



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

PERMIT
FOR CORRECTIVE ACTION

CYTEC INDUSTRIES INC.
HAVRE DE GRACE, MARYLAND
EPA ID NO. MDD 003 075 942

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
PERMIT
FOR CORRECTIVE ACTION;
PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT
AS AMENDED BY THE HAZARDOUS AND SOLID WASTE
AMENDMENTS OF 1984

Permittee: Cytec Industries Inc
Permit Number: MDD 003 075 942
Facility: Havre De Grace, Maryland

The United States Environmental Protection Agency (EPA or Agency), under the authority of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. § 6901 et seq., and the regulations promulgated thereunder and set forth at 40 C.F.R. Parts 260-271, is hereby issuing this permit for the performance of corrective action (Permit) to Cytec Industries Inc. (Cytec or the Permittee) for the Facility located 1300 Revolution Street in Havre De Grace, Maryland at latitude 39° 37' 04" North and longitude 76° 06' 15" West (the Facility).

The complete RCRA permit for purposes of Section 3005(c) of RCRA, 42 U.S.C. §6925(c), consists of two portions: this Permit, issued by EPA, which addresses the provisions of HSWA, and the permit issued by the Maryland Department of the Environment (MDE) in March 1982, which addresses the provisions of the Code of Maryland Regulations, (COMAR) , Title 26, Subtitle 13, for which the State of Maryland (State) has received authorization under Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), to carry out such program in lieu of the federal hazardous waste management program under RCRA. As of the date of issuance of this Permit, the State has not received authorization to administer the corrective action provisions of HSWA. This Permit, which addresses corrective action provisions of HSWA, will be enforced by EPA. The MDE permit will be enforced by MDE, but EPA may also exercise its enforcement discretion if, and when, appropriate.

The Permittee must comply with all terms and conditions of this Permit. This Permit consists of the conditions contained herein (Parts I and II and Attachments A and B) and the applicable regulations contained in 40 C.F.R. Parts 124, 260 through 264, 268 and 270 as specified in the permit or that are, by statute, self-implementing (40 C.F.R.. § 270.32(c)).

This Permit is based on information provided to EPA by the Permittee and MDE. Section 3005(c)(3) of RCRA, 42 U.S.C § 6925(c)(3) provides EPA the authority to review and amend this Permit at any time. Any inaccuracies found in the information submitted by the Permittee may be grounds for the termination, modification or revocation and reissuance of this

permit (see 40 C.F.R. §§ 270.41, 270.42 and 270.43). The Permittee must inform EPA of any deviation from or changes in the submitted information that would affect the Permittee's ability to comply with the applicable statutes, regulations or permit conditions.

This Permit is effective on December 6, 2012, and shall remain in effect until December 6, 2022, unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§270.41, 270.42, 270.43 or continued in accordance with 40 C.F.R. §270.51(a).

TABLE OF CONTENTS

PART I - STANDARD CONDITIONS.....	1
A. DEFINITIONS.....	1
B. DUTIES AND REQUIREMENTS	1
C. APPROVAL/DISAPPROVAL OF SUBMISSIONS.....	7
D. DISPUTE RESOLUTION.....	8
E. EFFECT OF PERMIT	8
F. PERMIT MODIFICATION, REVOCATION AND REISSUANCE.....	9
G. PERMIT EXPIRATION AND CONTINUANCE.....	10
H. TRANSFER OF PERMIT	10
I. SEVERABILITY	11
PART II – SPECIFIC FACILITY CONDITIONS	12
A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	12
B. REMEDY IMPLEMENTATION	12
C. EVALUATION OF THE REMEDY	13
D. EMERGENCY RESPONSE; RELEASE REPORTING	13
E. GUIDANCE DOCUMENTS.....	14
F. FINANCIAL ASSURANCE	14
G. RECORD KEEPING.....	15
H. ACCESS FOR CORRECTIVE ACTION OVERSIGHT.....	15

LIST OF ATTACHMENTS

The following Attachments are incorporated, in their entirety, by reference into this Permit. These incorporated attachments contain enforceable conditions of this Permit.

Attachment A: Final Decision and Response to Comments

Attachment B: Performance Monitoring Plan

PART I - STANDARD CONDITIONS

A. DEFINITIONS

Pursuant to the authority granted by Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3) 40 C.F.R. § 270.32(b)(2), and for the purposes of this Permit, terms used herein shall have the same meaning as those set forth in 40 C.F.R. Parts 260 through 264, 268 and 270, unless this Permit specifically states otherwise. Where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the terms. The following definitions also apply to this Permit.

1. Area of Concern - an area of concern is hereby defined for purposes of this Permit to mean an area at the Facility or an off-site area, which is not at this time known to be a solid waste management unit, where hazardous waste and/or hazardous constituents are present or are suspected to be present as a result of a release from the Facility.
2. Days – except as otherwise provided herein, shall mean calendar days. If any requirement under the terms of this Permit would fall on a Saturday, Sunday or federal holiday, then the requirements shall fall on the following day.
3. Regional Administrator – the Regional Administrator for EPA Region III or his/her authorized representative.
4. Release - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

B. DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued under 40 C.F.R. § 270.61 or the analogous provisions of the State's authorized hazardous waste management regulations. Any other permit noncompliance constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application (40 C.F.R. § 270.30(a)).

2. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this Permit after the

expiration date of this Permit, the Permittee must apply for and obtain a new permit (40 C.F.R. § 270.30(b)).

3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit (40 C.F.R. § 270.30(c)).

4. Duty to Mitigate

In the event of noncompliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment (40 C.F.R. § 270.30(d)).

5. Duty to Properly Operate and Maintain

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the Permit (40 C.F.R. § 270.30(e)).

6. Duty to Monitor and Record Results

Pursuant to 40 C.F.R. § 270.30(j), the Permittee shall comply with the following requirements:

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. All sampling and analyses shall be of adequate quality, scientifically valid, of known precision and accuracy, and of acceptable completeness, representativeness and comparability. Laboratory analysis of each sample must be performed using an appropriate method for testing the parameter(s) of interest taking into account the sample matrix. The test methods found in the EPA publication Test Methods for Evaluating Solid Waste. Physical/Chemical Methods (SW-846), 3rd Edition, as updated, shall be used for: the Toxicity Characteristic analytes (40 C.F.R. § 261.24); the Free Liquids Test

(Method 9095) shall be used to determine if free liquid is a component of a waste as a specific requirement for bulk and containerized wastes (40 C.F.R. § 264.314(c)); and the chemical analysis of wastes for hazardous waste incineration permits (40 C.F.R. § 270.62(b)(2)(i)(C)).

- b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this Permit, the certification required by 40 C.F.R. § 264.73(b)(9) and records of all data used to complete the application for this Permit for a period of at least three (3) years from the date of the sample, measurement, report, certification or application. This period may be extended by request of the Regional Administrator at any time and is automatically extended during the course of any unresolved enforcement action regarding the Facility (40 C.F.R. § 264.74). The Permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations for the active life of the Facility, and for disposal facilities, for the post-closure care period as well (40 C.F.R. § 270.30(j)).
- c. Records of monitoring information shall specify:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.

7. Duty to Provide Information

The Permittee shall furnish, within a reasonable specified time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Regional Administrator upon request, copies of records required to be kept by this Permit (40 C.F.R. §§ 270.30(h) and 264.74(a)).

8. Duty to Allow Inspection and Entry

Pursuant to 40 C.F.R. § 270.30(i), the Permittee shall allow the Regional

Administrator, or an EPA authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

9. Duty to Submit Certified Documents

- a. Except for submissions for which the Permittee is asserting a business confidentiality claim pursuant to Paragraph 9.d. and e., below, at least one electronic copy of draft documents and one electronic copy of all final plans, reports, notifications or other documents that are required by this Permit to be submitted to the Regional Administrator or EPA, shall be sent via electronic mail or on compact disc to the:

Office of Remediation (3LC20)
EPA Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

- b. Each report, notification or other submission shall reference the Permittee's name, permit number and Facility location. In addition, one electronic copy of such submission shall be sent to:

Land Management Administration
Waste Diversion and Utilization Program
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230-1719
(410) 537 - 3314

- c. All applications, reports or other information submitted to the Regional Administrator shall be signed and certified as described in 40 C.F.R. §§ 270.11 and 270.30(k).
- d. The Permittee may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Permit in the manner described in 40 C.F.R. § 2.203(b). Any assertion of confidentiality shall be adequately substantiated by the Permittee when the assertion is made in accordance with 40 C.F.R. § 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent allowed by, and in accordance with, the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to the Permittee. The Permittee shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data.
- e. One hardcopy of all submissions for which the Permittee is asserting a business confidentiality claim pursuant to Paragraph 9.d, above, shall be sent Certified Mail, Return Receipt Requested, overnight mail, or hand-carried to:

Office of Remediation (3LC20)
EPA Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

10. Duty to Maintain Documents at the Facility

Pursuant to 40 C.F.R. § 264.73, the Permittee shall maintain at the Facility (or other location approved by the Regional Administrator) during the term of this Permit, including any reissued permit, all documents and raw data, such as laboratory reports, drilling logs, and other supporting information generated from investigations required by this Permit including amendments, revisions and modifications to these documents.

11. Duty to Minimize Waste

The Permittee shall certify in writing no less often than annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that the Permittee generates to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage or disposal is the practicable method currently available to the Permittee which

minimizes the present and future threat to human health and the environment. The Permittee shall maintain each such written certification of waste minimization at the Facility until closure of such Facility (40 C.F.R. §264.73(b)(9)).

12. Duty to Comply with the Land Disposal Restrictions

All activities of the Permittee which involve the land disposal of hazardous waste are subject to the provisions of RCRA Section 3004(b)-(m), 42 U.S.C. § 6924(b)-(m), and applicable regulations thereunder at 40 C.F.R. Part 268.

13. Reporting Requirements

a. Planned Changes

The Permittee shall give notice to the Regional Administrator, as soon as possible, of any planned physical alterations or additions to the Facility (40 C.F.R. §270.30(1)(1)).

b. Anticipated Noncompliance

The Permittee shall give advance notice to the Regional Administrator of any planned changes in the Facility or activity which may result in noncompliance with permit requirements (40 C.F.R. § 270.30(1)(2)).

c. Monitoring Reports

Monitoring reports shall be reported at the intervals specified elsewhere in this Permit (40 C.F.R. § 270.30(1)(4)).

d. Noncompliance with Schedules for Interim and Final Requirements

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than fourteen (14) days following each schedule date (40 C.F.R. § 270.30(1)(5)).

e. Twenty-four Hour Reporting

The Permittee shall report to the Regional Administrator any noncompliance which may endanger health or the environment orally within 24 hours from the time the Permittee becomes aware of the circumstances. The report shall contain the information listed in 40 C.F.R. § 270.30(1)(6).

f. Manifest Discrepancy Report

If a significant discrepancy in a manifest is discovered, the Permittee must attempt to reconcile the discrepancy. If not resolved within fifteen (15) days, the Permittee shall submit a letter report including a copy of the

manifest, to the Regional Administrator (40 C.F.R. § 270.30(1)(7) and 40 C.F.R. § 264.72).

- g. Unmanifested Waste Report
The Permittee shall submit a report to the Regional Administrator within fifteen (15) days of receipt of unmanifested waste (40 C.F.R. § 270.30(1)(8) and 40 C.F.R. § 264.76).
- h. Biennial Report
The Permittee shall submit a biennial report covering Facility activities during odd numbered calendar years (40 C.F.R. § 270.30(1)(9)).
- i. Other Noncompliance
The Permittee shall report all other instances of noncompliance not otherwise required to be reported as specified in the paragraph above, at the time monitoring reports are submitted. The reports shall contain the information listed in 40 C.F.R. § 270.30(1)(6)) (40 C.F.R. § 270.30(1)(10)).
- j. Failure to Submit Relevant and/or Accurate Information
Whenever the Permittee becomes aware that it failed to submit any relevant facts in this Permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, the Permittee shall notify the Regional Administrator of such failure within seven (7) days of becoming aware of such deficiency or inaccuracy. The Permittee shall submit the correct or additional information to the Regional Administrator within fourteen (14) days of becoming aware of the deficiency or inaccuracy (40 C.F.R. § 270.30(1)(11)). Failure to submit the information required in this permit or misrepresentation of any submitted information is grounds for termination of this permit (40 C.F.R. § 270.43).

C. APPROVAL/DISAPPROVAL OF SUBMISSIONS

EPA will review all plans, reports, schedules and other documents (hereinafter collectively referred to as “submissions”) submitted by the Permittee which require EPA approval. EPA will notify the Permittee in writing of EPA’s approval or disapproval of each submission.

Each submission required by this Permit is, upon approval by the Regional Administrator, incorporated into this Permit. Any noncompliance with such EPA-approved submission shall be deemed noncompliance with this Permit.

In the event of EPA disapproval in whole or in part of any submission, EPA shall specify the deficiencies in writing. Such disapproval shall not be subject to the Dispute

Resolution provision set forth in Permit Condition I.D., immediately below, of this Permit. The Permittee shall modify the submission to correct/address the specified deficiencies within a reasonable time period established by EPA taking into account the tasks to be performed, and submit the revised submission to EPA for approval. If the revised submission is disapproved, EPA will notify the Permittee of the deficiencies in writing and specify a schedule for the Permittee to correct the deficiencies and resubmit the submission to EPA. The Permittee shall correct the deficiencies, as directed by EPA, and forward the revised submission to EPA within the time period specified by EPA. In the event the Permittee disagrees with EPA's disapproval of the revised submission the Permittee shall notify EPA in writing and the disagreement shall be resolved in accordance with the Dispute Resolution provision in Permit Condition I.D., below, of this Permit.

D. DISPUTE RESOLUTION

Except as otherwise provided in this Permit in the event the Permittee disagrees, in whole or in part, with EPA disapproval of any submission required by this Permit, the Permittee shall notify EPA in writing of its objections, and the basis therefore, within twenty-one (21) days of receipt of EPA's disapproval.

Such notice shall set forth the specific matters in dispute, the basis for the Permittee's belief that its position is consistent with the Permit requirements, and any supporting documentation.

EPA and the Permittee shall have an additional twenty-one (21) days from EPA receipt of the notification to meet or confer to resolve any dispute. In the event agreement is reached, the Permittee shall submit the revised submission and implement the same in accordance with such agreement.

In the event EPA and the Permittee are not able to reach agreement within this twenty-one (21)-day period, the Permittee shall have the opportunity to submit written comments regarding EPA's disapproval, and receive a written decision from the EPA Regional Administrator or his delegate (e.g., the Division Director or the Office Director) regarding the Permittee's objection. EPA will notify the Permittee in writing of its decision and the Permittee shall comply with the terms and conditions of EPA's decision. The Permittee does not waive its right to assert any and all available defenses in a proceeding to enforce this Permit, nor does it waive any statutory or regulatory rights it may have, if any, to affirmatively challenge EPA's decision in the dispute.

E. EFFECT OF PERMIT

1. This Permit authorizes only the management of hazardous waste expressly described in this Permit and does not authorize any other management of hazardous waste.

2. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, or invasion of other private rights, or any infringement of State or local laws or regulations. (40 C.F.R. §§ 270.30(g) and 270.4(b) and (c)). Compliance with this Permit during its term constitutes compliance with Subtitle C of RCRA, except for those requirements not included in the Permit which are described in 40 C.F.R. § 270.4(a)(1)(i)-(iv). However, compliance with the terms of this Permit does not constitute a defense to any action brought under Section 7003 of RCRA, 42 U.S.C. § 6973, Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended 42 U.S.C. §9606(a) (commonly known as Superfund), or any other law governing protection of public health or welfare or the environment.
3. Nothing contained herein shall in any way be deemed to waive the Permittee's obligation to comply with 40 C.F.R. Part 270, Subpart C, and applicable regulations set forth at 40 C.F.R. Part 124.

F. PERMIT MODIFICATION, REVOCATION AND REISSUANCE

1. This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay any permit condition (40 C.F.R. § 270.30(f)). Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations and laws (RCRA Section 3005(c)(3), 42 U.S.C. § 6925(c)(3)).
2. The Regional Administrator will modify the Permit in accordance with 40 C.F.R. § 270.41 and Section 3005(c) of RCRA, 42 U.S.C. § 6925(c) in the event that investigations required in this Permit, or any other information available to the Regional Administrator, identify solid waste management units (SWMUs) that require corrective measures. The modified permit will include assurances of financial responsibility for completing such corrective action (40 C.F.R. § 264.101(b)). This paragraph does not limit the Regional Administrator's authority to otherwise modify this Permit in accordance with 40 C.F.R. Part 270, Subpart D.
3. This Permit may be modified if the Regional Administrator determines good cause exists for modification as set forth in 40 C.F.R. § 270.41.

G. PERMIT EXPIRATION AND CONTINUANCE

1. Pursuant to 40 C.F.R. § 270.50, this Permit shall be effective for a fixed term not to exceed (10) ten years. Pursuant to 40 C.F.R. § 270.51, this Permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely and complete application for a new permit (see 40 C.F.R. §§ 270.10 and 270.13 - 270.29) and, through no fault of the Permittee, the Director has not issued a new permit under 40 C.F.R. § 124.15 on or before the expiration date of this permit. In addition, each permit for a land disposal facility shall be reviewed by the Regional Administrator five years after the date of permit issuance or reissuance and shall be modified as necessary, as provided in 40 C.F.R. § 270.41 (40 C.F.R. § 270.50(d)).
2. If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this permit, the Permittee must submit a complete application for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Regional Administrator (40 C.F.R. §§ 270.10(h) and 270.30(b)).
3. The corrective action obligations contained in this Permit shall continue regardless of whether the Permittee continues to operate or ceases operation and closes the Facility. The Permittee is obligated to complete Facility-wide corrective action under the conditions of a RCRA permit regardless of the operational status of the Facility. The Permittee must submit an application for a new permit at least 180 days before this Permit expires pursuant to 40 C.F.R. § 270.10(h), unless the Permit has been modified to terminate the corrective action schedule of compliance and the Permittee has been released from the requirements for financial assurance for corrective action.

