1991- Active
2000 – Transferred to Celanese Chemicals L.P.
2019 – Closed on Notice of Registration

E. Wastes Managed: (constituents are listed in current Notice of Registration document)

F. Evidence of Release:

No indications of spills were noted by APLLC. A review of historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Distillation/Solvent Recovery Unit was transferred to Celanese Chemicals L.P. on 10/01/2000.

I. Recommended Action:

No further action is recommended by APLLC based upon review of current and historic inspection records, given no reportable spills, and construction and operation of the unit.

As described above, the Distillation/Solvent Recovery Unit was transferred to Celanese Chemicals L.P. on 10/01/2000.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: October 21, 2025
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Hazardous Waste Materials Bins

B. NOR No: 029

C. Description: Storage (S01)

D. Dates of Operation: 1991 - Active
2020 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
TDA Contaminated Debris	0550319H	U221	T
Total Plant Effluent Contaminated Debris	0620409H	K111, K112	C,T T
Total Plant Effluent Contaminated Soils	0630301H	K111, K112	C,T T
TDA Contaminated Soils	0551301H	U221	T
DNT Contaminated Soil	0170301H	D030	E
DNT Contaminated Debris	0160319H	D030	E
Toluenediamine Wastewater Tank Sludge	0595319H	K112	T
Water and Associated Sludge	0165519H	D007	E
DNT and Water Contaminated with DNT	0167207H	D030	E

Solids and Debris Generated from Stripping Coatings on Product Tanks	0402319H	D007, D008, D030	E, E, E
Pyrophoric Catalysts	0148393H	D001	I
Debris Contaminated with DNT, TDA, and Toluidines	0680319H	D030, K111, K112, K113, K114, K115, U221	E C,T T, T, T, T, T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The hazardous materials bins (NOR Unit No. 9) are 25 cubic yards each and located south of the container accumulation area (NOR Unit No. 2).

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

This unit received TCEQ closure on January 31, 2020.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: PVOH Equalization Tank

B. NOR No: 030

C. Description: Tank (TK-60.01)(500,000-gallon capacity)

D. Dates of Operation: 1991 - Active
2000 – Transferred to Celanese Chemicals L.P.
2019 – Closed on Notice of Registration

E. Wastes Managed: (constituents are listed in current Notice of Registration document)

F. Evidence of Release:

No indications of spills were noted by APLLC. A review of historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The PVOH Equalization Tank was transferred to Celanese Chemicals L.P. on 10/01/2000.

I. Recommended Action:

No further action is recommended by APLLC based upon review of current and historic inspection records, given no reportable spills, and construction and operation of the unit.

As described above, the PVOH Equalization Tank was transferred to Celanese Chemicals L.P. on 10/01/2000.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Neutralization Tank (V-16.155)

B. NOR No: 031

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2017 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0190105H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Neutralization Tank consists of a 13,000-gallon aboveground stainless steel tank formerly used to manage wastewaters from the dinitrotoluene (DNT) process unit prior to carbon treatment. The DNT wastewaters were neutralized with sodium carbonate to a pH ranging from 5 to 7. Dimensions of the tank are 10.5 feet in diameter, and 20 feet in height. An epoxy coated concrete containment pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

The unit has been decontaminated, and closed as of July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Contaminated Wastewater Tank (V-16.153)

B. NOR No: 032

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2017 – Inactive
2021 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/dinitrotoluene mixture from loading spills	0175102H	D030	E

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Contaminated Wastewater Tank consists of a 56,000-gallon stainless steel tank used to manage DNT wastewaters prior to carbon treatment. Dimensions of the tank are 20 feet in diameter, and 24 feet in height. The wastewater is neutralized to a pH of 5 if necessary. A epoxy coated concrete containment pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

This unit received TCEQ closure on May 27, 2021.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Pulsed Bed Adsorber (V-1)

B. NOR No: 033

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 to 2017 - Active
2017 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater Containing PPM levels of DNT	0190105H	K111	C,T
DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Pulsed Bed Adsorber (V-1) consists of an aboveground stainless steel cylindrical vessel used for the carbon treatment of DNT Wastewaters prior to transfer to the

carbon filter (Facility 037) for further carbon treatment. Dimensions of the tank are approximately 10 feet in diameter and 50 feet in height. The adsorber has a capacity of 30,000 gallons of wastewater. A epoxy coated concrete pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

The unit has been decontaminated, and closed as of July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC City: Pasadena, Texas
ISW Reg No: 30317 Date: October 21, 2025
Permit No: HW-50134 Reviewer: Owner
EPA ID No: TXD 990757486

- A. Waste Management Unit: Pulsed Bed Adsorber (V-2)
- B. NOR No: 034
- C. Description: Tank - Treatment (T01)
- D. Dates of Operation: 1992 to 2017 - Active
2017 - Closed
- E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater Containing PPM Levels of DNT	0190105H	K111	C,T
DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Pulsed Bed Adsorber (V-2) consists of an aboveground stainless steel cylindrical vessel formerly used for the carbon treatment of DNT Wastewaters prior to transfer

to the carbon filter (Facility 037) for further carbon treatment. Dimensions of the tank are approximately 10 feet in diameter and 50 feet in height. The adsorber has a capacity of 30,000 gallons of wastewater. An epoxy coated concrete pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the unit.

The unit has been decontaminated, and closed as of July 28, 2017.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Contaminated Wastewater Adsorber (V-3)

B. NOR No: 035

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2017 - Inactive
2021 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0190105H	K111	C,T
DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the tank.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Contaminated Wastewater Adsorber (V-3) consists of an aboveground stainless steel cylindrical vessel used for the carbon treatment of DNT Wastewaters prior to

transfer to the carbon filter (Facility 037) to remove carbon fines. Dimensions of the tank are approximately 6.5 feet in diameter and 30 feet in height. The adsorber has a capacity of 7,500 gallons of wastewater. An epoxy coated concrete pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the tank.

This unit received TCEQ closure on May 27, 2021.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Contaminated Wastewater Surge Adsorber (V-10)

B. NOR No: 036

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2017 – Inactive
2021 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/dinitrotoluene mixture from loading spills	0175102H	D030	E
DNT Wastewater	0190105H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the tank.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Contaminated Wastewater Surge Adsorber is used to carbon treat DNT Wastewaters prior to transfer to the Total Plant Wastewater Tank (Facility 012). The above grade tank is a stainless steel cylindrical vessel with an internal cone nose bottom. Spent carbon is removed from the bottom of the unit and fresh carbon is

added at the top of the unit. Dimensions of the tank are approximately 10 feet in diameter and 10 feet in height. The adsorber has a capacity of 800 gallons of wastewater. An epoxy coated concrete pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the tank.

This unit received TCEQ closure on May 27, 2021.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Carbon Filter (V-9)

B. NOR No: 037

C. Description: Tank - Treatment (T01)

D. Dates of Operation: 1992 - Active
2017 – Inactive
2021 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0190105H	K111	C,T
DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the tank.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Carbon Filter is used to carbon treat DNT Wastewaters prior to transfer to the Total Plant Wastewater Tank (Facility 012). The tank is a stainless steel cylindrical vessel with an internal cone nose bottom. Spent carbon is removed from the bottom

of the unit and fresh carbon is added at the top of the unit. Dimensions of the tank are approximately 10 feet in diameter and 10 feet in height. The adsorber has a capacity of 800 gallons of wastewater. The tank is raised aboveground, supported by a steel structure. An epoxy coated concrete pad underlies the tank.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, and construction and operation of the tank.

This unit received TCEQ closure on May 27, 2021.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Collection Container for Medical Waste

B. NOR No: 038

C. Description: Misc. Storage Container

D. Dates of Operation: 1993 - Active
2016 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Medical Waste	03419992	None	None
Medical Waste	03409032	None	None

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of current and historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

This was a container situated at main entrance gate to collect medicine waste prior to transporting off site for treatment.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, and no reportable spills.

The unit is no longer present and was closed on February 6, 2016.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Collection Area for Used Batteries

B. NOR No: 039

C. Description: Misc. Storage Container

D. Dates of Operation: 1993 - Active
2003 - Inactive
2016 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Batteries, Automotive	00703091	None	None
Batteries, Automotive	0071309H	D002, D008	C, E
Batteries, Rechargeable	03833091	None	None

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the collection area.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The battery collection area was used until 2003 as an accumulation point where batteries resided until they were transported offsite for recycling.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of current and historic inspection records, no reportable spills, or other outstanding environmental issues associated with the collection area.

The unit is no longer present and was closed on February 6, 2016.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: March 26, 2015

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Pilot Wastewater Bioremediation Unit

B. NOR No: 040

C. Description: Tank (surface)

D. Dates of Operation: 1998 - Active
2000 - Inactive
2003 - Closed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Water/DNT Mixture	0175102H	D030	E
DNT Waste Water	0190105H	K111	C,T
TDA Waste Water	0580102H	K112	T

F. Evidence of Release:

No indications of spills were noted by APLLC as part of its inspection of the unit completed on March 7, 2000 to support the prior renewal. A review of past inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

A scale model of a bioremediation unit was used in 1998-2000 to perform studies on plant waste water treatability consisted of three poly 55-gallon drums in series. Once processing was complete, wastewater was reintroduced into waste water system POTW. The unit has been dismantled and closed.

I. Recommended Action:

No further action is recommended with respect to the current RFA evaluation for the unit by APLLC based upon review of inspection records, brief operation period and no reportable spills or other outstanding environmental issues associated with the unit.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Organic Waste Tank

B. NOR No: 041

C. Description: PMD Organic Waste Tank (T-880)

D. Dates of Operation:

2017 – Inactive, decontaminated and transferred to Evonik
2019 – Closed on Notice of Registration

E. Wastes Managed: (*hazardous constituents listed in Appendix II*)

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
DNT Wastewater	0699219H	K111	C,T

F. Evidence of Release:

No indications of spills were noted by APLLC. A review of historic inspection and spill records indicates no reportable spills or other outstanding environmental issues associated with the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The PMD Organic Waste Tank was decontaminated and transferred to Evonik in 2017. The Unit is now listed on Evonik's NOR as *NOR-002 PMD Organic Waste Tank(UT1-T880) Active*. The Unit has been closed on the APLLC NOR.

I. Recommended Action:

No further action is recommended by APLLC based upon review of current and historic

inspection records, given no reportable spills, and construction and operation of the unit.

The PMD Organic Waste Tank was decontaminated and transferred to Evonik in 2017. The Unit is now listed on Evonik's NOR as *NOR-002 PMD Organic Waste Tank (UT1-T880) Active*. The Unit has been closed on the APLLC NOR.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Waste Pile

B. NOR No: 042

C. Description: Construction Project Stockpile of Soils

D. Dates of Operation: 2018 - Active

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Soils excavated due to construction activities	02753011		

F. Evidence of Release:

No indications of spills have been observed by APLLC as part of routine inspection of the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The construction stockpile of soils was generated during decommissioning and dismantling of the former dinitrotoluene and toluidinediamine manufacturing areas. The stockpile is intended for use in future on-site construction projects.

I. Recommended Action:

Continue routine inspections of unit to verify stabilized vegetative cover and integrity of silt fencing.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: Container Storage Area

B. NOR No: 043

C. Description: Storage area for staging and transfer of materials for recycling or off-site disposal.

D. Dates of Operation: 2018 - Active
2025 - Inactive

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Residual containerized wastes	0698203H		

F. Evidence of Release:

No indications of spills have been observed by APLLC as part of routine inspection of the unit.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The unit manages residual material collected from punctured aerosol cans including paints, lubricants, and other miscellaneous products.

I. Recommended Action:

Continue routine inspections of unit to verify stabilized vegetative cover and integrity of silt fencing.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC

City: Pasadena, Texas

ISW Reg No: 30317

Date: October 21, 2025

Permit No: HW-50134

Reviewer: Owner

EPA ID No: TXD 990757486

A. Waste Management Unit: DNT Product Storage Area (AOC1)

B. NOR No: None (Area of Concern 1)

C. Description: Product Storage Area

D. Dates of Operation: 1972 - Active
2013 – Inactive and removed

E. Wastes Managed: (*hazardous constituents listed in Appendix II*)

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Not Applicable	Not Applicable	Not Applicable	Not Applicable

F. Evidence of Release:

Some spills are known to have occurred from the product storage area. An inspection of the storage area was completed on October 12, 1999. No visual evidence of a release to the gunite/soils at the bottom of the secondary containment area was present. No evidence of leakage was observed along tank seams, valves or piping connections. The secondary containment appeared in good condition with moderate cracking of the gunite earthen berms and floor noted in some areas.

Releases to groundwater have been noted in two monitoring wells located in the immediate vicinity of the DNT Storage Area. Decreasing concentrations of 2,4-DNT, 2,6-DNT, have been monitored at MW6 since January, 1985. Current concentrations of the two isomers are 17 and 11 ug/l, respectively. 2,6-DNT was recently detected at 27 ug/l in Well MW64 in May 1998. The well is located at the immediate southern perimeter of the storage tanks. A summary of the groundwater analyses for the DNT Storage Area (AOC1) are included in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The DNT Storage Area (now removed) consisted of five horizontal 50,000-gallon carbon steel tanks elevated aboveground on cradles within an earthen berm covered with gunite. The unit served as storage for DNT product since its construction. The pure DNT is a solid at standard temperature and pressure. Therefore, it was transferred between process units and storage and transportation facilities by heating the material to a temperature above its melting point (160° F).

I. Recommended Action:

Releases associated with the DNT Storage Area (AOC1), Former Neutralization Pit (NOR Unit No. 027), DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)], Former Effluent Impoundment (NOR No. 1), and Northwest Storage Area (AOC2) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the former DNT Storage Area (AOC1) has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to AOC1) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The DNT Storage Area (AOC1) is also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the area pursuant to 30 TAC 335.167 remains on-going.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: March 26, 2015
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: Northwest Storage Area (AOC2)

B. NOR No: None (Area of Concern 2)

C. Description: Northwest Storage Area

D. Dates of Operation: Unknown (Inactive)

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Unknown	Not Applicable	Not Applicable	Not Applicable

F. Evidence of Release:

This unit is located near the southeast corner of the TDA Storage Tanks, which are within a containment structure northwest of the former Effluent Impoundment (Unit 001). Releases to groundwater likely attributable to AOC2 in have been found at sampling locations where temporary push-in sampling devices have been deployed, as reported in the previous three Semiannual Reports submitted under Compliance Plan CP-50134. Concentrations of 2,4-DNT and 2,6-DNT in groundwater were found to increase to the northwest in the area, then abruptly decline to the northwest of the area around the southeast corner of the containment surrounding the TDA Storage Tanks. A summary of groundwater analyses for the Northwest Storage Area (AOC2) are included in Appendix III.

There is no available information concerning waste management activities in this area. An inspection of the storage area was completed on November 27, 2000. No visual evidence of a release to the soils in this area was observed. A review of aerial photographs and interviews with long-term employees indicated that miscellaneous containers were temporarily stored in different parts of this area early in the facility's history. It is possible that some of these containers may have contained waste constituents which were accidentally released to the environment.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

The Northwest Storage Area consists of suspected contaminated soils located in the vicinity of the southeast corner of the containment structure for the TDA Storage Tanks, which are located northwest of ongoing corrective actions at the former Effluent Impoundment (Unit 001). There is no record of waste management activities in this area. The suspected area of contaminated soils was located by sampling of groundwater in the area. Groundwater flows to the southeast in this area, away from the TDA Storage Tanks and toward the former Effluent Impoundment.

I. Recommended Action:

Releases associated with the Northwest Storage Area (AOC2), DNT Storage Area (AOC1), Former Neutralization Pit (NOR Unit No. 027), DNT Loading Area [i.e., DNT Tank Car Loading Area (NOR Unit No. 22), DNT Truck Loading Area (NOR Unit No. 23), and DNT Spill-Off Pond (NOR Unit No. 24)], and Former Effluent Impoundment (NOR No. 1) have previously been incorporated into the site-wide groundwater corrective action program for WMA1 established under the terms of the facility's existing Compliance Plan CP 50134. Affected groundwater in the vicinity of the Northwest Storage Area (AOC2) has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). Groundwater Protective Concentration Level Exceedance (PCLE) Zones located within WMA1 include portions of two PMZs, designated as PMZ1 for the SZ and PMZ2 for the IZ, respectively. From 1991 to 2008, PMZ1 was hydraulically controlled by a system of 10 recovery wells (RW11 through RW20), collectively referred to as RWC2, and four additional wells; RW21, RW25, MW48, and MW49. The RWC2 system was deactivated in April 2008, and currently PMZ1 is controlled by RW21, RW25, and MW49. PMZ2 is controlled by CAS well RW26, which was activated in 1996. Proper control of the groundwater in PCLE Zones in WMA1 (i.e., PMZs 1 and 2) is, in part, assessed by measuring water levels and sampling groundwater in an array of monitoring wells completed in the SZ and IZ on a semi-annual basis. Final response actions for WMA1 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA1 (including reference to AOC2) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The Northwest Storage Area (AOC2) is also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the area pursuant to 30 TAC 335.167 remains on-going.

PRELIMINARY REVIEW UNIT CHECKLIST

Facility: Air Products LLC	City: Pasadena, Texas
ISW Reg No: 30317	Date: March 26, 2015
Permit No: HW-50134	Reviewer: Owner
EPA ID No: TXD 990757486	

A. Waste Management Unit: DNT Manufacturing Area (AOC3)

B. NOR No: None (Area of Concern 3)

C. Description: DNT Manufacturing Area

D. Dates of Operation: 1972 - Active
2013 – Inactive and removed

E. Wastes Managed: *(hazardous constituents listed in Appendix II)*

Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code
Unknown	Not Applicable	Not Applicable	Not Applicable

F. Evidence of Release:

The DNT Manufacturing Area (AOC 3) (now removed) consisted of two separate but adjacent manufacturing units, DNT Unit No. 1 (east unit) and DNT Unit No. 2 (west unit). During construction of two new pad extensions in August 2003 for new acid tanks, discolored water was observed seeping into the excavations. The apparent release was reported to TCEQ by letter dated September 11, 2003. Although the releases were detected in 2003, the initial date of the release is not known.

The extent of affected soil and groundwater was described in the APAR for the DNT Manufacturing Area (Geomatrix, 2007). The combined manufacturing units were assessed together as a single source area in the APAR. The results of the APAR documented impacts to soil and groundwater of organics (i.e., volatile and semivolatile organics). The horizontal extent of affected soils at each unit was found to be contained within the perimeter of its associated French drain system surrounding each individual manufacturing unit. Groundwater contamination has been identified in the Shallow Zone (SZ) and the Intermediate Zone (IZ). A summary of the soil and groundwater analyses for the DNT Manufacturing Area (AOC3) are included in Appendix III.

G. Pollutant Dispersal Pathways:

Refer to Appendix IV.

H. Summary:

Releases to soil and groundwater identified in the DNT Manufacturing Area have been designated an Area of Concern (AOC) in the RCRA CA program (RFI). AOC3 includes DNT Production Units No. 1 (east unit) and No. 2 (west unit). The units were constructed in 1972 and production of DNT began that year. The units were covered with metal roofs and did not have walls. Originally, the units had earthen floors. When spills occurred, the DNT material (which freezes to a solid at ambient temperatures) and a small amount of the underlying soil were removed. Later, the plant constructed concrete floors or pads beneath the units. The concrete was covered with an artificial membrane and finished with an upper surface of acid-resistant brick. The edge of each pad had a curb to impede liquids from moving off the floor onto the surrounding soils.

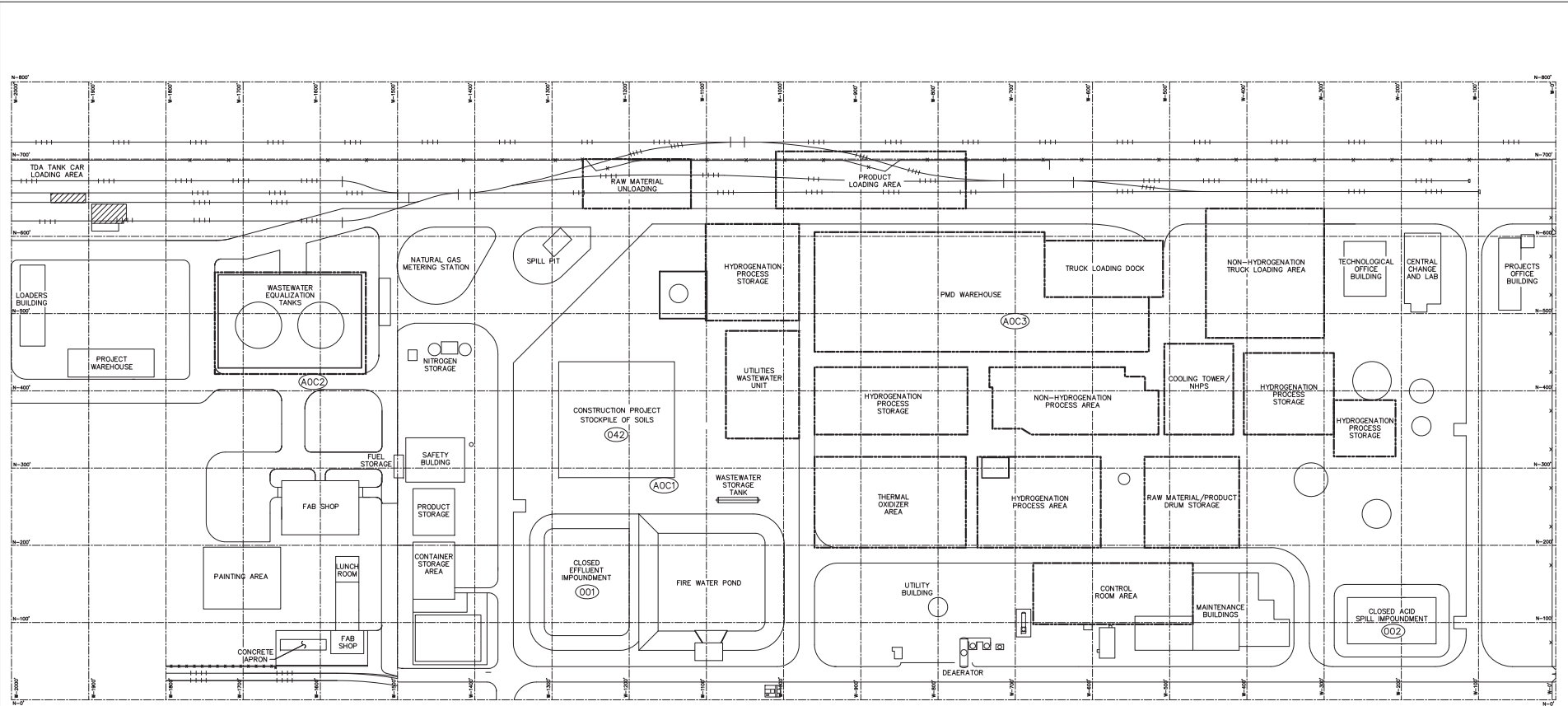
In recent use (terminated in 2013, and removed in 2015) in the event that spills of product onto the bricked floor occurred, the solidified material was removed and any residue was rinsed off the brick with hot water and collected by floor drains. The drains were connected to the associated DNT Unit No. 1 Pad Sump or the DNT Unit No. 2 Pad Sump. Water routed to the Pad Sumps was pumped to the Total Plant Wastewater Tank (NOR 012) to await treatment with activated carbon and routing to the Washburn Tunnel Facility of the Gulf Coast Waste Disposal Authority, a publicly owned treatment works (POTW).

I. Recommended Action:

Releases associated with the former DNT Manufacturing Area (AOC3), and Acid Spill Impoundment (ASI) have previously been incorporated into the site-wide groundwater corrective action program for WMA2 established under the terms of the facility's existing Compliance Plan CP 50134. WMA2 generally encompasses the eastern portion of the Plant. The area contains the former ASI, located near the east property line of the Plant in the eastern part of PMZ1, and AOC3 located in the north-central part of the Plant. Groundwater conditions in this area were described in an Affected Property Assessment Report (APAR), in January 2006, and a remedy was detailed in a Response Action Report (RAP), in November 2006. PMZ1 in WMA2 was previously controlled by a system of 10 recovery wells (RW1 through RW10), collectively referred to as RWC1, which was activated in 1988, and operated until January 2010. In early 2010, recovery well RW27 was installed and activated near the southeast corner of the former ASI to control the SZ PCLE Zone, and RWC1 was inactivated. From 1993 to 2008, groundwater having PCL exceedances in the IZ was controlled by recovery well RW22. However, RW22 was removed in July 2008 due to construction of a new facility structure. Following construction, this well was replaced by RW28, which was activated in April 2010. RW28 is currently the only IZ well in the former ASI area where PCL exceedances are observed. As

such, a PMZ has not been established in the IZ for this area. Final response actions for WMA2 are on-going and will continue to be conducted in accordance with 30 TAC 350 (Texas Risk Reduction Program Rule) and 30 TAC 335.166 (Groundwater Corrective Action Program).

WMA2 (including reference to AOC3) has been captured in CP Table I.A of Section XI of the current renewal application (Waste Management Units and Areas of Concern Subject to Groundwater Corrective Action and Compliance Monitoring). The DNT Manufacturing Area (AOC3) is also retained in CP Table III of Section XI of the renewal application as the RCRA Corrective Action program requirements to address releases from the area pursuant to 30 TAC 335.167 remains on-going.



NOR UNIT	UNIT TYPE	DESCRIPTION	STATUS
001	EFFLUENT IMPOUNDMENT	SURFACE IMPOUNDMENT	POST CLOSURE CARE
002	ACID SPILL IMPOUNDMENT	SURFACE IMPOUNDMENT	POST CLOSURE CARE
003	CONTAINER STORAGE AREA	CONTAINER STORAGE AREA	CLOSED (NOT SHOWN)
004	USED OIL STORAGE TANK	SURFACE TANK	CLOSED (NOT SHOWN)
005	TDA BYPRODUCTS TANK	SURFACE TANK	CLOSED (NOT SHOWN)
006	15.20 BOILER	BOILER	CLOSED (NOT SHOWN)
007	15.30 BOILER	BOILER	CLOSED (NOT SHOWN)
008	MISCELLANEOUS	STORAGE CONTAINERS	ACTIVE (NOT SHOWN)
009	MISCELLANEOUS	STORAGE CONTAINERS	ACTIVE (NOT SHOWN)
010	15.60 BOILER	BOILER	CLOSED (NOT SHOWN)
011	TDA WASTEWATER SURGE TANK	WASTE TREATMENT UNIT	CLOSED (NOT SHOWN)
012	TOTAL WASTEWATER PLANT TANK	SURFACE TANK	CLOSED (NOT SHOWN)
013	PARTS CLEANER	WASTE TREATMENT UNIT	NEVER BUILT (NOT SHOWN)
014	SPENT CARBON STORAGE TANK (V8)	SURFACE TANK	CLOSED (NOT SHOWN)
015	SPENT CARBON PULSE TANK (V4)	SURFACE TANK	CLOSED (NOT SHOWN)

ABBREVIATIONS
AST ABOVEGROUND STORAGE TANK
NHPS NON-HYDROGENATION PROCESS STORAGE

NOR UNIT	UNIT TYPE	DESCRIPTION	STATUS
016	NITRIC ACID TRUCK LOADING AND RISE AREA	SUMP	CLOSED (NOT SHOWN)
017	NITRIC ACID SUMP	SUMP	CLOSED (NOT SHOWN)
018	CARBONATE TRUCK UNLOADING AREA	SUMP	CLOSED (NOT SHOWN)
019	MEA/SODIUM CARBONATE SUMP OR TOLUENE SUMP	SUMP	CLOSED (NOT SHOWN)
020	DNT WASTEWATER/RED WATER SUMP	SUMP	CLOSED (NOT SHOWN)
021	AMMONIA SPILL SUMP	SUMP	CLOSED (NOT SHOWN)
022	DNT TANK CAR LOADING AREA	SUMP	CLOSED (NOT SHOWN)
023	DNT TRUCK LOADING AREA	SUMP	CLOSED (NOT SHOWN)
024	DNT SPILL OFF POND	SUMP	CLOSED (NOT SHOWN)
025	TDA TANK CAR LOADING AREA	SUMP	CLOSED (NOT SHOWN)
026	TDA TRUCK LOADING AREA	SUMP	CLOSED (NOT SHOWN)
027	NEUTRALIZATION PIT	SUMP	CLOSED (NOT SHOWN)
028	DISTILLATION/SOLVENT RECOVERY UNIT	SURFACE UNIT	CLOSED (NOT SHOWN)
029	HAZARDOUS WASTE BINS (RCRA PERMIT EXEMPT)	MISC STORE CONTAINER	CLOSED (NOT SHOWN)
030	PVOH EQUALIZATION TANK	AST	CLOSED (NOT SHOWN)

NOR UNIT	UNIT TYPE	DESCRIPTION	STATUS
031	NEUTRALIZATION TANK (V-16.155)	SURFACE TANK	CLOSED (NOT SHOWN)
032	CONTAMINATED WASTEWATER TANK (V-16.153)	SURFACE TANK	CLOSED (NOT SHOWN)
033	PULSE BED ADSORBER (V-1)	SURFACE TANK	CLOSED (NOT SHOWN)
034	PULSE BED ADSORBER (V-2)	SURFACE TANK	CLOSED (NOT SHOWN)
035	CONTAMINATED WASTEWATER ADSORBER (V-3)	SURFACE TANK	CLOSED (NOT SHOWN)
036	CONTAMINATED WASTEWATER SURGE ADSORBER	SURFACE TANK	CLOSED (NOT SHOWN)
037	CARBON FILTER (V-4)	SURFACE TANK	CLOSED (NOT SHOWN)
038	MEDICAL WASTE CONTAINER	STEEL CONTAINER	CLOSED (NOT SHOWN)
039	USED BATTERY STORAGE AREA	OPEN STORAGE AREA	CLOSED (NOT SHOWN)
040	PILOT WASTEWATER BIOREMEDIATION UNIT	AST	CLOSED (NOT SHOWN)
041	PMD ORGANIC WASTE TANK	SURFACE TANK	CLOSED (NOT SHOWN)
042	CONSTRUCTION PROJECT STOCKPILE OF SOILS	STOCKPILE	ACTIVE
043	CONTAINER STORAGE AREA	MISC STORAGE CONTAINER	INACTIVE (NOT SHOWN)
AOC1	FORMER DNT STORAGE AREA	(NA)	
AOC2	FORMER NORTHWEST STORAGE AREA	(NA)	
AOC3	FORMER DNT MANUFACTURING AREA	(NA)	

0" 30' 60' 90'

NORTH

APPROVED FOR CONSTRUCTION

PROJ. MANAGER

DATE

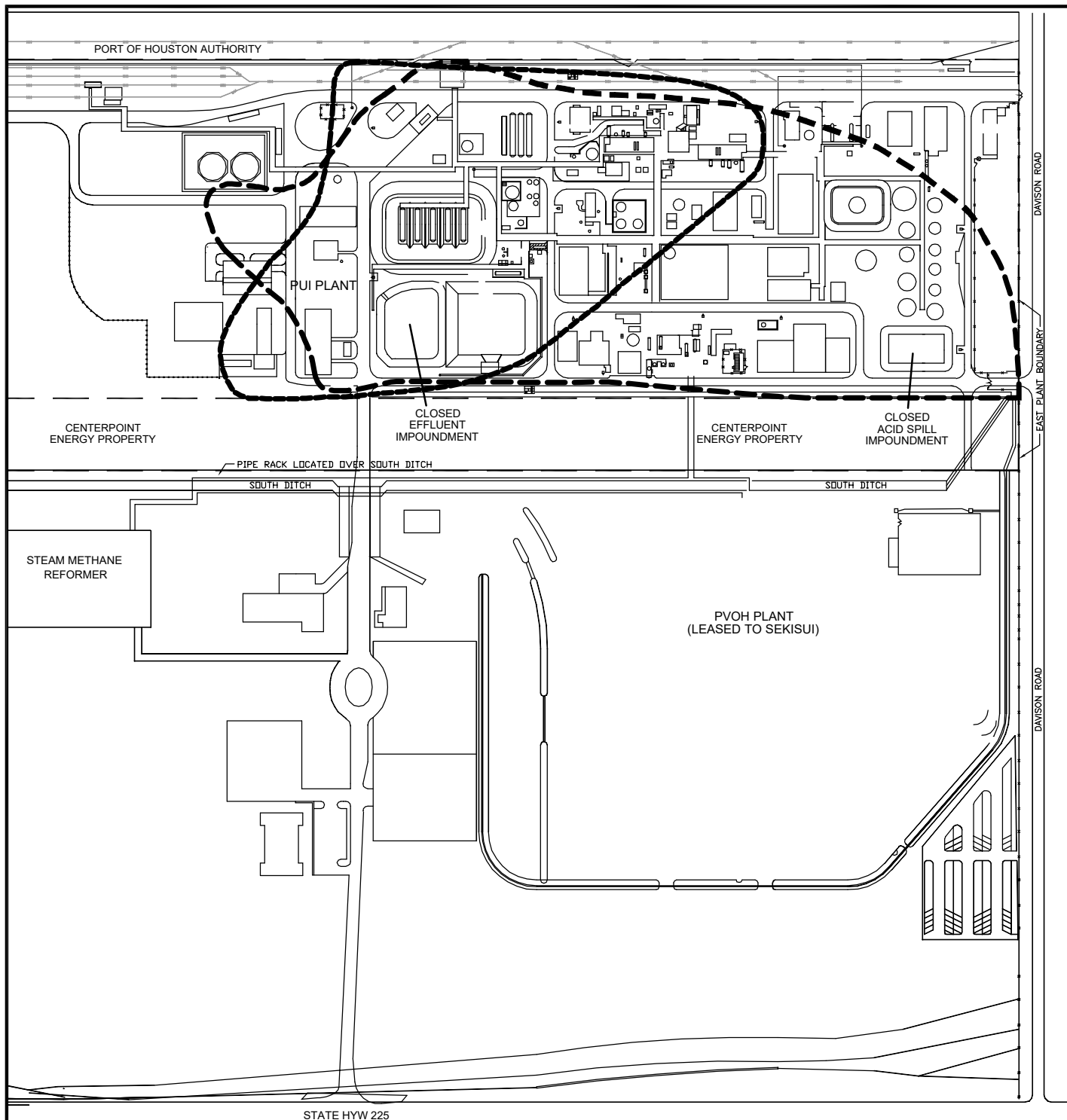
AIR PRODUCTS

FIGURE 1.2
SOLID WASTE MANAGEMENT UNIT
LOCATION MAP

NOTES:					OVERALL SITE PLOT PLAN PROJECT EN 13-1484					PASADENA, TEXAS				
					PROJECT NO:									
					DESIGNED BY:									
					DRAWN BY:									
					CHECKED BY:									
					APPROVED BY:									
REV	DATE	BY	DESCRIPTION	CHK	ENGR	APPR	CLIENT	SCALE:	SEE MAP SCALE	DATE	DRAWING NO:	DOC0000728006	REV: C	BASED ON DWG-ENG-1004 REV 3

ATTACHMENT 5

CP Attachment A Sheets 1 through 6 of 6



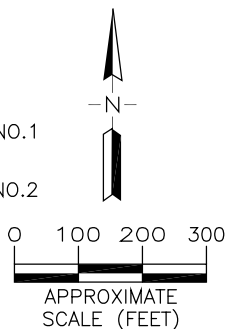
ISWR No. 30317
 PERMIT No.: H-50134
 COMPLIANCE PLAN
 No.: CP-50134

Revision No.: 1
 Revision Date: 10/01/2025

Base Map Source: AIR PRODUCTS LLC

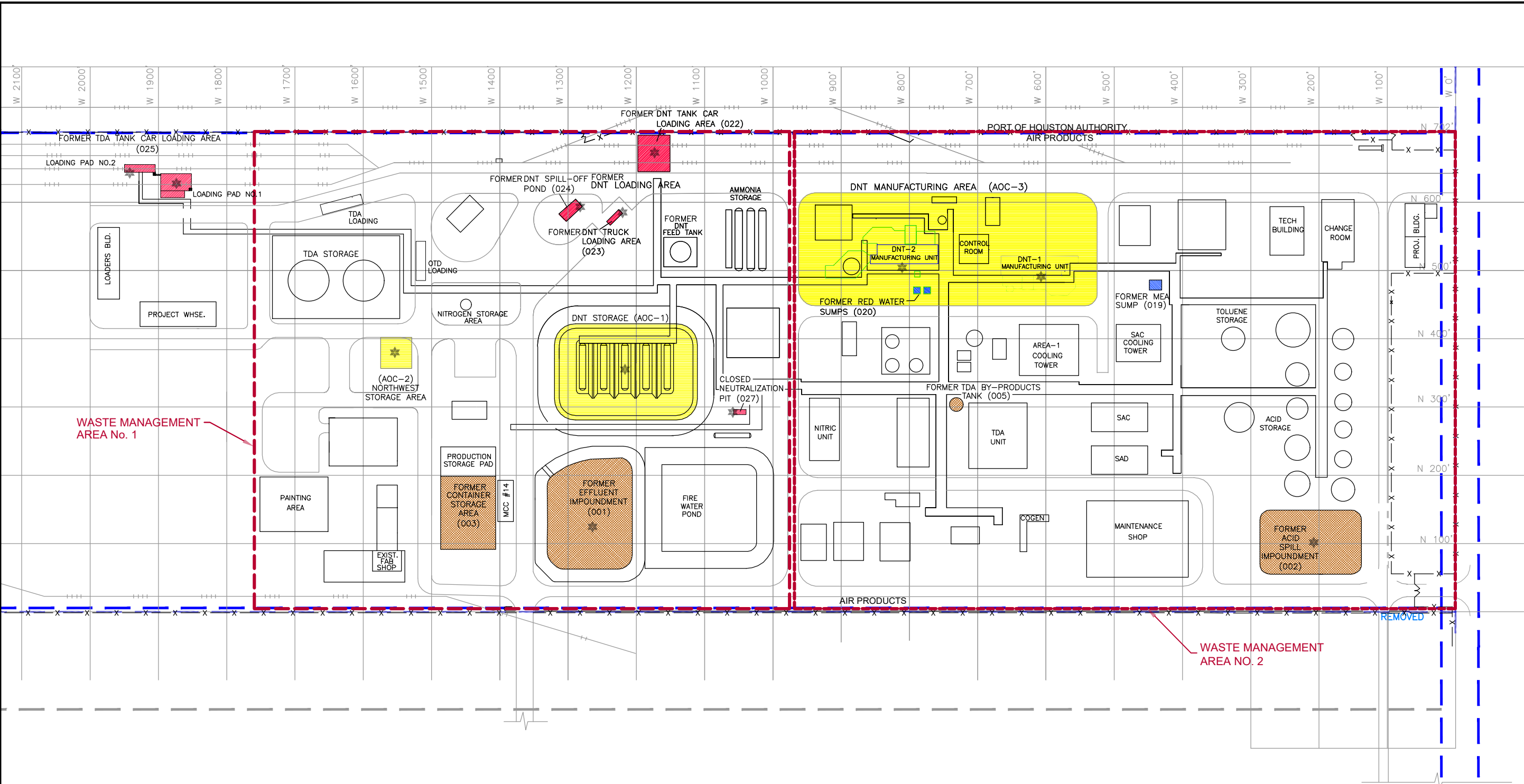
EXPLANATION

- PLUME MANAGEMENT ZONE NO.1 (SHALLOW ZONE)
- PLUME MANAGEMENT ZONE NO.2 (INTERMEDIATE ZONE)
- x-x-x- FENCE
- ||| RAIL LINE
- PROPERTY BOUNDARY



	FACILITY SITE MAP AND PMZ BOUNDARY LOCATION MAP PREPARED FOR AIR PRODUCTS LLC - PASADENA, TEXAS	
	Project No. 40360.4128 Date: 09/29/25 By: TW	CP ATTACHMENT A SHEET 1 of 6

Plot Date: 09/29/25 - 9:15am, Plotted by: USAT145973
Drawing Path: G:\geomatics\Air Products LLC\Pasadena\99_PROJECTS\US40360.4128_2025_RCRA_Permit_Renewal\4487\AXXX_CP Attachment A & Figures\02_PRODUCTION\DWG_ Drawing Name: US0040360.4128_XI.D.6.dwg



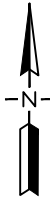
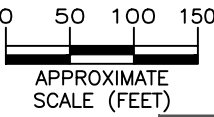
Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- ★ UNITS WITH CONFIRMED RELEASE, GROUNDWATER MONITORING AND CORRECTIVE ACTION
- REGULATED UNITS
- SOLID WASTE MANAGEMENT UNIT SUBJECT TO INVESTIGATION OR CORRECTIVE ACTION
- AREA OF CONCERN
- SOLID WASTE MANAGEMENT UNIT WITH COMPLETE INVESTIGATION AND NO FURTHER ACTION

- x-x-x- FENCE
- - - - - PROPERTY BOUNDARY
- - - - - WASTE MANAGEMENT AREA No. 1
- - - - - WASTE MANAGEMENT AREA No. 2

NOTE:
(001) = NOTICE OF REGISTRATION (NOR) UNIT NO.1
THIS FIGURE REPRESENTS PRIOR FACILITY INFRASTRUCTURE.

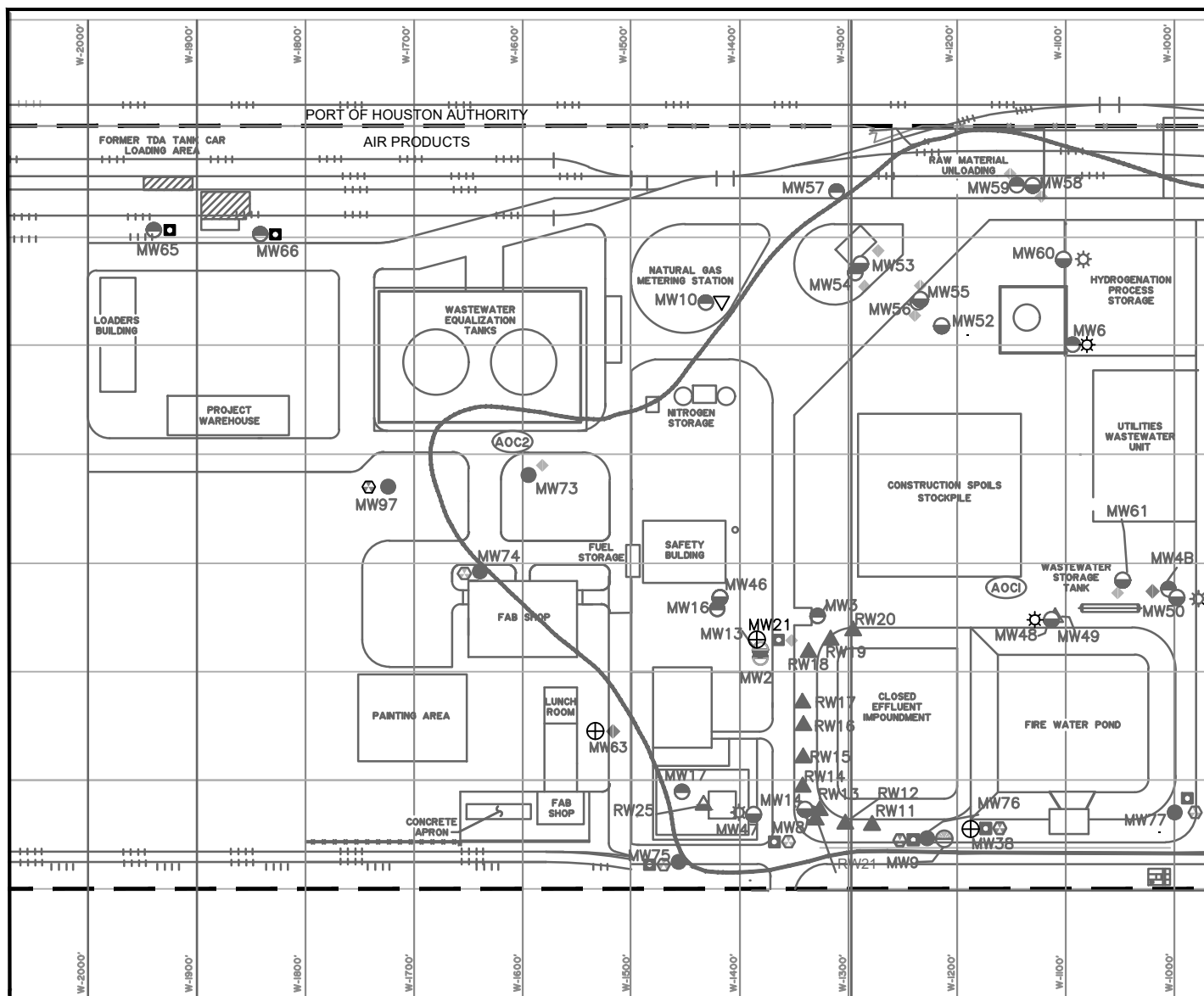


Revision No.: 1
Revision Date: 10/01/2025

WASTE MANAGEMENT AREAS W/ WASTE MANAGEMENT UNITS & AREAS OF CONCERN
PREPARED FOR
AIR PRODUCTS LLC
PASADENA, TEXAS

Project No. 40360.4128
Date: 09/29/25
By: AT

CP ATTACHMENT A
PAGE 2 OF 6



(SEKISUI)

Base Map Source: AIR PRODUCTS LLC

Revision No.: 1

Revision Date: 10/01/2025

EXPLANATION

MW2 UPPER SHALLOW ZONE MONITORING WELL LOCATION

MW14 LOWER SHALLOW ZONE MONITORING WELL LOCATION

MW75 SHALLOW ZONE MONITORING WELL LOCATION

MW21 DEEP ZONE MONITORING WELL LOCATION

MW49 UPPER SHALLOW ZONE RECOVERY WELL LOCATION

RW21 LOWER SHALLOW ZONE RECOVERY WELL LOCATION

RW11 SHALLOW ZONE RECOVERY WELL LOCATION

POINT OF COMPLIANCE WELL

CORRECTIVE ACTION OBSERVATION WELL

POINT OF EXPOSURE WELL

ALTERNATE POINT OF EXPOSURE WELL

BACKGROUND WELL

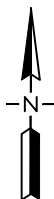
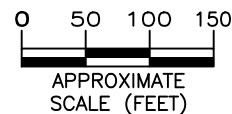
PLUME MANAGEMENT ZONE No.1

AREA OF CONCERN

SOLID WASTE MANAGEMENT UNIT

FENCE

PROPERTY BOUNDARY



WELL LOCATIONS AND PMZ1 WASTE MANAGEMENT AREA NO. 1 SHALLOW AND DEEP ZONE

PREPARED FOR

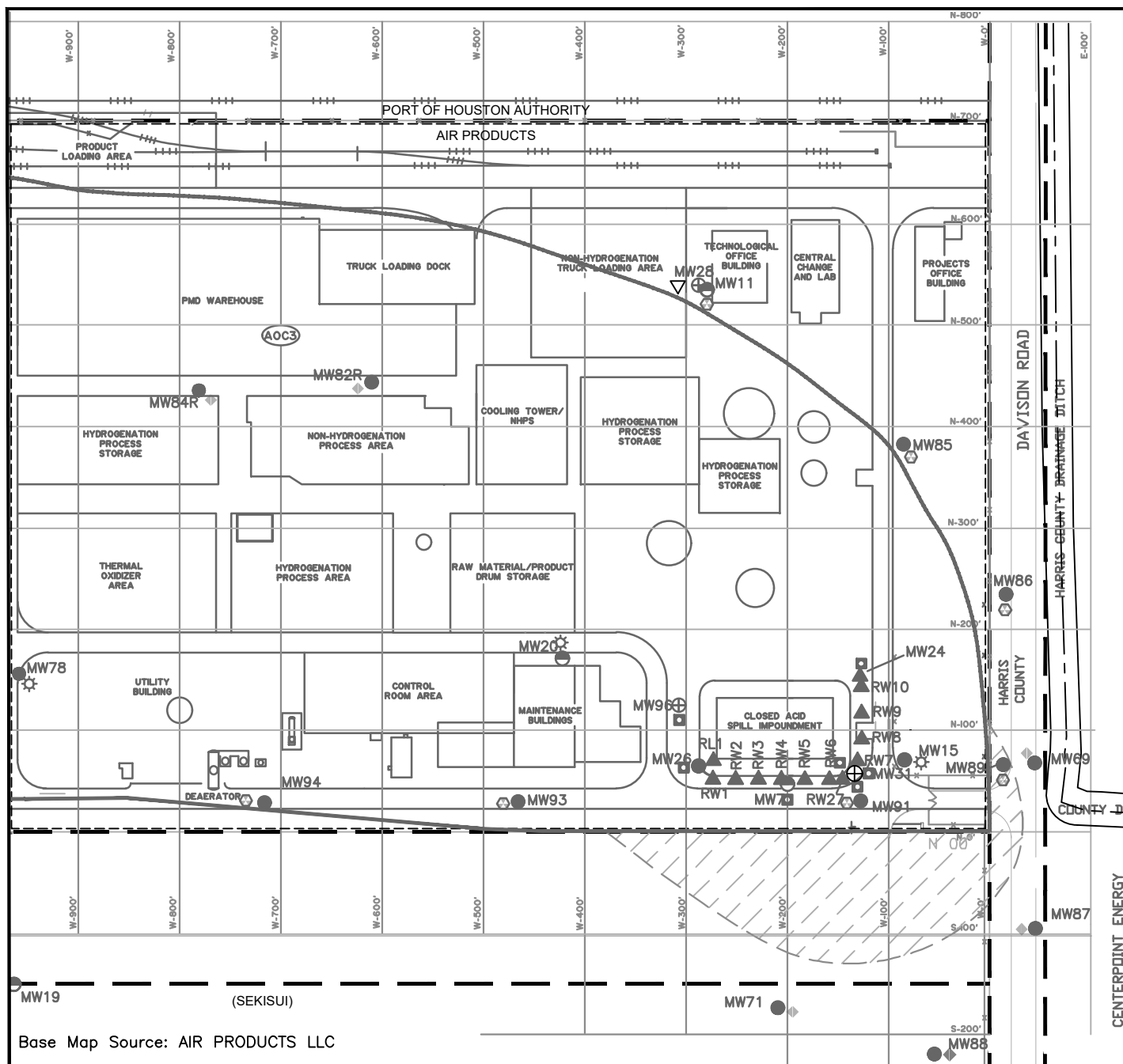
AIR PRODUCTS LLC - PASADENA, TEXAS

Project No. 40360.4128

Date: 09/30/25

By: AT

CP ATTACHMENT A
SHEET 3 OF 6



EXPLANATION

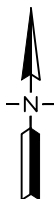
- MW2 UPPER SHALLOW ZONE MONITORING WELL LOCATION
- MW14 LOWER SHALLOW ZONE MONITORING WELL LOCATION
- MW75 SHALLOW ZONE MONITORING WELL LOCATION
- MW21 DEEP ZONE MONITORING WELL LOCATION
- MW49 UPPER SHALLOW ZONE RECOVERY WELL LOCATION
- RW21 LOWER SHALLOW ZONE RECOVERY WELL LOCATION
- RW11 SHALLOW ZONE RECOVERY WELL LOCATION