H. TRANSFER OF PERMIT

1. This Permit is not transferable to any person, except after notice to the Regional Administrator. (40 C.F.R. § 270.30(1)(3)) The Permit may be transferred by the Permittee to a new owner or operator only if the Permit has been modified or revoked and reissued under 40 C.F.R. § 270.40(b) and 270.42(a) to identify the new Permittee and incorporate such other requirements as may be necessary under the appropriate Act. (40 C.F.R. § 270.40). The Regional Administrator may require modification or revocation and reissuance of the Permit to change the name of the Permittee and incorporate such other requirements as may be necessary under RCRA. (40 C.F.R. § 270.30(1)(3)).
2. Before transferring ownership or operation of the Facility during its operating life, the Permittee transferring its interest in the Facility shall notify the new owner or operator in writing of the requirements of 40 C.F.R. Parts 264 and 270 (40 C.F.R.

§ 264.12(c)).

I. SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby (40 C.F.R. § 124.16(a)(2)).

PART II – SPECIFIC FACILITY CONDITIONS

A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

1. Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), and regulations codified at 40 C.F.R. §264.101, provide that all permits issued after November 8, 1984 must require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU), regardless of when waste was placed in the unit.
2. Under Section 3004(v) of RCRA, 42 U.S.C. § 6924(v), and 40 C.F.R. §264.101(c), the EPA may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of the EPA that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.
3. Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), and 40 C.F.R. § 270.32(b) provide that each permit shall contain such terms and conditions as EPA determines necessary to protect human health and the environment.

B. REMEDY IMPLEMENTATION

1. Based on the CMS results and the Administrative Record, the final remedy for the Facility is described in the Final Decision and Response to Comments (FDRTC), which is included as Attachment A. The requirements of this Permit provide for the operation and maintenance of the final remedy described in the FDRTC.
2. The Permittee shall operate, maintain and monitor the groundwater monitoring system in accordance with the EPA approved Performance Monitoring Plan, set forth herein Attachment B.
3. Within ninety (90) days of the effective date of this Permit, the Permittee shall submit to the EPA for approval an Institutional Control (IC) Plan for implementation of the requirements set forth in subparagraphs a. through d. immediately below:
 - a. Residential land use (defined as single family homes, multiple family dwellings, schools, day care centers, child care centers, apartment buildings, dormitories, other residential-style facilities, hospitals, and in-patient health care facilities) shall be prohibited at the Facility;

- b. Groundwater at the Facility shall not be used for any purpose other than for industrial usage and for the operation, maintenance, and monitoring activities required by EPA unless it is demonstrated to EPA that (1) such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected final remedy and (2) EPA provides prior written approval for such use;
- c. No new wells will be installed on Facility property unless EPA provides prior written approval to install such wells;
- d. Submission of coordinate surveys for applicable property use restrictions that meet the following requirements:
 - (1) The boundary of each use restriction shall be defined as a polygon and;
 - (2) The longitude and latitude of each polygon vertex shall be established as follows:
 - (a) Decimal degrees format;
 - (b) At least seven decimal places;
 - (c) Negative sign for west longitude; and
 - (d) WGS 1984 datum.

C. EVALUATION OF THE REMEDY

The Permittee shall submit to EPA annual progress reports on the final remedy performance beginning by January 31 of each year until media clean-up standards in the FDRTC have been met. If the Agency determines that the remedy will not comply with the media clean-up standards as set forth in the FDRTC, the Agency may require the Permittee to perform additional studies and/or perform modifications to the remedy. If necessary, the Agency or the Permittee may seek modification of this Permit pursuant to 40 CFR § 270.41 or § 270.42 and § 124.5 to implement modifications to the remedy.

D. EMERGENCY RESPONSE; RELEASE REPORTING

- 1. In the event Permittee identifies a newly discovered solid waste management unit (SWMU) or new releases of hazardous waste and/or hazardous constituents at or from the Facility not previously identified, or discovers an immediate or potential threat to human health and/or the environment at or from the Facility, Permittee shall notify the EPA Project Coordinator orally within forty-eight (48) hours of discovery and notify EPA in writing within three (3) calendar days of such discovery summarizing the potential for the migration or release of hazardous wastes, solid wastes and/or hazardous constituents at and/or from the Facility and the immediacy and magnitude of the potential threat(s) to human health and/or the environment, as applicable. Upon written request of EPA, Permittee shall submit to EPA for approval an Interim Measures (IM) Workplan in accordance with the IM Scope of Work (see Permit Condition II.E below) that identifies interim measures which will mitigate the migration or release of hazardous wastes, solid

wastes and/or hazardous constituents at and/or from the Facility and mitigate any threat to human health and/or the environment. If EPA determines that immediate action is required, the EPA Project Coordinator may orally authorize Permittee to act prior to EPA's receipt of the IM Workplan.

2. If EPA identifies a newly discovered SWMU or new releases of hazardous waste and/or hazardous constituents at or from the Facility not previously identified, or discovers an immediate or potential threat to human health and/or the environment at the Facility, EPA will notify Permittee in writing. Within ten (10) days of receiving EPA's written notification, Permittee shall submit to EPA for approval an IM Workplan in accordance with the IM Scope of Work, that identifies interim measures which will mitigate the migration or release of hazardous wastes, solid wastes and/or hazardous constituents at and/or from the Facility and mitigate any threat to human health and/or the environment. If EPA determines that immediate action is required, the EPA Project Coordinator may orally require Permittee to act prior to Permittee's receipt of EPA's written notification.
3. All IM Workplans shall ensure that the interim measures are designed to mitigate the migration and/or release of hazardous wastes, solid wastes and/or hazardous constituents at and/or from the Facility and mitigate any immediate or potential threat(s) to human health and/or the environment. Such interim measures shall be consistent with the objectives of, and contribute to the performance of the final remedy set forth in the FDRTC or any additional remedy which may be required at the Facility.
4. Each IM Workplan shall include the following sections as appropriate and approved by EPA: Interim Measures Objectives, Public Involvement Plan, Data Collection Quality Assurance, Data Management, Design Plans and Specifications, Operation and Maintenance, Project Schedule, Interim Measures Construction Quality Assurance, and Reporting Requirements.
5. Concurrent with submission of an IM Workplan, Permittee shall submit to EPA an IM Health and Safety Plan.

E. GUIDANCE DOCUMENTS

All work to be performed at the Facility pursuant to this Permit shall be in general accordance with applicable EPA RCRA corrective action guidance available at: <http://www.epa.gov/reg3wcmd/correctiveaction.htm>

F. FINANCIAL ASSURANCE

1. Within ninety (90) days after the effective date of this Permit, Permittee shall submit to EPA detailed written estimates, in current dollars, of the cost of hiring a

third party to perform the work required under Part II.B “Remedy Implementation” (Cost Estimate). The Cost Estimate must account for the costs of all foreseeable work, including all investigations and reports, construction work, monitoring, and other long term care work. All Cost Estimates shall be consistent with the requirements of 40 C.F.R. § 264.142 and § 264.144. References in these regulations to closure and post-closure shall mean the work to be performed under Part II of this Permit.

2. Permittee shall annually adjust the Cost Estimate for inflation and for changes in the work required under Part II.B. “Remedy Implementation” until such work is completed. By January 31 of each year the Permittee shall submit each annual Cost Estimate to EPA.
3. By March 31 of each year, the Permittee shall demonstrate compliance with financial assurance to the Agency as required by 40 CFR 264.143 for completing the final remedy in accordance with 40 CFR § 264.101(b).
4. Permittee’s inability or failure to establish or maintain financial assurance for completion of the final remedy shall in no way excuse performance of any requirement of this Permit.

G. RECORDKEEPING

Upon completion of closure of any current or future SWMU, the Permittee shall maintain in the Facility operating record, documentation of the closure measures taken.

H. ACCESS FOR CORRECTIVE ACTION OVERSIGHT

The EPA and its authorized representatives shall have access to the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this Permit. The Permittee shall use its best efforts to obtain access to property beyond the boundaries of the Facility at which corrective action is required by this Permit (see Section 3004(v) of RCRA, 42 USC § 6924(v), and 40 CFR § 264.101(c)): (1) for itself and any contractor of the Permittee for the purpose of taking corrective action required by this Permit, and (2) for EPA and its authorized representatives for the purposes described in this paragraph.

12/6/12
Date Signed

Abraham Ferdas
Abraham Ferdas, Director
Land & Chemicals Division
EPA Region III

ATTACHMENT A

**FINAL DECISION AND
RESPONSE TO COMMENTS**

**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III**

**FINAL DECISION AND RESPONSE TO COMMENTS
CYTEC INDUSTRIES INC.**

PURPOSE

The United States Environmental Protection Agency (EPA) is issuing this Final Decision and Response to Comments (FDRTC or Final Decision) selecting the Final Remedy for the Cytec Industries Inc. located at the Havre De Grace, Maryland (hereinafter referred to as the Facility). The Final Decision is issued pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901, et seq.

On September 27, 1991, EPA issued American Cyanamid a Corrective Action Permit (MDD 003 075 942) (1991 Permit). The 1991 Permit required that American Cyanamid conduct environmental investigations at the Facility. In 1993, American Cyanamid spun off its chemical operations to create Cytec Industries, Inc. which included the Facility in Havre de Grace, Maryland.

On September 18, 2012, EPA issued a Statement of Basis (SB) in which it described the information gathered during environmental investigations at the Facility and proposed a Final Remedy for the Facility. Concurrent with the SB, EPA issued a Draft RCRA Corrective Action Permit (CA Permit) requiring implementation of the Final Remedy. The SB is hereby incorporated into this Final Decision by reference and made a part hereof as Attachment AA.

This FDRTC selects the remedy that EPA evaluated under the 1991 Permit. Consistent with the public participation provisions under RCRA, EPA solicited public comment on its proposed Final Remedy and Draft CA Permit. On September 19, 2012, notice of the Statement of Basis was published on the EPA website:

[<http://www.epa.gov/reg3wcmd/ca/md/webpages/mdd003075942.html>] and in the Maryland Daily Record newspaper. The forty-five (45) day comment period ended on November 5, 2012.

Since EPA did not receive any comments on the SB during the public comment period, EPA has determined it is not necessary to modify the proposed Final Remedy set forth in the SB; thus, the remedy proposed in the SB is the Final Remedy selected by EPA for the Facility.

Final Decision

EPA's Final Remedy for the Facility consists of the following:

- Groundwater extraction and treatment;
- Maintenance and monitoring, including groundwater; and

- Compliance with and maintenance of institutional controls.

DECLARATION

Based on the Administrative Record compiled for the corrective action at the Cytec Industries Inc. facility, I have determined that the remedy selected in this Final Decision and Response to Comments, which incorporates the September 18, 2012 Statement of Basis, is protective of human health and the environment.

Date: 12/5/12



Abraham Ferdas, Director
Land and Chemicals Division
U.S. Environmental Protection Agency, Region III

Attachment AA: Statement of Basis (September 18, 2012)

ATTACHMENT AA
STATEMENT OF BASIS



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III
STATEMENT OF BASIS
CYTEC FACILITY
HAVRE DE GRACE, MARYLAND
EPA ID NO. MDD 003 075 942

I. INTRODUCTION

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for Corrective Action Units at the Cytec Industries Inc.'s (Cytec) Engineered Materials Facility (Facility or Site), located in Havre de Grace, Maryland. The Corrective Action Units consist of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). EPA's proposed remedy consists of expansion of the existing groundwater extraction system and operation and maintenance of the expanded groundwater extraction system, monitoring wells and recovery wells. Furthermore, EPA is proposing the compliance with and maintenance of institutional controls that restrict certain land and groundwater uses at the Facility. This SB highlights key information relied upon by EPA in making its proposed remedy decision.

The Facility is subject to EPA's Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 *et seq.* (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have investigated and cleaned up any releases of hazardous waste and hazardous constituents that have occurred at their property. Maryland is not authorized for the Corrective Action Program under Section 3006 of RCRA, 42 U.S.C. §6926; therefore, EPA retains authority in the State of Maryland for the Corrective Action Program.

This document summarizes the information that can be found in the work plans and reports submitted by Cytec to EPA during the Verification Investigation (VI), RCRA Facility Investigation (RFI), and Corrective Measures Study (CMS) activities undertaken by Cytec. This document also explains the rationale for EPA's proposed remedy for the Facility. The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed decision is based. See Section VI, Public Participation, below, for information on how you may review the AR.

Concurrently with this SB, EPA is soliciting comments on a draft Corrective Action Permit (Permit). The draft Permit incorporates the remedy proposed in this SB. The components of EPA's proposed final remedy as described in this SB are contained in the draft Permit, and will be enforceable thereunder once the Permit is finalized.

EPA will make a decision on the draft Corrective Action Permit after considering the information submitted during the public comment period. If there are no comments which result in a change to the draft permit, the final Corrective Action Permit will be signed and will become effective upon EPA's signature. Otherwise, the final Permit will become effective forty-five (45) days after the service of notice of the Final Decision or upon conclusion of any appeals filed. The SB will be incorporated into the final CA Permit and made a part thereof.

Information on the Corrective Action Program as well as a fact sheet for the Facility can be found by navigating <http://www.epa.gov/reg3wcmd/correctiveaction.htm>.

II. FACILITY DESCRIPTION AND BACKGROUND

The Facility occupies an approximately 27-acre parcel located at 1300 Revolution Street in Havre de Grace, Maryland (Attachment 1, Figure 1). The Facility began operations in 1962 as American Cyanamid which manufactured structural adhesives for the aerospace industry. Between 1981 and 1992, a portion of the Facility was used to manufacture honeycomb core used in conjunction with adhesives to form fuselage and wing components of aircraft. In 1993, American Cyanamid spun off its chemical operations to create Cytec Industries, Inc. which included the Facility in Havre de Grace, Maryland. Currently Cytec Industries, Inc. produces specialty bonding adhesives, including modified epoxy adhesives, adhesive primers, high-temperature resin systems, and thermoplastic materials (e.g., graphite, declar) for the aerospace industry.

The Facility is bisected by the Norfolk Southern Railroad and an intermittent stream (a branch of Lilley Run) (Attachment 1, Figure 2). The adhesive production building is located on the western portion of the Facility. A warehouse occupies the eastern half of the Facility. The area surrounding the Facility includes a mixture of light industrial and high-density residential properties. No structures are present on the area to the east of the Facility. The local publicly owned treatment works is located immediately southeast of the Facility boundary.

According to Facility personnel, 1,2-dichloroethane (1,2-DCA) was used as a raw material and for cleaning at the Facility from approximately 1967 through July 1990. A 6,000-gallon underground storage tank (UST) at the UST tank farm located at the southern corner of the adhesives production building was used to store 1,2-DCA and was removed in December 1991. Methylene chloride (MCL) was used at the Facility as a raw material and for cleaning from approximately 1967 through 2003. MCL was stored in a 6,000-gallon UST that was removed in December 1991; in a 3,000-gallon aboveground storage tank (AST) from September 1992 through December 1993; and in 55-gallon drums until its use at the Facility was discontinued in 2003.

III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS

On April 1991, EPA prepared a Final RCRA Facility Assessment (RFA) Report. The RFA Report identified areas with the potential for a release to soil, groundwater, and surface water. The RFA Report recommended that certain areas be investigated further. The areas identified were the printline acid accumulation area, the outside sump, waste oil accumulation area, honeycomb core building, adhesives building sanitary sewer, Dowanol EE underground tank line leak, and the MEK underground tank leak. Based on the results of the RFA, on September 27, 1991, EPA issued American Cyanamid a Corrective Action Permit (MDD 003 075 942) (1991 Permit). The 1991 Permit required that American Cyanamid conduct environmental investigations at the Facility. The

specific Areas of Concern (AOCs) and SWMUs identified in the 1991 Permit include: SWMU 6-Spent Acid Truck Loading Pad, SWMU 7-RCRA Spent Acid Tank Facility, SWMU 10-Outside Sump, SWMU 18-Waste Oil Accumulation Area, AOC-1-Underground Storage Tanks (UST) Area, AOC-2-Adhesives Building Sanitary Sewer, and AOC-3-Honeycomb Core Building Sanitary Sewer (See Figure 2). Since 1991, Cytec has performed and completed numerous investigations at the Facility. All stages of the corrective action process for the SWMUs and AOCs identified in the 1991 Permit are completed. The predominant contaminant of concern (COC) in groundwater at the Facility is 1,2-DCA. Other compounds detected above screening criteria in groundwater are: chloroethane, chloroform, MCL, TCE, and vinyl chloride. The investigations performed at the Facility are summarized below.

A. AOC-1 Underground Storage Tank Area

The Verification Sampling Report, Area of Concern No. 1 Underground Storage Tank Area addresses the former UST area (AOC-1). Five 6,000-gallon USTs were registered with the Maryland Department of Environment (MDE) and were last known to contain methyl ethyl ketone (MEK), 2-ethoxyethanol (EE), methanol (MEOH), ethylene dichloride (EDC), and MCL. In December 1991, Cytec took these five USTs permanently out of service. Soil samples were analyzed from three exploratory borings and five monitoring wells during 1991 (see Figure 3).

MW-1A well groundwater had 12 ug/l of methylene chloride. MW-2 well groundwater had 1,800 ug/l of methylene chloride. MW-3 well groundwater had 2,200 ug/l of methylene chloride and 37 ug/l of vinyl chloride. MW-4 well groundwater had 49,000 ug/l of methylene chloride. The Maximum Contaminant Level for methylene chloride is 5 ug/l and vinyl chloride is 2 ug/l. These applicable Maximum Contaminant Levels for methylene chloride and vinyl chloride are codified at 40 CFR Part 141 and promulgated pursuant to the Safe Drinking Water Act, Section 42 U.S.C. § 300f et seq.