- POINT OF COMPLIANCE WELL
- CORRECTIVE ACTION OBSERVATION WELL
- POINT OF EXPOSURE WELL
- ALTERNATE POINT OF EXPOSURE WELL
- BACKGROUND WELL

- PLUME MANAGEMENT ZONE No.1
- AREA OF CONCERN
- SOLID WASTE MANAGEMENT UNIT
- FENCE
- PROPERTY BOUNDARY

Revision No.: 1
Revision Date: 10/01/2025

0 50 100 150
APPROXIMATE
SCALE (FEET)

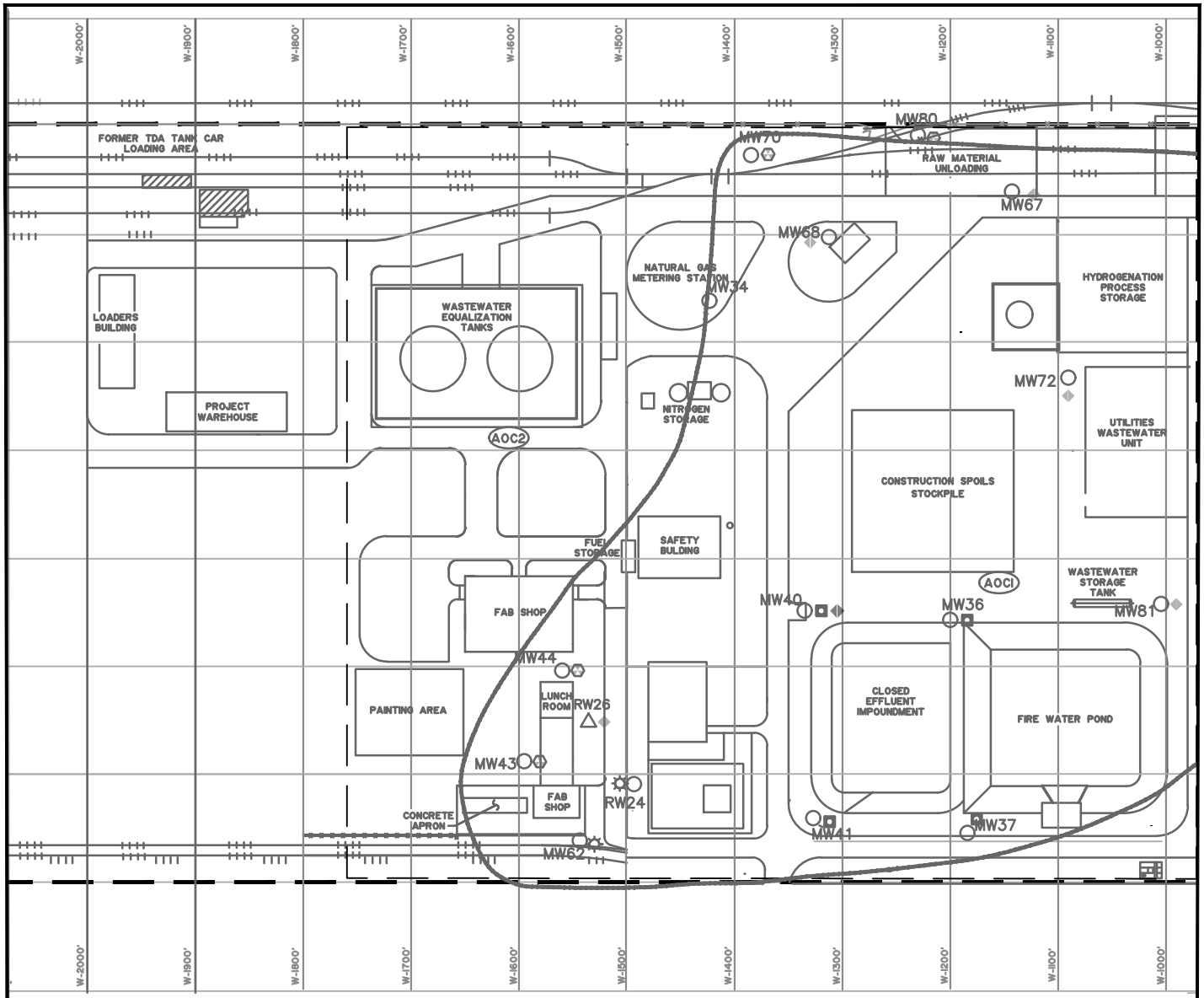


WELL LOCATIONS AND PMZ1 WASTE MANAGEMENT AREA NO. 2 INTERMEDIATE ZONE

PREPARED FOR
AIR PRODUCTS LLC - PASADENA, TEXAS

Project No. 40360.4128
Date: 09/29/25
By: AT

CP ATTACHMENT A
SHEET 4 OF 6



(SEKISUI)

Base Map Source: AIR PRODUCTS LLC

EXPLANATION

MW40 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION

RW26 △ INTERMEDIATE ZONE RECOVERY WELL LOCATION

■ POINT OF COMPLIANCE WELL

⊛ CORRECTIVE ACTION OBSERVATION WELL

◆ POINT OF EXPOSURE WELL

⊕ ALTERNATE POINT OF EXPOSURE WELL

— PLUME MANAGEMENT ZONE No.2

— AREA OF CONCERN

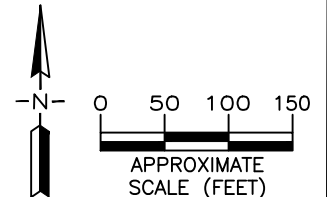
▨ SOLID WASTE MANAGEMENT UNIT

—x—x— FENCE

— PROPERTY BOUNDARY

Revision No.: 1

Revision Date: 10/01/2025

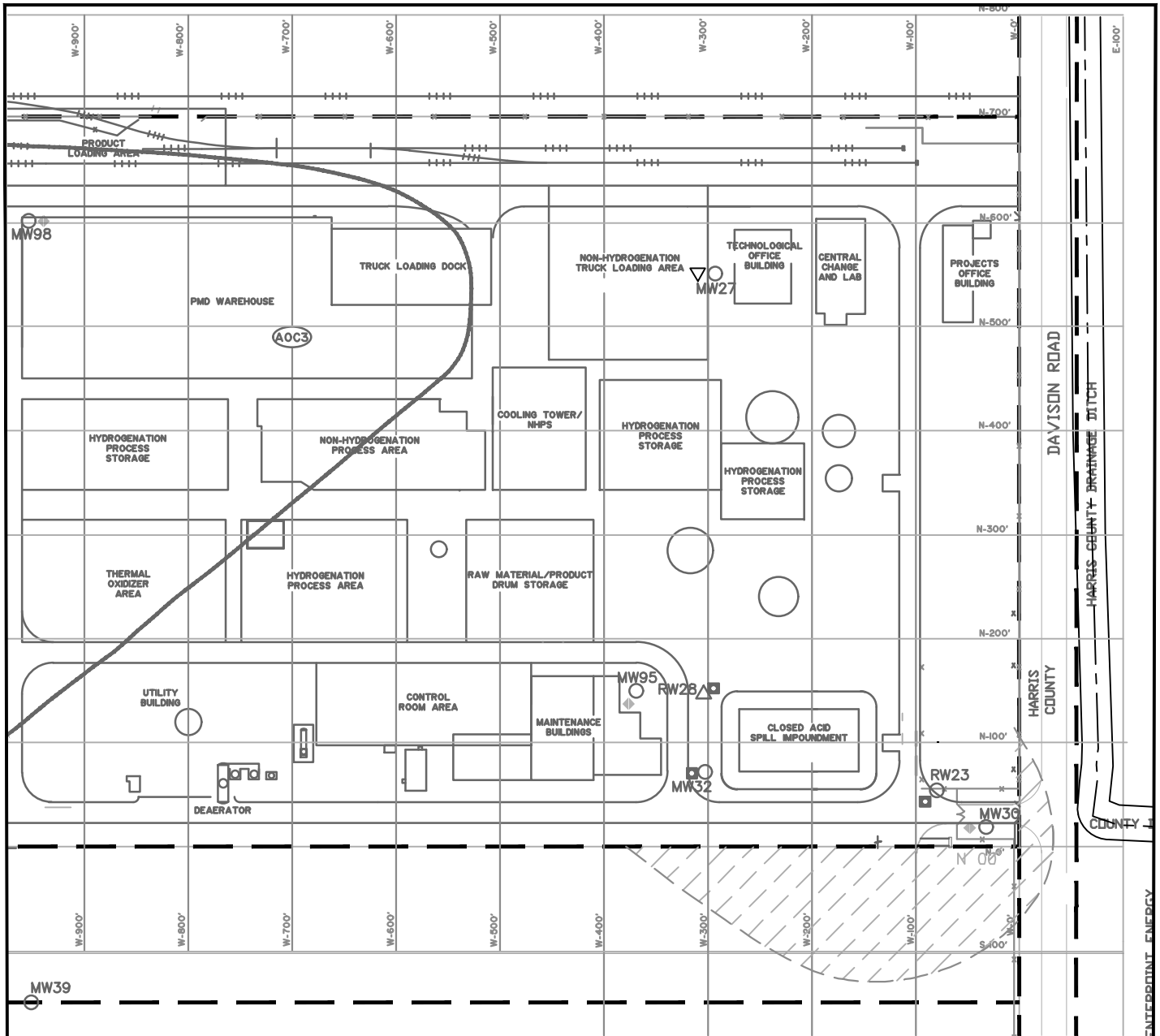


WELL LOCATIONS AND PMZ2 WASTE MANAGEMENT AREA NO. 1 INTERMEDIATE ZONE

PREPARED FOR
AIR PRODUCTS LLC - PASADENA, TEXAS

Project No. 40360.4128
Date: 09/29/25
By: AT

CP ATTACHMENT A
SHEET 5 OF 6

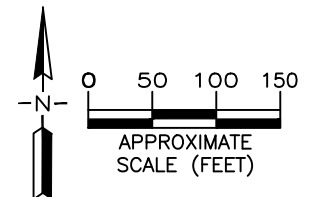


Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- MW32 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION
- RW28 △ INTERMEDIATE ZONE RECOVERY WELL LOCATION
- POINT OF COMPLIANCE WELL
- ⊛ CORRECTIVE ACTION OBSERVATION WELL
- ◆ POINT OF EXPOSURE WELL
- ⊕ ALTERNATE POINT OF EXPOSURE WELL
- ▽ BACKGROUND WELL
- PLUME MANAGEMENT ZONE No.2
- AREA OF CONCERN
- ▨ SOLID WASTE MANAGEMENT UNIT
- x—x— FENCE
- == PROPERTY BOUNDARY

Revision No.: 1
Revision Date: 10/01/2025



WELL LOCATIONS AND PM22 WASTE MANAGEMENT AREA NO. 2 INTERMEDIATE ZONE

PREPARED FOR
AIR PRODUCTS LLC - PASADENA, TEXAS

Project No. 40360.4128
Date: 09/29/25
By: AT

CP ATTACHMENT A
SHEET 6 OF 6

ATTACHMENT 6

Section IX – Appendices II, III, and IV

APPENDIX II

WASTE MANAGED

Air Products, LLC
Pasadena Facility

Appendix II. Wastes Managed

SWMU No.	Waste Name	TCEQ Waste Code No.	EPA Waste Code	EPA Hazard Code	Hazardous Constituents
001	Mixed Acid	0020105H	D002, D030	C E	List D*, nitric acid, sulfuric acid
	DNT Wastewater	0190105H	K111	C, T	List D
	Monoethanolamine in Water	03801021	None	None	None
	TDA Wastewater	0580102H	K112	T	List T1*
002	Mixed Acid	0020105H	D002, D030	C E	List D, nitric acid, sulfuric acid
003	See PR	See PR	See PR	See PR	List D, List T2*, vinyl acetate, nitric acid, sulfuric acid, methyl ethyl ketone, nitrophenols
004	Lubricating Oil	03302061	None	None	None
005	TDA By-Products/ TDA Distillation Residue	0530409H	K113 K114 K115	T T T	List T2
006	TDA By-Products/ TDA Distillation Residue	0530409H	K113, K114, K115	T T T	List T2
007	TDA By-Products/ TDA Distillation Residue	0530409H	K113, K114, K115	T T T	List T2
010	TDA By-Products/ TDA Distillation Residue	0530409H	K113, K114, K115	T T T	List T2
011	TDA Wastewater TDA Wastewater Tank Sludge	0580102H 0595319H	K112 K112	T T	List T1
012	See PR	See PR	D002, D030, K111, K112, U221	C E C,T T T	List D, List T2, nitric acid, sulfuric acid

013	Spent Naphtha/Tool Cleaning Solvent	0172211H 0510203H	D030 D001, D018, D039, F005	E I E E I,T	2,4-dinitrotoluene, 2,6-dinitrotoluene, benzene,tetrachloroethylene
		05222031	None	None	None
014	DNT Wastewater Spent Carbon	0220404H	K111	C,T	List D
	Spent solvent from parts cleaner	05222031	None	None	None
015	DNT Wastewater Spent Carbon	0220404H	K111	C,T	List D
	DNT Wastewater	0190105H	K111	C,T	List D
016	Nitric Acid/Nitric Acid Wastewater	0385105H	D002	C	nitric acid
017	Nitric Acid/Nitric Acid Wastewater	0385105H	D002	C	nitric acid
018	Monoethanolamine in water/wastewater contaminated with MEA	03801021	None	None	None
019	Monoethanolamine in water/wastewater contaminated with MEA	03801021 NA	None NA	None NA	None toluene
020	DNT Wastewater	0190105H	K111	C,T	List D
	Boiler/Cooling Tower Wastewater	06351141	None	None	None
	Water/dinitrotoluene mixture	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
021	Water and ammonia	00551191	None	None	None
022	Water/dinitrotoluene mixture	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
023	Water/dinitrotoluene mixture	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
024	Water/dinitrotoluene mixture	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene

025	Mixture of settled solids contaminated with toluenediamine and dinitrotoluene	0525609H	D030 U221	E T	2,4-dinitrotoluene, 2,6-dinitrotoluene, and 2,4-, 2,6-, 3,4-toluenediamine
	TDA Product Waste	0570219H	U221	T	2,4-, 2,6-, 3,4-toluenediamine
026	TDA Product Waste	0570219H	U221	T	2,4-, 2,6-, 3,4-toluenediamine
027	Mixed Acid	0020105H	D002, D030	C E	List D, nitric acid, sulfuric acid
	DNT Wastewater	0190105H	K111	C, T	List D
	TDA Wastewater	0580102H	K112	T	List T1
029	See PR	See PR	See PR	See PR	List D, List T2, vinyl acetate, nitric acid, sulfuric acid, methyl ethyl ketone, nitrophenols
031	DNT Wastewater	0190105H	K111	C,T	List D
032	Water/dinitrotoluene mixture from loading spills	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
033	DNT Wastewater Containing PPM Levels of DNT	0190105H	K111	C,T	List D
	DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T	List D
034	DNT Wastewater Containing PPM Levels of DNT	0190105H	K111	C,T	List D
	DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T	List D
035	DNT Wastewater	0190105H	K111	C,T	List D
	DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T	List D

036	Water/dinitrotoluene mixture from loading spills	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
	DNT Wastewater	0190105H	K111	C,T	List D
037	DNT Wastewater	0190105H	K111	C,T	List D
	DNT Wastewater Spent Carbon/Carbon Adsorption Unit	0220404H	K111	C,T	List D
038	Medical waste	03419992	None	None	None
	Medical Waste	03409032	None	None	None
039	Batteries, Automotive	00703091	None	None	None
	Batteries, Automotive	0071309H	D002, D008	C, E	Lead
	Batteries, Rechargeable	03833091	None	None	None
040	Water/DNT Mixture	0175102H	D030	E	2,4-dinitrotoluene, 2,6-dinitrotoluene
	DNT Waste Water	0190105H	K111	C,T	List D
	TDA Waste Water	0580102H	K112	T	List T1
AOC1	DNT Product Storage Area	NA	NA	NA	2,4-dinitrotoluene, 2,6-dinitrotoluene
AOC2	Northwest Storage Area	UN	NA	NA	2,4-dinitrotoluene, 2,6-dinitrotoluene
AOC3	DNT Manufacturing Area	UN	NA	NA	2,4-dinitrotoluene, 2,6-dinitrotoluene, meta-nitrotoluene, ortho-nitrotoluene, para-nitrotoluene

*Notes:

List D: 2,4-dinitrotoluene, 2,6-dinitrotoluene, meta-nitrotoluene, ortho-nitrotoluene, para-nitrotoluene, 4,6-dinitro-ortho-cresol, toluene, phenol

List T1: nickel, o & p toluidine, 2,4-, 2,6-, 3,4-toluenediamine

List T2: cadmium, chromium, nickel, aniline, o & p toluidine, 2,4-, 2,6-, 3,4-toluenediamine

NA – Not Applicable

UN – Unknown

Pertinent health, safety, and risk data for constituents of concern are attached to Appendix II

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.8

Revision Date 03.01.2024

Print Date 27.10.2025

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifiers**

Product name : 2,4-Dinitrotoluene

Product Number : 101397

Brand : Aldrich

Index-No. : 609-007-00-9

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. : 121-14-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Scientific research and development

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Acute toxicity, (Category 3) H301: Toxic if swallowed.

Acute toxicity, (Category 3) H311: Toxic in contact with skin.



Germ cell mutagenicity, (Category 2)	H341: Suspected of causing genetic defects.
Carcinogenicity, (Category 1B)	H350: May cause cancer.
Reproductive toxicity, (Category 2)	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
Specific target organ toxicity - repeated exposure, (Category 2)	H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, (Category 1)	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, (Category 1)	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal Word

Danger

Hazard Statements

H301 + H311

Toxic if swallowed or in contact with skin.

H341

Suspected of causing genetic defects.

H350

May cause cancer.

H361fd

Suspected of damaging fertility. Suspected of damaging the unborn child.

H373

May cause damage to organs through prolonged or repeated exposure.

H410

Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P202

Do not handle until all safety precautions have been read and understood.

P260

Do not breathe dust.

P273

Avoid release to the environment.

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P310

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P302 + P352 + P312

IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.

Supplemental Hazard
Statements

none

Restricted to professional users.

Reduced Labeling (<= 125 ml)



Pictogram



Signal Word

Danger

Hazard Statements

H341

Suspected of causing genetic defects.

H350

May cause cancer.

H361fd

Suspected of damaging fertility. Suspected of damaging the unborn child.

H301 + H311

Toxic if swallowed or in contact with skin.

Precautionary Statements

P202

Do not handle until all safety precautions have been read and understood.

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P310

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P302 + P352 + P312

IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.

Supplemental Hazard Statements

none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula : $C_7H_6N_2O_4$
Molecular weight : 182,13 g/mol
CAS-No. : 121-14-2
EC-No. : 204-450-0
Index-No. : 609-007-00-9

Component		Classification	Concentration
2,4-dinitrotoluene Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)			
CAS-No.	121-14-2	Acute Tox. 3; Muta. 2;	<= 100 %
EC-No.	204-450-0	Carc. 1B; Repr. 2; STOT	
Index-No.	609-007-00-9	RE 2; Aquatic Acute 1;	

Aldrich- 101397

Page 3 of 14

The life science business of Merck operates as MilliporeSigma in the US and Canada



	Aquatic Chronic 1; H301, H311, H341, H350, H361fd, H373, H400, H410	
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For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Water Foam
Carbon dioxide (CO₂) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given. For this substance/mixture no limitations of extinguishing agents are given.



5.2 Special hazards arising from the substance or mixture

Carbon oxides

Nitrogen oxides (NO_x)

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid formation of dust and aerosols. Work under hood. Do not inhale substance/mixture.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class



Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

Body Protection

protective clothing

Respiratory protection

required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type P3

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains.



SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Physical state	crystalline
b) Color	light yellowdark yellow
c) Odor	aromatic
d) Melting point/freezing point	Melting point/range: 67 - 70 °C
e) Initial boiling point and boiling range	300 °C - (decomposition)
f) Flammability (solid, gas)	No data available
g) Upper/lower flammability or explosive limits	No data available
h) Flash point	155,0 °C - closed cup
i) Autoignition temperature	No data available
j) Decomposition temperature	> 250 °C
k) pH	No data available
l) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
m) Water solubility	0,3 g/l at 20 °C
n) Partition coefficient: n-octanol/water	log Pow: 1,98 - Bioaccumulation is not expected., (IUCLID)
o) Vapor pressure	133,3 hPa at 157,7 °C 1,3 hPa at 102,7 °C
p) Density	1,52 g/cm ³ at 20 °C
Relative density	No data available
q) Relative vapor density	No data available
r) Particle characteristics	No data available
s) Explosive properties	No data available
t) Oxidizing properties	none



9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Violent reactions possible with:

Oxidizing agents

Reducing agents

Strong bases

Metals

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 268,0 mg/kg

Remarks: (RTECS)

Acute toxicity estimate Oral - 268 mg/kg

(Calculation method)

Acute toxicity estimate Inhalation - 4 h - 0,51 mg/l - dust/mist

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Dermal - 300,1 mg/kg

(Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation - 24 h

Remarks: (RTECS)



Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

Remarks: (IUCLID)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Suspected of causing genetic defects.

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Result: positive

Remarks: (National Toxicology Program)

Test Type: sister chromatid exchange assay

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Result: Positive results were obtained in some in vitro tests.

Remarks: (National Toxicology Program)

Carcinogenicity

Presumed to have carcinogenic potential for humans

Reproductive toxicity

Suspected of damaging the unborn child.

Suspected of damaging fertility.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

No data available

11.2 Additional Information**Endocrine disrupting properties****Product:**

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

RTECS: XT1575000

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Systemic effects:



Dizziness
Unconsciousness

Effect potentiated by: ethanol

Damage to:

Liver
Kidney

The following applies to aromatic nitro compounds in general: systemic effect: methaemoglobinaemia with headache, cardiac dysrhythmias, drop in blood pressure, dyspnoea, and spasms; principal sign: cyanosis (blue discolouration of the blood).

This substance should be handled with particular care.

Heart -

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 24,3 mg/l - 96 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 26,2 mg/l - 48 h Remarks: (ECOTOX Database)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata (green algae) - 1,6 mg/l - 96 h Remarks: (ECOTOX Database)
Toxicity to fish(Chronic toxicity)	NOEC - Oryzias latipes (Orange-red killifish) - 1 mg/l - 28 d Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	static test NOEC - Daphnia magna (Water flea) - 3,2 mg/l - 21 d Remarks: (ECOTOX Database)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 14 d Result: 0 % - Not biodegradable (OECD Test Guideline 301C) Remarks: (Lit.)
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12.3 Bioaccumulative potential

No data available

Aldrich- 101397

Page 10 of 14

The life science business of Merck operates as MilliporeSigma in the US and Canada



12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

No data available

SECTION 14: Transport information

14.1 UN number

ADR/RID: 3454

IMDG: 3454

IATA: 3454

14.2 UN proper shipping name

ADR/RID: DINITROTOLUENES, SOLID

IMDG: DINITROTOLUENES, SOLID

IATA: Dinitrotoluenes, solid

14.3 Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID: yes

IMDG Marine pollutant: yes

IATA: no

14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available



SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : 2,4-dinitrotoluene

This product contains a substance listed on Annex XIV of the REACH Regulation (EC) Nr. 1907/2006.

Listed substance / Sunset Date : 2,4-dinitrotoluene / 21.08.2015

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : 2,4-dinitrotoluene

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. E1 ENVIRONMENTAL HAZARDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements

H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.



Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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SAFETY DATA SHEET

Revision Date 29-Mar-2024

Revision Number 3

1. Identification

Product Name 2,6-Dinitrotoluene

Cat No. : L00856

CAS No 606-20-2
Synonyms 2,6-DNT.

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet**Company**

Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number US:001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 3
Acute dermal toxicity	Category 3
Acute Inhalation Toxicity - Dusts and Mists	Category 3
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1B
Reproductive Toxicity	Category 2
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver, Eyes, Central nervous system (CNS), Cardiovascular system.	

Label Elements**Signal Word**

Danger

Hazard Statements

Suspected of causing genetic defects

May cause cancer

Suspected of damaging fertility

May cause damage to organs through prolonged or repeated exposure

Toxic if swallowed, in contact with skin or if inhaled

**Precautionary Statements****Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Use only outdoors or in a well-ventilated area

Do not breathe dust/fume/gas/mist/vapors/spray

Response

IF exposed or concerned: Get medical attention/advice

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Call a POISON CENTER or doctor/physician

Skin

IF ON SKIN: Wash with plenty of soap and water

Call a POISON CENTER or doctor/physician if you feel unwell

Remove/Take off immediately all contaminated clothing

Wash contaminated clothing before reuse

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Rinse mouth

Storage

Store locked up

Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Harmful to aquatic life with long lasting effects

WARNING. Cancer and Reproductive Harm - <https://www.p65warnings.ca.gov/>.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
2,6-Dinitrotoluene	606-20-2	<= 100

4. First-aid measures

General Advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact

In the case of contact with eyes, rinse immediately with plenty of water and seek medical

	advice. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media	No information available
Flash Point	207 °C / 404.6 °F
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO₂). Nitrogen oxides (NO_x).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	1	3	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust,
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vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.

Storage.

Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Oxidizing agent.

8. Exposure controls / personal protection

Exposure GuidelinesLegend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment**Eye/face Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type:

Particulates filter conforming to EN 143.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Light yellow
Odor	Odorless
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	64 - 70 °C / 147.2 - 158 °F
Boiling Point/Range	250 °C / 482 °F
Flash Point	207 °C / 404.6 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 20 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C7H6N2O4
Molecular Weight	182.14

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Oxidizing agent
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Nitrogen oxides (NO _x)
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
2,6-Dinitrotoluene	LD50 = 177 mg/kg (Rat)	Not listed	LC50 = 360 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
2,6-Dinitrotoluene	606-20-2	Group 2B	Not listed	Not listed	X	Not listed

IARC (International Agency for Research on Cancer)

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

A1 - Known Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

A1 - Confirmed Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Confirmed Animal Carcinogen

A4 - Not Classifiable as a Human Carcinogen

A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Liver Eyes Central nervous system (CNS) Cardiovascular system

Aspiration hazard No information available

Symptoms / effects, both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability Persistence is unlikely

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
2,6-Dinitrotoluene	2.05

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
2,6-Dinitrotoluene - 606-20-2	U106	-

14. Transport information

DOT

UN-No UN3454
 Proper Shipping Name DINITROTOLUENES, SOLID
 Hazard Class 6.1
 Packing Group II

TDG

UN-No UN3454
 Proper Shipping Name DINITROTOLUENES, SOLID
 Hazard Class 6.1
 Packing Group II

IATA

UN-No UN3454
 Proper Shipping Name DINITROTOLUENES, SOLID
 Hazard Class 6.1
 Packing Group II

IMDG/IMO

UN-No UN3454
 Proper Shipping Name DINITROTOLUENES, SOLID
 Hazard Class 6.1
 Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
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2,6-Dinitrotoluene	606-20-2	X	ACTIVE	-
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Legend:

TSCA - US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

- - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Not applicable

International Inventories

Canada (DSL/NDL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
2,6-Dinitrotoluene	606-20-2	X	-	210-106-0	-	X	X	X	X	KE-23777

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting thresholds
2,6-Dinitrotoluene	606-20-2	<= 100	0.1 %	-

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
2,6-Dinitrotoluene	X	-	-	X

Clean Air Act

Not applicable

OSHA - Occupational Safety and Health Administration

Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
2,6-Dinitrotoluene	100 lb	-	100 lb 45.4 kg

California Proposition 65

This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
2,6-Dinitrotoluene	606-20-2	Carcinogen	-	Carcinogen

		Male Reproductive		
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U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
2,6-Dinitrotoluene	X	X	X	X	-

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
2,6-Dinitrotoluene	606-20-2	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
2,6-Dinitrotoluene	606-20-2	Not applicable	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
2,6-Dinitrotoluene	606-20-2	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By Health, Safety and Environmental Department
Email: [REDACTED]
www.thermofisher.com

Revision Date 29-Mar-2024
Print Date 29-Mar-2024
Revision Summary New emergency telephone response service provider.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 24-Dec-2021

Revision Number 4

1. Identification

Product Name 2,4-Diaminotoluene

Cat No. : AC146600000; AC146600010; AC146600250; AC146602500

CAS No 95-80-7
Synonyms 2,4-Toluenediamine

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99
CHEMTREC Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 3
Acute dermal toxicity	Category 4
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1B
Reproductive Toxicity	Category 2
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver, Kidney.	

Label Elements

Signal Word

Danger

Hazard Statements

Toxic if swallowed
Harmful in contact with skin
May cause an allergic skin reaction
Suspected of causing genetic defects
May cause cancer
Suspected of damaging fertility
May cause damage to organs through prolonged or repeated exposure

**Precautionary Statements****Prevention**

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Do not breathe dust/fume/gas/mist/vapors/spray

Response

IF exposed or concerned: Get medical attention/advice

Skin

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth

Storage

Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Toxic to aquatic life with long lasting effects
WARNING. Cancer - <https://www.p65warnings.ca.gov/>.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Toluene 2,4-diamine	95-80-7	98

4. First-aid measures

Eye Contact

Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation	Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.
Ingestion	Call a physician immediately. Clean mouth with water.
Most important symptoms and effects	May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO ₂). Dry chemical. Chemical foam.
Unsuitable Extinguishing Media	No information available
Flash Point	149 °C / 300.2 °F
Method -	No information available
Autoignition Temperature	520 °C / 968 °F
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Nitrogen oxides (NO_x). Carbon monoxide (CO). Carbon dioxide (CO₂).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health
3

Flammability
0

Instability
0

Physical hazards
N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling	Do not breathe dust. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation.
Storage.	Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Incompatible Materials. Strong oxidizing agents.

8. Exposure controls / personal protection

Exposure Guidelines

This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment**Eye/face Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Brown
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	97 - 101 °C / 206.6 - 213.8 °F
Boiling Point/Range	283 - 285 °C / 541.4 - 545 °F
Flash Point	149 °C / 300.2 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 hPa @ 106 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	520 °C / 968 °F
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C7 H10 N2
Molecular Weight	122.17

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Toluene 2,4-diamine	LD50 = 73 mg/kg (Rat)	LD50 = 650 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Toluene 2,4-diamine	95-80-7	Group 2B	Reasonably Anticipated	Not listed	X	Not listed

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure Liver Kidney

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Toluene 2,4-diamine	Not listed	LC50: 797 - 1040 mg/L, 96h flow-through (Oryzias latipes) LC50: = 1420 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 102 mg/L 30 min EC50 = 106 mg/L 5 min EC50 = 97.0 mg/L 15 min	Not listed

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1709
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1709
Hazard Class 6.1
Packing Group III

IATA

UN-No UN1709
Proper Shipping Name 2,4-TOLUYLENEDIAMINE, SOLID
Hazard Class 6.1
Packing Group III

IMDG/IMO

UN-No UN1709
Proper Shipping Name 2,4-TOLUYLENEDIAMINE, SOLID
Hazard Class 6.1
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Toluene 2,4-diamine	95-80-7	X	ACTIVE	TP

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TP - Indicates a substance that is the subject of a proposed TSCA Section 4 test rule

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Toluene 2,4-diamine	95-80-7	X	-	202-453-1	X	X	X	X	X	KE-23455

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Toluene 2,4-diamine	95-80-7	98	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Toluene 2,4-diamine	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Toluene 2,4-diamine	10 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Toluene 2,4-diamine	95-80-7	Carcinogen	0.2 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Toluene 2,4-diamine	X	X	X	X	-

U.S. Department of Transportation

Reportable Quantity (RQ): Y
 DOT Marine Pollutant N
 DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Toluene 2,4-diamine	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item 43. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - Carcinogenic (Article 57a)

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

<https://echa.europa.eu/authorisation-list>
<https://echa.europa.eu/substances-restricted-under-reach>
<https://echa.europa.eu/candidate-list-table>

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Toluene 2,4-diamine	95-80-7	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Toluene 2,4-diamine	95-80-7	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By

Regulatory Affairs
Thermo Fisher Scientific
Email: [REDACTED]

Revision Date

24-Dec-2021

Print Date

24-Dec-2021

Revision Summary

This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 29-Mar-2024

Revision Number 5

1. Identification

Product Name 2,6-Diaminotoluene

Cat No. : L04278

CAS No 823-40-5
Synonyms 2,6-Toluenediamine

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet**Company**

Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number US:001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2

Label Elements**Signal Word**

Warning

Hazard Statements

May cause an allergic skin reaction
Suspected of causing genetic defects

Harmful if swallowed or in contact with skin



Precautionary Statements

Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

Response

IF exposed or concerned: Get medical attention/advice

Skin

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Storage

Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Toxic to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS No	Weight %
2,6-Diaminotoluene	823-40-5	<= 100

4. First-aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.
Inhalation	Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
Ingestion	Clean mouth with water. Get medical attention.
Most important symptoms and effects	May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest

Notes to Physician pain, muscle pain or flushing
Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO₂). Dry chemical. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits

Upper No data available

Lower No data available

Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Nitrogen oxides (NO_x). Carbon monoxide (CO). Carbon dioxide (CO₂).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health
2

Flammability
0

Instability
0

Physical hazards
N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required.

Environmental Precautions Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Avoid dust formation. Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling Avoid contact with skin and eyes. Do not breathe dust.

Storage. Keep container tightly closed in a dry and well-ventilated place. To maintain product quality: Keep refrigerated. Incompatible Materials. Strong oxidizing agents. Strong acids.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard

EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Particulates filter conforming to EN 143.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Dark grey
Odor	No information available
Odor Threshold	No information available
pH	10 6% aq. sol
Melting Point/Range	102 - 107 °C / 215.6 - 224.6 °F
Boiling Point/Range	289 °C / 552.2 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	<1 mbar @ 50 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C7 H10 N2
Molecular Weight	122.17

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under recommended storage conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Strong oxidizing agents, Strong acids
Hazardous Decomposition Products	Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO ₂)
Hazardous Polymerization	No information available.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
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2,6-Diaminotoluene	LD50 = 3000 mg/kg (Rat) LD50 = 1000 mg/kg (Rat)	Not listed	Not listed
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Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
2,6-Diaminotoluene	823-40-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects .

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
2,6-Diaminotoluene	Not listed	Not listed	EC50 = 102 mg/L 60 min EC50 = 95 mg/L 30 min	Not listed

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Technical Name 2,6-Diaminotoluene

Hazard Class	9
Packing Group	III
TDG	
UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III
IATA	
UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III
IMDG/IMO	
UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
2,6-Diaminotoluene	823-40-5	X	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
2,6-Diaminotoluene	823-40-5	X	-	212-513-9	X	X	X	X	X	KE-23452

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Not applicable

Health Administration

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
2,6-Diaminotoluene	10 lb	-	10 lb 4.54 kg

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
2,6-Diaminotoluene	X	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): Y

DOT Marine Pollutant N

DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations**Mexico - Grade**

No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
2,6-Diaminotoluene	823-40-5	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links<https://echa.europa.eu/substances-restricted-under-reach>**Safety, health and environmental regulations/legislation specific for the substance or mixture**

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
2,6-Diaminotoluene	823-40-5	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
2,6-Diaminotoluene	823-40-5	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By Health, Safety and Environmental Department
Email: [REDACTED]
www.thermofisher.com

Revision Date 29-Mar-2024
Print Date 29-Mar-2024
Revision Summary New emergency telephone response service provider.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 29-Mar-2024

Revision Number 4

1. Identification

Product Name o-Toluidine

Cat No. : A13602

CAS No 95-53-4
Synonyms 2-Aminotoluene; 2-Methylaniline

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number US:001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 4
Acute oral toxicity	Category 3
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 3
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A

Label Elements

Signal Word

Danger

Hazard Statements

Combustible liquid
Harmful in contact with skin
Causes skin irritation
Causes serious eye damage
Suspected of causing genetic defects
May cause cancer
Toxic if swallowed or if inhaled



Precautionary Statements

Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep cool

Response

IF exposed or concerned: Get medical attention/advice

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician

Skin

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Very toxic to aquatic life

WARNING. Cancer - <https://www.p65warnings.ca.gov/>.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
o-Toluidine	95-53-4	<= 100

4. First-aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Difficulty in breathing. Causes eye burns. Causes severe eye damage. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO ₂). Dry chemical. Chemical foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	85 °C / 185 °F
Method -	No information available
Autoignition Temperature	480 °C / 896 °F
Explosion Limits	
Upper	7.50%
Lower	1.50%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Combustible material. Flammable. Containers may explode when heated. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products

Nitrogen oxides (NO_x). Carbon monoxide (CO). Carbon dioxide (CO₂).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health
3

Flammability
2

Instability
0

Physical hazards
N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Keep people
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Environmental Precautions

away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Remove all sources of ignition.

7. Handling and storage

Handling

Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition.

Storage.

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat, sparks and flame. Protect from direct sunlight. Keep locked up. Keep under nitrogen. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Strong oxidizing agents. Strong acids.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
o-Toluidine	TWA: 2 ppm Skin	(Vacated) TWA: 5 ppm (Vacated) TWA: 22 mg/m ³ Skin TWA: 5 ppm TWA: 22 mg/m ³	IDLH: 50 ppm	TWA: 2 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment**Eye/face Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type:

Particulates filter conforming to EN 143. Ammonia and organic ammonia derivatives filter. Type K. Green. conforming to EN14387.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State

Liquid

Appearance	Light yellow
Odor	Rotten-egg like
Odor Threshold	No information available
pH	7.5 8 g/l aq. sol
Melting Point/Range	-23 °C / -9.4 °F
Boiling Point/Range	199 - 200 °C / 390.2 - 392 °F
Flash Point	85 °C / 185 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	7.50%
Lower	1.50%
Vapor Pressure	0.3 mbar @ 20 °C
Vapor Density	3.7 (Air = 1.0)
Specific Gravity	1.000
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	480 °C / 896 °F
Decomposition Temperature	> 200°C
Viscosity	No information available
Molecular Formula	C7 H9 N
Molecular Weight	107.15

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions. Light sensitive. Air sensitive.
Conditions to Avoid	Exposure to air. Exposure to light. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Strong acids
Hazardous Decomposition Products	Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO ₂)
Hazardous Polymerization	No information available.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
o-Toluidine	LD50 = 670 mg/kg (Rat)	LD50 = 3235 mg/kg (Rabbit)	LC50 = 862 ppm (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	No information available
Sensitization	No information available
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
o-Toluidine	95-53-4	Group 1	Known	A3	X	A3

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

Mexico - Occupational Exposure Limits - Carcinogens

A1 - Confirmed Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Confirmed Animal Carcinogen

A4 - Not Classifiable as a Human Carcinogen

A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available**Reproductive Effects** No information available.**Developmental Effects** No information available.**Teratogenicity** No information available.**STOT - single exposure** None known**STOT - repeated exposure** None known**Aspiration hazard** No information available**Symptoms / effects, both acute and delayed** Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting**Endocrine Disruptor Information** No information available**Other Adverse Effects** The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
o-Toluidine	EC50: = 3.7 mg/L, 96h static (Desmodesmus subspicatus) EC50: = 3.9 mg/L, 72h (Desmodesmus subspicatus)	Not listed	EC50 = 13.2 mg/L 30 min	Not listed

Persistence and Degradability Persistence is unlikely**Bioaccumulation/ Accumulation** No information available.**Mobility** . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
o-Toluidine	1.4

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and

national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
o-Toluidine - 95-53-4	U328	-

14. Transport information

DOT

UN-No UN1708
Hazard Class 6.1
Packing Group II

TDG

UN-No UN1708
Hazard Class 6.1
Packing Group II

IATA

UN-No UN1708
Proper Shipping Name TOLUIDINES, LIQUID
Hazard Class 6.1
Packing Group II

IMDG/IMO

UN-No UN1708
Proper Shipping Name TOLUIDINES, LIQUID
Hazard Class 6.1
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
o-Toluidine	95-53-4	X	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Not applicable

International Inventories

Canada (DSL/NDL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
o-Toluidine	95-53-4	X	-	202-429-0	X	X	X	X	X	KE-23446

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting thresholds
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o-Toluidine	95-53-4	<= 100	0.1 %	-
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SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act) Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
o-Toluidine	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
o-Toluidine	100 lb	-	100 lb 45.4 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
o-Toluidine	95-53-4	Carcinogen	4 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
o-Toluidine	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
o-Toluidine	95-53-4	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item	SVHC Candidate list - Carcinogenic (Article 57a)

			43. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	
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After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links

<https://echa.europa.eu/authorisation-list>

<https://echa.europa.eu/substances-restricted-under-reach>

<https://echa.europa.eu/candidate-list-table>

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
o-Toluidine	95-53-4	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
o-Toluidine	95-53-4	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information**Prepared By**

Health, Safety and Environmental Department

Email: [REDACTED]
www.thermofisher.com

Revision Date

29-Mar-2024

Print Date

29-Mar-2024

Revision Summary

New emergency telephone response service provider.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Version 6.29
Revision Date 07/08/2025
Print Date 07/09/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Toluene

Product Number : 244511
Brand : Sigma-Aldrich
Index-No. : 601-021-00-3
CAS-No. : 108-88-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 2

Skin irritation : Category 2

Sigma-Aldrich - 244511

Page 1 of 17

Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure (Inhalation)	: Category 2 (Central nervous system)
Aspiration hazard	: Category 1
Short-term (acute) aquatic hazard	: Category 2
Long-term (chronic) aquatic hazard	: Category 3

Other hazards

None known.

GHS label elements

Hazard pictograms : 

Signal Word : Danger

Hazard Statements : H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure if inhaled.
H401 Toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting

equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Toluene	108-88-3*	>= 80 - <= 100	TSC

* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	: Show this safety data sheet to the doctor in attendance.
If inhaled	: After inhalation: fresh air. Call in physician.
In case of skin contact	: In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.
In case of eye contact	: After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.
If swallowed	: After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.
Most important symptoms and effects, both acute and delayed	: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Protection of first-aiders	: For personal protection see section 8.
Notes to physician	: No data available

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Foam Carbon dioxide (CO ₂) Dry powder
Unsuitable extinguishing media	: For this substance/mixture no limitations of extinguishing agents are given.
Specific hazards during fire fighting	: Combustible.

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

Development of hazardous combustion gases or

vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

Hazardous combustion products	: Carbon oxides
Specific extinguishing methods	: No data available
Further information	: Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for fire-fighters	: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.
Environmental precautions	: Do not let product enter drains. Risk of explosion.
Methods and materials for containment and cleaning up	: Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on protection against fire and explosion	: Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.
Advice on safe handling	: Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
Further information on storage conditions	: Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.
Storage class	: 3, Flammable liquids
Recommended storage temperature	: Recommended storage temperature see product label.
Further information on storage stability	: Handle and store under inert gas.
Packaging material	: Suitable material: Mild Steel Drum

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Toluene	108-88-3	TWA	100 ppm 375 mg/m ³	OSHA P0
		STEL	150 ppm 560 mg/m ³	OSHA P0
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm	OSHA Z-2
		TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m ³	NIOSH REL
		ST	150 ppm 560 mg/m ³	NIOSH REL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI

				ek		
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g creatinine	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Viton®
Break through time : 480 min
Glove thickness : 0.7 mm
Protective index : Full contact
Manufacturer : Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Material : Viton®
Break through time : 480 min
Glove thickness : 0.7 mm
Protective index : Splash contact

Manufacturer	: Vitoject® (KCL 890 / Aldrich Z677698, Size M)
Remarks	: This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Eye protection	: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin and body protection	: Flame retardant antistatic protective clothing.
Hygiene measures	: Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Color	: No data available
Odor	: benzene-like
Odor Threshold	: 0.2 ppm
pH	: Not applicable
Melting point/ range	: -135 °F / -93 °C
Boiling point/boiling range	: 230 - 232 °F / 110 - 111 °C
Flash point	: 39.9 °F / 4.4 °C (1,013 hPa) Method: closed cup, closed cup
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Flammability (liquids)	: No data available

Sigma-Aldrich - 244511

Page 8 of 17

Burning rate	: No data available
Upper explosion limit / Upper flammability limit	: Upper explosion limit 7.1 %(V)
Lower explosion limit / Lower flammability limit	: Lower explosion limit 1.2 %(V)
Vapor pressure	: 30.88 hPa (70.0 °F / 21.1 °C)
Relative vapour density	: 3.18
Relative density	: No data available
Density	: 0.865 g/mL (77 °F / 25 °C)
Solubility(ies) Water solubility	: 0.58 g/l partly soluble (77 °F / 25 °C) pH: 7
Partition coefficient: n- octanol/water	: log Pow: 2.73 (68 °F / 20 °C) pH: 7 Bioaccumulation is not expected.
Autoignition temperature	: 896 °F / 480 °C (1,013.25 hPa)
Decomposition temperature	: No data available
Viscosity Viscosity, dynamic	: 0.56 mPa.s (77 °F / 25 °C)
Viscosity, kinematic	: No data available
Flow time	: No data available
Explosive properties	: Not classified as explosive.
Oxidizing properties	: none
Surface tension	: 27.73 mN/m, 0.516 g/l, 77 °F / 25 °C
Conductivity	: < 0.01 µS/cm
Molecular weight	: 92.14 g/mol
Particle characteristics Particle size	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapours may form explosive mixture with air. Vapours may form explosive mixture with air.
Chemical stability	: The product is chemically stable under standard ambient conditions (room temperature) . The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	: Risk of explosion with: fuming sulfuric acid Nitric acid silver perchlorates nitrogen dioxide nonmetallic halides halogen-halogen compounds uranium hexafluoride organic nitro compounds Violent reactions possible with: Strong acids Strong oxidizing agents sulfur with Heat
Conditions to avoid	: Warming. Warming.
Incompatible materials	: No data available
Hazardous decomposition products	: In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 5,580 mg/kg

(Directive 67/548/EEC, Annex V, B.1.)

LC50 Inhalation - Rat - male - 4 h - 25.7 mg/l - vapour

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male - > 5,000 mg/kg

Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit

Result: irritating - 4 h

(Regulation (EC) No. 440/2008, Annex, B.4)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

Respiratory or skin sensitization

Maximisation Test - Guinea pig

Result: negative

(Regulation (EC) No. 440/2008, Annex, B.6)

Germ cell mutagenicity

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Ames test

Test system: *S. typhimurium*

Metabolic activation: with and without metabolic activation

Method: Regulation (EC) No. 440/2008, Annex, B.13/14 (Ames test)

Result: negative

Test Type: Chromosome aberration test

Species: Rat

Cell type: Bone marrow

Application Route: Intraperitoneal

Result: negative

Remarks: (ECHA)

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure

Inhalation - May cause drowsiness or dizziness. - Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Specific target organ toxicity - repeated exposure

Inhalation - May cause damage to organs through prolonged or repeated exposure.

- Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

Aspiration may cause pulmonary oedema and pneumonitis.

11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - No observed adverse effect level - 625 mg/kg - Lowest observed adverse effect level - 1,250 mg/kg

RTECS: XS5250000

Stomach - Irregularities - Based on Human Evidence

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****Toluene:**

Toxicity to fish	: LC50 (Oncorhynchus kisutch (coho salmon)): 5.5 mg/l End point: mortality Exposure time: 96 h Test Type: flow-through test Analytical monitoring: yes Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Ceriodaphnia dubia (water flea)): 3.78 mg/l End point: mortality Exposure time: 48 h Analytical monitoring: yes Method: US-EPA
Toxicity to fish (Chronic toxicity)	: NOEC (Oncorhynchus kisutch (coho salmon)): 1.39 mg/l End point: Growth inhibition Exposure time: 40 d Test Type: flow-through test Analytical monitoring: yes Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Ceriodaphnia dubia (water flea)): 0.74 mg/l End point: reproduction rate Exposure time: 7 d Analytical monitoring: yes Method: US-EPA
Toxicity to microorganisms	: EC50 (Bacteria): 84 mg/l Exposure time: 24 h Test Type: static test Remarks: (ECHA)

Persistence and degradability

Components:

Toluene:

Biodegradability : aerobic
Result: Readily biodegradable.
Biodegradation: 86 %
Exposure time: 20 d
Remarks: (IUCLID)

Bioaccumulative potential

Components:

Toluene:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 90
Exposure time: 3 d
Concentration: 0.05 mg/l

Partition coefficient: n-octanol/water : log Pow: 2.73 (68 °F / 20 °C)
pH: 7
Remarks: Bioaccumulation is not expected.

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

Sigma-Aldrich - 244511

Page 13 of 17

IATA-DGR

UN/ID No. : UN 1294
Proper shipping name : Toluene
Class : 3
Packing group : II
Labels : Class 3 - Flammable liquids
Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353

IMDG-Code

UN number : UN 1294
Proper shipping name : TOLUENE

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-D
Marine pollutant : no

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations**49 CFR Road**

UN/ID/NA number : UN 1294
Proper shipping name : Toluene

Class : 3
Packing group : II
Labels : Class 3 - Flammable liquids
ERG Code : 130
Marine pollutant : no

Poison Inhalation Hazard : No

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION**CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Toluene	108-88-3	1000	1000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

This product contains the following priority pollutants related to the U.S. Clean Water Act:

Toluene	108-88-3	>= 90 - <= 100 %
---------	----------	------------------

US State Regulations

Massachusetts Right To Know

Toluene	108-88-3
---------	----------

Pennsylvania Right To Know

Toluene	108-88-3
---------	----------

Maine Chemicals of High Concern

Toluene	108-88-3
---------	----------

Vermont Chemicals of High Concern

Toluene	108-88-3
---------	----------

Washington Chemicals of High Concern

Toluene

108-88-3

California Prop. 65

WARNING: This product can expose you to chemicals including Toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA P0	: USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-2	: USA. Occupational Exposure Limits (OSHA) - Table Z-2
ACGIH / TWA	: 8-hour, time-weighted average
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	: 8-hour time weighted average
OSHA P0 / STEL	: Short-term exposure limit
OSHA Z-2 / TWA	: 8-hour time weighted average
OSHA Z-2 / CEIL	: Acceptable ceiling concentration
OSHA Z-2 / Peak	: Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and

Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Revision Date : 07/08/2025

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US / EN

APPENDIX III

EVIDENCE OF RELEASE

Air Products, L.P.
Pasadena Facility
Appendix III. Evidence of Releases

Air Products submitted an initial application for a RCRA Part B Permit in June 1985 and an application for a RCRA Compliance Plan in October 1985. All remedial response action activities to address releases at the Air Products facility are governed by the CP. The Texas Water Commission (TWC), predecessor agency of the current Texas Commission on Environmental Quality (TCEQ), issued RCRA Part B Permit HW-50134 and Compliance Plan CP-50134 (CP) in September 1990. RCRA Facility Investigations (RFIs) have been previously implemented for the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) listed in CP Table II of Section XI of the current renewal application:

1. TDA Tank Car Loading Area;
2. DNT Storage Area (AOC1);
3. Northwest Storage Area (AOC2);
4. DNT Loading Area [consisting of the DNT Tank Car Loading Area (NOR Unit No. 022), DNT Truck Loading Area (NOR Unit No. 023), DNT Spill-Off Pond (NOR Unit NO. 024)];
5. Former Neutralization Pit;
6. Former MEA and Sodium Carbonate Sump;
7. Former DNT Wastewater "Red Water" Sumps; and,
8. DNT Manufacturing Area (AOC3).

An initial RFI was conducted in the early 1990's following the issuance of Hazardous Waste Management Permit No. HW-50134 at the Former MEA Carbonate Sump, DNT "Red Water" Sumps (2), DNT Tank Car Loading Area, DNT Truck Loading Area, DNT Spill-Off Pond, and Former Neutralization Pit. Additional investigation was conducted to evaluate the nature and extent of PCLE Zones in the vicinity of the Former DNT Loading Area and the former Neutralization Pit. The results of the additional RFIs for these units, plus two units with no further action required (MEA Carbonate Sump, NOR 019, and DNT Red-Water Sumps, NOR 020) are included in an RFI Report (Geomatrix, 1998). The assessments of the DNT Storage Area and the Northwest Storage Area (AOC2) were provided in the prior Application for Renewal of the Compliance Plan (Geomatrix, 2001). The assessments of the ASI and the DNT Manufacturing Area were included in APARs (Geomatrix 2006a and 2007, respectively). The assessment of the TDA Tank Car Loading Area (no confirmed groundwater PCLE zone) is included in an APAR (Geomatrix, 2001a). **At present, no new or additional SWMUs or AOCs have been identified at the facility.**

A groundwater corrective action program is currently established in the Compliance Plan to address releases from the following SWMUs and AOCs (refer to CP Table I of the Section XI of the application):

1. Waste Management Area 1 (consisting of the following 5 Units and AOCs):
 - a. Former Effluent Impoundment (NOR Unit No. 001);
 - b. Former Neutralization Pit (NOR Unit No. 027);
 - c. DNT Loading Area [consisting of the DNT Tank Car Loading Area (NOR Unit No. 022), DNT Truck Loading Area (NOR Unit No. 023), DNT Spill-Off Pond (NOR Unit NO. 024)];
 - d. DNT Storage Area (AOC1); and,

- e. Northwest Storage Area (AOC2).
- 2. Waste Management Area 2 (consisting of the following 2 units and AOCs):
 - a. Former Acid Spill Impoundment (NOR Unit No. 002); and,
 - b. DNT Manufacturing Area (AOC3).
- 3. TDA Tank Car Loading Area (NOR Unit No. 025).

Groundwater Protective Concentration Level Exceedence (PCLE) Zones have been identified in the Shallow Zone (SZ), and in some cases the Intermediate Zone (IZ) also, in the vicinity of seven plant areas where hazardous materials are handled now or were handled in the past: the closed former Acid Spill Impoundment (ASI), the closed former Effluent Impoundment (EI), the Dinitrotoluene (DNT) Loading Area, the former Neutralization Pit (NP), the DNT Storage Area (AOC1), the Northwest Storage Area (AOC2), and the DNT Manufacturing Area (AOC3). The Toluenediamine (TDA) Tank Car Loading Area has had a release to soil but no PCLE Zone in groundwater has been confirmed. The former ASI (NOR 002), the former EI (NOR 001), the former NP (NOR 027), and the former Northwest Storage Area (AOC2) are no longer in operation. The DNT Loading Area (NOR 022, 023, and 024), the DNT Storage Area (AOC1), the DNT Manufacturing Area (AOC3), and the TDA Tank Car Loading Area (NOR 025) are active.

The PCLE zones have been affected by several Chemicals of Concern (COC). The constituents in greatest abundance are nitrotoluene (NT) compounds and these have been adopted as indicator parameters. They include: 2,4-Dinitrotoluene (2,4-DNT), 2,6-Dinitrotoluene (2,6-DNT), o-Mononitrotoluene (o-MNT), m-Mononitrotoluene (m-MNT), p-Mononitrotoluene (p-MNT), o-Toluidine, p-Toluidine, 5-Nitro-o-toluidine (5-N-o-T), 2,4-Toluenediamine (2,4-TDA) and 2,6-Toluenediamine (2,6-TDA). Other indicator parameters include COCs analyzable by EPA Method 8270: Nitrobenzene (NB) and 1,3-Dichlorobenzene (1,3-DCB). Additional constituents have been identified at relatively low concentrations in several areas. Refer to Section XI.B of the application for the full list of COCs.

Detailed discussion of the existing groundwater PCLE Zones associated with WMA1, WMA2 and the TDA Tank Car Loading Area are provided in Section XI of the application, specifically in Section 2.0 (Releases to Groundwater) of Attachment XI.A.4 Site Geology Report.

Supporting documentation of existing releases to soil and groundwater associated with SWMUs and AOCs associated with WMA1, WMA2 and the TDA Tank Car Loading Area are provided in the soil and groundwater data summaries attached to Section IX.Appendix III (Evidence of Release).

Supporting documentation of existing lateral/vertical pathways and movements of releases are depicted on the potentiometric flow maps, cross-sections depicting existing PCLE zones provided in the attachments associated with Section IX.Appendix IV (Pollutant Dispersal Pathways).

Soil Data Summary

Former MEA and Sodium Carbonate Sump
(SWMU No. 019)

Table 5-1
 Soil Sample Analytical Results
 Investigative Unit 4 - MEA Carbonate Sump
 RFI Investigation
 Air Products Manufacturing Corporation
 Pasadena, Texas

Boring Number	Sample Depth (feet)	Date Collected	Toluene (ug/kg)
AP-13	2.5	12/9/91	5.5
AP-13	5.0	12/9/91	4.9
AP-13	6.0	12/9/91	<1.0
AP-13	7.5	12/9/91	<1.0
AP-13	10.0	12/9/91	<1.0
AP-14	2.5	12/9/91	<1.0
AP-14	5.0	12/9/91	<1.0
AP-14	6.0	12/9/91	<1.0
AP-14	7.5	12/9/91	<1.0
AP-14	10.0	12/9/91	<1.0
AP-15	2.5	12/12/91	<1.0
AP-15	5.0	12/12/91	<1.0
AP-15	6.0	12/12/91	<1.0
AP-15	7.5	12/12/91	<1.0
AP-15	10	12/12/91	<1.0
AP-16	2.5	12/12/91	<1.0
AP-16	5.0	12/12/91	<1.0
AP-16	6.0	12/12/91	<1.0
AP-16	7.5	12/12/91	<1.0
AP-16	10.0	12/12/91	<1.0
AP-20	1.5	4/27/92	<1.0
Concrete from Floor of Sump	NA	4/27/92	2.2

Note: Numbers preceded by "<" indicate that the constituent was not detected at the indicated detection limit.

Soil Data Summary

Former DNT Wastewater "Red Water" Sumps
(SWMU No. 020)

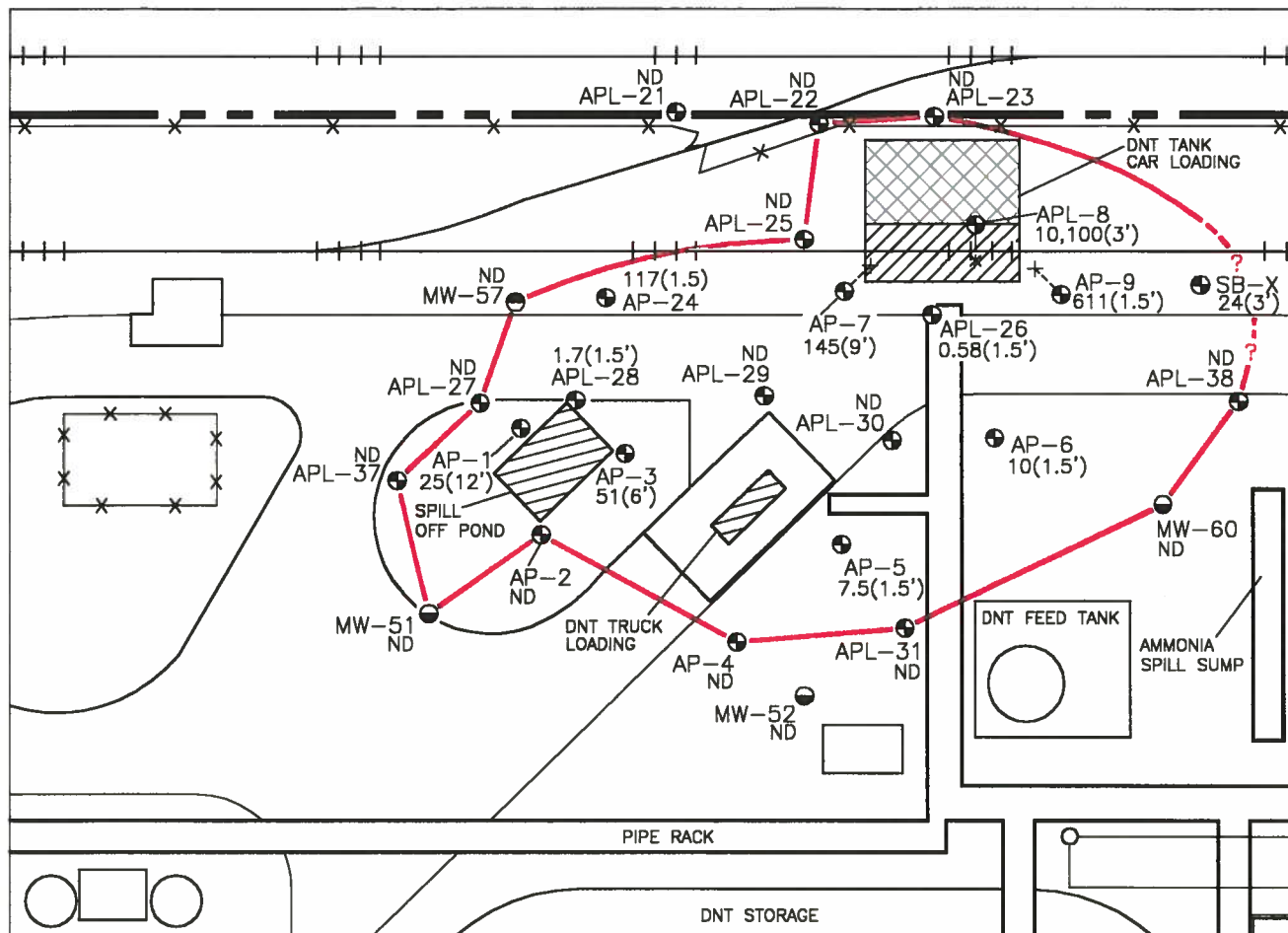
Soil Analytical Results
Investigative Unit 3 - DNT "Red Water" Sumps
RFI Investigation
Air Products Manufacturing Company
Pasadena, Texas

Boring Number	Sample Depth (feet)	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	4,6-Dinitro-2-Methylphenol (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)
AP-10	4.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	5.5	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	6.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	9.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	10.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	12.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	15.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	16.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	19.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-10	20.0	12/4/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	3.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	6.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	7.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	9.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	10.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-11	12.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	3.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	6.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	7.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	9.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	10.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33
AP-12	12.0	12/6/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33

Note: Numbers preceded by "<" indicate that the constituent was not detected at the indicated detection limit.

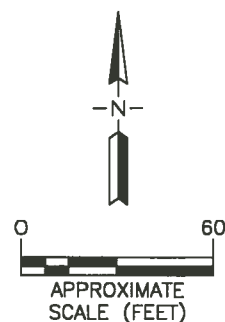
Soil Data Summary

DNT Loading Area
(SWMU No. 022, 023, 024)



EXPLANATION

- | | | | |
|-----------|---|-------|---|
| AP-9 | SOIL SAMPLE LOCATION
(SOME BORINGS SLANTED—APPROXIMATE
BOTTOM—HOLE LOCATION INDICATED) | — | HORIZONTAL EXTENT
OF AFFECTED SOILS
(DASHED WHERE INFERRED) |
| MW-52 | LOWER SHALLOW MONITORING WELL
BORING USED FOR SOIL SAMPLING | | SOLID WASTE
MANAGEMENT UNIT |
| MW-57 | UPPER SHALLOW MONITORING WELL
BORING USED FOR SOIL SAMPLING | | EXTENSION OF LOADING PAD
CONSTRUCTED IN 1992 |
| 611(1.5') | MAXIMUM CONCENTRATION OF
TOTAL NITROTOLUENE ISOMERS AT LOCATION (mg/kg)
(SAMPLE DEPTH OF MAXIMUM CONCENTRATION,
FEET BELOW GROUND LEVEL) | --- | AIR PRODUCTS
PROPERTY LINE |
| ND | NOT DETECTED | ++++ | RAIL LINE |
| | | -x-x- | FENCE |



DNT LOADING AREA
SOIL SAMPLING LOCATIONS AND RESULTS
 PREPARED FOR
AIR PRODUCTS, L.P. — PASADENA, TEXAS

Project No.
 A4487
 Figure No.
III.4

4487A43.DWG

TABLE 4-3
SUMMARY OF SOIL ANALYTICAL RESULTS
PHASE I AND II RFIs
DNT LOADING AREA
Air Products Incorporated
Pasadena, Texas

Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	Total NT (mg/kg)
PHASE I							
AP-1-1.5	12/4/94	0.93	0.39	NS	NS	NS	1.32
AP-1-3.0	12/4/91	0.86	0.36	NS	NS	NS	1.22
AP-1-5.0	12/4/91	0.35	<0.33	NS	NS	NS	0.35
AP-1-8.0	12/4/91	8.4	11	NS	NS	NS	19.4
AP-1-12.0	12/4/91	12	13	NS	NS	NS	25
AP-2-1.5	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-2-3.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-2-5.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-2-6.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-2-7.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-2-9.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-3-1.5	12/5/91	8	3.0	NS	NS	NS	11
AP-3-3.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-3-5.0	12/5/91	0.65	<0.33	NS	NS	NS	0.65
AP-3-6.0	12/5/91	51	0.44	NS	NS	NS	51.44
AP-3-7.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-3-9.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-1.5	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-3.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-5.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-6.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-7.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-4-9.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-5-1.5	12/5/91	4.3	3.2	NS	NS	NS	7.5
AP-5-3.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-5-5.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-5-6.0	12/5/91	1.0	<0.33	NS	NS	NS	1
AP-5-7.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-5-9.0	12/5/91	<0.33	<0.33	NS	NS	NS	0
AP-6-1.5	12/6/91	6.8	3.2	NS	NS	NS	10
AP-6-3.0	12/6/91	<0.33	<0.33	NS	NS	NS	0
AP-6-5.0	12/6/91	<0.33	<0.33	NS	NS	NS	0
AP-6-6.0	12/6/91	<0.33	<0.33	NS	NS	NS	0
AP-6-7.0	12/6/91	<0.33	<0.33	NS	NS	NS	0
AP-6-9.0	12/6/91	<0.33	<0.33	NS	NS	NS	0
AP-7-2.5	12/12/91	6.3	4.8	NS	NS	NS	11.1
AP-7-5.0	12/12/91	39	41	NS	NS	NS	80
AP-7-6.0	12/12/91	8.9	14	NS	NS	NS	22.9
AP-7-7.0	12/12/91	4.5	6.5	NS	NS	NS	11
AP-7-9.0	12/12/91	55	90	NS	NS	NS	145
AP-8-1.5	12/11/91	0.82	<0.33	NS	NS	NS	0.82

TABLE 4-3
SUMMARY OF SOIL ANALYTICAL RESULTS
PHASE I AND II RFIs
DNT LOADING AREA
Air Products Incorporated
Pasadena, Texas

Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	Total NT (mg/kg)
AP-8-3.0	12/11/91	7200	2900	NS	NS	NS	10,100
AP-8-5.0	12/11/91	4.3	14	NS	NS	NS	18.3
AP-8-6.0	12/11/91	0.33	<0.33	NS	NS	NS	0.33
AP-8-8.0	12/11/91	<0.33	<0.33	NS	NS	NS	0
AP-9-1.5	12/11/91	540	71	NS	NS	NS	611
AP-9-3.0	12/11/91	50	40	NS	NS	NS	90
AP-9-5.0	12/11/91	9.2	5.1	NS	NS	NS	14.3
AP-9-6.0	12/11/91	46	29	NS	NS	NS	75
AP-9-8.0	12/11/91	13	9.1	NS	NS	NS	22.1
MW-51-1.5	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-51-3.0	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-51-5.0	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-51-6.0	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-51-7.0	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-51-9.0	4/22/92	<0.33	<0.33	NS	NS	NS	0
MW-52-1.5	4/28/92	<0.3	<0.3	NS	NS	NS	0
MW-52-3.5	4/28/92	<0.3	<0.3	NS	NS	NS	0
MW-52-5.0	4/28/92	<0.3	<0.3	NS	NS	NS	0
MW-52-6.0	4/28/92	<0.3	<0.3	NS	NS	NS	0
MW-52-7.0	4/28/92	<0.3	<0.3	NS	NS	NS	0
MW-52-9.0	4/28/92	<0.33	<0.33	NS	NS	NS	0
MW-57-1.5	5/5/92	<0.3	<0.3	NS	NS	NS	0
MW-57-3.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
MW-57-5.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
MW-57-7.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
MW-57-9.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
MW-60-1.5	5/11/92	<0.3	<0.3	NS	NS	NS	0
MW-60-3.5	5/11/92	<0.3	<0.3	NS	NS	NS	0
MW-60-5.0	5/11/92	<0.3	<0.3	NS	NS	NS	0
SB-X-1.5	5/5/92	5.6	6.3	NS	NS	NS	11.9
SB-X-3.0	5/5/92	24.0	<0.3	NS	NS	NS	24
SB-X-5.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
SB-X-6.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
SB-X-7.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
SB-X-9.0	5/5/92	<0.3	<0.3	NS	NS	NS	0
PHASE II							
APL-21-1.5	5/21/98	<1.6	<1.6	<1.6	<1.6	<1.6	0
APL-22-1.5	5/21/98	<1.6	<1.6	<1.6	<1.6	<1.6	0
APL-23-1.5	5/21/98	<0.5	<0.5	<0.5	<0.5	<0.5	0
APL-24-1.5	5/21/98	77 D	40 D	<0.33	<0.33	<0.33	117
APL-25-1.5	5/21/98	<0.5	<0.5	<0.5	<0.5	<0.5	0
APL-26-1.5	5/21/98	0.58	<0.5	<0.5	<0.5	<0.5	0.58

TABLE 4-3
SUMMARY OF SOIL ANALYTICAL RESULTS
PHASE I AND II RFIs
DNT LOADING AREA
Air Products Incorporated
Pasadena, Texas

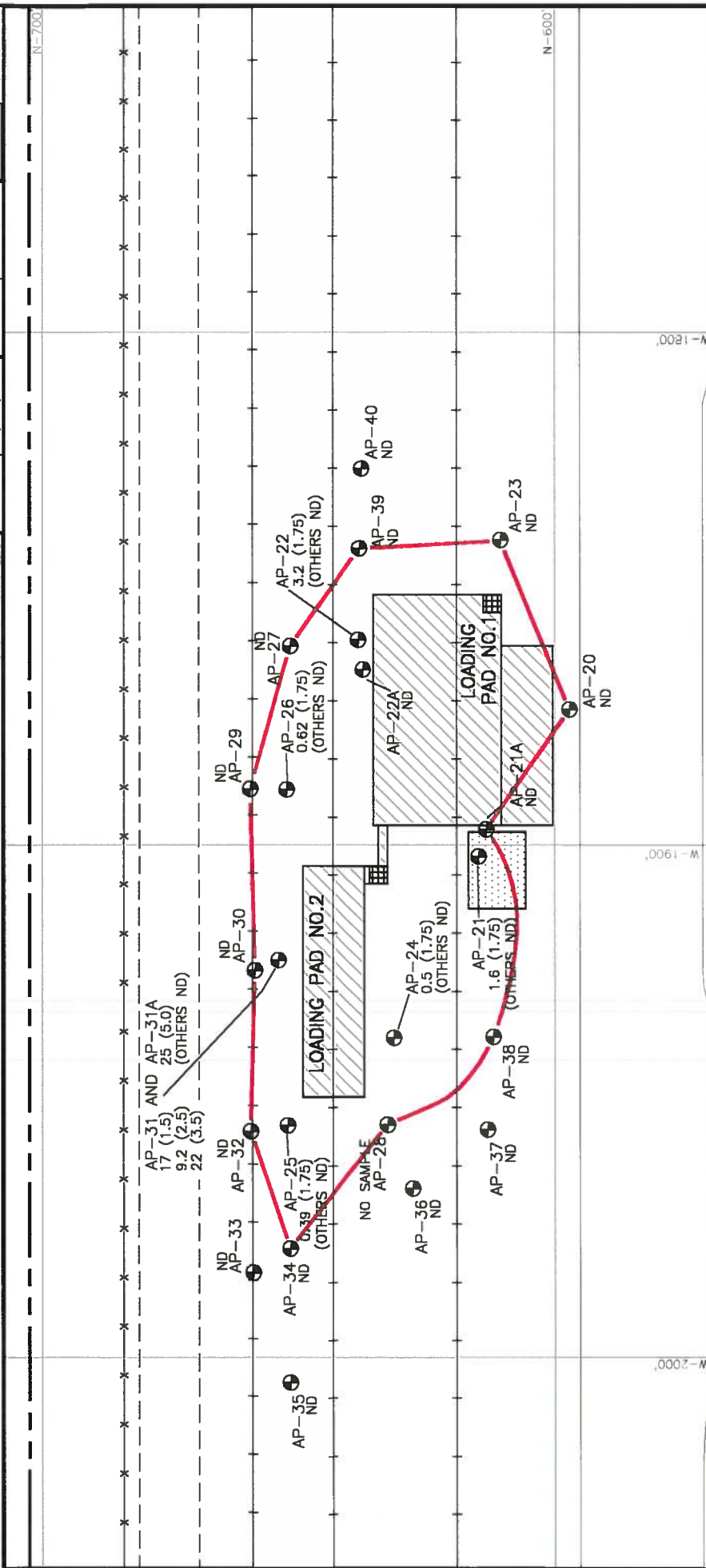
Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	Total NT (mg/kg)
APL-27-1.5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-27-3	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-27-5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-27-6	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-27-7	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-27-9	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-28-1.5	5/21/98	<1.6	1.7	<1.6	<1.6	<1.6	1.7
APL-29-1.5	5/21/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-30-2.5	5/21/98	<1.6	<1.6	<1.6	<1.6	<1.6	0
APL-31-1.5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-31-3	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-31-5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-31-6	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-31-8	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-31-9	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-1.5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-3	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-5	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-6	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-8	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-37-9	5/13/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-1.5	5/14/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-3	5/14/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-5	5/15/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-6	5/14/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-7	5/14/98	<0.33	<0.33	<0.33	<0.33	<0.33	0
APL-38-9	5/14/98	<0.33	<0.33	<0.33	<0.33	<0.33	0

Notes:

1. NS - Not sampled
2. D - Indicates sample diluted and rerun in laboratory due to initial result exceeding calibration curve.
3. DNT - Dinitrotoluene
4. MNT - Mononitrotoluene
5. Total NT - Total Nitrotoluenes - Sum of concentrations of 2,4-DNT, 2,6-DNT, o-MNT, m-MNT, and p-MNT.
6. Numbers preceded by "<" indicate that the constituent was not detected at the indicated detection limit.
7. mg/kg - milligrams per kilogram

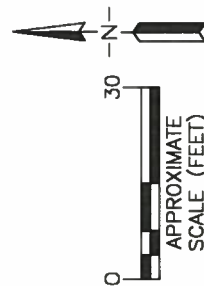
Soil Data Summary

TDA Tank Car Loading Area
(SWMU No. 025)



EXPLANATION

AP-26 0.62 (1.75)	SOIL BORING/PROBE HOLE LOCATION AND IDENTIFICATION NUMBER	SUMP	RAIL LINE
ND	TDA SOIL CONCENTRATIONS (mg/kg) (DEPTH OF SAMPLE (ft))	LOCATION OF EXCAVATION (7/1/92)	FENCE
(OTHERS ND)	NO TDA DETECTED IN ANY SAMPLE AT THIS LOCATION	SOLID WASTE MANAGEMENT UNIT	RAIL ROADBED UNDER CONSTRUCTION
	NO TDA DETECTED IN DEEPER SAMPLE(S) AT THIS LOCATION	HORIZONTAL EXTENT OF AFFECTED SOILS (DASHED WHERE INFERRED)	PROPERTY BOUNDARY



CONCENTRATIONS OF TDA
IN SOIL SAMPLES
PREPARED FOR
AIR PRODUCTS, L.P. - PASADENA, TEXAS

Project No.
A4487
Figure No.
III.6



TABLE 4-1
SOIL ANALYTICAL DATA AND CRITICAL PCLS
TDA LOADING AREA
Air Products, L.P.
Pasadena, Texas

			TDA (mg/kg)	o-Toluidine (mg/kg)
<i>Tier 1 Critical PCL - Surface Soil ¹</i>			6 ³	10 ⁴
<i>Tier 1 Critical PCL - Subsurface Soil ²</i>			11000 ³	10 ⁴
Sample Identification	Sample Interval (ft. bgs)	Date Collected		
AP-20-1.75	1.75 - 2.0	5/14/1996	<1.7	<3.3
AP-20-3.5	3.50 - 3.75	5/14/1996	<0.33	<0.66
AP-20-5.5	5.5 - 5.75	5/14/1996	<0.33	<0.66
AP-20-7.5	7.25 - 7.50	5/14/1996	<0.33	<0.66
AP-20-9.5	9.5 - 9.75	5/14/1996	<0.33	<0.66
AP-21-1.75	1.75 - 2.0	5/15/1996	1.6	<0.66
AP-21A-2.5	2.25 - 2.50	10/9/1996	<0.33	<0.66
AP-21-3.5	3.50 - 3.70	5/15/1996	<0.33	<0.66
AP-21-5.5	5.50 - 7.70	5/15/1996	<0.33	<0.66
AP-21-7.5	7.5 - 7.70	5/15/1996	<0.33	<0.66
AP-21-9.5	9.5 - 9.20	5/15/1996	<0.33	<0.66
AP-22-1.75	1.75 - 2.0	5/15/1996	3.2	<0.66
AP-22A-2.5	2.25 - 2.50	10/9/1996	<0.33	<0.66
AP-22-3.5	3.5 - 3.75	5/15/1996	<0.33	<0.66
AP-22-5.5	5.5 - 5.75	5/15/1996	<0.33	<0.66
AP-22-5.5-DUP	5.5 - 5.75	5/15/1996	<0.33	<0.66
AP-22-7.5	7.5 - 7.75	5/15/1996	<0.33	<0.66
AP-22-9.5	9.5 - 9.75	5/15/1996	<0.33	<0.66
AP-23-1.75	1.75 - 2.0	5/14/1996	<0.33	<0.66
AP-23-3.5	3.5 - 3.75	5/14/1996	<0.33	<0.66
AP-23-5.5	5.5 - 5.75	5/14/1996	<0.33	<0.66
AP-23-7.5	7.5 - 7.75	5/14/1996	<0.33	<0.66
AP-23-9.5	9.5 - 9.75	5/14/1996	<0.33	<0.66
AP-24-1.75	1.75 - 2.0	8/27/1996	0.5	<0.66
AP-24-3.5	3.5 - 3.75	8/27/1996	<0.33	<0.66
AP-24-3.5-DUP	3.5 - 3.75	8/27/1996	<0.33	<0.66
AP-24-5.5	5.5 - 5.75	8/27/1996	<0.33	<0.66
AP-24-7.5	7.5 - 7.75	8/27/1996	<0.33	<0.66
AP-24-9.5	9.5 - 9.75	8/27/1996	<0.33	<0.66
AP-25-1.75	1.75 - 2.0	8/27/1996	0.39	<0.66
AP-25-3.5	3.5 - 3.75	8/27/1996	<0.33	<0.66
AP-25-5.5	5.5 - 5.75	8/27/1996	<0.33	<0.66

TABLE 4-1
SOIL ANALYTICAL DATA AND CRITICAL PCLS
TDA LOADING AREA
 Air Products, L.P.
 Pasadena, Texas

			TDA (mg/kg)	o-Toluidine (mg/kg)
<i>Tier 1 Critical PCL - Surface Soil</i> ¹			6 ³	10 ⁴
<i>Tier 1 Critical PCL - Subsurface Soil</i> ²			11000 ³	10 ⁴
Sample Identification	Sample Interval (ft. bgs)	Date Collected		
AP-25-7.5	7.5 - 7.75	8/27/1996	<0.33	<0.66
AP-25-9.5	9.5 - 9.75	8/27/1996	<0.33	<0.66
AP-26-1.75	1.75 - 2.0	8/27/1996	0.62	<0.66
AP-26-3.5	3.5 - 3.75	8/27/1996	<0.33	<0.66
AP-26-5.5	5.5 - 5.75	8/27/1996	<0.33	<0.66
AP-26-7.5	7.5 - 7.75	8/27/1996	<0.33	<0.66
AP-26-9.5	9.5 - 9.75	8/27/1996	<0.33	<0.66
AP-27-1.75	1.75 - 2.0	8/27/1996	<0.33	<0.66
AP-27-3.5	3.5 - 3.75	8/27/1996	<0.33	<0.66
AP-27-5.5	5.5 - 5.75	8/27/1996	<0.33	<0.66
AP-27-7.5	7.5 - 7.75	8/27/1996	<0.33	<0.66
AP-27-9.5	9.5 - 9.75	8/27/1996	<0.33	<0.66
AP-28	NO RECOVERY	8/27/1996	NO RECOVERY	
AP-29-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-30-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-31-1.5	1.5 - 1.75	10/8/1996	17D	<0.66
AP-31-2.5	2.5 - 2.75	10/8/1996	9.2D	<0.66
AP-31-3.5	3.5 - 3.75	10/8/1996	22	<6.6
AP-31A-5	5.0 - 5.5	12/4/1996	25	<13.0
AP-31A-9	9.0 - 9.5	12/4/1996	<0.33	<0.66
AP-31A-12	11.5 - 12	12/4/1996	<0.33	<0.66
AP-31A-14	13.5 - 14	12/4/1996	<0.33	<0.66
AP-31A-16	15.5 - 16	12/4/1996	<0.33	<0.66
AP-32-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-33-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-34-1.5	1.5 - 1.75	10/8/1996	<0.33	<0.66
AP-34-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-34-3.5	3.5 - 3.75	10/8/1996	NA	NA
AP-35-1.5	1.5 - 1.75	10/8/1996	<0.33	<0.66
AP-35-2.5	2.5 - 2.75	10/8/1996	NA	NA
AP-35-3.5	3.5 - 3.75	10/8/1996	NA	NA
AP-36-1.5	1.5 - 1.75	10/8/1996	<0.33	<0.66

TABLE 4-1
SOIL ANALYTICAL DATA AND CRITICAL PCLS
TDA LOADING AREA

Air Products, L.P.
Pasadena, Texas

			TDA (mg/kg)	o-Toluidine (mg/kg)
<i>Tier 1 Critical PCL - Surface Soil ¹</i>			6 ³	10 ⁴
<i>Tier 1 Critical PCL - Subsurface Soil ²</i>			11000 ³	10 ⁴
Sample Identification	Sample Interval (ft. bgs)	Date Collected		
AP-36-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-36-3.5	3.5 - 3.75	10/8/1996	NA	NA
AP-37-1.5	1.5 - 1.75	10/8/1996	<0.33	<0.66
AP-37-2.5	2.5 - 2.75	10/8/1996	<0.33	<0.66
AP-37-3.5	3.5 - 3.75	10/8/1996	NA	NA
AP-38-1.5	1.5 - 1.75	10/9/1996	<0.33	<0.66
AP-38-1.5-DUP	1.5 - 1.75	10/9/1996	<0.33	<0.66
AP-38-2.5	2.5 - 2.75	10/9/1996	<0.33	<0.66
AP-38-3.5	3.5 - 3.75	10/9/1996	NA	NA
AP-39-1.5	1.5 - 1.75	10/9/1996	<0.33	<0.66
AP-39-2.5	2.5 - 2.75	10/9/1996	<0.33	<0.66
AP-39-3.5	3.5 - 3.75	10/9/1996	NA	NA
AP-40-1.5	1.5 - 1.75	10/9/1996	<0.33	<0.66

Bold indicates concentrations exceeds applicable Tier 1 Critical PCL

1 Tier 1 Critical PCL - Surface Soil = $\text{TotSOIL}_{\text{Comb}}$, Table 2 Tier 1 Com./Ind. Soil PCLs, 0.5 acre, < or = 5 feet bgs

2 Tier 1 Critical PCL - Subsurface Soil = $\text{AirSOIL}_{\text{Inh-V}}$, Table 2 Tier 1 Com./Ind. Soil PCLs, 0.5 acre, > 5 feet bgs

3 The critical PCL was determined by the lower of the given values for either 2,4-TDA or 2,6-TDA. For both surface and subsurface soils, the 2,4-TDA PCLs are lower.

4 Region 9 PRG based on Industrial Land Use - ingestion, inhalation and dermal exposure

TDA = Total Toluenediamine, 2,4-TDA and 2,6-TDA

D = Result was obtained from the analyses of a dilution.

DUP = Duplicate

NA = Not analyzed

<= Less than detection level

Table 1

Summary of Analytical Data
RCRA Facility Investigation Report - TDA Loading Areas
Air Products Incorporated, Pasadena, Texas

Sample Identification	Sample Interval (ft. bgs)	Date Collected	Toluene diamine (mg/kg)	o-Toluidine (mg/kg)
AP-20-1.75	1.75 - 2.0	5/14/96	<1.7	<3.3
AP-20-3.5	3.50 - 3.75	5/14/96	<0.33	<0.66
AP-20-5.5	5.5 - 5.75	5/14/96	<0.33	<0.66
AP-20-7.5	7.25 - 7.50	5/14/96	<0.33	<0.66
AP-20-9.5	9.5 - 9.75	5/14/96	<0.33	<0.66
AP-21-1.75	1.75 - 2.0	5/15/96	1.6	<0.66
AP-21A-2.5	2.25 - 2.50	10/9/96	<0.33	<0.66
AP-21-3.5	3.50 - 3.70	5/15/96	<0.33	<0.66
AP-21-5.5	5.50 - 7.70	5/15/96	<0.33	<0.66
AP-21-7.5	7.5 - 7.70	5/15/96	<0.33	<0.66
AP-21-9.5	9.5 - 9.20	5/15/96	<0.33	<0.66
AP-22-1.75	1.75 - 2.0	5/15/96	3.2	<0.66
AP-22A-2.5	2.25 - 2.50	10/9/96	<0.33	<0.66
AP-22-3.5	3.5 - 3.75	5/15/96	<0.33	<0.66
AP-22-5.5	5.5 - 5.75	5/15/96	<0.33	<0.66
AP-22-5.5-DUP	5.5 - 5.75	5/15/96	<0.33	<0.66
AP-22-7.5	7.5 - 7.75	5/15/96	<0.33	<0.66
AP-22-9.5	9.5 - 9.75	5/15/96	<0.33	<0.66
AP-23-1.75	1.75 - 2.0	5/14/96	<0.33	<0.66
AP-23-3.5	3.5 - 3.75	5/14/96	<0.33	<0.66
AP-23-5.5	5.5 - 5.75	5/14/96	<0.33	<0.66
AP-23-7.5	7.5 - 7.75	5/14/96	<0.33	<0.66
AP-23-9.5	9.5 - 9.75	5/14/96	<0.33	<0.66
AP-24-1.75	1.75 - 2.0	8/27/96	0.5	<0.66
AP-24-3.5	3.5 - 3.75	8/27/96	<0.33	<0.66
AP-24-3.5-DUP	3.5 - 3.75	8/27/96	<0.33	<0.66
AP-24-5.5	5.5 - 5.75	8/27/96	<0.33	<0.66
AP-24-7.5	7.5 - 7.75	8/27/96	<0.33	<0.66
AP-24-9.5	9.5 - 9.75	8/27/96	<0.33	<0.66
AP-25-1.75	1.75 - 2.0	8/27/96	0.39	<0.66
AP-25-3.5	3.5 - 3.75	8/27/96	<0.33	<0.66
AP-25-5.5	5.5 - 5.75	8/27/96	<0.33	<0.66
AP-25-7.5	7.5 - 7.75	8/27/96	<0.33	<0.66
AP-25-9.5	9.5 - 9.75	8/27/96	<0.33	<0.66
AP-26-1.75	1.75 - 2.0	8/27/96	0.62	<0.66
AP-26-3.5	3.5 - 3.75	8/27/96	<0.33	<0.66
AP-26-5.5	5.5 - 5.75	8/27/96	<0.33	<0.66
AP-26-7.5	7.5 - 7.75	8/27/96	<0.33	<0.66
AP-26-9.5	9.5 - 9.75	8/27/96	<0.33	<0.66
AP-27-1.75	1.75 - 2.0	8/27/96	<0.33	<0.66
AP-27-3.5	3.5 - 3.75	8/27/96	<0.33	<0.66
AP-27-5.5	5.5 - 5.75	8/27/96	<0.33	<0.66

Table 1

Summary of Analytical Data
 RCRA Facility Investigation Report - TDA Loading Areas
 Air Products Incorporated, Pasadena, Texas

Sample Identification	Sample Interval (ft. bgs)	Date Collected	Toluene diamine (mg/kg)	o-Toluidine (mg/kg)
AP-27-7.5	7.5 - 7.75	8/27/96	<0.33	<0.66
AP-27-9.5	9.5 - 9.75	8/27/96	<0.33	<0.66
AP-28	NO RECOVERY	8/27/96	NO RECOVERY	
AP-29-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-30-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-31-1.5	1.5 - 1.75	10/8/96	17D	<0.66
AP-31-2.5	2.5 - 2.75	10/8/96	9.2D	<0.66
AP-31-3.5	3.5 - 3.75	10/8/96	22	<0.66
AP-31A-5	5.0 - 5.5	12/4/96	25	<13.0
AP-31A-9	9.0 - 9.5	12/4/96	<0.33	<0.66
AP-31A-12	11.5 - 12	12/4/96	<0.33	<0.66
AP-31A-14	13.5 - 14	12/4/96	<0.33	<0.66
AP-31A-16	15.5 - 16	12/4/96	<0.33	<0.66
AP-32-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-33-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-34-1.5	1.5 - 1.75	10/8/96	<0.33	<0.66
AP-34-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-34-3.5	3.5 - 3.75	10/8/96	NA	NA
AP-35-1.5	1.5 - 1.75	10/8/96	<0.33	<0.66
AP-35-2.5	2.5 - 2.75	10/8/96	NA	NA
AP-35-3.5	3.5 - 3.75	10/8/96	NA	NA
AP-36-1.5	1.5 - 1.75	10/8/96	<0.33	<0.66
AP-36-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-36-3.5	3.5 - 3.75	10/8/96	NA	NA
AP-37-1.5	1.5 - 1.75	10/8/96	<0.33	<0.66
AP-37-2.5	2.5 - 2.75	10/8/96	<0.33	<0.66
AP-37-3.5	3.5 - 3.75	10/8/96	NA	NA
AP-38-1.5	1.5 - 1.75	10/9/96	<0.33	<0.66
AP-38-1.5-DUP	1.5 - 1.75	10/9/96	<0.33	<0.66
AP-38-2.5	2.5 - 2.75	10/9/96	<0.33	<0.66
AP-38-3.5	3.5 - 3.75	10/9/96	NA	NA
AP-39-1.5	1.5 - 1.75	10/9/96	<0.33	<0.66
AP-39-2.5	2.5 - 2.75	10/9/96	<0.33	<0.66
AP-39-3.5	3.5 - 3.75	10/9/96	NA	NA
AP-40-1.5	1.5 - 1.75	10/9/96	<0.33	<0.66

D = Result was obtained from the analyses of a dilution.

DUP = Duplicate

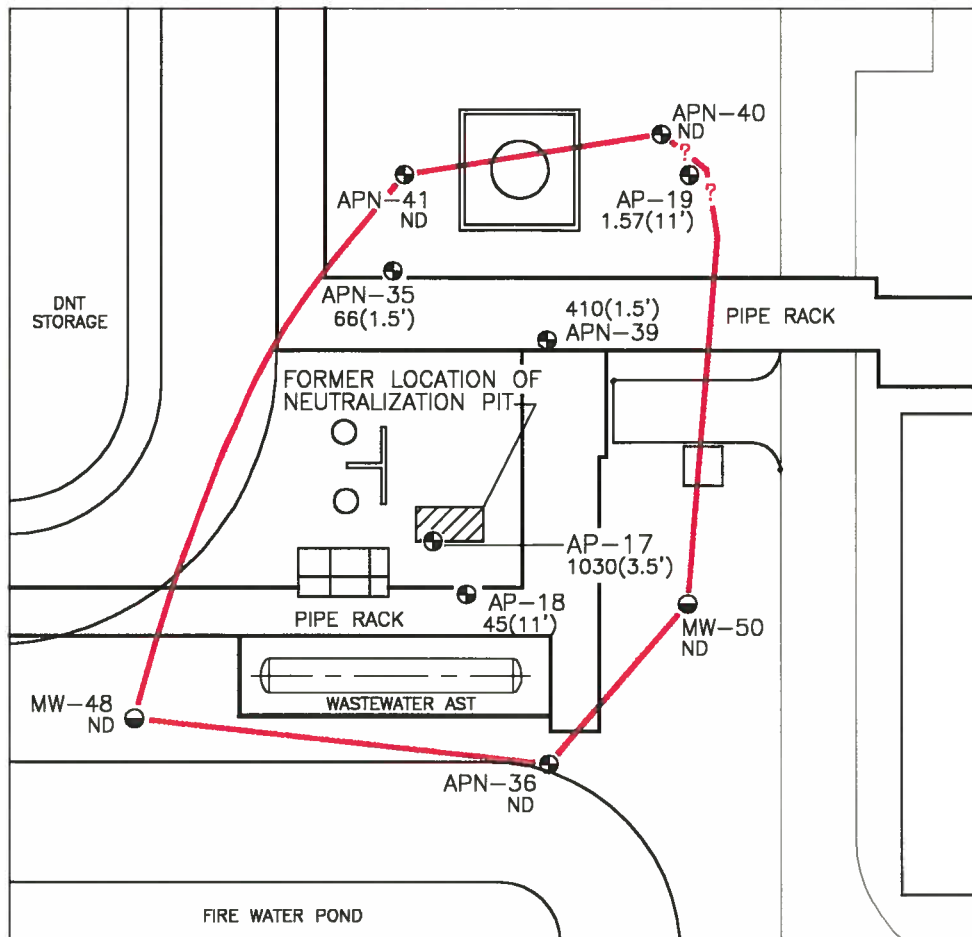
NA = Not analyzed

< = Less than detection level

Soil Data Summary

Former Neutralization Pit
(SWMU No. 027)

DRAFT BY	RPS 2/12/00	PROJ. CHK	ERM 4/17/00	APPRV. BY	MEB 4/17/00
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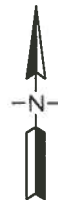
EXPLANATION

- AP-17 ● SOIL SAMPLE LOCATION
- MW-48 ● LOWER SHALLOW MONITORING WELL BORING USED FOR SOIL SAMPLING
- 1030(3.5') MAXIMUM CONCENTRATION OF TOTAL NITROTOLUENE ISOMERS AT LOCATION (mg/kg) (SAMPLE DEPTH OF MAXIMUM CONCENTRATION, FEET BELOW GROUND LEVEL)
- ND NOT DETECTED

— HORIZONTAL EXTENT OF AFFECTED SOILS (DASHED WHERE INFERRED)



FORMER LOCATION OF SOLID WASTE MANAGEMENT UNIT



FORMER NEUTRALIZATION PIT
SOIL SAMPLING LOCATIONS AND RESULTS
PREPARED FOR
AIR PRODUCTS, L.P. - PASADENA, TEXAS

Project No.
A4487
Figure No.
III.5

4487A44.DWG

TABLE 4-1
SUMMARY OF SOIL ANALYTICAL RESULTS
PHASE I AND II RFIs FORMER NEUTRALIZATION PIT
 Air Products Incorporated
 Pasadena, Texas

Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	4,6-DNOC (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	o-Toluidine (mg/kg)	Total NT (mg/kg)
PHASE I									
AP-17-3.5	12/10/91	880	150	<170	<33	<33	<33	<33	1030
AP-17-7.0	12/10/91	370	340	<170	<33	<33	<33	<33	710
AP-17-8.5	12/10/91	260	200	<170	<33	<33	<33	<33	460
AP-17-11.0	12/10/91	90	56	<42	<8.3	<8.3	<8.3	<8.3	146
AP-18-3.5	12/10/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33	0.66	0
AP-18-7.0	12/10/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33	<0.33	0
AP-18-8.5	12/10/91	0.37	<0.33	<1.7	<0.33	<0.33	<0.33	<0.33	0.37
AP-18-11.0	12/10/91	26	19	<1.7	<0.33	<0.33	<0.33	<0.33	45
AP-19-7.0	12/10/91	0.53	0.43	<1.7	<0.33	<0.33	<0.33	<0.33	0.96
AP-19-8.5	12/10/91	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33	<0.33	0
AP-19-11.0	12/10/91	0.96	0.61	<1.7	<0.33	<0.33	<0.33	<0.33	1.57
MW-48-3.5	5/14/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-48-7.0	5/14/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-48-8.5	5/14/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-48-11.0	5/14/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-50-3.5	5/26/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-50-7.0	5/26/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-50-8.5	5/26/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
MW-50-11.0	5/26/92	<0.3	<0.3	<2.0	<0.33	<0.33	<0.33	<0.33	0
PHASE II									
APN-35-1.5	5/15/98	66 D	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	66
APN-35-3.5	5/15/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-35-7	5/15/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-35-8.5	5/15/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-35-11	5/15/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-36-1.5	5/14/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-36-3.5	5/14/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0

TABLE 4-1
SUMMARY OF SOIL ANALYTICAL RESULTS
PHASE I AND II RFIs FORMER NEUTRALIZATION PIT
 Air Products Incorporated
 Pasadena, Texas

Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	4,6-DNOC (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	o-Toluidine (mg/kg)	Total NT (mg/kg)
APN-36-7	5/14/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-36-8.5	5/14/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-36-11	5/14/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-39-1.5	5/15/98	240 D	170 D	<2.4	<0.5	<0.5	<0.5	<0.99	410
APN-39-3.5	5/15/98	30 D	21 D	<1.6	<0.33	<0.33	<0.33	<0.66	51
APN-39-7	5/15/98	17 D	9.4 D	<1.6	<0.33	<0.33	<0.33	<0.66	26.4
APN-39-8.5	5/15/98	110 D	90 D	<1.6	<0.33	<0.33	<0.33	<0.66	200
APN-39-11	5/15/98	55 D	46 D	<1.6	<0.33	<0.33	<0.33	<0.66	101
APN-40-1.5	7/23/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0
APN-41-1.5	7/23/98	<0.33	<0.33	<1.6	<0.33	<0.33	<0.33	<0.66	0

Notes:

1. D - Indicates sample diluted and rerun in laboratory due to initial result exceeding calibration curve.
2. DNT - Dinitrotoluene
3. DNOC - Dinitro-o-cresol
4. MNT - Mononitrotoluene
5. Total NT - Total Nitrotoluenes - Obtained by adding concentrations of 2,4-DNT, 2,6-DNT, o-MNT, m-MNT, and p-MNT.
6. No sample was recovered in the run at 3.5 feet in AP-19.
7. Numbers preceded by "<" indicate that the constituent was not detected at the indicated detection limit.
8. Mg/kg - milligrams per kilogram

TABLE 4-2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
PHASE I AND II RFI's FORMER NEUTRALIZATION PIT
 Air Products Incorporated
 Pasadena, Texas

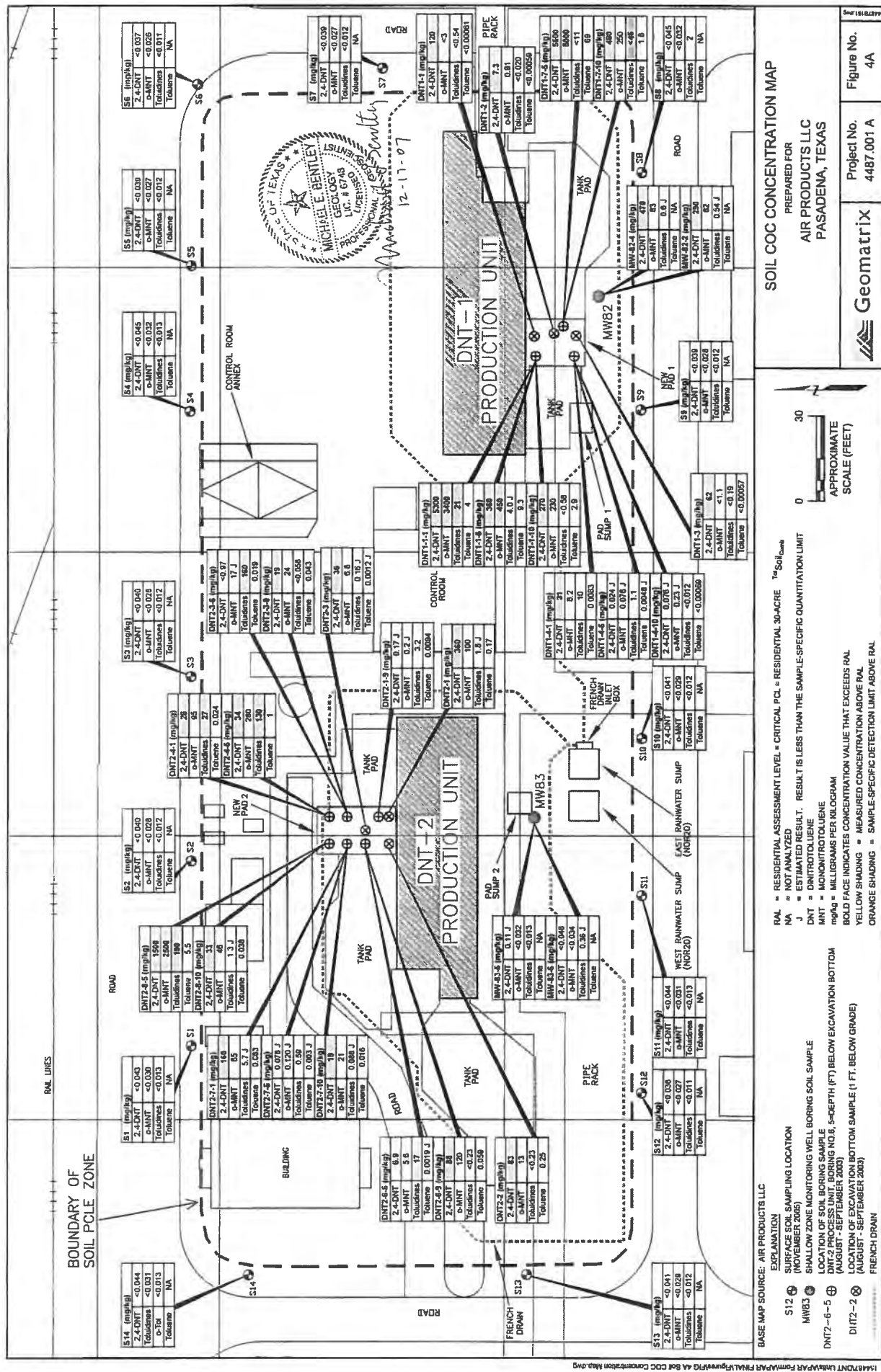
Well/Sample Number	Zone Sampled	Date Collected	2,4-DNT (µg/l)	2,6-DNT (µg/l)	4,6-DNOC (µg/l)	o-MNT (µg/l)	m-MNT (µg/l)	p-MNT (µg/l)	o-Toluidine (µg/l)	Total NT (µg/l)
HP-33	IZ	5/20/98	140	22	<50	<10	<10	<10	<20	162
HP-34	IZ	5/20/98	<12	<12	<59	<12	<12	<12	<24	NA
HP-35	USZ	5/20/98	<10	<10	<50	<10	<10	<10	<20	NA
HP-36	LSZ	5/20/98	<10	<10	<50	<10	<10	<10	<20	NA
HP-36 Dup	LSZ	5/20/98	<13	<13	<66	<13	<13	<13	<27	NA
HP-37	IZ	5/20/98	25	<10	<50	<10	<10	<10	<20	25
HP-38	USZ	5/19/98	<14	<14	<68	<14	<14	<14	<27	NA
HP-39	LSZ	5/18/98	<10	<10	<50	<10	<10	<10	<20	NA
HP-42	IZ	5/18/98	<15	<15	<74	<15	<15	<15	<29	NA