UST Area soil samples collected from the vadose zone (from the surface to groundwater) did not detect any COCs.

B. AOC-2, AOC-3, SWMUs 6, 7, 10, and 18

The Verification Sampling Report, SWMUs No. 6, 7, 10, 18, and AOCs No. 2 and 3 presents the investigative findings for AOC-2, AOC-3, and SWMUs 6, 7, 10, and 18. Soil boring samples from SWMU 18 were analyzed for several constituents (VOCs, Semi-VOCs, and PCBs) commonly found in fuels and oils. Soil boring and groundwater samples from the remainder of the SWMUs and AOCs were analyzed for hexavalent, trivalent, and total chromium. Cytec concluded that there was no contamination present above Heath Based Numbers (HBNs) in either the four SWMUs or the two AOCs, and therefore no further investigation was recommended.

C. Facility Wide Soils

A Phase II Soil Investigation was conducted to characterize the potential presence of COCs in on-site soils that may be acting as ongoing sources of groundwater impacts. The investigation was prompted by the detection of elevated groundwater concentrations of COCs in fence line groundwater monitoring wells MW-12D with the highest detected concentration at the well of 8,400 ug/l 1,2 DCA and MW-13D with the highest detected concentration at the well of 12,000 ug/l 1,2 DCA (Figure 3). These concentrations are not attributable to AOC-1. Because these impacts were not attributable to any documented releases, the soil investigation focused on subsurface structures, such as piping, where potential impacts could have gone unobserved. In addition, soil adjacent to the drum storage area was investigated based on its proximity to the area of greatest COC impact to groundwater. As presented in the *Phase II RFI Report Addendum*, Table 1, 1,2-DCA was detected at .42 milligram per kilogram (mg/kg) in vadose zone soil samples at SB-2 (3.5 to 4 feet below ground surface (bgs)), which is located approximately 100 feet from the southeast edge of the adhesives building. Methylene chloride was detected at 2 mg/kg in SB-6 (at 6 to 7 feet bgs) and SB-8 (at 7.5 to 8 feet bgs) at .58 mg/kg, which are located approximately 15 feet from the southwest and northwest edges of the adhesives building, respectively.

During activities completed as part of the Phase III RFI, soil samples were collected from the newly installed monitoring well locations on-site (MW-5D, MW-6D, MW-24, MW-25, and MW-26) and off-site (MW-27) (see Figure 3). As presented in attached Table 1, none of the vadose zone soil samples contained COCs.

Soil samples were collected from one on-site location (MW-25I) and two off-site locations (MW-14I and MW-15I) (see Figure 3) during the Phase IV RFI. As presented in attached Table 1, none of the vadose zone soil samples contained COCs above their respective Soil Screening Levels (SSLs).

Vadose zone soil impacts are limited to three locations, all approximately 100 feet from the adhesives Facility building and at depths ranging from 3.5 feet bgs to 8 feet bgs. The low-level concentrations in this area do not represent potential sources of impact to groundwater and are also below the respective residential and industrial Screening Levels (SLs) for direct exposure scenario. Thus the soils do not present and unacceptable risk to human health and the environment.

D. Facility Wide Groundwater

The *Phase I RCRA Facility Investigation Report* describes the results of the EPA-approved RCRA Facility Investigation Work Plan, dated August 17, 1994. The Phase I RFI focused on assessing the impact of past activities at AOC-1 and investigating both quality and flow for overburden groundwater downgradient of AOC-1. Results of the Phase I RFI identified the following COCs for groundwater: 1,2-DCA, carbon disulfide, chloroform, MCL, trichloroethene (TCE), tetrachloroethene (PCE), 1,1,2-trichloroethane (TCA), and vinyl chloride. The highest concentrations of these COCs were detected

adjacent to the former AOC-1 source area. 1,2-DCA was detected at concentrations ranging from 29 to 52,000 ug/l. MCL was detected at concentrations ranging from 100 to 26,000 ug/l.

In 1998, the Facility conducted Phase II RFI activities to define the nature and the horizontal and vertical extents of groundwater contaminant migration beneath and adjacent to the Facility. Groundwater quality was evaluated through the collection of overburden groundwater samples from twenty-four (24) permanent monitoring wells (See Figure 3) and thirty-six (36) temporary Geoprobe® points. Samples of groundwater showed 1,2-DCA and MCL as the principal COCs in groundwater. The other COCs concentrations are several orders of magnitude lower than 1,2-DCA and MCL. The highest concentration of 1,2-DCA was found at MW-3 at 44,000 ug/l. MCL was detected in MW-4 at 490 ug/l. The groundwater sampling results from the deeper locations did not find the boundaries of the 1,2-DCA plume. The results of the Phase II RFI suggested a need for further delineation of COCs, particularly 1,2-DCA in deeper overburden groundwater at off-site locations, downgradient and to the east (*Phase II RCRA Facility Investigation Report*, BBL 1998).

A bedrock groundwater investigation which comprised the Phase II RFI Addendum involved the installation of three shallow bedrock boreholes, packer testing, installation of bedrock monitoring wells, and groundwater sampling (See Figure 3). Based on the findings of the bedrock groundwater investigation, the *Phase II RCRA Facility Investigation Addendum* concluded that the focus of the Facility stabilization and remediation should remain on the deep overburden beneath and to the east of the Facility. The concentrations of COCs were highest in the overburden and decreased in the bedrock the deeper the samples were taken. The highest concentration of 1,2-DCA in the bedrock was 5,600 ug/l and was located under the former UST area (MWBR-1).

A Phase III RFI was completed during 2006 to provide additional data to evaluate the possibility of a separate source of COCs in deeper overburden groundwater near monitoring well MW-13 and at the off-site area north of the Facility near monitoring well MW-18 to address the conclusions reached from the Phase II RFI (See Figure 3). The Phase III investigation activities included the installation of six on-site monitoring wells and one off-site monitoring well; collection of soil samples from the new monitoring well locations; and collection of groundwater samples from all newly installed wells and select existing monitoring wells. The investigation results confirmed that impacts of COCs in on-site soils are limited. None of the sample results had COCs above SLs or SSLs. Groundwater analytical results also confirmed that 1,2-DCA is the principal COC in deeper overburden groundwater both on and off-site. The highest concentration of 1,2-DCA was from an off-site well MW-27 at 12,000 ug/l. The second highest concentration of 1,2-DCA was an on-site well MW-6 which had a concentration of 9,000 ug/l of 1,2-DCA.

A Phase IV RFI report was completed during 2007 to fill in gaps in the understanding of contaminated groundwater in the intermediate and deeper portions of the groundwater (lower Talbot) and if pumping from one zone would affect the other. The Phase IV investigation revealed that the overburden (soils over bedrock) has three layers. The shallow overburden formation (upper Talbot) is made of 10 to 20 feet deep of silty soil. The intermediate overburden consists of sand and gravel. The deeper layer also consists of sand and gravel. The intermediate and deeper zones are separated by a silty clay layer. The Phase IV RFI report concluded that 1,2-DCA is the predominant COC in groundwater at the Facility. The highest COC concentrations were observed within the intermediate overburden groundwater beneath the northern portion of the adhesives Facility building and neighboring properties northeast and downgradient from the Facility boundary. In October 2008, EPA approved the Final Phase IV RFI Report which triggered the commencement of the development of a Corrective Measures Study (CMS) Work Plan.

On May 3, 2011, the Facility also conducted groundwater sampling to characterize current conditions at the Facility. The sampling focused on contamination in three water bearing zones: Shallow Overburden, Intermediate Overburden and Deep Overburden. The Shallow Overburden is 33.76 to 43.58 feet above mean sea level. The Intermediate Overburden is 22.29 to 40.73 feet above mean sea level. Deep Overburden is -.86 to 37.02 feet above mean sea level.

Shallow Overburden Zone

The sampling results did not detect any COCs in the Shallow Overburden zone above the Maximum Contaminant Levels or Risk Based Concentrations (RBCs).

Intermediate and Deep Overburden Zones

The following COCs were detected above Maximum Contaminant Levels and RBCs in intermediate and deep overburden zone groundwater in May 2011:

- 1,1,2-Trichloroethane was detected above the Maximum Contaminant Level of 5 ug/L in one of the 30 samples at a concentration of 5.4 ug/L (MW-25).
- 1,2-Dichloroethane was detected above the Maximum Contaminant Level of 5 ug/L in 19 of the 30 samples collected at concentrations ranging from 42 ug/L (MW-14I) to 1,300,000 ug/L (DDC Well).
- Methylene chloride was detected above the Maximum Contaminant Level of 5 ug/L in seven of the 30 samples collected at concentrations ranging from 8 ug/L (MW-23) to 2,900,000 ug/L (DDC Well).
- Trichloroethene was detected above the Maximum Contaminant Level of 5 ug/L in eight of the 30 samples collected at concentration ranging from 5.9 ug/L (MW-16) to 160 ug/L (MW-26).
- Vinyl chloride was detected above the Maximum Contaminant Level of 2 ug/L in three of the 30 samples collected at concentrations ranging from 4.9 ug/L (MW-26) to 8.3 ug/L (MW-16).

Bedrock Zone

The following COCs were detected above Maximum Contaminant Levels and Risk Based Criteria (RBCs) in samples collected from the bedrock zone groundwater in May 2011:

- 1,2-Dichloroethane was detected above the Maximum Contaminant Level of 5 ug/L in two of the four samples collected at concentrations ranging from 350 ug/L (MWBR-4) to 1,400 ug/L (MWBR-1).
- Methylene chloride was detected above the Maximum Contaminant Level of 5 ug/L in two of the four samples collected at concentrations ranging from 12 ug/L (MWBR-4) to 17 ug/L (MWBR-3).
- Trichloroethene was detected above the Maximum Contaminant Level of 5 ug/L in one of the four samples collected at a concentration of 91 ug/L (MWBR-1).
- Vinyl chloride was detected above the Maximum Contaminant Level of 2 ug/L in one of the four samples collected at a concentration of 310 ug/L (MWBR-4).

The predominant COC in groundwater at the Facility is 1,2-DCA. Other compounds detected above screening criteria in groundwater are: chloroethane, chloroform, MCL, TCE, and vinyl chloride. Impacts to groundwater appear on-site beneath operational areas and extend off the Facility to the northeast. Only limited groundwater contamination has been identified in shallow groundwater at the Facility; the majority of COCs have been detected at greater depths. The contamination has migrated from the source to the intermediate overburden. The highest detected concentrations of COCs observed in the most recent round of groundwater sampling are present east of the Adhesive Production Building. There are no known historic or current uses of chloroethane, chloroform, TCE, and vinyl chloride.

D. Interim Measures

Concurrent with the implementation of the RFI, Cytec has completed a preliminary evaluation of applicable remedial alternatives and pilot studies to contain chlorinated volatile organic carbon impacts in Facility groundwater and implemented various interim remedial measures of their own accord. Cytec used previous studies to assist with the location and type of appropriate remedial systems for groundwater. An evaluation of the geology, hydrology and extend of the contamination was conducted.

In the fall of 1996, Cytec selected the Direct Drive Convection (DDC) groundwater remediation system for a pilot study. The DDC system is an in-situ groundwater remediation system involving in-well air sparging. Details of this system and its installation and results are presented in the Phase II RCRA RFI Report which is included in the AR. Following the completion of an initial 12-week pilot program, Cytec extended the operation of the DDC system for continued remediation of the lower Talbot groundwater beneath the southeast end of the Facility. From the completion of the 12-week pilot program and through its continuous operation from December 1996 through July 1999, an estimated (based on analysis of exhaust air samples) 70 pounds of 1,2-DCA

and 118 pounds of methylene chloride had been removed from the lower Talbot by the DDC system.

The results of the in-situ air-stripping system pilot test indicated that such systems do not provide sufficient treatment and stabilization of groundwater impacts. Therefore, in 2001, a remediation system involving only groundwater extraction was implemented at the Facility.

In 2001, Cytec installed a groundwater extraction system at MW-10D which is screened within a high-permeability zone. MW-10D is located in the area of the overburden aquifer with the highest contamination. MW-10D is also located at the down gradient edge of the Facility and serves to control migration of impacted groundwater off-site. Groundwater is extracted from monitoring well MW-10D and pumped approximately 2,500 feet from the Facility to the City of Havre de Grace Publicly Operated Treatment Works (POTW) through a dedicated, double-contained pipeline. As a requirement of Cytec's National Pollutant Discharge Elimination System (NPDES) permit to discharge industrial wastewater from the Facility to the City POTW, Cytec must provide monthly compliance reports to the POTW that describe recorded daily flow data, measured weekly pH data, and annual effluent sample results. Effluent limitations required by Cytec's NPDES permit include maintaining a pH greater than 5.0 standard units and discharging no more than 15,000 gallons per day or 500 gallons in any 30-minute period. The groundwater extraction system is designed to operate at an average flow rate of 7.5 gallons per minute to the POTW, and typically pumps approximately 250,000 gallons of extracted groundwater to the POTW each month.

IV. PROPOSED REMEDY.

EPA's proposed remedy for the Facility consists of the following components:

A. Soils

Based on the available information, there are currently no unacceptable risks to human health and the environment via the soil for the present and anticipated use of the Facility property (industrial use). However, residual soil contamination remains at the Facility, thus the proposed remedy for soils is institutional controls (See Section C) to restrict the Facility to non-residential use, to protect the integrity of the groundwater portion of the remedy (See Section B below) thereby enhancing the overall protectiveness of the remedy.

B. Groundwater - Long Term Monitoring

The proposed remedy for the groundwater is the combination of groundwater use restrictions (See Section C below), enhancement of the existing groundwater extraction system through installation of two additional on-site wells, and the implementation of a groundwater monitoring program until groundwater clean-up standards are met. Based on the data collected during the RFI and a subsequent round of groundwater sampling that the Facility conducted on May 3, 2011 to characterize current conditions at the

Facility, the groundwater plume appears to be stable (not migrating), and concentrations of constituents of concern are either stable or declining over time. Groundwater is not used on the Facility for drinking water, and there are no known downgradient users of off-site groundwater between the Facility boundary and the Chesapeake Bay.

C. Institutional Controls

Institutional Controls (ICs) are generally non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. Under EPA's proposed remedy, some concentrations of contaminants remain in the soils and groundwater at the Facility above levels appropriate for residential uses. As a result, the proposed remedy will require the Facility to implement ICs in order to restrict use of Facility property and groundwater to prevent human exposure to contaminants while such contaminants remain in place.

These ICs may be implemented through State of Maryland Well Construction Regulations, Article Title 9, Subtitle 13, Annotated Code of Maryland; Code of Maryland Regulation (COMAR), Title 26, Subtitle 4, Chapter 4, COMAR 26.04.04 (Regulations) local ordinances and local zoning requirements, and through site-specific institutional controls required by Permit Conditions. The ICs will restrict land use to non-residential uses and prohibit the use of groundwater as a source of potable water

The ICs shall contain the following land and groundwater use restrictions:

1. Groundwater at the Facility shall not be used for any purpose other than industrial usage and to conduct the operation, maintenance, and monitoring activities required by EPA unless it is demonstrated to EPA that, (1) such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected final remedy and (2) EPA provides prior written approval for such use;
2. No new wells shall be installed on Facility property unless EPA provides prior written approval to install such wells;
3. The Facility property shall not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy, and EPA provides prior written approval for such use;

D. Reporting

EPA's proposed remedy includes the following reporting requirements:

Compliance with and effectiveness of institutional controls and engineering controls implemented at the Facility shall be evaluated every three (3) years. The evaluation will

include, but not be limited to, a review of groundwater data from the Facility, review of groundwater and land uses within 1 mile of the Facility property boundary, and zoning maps or planning documents that may affect future land use in the impacted area. A report documenting the findings of the evaluation shall be provided to EPA.

V. EVALUATION OF EPA'S PROPOSED REMEDY DECISION

This section provides a description of the criteria EPA uses to evaluate proposed remedies consistent with EPA guidance under the CA Program. The criteria are applied in two phases. In the first phase, EPA evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed decision alternative provides the best relative combination of attributes.

A. Threshold Criteria

- 1. Protect Human Health and the Environment** - EPA's proposed remedy protects human health and the environment by eliminating, reducing, and/or controlling unacceptable risk through the remediation of contaminated groundwater and the implementation of institutional controls to prevent potential current and future human exposure. The existing State of Maryland well construction regulations will aid in minimizing exposure to contaminated groundwater by restricting the installation of wells in contaminated water sources. The proposed ICs restrict the use of and exposure to contaminated groundwater at the Facility. With respect to future uses, the proposed remedy requires groundwater use restrictions to minimize the potential for human exposure to contamination and protect the integrity of the remedy.
- 2. Achieve Media Cleanup Objectives** - The media cleanup objectives of the proposed remedy are as follows: groundwater should meet EPA's Maximum Contaminant Levels and SLs as applicable for contaminants of concern and soil should remain below SSLs and SLs for industrial use. EPA's proposed remedies meet the appropriate cleanup objectives based on assumptions regarding current and reasonably anticipated land and groundwater use(s). Soils at the Facility already meet media cleanup objectives for industrial use and the anticipated future land use for the Facility is industrial. Operation of an expanded on-site groundwater extraction system would maintain hydraulic control of impacted groundwater. Groundwater cleanup goals will be achieved more quickly with enhancement of this system, as additional groundwater would be extracted from throughout the 1,2-DCA plume area.
- 3. Remediating the Source of Releases** - In its RCRA remedy decisions, EPA seeks to eliminate and/or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Operation of an expanded groundwater extraction system

would continue to maintain hydraulic control and provide additional remediation of the impacted groundwater, as contaminated groundwater would be recovered directly from the 1,2-DCA source area. At SMWUs and AOCs where contamination is left in place, i.e., sources which are undergoing remediation, institution controls will be implemented to restrict residential use.