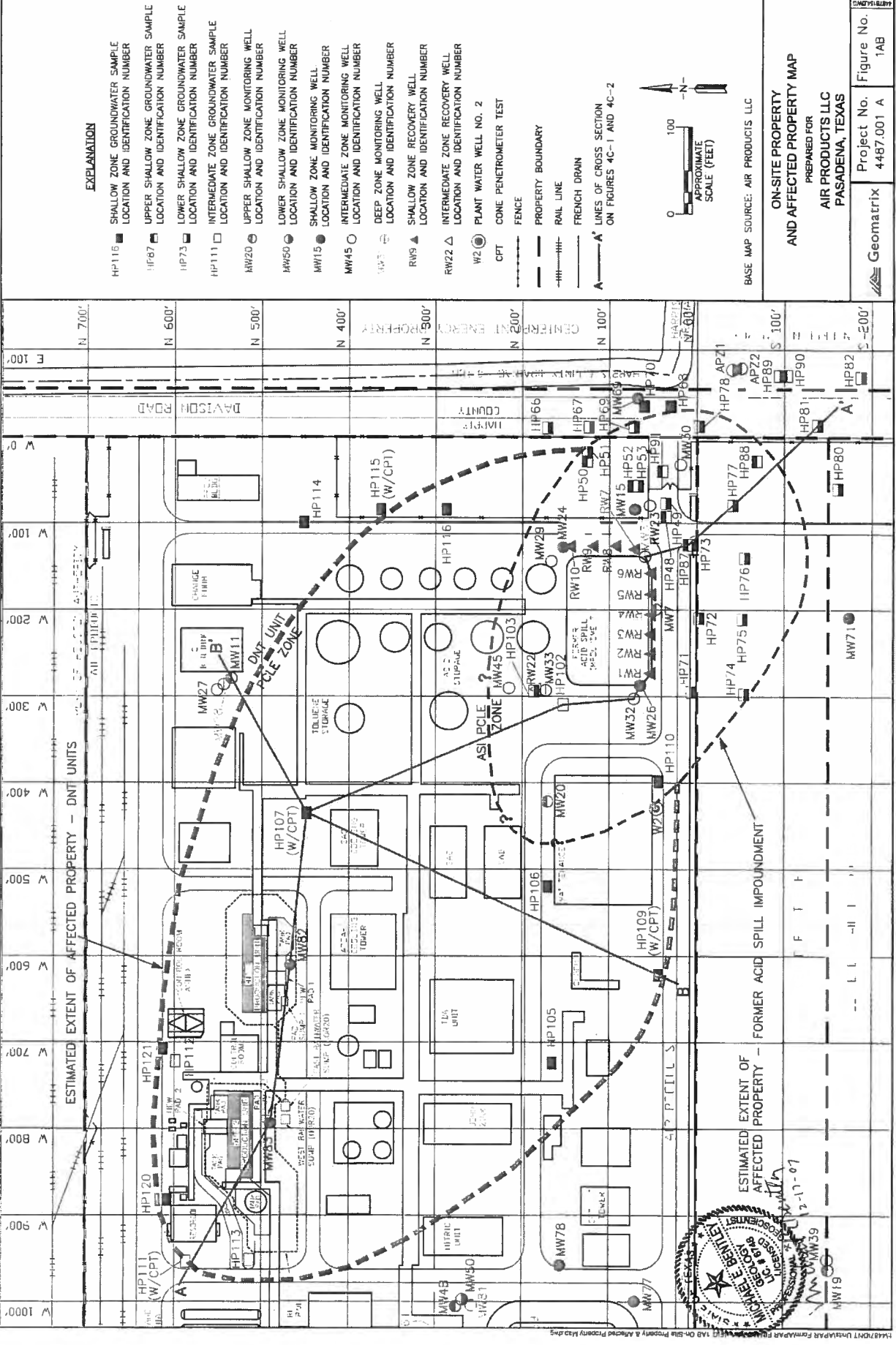
Notes:

1. DNT - Dinitrotoluene
2. DNOC - Dinitro-o-cresol
3. MNT - Mononitrotoluene
4. Total NT - Total Nitrotoluenes - Obtained by adding concentrations of 2,4-DNT, 2,6-DNT, o, m, p-MNT
5. ND - Concentration below reporting limit, reporting limits not available.
6. NA - Not analyzed
7. Numbers preceded by "<" indicate that the constituent was not detected at the indicated detection limit.
8. Dup - Field Duplicate Sample
9. D - Indicates diluted sample rerun in laboratory due to initial result exceeding calibration curve.
10. µg/l - micrograms per liter

Soil Data Summary

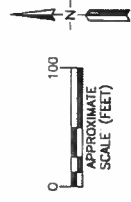
DNT Manufacturing Area
(AOC3)





EXPLANATION

- HP116 ■ SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER
- HP87 ■ UPPER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER
- HP73 ■ LOWER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER
- HP111 □ INTERMEDIATE ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER
- MW20 ○ UPPER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW50 ○ LOWER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW15 ● SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW45 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW5 ○ DEEP ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- RW5 ▲ SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW22 △ INTERMEDIATE ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- W2 ● PLANT WATER WELL NO. 2
- CPT ○ CONE PENETROMETER TEST
- FENCE
- - - - - PROPERTY BOUNDARY
- - - - - RAIL LINE
- - - - - FRENCH DRAIN
- - - - - LINES OF CROSS SECTION ON FIGURES 4C-1 AND 4C-2



BASE MAP SOURCE: AIR PRODUCTS LLC

ON-SITE PROPERTY MAP
AND AFFECTED PROPERTY MAP
PREPARED FOR
AIR PRODUCTS LLC
PASADENA, TEXAS

Geomatrix	Project No. 4487.001 A	Figure No. 1AB
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Table 6-1
SOIL ANALYTICAL DATA SUMMARY
DNT PRODUCTION UNITS
Air Products, LP
Pasadena, Texas
(all concentrations in mg/kg)

Well ID	Sample Depth (feet)	Date	2,4-Dinitrotoluene	2,6-Dinitrotoluene	o- Nitrotoluene	m- Nitrotoluene	p- Nitrotoluene	o-Toluidine	5-Nitro-o-Toluidine	Strontium	Zinc
MW-82	2 - 2.5	10/17/2005	290	120	82	7.3	62	0.54 J	20	48.4	30.7 J
MW-82	3 - 4	10/17/2005	470	100	63	5.5	46	0.6 J	18	112	23.7 J
MW-83	5	10/18/2005	0.11 J	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	283	736 J
MW-83	6 - 6.5	10/18/2005	<0.51	<0.51	<0.51	<0.51	<0.51	0.36	<0.51	87.5 J	52.3 J
S1	3	11/8/2005	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	--	--
S2	2	11/8/2005	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	--	--
S3	2	11/8/2005	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	--	--
S4	0.5	11/8/2005	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	--	--
S5	2.5	11/8/2005	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	--	--
S6	3.5	11/8/2005	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	--	--
S7	2	11/8/2005	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	--	--
S8	2	11/8/2005	<0.48	<0.48	<0.48	<0.48	<0.48	2.0	<0.48	--	--
S9	2	11/8/2005	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	--	--
S10	2	11/8/2005	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	--	--
S11	3	11/8/2005	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	--	--
S12	2	11/8/2005	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	--	--
S13	2	11/8/2005	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	--	--
S14	3	11/8/2005	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	--	--
TRRP Tier 1 Soil PCL for 0.5-acre Commercial/Industrial ¹ Soil ² Comb											
			28	28	1,100	1,000	1,000	59	580	490,000	250,000

Notes:

1. Detections indicated in **bold**.
2. Analytes exceeding Commercial/Industrial PCLs are indicated with blue shading.
3. '<' indicates analyte concentration is below indicated sample-specific Method Quantitation Limit (Reporting Limit).
4. 'J' indicates concentration is below Reporting Limit but above Method Detection Limit.
5. '-' indicates analysis not performed since "maximum concentrations" (MW82 and MW83 soils) have levels below PCL
6. PCL: Protective Concentration Level

TABLE 7-2
SOIL ANALYTICAL RESULTS - VOLATILES
DNT Production Units
SEMIANNUAL REPORT - January 2004
Air Products, L.P.
Pasadena, Texas

Sample Identification	Date Collected	Benzene (mg/kg)	Toluene (mg/kg)	o-Xylene (mg/kg)	m-Xylene & p-Xylene (mg/kg)	Isopropyltoluene (mg/kg)	Trimethylbenzene (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,2-Dichloroethane (mg/kg)	Naphthalene (mg/kg)	Methyl Ethyl Ketone (mg/kg)	Methylene Chloride (mg/kg)
DNT1-1	8/29/2003	<0.0061	0.001	<0.0061	<0.0061	<0.0061	<0.0061	<0.0061	0.0017	<0.0061	0.0022	<0.0061
DNT1-2	8/29/2003	<0.0059	0.001	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.012	<0.0059
DNT1-3	8/29/2003	<0.0057	0.001	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	0.0058	<0.0057	<0.011	<0.0057
DNT1-1-1	8/29/2003	<0.31	4	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.61	<0.31
DNT1-1-5	9/5/2003	<0.33	9.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	0.17	<0.33
DNT1-1-10	9/5/2003	<0.34	2.9	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	0.13	<0.34
DNT1-4-1	9/5/2003	<0.0072	0.0083	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.014	<0.0072
DNT1-4-5	9/5/2003	<0.0071	0.0048	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0055	<0.0071
DNT1-4-10	9/5/2003	<0.0069	0.001	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	0.00097	<0.0069	<0.014	<0.0069
DNT1-7-5	9/5/2003	<3	69	<3	<3	<3	<3	<3	<3	<3	<6.1	<3
DNT1-7-10	9/5/2003	<0.34	1.8	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
DNT2-1	8/29/2003	<0.11	0.17	<0.11	<0.11	<0.11	<0.11	0.0017	0.001	<0.11	<0.022	0.016
DNT2-2	8/29/2003	<0.13	0.25	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.026	0.025
DNT2-3	8/29/2003	<0.0061	0.0012	<0.0061	<0.0061	<0.0061	<0.0061	0.0011	0.0011	<0.0061	<0.012	0.003
DNT2-1-9	9/4/2003	<0.13	0.0094	<0.007	<0.007	<0.007	<0.007	<0.13	0.0014	<0.13	0.006	0.0088
DNT2-3-6	9/4/2003	<0.035	0.019	<0.007	<0.007	<0.007	<0.007	<0.035	0.0027	0.0098	0.0055	0.0027
DNT2-3-9	9/7/2003	<0.035	0.043	<0.013	<0.013	<0.013	<0.013	<0.035	0.0018	<0.035	0.11	0.0061
DNT2-4-1	9/4/2003	<0.035	0.024	<0.0057	<0.0057	<0.0057	<0.0057	<0.035	0.0017	<0.035	0.031	0.0023
DNT2-4-5	9/4/2003	0.0035	1	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.078	<0.035
DNT2-4-10	9/4/2003	<0.0069	0.7	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	0.0012	<0.0069	0.16	0.0046
DNT2-6-5	9/4/2003	<0.0072	0.0019	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	0.0022	<0.0072	0.0095	0.0029
DNT2-6-9	9/4/2003	<0.0066	0.059	<0.0066	<0.0066	<0.0066	<0.0066	<0.0066	0.0025	<0.0066	0.029	0.0024
DNT2-7-1	9/4/2003	<0.0058	0.063	0.0009	<0.0066	<0.0066	<0.0066	<0.0058	0.001	0.0059	0.0041	<0.0058
DNT2-7-5	9/4/2003	<0.007	0.003	<0.007	<0.007	<0.007	<0.007	<0.007	0.0023	<0.007	0.0045	0.0039
DNT2-7-10	9/4/2003	<0.0067	0.016	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	0.0059	0.01	<0.0067
DNT2-8-5	9/4/2003	<0.64	5.5	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	0.76	<1.3	<0.64
DNT2-8-10	9/4/2003	<0.0068	0.038	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	0.0066	0.0024	<0.0068

Notes:

J qualifiers for some concentrations are not shown

Shading indicates result below quantitation limit shown

Key to soil sample identification:

DNT 2-6-9: DNT-2 process unit, pier hole No. 6, depth 9 feet below base of excavation

DNT 1-3: DNT-1 process unit, bottom surface of excavation, location No. 3.

TABLE 7-1
SOIL ANALYTICAL RESULTS - SEMIVOLATILES
DNT Production Units
SEMIANNUAL REPORT - January 2004
 Air Products, L.P.
 Pasadena, Texas

Sample Identification	Date Collected	2,4-DNT (mg/kg)	2,6-DNT (mg/kg)	4,6-DNOC (mg/kg)	o-MNT (mg/kg)	m-MNT (mg/kg)	p-MNT (mg/kg)	1,3-Dichloro-benzene (mg/kg)	Nitro-benzene (mg/kg)	5-Nitro-o-toluidine (mg/kg)	o-Toluidine (mg/kg)	2,4-TDA (mg/kg)	2,6-TDA (mg/kg)
DNT1-1	8/29/2003	120	25	<100	<21	<21	<21	<21	<21	<21	<21	<21	<21
DNT1-2	8/29/2003	7.3	2.9	<3.7	0.91	0.001	0.97	<0.0059	<0.77	0.13	<0.77	<0.77	<0.77
DNT1-3	8/29/2003	62	10	<36	<7.4	<7.4	<7.4	<7.4	<7.4	0.37	<7.4	<7.4	<7.4
DNT1-1-1	8/29/2003	5,300	850	<40	3,400	260	2,300	<82	0.9	20	21	<8.2	<8.2
DNT1-1-5	9/5/2003	360	130	<210	450	39	310	<44	<44	7.1	4.0	<44	<44
DNT1-1-10	9/5/2003	270	56	<110	230	20	170	<22	<22	2.7	<22	<22	<22
DNT1-4-1	9/5/2003	31	13	<12	8.2	0.77	7.3	<2.4	<2.4	3.4	10	1.4	<2.4
DNT1-4-5	9/5/2003	0.02	<0.47	<2.3	0.08	<0.47	<0.47	<0.47	<0.47	0.05	1.1	<0.47	<0.47
DNT1-4-10	9/5/2003	0.08	0.1	<2.2	0.23	<0.46	0.16	<0.46	<0.46	0.04	<0.46	<0.46	<0.46
DNT1-7-5	9/5/2003	5,500	2,100	<1900	5,000	490	3,600	<400	<400	29	<400	<400	<400
DNT1-7-10	9/5/2003	480	200	<220	250	21	190	<45	<45	4.8	<45	<45	<45
DNT2-1	8/29/2003	360	93	<180	100	11	91	<37	<37	1.5	1.5	<37	<37
DNT2-2	8/29/2003	83	27	<42	13	<8.7	10	<0.013	<8.7	0.53	<8.7	<8.7	<8.7
DNT2-3	8/29/2003	36	15	<20	6.8	0.72	5.6	<4	<4	0.55	0.16	<4	<4
DNT2-1-9	9/4/2003	0.17	<0.46	<2.2	0.2	<0.46	0.26	<0.46	<0.46	0.81	3.2	<0.46	<0.46
DNT2-3-6	9/4/2003	<23	<23	<110	17	<23	25	<23	<23	5.8	160	<23	<23
DNT2-3-9	9/7/2003	19	3.20	<11	22	2.2	22	<2.2	<2.2	2.3	<2.2	<2.2	<2.2
DNT2-4-1	9/4/2003	26	7.0	<91	83	10	83	<19	<19	8.6	27	<19	<19
DNT2-4-5	9/4/2003	34	20	<110	280	33	250	<23	<23	33	130	<23	<23
DNT2-4-10	9/4/2003	160	43	<110	300	33	240	<22	<22	9.3	3.1	<22	<22
DNT2-6-5	9/4/2003	6.9	1.1	<12	5.6	0.52	5.1	<2.4	<2.4	2.7	17	<2.4	<2.4
DNT2-6-9	9/4/2003	88	37	<43	120	13	93	<8.9	<8.9	4.2	<8.9	<8.9	<8.9
DNT2-7-1	9/4/2003	160	63	<93	65	6	49	<19	<19	5.6	5.7	<19	<19
DNT2-7-5	9/4/2003	0.1	<0.46	<2.2	0.12	-	0.09	<0.46	<0.46	0.031	0.59	0.34	<0.46
DNT2-7-10	9/4/2003	19	7.5	<11	21	2	19	<2.2	<2.2	2.6	0.09	<2.2	<2.2
DNT2-8-5	9/4/2003	1,500	410	<210	2,500	210	1,700	<42	<42	87	190	<42	<42
DNT2-8-10	9/4/2003	33	7.8	<22	46	5.1	41	<4.5	<4.5	3.2	1.3	<4.5	<4.5

Notes:
 DNT - Dinitrotoluene
 MNT - Mononitrotoluene
 TDA - Toluenediamine
 DNOC - Dinitro-o-cresol
 o-Toluidine includes both o- and p-Toluidine
 J qualifiers for some concentrations are not shown
 Shading indicates result below quantitation limit shown

Key to soil sample identification:
 DNT 2-6-9: DNT-2 process unit, pier hole No. 6, depth 9 feet below base of excavation
 DNT 1-3: DNT-1 process unit, bottom surface of excavation, location No. 3.

TABLE 7-4
SUMMARY OF ANALYTICAL RESULTS
TDA CHECK TANK PAD
Air Products LLC
Pasadena, Texas

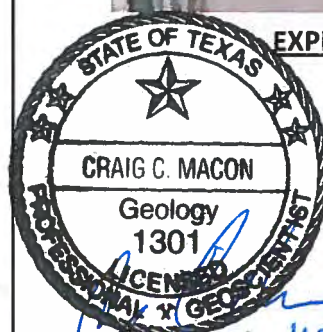
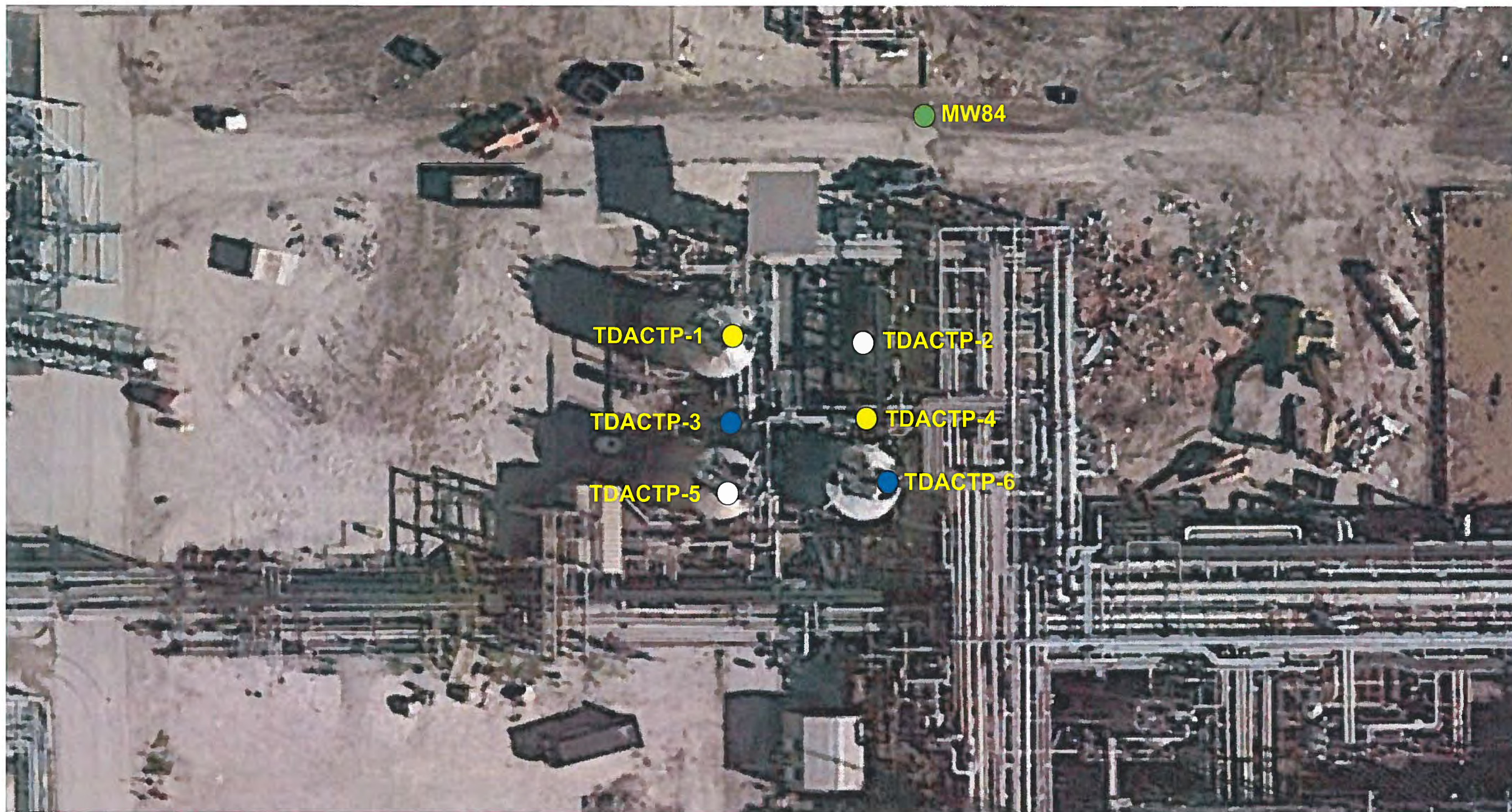
SAMPLE IDENTIFICATION	Sampled Depth (ft bgl)	SEMIVOLATILE ORGANICS										
		1,3-DCB	2,4-DNT	2,6-DNT	46DN2MPH	m-MNT	o-MNT	p-MNT	NB	5-N-o-T	*TDAs	**Toluidines
0.5 acre RES ^{Tot} Soil _{Comb}		120	6.9	6.9	6.7	670	21	270	66	520	1.5	47
0.5 acre RES ^{GW} Soil _{Ing}		6.7	0.0053	0.0048	0.0047	1.8	0.031	0.43	0.35	0.52	0.015	0.089
0.5 acre C/I ^{Tot} Soil _{Comb}		170	28	28	68	6800	87	1200	110	2100	6	110
0.5 acre C/I ^{GW} Soil _{Ing}		20	0.012	0.011	0.014	5.5	0.07	0.96	1	12	0.034	0.2
Texas-Specific Background		-	-	-	-	-	-	-	-	-	-	-
TDA CTP-1	1.5	<0.0019	<0.0044	<0.0036	<0.0061	<0.00069	<0.0016	<0.0014	<0.0036	<0.0028	5.7	0.026
TDA CTP-2	1.5	<0.0022	<0.0052	<0.0043	<0.0072	<0.00082	<0.0019	<0.0017	<0.0043	<0.0033	<0.0018	<0.020
TDA CTP-3	1.5	<0.0018	<0.0043	<0.0035	<0.0059	<0.00068	<0.0016	<0.0014	<0.0035	<0.0027	0.22	<0.017
TDA CTP-4	1.5	0.0092J	<0.0048	<0.0039	<0.0066	<0.00075	<0.0018	<0.0015	<0.0039	<0.0030	2.9	0.059
TDA CTP-5	1.5	<0.0018	<0.0043	<0.0035	<0.0059	<0.00067	<0.0016	<0.0014	<0.0035	<0.0027	<0.0015	0.062
TDA CTP-6	1.5	<0.0019	<0.0044	<0.0036	<0.0061	<0.00070	<0.0016	<0.0014	<0.0036	<0.0028	0.19	<0.017

Notes:
All concentrations reported in mg/kg (milligrams/kilogram)
" < " = concentration is less than the sample-specific Method Detection Limit shown.
J = Estimated concentration. Analyte was detected at a level less than the Reporting Limit, and greater than or equal to the Method Detection Limit
* 2,4-TDA and 2,6-TDA isomers are combined since analytical method cannot clearly distinguish the two isomers. PCLs listed are for 2,4-TDA, the most conservative PCLs between the two compounds.
** o-Toluidine and p-Toluidine isomers are combined since analytical method cannot clearly distinguish p- Toluidine. PCLs listed are the most conservative between the two compounds.

1,3-DCB = 1,3 Dichlorobenzene
2,4-DNT = 2,4 Dinitrotoluene
2,6-DNT = 2,6 Dinitrotoluene
46DN2MPH = 4,6-Dinitro-2-methylphenol
m-MNT = m-Nitrotoluene, also known as m-Mononitrotoluene
o-MNT = o-Nitrotoluene, also known as o-Mononitrotoluene
p-MNT = p-Nitrotoluene, also known as p-Mononitrotoluene

NB = Nitrobenzene
5-N-o-T = 5-Nitro-o-Toluidine
TDAs = 2,4- and 2,6 Toluenediamine
Toluidines = o-, and p- Toluidine
TCE = Trichloroethylene
PCBs = Polychlorinated biphenyls, including Aroclor 1242

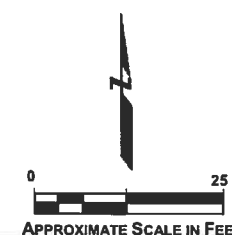
Cell Color Codes	
	Concentration exceeds Residential, and Commercial-Industrial Groundwater Protection PCL
	Concentration exceeds the Groundwater Protection PCLs and Residential Total Soil Combined PCL



EXPLANATION

- GROUNDWATER PROTECTIVE CONCENTRATION LEVEL EXCEEDED IN SOIL
- GROUNDWATER AND TOTAL SOIL COMBINED PROTECTIVE CONCENTRATION LEVELS EXCEEDED IN SOIL
- NO PROTECTIVE CONCENTRATION LEVELS EXCEEDED
- GROUNDWATER MONITORING WELL

AERIAL IMAGE PROVIDED BY GOOGLE EARTH
IMAGE DATE: APRIL 8, 2014



FORMER TDA CHECK TANK PAD ASSESSMENT SOIL SAMPLING

PREPARED FOR

AIR PRODUCTS LLC
PASADENA, TEXAS

By: SLB Date: 1/20/2015 Project No. 4487



Figure 7-1

TABLE 7-5
SUMMARY OF ANALYTICAL RESULTS
DNT MANUFACTURING AREA ASSESSMENT
Air Products LLC
Pasadena, Texas

SAMPLE IDENTIFICATION	Sampled Interval (ft bgl)	SEMIVOLATILE ORGANICS											VOLATILE ORGANICS				PCBs	METALS												
		1,3-DCB	2,4-DNT	2,6-DNT	46DN2MPH	m-MNT	o-MNT	p-MNT	NB	5-N-o-T	*TDAs	**Toluidines	2-Butanone	Chloroform	Toluene	TCE	Aroclor 1242	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury***	Nickel	Selenium	Silver	Strontium	Zinc
0.5 acre RES ^{Tot} Soil _{Comb}		120	6.9	6.9	6.7	670	21	270	66	520	1.5	47	40000	16	5900	18	1.1	15	20	8100	38	52	33000	500	8.3	840	310	97	44000	9900
0.5 acre RES ^{GW} Soil _{Ing}		6.7	0.0053	0.0048	0.0047	1.8	0.031	0.43	0.35	0.52	0.015	0.089	29	1	8.2	0.034	11	5.4	5	440	1.8	1.5	2400	3	2.1	160	2.3	0.48	610	2400
0.5 acre C/I ^{Tot} Soil _{Comb}		170	28	28	68	6800	87	1200	110	2100	6	110	190000	26	42000	40	7.7	310	200	120000	250	2600	120000	1600	19	8800	4900	2300	490000	250000
0.5 acre C/I ^{GW} Soil _{Ing}		20	0.012	0.011	0.014	5.5	0.07	0.96	1	12	0.034	0.2	87	3	8.2	0.034	11	5.4	5.0	440	1.8	1.5	2400	3	2.1	470	2.3	1.4	1800	7600
Texas-Specific Background		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5.9	300	1.5	-	30	15	0.04	10	0.3	-	100	30
B1	2-3	<0.0021	<0.0049	<0.0040	<0.0067	<0.00076	0.080	0.097	<0.0040	<0.0031	<0.0017	<0.019	<0.0026	<0.00089	<0.0019	<0.0019	<0.0017	<0.29	3.2	180	0.76	0.038J	10	9.8	0.0088J	11	<0.33	<0.15	260	30
B2	2-3	<0.0022	0.062	<0.0042	<0.0071	<0.00081	0.11	0.12	<0.0042	<0.0032	<0.0018	<0.020	<0.0027	<0.00094	<0.0020	<0.0020	<0.0018	<0.31	7.8	190	1.5	<0.034	21	18	<0.0051	21	<0.35	<0.16	35	34
B3	3-4	<0.0021	2.0	<0.0040	<0.0067	0.12	0.19	0.13	<0.0040	0.31	<0.0017	4.8	0.012J	<0.00090	0.014	<0.0019	<0.0017	<0.30	7.1	270	1.6	0.039J	22	18	0.010J	18	<0.34	<0.16	33	35
B6	2-3	<0.0020	0.038	0.023	<0.0064	0.095	0.34	0.27	<0.0038	<0.0029	<0.0016	0.40	<0.0024	<0.00085	<0.0018	<0.0018	<0.0016	<0.28	4.6	380	0.95	<0.031	12	19	<0.0045	15	<0.32	<0.15	45	25
B9	3-4	0.0039J	30	9.1	<0.0065	1.4	15	15	<0.0039	2.0	<0.0017	1.5	<0.0025	<0.00087	0.0055J	<0.0019	<0.0016	<0.29	4.1	230	0.91	0.056J	15	11	0.029	22	<0.32	<0.15	100	36
B13	2-3	<0.0021	0.057	0.047	<0.0067	<0.00076	0.16	0.14	<0.0040	<0.0031	<0.0017	0.058	<0.0026	<0.00090	<0.0019	<0.0019	<0.0017	<0.29	4.2	150	0.73	0.070J	12	11	<0.0046	13	<0.33	<0.15	230	34
B14	3-4	<0.0023	<0.0053	<0.0043	<0.0073	<0.00083	0.12	0.12	<0.0044	<0.0034	<0.0019	0.026	0.012J	<0.00098	<0.0020	<0.0021	<0.0018	<0.33	4.5	250	1.4	0.070J	18	22	0.0070J	16	<0.36	<0.17	35	32
B15	3-4	<0.0018	11	0.40	<0.0058	0.43	2.8	2.9	<0.0035	2.9	<0.0015	14	<0.0023	<0.00078	0.0052J	<0.0017	<0.0015	<0.25	4.4	150	0.70	0.054J	11	14	0.036	12	<0.28	<0.13	210	30
B17	3-4	<2.1	2600	770	<6.6	350	3800	2500	<3.9	<3.0	<1.7	<19	<0.0026	<0.00089	190000	<0.0019	<0.0017	<0.29	3.3	76	0.25J	<0.032	14	18	0.044	6.1	<0.32	<0.15	40	29
B18	3-4	<0.97	240	50	<3.1	81	660	480	<1.9	52	<0.80	150	0.0038J	<0.00083	4400	<0.0018	<0.0016	<0.27	3.8	210	0.64	0.14J	10	16	0.0090J	10	<0.30	<0.14	98	50
B19	3-4	<0.0018	0.28	0.088	<0.0059	0.087	0.20	0.19	<0.0035	0.097	<0.0015	0.36	<0.0023	<0.00079	0.0033J	<0.0017	<0.0015	<0.27	4.4	170	0.80	0.26J	17	58	0.023	36	<0.30	<0.14	160	5800
B21	3-4	<0.0020	<0.0047	<0.0038	<0.0065	<0.00073	0.066	0.079	<0.0038	<0.0030	<0.0016	<0.018	0.0065J	<0.00086	<0.0018	<0.0018	<0.0016	<0.29	4.0	180	0.72	0.10J	10	15	0.017J	11	<0.32	<0.15	58	30
B25	3-4	<0.0016	0.084	0.062	<0.0053	0.079	0.064	0.077	<0.0032	0.030	<0.0013	0.026	<0.0020	<0.00070	0.0016J	<0.0015	<0.0013	<0.24	1.8	20	0.11J	0.26	8.6	<2.2	0.14	25	<0.27	<0.12	180	120
B28	3-4	<0.0020	<0.0046	<0.0037	<0.0063	<0.00072	0.076	0.081	<0.0038	<0.0029	<0.0016	<0.018	<0.0024	<0.00084	<0.0018	<0.0018	<0.0016	<0.28	3.7	200	0.81	0.078J	11	11	0.015J	10	<0.31	<0.14	35	22
B30	3-4	<0.0020	<0.0046	<0.0038	<0.0063	<0.00072	<0.0017	<0.0015	<0.0038	<0.0029	<0.0016	0.025	<0.0024	<0.00084	<0.0018	<0.0018	<0.0016	<0.29	3.6	210	0.86	<0.032	12	10	<0.0045	9.2	<0.32	<0.15	30	20
B37	1-2	<0.0092	8.6	7.8	<0.030	0.46	2.0	1.6	<0.018	1.1	<0.0076	0.17	0.0048J	<0.00079	0.0018J	<0.0017	<0.0015	<0.27	3.0	120	0.15J	0.28J	11	8.5	0.092	15	<0.30	<0.14	160	410
B38	3-4	<0.0021	0.17	0.034	<0.0068	0.11	0.36	0.40	<0.0040	<0.0031	<0.0017	5.3	0.0041J	<0.00090	0.024	<0.0019	<0.0017	<0.31	5.2	220	0.84	0.074J	15	15	<0.0048	13	<0.35	<0.16	220	43
B39	3-4	<0.0022	<0.0052	<0.0043	<0.0072	<0.00082	0.060	0.10	<0.0043	<0.0033	<0.0018	<0.020	0.0036J	<0.00096	<0.0020	<0.0020	<0.0018	<0.31	7.4	130	0.69	0.087J	17	15	0.0062J	13	<0.35	<0.16	67	35
B40	3-4	<0.0018	1.9	0.34	<0.0057	0.29	2.6	2.0	<0.0034	1.7	<0.0014	1.6	<0.0022	0.0032J	0.038	<0.0016	<0.0014	<0.26	4.0	92	0.58	0.16J	12	7.5	0.012J	44	<0.29	<0.13	110	120
B41	3-4	<0.017	0.26	<0.033	<0.055	<0.0063	0.49	0.64	<0.033	<0.025	<0.014	<0.15	<0.0021	<0.00073	<0.0015	<0.0016	<0.0014	<0.25	4.6	160	0.47	0.13J	8.8	8.2	0.0068J	42	<0.28	<0.13	510	50

Notes:

All concentrations reported in mg/kg (milligrams/kilogram)

"<" = concentration is less than the sample-specific Method Detection Limit shown.

J = Estimated concentration. Analyte was detected at a level less than the Reporting Limit, and greater than or equal to the Method Detection Limit

* 2,4-TDA and 2,6-TDA isomers are combined since analytical method cannot clearly distinguish the two isomers.

** o-Toluidine and p-Toluidine isomers are combined since analytical method cannot clearly distinguish p- Toluidine

*** Assumes pH is 6.8

Cell Color Codes

	Concentration exceeds Residential Groundwater Protection PCL and Texas-Specific Background
	Concentration exceeds Residential, Commercial-Industrial Groundwater Protection PCL, and Texas-Specific Background
	Concentration exceeds the Residential Total Soil Combined PCL
	Concentration exceeds the Residential and the Commercial-Industrial Total Soil Combined PCL

1,3-DCB = 1,3 Dichlorobenzene

2,4-DNT = 2,4 Dinitrotoluene

2,6-DNT = 2,6 Dinitrotoluene

46DN2MPH = 4,6-Dinitro-2-methylphenol

m-MNT = m-Nitrotoluene, also known as m-Mononitrotoluene

o-MNT = o-Nitrotoluene, also known as o-Mononitrotoluene

p-MNT = p-Nitrotoluene, also known as p-Mononitrotoluene

NB = Nitrobenzene

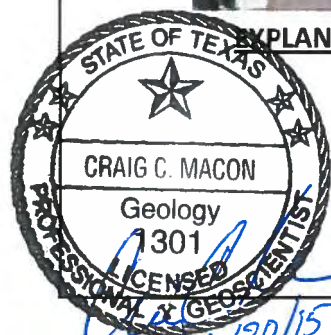
5-N-o-T = 5-Nitro-o-Toluidine

TDAs = 2,4- and 2,6 Toluenediamine

Toluidines = o-, and p- Toluidine

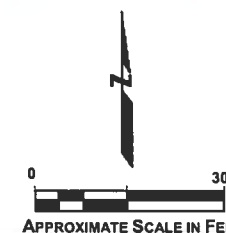
TCE = Trichloroethylene

PCBs = Polychlorinated biphenyls, including Aroclor 1242



- EXPLANATION**
- GROUNDWATER PROTECTIVE CONCENTRATION LEVEL EXCEEDED IN SOIL
 - GROUNDWATER AND TOTAL SOIL COMBINED PROTECTIVE CONCENTRATION LEVELS EXCEEDED IN SOIL
 - SAMPLE NOT ANALYZED, BUT NO SIGNIFICANT FIELD INDICATIONS OF IMPACT
 - DRILLING REFUSAL ON CONCRETE
 - GROUNDWATER MONITORING WELL

AERIAL IMAGE PROVIDED BY GOOGLE EARTH
IMAGE DATE: APRIL 8, 2014



**FORMER DNT MANUFACTURING AREA
ASSESSMENT SOIL SAMPLING RESULTS**

PREPARED FOR

AIR PRODUCTS LLC
PASADENA, TEXAS

By: SLB Date: 1/20/2015 Project No. 4487



Figure 7-2

Groundwater Data Summary

SWMUs and AOCs Subject to Groundwater Corrective Action

Waste Management Area 1 (consisting of the following 5 SWMUs and AOCs):

Former Effluent Impoundment (NOR 001);
Former Neutralization Pit (NOR No. 027);
DNT Loading Area [consisting of the DNT Tank Car Loading Area (NOR No. 022),
DNT Truck Loading Area (NOR 023), DNT Spill-Off Pond (NOR No. 024)];
DNT Storage Area (AOC1); and
Northwest Storage Area (AOC2).

Waste Management Area 2 (consisting of the following 2 SWMUs and AOCs):

Former Acid Spill Impoundment (NOR 002); and
DNT Manufacturing Area (AOC3).

TDA Tank Car Loading Area (NOR No. 025).

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-77	EI	SZ	10/12/2023	<0.0567 U	<0.0372 U	<1.09 U	<0.736 U	<0.796 U	--	--	--	--	--	<3.88 U	<7.76 U	<4.67 U	<1.19 U	<9.84 U*	~
MW-77	EI	SZ	4/18/2024	<0.0625 U	<0.0410 U	<1.22 U	<0.819 U	<0.886 U	--	--	--	--	--	<4.32 U	<8.64 U*	<5.20 U	<1.33 U	<11.0 U*	~
MW-77	EI	SZ	10/17/2024	<0.0608 U	<0.0399 U	<1.04 U	<0.702 U	<0.759 U	--	--	--	--	--	<3.70 U	<7.40 U	<4.46 U	<1.14 U	<9.40 U*	~
MW-77	EI	SZ	05/05/25	<0.0622 U	<0.0408 U	<1.10 U	<0.742 U	<0.802 U	--	--	--	--	--	<3.91 U	<7.82 U*	<4.71 U	<1.20 U	<9.92 U*	~
MW-78	Neut	SZ	12/19/2003	<0.96	<0.96	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<0.96	<9.6	<0.96	<1.9	~
MW-78	Neut	SZ	4/26/2004	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<19	<9.5	<19	--	~
MW-78	Neut	SZ	10/12/2004	<10	<10	<10	<10	<10	--	--	--	--	--	<10	<20	<10	<20	--	~
MW-78	Neut	SZ	4/12/2005	<9.7	7 J	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<9.7	<9.7	<9.7	--	Exceed
MW-78	Neut	SZ	10/18/2005	<9.6	<9.6	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<9.6	<9.6	<9.6	--	~
MW-78	Neut	SZ	4/13/2006	<9.8	<9.8	<9.8	<9.8	<9.8	--	--	--	--	--	<9.8	<9.8	<9.8	<9.8	--	~
MW-78	Neut	SZ	11/7/2006	<9.6	<9.6	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<9.6	<9.6	<9.6	--	~
MW-78	Neut	SZ	4/10/2007	<9.6	1.2 J	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<9.6	<9.6	<9.6	--	~
MW-78	Neut	SZ	10/9/2007	3.8 J	4.8 J	<1.0	<0.86	<0.94	--	--	--	--	--	<1.2	<0.62	<1.0	<4.1	--	Exceed
MW-78	Neut	SZ	4/14/2008	<2.8	2.3 J	<1.0	<1.0	<1.4	--	--	--	--	--	<0.96	<1.6	<1.1	<0.85	--	Exceed
MW-78	Neut	SZ	10/24/2008	<2.8	4 J	<1.0	<1.0	<1.4	--	--	--	--	--	<0.96	<1.6	<1.1	<0.85	--	Exceed
MW-78	Neut	SZ	4/20/2009	<2.80	<0.996	<1.01	<1.03	<1.45	--	--	--	--	--	<0.965	<1.56	<1.09	<0.850	--	~
MW-78	Neut	SZ	10/20/2009	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
MW-78	Neut	SZ	4/21/2010	5.03 J	8.69 J	<0.998	1.25 J	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	Exceed
MW-78	Neut	SZ	10/21/2010	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08 J	<0.841	--	~
MW-78	Neut	SZ	4/21/2011	<2.83	<1.01	<1.02	<1.04	<1.46	--	--	--	--	--	<1.12	<4.90	<1.47	<0.858	<3.17 J	~
MW-78	Neut	SZ	4/24/2012	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	--	~
MW-78	Neut	SZ	4/16/2014	<0.94	<0.63	<0.60	<1.1	<1.0	--	--	--	--	--	<1.1	<1.3	<1.2	<0.68	<4.1	~
MW-78	Neut	SZ	4/21/2016	<0.913	<0.615	<0.587 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<1.11	<1.26	<1.130	<0.663	<4.00 X7	~
MW-78	Neut	SZ	4/20/2018	3.88 J	5.39 J	<0.610 X7	4.92 J X7	2.27 J X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	Exceed
MW-78	Neut	SZ	4/23/2020	<0.950	<0.640	<0.610 X7	<1.07 LX7	<1.06 X7	--	--	--	--	--	<1.15 L	<1.31	<1.18	<0.690	<4.16 X7	~
MW-78	Neut	SZ	4/25/2022	<0.0587	0.115	<1.08 X7	<0.706 X7	<0.763 X7	--	--	--	--	--	<0.448	<5.73	<0.525	<2.86	<6.77 X7	~
MW-78	Neut	SZ	4/18/2024	2.45	5.25	<1.04 U	<0.697 U	<0.754 U	--	--	--	--	--	<3.67 U	<7.35 U	<4.43 U	<1.13 U	<9.33 U*	~
MW-79	ASI	SZ	12/12/2005	<0.24	<0.24	<0.24	0.024 J	<0.24	--	--	--	--	--	<0.48	<0.24	<0.48	<0.24	<1.9	~
MW-79	ASI	SZ	4/20/2006	0.15 J	0.31 J	<0.96	<0.96	<0.96	--	--	--	--	--	<0.96	<0.96	<0.96	<0.96	<4.8	~
MW-79	ASI	SZ	11/1/2006	<0.97	<0.97	<0.97	<0.97	<0.97	--	--	--	--	--	<0.97	<0.97	<0.97	<0.97	<4.8	~
MW-79	ASI	SZ	4/20/2007	<0.96	<0.96	<0.96	<0.96	<0.96	--	--	--	--	--	<0.96	<0.96	<0.96	<0.96	--	~
MW-79	ASI	SZ	10/12/2007	<0.056	<0.081	<0.083	<0.065	<0.074	--	--	--	--	--	<0.067	<0.10	<0.052	<0.094	--	~
MW-79	ASI	SZ	4/10/2008	<0.056	<0.081	<0.083	<0.065	<0.074	--	--	--	--	--	<0.067	<0.10	<0.052	<0.094	<1.7	~
MW-79	ASI	SZ	10/17/2008	<0.057	<0.082	<0.084	<0.066	<0.074	--	--	--	--	--	<0.068	<0.10	<0.053	<0.095	--	~
MW-79	ASI	SZ	4/23/2009	<0.0558	<0.0808	<0.0824	<0.0647	<0.0730	--	--	--	--	--	<0.0686	<0.100	<0.0518	<0.0937	--	~
MW-79	ASI	SZ	10/28/2009	0.149 J	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-79	ASI	SZ	4/8/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-79	ASI	SZ	10/14/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	<1.71	~
MW-79	ASI	SZ	4/19/2011	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-79	ASI	SZ	10/26/2011	<2.80	<0.996	<1.01	<1.03	<1.45	--	--	--	--	--	<1.11	<4.85	<1.46	<0.850	<3.14 J	~
MW-79	ASI	SZ	4/17/2012	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-79	ASI	SZ	10/26/2012	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-79	ASI	SZ	4/22/2013	<0.0592	<0.0857	<0.0874	<0.0686	<0.0775	--	--	--	--	--	<0.0706	<0.106	<0.0549	<0.0994	<1.79 L	~
MW-79	ASI	SZ	10/18/2013	<0.15	<0.091	<0.69	<1.2	<1.2	--	--	--	--	--	<0.19	<0.15	<0.13	<0.15	<4.6 L	~
MW-79	ASI	SZ	4/9/2014	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-80	DNTL	IZ	10/15/2004	<0.97	<0.97	<9.7	<9.7	<9.7	--	--	--	--	--	<0.97	<0.97	<9.7	<0.97	<1.9	~
MW-80	DNTL	IZ	4/6/2005	0.082 J	<0.24	<0.24	<0.24	<0.24	--	--	--	--	--	<0.24	<0.48	<0.24	<0.24	<1.9	~
MW-80	DNTL	IZ	10/25/2005	<0.24	<0.24	<0.24	<0.24	<0.24	--	--	--	--	--	<0.24	<0.48	<0.24	<0.24	<1.9	~
MW-80	DNTL	IZ	4/20/2006	<1	<1	<1	<1	<1	--	--	--	--	--	<1	<1	<1	<1	<5	~
MW-80	DNTL	IZ	11/1/2006	<0.97	<0.97	<0.97	<0.97	<0.97	--	--	--	--	--	<0.97	<0.97	<0.97	<0.97	<4.8	~
MW-80	DNTL	IZ	4/23/2007	<0.99	<0.99	<0.99	<0.99	<0.99	--	--	--	--	--	<0.99	<0.99	<0.99	<0.99	--	~
MW-80	DNTL	IZ	10/12/2007	9.8	4.2	0.91 J	13	8	--	--	--	--	--	<0.067	<0.10	<0.052	<0.094	--	Exceed
MW-80	DNTL	IZ	4/8/2008	<0.056	<0.081	<0.083	<0.065	<0.074	--	--	--	--	--	<0.067	<0.10	<0.052	<0.094	<1.7	~
MW-80	DNTL	IZ	10/15/2008	<0.057	<0.082	<0.084	<0.066	<0.074	--	--	--	--	--	<0.068	<0.10	<0.053	<0.095	--	~
MW-80	DNTL	IZ	4/23/2009	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	--	~
MW-80	DNTL	IZ	10/27/2009	0.366 J	1.48	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	Exceed
MW-80	DNTL	IZ	4/6/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-80	DNTL	IZ	10/14/2010	<0.0580	<0.0840	<0.0856	<0.0672	<0.0759	--	--	--	--	--	<0.0692 J	<0.104	<0.0539	<0.0974	<1.76	~
MW-80	DNTL	IZ	4/15/2011	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71 J	~
MW-80	DNTL	IZ	10/26/2011	<2.77 J	<0.987 J	<0.998 J	<1.02 J	<1.44 J	--	--	--	--	--	<1.10 J	<4.80 J	<1.44 J	<0.841 J	<3.11 J	~
MW-80	DNTL	IZ	4/17/2012	0.493 J	0.222 J	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-80	DNTL	IZ	10/30/2012	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71	~
MW-80	DNTL	IZ	4/19/2013	<0.0569	<0.0823	<0.0840	0.128 J	<0.0745	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72 L	~
MW-80	DNTL	IZ	10/17/2013	<0.13	<0.078	<0.59	<1.0	<1.0	--	--	--	--	--	<0.17	<0				