B. Balancing/Evaluation Criteria

1. **Long-Term Effectiveness** - EPA's proposed decision requires the compliance with and maintenance of land use and groundwater use restrictions referred to herein as Institutional Controls (ICs) at the Facility. The proposed ICs which EPA anticipates will be implemented through a permit will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining in groundwater and protecting the integrity of the remedy. EPA has also proposed long-term effectiveness will also be assured by the operation and maintenance of an expanded groundwater extraction system. The system will allow for hydraulic control of impacted groundwater.
2. **Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents** - Operation of an expanded groundwater extraction system will reduce the volume of COCs migrating from the 1,2-DCA source areas, at the Facility, and neighboring areas thereby reducing mobility. The reduction in the mobility of COCs will reduce the potential risk associated with migration of groundwater impacts (reducing the toxicity) by maintaining hydraulic control. The system will remove COCs from the subsurface through groundwater extraction (reducing the volume), and the extracted water will be discharged to the POTW, where it will receive treatment, destroying the COCs (also reducing the toxicity).
3. **Short-Term Effectiveness** - Installation of equipment to expand the groundwater stabilization system will pose minimal impact to nearby receptors. Minor truck traffic to deliver supplies and conduct drilling will be required; however, all work will be completed on the Facility. In addition, EPA anticipates that the land use and groundwater use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments.
4. **Implementability** - The two components of EPA's proposed remedy are readily implementable. EPA proposes to implement the institutional controls through a permit and the existing groundwater stabilization will be upgraded with readily available equipment to handle the proposed increase in flow and provide more efficient system operation.

5. **Cost** - The estimated capital cost of the remedy is \$237,000. The additional Operation and Maintenance cost (inclusive of long-term monitoring) for this alternative ranges from \$76,000 to \$106,000. The total present worth cost estimate for this alternative is approximately \$1,255,000.
6. **Community Acceptance** - EPA will evaluate the community's acceptance of the proposed remedy during the public comment period and will be described in the Final Decision and Response to Comments.
7. **State/Support Agency Acceptance** - EPA will evaluate the State of Maryland's acceptance of the proposed remedy based on comments received from MDE during the public comment period and will describe the State's position in the Final Decision and Response to Comments.

VI. PUBLIC PARTICIPATION

Written comments on this SB and the Draft Corrective Action Permit will be accepted during the forty-five (45) day public comment period. A final permit decision regarding the remedy proposed for the Facility will not be made until the public comment period has closed and all comments have been evaluated and addressed. Based on new information or comments from the public, EPA may modify the proposed remedy and/or the Draft Corrective Action Permit.

Following review of the comments, EPA will respond to comments and finalize the remedy and the Permit. The proposed remedy in this SB is a preliminary determination and should another remedy be selected based upon public comment or new information, any significant differences from this SB could cause a reopening of the public comment period and the reissuance of a revised SB.

The public comment period will last forty-five (45) calendar days from the date of the public notice in order to provide an opportunity for public comment and involvement during the evaluation of this proposal. This SB provides only a summary description of the investigations and activities performed at this Facility. EPA encourages the public to review the documents in the AR to gain a more comprehensive understanding of the activities that have been conducted at the Facility and the proposals under consideration. The AR contains all information considered by EPA in reaching this proposed decision. It is available for public review during normal business hours at:

U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103-2029
Contact: Leonard Hotham
Remedial Project Manager
Office of Remediation (3LC20)
Phone: (215) 814-5778
Email: hotham.leonard@epa.gov

Written comments must be postmarked within forty-five (45) calendar days of the public notice. EPA will address all comments received during the public comment period in the Final Permit and Response to Comments.

If requested, during the forty-five (45) day public comment period, EPA will hold a public hearing to accept oral comments on the proposed remedies and the alternatives. Comments made at the hearing will be transcribed, and a copy of the transcript will be added to the AR. Any interested person may request a public hearing or additional information by mailing or e-mailing to the above address.

Date: 9/18/12



Abraham Ferdas, Director
Land and Chemicals Division
US EPA, Region III

Attachments

Figure 1: Location Map

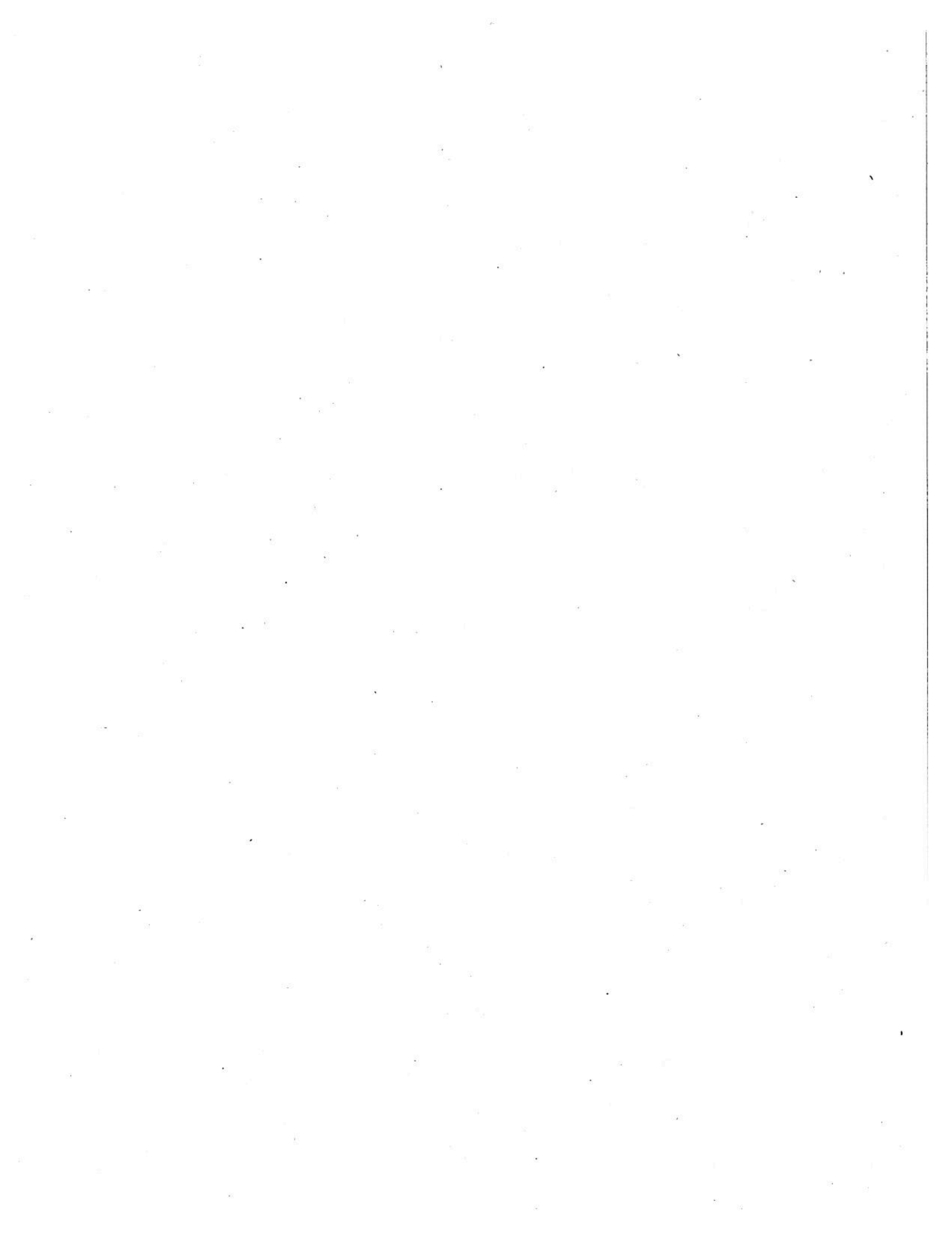
Figure 2: SWMUs and AOC location map

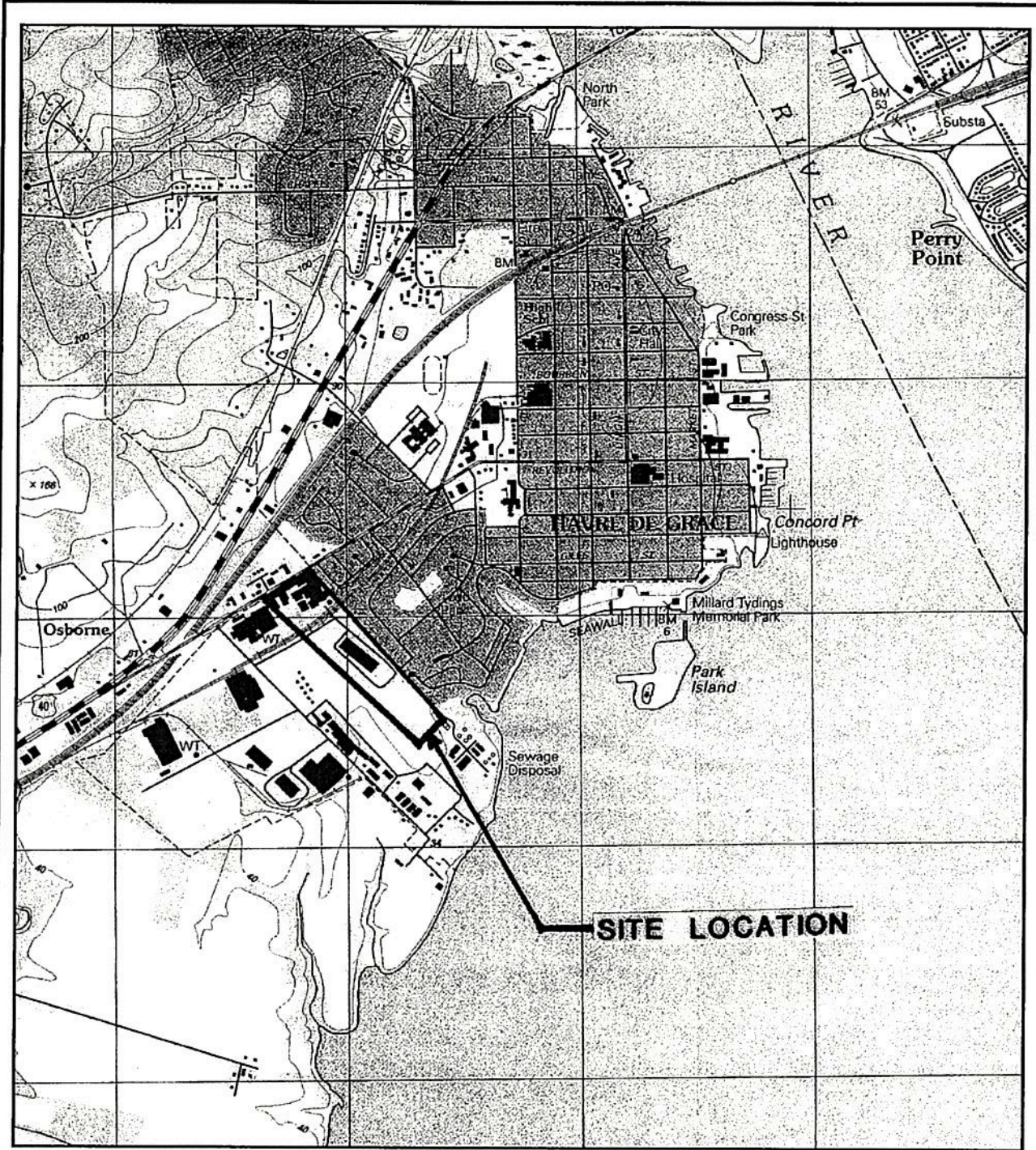
Figure 3: Monitoring Wells Location Map

Table 1: Summary of Site-Wide Soil Results

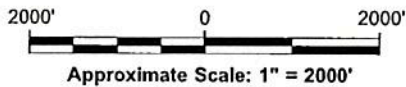
Administrative Record Index

Figure 1





REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., HAVRE DE GRACE, MD, 1992.