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-81	Neut	IZ	10/17/2005	<9.7	8.7 J	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<9.7	<9.7	<9.7	--	Exceed
MW-81	Neut	IZ	4/12/2006	<9.9	13	<9.9	<9.9	<9.9	--	--	--	--	--	<9.9	<9.9	<9.9	<9.9	--	Exceed
MW-81	Neut	IZ	10/13/2006	<9.8	4.9 J	<9.8	<9.8	<9.8	--	--	--	--	--	<9.8	<9.8	<9.8	<9.8	--	Exceed
MW-81	Neut	IZ	4/10/2007	<9.8	3 J	<9.8	<9.8	<9.8	--	--	--	--	--	<9.8	<9.8	<9.8	<9.8	--	Exceed
MW-81	Neut	IZ	10/4/2007	4.7 J	4.8 J	<1.0	<0.86	<0.94	--	--	--	--	--	<1.2	<0.62	<1.0	<4.1	--	Exceed
MW-81	Neut	IZ	4/10/2008	12	6.6 J	<1.0	1.7 J	<1.4	--	--	--	--	--	<0.95	<1.5	<1.1	<0.84	--	Exceed
MW-81	Neut	IZ	10/29/2008	<2.8	4.8 J	<1.0	<1.0	<1.5	--	--	--	--	--	<0.97	<1.6	<1.1	<0.86	--	Exceed
MW-81	Neut	IZ	4/17/2009	<2.85	1.24 J	<1.03	<1.05	<1.48	--	--	--	--	--	<0.984	<1.59	<1.11	<0.866	--	~
MW-81	Neut	IZ	10/20/2009	<2.83	2.86 J	<1.02	<1.04	<1.46	--	--	--	--	--	<0.975	<1.57	<1.10	<0.858	--	Exceed
MW-81	Neut	IZ	4/15/2010	<2.80	<0.996	<1.01	<1.03	<1.45	--	--	--	--	--	<0.965	<1.56	<1.09	<0.850	--	~
MW-81	Neut	IZ	10/20/2010	<2.88	<1.03	<1.04	<1.06	<1.49	--	--	--	--	--	<0.994	<1.60	<1.12	<0.875	--	~
MW-81	Neut	IZ	4/21/2011	<2.85	<1.02	<1.03	<1.05	<1.48	--	--	--	--	--	<1.13	<4.94	<1.49	<0.866	<3.20 J	~
MW-81	Neut	IZ	4/25/2012	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	--	~
MW-81	Neut	IZ	4/21/2014	<0.91	<0.62	<0.59	<1.0	<1.0	--	--	--	--	--	<1.1	<1.3	<1.1	<0.66	<4.0	~
MW-81	Neut	IZ	4/22/2016	<0.969	0.857 J	<0.622 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<1.17	<1.34	<1.20	<0.704	<4.24 X7	~
MW-81	Neut	IZ	4/24/2018	<1.00	<0.674	<0.642 X7	3.91 J X7	<1.12 X7	--	--	--	--	--	<1.21	<1.38	<1.24	<0.726	<4.38 X7	~
MW-81	Neut	IZ	5/1/2020	<1.09	<0.736	<0.701 X7	<1.23 X7	<1.22 X7	--	--	--	--	--	<1.32	<1.51	<1.36	<0.793	<4.78 X7	~
MW-81	Neut	IZ	4/26/2022	0.396	0.357	<1.14 X7	<0.744 X7	<0.805 X7	--	--	--	--	--	<0.473	<6.04	<0.553	<3.02	<7.14 X7	~
MW-81	Neut	IZ	4/5/2024	0.0761 J	0.0699 J	<1.37 U	<0.924 U	<0.999 U	--	--	--	--	--	<4.87 U	<9.74 U	<5.87 U	<1.50 U	<12.4 U*	~
MW-82	DNT	SZ	10/26/2005	65000	41000	5900 J	82000	47000	--	--	--	--	--	<20	110	36 J	740	--	Exceed
MW-82	DNT	SZ	4/17/2006	140000	62000	19000 J	270000	160000	--	--	--	--	--	<98	350	79 J	54 J	--	Exceed
MW-82	DNT	SZ	10/18/2006	57000	37000	5500	61000	39000	--	--	--	--	--	<500	440 J	<500	940	--	Exceed
MW-82	DNT	SZ	4/16/2007	15000	11000	1200 J	19000	12000	--	--	--	--	--	<96	6.5 J	<96	260	--	Exceed
MW-82	DNT	SZ	10/10/2007	78000	41000	6300 J	93000	55000	--	--	--	--	--	<13	12 J	29 J	550	--	Exceed
MW-82	DNT	SZ	4/25/2012	3630	1910	323 J	4510	2630	--	--	--	--	--	<1.10	6.47 J	<1.44	35	--	Exceed
MW-82	DNT	SZ	10/25/2013	4400	2600	410	4800	2900	--	--	--	--	--	<1.1	<1.3	<1.1	4.4 J	<4.0	Exceed
MW-82	DNT	SZ	6/3/2014	<4.6	200	22 J	100	30 J	--	--	--	--	--	<5.6	<6.4	<5.7	6.2 J	<20	Exceed
MW-82R	DNTU-AOC1	SZ	4/21/2017	43100	31400	7230 X7	112000 X7	62900 X7	--	--	--	--	--	<11.1	28.6 J	<56.7	1090	<200 X7	Exceed
MW-82R	DNTU-AOC1	SZ	4/20/2018	17,800	10,600	3,060 X7	49,500 X7	24,300 X7	--	--	--	--	--	<57.5	<65.5	<59.0	581	<208 X7	Exceed
MW-82R	DNTU-AOC1	SZ	5/1/2020	45100	20100	15800 X7	155000 X7	108000 X7	--	--	--	--	--	<59.9	1050	<61.5	3290	<217 X7	Exceed
MW-82R	DNTU-AOC1	SZ	4/26/2022	35000	18300	15300 X7	186000 X7	108000 X7	--	--	--	--	--	<2.25	293	49.1	1350	<33.9 X7	Exceed
MW-82R	DNTU-AOC1	SZ	4/24/2024	45800	17700	25300	323000	205000	--	--	--	--	--	<4.12 U	22.9	51.6	5970	<10.5 U	Exceed
MW-83	DNT	SZ	10/26/2005	50000	23000	9300 J	130000	71000	--	--	--	--	--	<100	390	55 J	1900 E	--	Exceed
MW-83	DNT	SZ	4/17/2006	82000	66000	6500 J	93000	56000	--	--	--	--	--	<100	9.1 J	49 J	910	--	Exceed
MW-83	DNT	SZ	10/18/2006	66000	28000	10000 J	140000	90000	--	--	--	--	--	<500	200 J	81 J	5000	--	Exceed
MW-83	DNT	SZ	4/16/2007	77000	25000	12000	140000	87000	--	--	--	--	--	<97	49 J	110	4700	--	Exceed
MW-83	DNT	SZ	10/10/2007	91000	32000	10000 J	160000	98000	--	--	--	--	--	<12	45 J	83 J	2600 J	--	Exceed
MW-84	DNT	SZ	4/22/2010	1700	1090	740	9240	6270	--	--	--	--	--	<0.956	16.6	3.35 J	120	--	Exceed
MW-84	DNT	SZ	10/25/2010	975	495	338	2650	2700	--	--	--	--	--	<9.75	<15.7	<11.0	41.7 J	--	Exceed
MW-84	DNT	SZ	4/26/2011	544 J	335 J	259 J	2310 J	1520 J	--	--	--	--	--	<11.2 J	<49.0 J	<14.7 J	45 J	<31.7 J	Exceed
MW-84	DNT	SZ	4/25/2012	204	205	186 J	3100	1850	--	--	--	--	--	<1.11	289	<1.46	18.8	--	Exceed
MW-84	DNT	SZ	2/19/2013	3700	3500	2870	42100	21800	--	--	--	--	--	<0.956	--	--	390	5930 J	Exceed
MW-84	DNT	SZ	10/25/2013	1000	620	460	7500	4600	--	--	--	--	--	<17	54 J	<17	48 J	1400	Exceed
MW-84	DNT	SZ	6/3/2014	230	150	96 J	1300	900	--	--	--	--	--	<11	<13	<11	<6.7	<40	Exceed
MW-84R	DNTU-AOC1	IZ	4/21/2017	37500	19400	8570 X7	131000 X7	65100 X7	--	--	--	--	--	<11.3	410	<116	2,160	<408 X7	Exceed
MW-84R	DNTU-AOC1	IZ	4/20/2018	49,000	24,700	11,400 X7	184,000 X7	83,400 X7	--	--	--	--	--	<57.5	338 J	<59.0	2,750	<208 X7	Exceed
MW-84R	DNTU-AOC1	IZ	5/1/2020	3580	2360	686 X7	8250 X7	7120 X7	--	--	--	--	--	<1.16	50.4	<1.19	279 J	<4.20 X7	Exceed
MW-84R	DNTU-AOC1	IZ	4/26/2022	12100	8950	4260 X7	46100 X7	36500 X7	--	--	--	--	--	<2.36	<30.1	10.7 J	480	<35.6 X7	Exceed
MW-84R	DNTU-AOC1	IZ	4/24/2024	16100	7950	7620	83000	55900	--	--	--	--	--	<4.10 U	<8.20 U	6.14 J	414	<10.4 U	Exceed
MW-85	DNT	SZ	4/8/2010	<0.0563	0.746 J	0.604 J	8.07	4.54	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	Exceed
MW-85	DNT	SZ	10/13/2010	<0.0569	<0.0823	0.445 J	6.37	3.53	--	--	--	--	--	<0.0679 J	<0.102	<0.0528	<0.0955	<1.72	Exceed
MW-85	DNT	SZ	4/18/2011	<0.0569	0.575 J	1.5	4.26	3.34	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72 J	Exceed
MW-85	DNT	SZ	10/25/2011	<2.77	<0.987	<0.998	3.81 J	1.98 J	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	<3.11 J	~
MW-85	DNT	SZ	4/17/2012	<0.0575	<0.0831	0.98	13.4	7.61	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	--	Exceed
MW-85	DNT	SZ	10/26/2012	<0.0563	<0.0815	0.537 J	8.33	4.17	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71 J	Exceed
MW-85	DNT	SZ	4/18/2013	<0.0586	1.76	0.797 J	12.9	7.19	--	--	--	--	--	<0.0699	<0.105	<0.0544	<0.0984	<1.77 L	Exceed
MW-85	DNT	SZ	10/18/2013	0.28 J	0.93 J	0.9 J	10	6.3	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9 I	Exceed
MW-85	DNT	SZ	4/10/2014	<0.13	1.00	<0.60	7.4	4.3 J	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	Exceed
MW-85	DNT	SZ	10/24/2014	0.42 J	1.10	1.2 J	8.8	5.7	--	--	--	--	--	<0.17 L	<0.13	<0.11	<0.13	<4.0	Exceed
MW-85	DNT	SZ	4/17/2015	1.2 J	0.60 J	1.4 J	12	6.9	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	Exceed
MW-85	DNT	SZ	10/9/2015	0.448 J	1.37	1.26 J	11.8	7.80	--	--	--	--	--	<0.189	<0.144	<0.122	<0.144	<4.46	Exceed
MW-85	DNT	SZ	4/6/2016	0.715 J	2.03	1.48 J X7	15.6 X7	10.2 X7	--	--	--	--	--	<0.17	<0.130	<0.110	<0.130	<4.01 X7	Exceed
MW-85	DNT	SZ	10/25/2016	<0.133	<0.0816	<0.623 X7	8.56 X7	3.48 J X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 LX7	Exceed
MW-85	DNT	SZ	4/14/2017	0.731 J	1.20	1.43 J X7	16.6 X7	9.97 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 X7	Exceed
MW-85	DNT	SZ	10/17/2017	<0.137	<0.0842	<0.643 X7	<1.13 X7	<1.12 X7	--	--	--	--	--	<0.179	<0.137	<0.116	<0.137	<4.22 LX7	~
MW-85	DNTU	SZ	4/16/2018	2.47	4.34	2.25 J X7	29.4 X7	16.5 X7	--	--	--	--	--	<0.165	<0.126 L	<0.107	<0.126 L	R	Exceed
MW-85	DNTU	SZ	10/22/2018	3.42	6.56	2.34 J LX7	37.3 X7	16.7 X7	--	--	--	--	--						

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-86	DNT	SZ	10/25/2016	<0.127	<0.0784	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 LX7	~
MW-86	DNT	SZ	4/14/2017	<0.130	<0.080	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-86	DNT	SZ	10/17/2017	<0.133	<0.0816	<0.623 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 LX7	~
MW-86	DNTU	SZ	4/16/2018	2.73 J	4.77 J	2.30 J X7	30.4 J X7	16.9 J X7	--	--	--	--	--	<0.163 J	<0.125 J	<0.106 J	<0.125 J	<3.86 J X7	Exceed
MW-86	DNTU	SZ	5/30/2018	<0.130	<0.0800	<0.617	<1.08 X7	<1.07 X7	--	--	--	--	--	<0.611	<0.131	<0.111	<0.130	<4.05 X7	~
MW-86	DNTU	SZ	10/25/2018	<0.141	<0.087	<0.664 LX7	<1.16 X7	<1.15 X7	--	--	--	--	--	<0.185	<0.141 L	<0.120 L	<0.141 L	<4.36 R	~
MW-86	ASI	SZ	4/11/2019	<0.134	<0.0825	<0.630 X7	<1.10 X7	<1.09 X7	--	--	--	--	--	<0.175	<0.134	<0.113	<0.134	<4.13 X7	~
MW-86	ASI	SZ	10/23/2019	<0.131	<0.0808	<0.617 X7	<1.08 X7	<1.07 X7	--	--	--	--	--	<0.172	<0.131	<0.111	<0.131 L	<4.05 LX7	~
MW-86	ASI	SZ	4/15/2020	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-86	ASI	SZ	10/14/2020	<0.133	<0.0816	<0.623 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 X7	~
MW-86	ASI	SZ	4/19/2021	0.336	0.159	<10.6 X7	<10.6 X7	<10.6 X7	--	--	--	--	--	<0.500	<6.39	<0.585	<3.19	<7.56 X7	~
MW-86	ASI	SZ	10/11/2021	<0.0579	<0.038	<1.16 X7	<0.759 X7	<0.821 X7	--	--	--	--	--	<0.482	<6.16	<0.564	<3.08	<7.28 X7	~
MW-86	ASI	SZ	4/8/2022	<0.0572	<0.0375	<1.08 X7	<0.708 X7	<0.766 X7	--	--	--	--	--	<0.450	<5.74	<0.526	<2.87	<6.80 X7	~
MW-86	ASI	SZ	10/10/2022	<0.0614	<0.0403	<1.08 X7	<0.708 X7	<0.766 X7	--	--	--	--	--	<0.450	<5.74	<0.527	<2.87	<6.80 X7	~
MW-86	ASI	SZ	4/10/2023	<0.0588	<0.0386	<1.10*	<0.721*	<0.779*	--	--	--	--	--	<0.458	<5.85	<0.536	<2.92	<6.92*	~
MW-86	ASI	SZ	10/11/2023	<0.0581 U	<0.0381 U	<1.14 U	<0.768 U	<0.831 U	--	--	--	--	--	<4.05 U	<8.10 U	<4.88 U	<1.25 U	<10.3 U*	~
MW-86	ASI	SZ	4/19/2024	<0.0608 U	<0.0399 U	<1.06 U	<0.715 U	<0.773 U	--	--	--	--	--	<3.77 U	<7.54 U*	<4.54 U	<1.16 U	<9.57 U*	~
MW-86	ASI	SZ	10/21/2024	<0.0610 U	<0.0400 U	<1.08 U	<0.729 U	<0.789 U	--	--	--	--	--	<3.84 U	<7.69 U	<4.63 U	<1.18 U	<9.76 U*	~
MW-86	ASI	SZ	05/06/25	<0.0602 U	<0.0395 U	<1.10 U	<0.742 U	<0.802 U	--	--	--	--	--	<3.91 U	<7.82 U	<4.71 U	<1.20 U	<9.92 U*	~
MW-87	ASI	SZ	4/8/2010	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	--	~
MW-87	ASI	SZ	10/13/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	<1.71	~
MW-87	ASI	SZ	4/18/2011	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72 J	~
MW-87	ASI	SZ	10/25/2011	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<0.841	<3.11 J	~	~
MW-87	ASI	SZ	4/17/2012	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-87	ASI	SZ	10/26/2012	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71 J	~
MW-87	ASI	SZ	4/18/2013	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 L	~
MW-87	ASI	SZ	10/18/2013	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9 L	~
MW-87	ASI	SZ	4/10/2014	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-87	ASI	SZ	10/27/2014	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16 L	<0.13	<0.11	<0.13	<3.9	~
MW-87	ASI	SZ	4/16/2015	0.26 J	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-87	ASI	SZ	10/9/2015	<0.148	<0.0909	<0.694	<1.22	<1.20	--	--	--	--	--	<0.193	<0.148	<0.125	<0.148	<4.56	~
MW-87	ASI	SZ	4/6/2016	0.132 J	0.439 J	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 X7	~
MW-87	ASI	SZ	10/24/2016	<0.126	<0.0777	<0.593 X7	<1.04 X7	<1.03 X7	--	--	--	--	--	<0.165	<0.126	<0.107	<0.126	<3.89 LX7	~
MW-87	ASI	SZ	4/14/2017	<0.130	<0.080	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-87	ASI	SZ	10/17/2017	<0.133	<0.0816	<0.623 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 LX7	~
MW-87	ASI	SZ	4/16/2018	<0.130 J	0.353 J	<0.611 J X7	<1.07 J X7	<1.06 J X7	--	--	--	--	--	<0.170 J	<0.130 J	<0.110 J	<0.130	<4.01 J X7	~
MW-87	ASI	SZ	10/25/2018	<0.138	<0.0851	<0.650 LX7	<1.14 X7	<1.13 X7	--	--	--	--	--	<0.181	<0.138	<0.117	<0.138	<4.27 X7	~
MW-87	ASI	SZ	4/11/2019	<0.130 L	<0.0800 L	<0.611 LX7	<1.07 LX7	<1.06 LX7	--	--	--	--	--	<0.170 L	<0.130 L	<0.110 L	<0.130 L	<4.01 LX7	~
MW-87	ASI	SZ	10/24/2019	<0.130	<0.0800	<0.611 X7	<1.07 LX7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130 L	<4.01 LX7	~
MW-87	ASI	SZ	4/15/2020	<0.130	<0.0800	<0.611 X7	1.11 J X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-87	ASI	SZ	10/14/2020	<0.130	<0.0800	<0.611 X7	<1.07 X7	<0.106 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 X7	~
MW-87	ASI	SZ	4/19/2021	<0.0635	0.0597 J	<10.8 X7	<10.8 X7	<10.8 X7	--	--	--	--	--	<0.506	<6.47	<0.593	<3.23	<7.65 X7	~
MW-87	ASI	SZ	10/11/2021	<0.0572	0.0581 J	<1.12 X7	<0.734 X7	<0.794 X7	--	--	--	--	--	<0.466	<5.95	<0.546	<2.98	<7.05 X7	~
MW-87	ASI	SZ	4/12/2022	<0.0594	<0.0390	<1.14 X7	<0.747 X7	<0.807 X7	--	--	--	--	--	<0.474	<6.05	<0.555	<3.03	<7.16 X7	~
MW-87	ASI	SZ	10/10/2022	<0.0610	<0.0400	<1.08	0.799 J X7	<0.766 X7	--	--	--	--	--	<0.450	<5.74	<0.526	<2.87	<6.80 X7	~
MW-87	ASI	SZ	4/10/2023	<0.0592	<0.0388	<1.18*	<0.771*	<0.834*	--	--	--	--	--	<0.490	<6.26	<0.573	<3.13	<7.40*	~
MW-87	ASI	SZ	10/11/2023	<0.0581 U	0.0546 J	<1.11 U	2.06 J	0.896 J	--	--	--	--	--	<3.94 U	<7.89 U	<4.75 U	<1.21 U	<10.0 U*	~
MW-87	ASI	SZ	4/19/2024	<0.0588 U	0.0522 J	<1.07 U	<0.722 U	<7.80 U	--	--	--	--	--	<3.80 U	<7.61 U*	<4.58 U	<1.17 U	<9.65 U*	~
MW-87	ASI	SZ	10/22/2024	<0.0614 U	<0.0403 U	<1.03 U	1.56 J	<0.751 U	--	--	--	--	--	<3.66 U	<7.32 U	<4.41 U	<1.13 U	<9.29 U*	~
MW-87	ASI	SZ	05/08/25	<0.0604 U	<0.0396 U	<1.09 U	1.08 J	<0.791 U	--	--	--	--	--	<3.86 U	<7.71 U	<4.65 U	<1.19 U	<9.79 U*	~
MW-88	ASI	SZ	4/7/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-88	ASI	SZ	10/13/2010	<0.0563 J	<0.0815 J	<0.0832 J	<0.0653 J	<0.0738 J	--	--	--	--	--	<0.0672 J	<0.101 J	<0.0523 J	<0.0946 J	<1.71 J	~
MW-88	ASI	SZ	4/18/2011	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-88	ASI	SZ	10/19/2011	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71 J	~
MW-88	ASI	SZ	4/13/2012	<0.0563 J	<0.0815 J	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	--	~
MW-88	ASI	SZ	10/25/2012	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74	~
MW-88	ASI	SZ	4/15/2013	<0.0592	<0.0857	<0.0874	<0.0686	<0.0775	--	--	--	--	--	<0.0706	<0.106	<0.0549	<0.0994	<1.79	~
MW-88	ASI	SZ	10/16/2013	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-88	ASI	SZ	4/8/2014	<0.26	<0.16	<1.2	<2.1	<2.1	--	--	--	--	--	<0.34	<0.26	<0.22	<0.26	<8.0	~
MW-88	ASI	SZ	10/23/2014	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-88	ASI	SZ	4/16/2015	<0.13</															

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-89	ASI	SZ	10/20/2015	<0.125	<0.0769	<0.588	<1.03	<1.02	--	--	--	--	--	<0.163	0.372 J	<0.106	0.253 J	<3.86	~
MW-89	ASI	SZ	4/21/2016	5.18 J	2.61 J	1.86 J X7	17.0 X7	13.2 X7	--	--	--	--	--	<1.13	<1.28	<1.16	1.83 J	<4.08 X7	Exceed
MW-89	ASI	SZ	10/26/2016	<0.96	<0.646	<0.616 X7	<1.08 X7	<1.07 X7	--	--	--	--	--	<1.16	<1.32	<1.19	<0.697	<4.20 X7	~
MW-89	ASI	SZ	4/19/2017	<0.990	<0.667	<0.635 X7	<1.11 X7	<1.10 X7	--	--	--	--	--	<1.20	<1.36	<1.23	<0.719	<4.33 X7	~
MW-89	ASI	SZ	10/19/2017	<1.02	<0.688	<0.656 X7	<1.15 X7	<1.14 X7	--	--	--	--	--	<1.24	<1.27	<1.27	<0.742	<4.47 X7	~
MW-89	ASI	SZ	4/23/2018	<0.969	<0.653	<0.622 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<1.17	<1.34	<1.20	<0.704	<4.24 X7	~
MW-89	ASI	SZ	10/29/2018	<0.990	<0.667	<0.635 LX7	<1.11 X7	<1.10 LX7	--	--	--	--	--	<1.20	<1.36	<1.23	<0.719	<4.33 X7	~
MW-89	ASI	SZ	4/18/2019	<0.960	<0.646	<0.616 X7	<1.08 X7	<1.07 X7	--	--	--	--	--	<1.16	<1.32	<1.19	<0.697	<4.20 X7	~
MW-89	ASI	SZ	10/28/2019	9.24J	6.64J	<0.610	2.45J	<0.106	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	Exceed
MW-89	ASI	SZ	4/23/2020	<0.931	<0.627	<0.598 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<1.13	<1.28	<1.16	<0.676	<4.08 X7	~
MW-89	ASI	SZ	10/22/2020	<0.133	<0.0816	<0.623 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 X7	~
MW-89	ASI	SZ	4/28/2021	<0.0572	<0.0375	<10.9 X7	<10.9 X7	<10.9 X7	--	--	--	--	--	<0.513	<6.55	<0.601	<3.28	<7.75 X7	~
MW-89	ASI	SZ	10/26/2021	0.356	0.43	<1.14 X7	<0.744 X7	<0.805 X7	--	--	--	--	--	<0.473	<6.04	<0.553	<3.02	<7.14 X7	~
MW-89	ASI	SZ	4/25/2022	<0.598	<0.0392	<1.08 X7	<0.708 X7	<0.765 X7	--	--	--	--	--	<0.450	<5.74	<0.526	<2.87	<6.79 X7	~
MW-89	ASI	SZ	10/14/2022	<0.0568	<0.0373	<1.11 X7	<0.727 X7	<0.786 X7	--	--	--	--	--	<0.462	<5.90	<0.540	<2.95	<6.98 X7	~
MW-89	ASI	SZ	4/18/2023	<0.0565	<0.0370	<1.11	<1.11	<1.11	--	--	--	--	--	<1.11	<1.11	<1.11	<1.11	<1.11	~
MW-89	ASI	SZ	10/18/2023	1.34	0.822	<1.18 U	<0.794 U	<0.858 U	--	--	--	--	--	<4.18 U	<8.37 U	<5.04 U	<1.29 U	<10.6 U*	Exceed
MW-89	ASI	SZ	4/19/2024	<0.0600 U	<0.0393 U	<1.13 U	<0.757 U	<0.818 U	--	--	--	--	--	<3.99 U	<7.98 U*	<4.81 U	<1.23 U	<10.1 U*	~
MW-89	ASI	SZ	10/23/2024	<0.0606 U	<0.0397 U	<1.08 U	1.87 J	1.65 J	--	--	--	--	--	<3.81 U	<7.62 U	<4.59 U	<1.17 U	<9.68 U*	~
MW-89	ASI	SZ	05/06/25	<0.0594 U	<0.0390 U	<1.12 U	<0.752 U	<0.813 U	--	--	--	--	--	<3.96 U	<7.93 U	<4.78 U	<1.22 U	<10.1 U*	~
MW-91	ASI	SZ	4/7/2010	3330	692	1310	7550	5350	--	--	--	--	--	<0.0685	0.13 J	2.37	3.52	--	Exceed
MW-91	ASI	SZ	10/26/2010	53.9	27	15.1	157	88.3	--	--	--	--	--	<0.975	<1.57	<1.10	<0.858	--	Exceed
MW-91	ASI	SZ	4/27/2011	292	114	55.1	476	270	--	--	--	--	--	<1.11	<4.85	<1.46	1.09 J	<3.14 J	Exceed
MW-91	ASI	SZ	10/18/2011	347 J	115	49.8	356 J	272 J	--	--	--	--	--	<1.11	<4.85	<1.46	1.03 J	<3.14	Exceed
MW-91	ASI	SZ	4/27/2012	126	35.2	16	182	149	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	--	Exceed
MW-91	ASI	SZ	10/17/2012	137	28.5	11.5	146	98.4	--	--	--	--	--	<0.956	<4.80	<1.17	<2.88	--	Exceed
MW-91	ASI	SZ	4/25/2013	96.5	24.3	5.9 J	106	81.4	--	--	--	--	--	<1.01	<5.09	<1.24	8.89 J	<3.30 L	Exceed
MW-91	ASI	SZ	10/25/2013	200	61	38	420	310	--	--	--	--	--	<1.1	<1.3	<1.1	7.8 J	<4.0	Exceed
MW-91	ASI	SZ	4/16/2014	40	17	8.9 J	65	47	--	--	--	--	--	<1.1	<1.3	<1.2	<0.68	<4.1	Exceed
MW-91	ASI	SZ	10/22/2014	--	28	18	--	160	--	--	--	--	--	<1.2	<1.3	<1.2	1.5 J	<4.2	Exceed
MW-91	ASI	SZ	4/22/2015	44	17	7.1 J	75	48	--	--	--	--	--	<1.2	<1.4	<1.3	<0.73	<4.4	Exceed
MW-91	ASI	SZ	10/20/2015	95.3	16.8	19.1	216	179	--	--	--	--	--	<0.189	19.9	<0.122	17.5	<4.46	Exceed
MW-91	ASI	SZ	4/21/2016	46.0	18.9	11.4 X7	129 X7	70.2 X7	--	--	--	--	--	<1.11	<1.26	<1.13	0.976 J	<4.00 X7	Exceed
MW-91	ASI	SZ	10/27/2016	74.3	22.5	15.3 X7	193 X7	103 X7	--	--	--	--	--	<1.11	<1.26	<1.13	1.85 J	<4.00 X7	Exceed
MW-91	ASI	SZ	4/19/2017	72.1	21.4	12.5 X7	156 X7	90.1 X7	--	--	--	--	--	<1.13	<1.28	<1.16	1.12 J	<4.08 X7	Exceed
MW-91	ASI	SZ	10/19/2017	181	65.8	32.5 X7	606 X7	375 X7	--	--	--	--	--	<1.17	20	<1.2	5.21 J	<4.24 X7	Exceed
MW-91	ASI	SZ	4/20/2018	63.7	33.5	11.4 X7	134 X7	79.8 X7	--	--	--	--	--	<1.15	1.51 J	<1.18	<0.690	<4.16 X7	Exceed
MW-91	ASI	SZ	10/29/2018	19.7	5.15 J	3.95 J LX7	52.0 X7	29.9 LX7	--	--	--	--	--	<1.15	<1.31	<1.18	1.29 J	<4.16 X7	Exceed
MW-91	ASI	SZ	4/18/2019	17.5 H	12.5	4.51 J X7	31.2 X7	27.2 X7	--	--	--	--	--	<1.22	<1.39	<1.26	<0.734	<4.43 X7	Exceed
MW-91	ASI	SZ	10/28/2019	40.2	14.8	9.26 J X7	90.5 X7	67.8 X7	--	--	--	--	--	<1.15	<1.31	<1.18	0.777 J	<4.16 X7	Exceed
MW-91	ASI	SZ	4/30/2020	6.27 J	2.26 J	1.68 J X7	17.7 X7	17.7 X7	--	--	--	--	--	<1.14	1.47 J	<1.17	<0.683	<4.12 X7	Exceed
MW-91	ASI	SZ	10/22/2020	22.4	7.96	6.31 X7	63.3 X7	39.4 X7	--	--	--	--	--	<0.175	14.9	<0.113	1.63 J	5.02 X7	Exceed
MW-91	ASI	SZ	4/28/2021	9.13	3.09	<10.6 X7	22.9 X7	14.9 X7	--	--	--	--	--	<0.499	<6.36	<0.583	<3.18	<7.53 X7	Exceed
MW-91	ASI	SZ	10/26/2021	8.19	3.47	<5.47 X7	45.4 J X7	30.3 J X7	--	--	--	--	--	<2.28	<29.1	<2.66	<14.5	<34.4 X7	Exceed
MW-91	ASI	SZ	4/26/2022	8.05	6.06	19.7 X7	35.9 X7	27.6 X7	--	--	--	--	--	<0.901	<11.5	<1.05	<5.75	<13.6 X7	Exceed
MW-91	ASI	SZ	10/14/2022	2.22	1.24	<2.23 X7	9.43 J X7	6.01 J X7	--	--	--	--	--	<0.929	<11.9	<1.09	<5.93	<14 X7	Exceed
MW-91	ASI	SZ	4/18/2023	<0.0581	1.32	<1.11	<1.11	<1.11	--	--	--	--	--	<1.11	<1.11	<1.11	<1.11	<1.11	Exceed
MW-91	ASI	SZ	10/17/2023	4.28	2.08	2.03 J	22.9	18.1	--	--	--	--	--	<3.88 U	<7.77 U	<4.68 U	2.59 J	<9.86 U*	Exceed
MW-91 1st Run	ASI	SZ	4/17/2024	9.56	3.02	<1.09 U H	37.3 H	51.0 H	--	--	--	--	--	<3.86 U H	16.7 H	<4.66 U H	5.42 U H	<9.81 UH*	Exceed
MW-91-ReSamp-Run	ASI	SZ	5/21/2024	20.7	10.4	5.71 J	53.5	39.7	--	--	--	--	--	<3.97 U	<7.95 U	<4.79 U	3.43 J	<10.1 U*	Exceed
MW-91	ASI	SZ	10/23/2024	4.10	2.30	<1.03 U	10.8	11.2	--	--	--	--	--	<3.66 U	<7.33 U	<4.41 U	<1.13 U	<9.30 U*	Exceed
MW-91 1st Run	ASI	SZ	5/6/2025	141	38.9	10.7	101	82.9	--	--	--	--	--	<3.90 U	<7.80 U	<4.70 U	4.32 J	<9.90 U*	Exceed
MW-91-ReSamp-Run	ASI	SZ	06/19/25	23.7	12.7	--	75.9	59.4	--	--	--	--	--	--	--	--	--	--	Exceed
MW-93	DNT	SZ	4/8/2010	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-93	DNT	SZ	10/13/2010	<0.0563	<0.0815	<0.0832	<0.0928 J	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	<1.71	~
MW-93	DNT	SZ	4/18/2011	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-93	DNT	SZ	10/26/2011	<2.77 J	<0.987 J	<0.998 J	<1.02 J	<1.44 J	--	--	--	--	--	<1.10 J	<4.80 J	<1.44 J	<0.841 J	<3.11 J	~
MW-93	DNT	SZ	4/13/2012	<0.0563 J	<0.0815 J	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	--	~
MW-93	DNT	SZ	10/25/2012	<0.0563 J	<0.0815 J	<0.0832 J	<0.0653 J	<0.0738 J	--	--	--	--	--	<0.0672 J	<0.101 J	<0.0523 J	<0.0946 J	<1.71 J	~
MW-93	DNT	SZ	4/19/2013	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72 L	~
MW-93	DNT	SZ	10/16/2013	0.27 J	1.3	<0.59	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-93	DNT	SZ	4/8/2014	<0.26	<0.16	<1.2	<2.1	<2.1	--	--	--	--	--	<0.34	<0.26	<0.22	<0.26	<8.0	~
MW-93	DNT	SZ	10/23/2014	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-93	DNT	SZ	4/16/2015	0.27 J	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-93	DNT	SZ	10/8/2015	<0															

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-94	DNT	SZ	4/8/2014	<0.26	<0.16	<1.2	<2.1	<2.1	--	--	--	--	--	<0.34	<0.26	<0.22	<0.26	<8.0	~
MW-94	DNT	SZ	10/23/2014	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-94	DNT	SZ	4/16/2015	<0.13	<0.080	<0.61	<1.1	<1.1	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<4.0	~
MW-94	DNT	SZ	10/8/2015	<0.141	0.403 J	<0.664	<1.16	<1.15	--	--	--	--	--	<0.185	<0.141	<0.120	<0.141	<4.36	~
MW-94	DNT	SZ	4/7/2016	<0.125	0.219 J	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 X7	~
MW-94	DNT	SZ	4/13/2017	<0.130	<0.080	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-94	DNT	SZ	10/16/2017	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-94	DNTU	SZ	4/12/2018	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-94	DNTU	SZ	10/22/2018	<0.141	<0.087	<0.664 LX7	<1.16 X7	<1.15 X7	--	--	--	--	--	<0.185	<0.141	<0.120	<0.141	<4.36 X7	~
MW-94	DNTU-AOC1	SZ	4/11/2019	<0.157	<0.0964	<0.736 X7	<1.29 X7	<1.28 X7	--	--	--	--	--	<0.205	<0.157	<0.133	<0.157	<4.83 X7	~
MW-94	DNTU-AOC1	SZ	10/18/2019	<0.130 L	<0.0800	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170 L	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-94	DNTU-AOC1	SZ	4/14/2020	<0.127	<0.0784	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 LX7	~
MW-94	DNTU-AOC1	SZ	10/15/2020	<0.130	<0.0800	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 X7	~
MW-94	DNTU-AOC1	SZ	4/19/2021	<0.0618	<0.0405	<10.7 X7	<10.7 X7	<10.7 X7	--	--	--	--	--	<0.503	<6.42	<0.588	<3.21	<7.59 X7	~
MW-94	DNTU-AOC1	SZ	10/13/2021	<0.0568	<0.0373	<1.16 X7	<0.759 X7	<0.820 X7	--	--	--	--	--	<0.482	<6.15	<0.564	<3.08	<7.28 X7	~
MW-94	DNTU-AOC1	SZ	4/12/2022	<0.0622	<0.0408	<1.08 X7	<1.08 X7	<0.762 X7	--	--	--	--	--	<0.488	<5.72	<0.524	<2.86	<6.77 X7	~
MW-94	DNTU-AOC1	SZ	10/11/2022	<0.0587	<0.0385	<1.09 X7	<0.712 X7	<0.770 X7	--	--	--	--	--	<0.452	<5.77	<0.529	<2.89	<6.83 X7	~
MW-94	DNTU-AOC1	SZ	4/11/2023	<0.0585	<0.0383	<1.13*	<0.740*	<0.800*	--	--	--	--	--	<0.470	<6.00	<0.550	<3.00	<7.10*	~
MW-94	DNTU-AOC1	SZ	10/10/2023	<0.0583 U	<0.0382 U	<1.16 U	<0.781 U	<0.845 U	--	--	--	--	--	<4.12 U	<8.23 U	<4.96 U	<1.27 U	<10.5 U*	~
MW-94	DNTU-AOC1	SZ	4/15/2024	<0.0629 U	<0.0412 U	<1.05 U	<0.707 U	<0.764 U	--	--	--	--	--	<3.72 U*	<7.45 U*	<4.49 U*	<1.15 U*	<9.45 U*	~
MW-94	DNTU-AOC1	SZ	10/17/2024	<0.0608 U	<0.0399 U	<1.02 U	<0.689 U	<0.745 U	--	--	--	--	--	<3.63 U	<7.27 U	<4.38 U	<1.12 U	<9.22 U*	~
MW-94	DNTU-AOC1	SZ	05/08/25	<0.0610 U	<0.0400 U	<1.11 U	<0.747 U	<0.807 U	--	--	--	--	--	<3.93 U	<7.87 U	<4.74 U	<1.21 U	<9.99 U*	~
MW-95	ASI	IZ	4/7/2010	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679	0.112 J	<0.0528	<0.0955	--	~
MW-95	ASI	IZ	10/14/2010	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679 J	<0.102	<0.0528	<0.0955	<1.72	~
MW-95	ASI	IZ	4/19/2011	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72 J	~
MW-95	ASI	IZ	12/8/2011	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71 J	~
MW-95	ASI	IZ	4/13/2012	<0.0563 J	<0.0815 J	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672 J	<0.101	<0.0523	<0.0946	--	~
MW-95	ASI	IZ	10/25/2012	<0.0580	<0.0840	<0.0856	<0.0672	<0.0759	--	--	--	--	--	<0.0692	<0.104	<0.0539	<0.0974	<1.76	~
MW-95	ASI	IZ	4/17/2013	<0.0586	<0.0848	<0.0865	<0.0679	<0.0767	--	--	--	--	--	<0.0699	<0.105	<0.0544	<0.0984	<1.77	~
MW-95	ASI	IZ	10/18/2013	<0.13	<0.078	<0.59	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9 L	~
MW-95	ASI	IZ	4/9/2014	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-95	ASI	IZ	10/23/2014	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-95	ASI	IZ	4/17/2015	0.18 J	<0.082	<0.62	<1.1	<1.1	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<4.1	~
MW-95	ASI	IZ	10/13/2015	<0.146	<0.0899	<0.687	<1.20	<1.19	--	--	--	--	--	<0.191	<0.146	<0.124	<0.146	<4.51	~
MW-95	ASI	IZ	4/7/2016	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 X7	~
MW-95	ASI	IZ	10/24/2016	<0.141	<0.087	<0.664 X7	<1.16 X7	<1.15 X7	--	--	--	--	--	<0.185	<0.141	<0.12	<0.141	<4.36 LX7	~
MW-95	ASI	IZ	10/16/2017	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-95	ASI	IZ	4/12/2018	<0.126	<0.0777	<0.593 X7	<1.04 X7	<1.03 X7	--	--	--	--	--	<0.165	<0.126	<0.107	<0.126	<3.89 LX7	~
MW-95	ASI	IZ	10/12/2018	<0.140	<0.086	<0.657 LX7	<1.15 X7	<1.14 X7	--	--	--	--	--	<0.183	<0.140	<0.118	<0.140	<4.31 X7	~
MW-95	ASI	IZ	4/15/2019	<0.143	<0.0879	<0.671 LX7	<1.18 LX7	<1.16 X7	--	--	--	--	--	<0.187	<0.143	<0.121	<0.143	<4.41 X7	~
MW-95	ASI	IZ	10/18/2019	<0.130 L	<0.0800	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170 L	<0.130	<0.110	<0.130	<4.01 LX7	~
MW-95	ASI	IZ	4/14/2020	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-95	ASI	IZ	10/20/2020	<0.127	<0.0784	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 X7	~
MW-95	ASI	IZ	4/19/2021	<0.0561	<0.0368	<11.0 X7	<11.0 X7	<11.0 X7	--	--	--	--	--	<0.515	<6.58	<0.603	<3.29	<7.79 X7	~
MW-95	ASI	IZ	10/12/2021	<0.0568	<0.0373	<1.19 X7	<0.781 X7	<0.844 X7	--	--	--	--	--	<0.496	<6.33	<0.581	<3.17	<7.49 X7	~
MW-95	ASI	IZ	4/12/2022	<0.0627	<0.0411	<1.18 X7	<0.775 X7	<0.837 X7	--	--	--	--	--	<0.492	<6.28	<0.576	<3.14	<7.43 X7	~
MW-95	ASI	IZ	10/11/2022	0.0977 J	<0.0408	<1.15 X7	<0.751 X7	<0.812 X7	--	--	--	--	--	<0.477	<6.09	<0.558	<3.05	<7.21 X7	~
MW-95	ASI	IZ	4/11/2023	<0.0577	<0.0379	<1.17*	<0.765*	<0.827*	--	--	--	--	--	<0.486	<6.20	<0.569	<3.10	<7.34*	~
MW-95	ASI	IZ	10/10/2023	<0.0581 U	<0.0381 U	<1.09 U	<0.730 U	<0.789 U	--	--	--	--	--	<3.85 U	<7.70 U	<4.64 U	<1.18 U	<9.77 U*	~
MW-95	ASI	IZ	4/8/2024	<0.0585 U	<0.0809 J	<1.07 U	<0.722 U	<0.781 U	--	--	--	--	--	<3.81 U	<7.61 U	<4.59 U	<1.17 U	<9.66 U	~
MW-95	ASI	IZ	10/18/2024	<0.0608 U	<0.0399 U	<1.05 U	<0.704 U	<0.761 U	--	--	--	--	--	<3.71 U	<7.42 U	<4.47 U	<1.14 U	<9.42 U*	~
MW-95	ASI	IZ	05/06/25	<0.0600 U	<0.0393 U	<1.08 U	<0.724 U	<0.783 U	--	--	--	--	--	<3.82 U	<7.64 U	<4.60 U	<1.17 U	<9.69 U*	~
MW-96	ASI	DZ	4/7/2010	<0.0586	<0.0848	<0.0865	<0.0679	<0.0767	--	--	--	--	--	<0.0699	0.935 J	<0.0544	<0.0984	--	~
MW-96	ASI	DZ	10/13/2010	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679 J	<0.102	<0.0528	<0.0955	<1.72	~
MW-96	ASI	DZ	4/19/2011	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-96	ASI	DZ	10/26/2011	<2.83 J	<1.01 J	<1.02 J	<1.04 J	<1.46 J	--	--	--	--	--	<1.12 J	<4.90 J	<1.47 J	<0.858 J	<3.17 J	~
MW-96	ASI	DZ	4/16/2012	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	--	~
MW-96	ASI	DZ	10/23/2012	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74 J	~
MW-96	ASI	DZ	4/17/2013	<0.0563	<0.0815	<0.0832	<0.0653	<0.0738	--	--	--	--	--	<0.0672	<0.101	<0.0523	<0.0946	<1.71	~
MW-96	ASI	DZ	10/16/2013	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-96</																			

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
MW-97	AOC2	SZ	4/9/2014	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-97	AOC2	SZ	10/24/2014	0.19 J	0.69 J	0.67 J	1.6 J	1.1 J	--	--	--	--	--	<0.17	4.9	<0.11	<0.13	19	Exceed
MW-97	AOC2	SZ	4/20/2015	2.3	0.37 J	0.78 J	1.9 J	<1.1	--	--	--	--	--	<0.17	0.36 J	<0.11	0.13 J	<4.0	Exceed
MW-97	AOC2	SZ	10/8/2015	0.266 J	3.57	<0.611	1.69 J	1.07 J	--	--	--	--	--	<0.170	0.436 J	<0.110	0.224 J	5.98 J	Exceed
MW-97	AOC2	SZ	4/6/2016	0.366 J	6.45	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	0.165 J	<3.86 X7	Exceed
MW-97	AOC2	SZ	10/19/2016	0.217 J	4.27	<0.588 X7	1.81 J X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	0.388 J	<3.86 LX7	Exceed
MW-97	AOC2	SZ	4/13/2017	0.716 J	9.10	<0.599 X7	1.47 J X7	<1.02 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 LX7	Exceed
MW-97	AOC2	SZ	10/13/2017	0.682 J	9.33	<0.588 X7	2.63 J X7	1.38 J X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	Exceed
MW-97	AOC2	SZ	4/12/2018	0.377 J	4.07	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 LX7	Exceed
MW-97	AOC2	SZ	10/12/2018	0.469 J	4.87	<0.650 X7	1.36 J X7	<1.13 X7	--	--	--	--	--	<0.181	<0.138	<0.117	<0.138	<4.27 X7	Exceed
MW-97	AOC2	SZ	4/11/2019	<0.133	2.00	<0.623 X7	<1.09 X7	<1.08 X7	--	--	--	--	--	<0.173	<0.133	<0.112	<0.133	<4.09 X7	Exceed
MW-97	AOC2	SZ	10/17/2019	<0.127 L	1.74	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167 L	<0.127	<0.108	<0.127	<3.93 LX7	Exceed
MW-97	AOC2	SZ	4/14/2020	<0.127	2.54	<0.599 X7	<1.05 X7	<1.04 X7	--	--	--	--	--	<0.167	<0.127	<0.108	<0.127	<3.93 LX7	Exceed
MW-97	AOC2	SZ	10/13/2020	<0.153	4.53 J	<0.719 X7	<1.26 X7	<1.25 X7	--	--	--	--	--	<0.200	<0.153	<0.129	<0.153	<4.72 X7	~
MW-97	AOC2	SZ	4/20/2021	0.327	5.31	<10.8 X7	<10.8 X7	<10.8 X7	--	--	--	--	--	<0.509	<6.50	<0.596	<3.25	<7.70 X7	Exceed
MW-97	AOC2	SZ	10/13/2021	0.198	1.11	<1.16 X7	1.5 J X7	<0.821 X7	--	--	--	--	--	<0.482	<6.16	<0.564	<3.08	<7.28 X7	~
MW-97	AOC2	SZ	4/13/2022	0.281	5.62	<1.18 X7	1.10 J X7	<0.838 X7	--	--	--	--	--	<0.492	<6.28	<0.576	<3.14	<7.44 X7	Exceed
MW-97	AOC2	SZ	10/12/2022	0.0746 J	1.02	<1.10 X7	<0.722 X7	<0.781 X7	--	--	--	--	--	<0.459	<5.85	<0.537	<2.93	<6.93 X7	~
MW-97	AOC2	SZ	4/11/2023	<0.0579	2.86	<1.09*	<0.711*	<0.769*	--	--	--	--	--	<0.452	<5.77	<0.529	<2.88	<6.82*	Exceed
MW-97	AOC2	SZ	10/5/2023	<0.0553 U*	0.299	<1.04 U	<0.703 U	<0.760 U	--	--	--	--	--	<3.70 U	<7.41 U	<4.46 U	<1.14 U	<9.4 U	~
MW-97	AOC2	SZ	4/8/2024	0.421	7.25	<1.13 U	1.37 J	1.04 J b	--	--	--	--	--	<3.99 U	<7.98 U	<4.81 U	<1.23 U	<10.1 U	Exceed
MW-97	AOC2	SZ	10/17/2024	0.127	2.41	<1.08 U	3.00 J	2.34 J	--	--	--	--	--	<3.84 U	<7.68 U	<4.63 U	<1.18 U	<9.75 U*	Exceed
MW-97 1st Run	AOC2	SZ	05/05/25	0.557	6.25	<1.20 U	1.98 J	1.53 J	--	--	--	--	--	<4.26 U	<8.52 U	<5.13 U	<1.31 U	<10.8 U	Exceed
MW-97-ReSamp-Run	AOC2	SZ	06/19/25	--	8.71	--	--	--	--	--	--	--	--	--	--	--	--	--	Exceed
MW-98	DNT	IZ	10/25/2011	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	<3.11 J	~
MW-98	DNT	IZ	4/12/2012	<0.0575 J	<0.0831 J	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685 J	<0.103	<0.0533	<0.0965	--	~
MW-98	DNT	IZ	10/23/2012	<0.0569	<0.0823	<0.0840	<0.0659	<0.0745	--	--	--	--	--	<0.0679	<0.102	<0.0528	<0.0955	<1.72	~
MW-98	DNT	IZ	4/17/2013	<0.0575	<0.0831	<0.0848	<0.0666	<0.0752	--	--	--	--	--	<0.0685	<0.103	<0.0533	<0.0965	<1.74	~
MW-98	DNT	IZ	10/17/2013	<0.13	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9 L	~
MW-98	DNT	IZ	4/9/2014	<0.13	<0.078	<0.60	<1.0	<1.0	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<3.9	~
MW-98	DNT	IZ	10/23/2014	<0.13	<0.080	<0.61	<1.1	<1.1	--	--	--	--	--	<0.17	<0.13	<0.11	<0.13	<4.0	~
MW-98	DNT	IZ	4/17/2015	0.27 J	<0.077	<0.59	<1.0	<1.0	--	--	--	--	--	<0.16	<0.13	<0.11	<0.13	<3.9	~
MW-98	DNT	IZ	10/8/2015	<0.141	<0.0870	<0.664	<1.16	<1.15	--	--	--	--	--	<0.185	<0.141	<0.120	<0.141	<4.36	~
MW-98	DNT	IZ	4/5/2016	<0.131	<0.0808	<0.617 X7	<1.08 X7	<1.07 X7	--	--	--	--	--	<0.172	<0.131	<0.111	<0.131	<4.05 X7	~
MW-98	DNT	IZ	10/24/2016	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-98	DNT	IZ	4/13/2017	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	3.57	<0.106	<0.125	<3.86 LX7	~
MW-98	DNT	IZ	10/13/2017	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-98	DNTU	IZ	4/12/2018	<0.126	0.110 J	<0.593 X7	<1.04 X7	<1.03 X7	--	--	--	--	--	<0.165	<0.126	<0.107	<0.126	<3.89 LX7	~
MW-98	DNTU	IZ	10/12/2018	<0.148	<0.0909	<0.694 X7	<1.22 X7	<1.20 X7	--	--	--	--	--	<0.193	<0.148	<0.125	<0.148	<4.56 X7	~
MW-98	DNTU	IZ	4/15/2019	<0.135	<0.0833	<0.636 LX7	<1.11 LX7	<1.10 X7	--	--	--	--	--	<0.177	<0.135	<0.115	<0.135	<4.18 X7	~
MW-98	DNTU	IZ	10/17/2019	<0.126 L	<0.0777	<0.593 X7	<1.04 X7	<1.03 X7	--	--	--	--	--	<0.165 L	<0.126	<0.107	<0.126	<3.89 LX7	~
MW-98	DNTU	IZ	4/14/2020	<0.125	<0.0769	<0.588 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86 LX7	~
MW-98	DNTU	IZ	10/14/2020	<0.130	<0.0800	<0.611 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<0.170	<0.130	<0.110	<0.130	<4.01 X7	~
MW-98	DNTU	IZ	4/21/2021	<0.0663	<0.0435	<10.8 X7	<10.8 X7	<10.8 X7	--	--	--	--	--	<0.506	<6.46	<0.592	<3.23	<7.64 X7	~
MW-98	DNTU	IZ	10/13/2021	<0.0568	<0.0373	<1.09 X7	<0.716 X7	<0.774 X7	--	--	--	--	--	<0.455	<5.81	<0.532	<2.9	<6.87 X7	~
MW-98	DNTU	IZ	4/13/2022	3.96	6.83	<1.10 X7	<0.723 X7	<0.781 X7	--	--	--	--	--	<0.459	<5.86	<0.537	<2.93	<6.93 X7	Exceed
MW-98Re-Samp-ReRun	DNTU	IZ	5/26/2022	<0.0594	<0.0390	<1.11 X7	<0.727 X7	<0.786 X7	--	--	--	--	--	<0.462	<5.90	<0.541	<2.95	<6.98 X7	~
MW-98	DNTU	IZ	10/12/2022	<0.0538	<0.0353	<1.10 X7	<0.723 X7	<0.781 X7	--	--	--	--	--	<0.459	<5.86	<0.537	<2.93	<6.93 X7	~
MW-98	DNTU	IZ	4/11/2023	<0.0587	<0.0385	<2.20*	<1.44*	<1.56*	--	--	--	--	--	<0.914	<11.7	<1.07	<5.83	<13.8*	~
MW-98	DNTU	IZ	10/10/2023	<0.0579 U	<0.0380 U	<1.12 U	<0.753 U	<0.814 U	--	--	--	--	--	<3.97 U	<7.93 U	<4.78 U	<1.22 U	<10.1 U*	~
MW-98	DNTU	IZ	4/8/2024	<0.0592 U	<0.0388 U	<1.09 U	<0.734 U	<0.794 U	--	--	--	--	--	<3.87 U	<7.74 U	<4.66 U	<1.19 U	<9.82 U	~
MW-98	DNTU	IZ	10/17/2024	<0.0604 U	<0.0396 U	<1.15 U	<0.777 U	<0.840 U	--	--	--	--	--	<4.09 U	<8.19 U	<4.93 U	<1.26 U	<10.4 U*	~
MW-98Re-Samp-ReRun	DNTU	IZ	11/19/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<3.22 U	~
MW-98	DNTU	IZ	05/08/25	<0.0610 U	<0.0400 U	<1.10 U	<0.739 U	<0.799 U	--	--	--	--	--	<3.90 U	<7.79 U	<4.70 U	<1.20 U	<9.89 U*	~
MW-100	--	--	10/13/2015	0.234 J	<0.0851	<0.650	<1.14	<1.13	--	--	--	--	--	<0.181	<0.138	<0.117	<0.138	<4.27	~
RL-1	ASI	SZ	10/11/2000	1700	130	<100	57 J	63 J	--	--	--	--	--	--	--	--	--	--	Exceed
RL-1	ASI	SZ	4/28/2001	<10	<10	<10	<10	<10	--	--	--	--	--	<10	<20	<10	<20	--	~
RL-1	ASI	SZ	10/26/2001	<10	<10	<10	1.1 J	<10	--	--	--	--	--	<10	<20	<10	<20	--	~
RL-1	ASI	SZ	10/8/2002	<9	<9	<9	<9	<9	--	--	--	--	--	<9	<20	<9	<20	--	~
RL-1	ASI	SZ	4/8/2003	<11	<11	<11	<11	<11	--	--	--	--	--	<11	<22	<11	<22	--	~
RL-1	ASI	SZ	10/3/2003	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<19	<9.5	<19	--	~
RL-1	ASI	SZ	4/19/2004	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<19	<9.5	<19	--	~
RL-1	ASI	SZ	10/6/2004	<9.7	<9.7	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<19	<9.7	<19	--	~
RL-1	ASI	SZ	4/7/2005																