Area Location

CYTEC ENGINEERED MATERIALS INC.
 HAVRE DE GRACE, MARYLAND
CORRECTIVE MEASURES STUDY REPORT

SITE LOCATION MAP



FIGURE
1

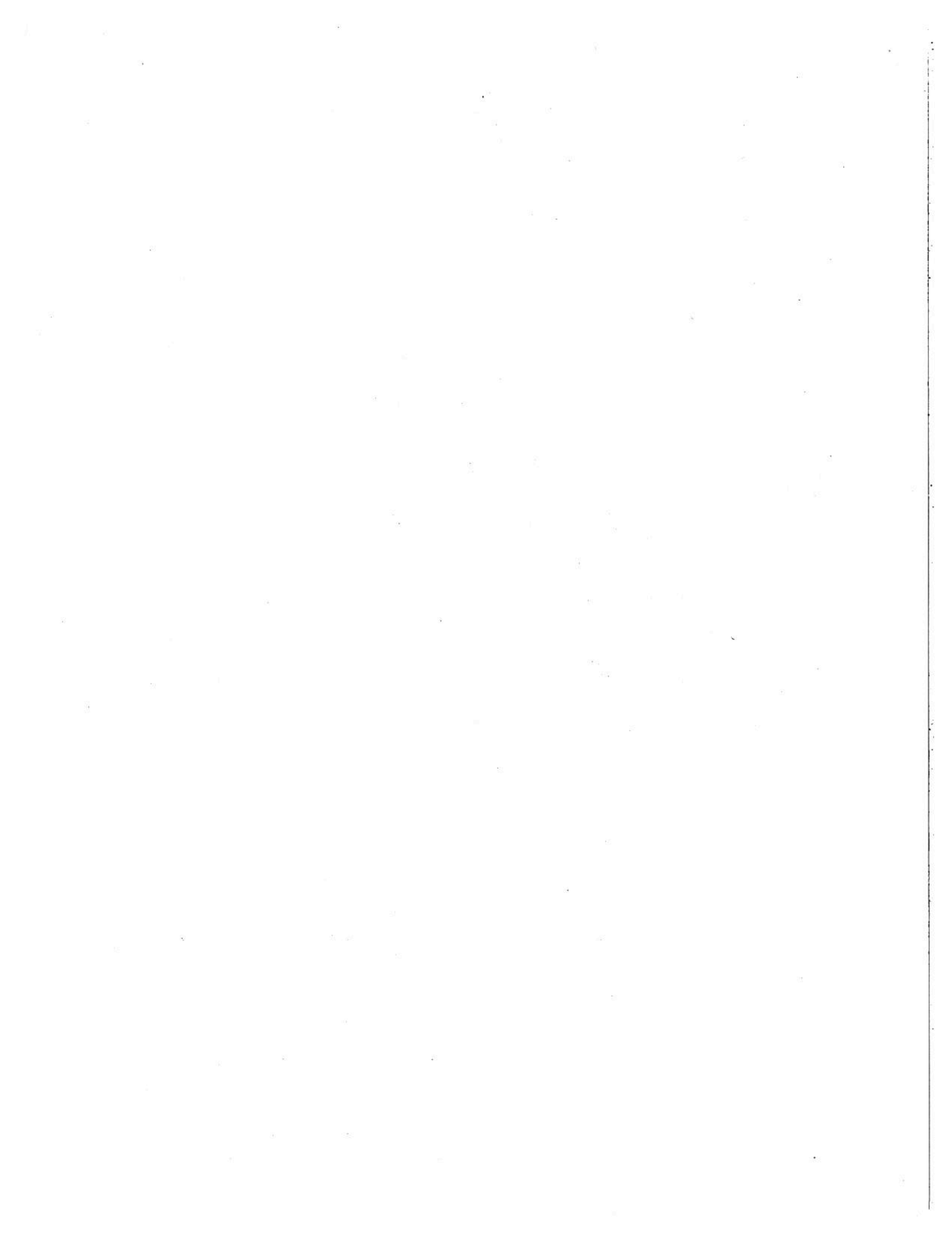
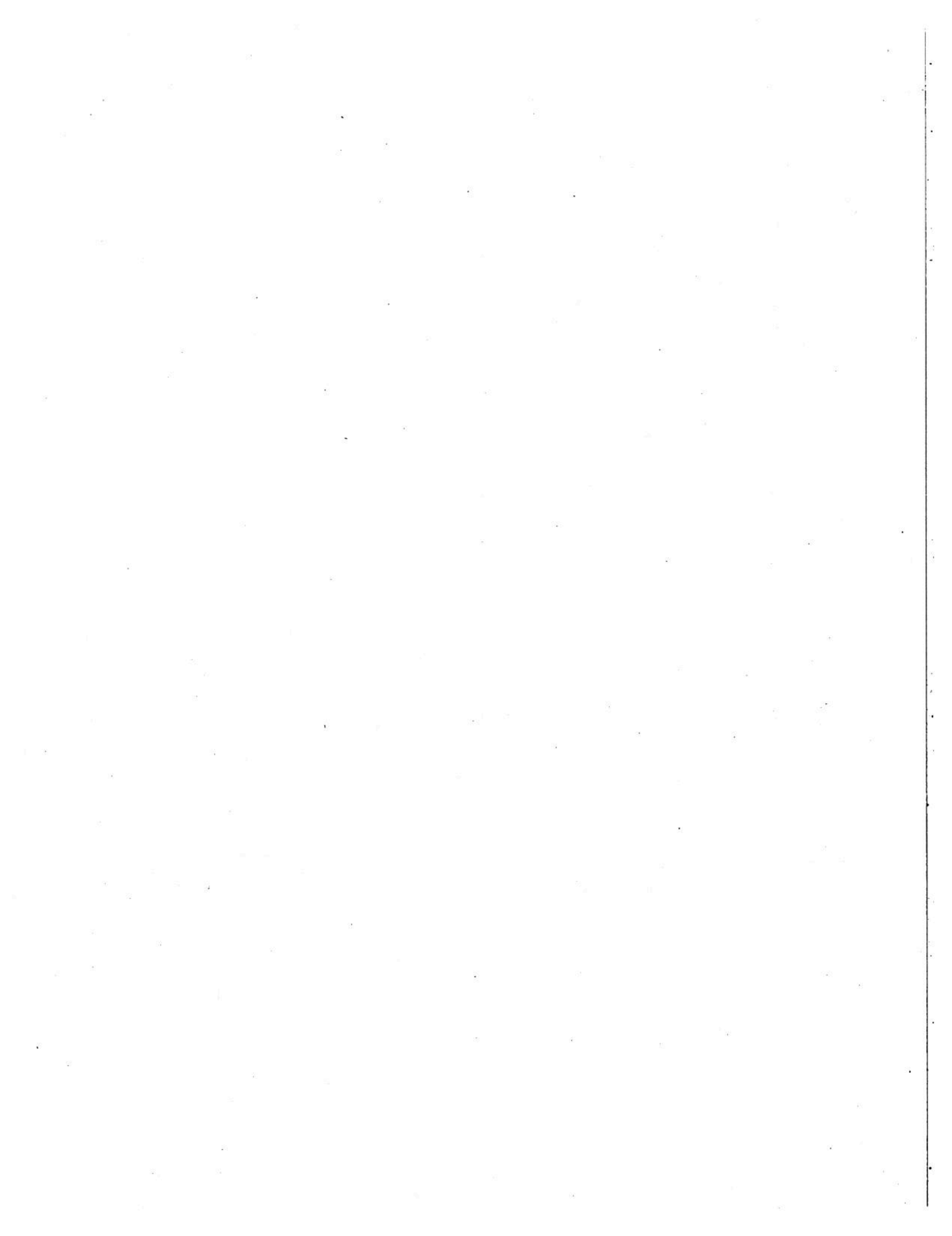
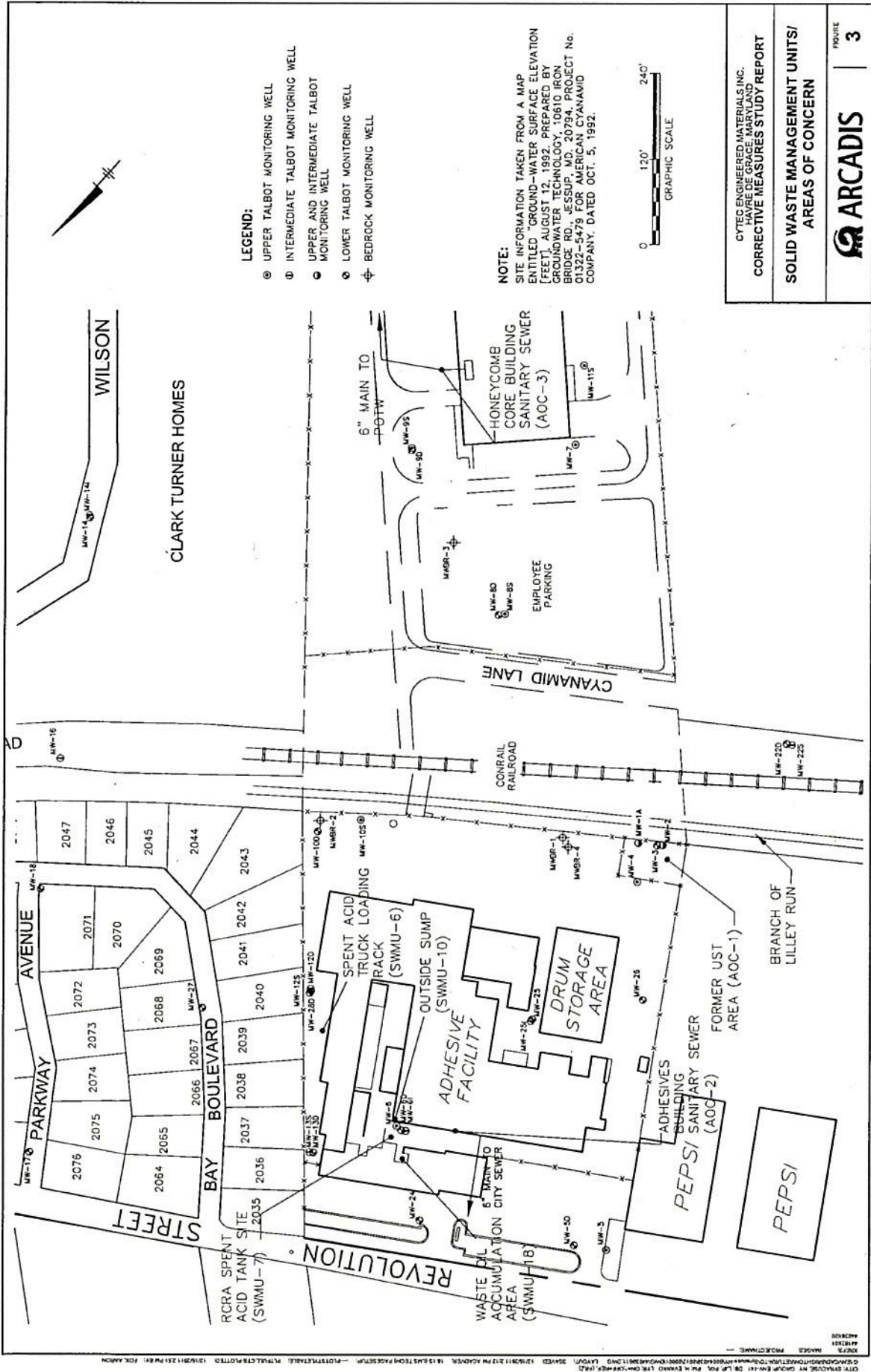


Figure 2





LEGEND:

- UPPER TALBOT MONITORING WELL
- ◐ INTERMEDIATE TALBOT MONITORING WELL
- ◑ UPPER AND INTERMEDIATE TALBOT MONITORING WELL
- LOWER TALBOT MONITORING WELL
- ⊕ BEDROCK MONITORING WELL

NOTE:

SITE INFORMATION TAKEN FROM A MAP ENTITLED "GROUND-WATER SURFACE ELEVATION [FEET], AUGUST 12, 1992. PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794, PROJECT NO. 01322-5479 FOR AMERICAN CYANAMID COMPANY, DATED OCT. 5, 1992.



CYTEC ENGINEERED MATERIALS INC.
 HAVRE DE GRACE, MARYLAND
 CORRECTIVE MEASURES STUDY REPORT

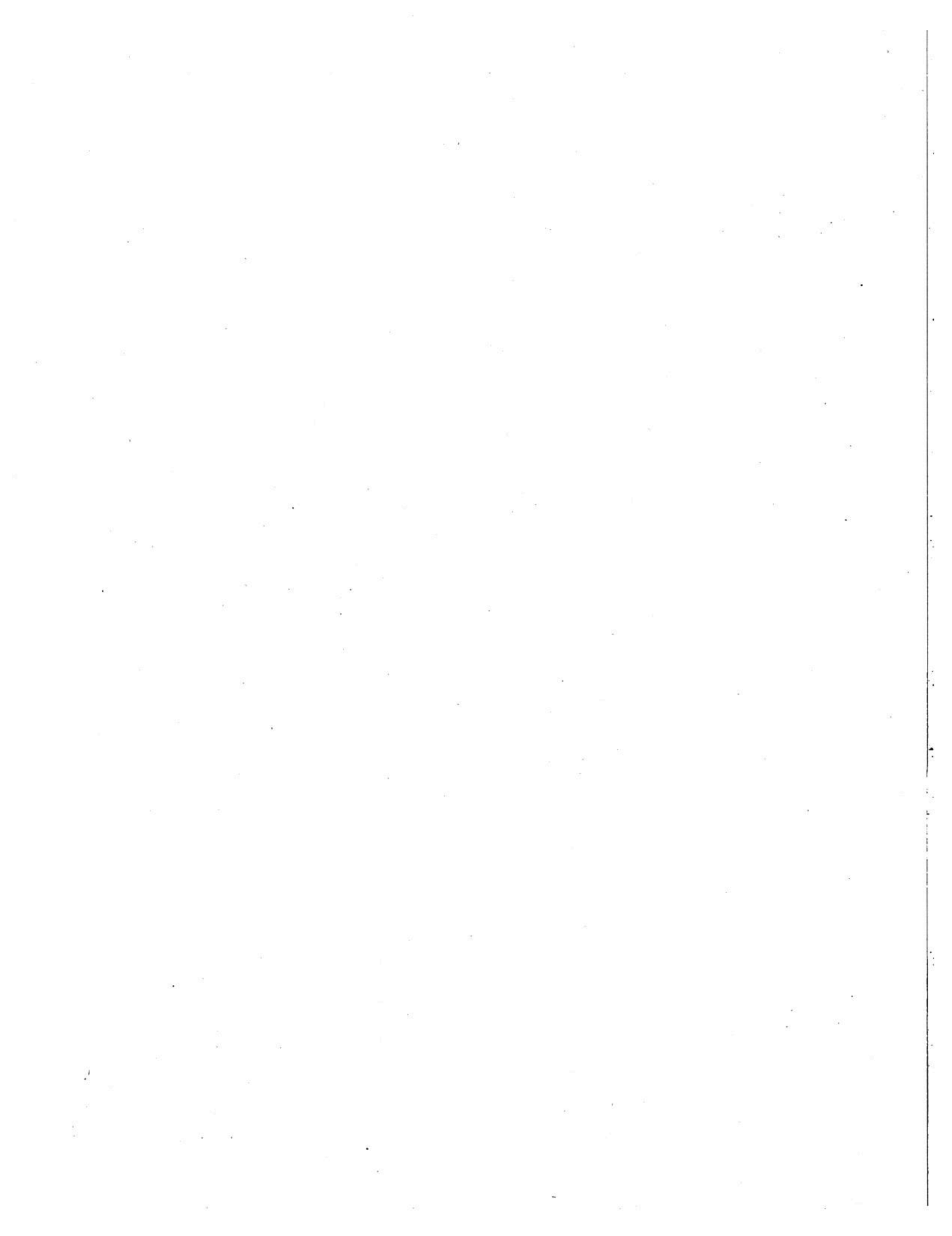
**SOLID WASTE MANAGEMENT UNITS/
 AREAS OF CONCERN**

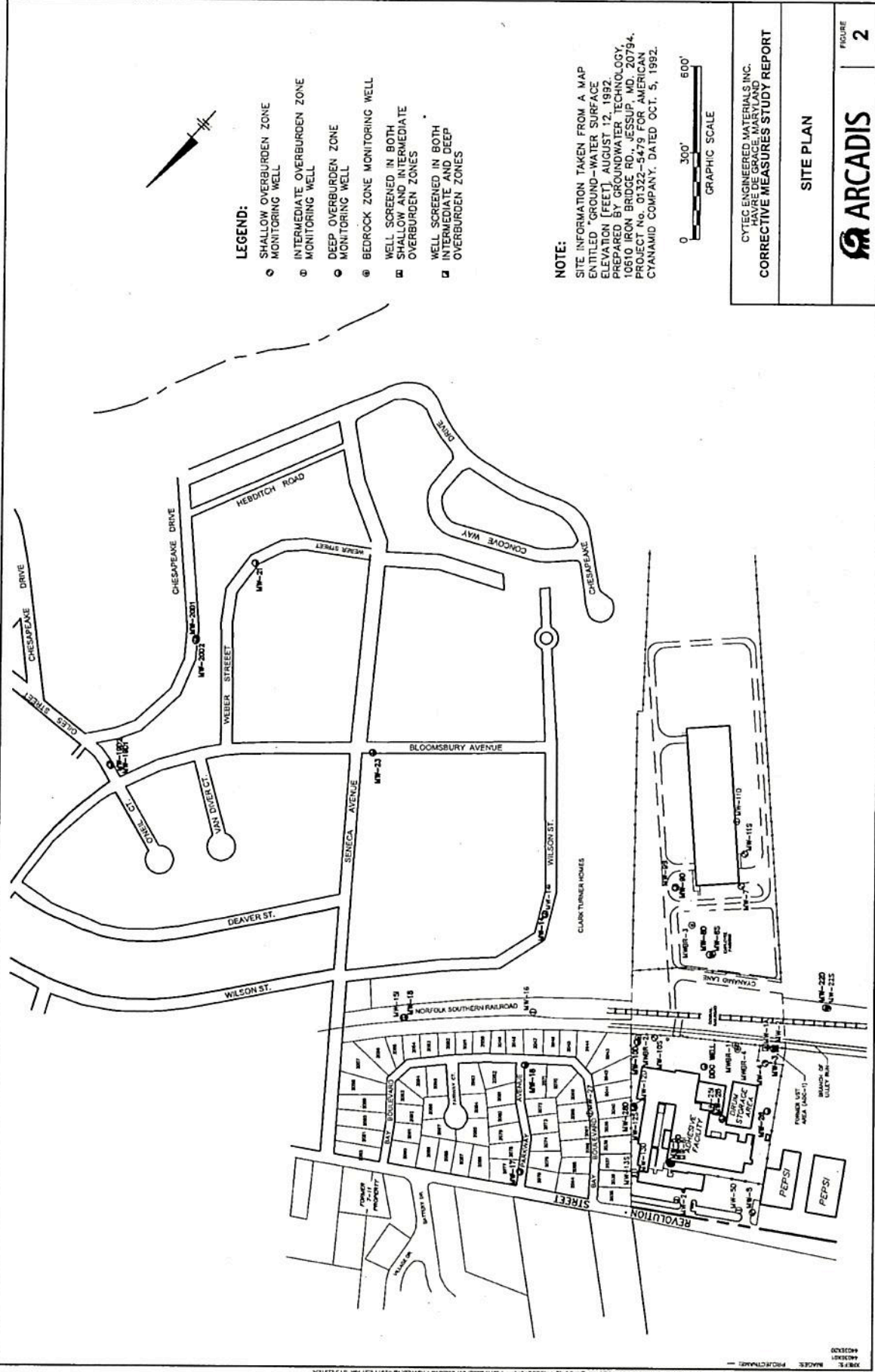
ARCADIS | FIGURE 3

DATE: 10/12/92
 DRAWN BY: J. B. BROWN
 CHECKED BY: J. B. BROWN
 PROJECT: CORRECTIVE MEASURES STUDY REPORT
 SHEET: 3 OF 3
 SCALE: AS SHOWN
 TITLE: SOLID WASTE MANAGEMENT UNITS / AREAS OF CONCERN
 CLIENT: CYTEC ENGINEERED MATERIALS INC.
 LOCATION: HAVRE DE GRACE, MARYLAND



Figure 3





LEGEND:

- SHALLOW OVERBURDEN ZONE MONITORING WELL
- ⊙ INTERMEDIATE OVERBURDEN ZONE MONITORING WELL
- DEEP OVERBURDEN ZONE MONITORING WELL
- ⊗ BEDROCK ZONE MONITORING WELL
- WELL SCREENED IN BOTH SHALLOW AND INTERMEDIATE OVERBURDEN ZONES
- ▣ WELL SCREENED IN BOTH INTERMEDIATE AND DEEP OVERBURDEN ZONES

NOTE:

SITE INFORMATION TAKEN FROM A MAP ENTITLED "GROUND-WATER SURFACE ELEVATION (FEET) AUGUST 12, 1982. PREPARED BY GROUNDWATER TECHNOLOGY, 10610 IRON BRIDGE RD., JESSUP, MD. 20794. PROJECT No. 01322-5479 FOR AMERICAN CYANAMID COMPANY. DATED OCT. 5, 1982.