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L) 1.3	(µg/L) 1.3	(µg/L) 240	(µg/L) 4.1	(µg/L) 57				(µg/L) 0.29	(µg/L) 730	(µg/L) 730	(µg/L) 30	(µg/L) 49	(µg/L) ---		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
RL-1	ASI	SZ	4/26/2021	<0.0602	<0.0395	<10.6 X7	<10.6 X7	<10.6 X7	--	--	--	--	--	<0.498	<6.35	<0.582	<3.18	<7.52 X7	~
RL-1	ASI	SZ	10/25/2021	0.394	0.233	<1.19 X7	<0.782 X7	<0.845 X7	--	--	--	--	--	<0.497	<6.34	<0.581	<3.17	<7.5 X7	~
RL-1	ASI	SZ	4/18/2022	0.158	0.141	<1.18 X7	<0.771 X7	<0.833 X7	--	--	--	--	--	<0.490	<6.25	<0.573	<3.13	<7.40 X7	~
RL-1	ASI	SZ	10/13/2022	2.73	1.68	<1.13 X7	<0.741 X7	<0.802 X7	--	--	--	--	--	<0.471	<6.01	<0.551	<3.01	<7.11 X7	Exceed
RL-1	ASI	SZ	4/13/2023	0.787	<0.192	<1.24	<0.814	<0.880	--	--	--	--	--	<0.517	<6.60	<0.605	<3.30	<7.81	~
RL-1	ASI	SZ	10/18/2023	4.41	3.25	<1.24 U	4.06 J	9.80 J	--	--	--	--	--	<4.39 U	<8.78 U	<5.29 U	<1.35 U	<11.1 U*	Exceed
RL-1	ASI	SZ	4/17/2024	<0.0583 U	<0.0382 U	<1.14 U	<0.767 U	<0.823 U	--	--	--	--	--	<4.04 U	<8.08 U	<4.87 U	<1.24 U	<10.3 U*	~
RL-1 ReSamp-ReRun	ASI	SZ	6/21/2024	<0.0583 U	<0.0382 U	<1.14 U	<0.767 U	<0.823 U	--	--	--	--	--	<4.04 U	<8.08 U	<4.87 U	<1.24 U	<10.3 U*	~
RL-1	ASI	SZ	10/24/2024	<0.0594 U	<0.0390 U	<1.10 U	<0.738 U	<0.798 U	--	--	--	--	--	<3.89 U	<7.78 U	<4.69 U	<1.20 U	<9.88 U	~
RL-1	ASI	SZ	05/01/25	<0.0614 U	<0.0403 U	<1.13 U	<0.762 U	<0.824 U	--	--	--	--	--	<4.02 U	<8.03 U	<4.84 U	<1.24 U	<10.2 U*	~
RW-15	EI	SZ	5/4/1994	1900	2000	72	570	450	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	11/22/1993	49000	40000	1600	14000	9300	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	6/20/1994	33000	32000	810	7400	8300	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	10/10/1994	41000	30000	1000	12000	5500	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	4/26/1995	40000	38000	1300	11000	6800	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	11/21/1995	35000	29000	<0	11000	7400	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	4/27/1996	31000	39000	10000	2100	<0	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	11/20/1996	32000 D	26000 D	970	7900 D	2600	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	7/1/1997	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	~
RW-21	EI	SZ	7/8/1997	36000 D	27000 D	810	7900 D	5800 D	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	11/1/1997	27000 D	27000 D	750	7800	<520	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	5/14/1998	4300 D	21000 D	590 D	6400 D	160	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	10/29/1998	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-21	EI	SZ	4/24/1999	25000 D	26000 D	620	4900 D	1900	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	10/27/1999	13000	17000	550	5900 D	<50	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	6/7/2000	21000 D	23000 D	500	410	<200	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	10/9/2000	32000 D	25000 D	740	6500 D	1400	--	--	--	--	--	--	--	--	--	--	Exceed
RW-21	EI	SZ	4/10/2001	26000	28000	1000 J	8900	<2000	--	--	--	--	--	<2000	<4000	<2000	<4000	--	Exceed
RW-21	EI	SZ	10/27/2001	25000 D	20000 D	550 D	5300 D	3200 D	--	--	--	--	--	<50	<100	<50	14 J	--	Exceed
RW-21	EI	SZ	4/23/2002	21000 D	19000 D	720	7800 D	3100 D	--	--	--	--	--	<99	<200	8.2 J	22 J	--	Exceed
RW-21	EI	SZ	10/7/2002	18000 D	17000 D	650 D	6400 D	56	--	--	--	--	--	<9	2.1 J	6.8 J	7 J	--	Exceed
RW-21	EI	SZ	4/3/2003	10000	16000 D	450 J	4500	230 J	--	--	--	--	--	<950	<1900	<950	<1900	--	Exceed
RW-21	EI	SZ	10/3/2003	9100	9900	<4800	3000 J	<4800	--	--	--	--	--	<4800	<9500	<4800	<9500	--	Exceed
RW-21	EI	SZ	4/19/2004	8300	14000	270	2200	42 J	--	--	--	--	--	<200	<390	<200	<390	--	Exceed
RW-21	EI	SZ	10/22/2004	12000	15000	540	3200	<110	--	--	--	--	--	<110	<21	<110	<210	--	Exceed
RW-21	EI	SZ	4/7/2005	5100	6900	320	2500	<100	--	--	--	--	--	<100	<100	<100	12 J	--	Exceed
RW-21	EI	SZ	10/12/2005	12000	14000	490 J	4600	98 J	--	--	--	--	--	<960	<960	<960	<960	--	Exceed
RW-21	EI	SZ	4/11/2006	10000	17000	330	3600	410	--	--	--	--	--	<110	<110	<110	<110	--	Exceed
RW-21	EI	SZ	11/2/2006	11000	14000	390	3900	<97	--	--	--	--	--	<97	<97	<97	<97	--	Exceed
RW-21	EI	SZ	4/6/2007	7100	15000	420	4600	11 J	--	--	--	--	--	<97	<97	<97	<97	--	Exceed
RW-21	EI	SZ	10/2/2007	17000	13000	510	5200	1300	--	--	--	--	--	<13	<6.4	<10	<42	--	Exceed
RW-21	EI	SZ	10/21/2008	5300	4300	170	1600	1300	--	--	--	--	--	<9.9	130	<11	190	--	Exceed
RW-21	EI	SZ	10/12/2009	1210	1570	64.1 J	586	357	--	--	--	--	--	<9.75	41.9 J	<11.0	50.7 J	--	Exceed
RW-21	EI	SZ	4/9/2010	19700	16700	584	5290	4170	--	--	--	--	--	<9.75	<15.7	<11.0	22.8 J	--	Exceed
RW-21	EI	SZ	10/18/2010	9590	11500	406	2270	<14.8	--	--	--	--	--	<9.84	<15.9	<11.1	16.4 J	--	Exceed
RW-21	EI	SZ	4/19/2011	11700	12000	359	2590	1150	--	--	--	--	--	<11.3	<49.4	<14.9	19.7 J	<32.0 J	Exceed
RW-21	EI	SZ	10/13/2011	6020	11100	303 J	2520	<14.5 J	--	--	--	--	--	<11.1 J	<48.5 J	<14.6 J	11 J	<31.4 J	Exceed
RW-21	EI	SZ	4/18/2012	10700	12400	412	4090	<14.4	--	--	--	--	--	<11.0	<48.0	<14.4	9.26 J	--	Exceed
RW-21	EI	SZ	10/11/2012	14400	11700	277	2370	980	--	--	--	--	--	<10.0	<50.4	<12.3	<30.3	--	Exceed
RW-21	EI	SZ	4/23/2013	1230	11800	104	20.4 J	<14.4	--	--	--	--	--	<9.56	<48.0	<11.7	85.9 J	<31.1 L	Exceed
RW-21	EI	SZ	10/21/2013	6600	5400	160	1100	460	--	--	--	--	--	<12	<14	<12	<7.3	<130	Exceed
RW-21	EI	SZ	4/10/2014	13000	12000	380	3800	250	--	--	--	--	--	<1.2	<1.4	3.8 J	<0.73	<4.4	Exceed
RW-21	EI	SZ	10/21/2014	290	3.9 J	39	43	11	--	--	--	--	--	<1.2	<1.4	<1.3	4.1 J	<4.5	Exceed
RW-21	EI	SZ	4/20/2015	8,100	9100	130	380	<1.1	--	--	--	--	--	<1.2	<1.4	<1.2	<0.73	<4.4	Exceed
RW-21	EI	SZ	10/19/2015	946	510	13.7 J	119	108	--	--	--	--	--	<1.89	<1.44	<1.22	22.9 J	<44.6	Exceed
RW-21	EI	SZ	4/21/2016	345	221	4.55 J X7	40.4 X7	39.8 X7	--	--	--	--	--	<1.11	2.79 J	<1.13	19.9	78.8 X7	Exceed
RW-21	EI	SZ	10/20/2016	367	354	6.44 J X7	62.3 X7	47.3 X7	--	--	--	--	--	<1.15	2.17 J	<1.18	17.5	80.7 X7	Exceed
RW-21	EI	SZ	4/21/2017	176	30.3	2.33 J X7	34.5 X7	16.8 X7	--	--	--	--	--	<1.11	1.28 J	<1.13	15.4	18.1 J X7	Exceed
RW-21	EI	SZ	10/19/2017	163	179	3.85 J X7	43.5 X7	29.7 X7	--	--	--	--	--	<1.39	<1.58	<1.42	4.75 J	49.7 X7	Exceed
RW-21	EI	SZ	4/19/2018	76.0	10.3	<0.610 X7	1.61 J X7	1.57 J X7	--	--	--	--	--	<1.15	<1.31	<1.18	7.22 J	<4.16 X7	Exceed
RW-21	EI	SZ	10/29/2018	57.2	7.79 J	<0.622 LX7	<1.09 X7	<1.08 LX7	--	--	--	--	--	<1.17	<1.34	<1.20	2.12 J	<4.24 X7	Exceed
RW-21	EI	SZ	4/18/2019	84.4 H	98.3	3.55 J X7	33.3 X7	29.1 X7	--	--	--	--	--	<1.16	<1.32	<1.19	6.81 J	15.5 J X7	Exceed
RW-21	EI	SZ	10/28/2019	42.4	6.54 J	<0.629 X7	1.35 J X7	1.45 J X7	--	--	--	--	--	<1.19	<1.35	<1.22	2.23 J	6.29 J X7	Exceed
RW-21	EI	SZ	4/29/2020	12.5	<0.674	<0.642 X7	<1.13 X7	<1.12 X7	--	--	--	--	--	<1.21	<1.38	<1.24	5.00 J	5.69 J X7	Exceed
RW-21	EI	SZ	10/22/2020	17.2	3.77	<0.630 X7	5.47 X7	3.83 J X7	--	--	--	--	--	<0.175	2.97 J	<0.113	2.04 J	16.2 X7	Exceed
RW-21	EI	SZ	4/28/2021	10.1	1.91	<11.0 X7	<11.0 X7	<11.0 X7	--	--	--	--	--	<0.516	<6.59	<0.604	<3.29	9.29 J X7	Exceed
RW-21	EI	SZ	10/26/2021	31.1	8.75	<1.26 X7	1.08 J X7	0.905 J X7	--	--	--	--	--	<0.522	<6.67	<0.611	<3.33	<7.89 X7	Exceed
RW-21	EI	SZ	4/27/2022	4.77	1.37	<1.09 X7	<0.714 X7	<0.772 X7	--	--	--	--	--	<0.453	<5.79	<0.531	<2.89	<6.85 X7	Exceed
RW-21	EI	SZ	11/4/2022	4.71	1.09	<1.07 X7	1.04 J X7	0.938 J	--	--	--	--	--	<0.447	<5.70	<0.523	6.05 J	<6.75 X7	Exceed
RW-21	EI	SZ	4/19/2023	23.0	6.76	<1.15	1.46 J	1.66 J	--	--	--	--	--	<0.480	<6.12	<0.561	<3.06	<7.24	Exceed

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Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
RW-22	ASI	IZ	10/26/2001	310	81	160	2000 D	1400 D	--	--	--	--	--	<50	2400 D	<50	320	--	Exceed
RW-22	ASI	IZ	4/23/2002	350	99 J	220	2100 D	1500	--	--	--	--	--	<110	850	<110	370	--	Exceed
RW-22	ASI	IZ	10/7/2002	310 D	74	120	1300 D	1100 D	--	--	--	--	--	<10	2100 D	1.2 J	310 D	--	Exceed
RW-22	ASI	IZ	4/3/2003	120 J	<950	88 J	1100	1400	--	--	--	--	--	<950	3600	<950	310 J	--	Exceed
RW-22	ASI	IZ	10/3/2003	320 J	<950	190 J	1900	1700	--	--	--	--	--	<950	4400	<950	480 J	--	Exceed
RW-22	ASI	IZ	4/19/2004	340	54 J	140	1500	1400	--	--	--	--	--	<100	3200	<100	410	--	Exceed
RW-22	ASI	IZ	10/22/2004	330	64	140	1800	1600	--	--	--	--	--	<10	2900	<10	470	--	Exceed
RW-22	ASI	IZ	4/7/2005	160	28 J	110	930	870	--	--	--	--	--	<98	2400	<98	260	--	Exceed
RW-22	ASI	IZ	10/12/2005	460	97 J	210	2000	1600	--	--	--	--	--	<190	3900	<190	550	--	Exceed
RW-22	ASI	IZ	4/11/2006	520	100	250	3300	2600	--	--	--	--	--	<100	3000	<100	680	--	Exceed
RW-22	ASI	IZ	11/2/2006	600	120	220	2400	2000	--	--	--	--	--	<98	6000	<98	580	--	Exceed
RW-22	ASI	IZ	4/6/2007	370	62 J	200	1500	1600	--	--	--	--	--	<98	1700	<98	800	--	Exceed
RW-22	ASI	IZ	10/2/2007	370	110	170	1000	1800	--	--	--	--	--	<13	880	<10	550	--	Exceed
RW-22	ASI	IZ	4/10/2008	430	110	190	1200	1100	--	--	--	--	--	<0.95	500	<1.1	590	--	Exceed
RW-23	ASI	IZ	11/10/1993	<0	<0	<0	11	12	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	6/20/1994	<0	<0	<0	<0	<0	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	10/30/1994	<0	<0	<0	<0	<0	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	4/26/1995	<0	<0	<0	<0	<0	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	11/21/1995	<0	<0	<0	<0	<0	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	5/31/1996	<0	<0	<0	14	<0	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	11/27/1996	<10	<10	<10	17	<10	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	4/22/1997	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	11/1/1997	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	5/14/1998	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	10/27/1998	<10	<10	<10	13	<10	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	4/24/1999	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-23	ASI	IZ	10/7/1999	<10	<10	<10	21	<10	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	6/13/2000	<10	<10	<10	10	7.5 J	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	10/12/2000	<10	<10	<10	12	7.7 J	--	--	--	--	--	--	--	--	--	--	Exceed
RW-23	ASI	IZ	4/10/2001	4.9 J	3.3 J	3.1 J	48	13	--	--	--	--	--	<10	8.5 J	<10	<20	--	Exceed
RW-23	ASI	IZ	10/26/2001	2 J	<10	2.8 J	37	30	--	--	--	--	--	<10	<20	<10	<20	--	Exceed
RW-23	ASI	IZ	4/23/2002	7.4 J	5.2 J	14	130	110	--	--	--	--	--	<10	81	<10	10 J	--	Exceed
RW-23	ASI	IZ	10/7/2002	8.2 J	7.8 J	2.8 J	29	11	--	--	--	--	--	<9	5.6 J	<9	1.1 J	--	Exceed
RW-23	ASI	IZ	4/3/2003	<9	<9	<9	<9	<9	--	--	--	--	--	<9	<19	<9	<19	--	~
RW-23	ASI	IZ	1/7/2004	<0.95	<0.95	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<0.95	<9.5	<0.95	<1.9	~
RW-23	ASI	IZ	4/28/2004	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<19	<9.5	<19	--	~
RW-23	ASI	IZ	10/22/2004	<9.7	<9.7	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<19	<9.7	<19	--	~
RW-23	ASI	IZ	4/12/2005	<9.7	<9.7	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<9.7	<9.7	<9.7	--	~
RW-23	ASI	IZ	10/18/2005	<9.6	<9.6	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<9.6	<9.6	<9.6	--	~
RW-23	ASI	IZ	4/13/2006	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<9.5	<9.5	<9.5	--	~
RW-23	ASI	IZ	10/18/2006	<9.9	<9.9	<9.9	0.93 J	<9.9	--	--	--	--	--	<9.9	<9.9	<9.9	<9.9	--	~
RW-23	ASI	IZ	4/10/2007	<9.7	<9.7	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<9.7	<9.7	<9.7	--	~
RW-23	ASI	IZ	10/10/2007	<0.79	<0.81	<1.0	<0.86	<0.94	--	--	--	--	--	<1.2	<0.62	<1.0	<4.1	--	~
RW-23	ASI	IZ	4/17/2008	<2.8	1.6 J	<1.0	<1.0	<1.4	--	--	--	--	--	<0.96	<1.6	<1.1	<0.85	--	Exceed
RW-23	ASI	IZ	10/23/2008	<2.8	<1.0	<1.0	<1.0	<1.4	--	--	--	--	--	<0.96	<1.6	<1.1	<0.85	--	~
RW-23	ASI	IZ	4/20/2009	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
RW-23	ASI	IZ	10/21/2009	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
RW-23	ASI	IZ	4/9/2010	<2.77	<0.987	<0.998	2.08 J	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
RW-23	ASI	IZ	10/21/2010	<2.83	<1.01	<1.02	<1.04	<1.46	--	--	--	--	--	<0.975	<1.57	<1.10	<0.858	--	~
RW-23	ASI	IZ	4/26/2011	<2.80	<0.996	<1.01	<1.03	<1.45	--	--	--	--	--	<1.11	<4.85	<1.46	<0.850	<3.14 J	~
RW-23	ASI	IZ	10/18/2011	<2.83	<1.01	<1.02	<1.04	<1.46	--	--	--	--	--	<1.12	<4.90	<1.47	<0.858	<3.17	~
RW-23	ASI	IZ	4/27/2012	<2.77 J	<0.987 J	<0.998 J	<1.02 J	<1.44 J	--	--	--	--	--	<1.10 J	<4.80 J	<1.44 J	<0.841 J	--	~
RW-23	ASI	IZ	10/17/2012	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<4.80	<1.17	<2.88	--	~
RW-23	ASI	IZ	4/25/2013	<2.88	<1.03	<1.04	<1.06	<1.49	--	--	--	--	--	<0.994	<4.99	<1.21	<3.00	<3.24 L	~
RW-23	ASI	IZ	10/22/2013	<0.95	<0.64	<0.61	<1.1	<1.1	--	--	--	--	--	<1.2	<1.3	<1.2	<0.69	<13 L	~
RW-23	ASI	IZ	4/18/2014	13	31	<0.59	<1.0	<1.0	--	--	--	--	--	<1.1	<1.3	<1.1	<0.66	<4.0	Exceed
RW-23	ASI	IZ	10/21/2014	<0.94	<0.63	<0.60 L	<1.1 L	<1.0 L	--	--	--	--	--	<1.1	<1.3 L	<1.2	<0.68	<4.1 L	~
RW-23	ASI	IZ	4/22/2015	<1.1	<0.72	<0.69	<1.2	<1.2	--	--	--	--	--	<1.3	<1.5	<1.3	<0.78	<4.7	~
RW-23	ASI	IZ	10/19/2015	<0.125	<0.0769	<0.588	<1.03	<1.02	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86	~
RW-23	ASI	IZ	4/20/2016	<0.950	<0.640	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	~
RW-23	ASI	IZ	10/26/2016	<0.95	<0.64	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.69	<4.16 X7	~
RW-23	ASI	IZ	4/19/2017	15.9	9.04 J	2.45 J X7	40.2 X7	17 X7	--	--	--	--	--	<1.40	41.0	<1.44	2.81 J	<5.07 X7	Exceed
RW-23	ASI	IZ	5/31/2017	<0.125	<0.0769	<0.588	<1.03	<1.02	--	--	--	--	--	<0.163	<0.125	<0.106	<0.125	<3.86	~
RW-23	ASI	IZ	10/18/2017	2.13 J	1.89 J	<0.693 X7	<1.22 LX7	<1.2 X7	--	--	--	--	--	<1.31 L	<1.49 L	<1.34 L	<0.784	R	Exceed
RW-23	ASI	IZ	4/20/2018	<0.950	<0.640	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	~
RW-23	ASI	IZ	10/29/2018	<0.950	<0.640	<0.610 LX7	<1.07 X7	<1.06 LX7	--	--	--	--	--	<1.15	<1.31 L	<1.18	<0.690 L	<4.16 X7	~
RW-23	ASI	IZ	4/17/2019	<1.03	<0.696	<0.663 X7	<1.16 X7	<1.15 X7	--	--	--	--	--	<1.25	<1.42	<1.28	<0.750	<4.52 X7	~
RW-23	ASI	IZ	10/28/2019	<0.913	<0.615	<0.587 X7	<1.03 X7	<1.02 X7	--	--	--	--	--	<1.11	<1.26	<1.13	<0.663	<4.00 X7	~
RW-23	ASI	IZ	4/22/2020	<0.950	<0.640	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	~
RW-23	ASI	IZ	10/22/2020	301 J	<0.0816	<0.623 X7	4.02 J X7	2.08 J X7	--	--	--	--	--	<0.173	0.286 J	<0.112	<0.133	<4.09 X7	~
RW-23	ASI	IZ	4/27/2021	0.107	0.0517 J	<10.8 X7	<10.8 X7	<10.8 X7	--	--	--	--	--	<0.505	<6.45	<0.592	<3.23	<7.64 X7	~
RW-23	ASI	IZ	10/14/2021	0.0848 J	<0.037	<1.13 X7	<0.738 X7	<0.798 X7</											

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	--		
RW-24	EI	IZ	5/18/2000	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-24	EI	IZ	10/6/2000	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	~
RW-24	EI	IZ	4/3/2001	<10	<10	<10	<10	<10	--	--	--	--	--	<10	4.9 J	--	<20	--	~
RW-24	EI	IZ	10/24/2001	<50	<50	<50	<50	<50	--	--	--	--	--	<50	<100	<50	<100	--	Exceed
RW-24	EI	IZ	4/25/2002	<10	<10	<10	<10	<10	--	--	--	--	--	<10	<21	<10	<21	--	Exceed
RW-24	EI	IZ	10/7/2002	<11	<11	<11	<11	<11	--	--	--	--	--	<11	<21	<11	<21	--	Exceed
RW-24	EI	IZ	4/2/2003	<48	<48	<48	<48	<48	--	--	--	--	--	<48	<95	<48	<95	--	Exceed
RW-24	EI	IZ	10/7/2003	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	0.78 J	<9.5	<19	--	Exceed
RW-24	EI	IZ	4/22/2004	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	<19	<9.5	<19	--	Exceed
RW-24	EI	IZ	10/22/2004	<10	<10	<10	<10	<10	--	--	--	--	--	<10	<21	<10	<21	--	~
RW-24	EI	IZ	10/23/2004	<10	<10	<10	<10	<10	--	--	--	--	--	<10	<21	<10	<21	--	~
RW-24	EI	IZ	4/11/2005	<9.7	<9.7	<9.7	<9.7	<9.7	--	--	--	--	--	<9.7	<9.7	<9.7	<9.7	--	Exceed
RW-24	EI	IZ	10/13/2005	<9.6	<9.6	<9.6	<9.6	<9.6	--	--	--	--	--	<9.6	<9.6	<9.6	<9.6	--	Exceed
RW-24	EI	IZ	4/12/2006	<9.9	<9.9	<9.9	<9.9	<9.9	--	--	--	--	--	<9.9	<9.9	<9.9	<9.9	--	Exceed
RW-24	EI	IZ	10/18/2006	<9.8	<9.8	<9.8	2.8 J	2 J	--	--	--	--	--	<9.8	<9.8	<9.8	<9.8	--	Exceed
RW-24	EI	IZ	4/10/2007	<9.8	<9.8	<9.8	<9.8	<9.8	--	--	--	--	--	<9.8	<9.8	<9.8	<9.8	--	Exceed
RW-24	EI	IZ	10/4/2007	<0.80	<0.82	<1.0	<0.87	<0.95	--	--	--	--	--	<1.3	<0.62	<1.0	<4.1	--	Exceed
RW-24	EI	IZ	4/17/2008	<2.8	<1.0	<1.0	<1.0	<1.4	--	--	--	--	--	<0.96	<1.6	<1.1	<0.85	--	Exceed
RW-24	EI	IZ	10/24/2008	<2.8	<1.0	<1.0	<1.0	<1.5	--	--	--	--	--	<0.97	<1.6	<1.1	<0.86	--	Exceed
RW-24	EI	IZ	4/20/2009	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
RW-24	EI	IZ	10/20/2009	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	Exceed
RW-24	EI	IZ	4/22/2010	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<0.956	<1.54	<1.08	<0.841	--	~
RW-24	EI	IZ	10/21/2010	<2.85	<1.02	<1.03	<1.05	<1.48	--	--	--	--	--	<0.984	<1.59	<1.11	<0.866	--	~
RW-24	EI	IZ	4/25/2011	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	<3.11 J	~
RW-24	EI	IZ	4/24/2012	<2.77	<0.987	<0.998	<1.02	<1.44	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	--	~
RW-24	EI	IZ	4/16/2014	<0.94	<0.63	<0.60	<1.1	<1.0	--	--	--	--	--	<1.1	<1.3	<1.2	<0.68	<4.1	~
RW-24	EI	IZ	4/19/2016	<0.950	0.772 J	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	~
RW-24	EI	IZ	4/23/2018	<0.913	<0.615	<0.587 LX7	<1.03 LX7	<1.02 LX7	--	--	--	--	--	<1.11 L	<1.26 L	<1.13 L	<0.663 L	R	~
RW-24	EI	IZ	5/1/2020	<0.950	<0.640	<0.610 X7	<1.07 X7	<1.06 X7	--	--	--	--	--	<1.15	<1.31	<1.18	<0.690	<4.16 X7	~
RW-24	EI	IZ	4/28/2021	<0.0658	<0.0432	<10.5 X7	<10.5 X7	<10.5 X7	--	--	--	--	--	<0.495	<6.33	<0.580	<3.16	<7.48 X7	~
RW-24	EI	IZ	4/25/2022	<0.0602	<0.0395	<1.09 X7	<0.712 X7	<0.770 X7	--	--	--	--	--	<0.452	<5.77	<0.529	<2.89	<6.83 X7	~
RW-24	EI	IZ	4/18/2024	<0.0622	<0.0408	<1.19 U	<0.802 U	<0.867 U	--	--	--	--	--	<4.23 U	<8.46 U	<5.10 U	<1.30 U	<10.7 U*	~
RW-25	EI	LSZ	8/30/1995	24000	46000	2100	24000	18000	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	9/24/1995	19000 D	34000 D	1200	18000 D	13000 D	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	10/28/1998	16000 D	7500 D	370	3800 D	2800 D	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	4/24/1999	2200 D	4400 D	140	1300 D	210	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	10/27/1999	910 D	2800 D	150	1900 D	33	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	6/13/2000	2900	2500	<500	1000	820	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	10/9/2000	240	100	<100	390	400	--	--	--	--	--	--	--	--	--	--	Exceed
RW-25	EI	LSZ	12/28/2001	2900 D	3200 D	180	1400	930	--	--	--	--	--	<100	<200	<100	<200	--	Exceed
RW-25	EI	LSZ	4/23/2002	3400 D	3400 D	220	2000 D	1400	--	--	--	--	--	<100	320	<100	680	--	Exceed
RW-25	EI	LSZ	4/17/2003	2500 D	1500 D	71	640 D	430 J D	--	--	--	--	--	<9	<19	<9	7.3 J	--	Exceed
RW-25	EI	LSZ	10/3/2003	660	380	25 J	250	180	--	--	--	--	--	<95	310	<95	120 J	--	Exceed
RW-25	EI	LSZ	4/19/2004	1300	930	35 J	350	230	--	--	--	--	--	<98	<200	<98	<200	--	Exceed
RW-25	EI	LSZ	10/22/2004	<10	<10	<10	<10	<10	--	--	--	--	--	<10	470	<10	<20	--	Exceed
RW-25	EI	LSZ	10/23/2004	<9.5	<9.5	<9.5	<9.5	<9.5	--	--	--	--	--	<9.5	340	<9.5	<19	--	Exceed
RW-25	EI	LSZ	4/7/2005	<97	1200	58 J	57 J	<97	--	--	--	--	--	<97	<97	<97	<97	--	Exceed
RW-25	EI	LSZ	10/13/2005	1300	2200	88	880	520	--	--	--	--	--	<49	<49	<49	<49	--	Exceed
RW-25	EI	LSZ	4/11/2006	1100	3600	120	630	<100	--	--	--	--	--	<100	<100	<100	<100	--	Exceed
RW-25	EI	LSZ	11/2/2006	250	5400	220	530	25 J	--	--	--	--	--	<97	<97	<97	<97	--	Exceed
RW-25	EI	LSZ	4/6/2007	<98	3400	93 J	<98	<98	--	--	--	--	--	<98	<98	<98	<98	--	Exceed
RW-25	EI	LSZ	10/2/2007	4500	3400	160	1700	1300	--	--	--	--	--	<13	<6.3	<10	<42	--	Exceed
RW-25	EI	LSZ	10/12/2009	3360	2710	128	1250	812	--	--	--	--	--	<9.47	<15.3	<10.7	13.1 J	--	Exceed
RW-25	EI	LSZ	4/9/2010	3560	4510	232	1770	927	--	--	--	--	--	<9.65	<15.6	<10.9	18.4 J	--	Exceed
RW-25	EI	LSZ	10/18/2010	49 J	895	47.3 J	<10.6	<14.9	--	--	--	--	--	<9.94	<16.0	<11.2	<8.75	--	Exceed
RW-25	EI	LSZ	4/19/2011	111	5630	157	<10.4	841	--	--	--	--	--	<11.2	<49.0	<14.7	39.7 J	<31.7 J	Exceed
RW-25	EI	LSZ	4/26/2012	482	311	18.3	160	152	--	--	--	--	--	<1.10	559	<1.44	57.5	--	Exceed
RW-25	EI	LSZ	10/24/2013	11000	9500	330	3600	3200	--	--	--	--	--	<1.2	71	<1.2	66	670	Exceed
RW-25	EI	LSZ	10/21/2014	1400	870	34	150	90	--	--	--	--	--	<1.1	<1.3	<1.1	<0.67	<4.0	Exceed
RW-25	EI	LSZ	4/20/2015	830	2,600	87	790	380	--	--	--	--	--	<1.2	<1.3	<1.2	<0.70	<4.2	Exceed
RW-25	EI	LSZ	10/14/2015	6,050	9,680	344	3,390	2,350	--	--	--	--	--	<11.7	<13.4	<12.0	<7.04	<42.4	Exceed
RW-25	EI	LSZ	4/8/2016	9370	9780	345 X7	3160 X7	2590 X7	--	--	--	--	--	<12.1	<13.8	<12.4	9.43 J	<43.8 X7	Exceed
RW-25	EI	LSZ	10/25/2016	13,400	12,900	365 X7	4,340 X7	2,680 X7	--	--	--	--	--	<1.15	<1.31	<1.18	14	<4.16 LX7	Exceed
RW-25	EI	LSZ	4/18/2017	10,200	9,750	296 X7	3,190 X7	2,070 X7	--	--	--	--	--	<1.32	<1.51	<1.36	5.71 J	<4.78 X7	Exceed
RW-25	EI	LSZ	10/17/2017	11900	10700	344 X7	3780 X7	2740 X7	--	--	--	--	--	<1.26	<1.44	2.65 J	5.58 J	<4.57 X7	Exceed
RW-25	EI	LSZ	4/18/2018	4,790	8,340	188 J X7	2,560 X7	28.5 X7	--	--	--	--	--	<1.14	<1.30	<1.17	<0.683	<4.12 X7	Exceed
RW-25	EI	LSZ	10/25/2018	311	6,300	255 LX7	2310 X7	26.7 LX7	--	--	--	--	--	<1.26	<1.44	2.06 J	<0.758	<4.57 X7	Exceed
RW-25	EI	LSZ	4/17/2019	482 JH	6,410	266 J X7	1,730 X7	<57.0 X7	--	--	--	--	--	<61.8	<70.4	<63.4	<37.1	<224 X7	Exceed
RW-25	EI	LSZ	10/24/2019	<96.0	7440	<61.6 X7	79.5 X7	<1.07 X7	--	--	--	--	--	<1.16	<1.32	<1.19	29.5	<4.20 X7	Exceed
RW-25	EI	LSZ	4/20/2020	368 J	6330	<1.14 X7	<1.14 X7	<1.13 X7	--	--	--	--	--	<1.22	<1.39	<1.26	20.0	<4.43 X7	Exceed
RW-25	EI	LSZ	10/21/2020	9,350	8,650	201 J X7	2740 X												

TABLE A-1
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SEMIANNUAL REPORT - August 2025
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Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)			
				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
Groundwater Protection Standard (GWPS)																			
RW-26	EI	IZ	10/3/2003	97	100	6.5 J	81	62	--	--	--	--	--	<9.5	4.6 J	<9.5	4.5 J	--	Exceed
RW-26	EI	IZ	4/19/2004	63	78	3.9 J	36	<9.7	--	--	--	--	--	<9.7	1.6 J	<9.7	4.9 J	--	Exceed
RW-26	EI	IZ	10/22/2004	57	63	4.7 J	57	38	--	--	--	--	--	<9.6	2.6 J	<9.6	4.4 J	--	Exceed
RW-26	EI	IZ	10/23/2004	65	63	4.9 J	59	40	--	--	--	--	--	<10	4.1 J	<10	5.4 J	--	Exceed
RW-26	EI	IZ	4/7/2005	60	65	6.1 J	65	45	--	--	--	--	--	<9.7	2.6 J	<9.7	4 J	--	Exceed
RW-26	EI	IZ	10/12/2005	61	70	5.5 J	64	43	--	--	--	--	--	<9.5	2.4 J	<9.5	4.9 J	--	Exceed
RW-26	EI	IZ	4/11/2006	57	54	4.3 J	52	36	--	--	--	--	--	<19	1.8 J	<19	<19	--	Exceed
RW-26	EI	IZ	11/2/2006	55	47	4.1 J	51	33	--	--	--	--	--	<9.7	1.4 J	<9.7	<9.7	--	Exceed
RW-26	EI	IZ	4/6/2007	45	46	3.3 J	44	30	--	--	--	--	--	<9.6	1.1 J	<9.6	<9.6	--	Exceed
RW-26	EI	IZ	10/2/2007	31	29	2.7 J	30	16	--	--	--	--	--	<1.3	3 J	<1.1	<4.3	--	Exceed
RW-26	EI	IZ	4/16/2008	43	40	3.5 J	47	30	--	--	--	--	--	<0.95	1.9 J	<1.1	4.1 J	--	Exceed
RW-26	EI	IZ	10/20/2008	42	47	3.9 J	53	35	--	--	--	--	--	<0.98	<1.6	<1.1	2.3 J	--	Exceed
RW-26	EI	IZ	4/17/2009	51.1	50.4	3.85 J	56.4	36.5	--	--	--	--	--	<0.975	<1.57	<1.10	5.19 J	--	Exceed
RW-26	EI	IZ	10/12/2009	59	53.8	3.47 J	43.2	29.9	--	--	--	--	--	<0.975	<1.57	<1.10	2.54 J	--	Exceed
RW-26	EI	IZ	4/9/2010	44.3	44.1	2.89 J	37.6	24.9	--	--	--	--	--	<0.975	<1.57	<1.10	1.73 J	--	Exceed
RW-26	EI	IZ	10/18/2010	43	40.5	2.9 J	37.2	25.4	--	--	--	--	--	<0.975	<1.57	<1.10	1.43 J	--	Exceed
RW-26	EI	IZ	4/19/2011	44.2	46.5	8.12 J	30.7	23	--	--	--	--	--	<1.13	<4.94	<1.49	2.44 J	23 J	Exceed
RW-26	EI	IZ	10/13/2011	33.4	37.2	2.65 J	27.4	14.4	--	--	--	--	--	<1.12	<4.90	<1.47	1.39 J	14.2 J	Exceed
RW-26	EI	IZ	4/18/2012	35.2	37.3	2.64 J	38.4	23.4	--	--	--	--	--	<1.10	<4.80	<1.44	1.89 J	--	Exceed
RW-26	EI	IZ	10/11/2012	39.8 J	44.8 J	2.58 J	37.9	21.3	--	--	--	--	--	<0.975	<4.90	<1.19	<2.94	--	Exceed
RW-26	EI	IZ	4/23/2013	51.5	56.6	1.14 J	30	16.1	--	--	--	--	--	<0.975	<4.90	<1.19	8.95 J	31.6 J	Exceed
RW-26	EI	IZ	10/21/2013	46	50	3.3 J	38	25	--	--	--	--	--	<1.2	<1.3	<1.2	2.3 J	<13	Exceed
RW-26	EI	IZ	4/10/2014	49	54	3.7 J	40	26	--	--	--	--	--	<1.2	<1.4	<1.3	1.9 J	<4.5	Exceed
RW-26	EI	IZ	10/21/2014	40	46	3.6 J	39	27	--	--	--	--	--	<1.2	<1.4	<1.2	1.6 J	<4.4	Exceed
RW-26	EI	IZ	4/20/2015	34	37	1.7 J	25	16	--	--	--	--	--	<1.2	<1.4	<1.2	1.7 J	5.5 J	Exceed
RW-26	EI	IZ	10/14/2015	29.8	34.9	1.96 J	25.5	15.0	--	--	--	--	--	<1.24	<1.41	<1.27	1.37 J	8.88 J	Exceed
RW-26	EI	IZ	4/8/2016	35.7	37.9	2.41 J X7	28.5 X7	18.6 X7	--	--	--	--	--	<1.22	<1.39	<1.26	1.88 J	<4.43 X7	Exceed
RW-26	EI	IZ	10/25/2016	37.5	42.1	2.48 J X7	34.4 X7	17.9 X7	--	--	--	--	--	<1.16	<1.32	<1.19	1.45 J	18.2 J X7	Exceed
RW-26	EI	IZ	4/18/2017	29.8	32.9	1.94 J X7	27.6 X7	14.6 X7	--	--	--	--	--	<1.26	<1.44	<1.30	1.22 J	<4.57 X7	Exceed
RW-26	EI	IZ	10/17/2017	32.7	35.7	2.9 J X7	36.3 X7	21.5 X7	--	--	--	--	--	<1.31	<1.49	<1.34	1.43 J	<4.73 X7	Exceed
RW-26	EI	IZ	4/18/2018	29	33.1	1.98 J X7	28.9 X7	14 X7	--	--	--	--	--	<1.14	<1.30	<1.17	<0.683	<4.12 X7	Exceed
RW-26	EI	IZ	10/25/2018	24.1	27.7	1.51 J LX7	23.3 X7	11.5 LX7	--	--	--	--	--	<1.28	<1.46	<1.31	<0.767	<4.62 X7	Exceed
RW-26	EI	IZ	4/17/2019	22.3 H	21.2	1.92 J X7	22.6 X7	13.7 X7	--	--	--	--	--	<1.34	1.88 J	<1.37	1.87 J	<4.84 X7	Exceed
RW-26	EI	IZ	10/24/2019	20.1	21.5	<0.604 X7	16.0 X7	12.9 X7	--	--	--	--	--	<1.14	2.53 J	<1.17	1.93 J	5.32 J X7	Exceed
RW-26	EI	IZ	4/20/2020	10.5	17.4	1.91 J X7	<1.10 X7	17.0 X7	--	--	--	--	--	<1.19	<1.35	<1.22	5.79 J	<4.29 X7	Exceed
RW-26	EI	IZ	10/21/2020	15.8	21.0	1.42 J X7	15.5 X7	12.1 X7	--	--	--	--	--	<0.170	3.93	<0.110	2.02 J	38.5 X7	Exceed
RW-26	EI	IZ	4/26/2021	17.6	21.8	<10.7 X7	23.4 X7	13.9 X7	--	--	--	--	--	<0.502	<6.41	<0.588	<3.21	<7.59 X7	Exceed
RW-26	EI	IZ	10/25/2021	12.8	18.6	1.47 J X7	17.3 X7	11.7 J X7	--	--	--	--	--	<0.592	<7.56	<0.693	<3.78	<8.94 X7	Exceed
RW-26	EI	IZ	4/18/2022	9.41	18.1	1.59 J X7	18.9 X7	13.1 X7	--	--	--	--	--	<0.483	<6.16	<0.565	<3.08	<7.29 X7	Exceed
RW-26	EI	IZ	10/13/2022	12.2	20.7	3.07 J X7	21.9 X7	17.4 X7	--	--	--	--	--	<0.480	<6.13	<0.562	<3.06	<7.25	Exceed
RW-26	EI	IZ	4/13/2023	12.2	18.6	1.47 J	18.1	13.6	--	--	--	--	--	<0.458	<5.84	<0.536	<2.92	<6.91	Exceed
RW-26	EI	IZ	10/18/2023	29.5	31.1	<1.14 U	12.2	6.33 J	--	--	--	--	--	<4.04 U	<8.08 U	<4.87 U	<1.24 U	<10.3 U*	Exceed
RW-26	EI	IZ	4/12/2024	16.4	19.8	<1.13 U	13.1	9.39 J	--	--	--	--	--	<4.01 U	<8.01 U	<4.83 U	2.24 J	<10.2 U	Exceed
RW-26	EI	IZ	10/24/2024	1.07	1.52	<1.05 U	1.93 J	1.64 J	--	--	--	--	--	<3.73 U	<7.47 U	<4.50 U	<1.15 U	<9.48 U	Exceed
RW-26	EI	IZ	04/30/25	27.1	35.2	<1.05 U	17.6	11.7	--	--	--	--	--	<3.74 U	<7.48 U	<4.51 U	<1.15 U	<9.49 U*	Exceed
RW-27	ASI	SZ	4/13/2010	26500	7720	4690	43700	28900	--	--	--	--	--	<19.5	<31.4	<22.0	<17.2	--	Exceed
RW-27	ASI	SZ	10/18/2010	14200	4340	3370	33900	16300	--	--	--	--	--	<19.5	<31.4	<22.0	<17.2	--	Exceed
RW-27	ASI	SZ	4/19/2011	18500	6590	3600	36600	24100	--	--	--	--	--	<22.9	<99.9	<30.0	<17.5	<64.7 J	Exceed
RW-27	ASI	SZ	10/13/2011	14600	5250	3740 J	27000	13900	--	--	--	--	--	<22.3 J	<97.0 J	<29.1 J	18.5 J	<62.8 J	Exceed
RW-27	ASI	SZ	4/18/2012	15800	4710	2910	34000	19500	--										