CYTEC ENGINEERED MATERIALS INC.
 HAYRE DE GRACE, MARYLAND
CORRECTIVE MEASURES STUDY REPORT

SITE PLAN



FIGURE **2**

CPT SYNOPSIS BY DYNACOR (EMERY) DEL L. POSNAN, A. SOELING, P. LITTE, R. G. WROENKAS, T. L. SWANSON, T. E. K. BASTROCK, LAYER ONE, OFFSHORE, PHO.
 483201
 483202
 483203
 483204
 483205
 483206
 483207
 483208
 483209
 483210
 483211
 483212
 483213
 483214
 483215
 483216
 483217
 483218
 483219
 483220
 483221
 483222
 483223
 483224
 483225
 483226
 483227
 483228
 483229
 483230
 483231
 483232
 483233
 483234
 483235
 483236
 483237
 483238
 483239
 483240
 483241
 483242
 483243
 483244
 483245
 483246
 483247
 483248
 483249
 483250
 483251
 483252
 483253
 483254
 483255
 483256
 483257
 483258
 483259
 483260
 483261
 483262
 483263
 483264
 483265
 483266
 483267
 483268
 483269
 483270
 483271
 483272
 483273
 483274
 483275
 483276
 483277
 483278
 483279
 483280
 483281
 483282
 483283
 483284
 483285
 483286
 483287
 483288
 483289
 483290
 483291
 483292
 483293
 483294
 483295
 483296
 483297
 483298
 483299
 483300
 483301
 483302
 483303
 483304
 483305
 483306
 483307
 483308
 483309
 483310
 483311
 483312
 483313
 483314
 483315
 483316
 483317
 483318
 483319
 483320
 483321
 483322
 483323
 483324
 483325
 483326
 483327
 483328
 483329
 483330
 483331
 483332
 483333
 483334
 483335
 483336
 483337
 483338
 483339
 483340
 483341
 483342
 483343
 483344
 483345
 483346
 483347
 483348
 483349
 483350
 483351
 483352
 483353
 483354
 483355
 483356
 483357
 483358
 483359
 483360
 483361
 483362
 483363
 483364
 483365
 483366
 483367
 483368
 483369
 483370
 483371
 483372
 483373
 483374
 483375
 483376
 483377
 483378
 483379
 483380
 483381
 483382
 483383
 483384
 483385
 483386
 483387
 483388
 483389
 483390
 483391
 483392
 483393
 483394
 483395
 483396
 483397
 483398
 483399
 483400
 483401
 483402
 483403
 483404
 483405
 483406
 483407
 483408
 483409
 483410
 483411
 483412
 483413
 483414
 483415
 483416
 483417
 483418
 483419
 483420
 483421
 483422
 483423
 483424
 483425
 483426
 483427
 483428
 483429
 483430
 483431
 483432
 483433
 483434
 483435
 483436
 483437
 483438
 483439
 483440
 483441
 483442
 483443
 483444
 483445
 483446
 483447
 483448
 483449
 483450
 483451
 483452
 483453
 483454
 483455
 483456
 483457
 483458
 483459
 483460
 483461
 483462
 483463
 483464
 483465
 483466
 483467
 483468
 483469
 483470
 483471
 483472
 483473
 483474
 483475
 483476
 483477
 483478
 483479
 483480
 483481
 483482
 483483
 483484
 483485
 483486
 483487
 483488
 483489
 483490
 483491
 483492
 483493
 483494
 483495
 483496
 483497
 483498
 483499
 483500
 483501
 483502
 483503
 483504
 483505
 483506
 483507
 483508
 483509
 483510
 483511
 483512
 483513
 483514
 483515
 483516
 483517
 483518
 483519
 483520
 483521
 483522
 483523
 483524
 483525
 483526
 483527
 483528
 483529
 483530
 483531
 483532
 483533
 483534
 483535
 483536
 483537
 483538
 483539
 483540
 483541
 483542
 483543
 483544
 483545
 483546
 483547
 483548
 483549
 483550
 483551
 483552
 483553
 483554
 483555
 483556
 483557
 483558
 483559
 483560
 483561
 483562
 483563
 483564
 483565
 483566
 483567
 483568
 483569
 483570
 483571
 483572
 483573
 483574
 483575
 483576
 483577
 483578
 483579
 483580
 483581
 483582
 483583
 483584
 483585
 483586
 483587
 483588
 483589
 483590
 483591
 483592
 483593
 483594
 483595
 483596
 483597
 483598
 483599
 483600
 483601
 483602
 483603
 483604
 483605
 483606
 483607
 483608
 483609
 483610
 483611
 483612
 483613
 483614
 483615
 483616
 483617
 483618
 483619
 483620
 483621
 483622
 483623
 483624
 483625
 483626
 483627
 483628
 483629
 483630
 483631
 483632
 483633
 483634
 483635
 483636
 483637
 483638
 483639
 483640
 483641
 483642
 483643
 483644
 483645
 483646
 483647
 483648
 483649
 483650
 483651
 483652
 483653
 483654
 483655
 483656
 483657
 483658
 483659
 483660
 483661
 483662
 483663
 483664
 483665
 483666
 483667
 483668
 483669
 483670
 483671
 483672
 483673
 483674
 483675
 483676
 483677
 483678
 483679
 483680
 483681
 483682
 483683
 483684
 483685
 483686
 483687
 483688
 483689
 483690
 483691
 483692
 483693
 483694
 483695
 483696
 483697
 483698
 483699
 483700
 483701
 483702
 483703
 483704
 483705
 483706
 483707
 483708
 483709
 483710
 483711
 483712
 483713
 483714
 483715
 483716
 483717
 483718
 483719
 483720
 483721
 483722
 483723
 483724
 483725
 483726
 483727
 483728
 483729
 483730
 483731
 483732
 483733
 483734
 483735
 483736
 483737
 483738
 483739
 483740
 483741
 483742
 483743
 483744
 483745
 483746
 483747
 483748
 483749
 483750
 483751
 483752
 483753
 483754
 483755
 483756
 483757
 483758
 483759
 483760
 483761
 483762
 483763
 483764
 483765
 483766
 483767
 483768
 483769
 483770
 483771
 483772
 483773
 483774
 483775
 483776
 483777
 483778
 483779
 483780
 483781
 483782
 483783
 483784
 483785
 483786
 483787
 483788
 483789
 483790
 483791
 483792
 483793
 483794
 483795
 483796
 483797
 483798
 483799
 483800
 483801
 483802
 483803
 483804
 483805
 483806
 483807
 483808
 483809
 483810
 483811
 483812
 483813
 483814
 483815
 483816
 483817
 483818
 483819
 483820
 483821
 483822
 483823
 483824
 483825
 483826
 483827
 483828
 483829
 483830
 483831
 483832
 483833
 483834
 483835
 483836
 483837
 483838
 483839
 483840
 483841
 483842
 483843
 483844
 483845
 483846
 483847
 483848
 483849
 483850
 483851
 483852
 483853
 483854
 483855
 483856
 483857
 483858
 483859
 483860
 483861
 483862
 483863
 483864
 483865
 483866
 483867
 483868
 483869
 483870
 483871
 483872
 483873
 483874
 483875
 483876
 483877
 483878
 483879
 483880
 483881
 483882
 483883
 483884
 483885
 483886
 483887
 483888
 483889
 483890
 483891
 483892
 483893
 483894
 483895
 483896
 483897
 483898
 483899
 483900
 483901
 483902
 483903
 483904
 483905
 483906
 483907
 483908
 483909
 483910
 483911
 483912
 483913
 483914
 483915
 483916
 483917
 483918
 483919
 483920
 483921
 483922
 483923
 483924
 483925
 483926
 483927
 483928
 483929
 483930
 483931
 483932
 483933
 483934
 483935
 483936
 483937
 483938
 483939
 483940
 483941
 483942
 483943
 483944
 483945
 483946
 483947
 483948
 483949
 483950
 483951
 483952
 483953
 483954
 483955
 483956
 483957
 483958
 483959
 483960
 483961
 483962
 483963
 483964
 483965
 483966
 483967
 483968
 483969
 483970
 483971
 483972
 483973
 483974
 483975
 483976
 483977
 483978
 483979
 483980
 483981
 483982
 483983
 483984
 483985
 483986
 483987
 483988
 483989
 483990
 483991
 483992
 483993
 483994
 483995
 483996
 483997
 483998
 483999
 484000



Table 1

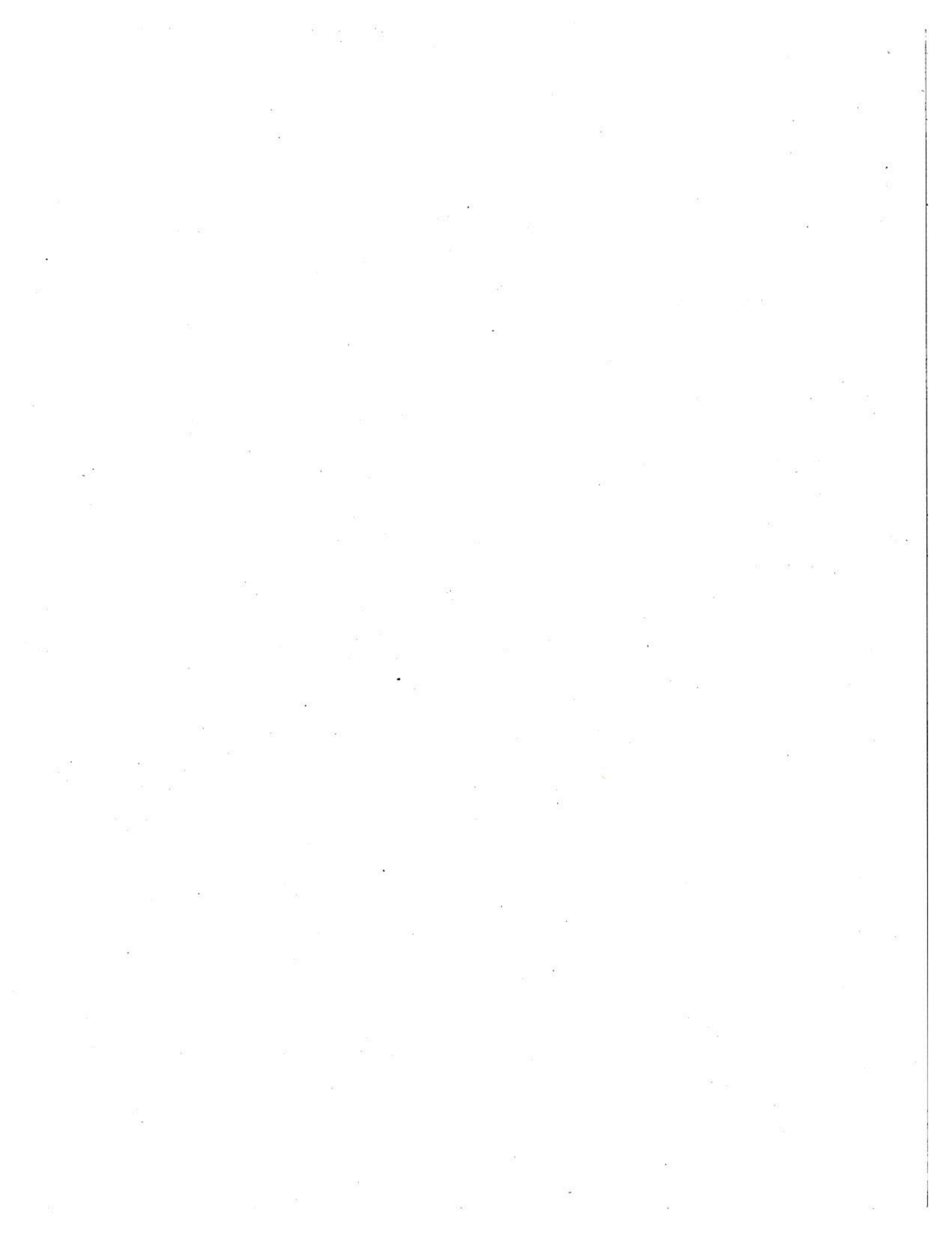


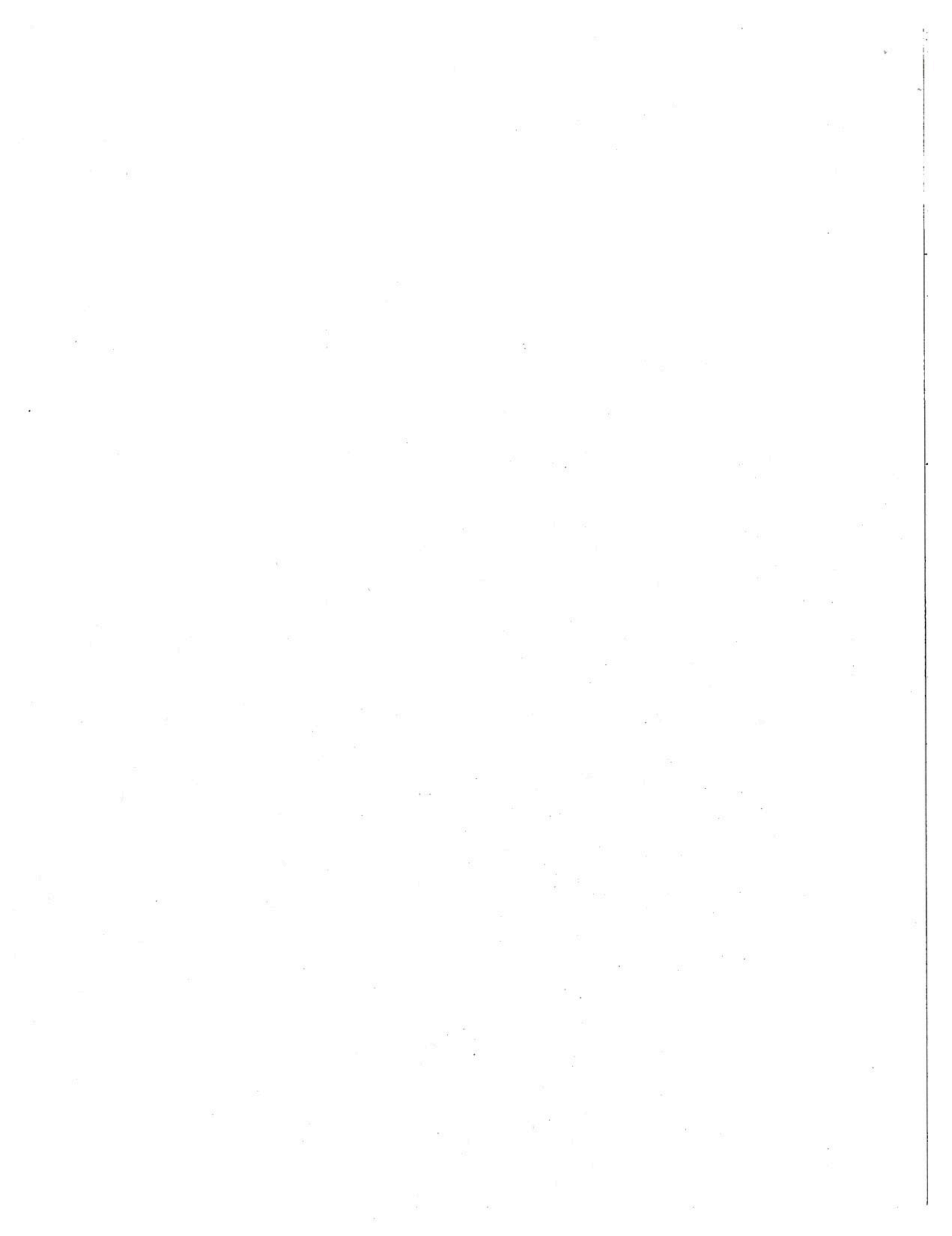
Table 2
 Summary of Vadose Zone Soil Sampling Results - Detected Constituents
 Cytec Industries Inc.
 Havre de Grace, Maryland
 Corrective Measures Study Report

		Phase II RFI Addendum									
Location ID	SSIL	SB1(00)	SB2(05)	SB3(05)	SB4(00)	SB5(05)	SB6(05)	SB7(00)	SB8(05)	SB9(05)	SB10(00)
Sample Depth (ft)	Units	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)	0.64(5.98)
Detected Volatile Organics											
1,1,2-Trichloroethane	0.000082	0.47 U	600 U	0.76 U	0.51 U	0.52 U	0.52 U	0.49 U	0.49 U	0.50 U	0.47 U
1,2-Dichloroethane	0.000044	0.47 U	0.47 U	0.76 U	0.51 U	0.52 U	0.52 U	0.49 U	0.49 U	0.50 U	0.47 U
Acetone	4.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromofluorobenzene	--	NA	5.2	7.5	4.9	5.3	4.8	4.4	4.4	4.4	4.4
Chloroform	0.000055	0.47 U	0.60 U	0.76 U	0.51 U	0.52 U	0.49 U	0.49 U	0.50 U	0.47 U	0.47 U
Methylene Chloride	0.0012	0.47 U	0.60 U	0.76 U	0.51 U	0.52 U	0.49 U	0.49 U	0.50 U	0.47 U	0.47 U
Trichloroethene	0.00061	0.47 U	0.60 U	0.76 U	0.51 U	0.52 U	0.49 U	0.49 U	0.50 U	0.47 U	0.47 U

		Phase III RFI									
Location ID	SSIL	MW15D	MW15E	MW16D	MW16E	MW17D	MW17E	MW18D	MW18E	MW19D	MW19E
Sample Depth (ft)	Units	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)	0.12(1.1)
Detected Volatile Organics											
1,1,2-Trichloroethane	0.000082	0.0027 U	0.0028 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U
1,2-Dichloroethane	0.000044	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U
Acetone	4.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromofluorobenzene	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.000055	0.0045 U	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0048 U
Methylene Chloride	0.0012	0.0027 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U	0.0027 U	0.0028 U
Trichloroethene	0.00061	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U