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SEMIANNUAL REPORT - August 2025
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Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		
Groundwater Protection Standard (GWPS)				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
RW-28	ASI	IZ	10/17/2017	<1.07	<0.719	<0.685 X7	1.96 J X7	<1.19 X7	--	--	--	--	--	<1.29	769	<1.33	<0.775	1150 X7	Exceed
RW-28	ASI	IZ	4/18/2018	246 J	51.9	104 X7	1,460 X7	814 X7	--	--	--	--	--	<1.15	1,100	<1.18	33.2	<208 X7	Exceed
RW-28	ASI	IZ	10/25/2018	222	34.6 J	91.7 J LX7	1120 X7	761 LX7	--	--	--	--	--	<24.5	1,590	<25.1	306	737 X7	Exceed
RW-28	ASI	IZ	4/17/2019	68.6 JH	58.2 J	79.6 J X7	808 X7	786 X7	--	--	--	--	--	<67.6	<77.1	<69.4	239 J	416 J X7	Exceed
RW-28	ASI	IZ	10/24/2019	221	30.6 J	91.9 J X7	745 X7	743 X7	--	--	--	--	--	<23.7	968	<24.3	203 J	<85.8 X7	Exceed
RW-28	ASI	IZ	4/20/2020	141 J	43.0	88.0 J X7	4.06 J X7	980 X7	--	--	--	--	--	<1.16	4.79 J	<1.19	299	135 J X7	Exceed
RW-28	ASI	IZ	10/22/2020	168	27.3	73.2 X7	597 X7	578 X7	--	--	--	--	--	<0.181	1.220	.539 J	175	2190 X7	Exceed
RW-28	ASI	IZ	4/26/2021	202	30.9	90.1 X7	787 X7	666 X7	--	--	--	--	--	<0.544	1.290	<0.637	186	561 X7	Exceed
RW-28	ASI	IZ	10/25/2021	126	21	108 X7	653 X7	460 X7	--	--	--	--	--	<0.498	2,170	0.792 J	177	695 X7	Exceed
RW-28	ASI	IZ	4/18/2022	95	19.4	52.7 X7	600 X7	482 X7	--	--	--	--	--	<0.907	1530	<1.06	122	1290 X7	Exceed
RW-28	ASI	IZ	10/13/2022	136	35.8	103 X7	762 X7	606 X7	--	--	--	--	--	<0.986	1580	<1.15	164	1080 X7	Exceed
RW-28	ASI	IZ	4/13/2023	128	23.0	60.0	521	450	--	--	--	--	--	<1.03	1200	<1.21	140	842	Exceed
RW-28	ASI	IZ	10/18/2023	118	23.2	<1.20 U	86.1	66.2	--	--	--	--	--	<4.24 U	192	<5.11 U	45.7	<10.8 U*	Exceed
RW-28	ASI	IZ	10/23/2024	69.0	10.8	49.5	265	253	--	--	--	--	--	<4.28 U	1050	<5.15 U	68.7	<19.9 U*	Exceed
RW-28-ReSamp-ReRun	ASI	IZ	11/19/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	282	Exceed
RW-28	ASI	IZ	4/17/2024	79	11.4	27.2 H	223 H	225 H	--	--	--	--	--	<4.30 U H	605 H	<5.15 U H	80.2 H	<10.9 U H*	Exceed
RW-28-ReSamp-ReRun	ASI	IZ	5/21/2024	105	20	49.5	281	333	--	--	--	--	--	<3.81 U	1140	<4.59 U	101	<9.86 U*	Exceed
RW-28	ASI	IZ	04/30/25	88.3	16.5	25.4	289	219	--	--	--	--	--	<3.90 U	19.4	<4.70 U	40.3	<9.89 U*	Exceed
RWC-1	ASI	SZ	4/18/1990	23000	8100	5600	52000	36000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	7/12/1990	19000	7700	4300	39000	30000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/3/1990	13000	3500	2700	30000	22000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	5/7/1991	18000	6000	2900	33000	28000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/1/1991	14000	5000	3600	43000	31000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	5/7/1992	12000	4500	2100	27000	17000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	11/3/1992	20000	6100	3000	38000	26000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	4/18/1993	18000	7200	3400	32000	21000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	7/20/1993	18000	4700	3000	25000	23000	<0	0.69	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	11/10/1993	18000	4700	3000	25000	23000	<0	0.69	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	4/17/1994	14000	6900	3000	29000	24000	<0	0.55	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/27/1994	14000	4500	1800	27000	18000	<0	0.76	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	5/30/1995	13000	5400	2500	29000	21000	<0	0.66	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	11/21/1995	10000	4000	2000	23000	15000	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	4/27/1996	19000	6900	3200	45000	25000	<0	0.55	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	11/27/1996	16000	5300	2600	24000 D	9100	--	1.2	0.064	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	5/9/1997	10000	3400	1400	9700	6000	--	0.66	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	11/1/1997	9300 D	3900	1500	15000 D	5900 D	--	0.62	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	5/14/1998	11000	4000	<2000	20000	11000	--	0.58	<0	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/27/1998	9700	3100	1200	14000	3300	--	--	--	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	4/23/1999	12000 D	5300	2400	19000 D	11000 D	--	--	--	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/28/1999	11000	4600	2500	27000 D	15000	--	--	--	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	6/12/2000	13000 D	6400 D	2300	23000 D	17000 D	--	--	--	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	10/11/2000	1.9 J	9.2 J	5.5 J	31	7.5 J	--	--	--	--	--	--	--	--	--	--	Exceed
RWC-1	ASI	SZ	4/10/2001	9700 J D	3700 J D	1900 J D	34000 D	18000 D	<50	--	--	<20	<20	<10	<20	20	<20	--	Exceed
RWC-1	ASI	SZ	10/25/2001	15000 D	4700 D	2600 D	28000 D	17000 D	<250	--	--	<100	<100	<50	<100	12 J	<100	--	Exceed
RWC-1	ASI	SZ	4/23/2002	14000 D	4400 D	2800 D	25000 D	15000 D	<530	--	--	<210	<210	<110	<210	13 J	14 J	--	Exceed
RWC-1	ASI	SZ	10/7/2002	12000 D	4900 D	2800 D	22000 D	14000 D	<49	--	--	<20	<20	<9	<20	13	4.7 J	--	Exceed
RWC-1	ASI	SZ	4/3/2003	18000 D	5600	2900	33000 D	22000 D	<2400	--	--	<950	<950	<480	<950	<480	<950	--	Exceed
RWC-1	ASI	SZ	10/3/2003	10000	3100 J	2000 J	20000	14000	<24000	--	--	<9500	<9500	<4800	<9500	<4800	<9500	--	Exceed
RWC-1	ASI	SZ	4/19/2004	13000	3600	1700 J	19000	12000	<480	--	--	<190	<190	<95	<190	9.1 J	<190	--	Exceed
RWC-1	ASI	SZ	10/6/2004	14000	4300 J	2200 J	25000	15000	<480	--	--	<190	<190	<95	<190	10 J	<190	--	Exceed
RWC-1	ASI	SZ	4/7/2005	11000	3700	2300	19000	13000	--	--	--	<190	<190	<96	5.1 J	10 J	17 J	--	Exceed
RWC-1	ASI	SZ	10/12/2005	15000	5400	2600	26000	15000	--	--	--	<200	<200	<100	<100	11 J	<100	--	Exceed
RWC-1	ASI	SZ	4/11/2006	16000	6600	3000	32000	17000	--	--	--	<200	<200	<100	<100	<100	43 J	--	Exceed
RWC-1	ASI	SZ	11/2/2006	11000	3200	2000	22000	14000	--	--	--	<390	<390	<200	<100	<200	<200	--	Exceed
RWC-1	ASI	SZ	4/6/2007	7500	3000	1700	13000	7200	--	--	--	<200	<200	<99	11 J	<99	220	--	Exceed
RWC-1	ASI	SZ	10/2/2007	12000	3600	2300	25000	16000	--	--	--	<72	<53	<13	<6.4	<10	120	--	Exceed
RWC-1	ASI	SZ	4/10/2008	9300	3100	1900	22000	13000	--	--	--	<16	<15	<9.6	<15	<11	72 J	--	Exceed
RWC-1	ASI	SZ	10/20/2008	5900	2700	1600	11000	6700	--	--	--	<16	<16	<9.7	<16	<11	30 J	--	Exceed
RWC-1	ASI	SZ	4/17/2009	11500	4310	2740	30600	17400	--	--	--	<1.65	<1.57	<0.975	<1.57	10.5	21.1	--	Exceed
RWC-1	ASI	SZ	10/12/2009	12600	3910	2330	25000	16300	--	--	--	<16.2	<15.4	<9.56	<15.4	11 J	29.9 J	--	Exceed
RWC-1	ASI	SZ	4/13/2010	5260	1400	890	9800	4970	--	--	--	<16.3	58.5 J	<9.65	1040	<10.9	306	--	Exceed
RWC-1	ASI	SZ	10/13/2011	598	494	237	101	423	--	--	--	<11.3	--	<11.3	2260	<14.9	15.9 J	522	Exceed
RWC-2	EI	SZ	1/22/1991	19000	23000	700	6500	5300	180	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	5/7/1991	32000	31000	840	8800	8600	1500	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	7/23/1991	36000	32000	700	6700	5800	600	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	10/7/1991	41000	30000	1200	17000	14000	350	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	2/9/1992	61000	46000	1200	11000	8800	210	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	11/10/1993	31000	26000	520	3700	3500	<0	0.35	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	4/17/1994	37000	36000	880	6700	6100	<0	0.5	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	10/26/1994	32000	25000	370	4100	2900	<0	0.59	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	4/19/1995	41000	31000	970	6000	7100	<0	0.54	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	11/21/1995	28000	27000	610	4700	3500	<0	<0	<0	--	--	--	--	--	--	--	Exceed
RWC-2	EI	SZ	4/27/1996	38000	39000	950	7900												

TABLE A-1
HISTORICAL GROUNDWATER RESULTS
SEMIANNUAL REPORT - August 2025
Air Products LLC
Pasadena, Texas
(all concentrations in micrograms per liter)

Well Number	Unit	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	4,6-DNOC	SR	ZN	2,4-TDA	2,6-TDA	1,3-DCB	Toluidine	NB	5-N-o-T	TDAs	Exceed
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)				(µg/L)	(µg/L)	(µg/L)	(µg/L)				
				1.3	1.3	240	4.1	57				0.29	730	730	30	49	---		
RWC-2	EI	SZ	10/12/2005	1800	1200	35 J	8610	210	--	--	--	<190	<190	<96	<96	<96	<96	--	Exceed
RWC-2	EI	SZ	4/11/2006	3800	2700	60 J	8611	150	--	--	--	<190	<190	<97	<97	<97	<97	--	Exceed
RWC-2	EI	SZ	11/2/2006	2700	1600	42 J	8612	220	--	--	--	<190	<190	<96	<96	<96	<96	--	Exceed
RWC-2	EI	SZ	4/6/2007	<98	660	23 J	8613	<98	--	--	--	<200	<200	<98	<98	<98	<98	--	Exceed
RWC-2	EI	SZ	10/2/2007	1400	800	24 J	8614	160	--	--	--	<70	<52	<13	<6.3	<10	<41	--	Exceed
RWC-2	EI	SZ	10/23/2009	3.2 J	3.95 J	<0.998	8615	<1.44	--	--	--	<1.62	<1.54	<0.956	<1.54	<1.08	<0.841	--	Exceed
RWC-2	EI	SZ	4/9/2010	21.7	12.6	<0.998	8616	2.7 J	--	--	--	<1.62	<1.54	<0.956	<1.54	<1.08	<0.841	--	Exceed
RWC-2	EI	SZ	10/26/2010	8.09 J	1.64 J	<1.02	8617	<1.46	--	--	--	<1.65 J	<1.57 J	<0.975	<1.57	<1.10	<0.858	--	Exceed
RWC-2	EI	SZ	4/21/2011	13.6	81.1	8.21 J	8618	6.37 J	--	--	--	--	--	<1.10	<4.80	<1.44	1.4 J	<3.11 J	Exceed
RWC-2	EI	SZ	10/13/2011	5.4 J	5.27 J	<0.998	8619	1.7 J	--	--	--	--	--	<1.10	<4.80	<1.44	<0.841	<3.11	Exceed

Notes/Abbreviations:

- AOC1 = Area of Concern No. 1

ASI = Acid Spill Impoundment

DNTL = DNT Loading Area

DNT = DNT Production Unit Area

DZ = Deep Zone

EI = Effluent Impoundment

"Exceed" indicates a detected concentration is greater than the GWPS.

IZ = Intermediate Zone

LSZ = Lower Shallow Zone

Neut = Area of Neutralization Pit

RL-1 = Recovery Pump Below Plastic Liner

RWC-1 = Recovery Wells RW-1 to RW-10

RWC-2 = Recovery Wells RW-11 to RW-20

SR = Strontium

SZ = Shallow Zone

TDA = Total toluenediamines, individual isomers not separated during low-level analysis.

TDAL = TDA Loading Area

SZ = Upper Shallow Zone

ZN = Zinc

"-" Indicates all detected COCs in sample are in compliance with GWPS.

"< " = concentration is less than the sample-specific detection limit shown.

E = The analyte concentration exceeds the upper calibration range; the result is considered an estimate

D = The analyte concentration is reported from a dilution

J = The concentration is an estimate because the detection is less than the sample-specific quantitation limit.

L = The concentration is an estimate with a possible low bias due to srogate recoveries or other quality control issues.

R = The result is rejected

H = Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

X7 = The laboratory is not NELAC accredited under the Texas Laboratory Accreditation Program for this analyte in this matrix analyzed by this method. The TCEQ does not offer accreditation for this analyte, in this matrix, analyzed by this method.

b = The compound was found in the blank and sample.

p = The %RPD between the primary confirmation column/detector is >40%. The lower value has been reported.

U = Analyte was not detected at or above the SDL.

! = concentration may be a combination of 2,4- and 2,6-TDA isomers.

* RPD of the LCS and LCSD exceeds the control limits.

* LCS or LCSD is outside acceptance limits.
- DNT = Dinitrotoluene

MNT = Mononitrotoluene

TDA = Toluendiamine

DCB = Dichlorobenzene

NB = Nitrobenzene

5-N-o-T=5-Nitro-o-Toluene

TABLE 5-1B
RESULTS OF ANALYSIS OF GROUNDWATER
April/May 2025
Air Products LLC
Pasadena, Texas

Well Number	Unit	Area	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	2,4-TDA & 2,6-TDA**	1,3-DCB	Toluidines	NB	5-N-o-T	Exceed
					(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	GWPS?
Groundwater Protection Standard (GWPS)					1.3	1.3	240	4.1	57	0.29	730	30	49	--	
MW-10		WMA1	USZ	05/13/25	<0.0600 U	<0.0393 U	<1.21 U	<0.811 U	<0.876 U	<10.8 U*	<4.27 U	<8.55 U	<5.15 U	<1.31 U	~
MW-11	DNT	WMA2	USZ	05/08/25	0.210	<0.0396 U	<1.13 U	<0.758 U	<0.819 U	<10.1 U*	<3.99 U	<7.99 U	<4.81 U	<1.23 U	~
MW-21	EI	WMA1	DZ	05/05/25	<0.0616 U	<0.0404 U	<1.04 U	<0.698 U	<0.754 U	<9.33 U*	<3.68 U	<7.35 U*	<4.43 U	<1.13 U	~
MW-24	ASI	WMA2	SZ	04/30/25	5990	2310	1110	12400	3800	<9.68 U*	<3.81 U	22.6	<4.60 U	69.4	Exceed
MW-26	ASI	WMA2	SZ	05/13/25	0.337	<0.403 U	<1.14 U*	<0.765 U*	<0.827 U*	<10.2 U*	<4.03 U	<8.06 U	<4.86 U	<1.24 U	~
MW-27		WMA2	IZ	05/09/25	<0.0606 U	<0.0397 U	<1.11 U	<0.748 U	<0.809 U	<10.0 U*	<3.94 U	<7.89 U	<4.75 U	<1.21 U	~
MW-28	ASI	WMA2	DZ	05/09/25	<0.0592 U	<0.0388 U	<1.11 U	<0.745 U	<0.806 U	<9.97 U*	<3.93 U	<7.86 U	<4.73 U	<1.21 U	~
MW-31	ASI	WMA2	DZ	05/01/25	0.106	<0.0404 U	<1.08 U	<0.726 U	<0.785 U	<9.71 U*	<3.83 U	<7.65 U	<4.61 U	<1.18 U	~
MW-32	ASI	WMA2	IZ	05/01/25	0.0791 J p	<0.0408 U	<1.06 U	<0.710 U	<0.768 U	<9.50 U*	<3.74 U	<7.49 U	<4.51 U	<1.15 U	~
MW-36	EI	WMA1	IZ	05/05/25	0.341	1.46	<1.04 U	<0.701 U	<0.758 U	<9.38 U*	<3.69 U	<7.39 U	<4.45 U	<1.14 U	Exceed
MW-40	EI	WMA1	IZ	05/05/25	48.4	152	<1.13 U	<0.763 U	<0.825 U	<10.2 U*	<4.02 U	<8.04 U*	<4.85 U	<1.24 U	Exceed
MW-41	EI	WMA1	IZ	05/09/25	0.175	<0.0400 U	<1.14 U	<0.770 U	<0.833 U	<10.3 U*	<4.06 U	<8.12 U	<4.89 U	<1.25 U	~
MW-43	EI	WMA1	IZ	04/30/25	0.237	0.144	<1.18 U	0.809 J	<0.858 U	<10.6 U*	<4.18 U	<8.36 U	<5.04 U	<1.29 U	~
MW-44	EI	WMA1	IZ	04/30/25	0.161	<0.0404 U	<1.04 U	<0.699 U	<0.756 U	<9.35 U*	<3.68 U	<7.37 U	<4.44 U	<1.13 U	~
MW-49	Neut	WMA1	USZ	04/30/25	13700	7840	284	3050	2340	<9.76 U*	<3.84 U	<7.69 U	<4.63 U	82.1	Exceed
MW-58	DNTL	WMA1	LSZ	05/08/25	161	344	66.2	228	60.5	<10.4 U*	<4.09 U	<8.18 U	<4.93 U	<1.26 U	Exceed
MW-59	DNTL	WMA1	USZ	05/08/25	322	437	<13.8 U	86.9 J	21.0 J	<124 U*	<48.8 U	<97.5 U	<58.8 U	924	Exceed
MW-59RS	DNTL	WMA1	USZ	06/19/25	23.1	120	<5.89 U	89.7	25.0 J	<53.0 U*	<20.9 U	<41.7 U	<25.1 U	920	Exceed
MW-63	EI	WMA1	DZ	05/01/25	0.171	<0.0408 U	<1.10 U	<0.743 U	<0.803 U	<9.94 U*	<3.92 U	<7.83 U	<4.72 U	<1.20 U	~
MW-65	TDAL		USZ	04/30/25	<0.0622 U	<0.0408 U	<1.20 U	7.57 J	2.23 J	<10.8 U*	<4.25 U	<8.50 U	<5.12 U	<1.31 U	Exceed
MW-65RS	TDAL		USZ	06/19/25	--	--	--	<0.758 U	--	--	--	--	--	--	~
MW-66	TDAL		USZ	04/30/25	<0.0620 U	<0.0407 U	<1.17 U	2.92 J	0.856 J	<10.6 U*	<4.16 U	<8.33 U	<5.02 U	<1.28 U	~
MW-69	ASI	offsite	SZ	05/09/25	<0.0585 U	<0.0383 U	<1.05 U	<0.709 U	<0.766 U	<9.48 U*	<3.74 U	<7.47 U	<4.50 U	<1.15 U	~
MW-70	DNTL	WMA1	IZ	05/13/25	<0.0596 U	<0.0391 U	<1.18 U	<0.796 U	<0.861 U	<10.6 U*	<4.20 U	<8.39 U	<5.06 U	<1.29 U	~
MW-71	ASI	offsite	SZ	05/06/25	0.0777 J p	<0.0391 U	<1.09 U	<0.731 U	<0.790 U	<9.77 U*	<3.85 U	<7.70 U	<4.64 U	<1.18 U	~
MW-74	AOC2	WMA1	SZ	05/01/25	0.196	0.0962 J	<1.08 U	<0.727 U	<0.786 U	<9.73 U*	<3.83 U	<7.67 U	<4.62 U	<1.18 U	~
MW-75	EI	WMA1	SZ	05/01/25	<0.0618 U	<0.0405 U	<1.07 U	<0.723 U	<0.781 U	<9.67 U*	<3.81 U	<7.62 U	<4.59 U	<1.17 U	~
MW-76	EI	WMA1	SZ	05/05/25	<0.0620 U	<0.0407 U	<1.08 U	<0.726 U	<0.785 U	<9.71 U*	<3.83 U	<7.65 U*	<4.61 U	<1.18 U	~
MW-77	EI	WMA1	SZ	05/05/25	<0.0622 U	<0.0408 U	<1.10 U	<0.742 U	<0.802 U	<9.92 U*	<3.91 U	<7.82 U*	<4.71 U	<1.20 U	~
MW-78	Neut	WMA1	SZ												
MW-8	EI	WMA1	USZ	05/09/25	<0.0633 U	<0.0415 U	<1.16 U	<0.778 U	<0.841 U	<10.4 U*	<4.10 U	<8.20 U	<4.94 U	<1.26 U	~
MW-80	DNTL	WMA1	IZ	05/13/25	<0.0594 U	<0.0390 U	<1.14 U	<0.764 U	<0.826 U	<10.2 U*	<4.03 U	<8.05 U	<4.85 U	<1.24 U	~
MW-85	ASI	WMA2	SZ	05/06/25	0.761	0.300	<1.10 U	3.40 J	1.88 J	<9.92 U*	<3.91 U	<7.81 U	<4.71 U	<1.20 U	~
MW-86	ASI	WMA2	SZ	05/06/25	<0.0602 U	<0.0395 U	<1.10 U	<0.742 U	<0.802 U	<9.92 U*	<3.91 U	<7.82 U	<4.71 U	<1.20 U	~
MW-87	ASI	offsite	SZ	05/08/25	<0.0604 U	<0.0396 U	<1.09 U	1.08 J	<0.791 U	<9.79 U*	<3.86 U	<7.71 U	<4.65 U	<1.19 U	~
MW-88	ASI	offsite	SZ	05/08/25	<0.0610 U	<0.0400 U	<1.09 U	<0.736 U	<0.796 U	<9.85 U*	<3.88 U	<7.76 U	<4.68 U	<1.19 U	~
MW-89	ASI	offsite	SZ	05/06/25	<0.0594 U	<0.0390 U	<1.12 U	<0.752 U	<0.813 U	<10.1 U*	<3.96 U	<7.93 U	<4.78 U	<1.22 U	~
MW-91	ASI	WMA2	SZ	05/06/25	141	38.9	10.7	101	82.9	<9.90 U*	<3.90 U	<7.80 U	<4.70 U	4.32 J	Exceed

TABLE 5-1B
RESULTS OF ANALYSIS OF GROUNDWATER
April/May 2025
Air Products LLC
Pasadena, Texas

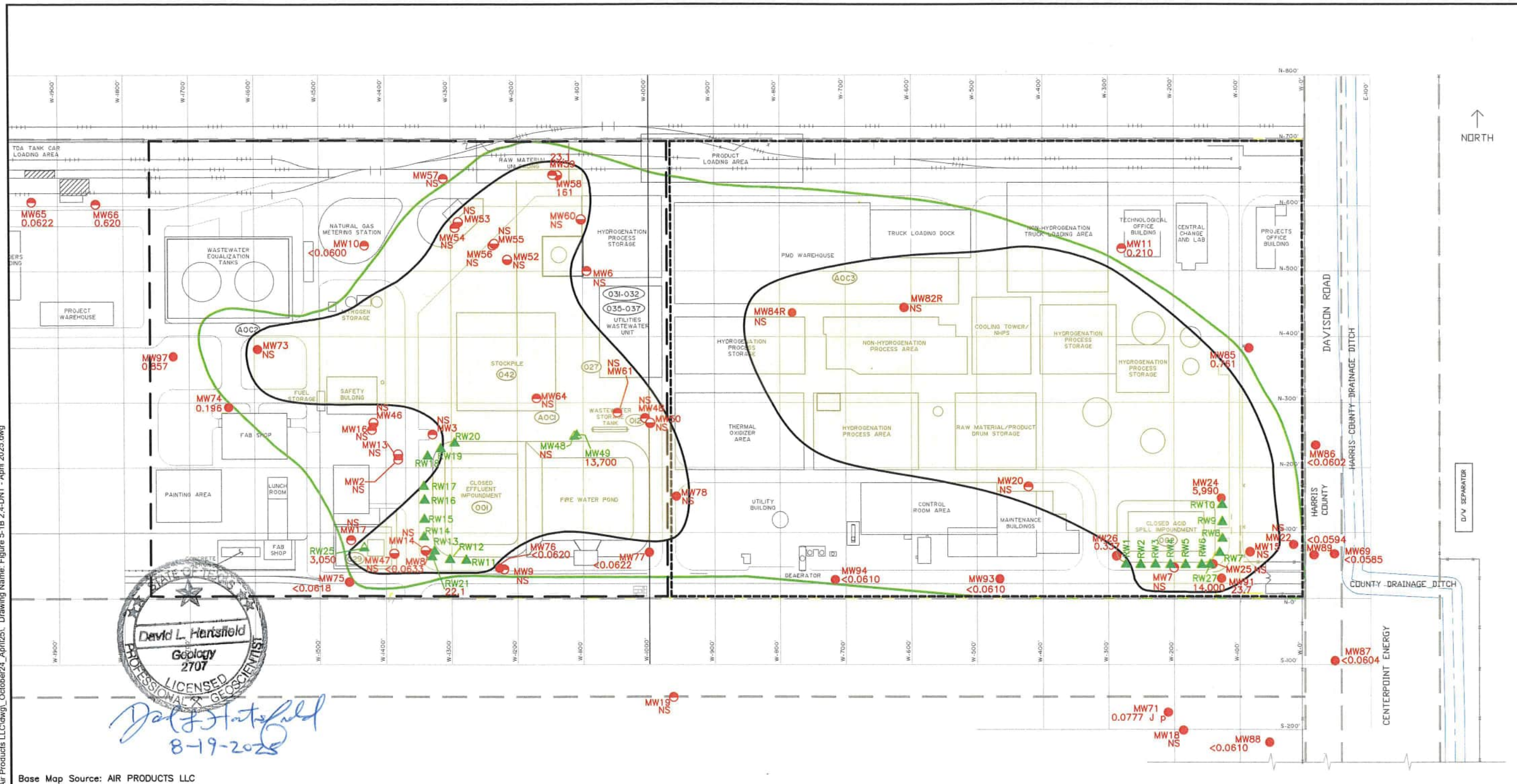
Well Number	Unit	Area	Zone	Date	2,4-DNT	2,6-DNT	m-MNT	o-MNT	p-MNT	2,4-TDA & 2,6-TDA**	1,3-DCB	Toluidines	NB	5-N-o-T	Exceed
					(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	GWPS?
Groundwater Protection Standard (GWPS)					1.3	1.3	240	4.1	57	0.29	730	30	49	--	
MW-91RS	ASI	WMA2	SZ	06/19/25	23.7	12.7	--	75.9	55.4	--	--	--	--	--	Exceed
MW-93	DNTU-AOC1	WMA2	SZ	05/08/25	<0.0610 U	<0.0400 U	<1.04 U	<0.701 U	<0.758 U	<9.38 U*	<3.70 U	<7.39 U	<4.45 U	<1.14 U	~
MW-94	DNTU-AOC1	WMA2	SZ	05/08/25	<0.0610 U	<0.0400 U	<1.11 U	<0.747 U	<0.807 U	<9.99 U*	<3.93 U	<7.87 U	<4.74 U	<1.21 U	~
MW-95	ASI	WMA2	IZ	05/06/25	<0.0600 U	<0.0393 U	<1.08 U	<0.724 U	<0.783 U	<9.69 U*	<3.82 U	<7.64 U	<4.60 U	<1.17 U	~
MW-96	ASI	WMA2	DZ	05/01/25	0.104	<0.0407 U	<1.07 U	<0.718 U	<0.776 U	<9.61 U*	<3.78 U	<7.57 U	<4.56 U	<1.16 U	~
MW-97	AOC2	WMA1	SZ	05/05/25	0.857	6.25	<1.20 U	1.98 J	1.53 J	<10.8 U	<4.26 U	<8.52 U	<5.13 U	<1.31 U	Exceed
MS-97RS	AOC2	WMA1	SZ	06/19/25	--	8.71	--	--	--	--	--	--	--	--	Exceed
MW-98	DNTU	WMA2	IZ	05/08/25	<0.0610 U	<0.0400 U	<1.10 U	<0.739 U	<0.799 U	<9.89 U*	<3.90 U	<7.79 U	<4.70 U	<1.20 U	~
RL-1	ASI	WMA2	SZ	05/01/25	<0.0614 U	<0.0403 U	<1.13 U	<0.762 U	<0.824 U	<10.2 U*	<4.02 U	<8.03 U	<4.84 U	<1.24 U	~
RW-21	EI	WMA1	SZ	05/09/25	22.1	12.7	<1.07 U	3.12 J	2.83 J	<9.66 U*	<3.81 U	<7.61 U	<4.59 U	<1.17 U	Exceed
RW-23	ASI	WMA2	IZ	05/05/25	<0.0616 U	<0.0404 U	<1.19 U	<0.797 U	<0.862 U	<10.7 U*	<4.20 U	<8.41 U*	<5.06 U	<1.29 U	~
RW-24	EI	WMA1	IZ												
RW-25	EI	WMA1	LSZ	04/30/25	3050	5270	204	2220	5.18 J	<9.90 U*	<3.90 U	<7.80 U	<4.70 U	2.17 J	Exceed
RW-26	EI	WMA1	IZ	04/30/25	27.1	35.2	<1.05 U	17.6	11.7	<9.49 U*	<3.74 U	<7.48 U	<4.51 U	<1.15 U	Exceed
RW-27	ASI	WMA2	SZ	04/30/25	14000	4040	2000	20300	8770	<11.0 U*	<4.35 U	<8.70 U	6.18 J	10.2 J	Exceed
RW-28	ASI	WMA2	IZ	04/30/25	88.3	16.5	25.4	289	219	<9.89 U*	<3.90 U	19.4	<4.70 U	40.3	Exceed

Notes: Concentration is greater than the GWPS. Estimated concentration is greater than the GWPS. Sample detection limit is greater than the GWPS.

ASI = Acid spill Impoundment SZ = Shallow Zone
EI = Effluent Impoundment USZ = Upper Shallow Zone
DNTL = DNT Loading Area LSZ = Lower Shallow Zone
DNTU = DNT Production Unit Area IZ = Intermediate Zone
TDAL = TDA Loading Area DZ = Deep Zone
Neut = Area of Neutralization Pit WMA1 = Waste Management Area 1
AOC1 = Area of Concern No. 1 WMA2 = Waste Management Area 2
RL-1 = Recovery Pump Below Plastic Liner

"Exceed" indicates a detected concentration is greater than the GWPS.
"~" Indicates all detected COCs in sample are in compliance with GWPS.
**** Indicates the concentration represents total toluene diamines.
" < " = concentration is less than the sample detection limit shown.
H = Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J = Estimated concentration. Analyte was detected at a level less than the reporting limit, and greater than or equal to the sample detection limit.
p = The %RPD between the primary confirmation column/detector is >40%. The lower value has been reported.
U = Analyte was not detected at or above the SDL.
* = The LCS or LCSD is outside acceptance limits.
RS = Sample was resampled due to laboratory hold time exceedances.

Plot Date: 08/14/25 - 10:22am, Plotted by: USA T145973
Drawing Path: K:\AMEC US OFFICES\Austin\0044870000 - Air Products LLC\dwg\ October24_April25, Drawing Name: Figure 5-1B 2,4-DNT - April 2025.dwg



Base Map Source: AIR PRODUCTS LLC

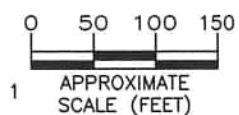
- EXPLANATION**
- MW2 ● UPPER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
 - MW14 ● LOWER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
 - MW15 ● SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
 - 47.3 ANALYTE CONCENTRATION (ug/L) (INCLUDED ESTIMATED VALUES)
 - GWPS EXCEEDANCE AREA

- MW49 ▲ UPPER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- RW25 ▲ LOWER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- RW27 ▲ SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- 001 SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER
- NS NOT SAMPLED

- FENCE
- PROPERTY BOUNDARY
- WASTE MANAGEMENT AREA No. 1
- WASTE MANAGEMENT AREA No. 2
- BOUNDARY OF PLUME MANAGEMENT ZONE 1

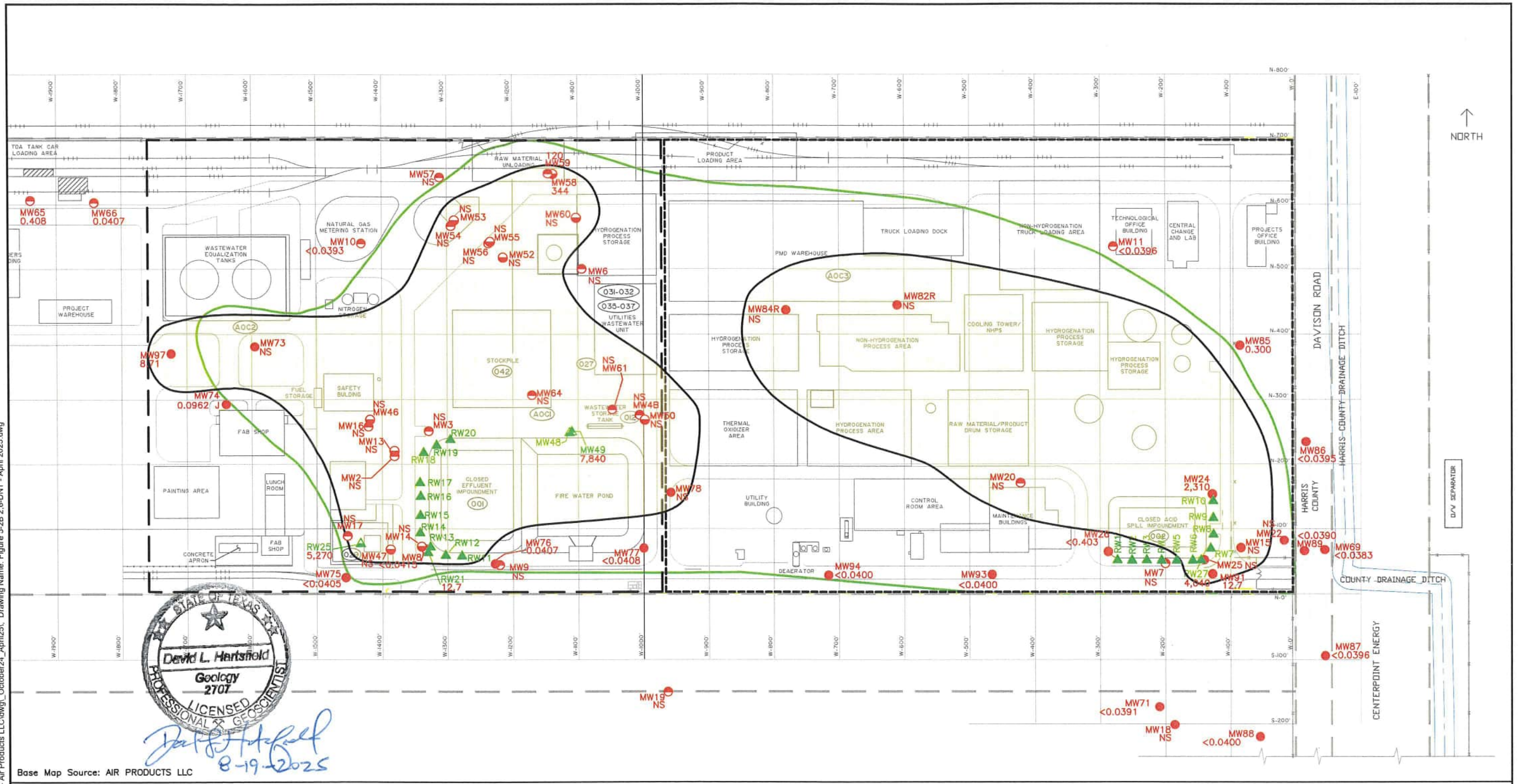
NOTES:

THE GWPS FOR 2,4-DNT IS 1.3 ug/L
INTERPRETATIONS SHOWN ON THIS MAP ARE
APPROXIMATIONS BASED ON AVAILABLE CURRENT
AND HISTORICAL GROUNDWATER DATA.



	2,4-DNT CONCENTRATIONS SHALLOW ZONE - APRIL/MAY 2025	
	PREPARED FOR AIR PRODUCTS LLC PASADENA, TEXAS	
	Project No. 40360.4128 Date: 08/14/25 By: AT	Figure 5-1B

PLOT DATE: 08/14/25 - 10:35am, PLOTTED BY: USAT145973
DRAWING PATH: K:\AMEC US OFFICES\Austin\0044870000 - Air Products LLC\dwg\ October24_ April25\ Drawing Name: Figure 5-2B 2,6-DNT - April 2025.dwg



David L. Hartsfield
Geology
2707
LICENSED PROFESSIONAL GEOSCIENTIST
8-19-2025

Base Map Source: AIR PRODUCTS LLC

EXPLANATION	
MW2	UPPER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
MW14	LOWER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
MW15	SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
47.3	ANALYTE CONCENTRATION (ug/L) (INCLUDED ESTIMATED VALUES)
[Green Box]	GWPS EXCEEDANCE AREA
MW49	UPPER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
RW25	LOWER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
RW27	SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
(001)	SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER
NS	NOT SAMPLED
[Dashed Line]	FENCE
[Solid Line]	PROPERTY BOUNDARY
[Thick Solid Line]	WASTE MANAGEMENT AREA No. 1
[Thin Solid Line]	WASTE MANAGEMENT AREA No. 2
[Green Line]	BOUNDARY OF PLUME MANAGEMENT ZONE 1

NOTES:
THE GWPS FOR 2,6-DNT IS 1.3 ug/L
INTERPRETATIONS SHOWN ON THIS MAP ARE APPROXIMATIONS BASED ON AVAILABLE CURRENT AND HISTORICAL GROUNDWATER DATA.

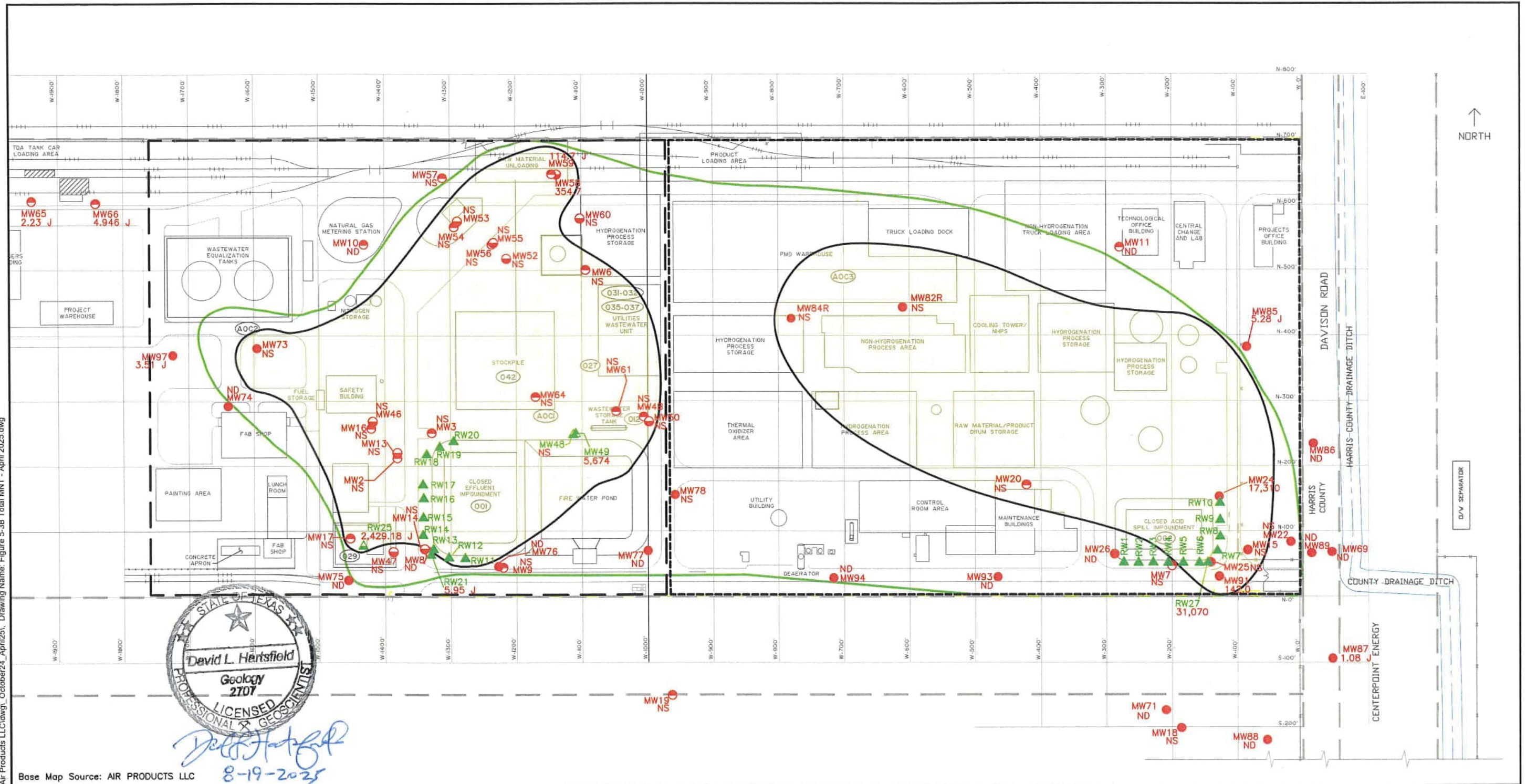
0 50 100 150
APPROXIMATE SCALE (FEET)

WSP

2,6-DNT CONCENTRATIONS
SHALLOW ZONE - APRIL/MAY 2025
PREPARED FOR
AIR PRODUCTS LLC
PASADENA, TEXAS
Project No. 40360.4128
Date: 08/14/25
By: SD

Figure 5-2B

Plot Date: 08/14/25 - 10:49am, Plotted by: USA1145973
Drawing Path: K:\AMEC US OFFICES\Austin\00448870000 - Air Products LLC\dwg\ - April 2025.dwg



Base Map Source: AIR PRODUCTS LLC

EXPLANATION

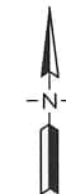
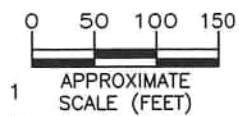
- MW2 ● UPPER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
- MW14 ● LOWER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
- MW15 ● SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER
- 47.3 ANALYTE CONCENTRATION (ug/L) (INCLUDED ESTIMATED VALUES)
- GWPS EXCEEDANCE AREA

- MW49 ▲ UPPER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- RW25 ▲ LOWER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- RW27 ▲ SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER
- 001 SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER
- ND NON DETECT
- NS NOT SAMPLED

- FENCE
- PROPERTY BOUNDARY
- WASTE MANAGEMENT AREA No. 1
- WASTE MANAGEMENT AREA No. 2
- BOUNDARY OF PLUME MANAGEMENT ZONE 1

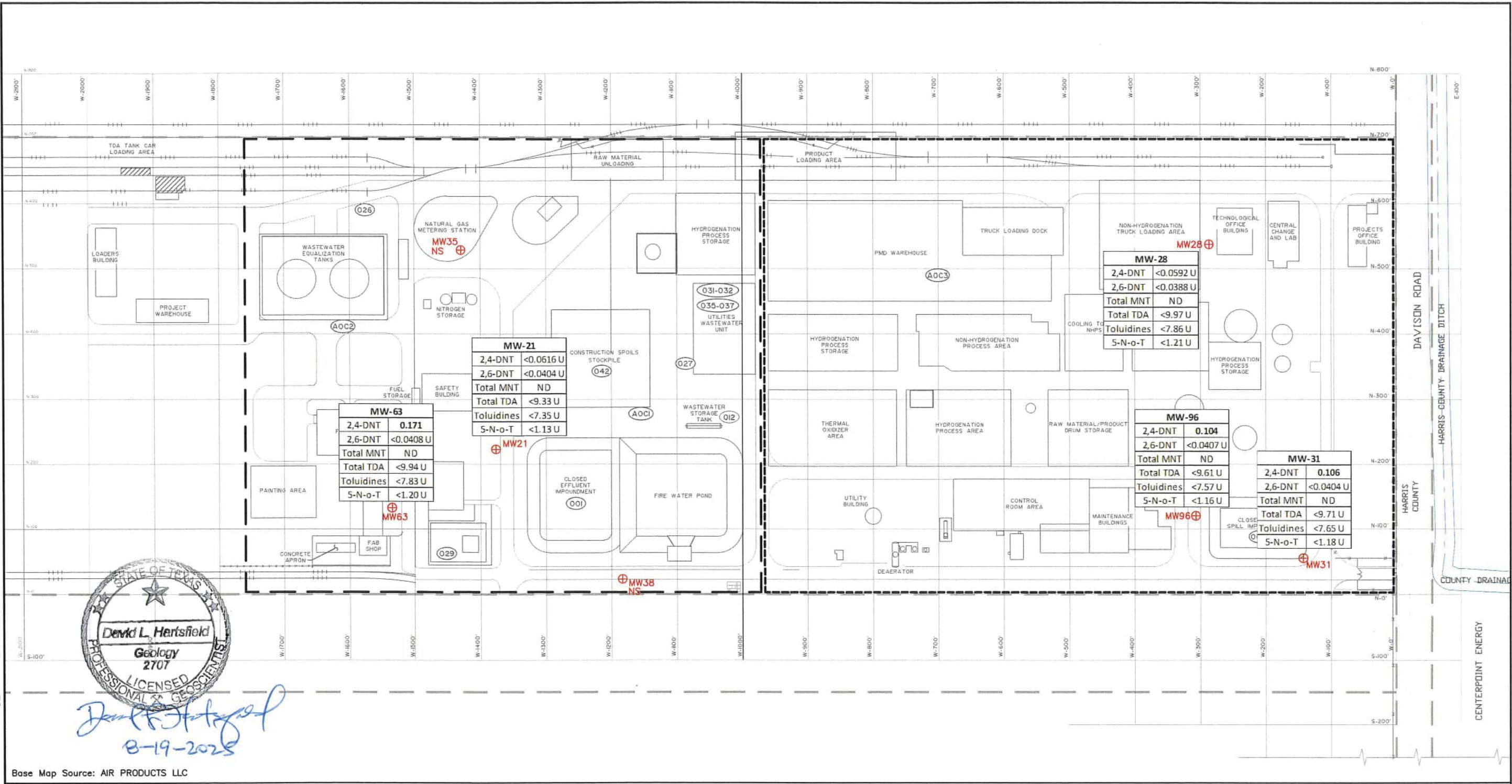
NOTES:

THE PCL FOR THE m-, o-, p-MNT ISOMERS ARE 240, 4.1, AND 57 ug/L RESPECTIVELY. THE MINIMUM ISOLEVEL MAPPED EQUALS THE o-MNT PCL AND ENVELOPES ALL MNT PCL EXCEEDANCES. INTERPRETATIONS SHOWN ON THIS MAP ARE APPROXIMATIONS BASED ON AVAILABLE CURRENT AND HISTORICAL GROUNDWATER DATA.



	TOTAL CONCENTRATIONS OF MNT SHALLOW ZONE - APRIL/MAY 2025	
	PREPARED FOR	
	AIR PRODUCTS LLC PASADENA, TEXAS	
	Project No. 40360.4128 Date: 08/14/25 By: AT	Figure 5-3B

Plot Date: 08/14/25 - 11:43am, Plotted by: USA/T145973
Drawing Path: K:\AMEC US OFFICES\Austin\0044870000 - Air Products LLC\dwg_ October24_April25, Drawing Name: Figure 5-5B - April 2025.dwg



EXPLANATION

MW21 ⊕ DEEP ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

MW-63	
2,4-DNT	0.171
2,6-DNT	<0.0408 U
Total MNT	ND
Total TDA	<9.94 U
Toluidines	<7.83 U
5-N-o-T	<1.20 U

ND NON DETECT
NS NOT SAMPLED

APPROXIMATE TOTAL CONTAMINANT CONCENTRATIONS (µg/L)
(INCLUDED ESTIMATED VALUES)

— FENCE
— PROPERTY BOUNDARY
— WASTE MANAGEMENT AREA No. 1
— WASTE MANAGEMENT AREA No. 2

NOTES:
THE GWPS FOR 2,4-DNT IS 1.3 ug/L.
THE GWPS FOR 2,6-DNT IS 1.3 ug/L.
THE GWPS FOR THE m-,o-,p-MNT ISOMERS ARE 240, 4.1, AND 57 ug/L RESPECTIVELY.
THE LOWEST GWPS FOR TDA IS 0.29 ug/L.
THE LOWEST GWPS FOR TOLUIDINES IS 30 ug/L.

0 50 100 150
APPROXIMATE SCALE (FEET)

N

CONTAMINANT CONCENTRATIONS DEEP ZONE - APRIL 2025
PREPARED FOR
AIR PRODUCTS LLC
PASADENA, TEXAS

Project No. 40360.4128
Date: 08/14/25
By: AT

Figure 5-5B

APPENDIX IV

POLLUTANT DISPERSAL PATHWAYS

APPENDIX IV

POLLUTANT DISPERSAL PATHWAYS

1. Surface Waters

The potential for impact to surface water from a release of hazardous constituents at APLLC Pasadena plant is minimized by APLLC's stormwater management system. The stormwater management system is designed to ensure segregation, and if necessary, treatment of first-flush runoff. The system includes curbing, valved discharge points from diked areas, valved leak containment systems, valved stormwater ditches, collection basins, piping and tankage for waters that must be treated, and permitted outfalls for discharge. No surface water bodies or perennial streams exist on the property. Receiving waters for runoff from the property include a municipal drainageway along Davison Road, located to the east of the APLLC property, which flows to Cotton Patch Bayou and thence to Buffalo Bayou and the San Jacinto River, Galveston Bay and the Gulf of Mexico.

Effluent from the plant flows to the municipal drainageway from outfalls 001 and 002, located at the east ends of the North and South Ditches, respectively. Discharge from these points is performed under the plant's TPDS discharge permit.

Potentially contaminated stormwater from the curbed process areas is routed to the Total Plant Wastewater Tank (TPWWT) prior to pumping it to the POTW at Gulf Coast Waste Disposal Authority's Washburn Tunnel Facility.

Potentially contaminated stormwater from undeveloped areas within the plant between the DNT Process Area and the TDA Process area flows to the lined and reconstructed Acid Spill Impoundment (ASI). Although the primary function of the ASI is to act as a containment for potential spills within the Tank Farm immediately to the north of the ASI, stormwater may also be collected within the ASI. Any stormwater collected within the ASI is either routed to the TPWWT or sampled and, if the water meets the conditions of the plant's TPDS permit, it is released to the South Ditch. During periods of very heavy rainfall, the ASI can be bypassed and stormwater released to the South Ditch. Prior to this, the stormwater in the pond is circulated through

the pump header and sampled. If the water samples meet the requirements of the TPDS permit, the bypassed stormwater is released to the South Ditch and the pond water is pumped to the South Ditch.

The north and south ditches are equipped with valves and sump pumps ("lift stations"). The valves remain closed at all times unless there is sufficient rainfall to require that they be opened. The valves protect the outfalls from any accidental spills or releases. If contaminants are accidentally released to the ditches, the sump pumps can remove the material and route it to the TPWWT and thence to the POTW. During storms, the water collecting in the ditches is inspected and sampled and if the water meets the requirements of the TPDS permit, the valves can be opened and the water released flows toward the 001 and 002 outfalls for release.

II. Groundwater

The Beaumont formation underlies the facility. The Beaumont formation consists of approximately 300 feet of unconsolidated clay material with interbedded water-bearing sands and forms the upper part of the regional Chicot Aquifer. However, no known water supply wells are completed in this interval within one mile of the plant. The highly productive sands of the regional Chicot and Evangeline Aquifers lie at greater depths and are protected by significant thicknesses of multiple clay beds.

The uppermost water-bearing zones within the upper 100 feet of sediment are termed the Upper Shallow Zone (USZ) the Lower Shallow Zone (LSZ) the Intermediate Zone (IZ) and the Deep Zone (DZ). Logs from boreholes show that the upper 100 feet consists mostly of clay, with generally thin, discontinuous, fine sandy or silty beds. Studies of releases of waste constituents at the plant indicate that these beds may transmit relatively small quantities of groundwater. Measurements of water levels in surveyed wells at the plant indicates that movement of groundwater in the USZ and the LSZ is southeastward, while movement of groundwater in the IZ and DZ is northward. The gradients in this area are relatively flat, resulting in relatively low rates of groundwater movement, on the order of 5 to 20 feet per year.

In general, it appears that constituents entering the groundwater beneath the facility would travel first within the groundwater in the USZ. This would generally be in a southeastward direction toward the municipal drainageway ditch located to the east of the plant. The potential for this groundwater to discharge into surface waters in the drainageway has not been evaluated.

Water within the USZ could move downward into the LSZ and then move southeastward toward the municipal drainageway. The potential for this groundwater to discharge into the USZ and then into surface waters in the drainageway has not been evaluated.

Water within the LSZ has the potential to move downward to the IZ since the hydraulic head in the IZ is lower than that in the LSZ. Contaminants entering the groundwater in the IZ could then move northward. Groundwater in this zone probably eventually flows toward discharge points along Buffalo Bayou.

Several factors would affect the transport of hazardous constituents in groundwater, including the following:

- The presence of clayey and silty strata and lenses, which would slow the movement of groundwater and restrict further vertical movement downward;
- Natural attenuation of the organic constituents within the groundwater, due to physical, chemical, and biological processes, which would tend to arrest the movement, and reduce the concentrations of hazardous constituents; and
- Releases are likely to involve limited volumes of groundwater the groundwater movement is naturally relatively slow.