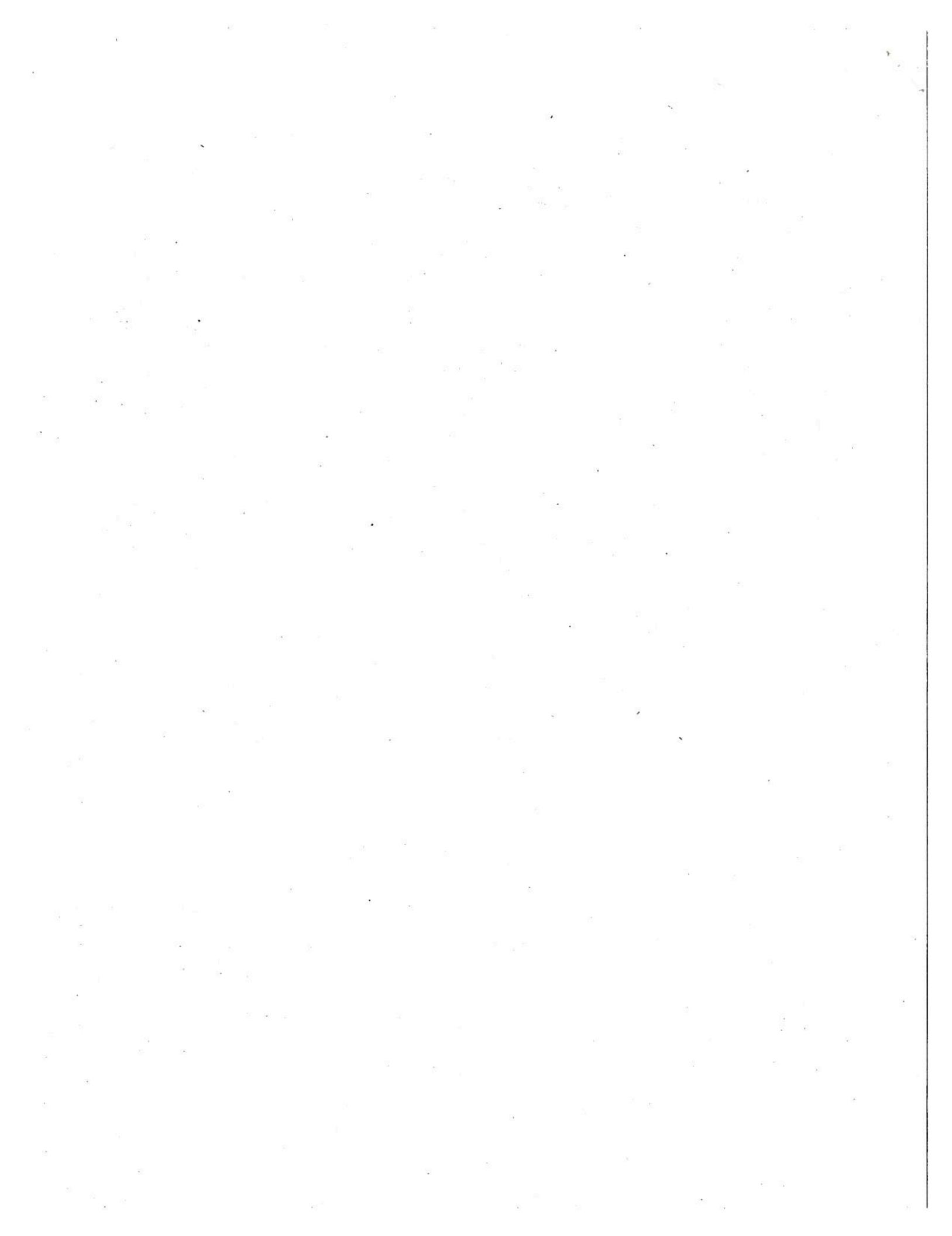
		Phase IV RFI	
Location ID	SSIL	MW14E	MW15E
Sample Depth (ft)	Units	0.12(1.1)	0.12(1.1)
Detected Volatile Organics			
1,1,2-Trichloroethane	0.000082	0.0028 U	0.0032 U
1,2-Dichloroethane	0.000044	0.0019 U	0.0022 U
Acetone	4.4	NA	NA
Bromofluorobenzene	--	NA	NA
Chloroform	0.000055	0.0047 U	0.0054 U
Methylene Chloride	0.0012	0.0012 U	0.0032 U
Trichloroethene	0.00061	0.0010 U	0.0011 U

- Notes:**
 SSL - USEPA Region 3 Risk-Based Soil Screening Levels (SSLs) for Protection of Groundwater (September 2008).
 Bolded and shaded results indicate exceedance of the SSL.
 U - Compound not detected above reported sample quantitation limit.
 J - The compound was identified; however, the associated numerical value is an estimated concentration.
 1. VI - Verification Sampling Report, Area of Concern No. 1 Underground Storage Tank Area (Groundwater Technology, Inc., 1992).
 2. Phase II RFI Addendum - Phase II RCRA Facility Investigation Report (RFI) Addendum (BBL, 1999).
 3. Phase III RFI - Phase III RCRA Facility Investigation Report (RFI) Addendum (BBL, 1999).
 4. Phase IV RFI - Phase IV RFI (ARCADIS, 2008).



Administrative Record for Cytec

1. Final Phase II RCRA Facility Assessment (RFA) (1990-1991)
2. Corrective Action Permit (MDD 003 075 942) (September 27, 1991)
3. Verification Sampling Report Area of Concern No. I Underground Storage Tank Area, Groundwater Technology, Inc. [GTI] (October 5, 1992)
4. The Verification Sampling Report, SWMUs No. 6, 7, 10, 18, and AOCs No. 2 and 3 (GTI, October 6, 1992)
5. The Phase I RCRA Facility Investigation Report (BBL, 1995)
6. Phase II RCRA Facility Investigation Report, (BBL, April 1998, Revised January 1999)
7. Phase II RCRA Facility Investigation Addendum (BBL, September 1999)
8. Phase III RFI Report, ARCADIS-BBL, (2007)
9. Final Phase IV RCRA RFI Report (October 22, 2008)
10. Corrective Measures Study (January 2012)



ATTACHMENT B
PERFORMANCE MONITORING PLAN

Cytec Industries Inc.

**Performance Monitoring Plan –
Havre de Grace**

USEPA ID #MDD 003 075 942

March 2012



Krista Mastrocola

Krista Mastrocola
Civil Specialist

Purvee Shah

Purvee Shah
Staff Chemical Specialist

Tina N. Armstrong

Tina N. Armstrong, PhD
Project Manager

Gary Wroblewski

Gary Wroblewski
Principal Engineer, Vice President

**Performance Monitoring Plan –
Havre de Grace**

USEPA ID #MDD 003 075 942

Prepared for:
Cytec Industries Inc.

Prepared by:
ARCADIS U.S., Inc.
1114 Benfield Boulevard
Suite A
Millersville
Maryland 21108
Tel 410 987 0032
Fax 410 987 4392

Our Ref.:
B0044039.0013

Date:
March 2012

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

1. Introduction	1
1.1 Site Background	1
1.2 Hydrogeologic Setting	1
1.3 Constituents of Concern	2
2. Performance Monitoring Objectives	3
2.1 Performance Goals	4
2.1.1 Numerical CAO Goals for Groundwater	4
2.2 Points of Compliance	5
3. Expanded Groundwater Stabilization System	5
3.1 Description of Treatment System	5
3.2 Groundwater Permit Requirements	6
4. Performance Monitoring Program	7
4.1 Groundwater Monitoring Well Network	8
4.2 Hydraulic Data Collection and Evaluation	8
4.2.1 Groundwater Level Measurements	8
4.3 Water Quality Data Collection and Evaluation	9
4.3.1 Sample Collection	9
4.3.2 Water Quality Monitoring and Analyses	9
4.3.2.1 Field Water Quality Parameters	9
4.3.2.2 Laboratory Analytical Parameters	9
4.4 Groundwater Monitoring Frequency	11
4.5 Groundwater Monitoring Duration	12
5. Reporting	12
5.1 Monthly Compliance Reports	12
5.2 Groundwater Performance Monitoring Reports	13

6. Contingency Plan and Response Actions	13
7. References	14

Tables

Table 1	Well Screen Intervals and PDB Deployment Depths
Table 2	Proposed Analyses and Sampling Frequency for Performance Monitoring Program

Figures

Figure 1	Site Location Map
Figure 2	Site Plan

Appendices

A	Industrial Use Wastewater Discharge Permit, No. CYT-2015-101
---	--

1. Introduction

On behalf of Cytec Industries Inc. (Cytec), ARCADIS is submitting this Performance Monitoring Plan (PMP) for Cytec's Engineered Materials Facility located at 1300 Revolution Street in Havre de Grace, Maryland (Site). This PMP has been prepared as requested in the February 13, 2012 United States Environmental Protection Agency (USEPA) conditional approval letter for the Corrective Measures Study Report (ARCADIS 2012). This PMP is required for final approval of the proposed remedy, which includes enhancement of the existing groundwater stabilization system. This PMP identifies the long-term monitoring required to evaluate the progress and performance of the final remedy versus the corrective action objectives (CAOs).

1.1 Site Background

The Site occupies an approximately 27-acre parcel located at 1300 Revolution Street in Havre de Grace, Maryland (Figure 1). The facility began operations in 1962, manufacturing structural adhesives for the aerospace industry. A portion of the facility was used to manufacture honeycomb core used in conjunction with adhesives to form fuselage and wing components of aircraft between 1981 and 1992. Currently at this facility, Cytec produces specialty bonding adhesives, including modified epoxy adhesives, adhesive primers, high temperature resin systems, and thermoplastic materials (e.g., graphite, declar) for the aerospace industry.

As illustrated on the Site plan (Figure 2), the Site is bisected by the Norfolk Southern Railroad and an intermittent stream (a branch of Lilley Run). The adhesive production facility is located on the western portion of the property. The facility warehouse occupies the eastern half of the property. Figure 2 also shows the areas surrounding the Site, which include a mixture of light industrial and high-density residential properties. No structures are currently present on the area to the east of the facility (Clark Turner Homes). The local publicly owned treatment works (POTW) is located immediately southeast of the Site property boundary (Figure 1).

1.2 Hydrogeologic Setting

Two primary water-bearing formations occur at the Site: the overburden and the weathered upper portion of the bedrock. The overburden has been further subdivided into the following three water-bearing units that have been classified based on results from the Phase IV Remedial Facility Investigation (RFI) and further review of historical Site data (ARCADIS 2012):

- Shallow Overburden Zone
- Intermediate Overburden Zone
- Deep Overburden Zone

Groundwater flows generally from west to east across the Site and surrounding area in all three zones. The similarity in groundwater flow patterns is most apparent in the intermediate and deep zones. This observation suggests that the sand and gravel layers within these two water-bearing units likely share some degree of vertical hydraulic connection. This is supported by the subsurface lithology interpretations, which show that at some locations, such as the MW-25 cluster (Figure 2), the layer of finer-grained material separating the sand and gravel layers of the intermediate and deep overburden zones coarsens to a silty sand and is likely fairly permeable. Similarly, at other locations such as MW-27 (Figure 2), this confining layer disappears completely and the intermediate and deep overburden zones merge.

The results of short-duration pumping tests conducted during the Phase IV RFI indicate that the intermediate and deep overburden zones are not hydraulically connected in the vicinity of the MW-6 well cluster beneath the adhesives building and at the MW-14 and MW-15 well clusters off Site to the east (Figure 2). The pumping test results are inconclusive regarding the presence of a hydraulic connection between these two units in the vicinity of the MW-25 well cluster beneath the central portion of the adhesives building, where the lithology suggests that such a connection may exist.

1.3 Constituents of Concern

The predominant constituent of concern (COC) in groundwater at the Site is 1,2-dichloroethane (1,2-DCA). The following additional compounds have also been detected above screening criteria in groundwater:

- Carbon disulfide
- Chloroform
- Methylene chloride
- Trichloroethylene (TCE)
- Tetrachloroethylene (PCE)
- 1,1,2-Trichloroethane (TCA)
- Vinyl chloride



Performance Monitoring Plan

Cytec Industries Inc.
Havre de Grace

According to facility personnel, 1,2-DCA was used as a raw material and for cleaning from approximately 1967 through July 1990. A 6,000-gallon underground storage tank (UST) stored the 1,2-DCA. The UST was located in the tank farm at the southern corner of the adhesives building and was removed in December 1991.

Data suggests that groundwater impacted with 1,2-DCA from a potential source apparently associated with the adhesives building has migrated downward and into the sand and gravel layers of both the intermediate and deep overburden zones beneath this portion of the Site. The impacted groundwater apparently then continued to migrate downgradient through these two zones and off Site to the northeast, where the deep zone is observed to merge with the intermediate zone in the vicinity of MW-27. From this point, the impacted groundwater then continued to migrate through the intermediate overburden zone further off Site to the northeast, spreading into the deep overburden zone in the vicinity of monitoring wells MW-14 and MW-18, where the two flow zones separate again.

Observations of COCs in the shallow water-bearing zone have been largely confined to monitoring wells located in the vicinity of the previously identified source related to the former UST farm at the south corner of the adhesives building yard (MW-1A, MW-2, and MW-4) and MW-6, located adjacent to the adhesives building. To the east of the facility, in the direction of groundwater flow in the shallow overburden water-bearing zone, no COCs have been detected in shallow overburden wells MW-7, MW-8S, MW-9S, and MW-11S since 1998. Along the north-northeast facility boundary, COCs have never been detected in shallow overburden well MW-12S, and methylene chloride was detected only once at 5.0 micrograms per liter ($\mu\text{g/L}$) in MW-10S in 1998. Along the western perimeter of the Site, methylene chloride ($3.5 \mu\text{g/L}$) and carbon disulfide ($4.6 \mu\text{g/L}$) were detected in shallow overburden well MW-5 in 1999, but were not detected at this well previously and have not been detected at that location since.

2. Performance Monitoring Objectives

The intended future use of the Site is industrial in nature. Based on this and the current understanding of impacts, the following qualitative CAOs for the Site have been developed [as part of the Corrective Measures Study (CMS)]:

- Manage future Site use such that residential land use within the property boundary is restricted;

- Minimize and/or manage exposure to groundwater containing COC concentrations greater than media cleanup goals at an appropriate point of exposure;
- Maintain no unacceptable population-level ecological risks; and,
- Restore groundwater to media cleanup standards to return groundwater to maximum beneficial use at an appropriate point of compliance.

These goals will be met via the implementation of engineering and institutional controls. The engineering controls – in this case the expansion of the groundwater stabilization system – will require performance monitoring to confirm CAOs are met.

2.1 Performance Goals

In support of the Site CAOs, performance goals have been established for groundwater. These goals are numerical groundwater cleanup levels to be achieved at specific points of compliance (POCs) and cleanup timeframes.

2.1.1 Numerical CAO Goals for Groundwater

The numerical CAO goals for Site COCs are summarized in the following table.

COC	Numerical CAO Goals for Groundwater (µg/L)
1,2-dicholorethane	5
carbon disulfide	1000*
chloroform	0.19*
methylene chloride	5
trichloroethene	5
tetrachloroethene	5
1,1,2-trichloroethane	5
vinyl chloride	2

*Maximum contaminant level (MCL) not available. Risk-based screening levels for tap water shown.

USEPA MCLs (USEPA 2008), when available, were used as the basis for the



groundwater cleanup level. For COCs where MCLs have not been established, USEPA Region 3 Regional Screening Levels for tap water (USEPA 2008) were used.

Groundwater samples collected as part of this PMP will be analyzed for the Site COCs, and results will be evaluated against the numerical CAO goals to support the effectiveness of the corrective measures.

2.2 Points of Compliance

POCs, based on returning groundwater to its maximum beneficial use, have been selected throughout the area of COC-impacted groundwater. These POCs represent a “throughout-the-plume/unit boundary” approach. The POCs include at least two locations intended to provide information regarding the downgradient extent of COCs and at least four locations intended to provide information regarding migration of groundwater across the property boundary. Groundwater will be evaluated on a periodic basis in accordance with Section 4.4 – *Groundwater Monitoring Frequency*, and POCs will be modified as the nature of the COC impacts change (i.e., the most downgradient POC location will move closer to the Site boundary as COCs naturally attenuate and the groundwater plume contracts). POCs will be established for each water-bearing unit where COC impacts in groundwater are observed above the numerical CAO goals.

3. Expanded Groundwater Stabilization System

3.1 Description of Treatment System

Groundwater stabilization is currently being used to reduce the migration of groundwater across the property boundary. To improve the effectiveness of the stabilization system, the current system, which includes one extraction well (MW-10D), will be enhanced and expanded.

The expanded system will include three extraction wells – MW-10D, one new extraction well installed near MW-12D, and one new extraction well installed near the monitoring wells where the highest 1,2-DCA concentrations have been observed on Site (Figure 2).

Groundwater will be extracted from each of the three recovery wells at specific recovery rates, which will be adjusted as necessary to optimize the control of groundwater while maintaining compliance with the Site’s discharge permit.

The extracted groundwater is to be combined at a manifold at MW-10 and discharged to the City Wastewater Treatment Plant (POTW) under an industrial user wastewater discharge permit which would likely be a modified version of the existing permit.

To maximize the effectiveness of the corrective measure, system operation and maintenance will be performed, as needed. Periodic groundwater monitoring will also be conducted at select Site monitoring wells to confirm the radius of influence and optimize the performance of the expanded groundwater stabilization system, as discussed in Section 4. The system will continue to operate until COC trends reach CAOs or Site conditions require a reevaluation of the corrective measure (e.g., asymptotic groundwater concentrations are reached prior to achieving numerical CAOs).

3.2 Groundwater Permit Requirements

Discharge from the existing groundwater stabilization system is sent to the POTW and is regulated under an existing permit. Requirements of the permit include the following:

- 1) Flow shall not exceed a flow greater than 500 gallons in any 30-minute period.
- 2) Flow shall be continuously measured and recorded with the total gallons each day reported in the periodic compliance report.
- 3) All parameters should meet the effluent limitations specified in the table below.



Performance Monitoring Plan

Cytec Industries Inc.
Havre de Grace

Parameter	Effluent Limitations Daily Maximum	Unit	Sampling Frequency
flow	15,000	gpd	daily
pH	>5	S.U.	weekly
Arsenic (Total)	4.06	mg/L	1/year
Cadmium (Total)	0.09	mg/L	1/year
Chromium (Total)	0.39	mg/L	1/year
Copper (Total)	0.08	mg/L	1/year
Cyanide (Total)	0.18	mg/L	1/year
Lead (Total)	0.65	mg/L	1/year
Nickel (Total)	0.78	mg/L	1/year
Zinc (Total)	9.30	mg/L	1/year
Silver (Total)	0.05	mg/L	1/year
Mercury (Total)	0.0003	mg/L	1/year

Gpd = gallons per day
S.U. = standard unit
mg/L = milligrams per liter

Consistent with the permit, a flow meter will be used to record flow. Cytec will describe any flow meter operational problems in monthly compliance reports submitted to the POTW. Total metals will be collected via a grab sample on an annual basis. Copies of the chains of custody for samples collected will be maintained at the Site for a minimum period of 3 years and will be subject to inspection and copying. A copy of the permit is included as Appendix A.

4. Performance Monitoring Program

The performance monitoring program is designed to achieve the following objectives:

- monitor the extent of COC-impacted groundwater
- evaluate the effectiveness of the groundwater stabilization system
- establish a dataset to evaluate natural attenuation of COCs

Three conditions will be evaluated through groundwater sampling. COCs will be sampled to monitor the extent and concentration of groundwater impacts through time. Natural attenuation parameters will be sampled to evaluate the natural attenuation of COCs over time. Finally, groundwater elevation data will be collected from the Site

wells to establish hydraulic capture zones created by the groundwater stabilization system.