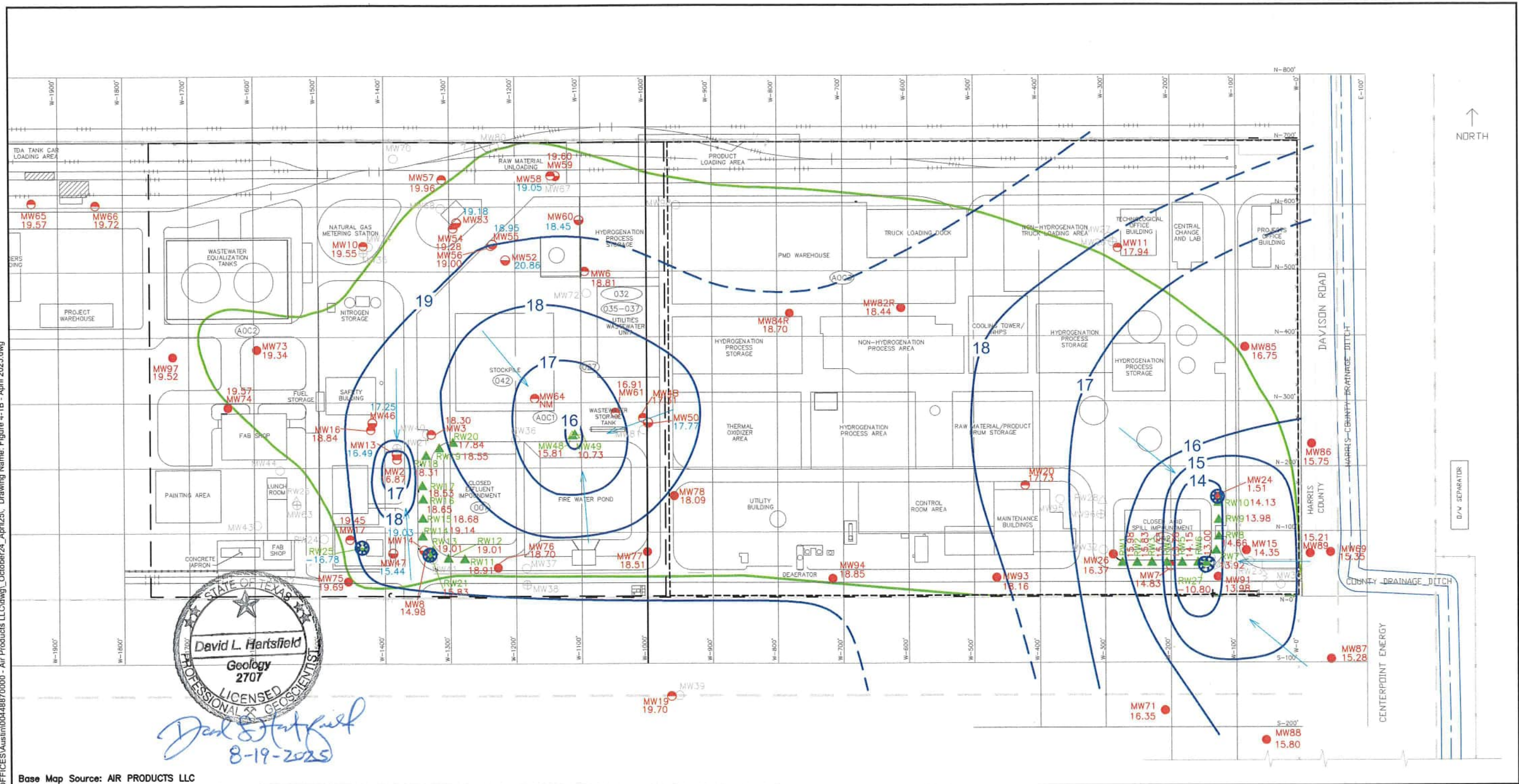
Given these factors, and the lack of any wells to act as receptors of the constituents, the potential for hazardous constituents to impact off-site or deeper groundwater receptors appears to be very low.

Supporting documentation of existing lateral/vertical pathways and movements of releases are depicted on the potentiometric flow maps, cross-sections depicting existing PCLE zones are attached to Appendix IV.

III. Air

The potential for dispersal of hazardous constituents through air emissions from the APLLC waste management units appears to be very low. The units are enclosed and are not used to manage significant volumes or concentrations of compounds that readily volatilize to the atmosphere.

Plot Date: 06/26/25 - 10:01am. Plotted by: JUSD715014
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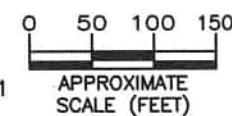
Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- MW2 17.74 UPPER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)
- MW14 9.74 LOWER SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL) (NOT CONTOURED)
- MW15 10.30 SHALLOW ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)
- MW40 INTERMEDIATE ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW21 DEEP ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

- MW49 12.12 UPPER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)
- RW25 1.30 LOWER SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL) (NOT CONTOURED)
- RW9 13.20 SHALLOW ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)
- RW26 INTERMEDIATE ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- 001 SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER

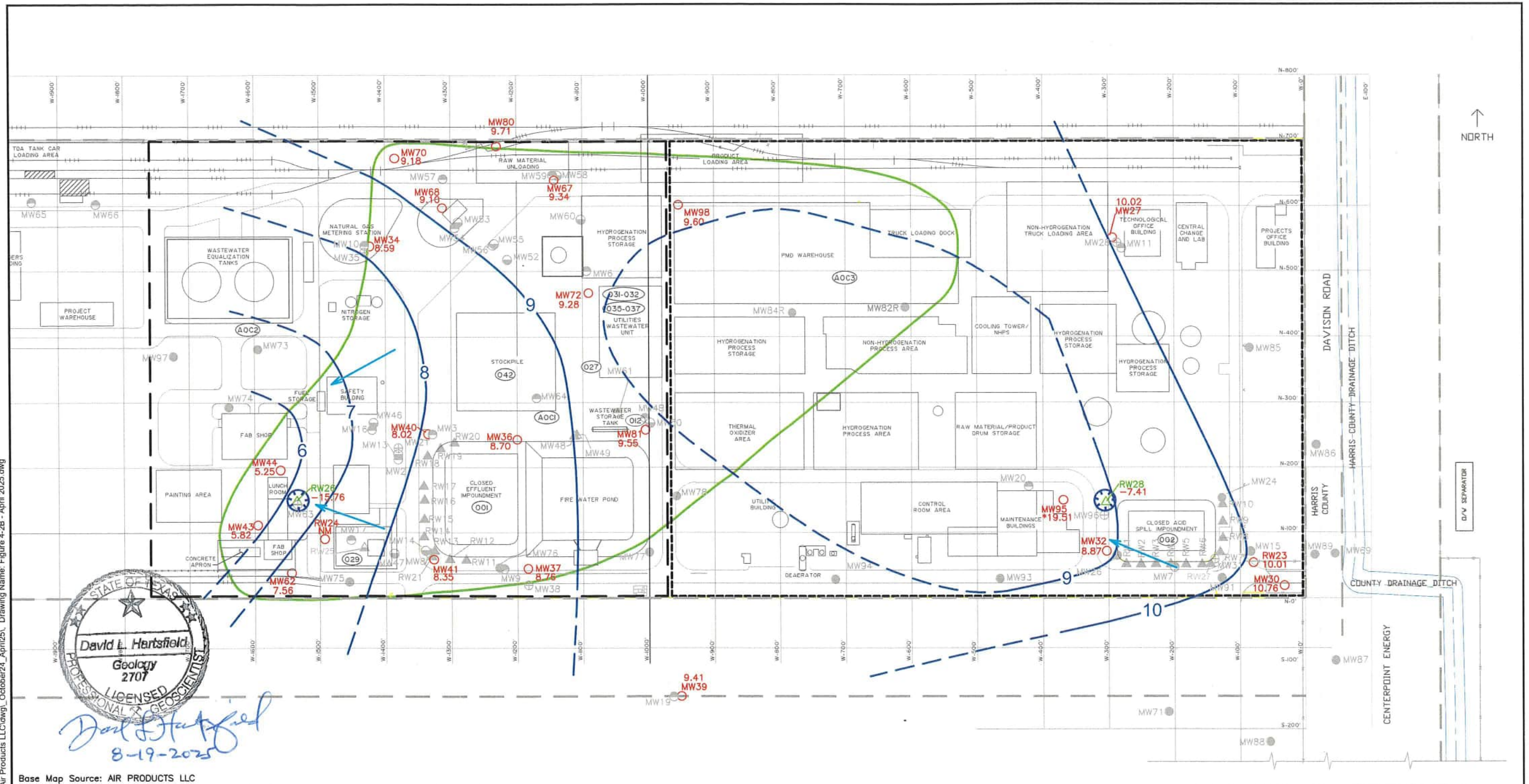
- FENCE
- PROPERTY BOUNDARY
- WASTE MANAGEMENT AREA No. 1
- WASTE MANAGEMENT AREA No. 2
- CONTOUR LINE OF WATER ELEVATION (FT MSL) (USZ ONLY - DASHED WHERE INFERRED)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- BOUNDARY OF PLUME MANAGEMENT ZONE 1
- ANOMALOUS MEASUREMENT, NOT CONTOURED
- NOT MEASURED, NOT ACCESSIBLE



NOTES:
LEVELS IN LSZ ARE NOT CONTOURED
ALL MEASUREMENTS OBTAINED ON APRIL 29, 2025

		WATER LEVEL MAP SHALLOW ZONE - APRIL/MAY 2025	
		PREPARED FOR AIR PRODUCTS LLC PASADENA, TEXAS	
Project No. 40360.4128 Date: 06/26/25 By: SD		Figure 4-1B	

Plot Date: 08/14/25 - 9:47am. Plotted by: USA1145973
Drawing Path: K:\AMEC US OFFICES\Austin\00448870000 - Air Products LLC\dwg\1_October24_April25\ Drawing Name: Figure 4-2B - April 2025.dwg



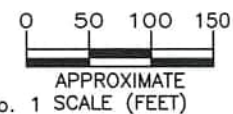
Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- MW2 ● UPPER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW14 ● LOWER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW15 ● SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW40 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)
- MW21 ⊕ DEEP ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

- MW49 ▲ UPPER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW25 ▲ LOWER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW9 ▲ SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW26 ▲ INTERMEDIATE ZONE RECOVERY WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FTMSL)
- 001 ○ SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER

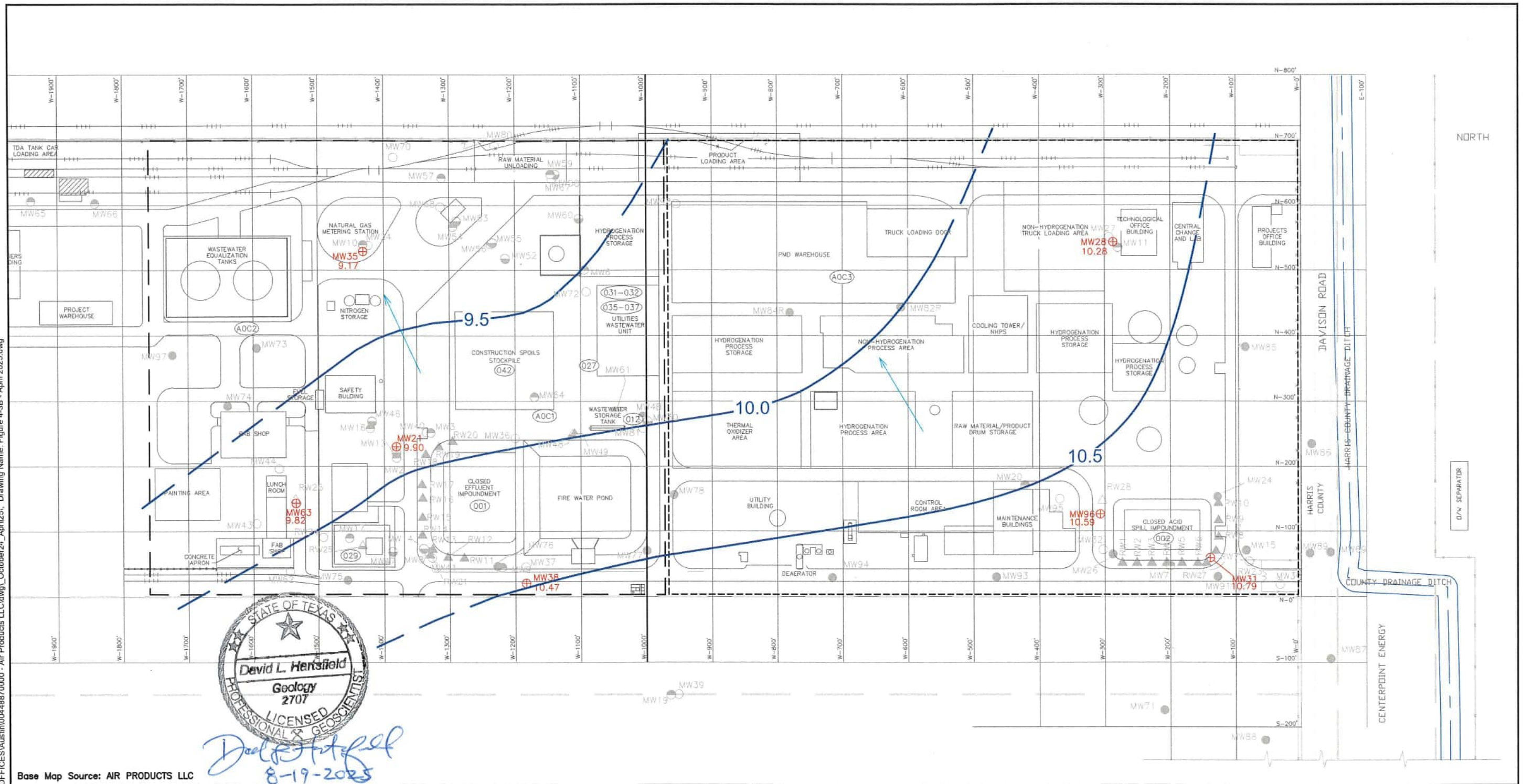
- FENCE
- PROPERTY BOUNDARY
- WASTE MANAGEMENT AREA No. 1 SCALE (FEET)
- WASTE MANAGEMENT AREA No. 2
- 18— CONTOUR LINE OF WATER ELEVATION (FT MSL)
- BOUNDARY OF PLUME MANAGEMENT ZONE 2
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- ANOMALOUS MEASUREMENT, NOT CONTOURED
- NM NOT MEASURED, NOT ACCESSIBLE



ALL MEASUREMENTS OBTAINED ON APRIL 29, 2025

		WATER LEVEL MAP	
		INTERMEDIATE ZONE - APRIL/MAY 2025	
		PREPARED FOR:	
		AIR PRODUCTS LLC	
		PASADENA, TEXAS	
Project No. 40360.4128		Figure 4-2B	
Date: 08/14/25			
By: AT			

Plot Date: 06/24/25 - 1:16pm, Plotted by: USSD715014
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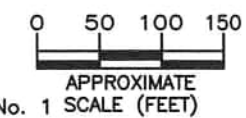
Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- MW2 ● UPPER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW14 ● LOWER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW15 ● SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW40 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- MW21 ⊕ DEEP ZONE MONITORING WELL LOCATION, IDENTIFICATION NUMBER, AND WATER LEVEL (FT MSL)

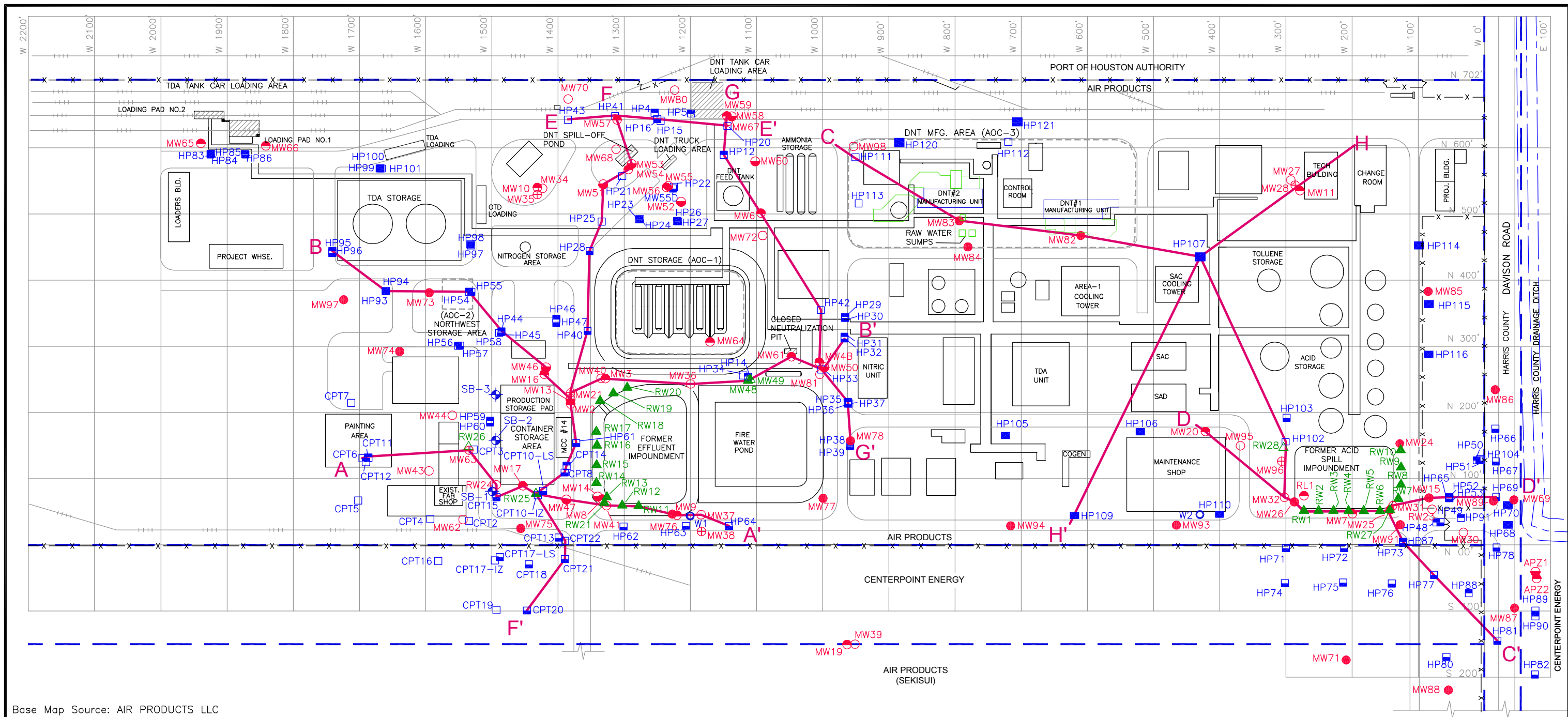
- MW49 ▲ UPPER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW25 ▲ LOWER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW9 ▲ SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- RW26 ▲ INTERMEDIATE ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- 001 ○ SOLID WASTE MANAGEMENT UNIT, NOR ID NUMBER

- FENCE
- PROPERTY BOUNDARY
- WASTE MANAGEMENT AREA No. 1
- WASTE MANAGEMENT AREA No. 2
- 18 --- CONTOUR LINE OF WATER LEVEL ELEVATION (FT MSL)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW



ALL MEASUREMENTS OBTAINED ON APRIL 29, 2025

	WATER LEVEL MAP DEEP ZONE - APRIL/MAY 2025	
	PREPARED FOR	
	AIR PRODUCTS LLC PASADENA, TEXAS	
Project No. 40360.4128		Figure 4-3B
Date: 06/24/25		
By: SD		

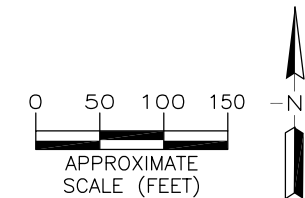


Base Map Source: AIR PRODUCTS LLC

EXPLANATION

- | | |
|--|--|
| MW2 ● UPPER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER | HP107 ■ SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| MW14 ● LOWER SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER | HP44 ■ UPPER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| MW15 ● SHALLOW ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER | HP45 ■ LOWER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| MW40 ○ INTERMEDIATE ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER | HP65 ■ INTERMEDIATE ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| MW21 ⊕ DEEP ZONE MONITORING WELL LOCATION AND IDENTIFICATION NUMBER | CPT14 ■ UPPER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| MW49 ▲ UPPER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER | CPT13 ■ LOWER SHALLOW ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| RW25 ▲ LOWER SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER | CPT22 ■ INTERMEDIATE ZONE GROUNDWATER SAMPLE LOCATION AND IDENTIFICATION NUMBER |
| RW27 ▲ SHALLOW ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER | SB-1 ⊕ SOIL BORING LOCATION AND IDENTIFICATION NUMBER |
| RW26 ▲ INTERMEDIATE ZONE RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER | W1 ○ PLANT WATER WELL |

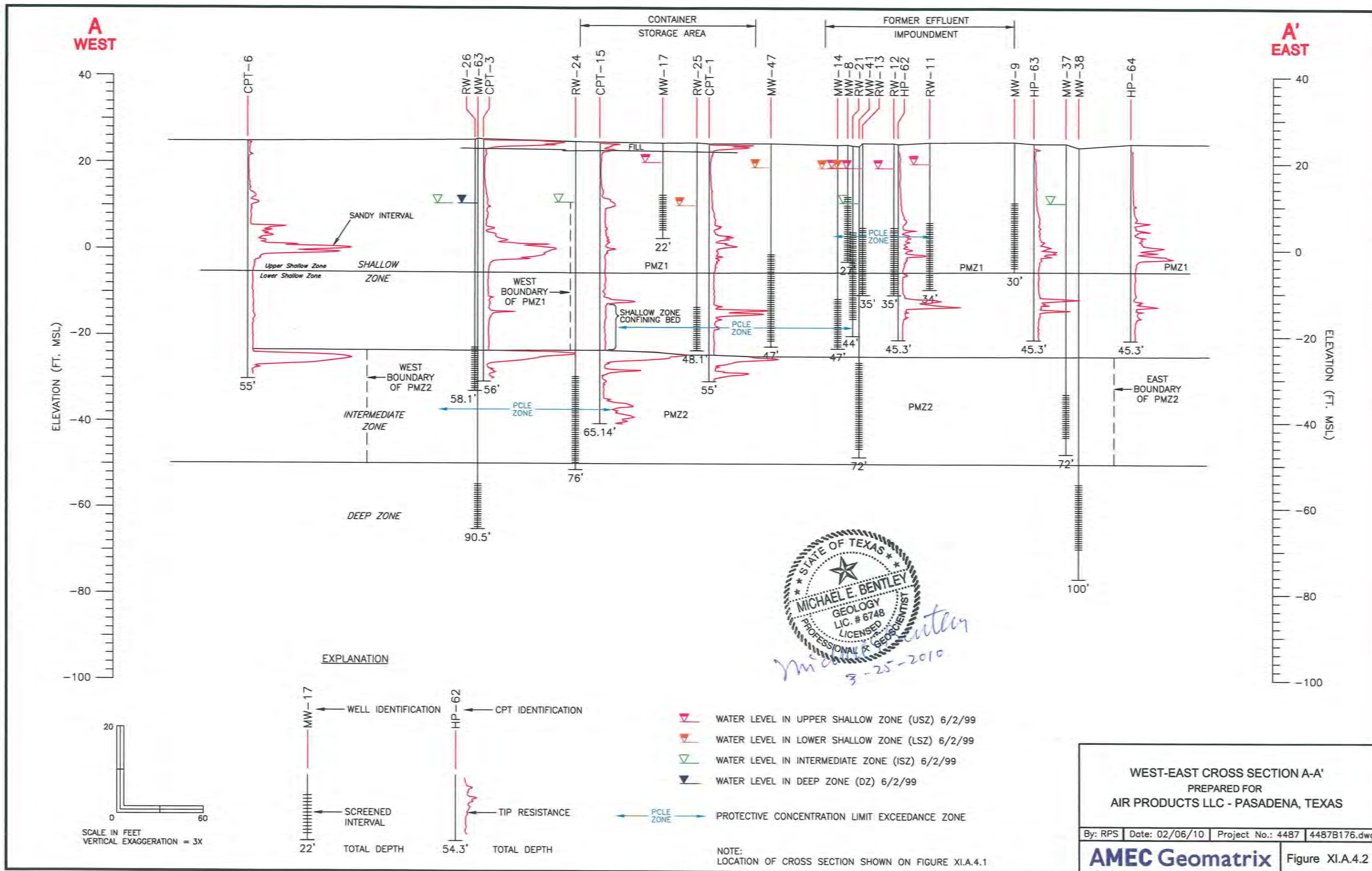
- | | |
|-----------|-----------------------------|
| — — — — — | AREA OF CONCERN |
| ▨ | SOLID WASTE MANAGEMENT UNIT |
| —x—x— | FENCE |
| — — — — — | PROPERTY BOUNDARY |
| A—A' | LINE OF CROSS SECTION |

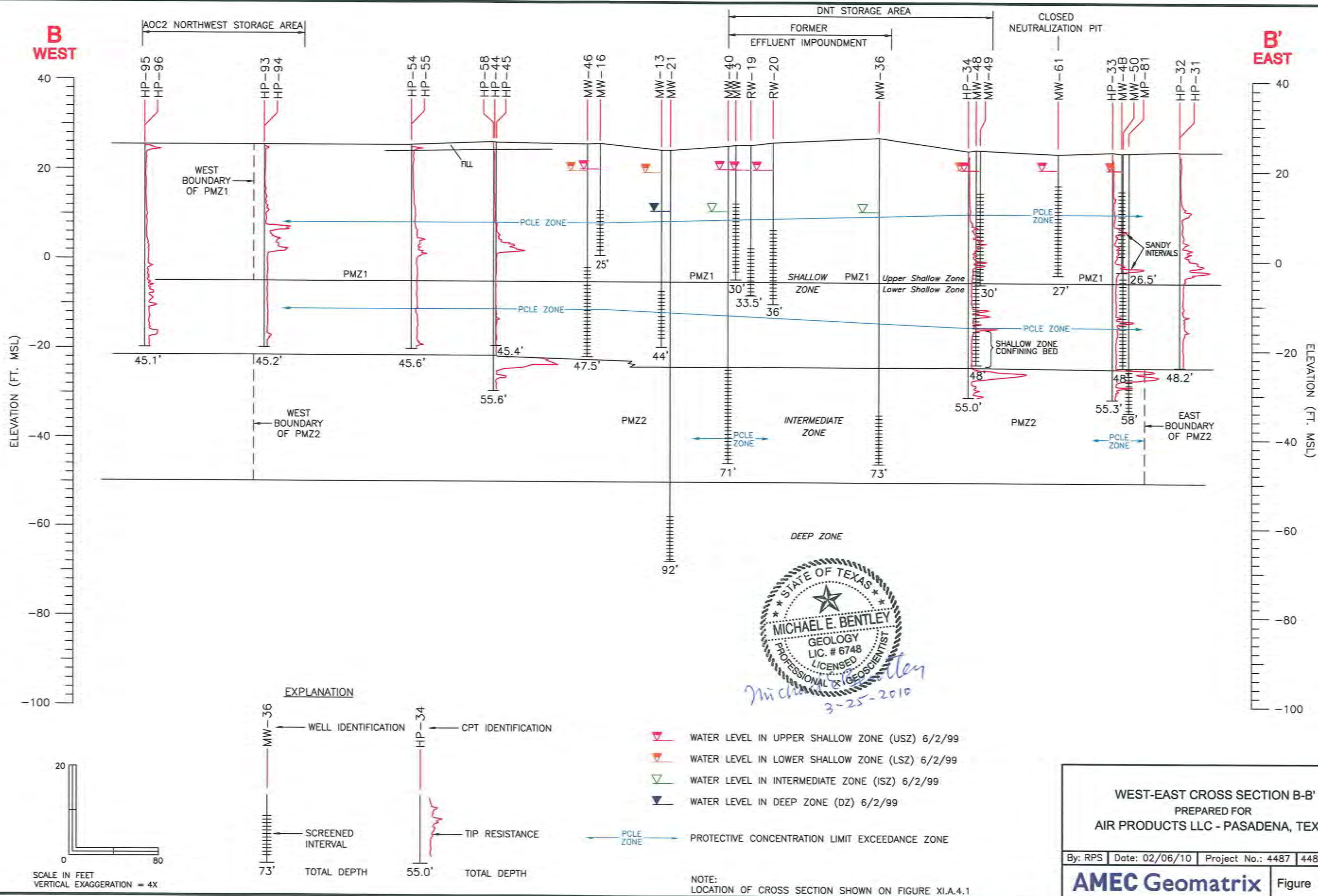


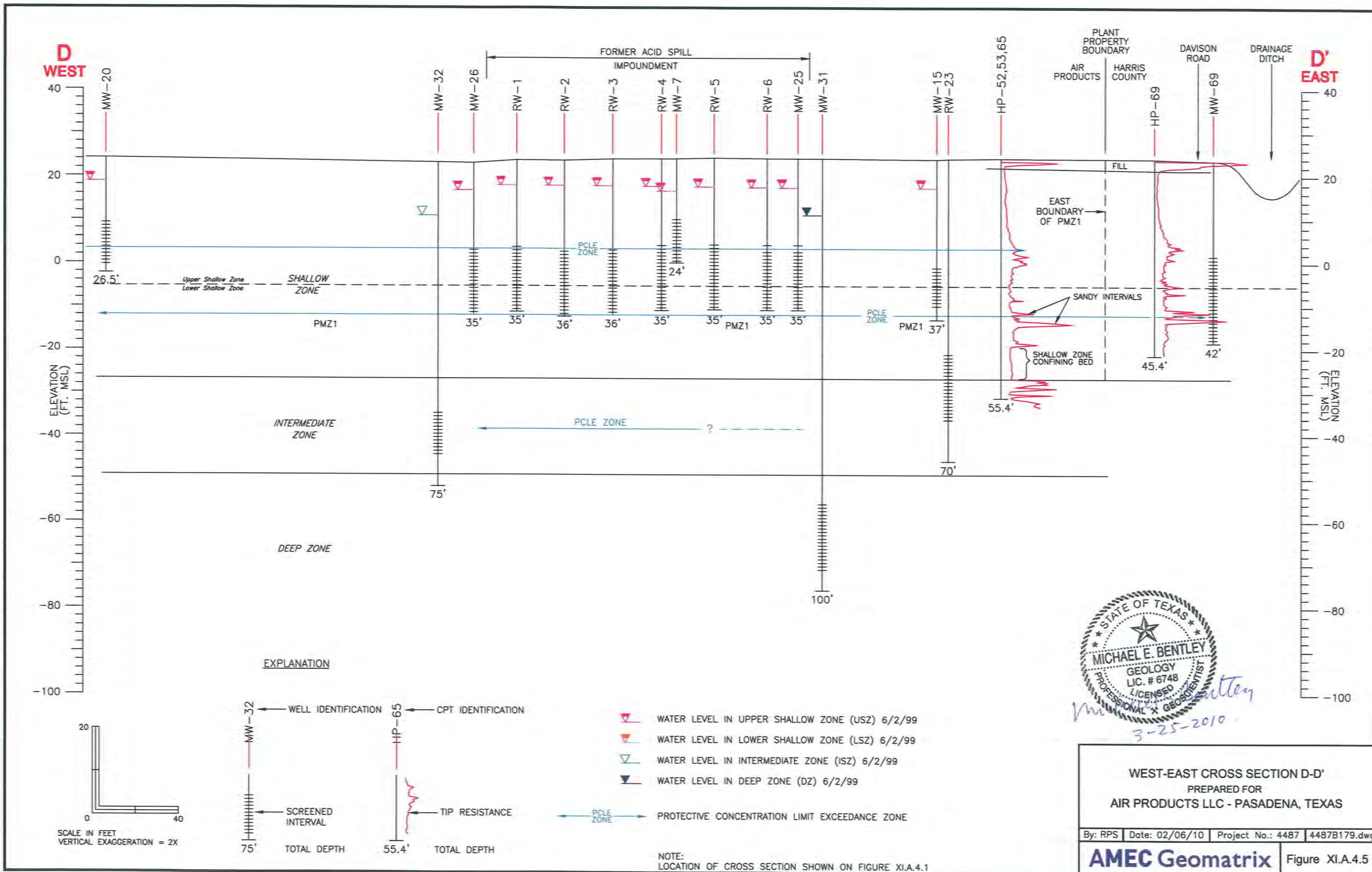
LOCATIONS OF WELLS, GROUNDWATER SAMPLES, AND CROSS SECTIONS PREPARED FOR AIR PRODUCTS LLC - PASADENA, TEXAS

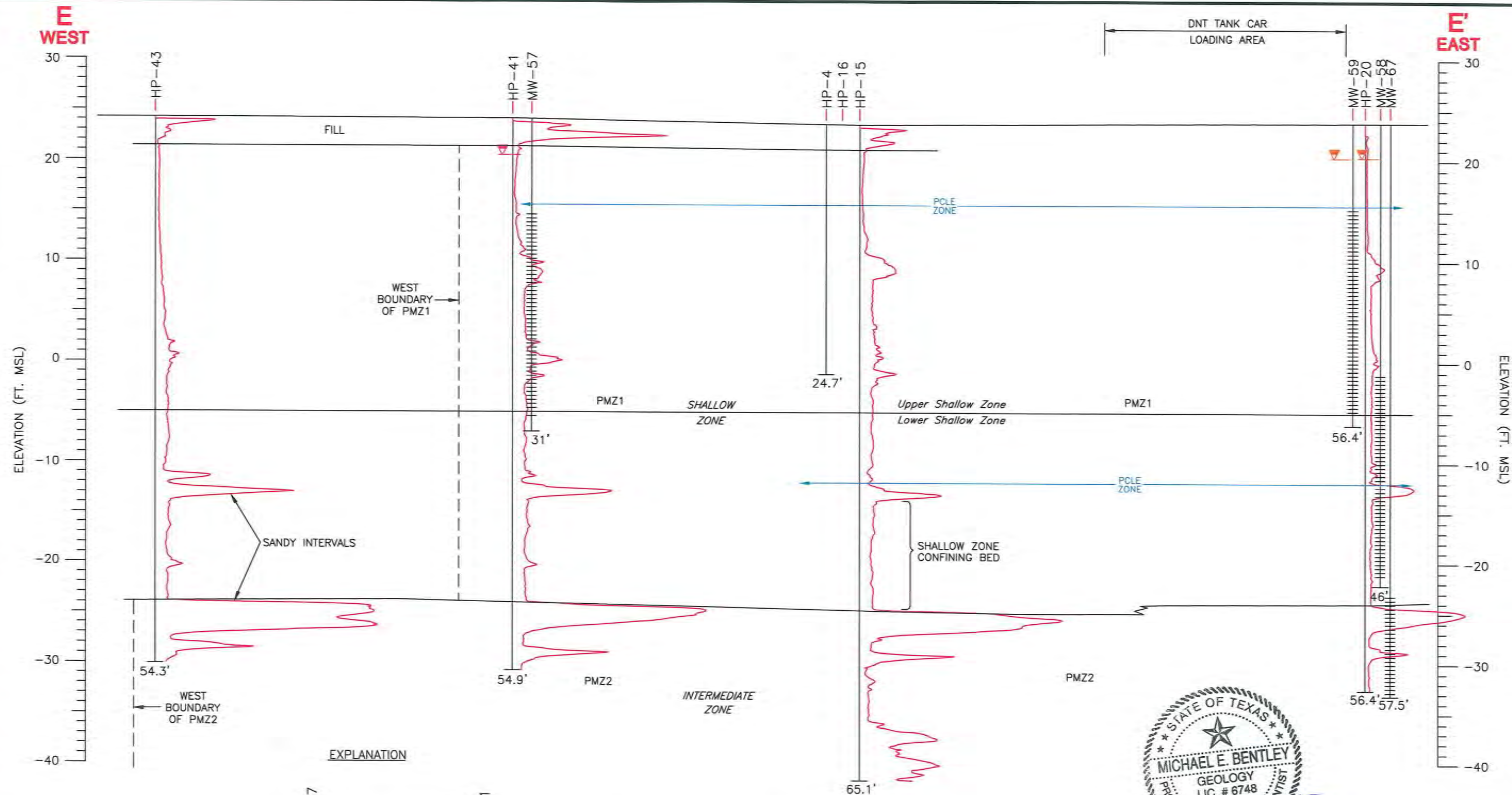
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AMEC Geomatrix Figure XI.A.4.1

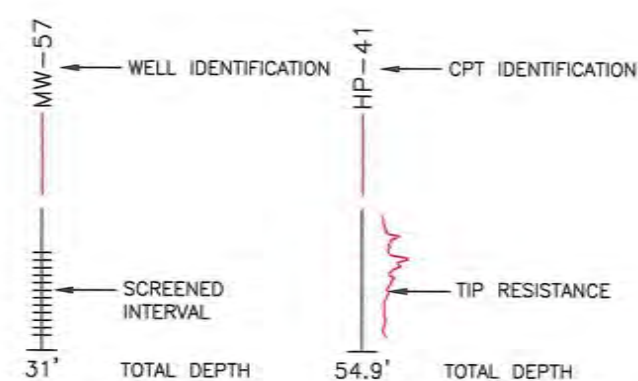








EXPLANATION



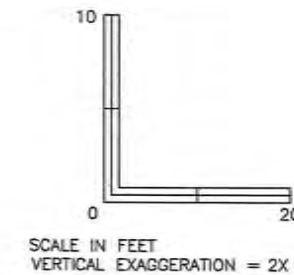
- WATER LEVEL IN UPPER SHALLOW ZONE (USZ) 6/2/99
- WATER LEVEL IN LOWER SHALLOW ZONE (LSZ) 6/2/99
- WATER LEVEL IN INTERMEDIATE ZONE (ISZ) 6/2/99
- WATER LEVEL IN DEEP ZONE (DZ) 6/2/99
- PCLE ZONE
- PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE ZONE

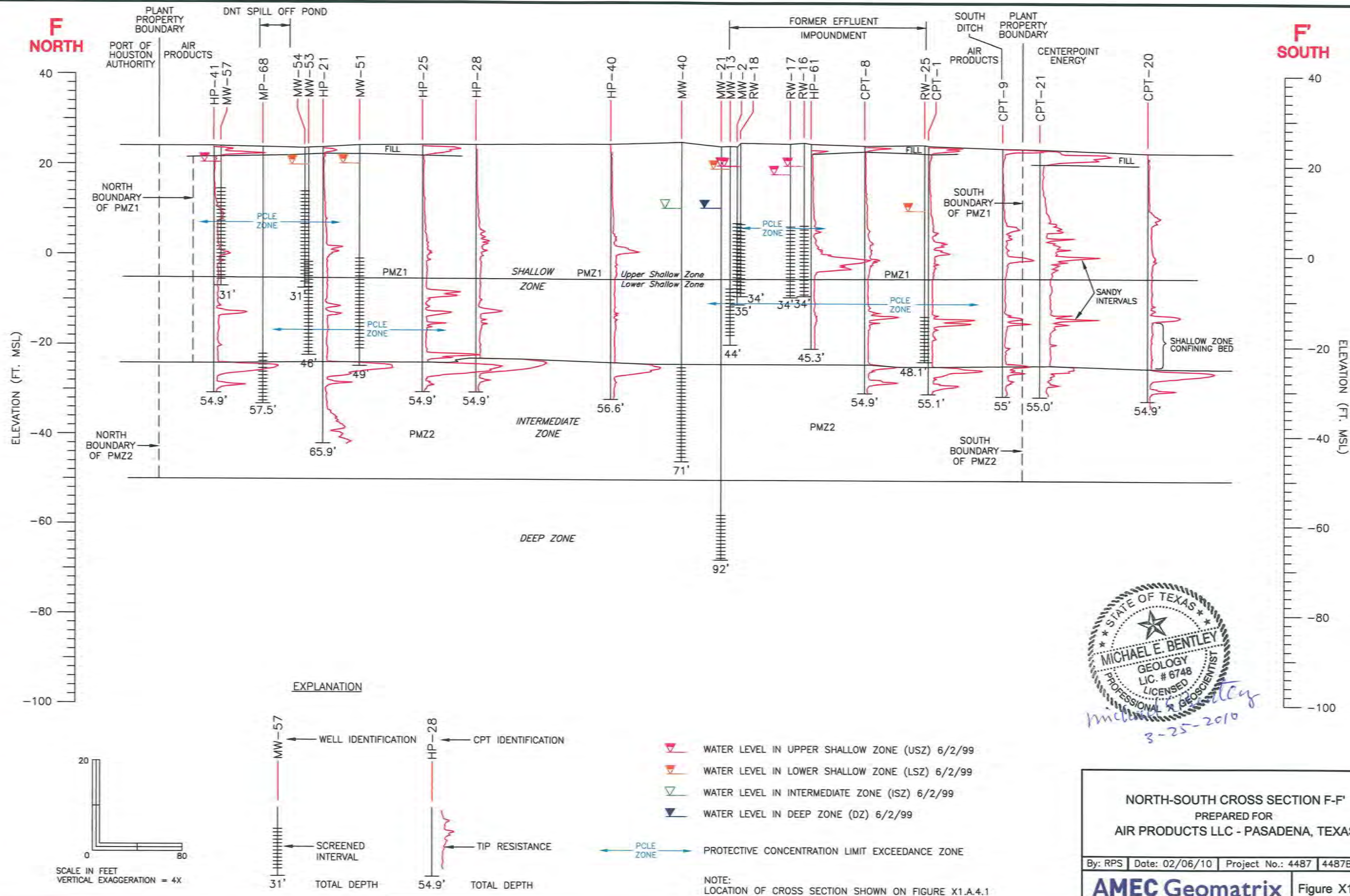
NOTE:
LOCATION OF CROSS SECTION SHOWN ON FIGURE XI.A.4.1

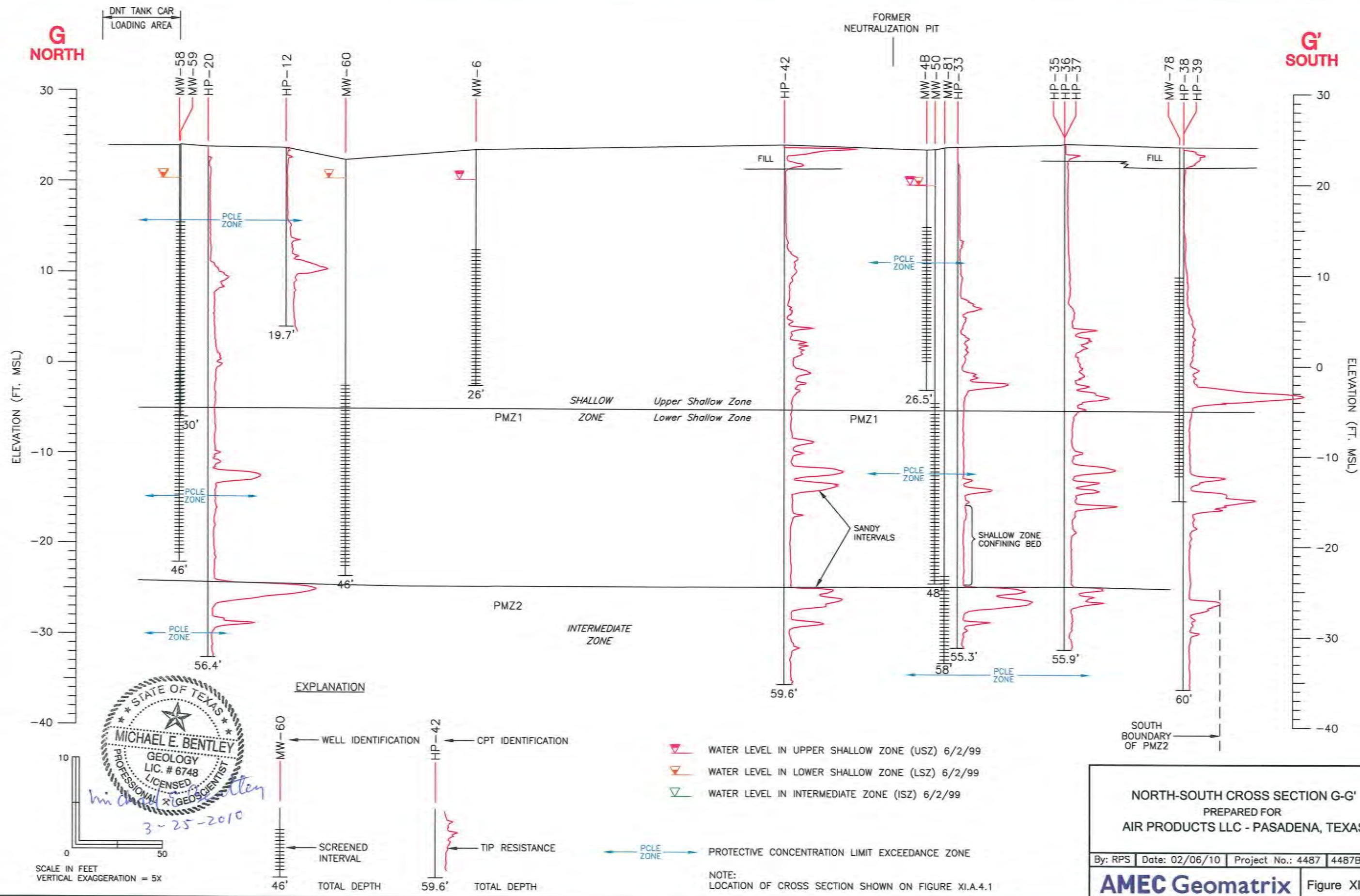
WEST-EAST CROSS SECTION E-E'
PREPARED FOR
AIR PRODUCTS LLC - PASADENA, TEXAS

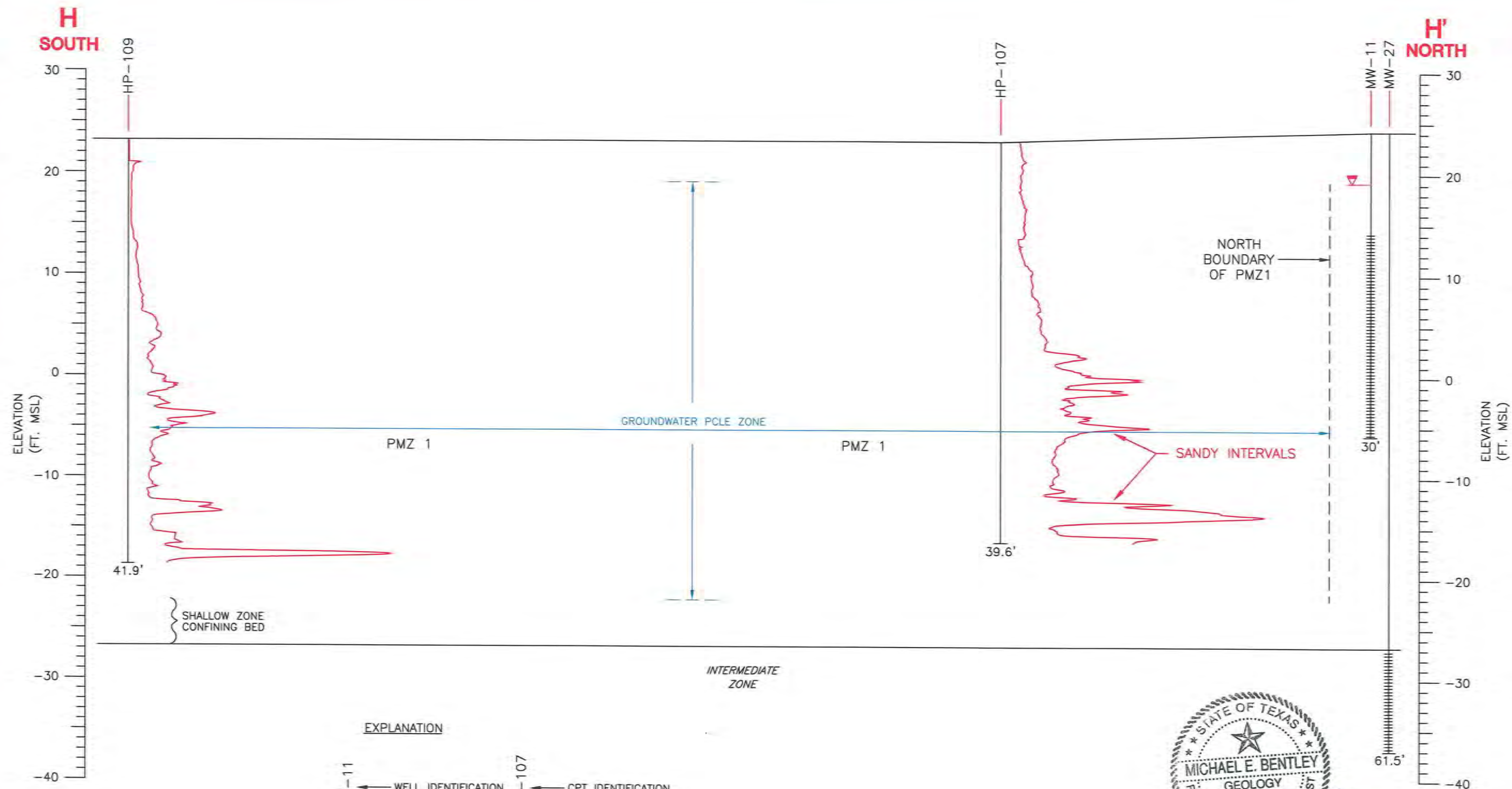
By: RPS Date: 02/06/10 Project No.: 4487 4487B180.dwg

AMEC Geomatrix Figure XI.A.4.6

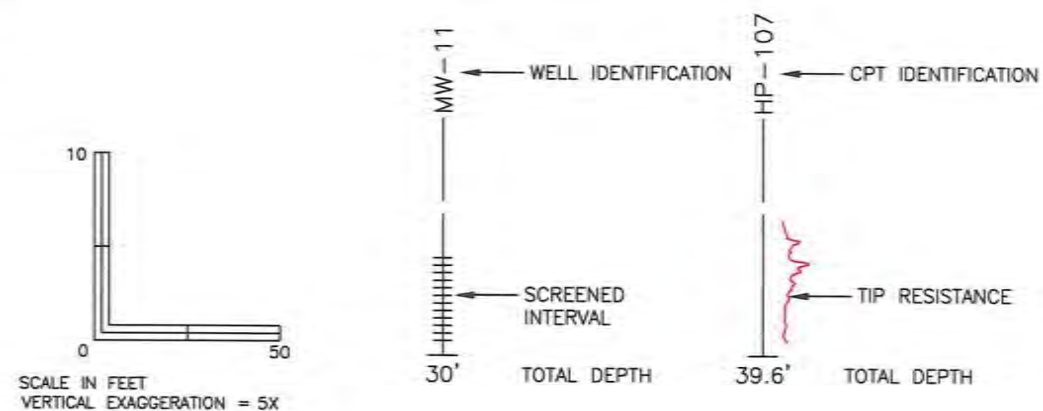






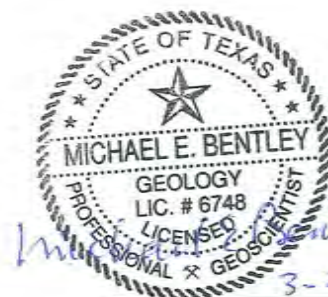


EXPLANATION



- CPT CONE PENETRATION TEST
- PCLC PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE
- ▽ WATER LEVEL IN UPPER SHALLOW ZONE (USZ) 6/2/99

NOTE:
LOCATION OF CROSS SECTION SHOWN ON FIGURE XI.A.4.1



SOUTH-NORTH CROSS SECTION H-H'
PREPARED FOR
AIR PRODUCTS LLC - PASADENA, TEXAS

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AMEC Geomatrix Figure XI.A.4.9