4.1 Groundwater Monitoring Well Network

Monitoring wells for inclusion in the PMP groundwater monitoring well network were selected based on their location relative to the impacted groundwater, as well as the formations in which the wells are screened. The PMP groundwater monitoring well network includes 21 wells screened in three water-bearing zones identified at the Site.

- **Shallow Overburden Zone:** MW-4, MW-6, MW-8S, MW-12S
- **Intermediate Overburden Zone:** MW-6I, MW-12D, MW-13D, MW-14I, MW-16, MW-25I, MW-27
- **Intermediate and Overburden Zone:** MW-28D
- **Deep Overburden Zone:** MW-3, MW-8D, MW-14, MW-15, MW-18, MW-19D1, MW-20D1, MW-22D, MW-23

The locations of these wells are shown on Figure 2. These wells will be sampled for performance monitoring as outlined in Section 4.3.2.1 – *Field Water Quality Parameters*.

4.2 Hydraulic Data Collection and Evaluation

4.2.1 Groundwater Level Measurements

A synoptic round of groundwater elevations will be measured prior to any groundwater purging and sampling activities. The depth to water (DTW) for wells will be measured using an electronic water-level indicator. The DTW from the top of the well casing will be recorded in the field logbook. DTW measurements will then be subtracted from the surveyed top of casing (Table 1) to calculate the groundwater elevations in each monitoring well. Groundwater flow contours will be developed for each water-bearing zone to evaluate the hydraulic influence of the extraction wells on the natural Site groundwater flow.

4.3 Water Quality Data Collection and Evaluation

4.3.1 Sample Collection

Monitoring wells will be sampled using passive diffusion bag (PDB) samplers. Table 1 provides well screen intervals and PDB sampler deployment depths for the monitoring wells listed in Section 4.1. PDB deployment depths are selected to intersect the elevations of the most permeable zones present within the screened interval of each well (e.g., sand and gravel layers) and are consistent with previously used PDB deployment depths. If no higher-permeability material is reported within the screened interval of an overburden zone well, the PDB will be deployed at the approximate mid-screen depth of the well or slightly below mid-screen, depending on groundwater elevations. PDB samplers will be deployed at two separate depth intervals in deep overburden zone monitoring wells MW-18 and MW-23. These two wells are screened across a layer of lower-permeability silt and clay. By deploying the PDB samplers at two intervals, the difference in dissolved-phase chlorinated volatile organic compound (VOC) concentrations above and below the silt and clay layer can be assessed.

4.3.2 Water Quality Monitoring and Analyses

4.3.2.1 *Field Water Quality Parameters*

A summary of the analytical program for the 21 wells included in the performance monitoring groundwater sampling plan is presented in Table 2. To assess the geochemical conditions of groundwater at the Site, field water quality parameters (including temperature, pH, dissolved oxygen, specific conductivity, and oxygen-reduction potential) will be collected during each groundwater sampling event and on an annual basis at the extraction wells. These parameters will be measured using a flow-through cell and a submersible water quality meter with tubing lowered to the depth at which the PDB is placed. Parameter readings will be recorded when the parameters have stabilized.

4.3.2.2 *Laboratory Analytical Parameters*

Two sets of parameters will be collected during the performance monitoring – COC evaluation parameters and natural attenuation parameters.

COC Evaluation Parameters

All groundwater samples collected (Table 2) will be analyzed for 10 VOCs using USEPA Method 624.

- carbon disulfide
- chloroform
- chloroethane*
- 1,2-DCA
- cis-1,2-dichloroethylene* (cis-1,2-DCE)
- methylene chloride
- PCE
- TCA
- TCE
- vinyl chloride

Eight of these compounds are the Site-specific COCs outlined in Section 2.1.1. The two additional compounds, chloroethane and cis-1,2-DCE, are anaerobic degradation daughter products of 1,2-DCA and TCE, respectively.

The ratio of parent to daughter products can be evaluated to assess whether degradation of COCs is successfully occurring and mass is naturally attenuating, or breaking down into innocuous end-products, over time.

Monitored Natural Attenuation (MNA) Evaluation Parameters

While a decline in Site-specific COC concentration trends indicate that natural attenuation is occurring, additional biogeochemical parameters can demonstrate that conditions are suitable for the COCs to naturally degrade and attenuate over time. MNA parameters will be analyzed using the following or comparable methods.

MNA Parameter	Analytical Method
Sulfate	300.0
Nitrate	300.0
Total Iron	6020
Dissolved Iron	6020
Methane	AM20GAX
Ethene	AM20GAX
Ethane	AM20GAX

Key wells will be sampled to evaluate MNA, as presented in Table 2.

4.4 Groundwater Monitoring Frequency

Water-level measurements and groundwater samples will be collected prior to startup of the expanded groundwater stabilization system and on an annual basis for a period of 5 years.

During startup and shakedown of the expanded groundwater stabilization system, samples will be collected at an increased frequency to optimize and evaluate the system performance. Key wells (those for which MNA parameters will be evaluated – MW-14I, MW-16, and MW-27 in the intermediate and MW-3, MW-8D, MW-19D1, MW-20D1, and MW-23 in the deep) will be sampled semi-annually during the first year and then sampled on an annual basis for 5 years. All other wells will be sampled on an annual frequency for 5 years, following the startup and shakedown period, which is anticipated to range from 3 to 6 months.

The selection of wells for monitoring may need to vary over time, as the plume dynamics change and different wells are better suited to evaluate Site conditions. Wells may be sampled or removed from the program as necessary to effectively monitor plume conditions and the effectiveness of the corrective measure with prior notification to the USEPA as part of the previous year’s reporting activities. Monitoring wells may be dropped from the performance monitoring program when concentrations in their samples are below CAOs for three consecutive annual sampling events.

Continuation of the sampling program, as well as the monitoring wells included in the program, will be evaluated 5 years following startup of the stabilization system to determine the most appropriate frequency, wells, and parameters to further assess Site conditions. Re-evaluation will occur every 5 years thereafter until all CAOs are met.

4.5 Groundwater Monitoring Duration

Engineering and institutional controls will be implemented until the numerical CAO goals for groundwater are achieved for this Site or Site conditions change requiring revised CAOs to be established. A trend analysis will continue for 3 to 5 years after the groundwater stabilization system is turned off.

If downward trends are not observed and/or the numerical CAOs are anticipated to no longer be achievable at the POC within a reasonable timeframe, Cytec will consider: 1) modifying the CAOs from restoring groundwater to maximum beneficial use to containing the plume, preventing further groundwater migration off Site, and reducing COC mass and 2) developing alternate concentration limits for Site groundwater that will not pose a substantial present or potential hazard to human health and the environment.

It is assumed that the remediation system will be operated for at least 15 years. Performance monitoring will be implemented years 1 through 5. If a downward trend is projected, monitoring will be reduced as described above. At a minimum, monitoring will need to continue to meet the requirements outlined in Cytec's permit to discharge industrial wastewater from the facility to the POTW (Section 3.2).

5. Reporting

5.1 Monthly Compliance Reports

As part of Cytec's existing permit to discharge industrial wastewater from the facility to the POTW, Cytec provides monthly industrial user monitoring reports to the POTW. These reports detail recorded daily flow data, measured weekly pH data and measured annual effluent sample results. As compliance with the permit is consistent with the overall performance monitoring objectives, Cytec will continue to submit these monthly reports. It is anticipated that these monthly reports will also be required by the future discharge permit.

5.2 Groundwater Performance Monitoring Reports

A Corrective Measures Implementation Report will be prepared following the startup and shakedown of the expanded groundwater stabilization system. This report will include an as-built drawing of the system and a summary of performance data collected during the startup and shakedown period.

Following this submittal, an Annual Performance Monitoring Report, which provides a summary of Site conditions, will be prepared for the first 5 years following startup and shakedown of the expanded groundwater stabilization system. These annual reports will discuss the system's operational status, evaluate the performance monitoring data, and present observations regarding COC trends and natural attenuation parameters. Similar to the groundwater sampling program, the need and frequency for additional reports will be evaluated following the first 5 years of annual report submittals.

6. Contingency Plan and Response Actions

The performance of the stabilization system will be routinely monitored and evaluated to confirm that the migration of COC-impacted groundwater at the property boundary is minimized and that appropriate and timely adjustments to the system operation can be made. If necessary, system operations may be optimized. These optimizations may include adjustment of extraction well flow rates, installation of additional extraction wells, and installation of additional monitoring wells (to more effectively monitor the groundwater plume). If adjustments to system operations are impractical or infeasible and/or COC trends are not indicative of natural attenuation within the first 5 years of system operation, alternative corrective measures may be evaluated.



Performance Monitoring Plan

Cytec Industries Inc.
Havre de Grace

7. References

ARCADIS. 2012. Corrective Measures Study Report Havre de Grace, USEPA ID #MDD 033 075 942. January.

City of Havre de Grace POTW. 2010. Industrial User Wastewater Discharge Permit, Permit No. CYT-2015-101. September.

United States Environmental Protection Agency. 2012. Re: Corrective Measures Study Report. February 13.



Tables

Table 1
Well Screen Intervals and PDB Deployment Depths
Cytex Industries Inc.
Havre de Grace, Maryland
Performance Monitoring Plan

Well ID	Top of Casing Elevation (ft amsl)	Ground Elevation (ft amsl)	Screen Interval		PDB Deployment Depth	
			Top (ft amsl)	Bottom (ft amsl)	(ft bgs)	(ft amsl) ⁽¹⁾
Shallow Overburden						
MW-4	46.40	46.95	41.95	31.95	12	35.0
MW-6	50.93	51.33	48.33	35.33	14.50	36.8
MW-8S	41.02	41.60	32.60	22.60	16.00	25.6
MW-12S	49.62	49.71	41.71	31.71	15.00	34.7
Intermediate Overburden						
MW-6I	50.20	50.55	28.55	22.55	26.50	24.1
MW-12D	49.41	49.70	31.70	21.70	26.50	23.2
MW-13D	50.79	51.00	29.00	19.00	29.50	21.5
MW-14I	35.80	35.98	19.98	9.98	23.00	13.0
MW-16	38.17	38.19	11.19	1.19	30.00	8.2
MW-25I	49.54	49.94	29.94	19.94	28.50	21.4
MW-27	43.07	43.27	19.12	9.12	41.50	1.8
Intermediate and Deep Overburden						
MW-28D	49.14	49.41	21.91	6.91	30.00	19.4
Deep Overburden						
MW-3	45.39	44.99	10.49	4.99	37.00	8.0
MW-8D	41.19	41.36	11.36	1.36	35.00	6.4
MW-14	36.43	36.83	10.83	0.83	35.00	1.8
MW-15	35.32	35.67	13.67	3.67	30.00	5.7
MW-18	38.37	38.67	16.17	6.17	24.00	14.7
					31.00	7.7
MW-19D1	29.26	29.53	-4.47	-14.47	39.00	-9.5
MW-20D1	25.66	25.87	-11.13	-21.13	40.00	-14.1
MW-22D	44.32	44.51	17.01	7.01	32.00	12.5
MW-23	45.96	46.30	6.90	-3.10	40.00	6.3
					47.00	-0.7

Notes:

ft amsl - feet above mean sea level

ft bgs - feet below ground surface

¹ - Depth at which the midpoint of the PDB was installed

PDB - Passive Diffusion Bag sampler

Table 2
Proposed Analyses for Performance Monitoring Program
Cytec Industries Inc.
Havre de Grace, Maryland
Performance Monitoring Plan

Well ID	Formation Screened/ Screened Interval	Monitoring Parameters	Purpose
MW-4	Shallow Overburden Zone	COCs	Plume Evaluation
MW-6	Shallow Overburden Zone	COCs	Plume Evaluation
MW-8S	Shallow Overburden Zone	COCs	Plume Evaluation
MW-12S	Shallow Overburden Zone	COCs	POC- Site Boundary
MW-6I	Intermediate Overburden Zone	COCs	Plume Evaluation
MW12D	Intermediate Overburden Zone	COCs	POC- Site Boundary
MW-13D	Intermediate Overburden Zone	COCs	POC- Site Boundary
MW-14I	Intermediate Overburden Zone	COCs MNA parameters	Plume Evaluation
MW-16	Intermediate Overburden Zone	COCs MNA parameters	Plume Evaluation
MW-25I	Intermediate Overburden Zone	COCs	Plume Evaluation
MW-27	Intermediate Overburden Zone	COCs MNA parameters	Plume Evaluation
MW-28D	Intermediate and Deep Overburden Zone	COCs	Plume Evaluation
MW-3	Deep Overburden Zone	COCs MNA parameters	POC- Site Boundary
MW-8D	Deep Overburden Zone	COCs	Plume Evaluation
MW-14	Deep Overburden Zone	COCs	Plume Evaluation
MW-15	Deep Overburden Zone	COCs	Plume Evaluation
MW-18	Deep Overburden Zone	COCs MNA parameters	Plume Evaluation
MW-19D1	Deep Overburden Zone	COCs MNA parameters	POC - Downgradient Edge
MW-20D1	Deep Overburden Zone	COCs MNA parameters	POC - Downgradient Edge
MW-22D	Deep Overburden Zone	COCs	Plume Evaluation
MW-23	Deep Overburden Zone	COCs MNA parameters	Plume Evaluation

Notes:

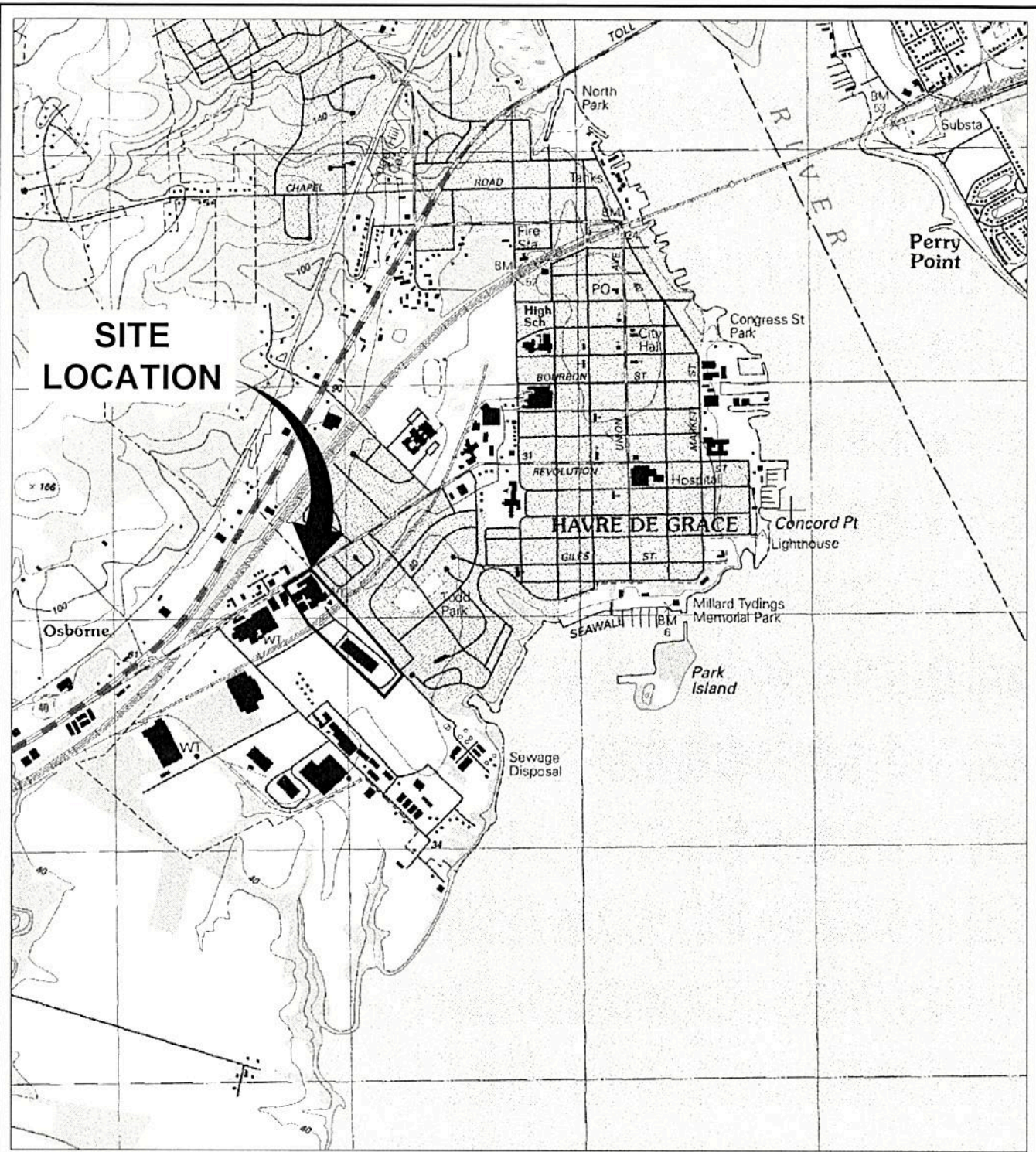
COCs = Constituents of Concern

MNA = Monitored Natural Attenuation

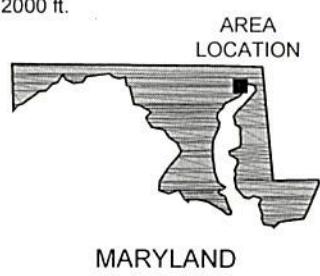
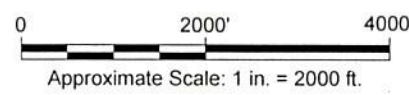


Figures

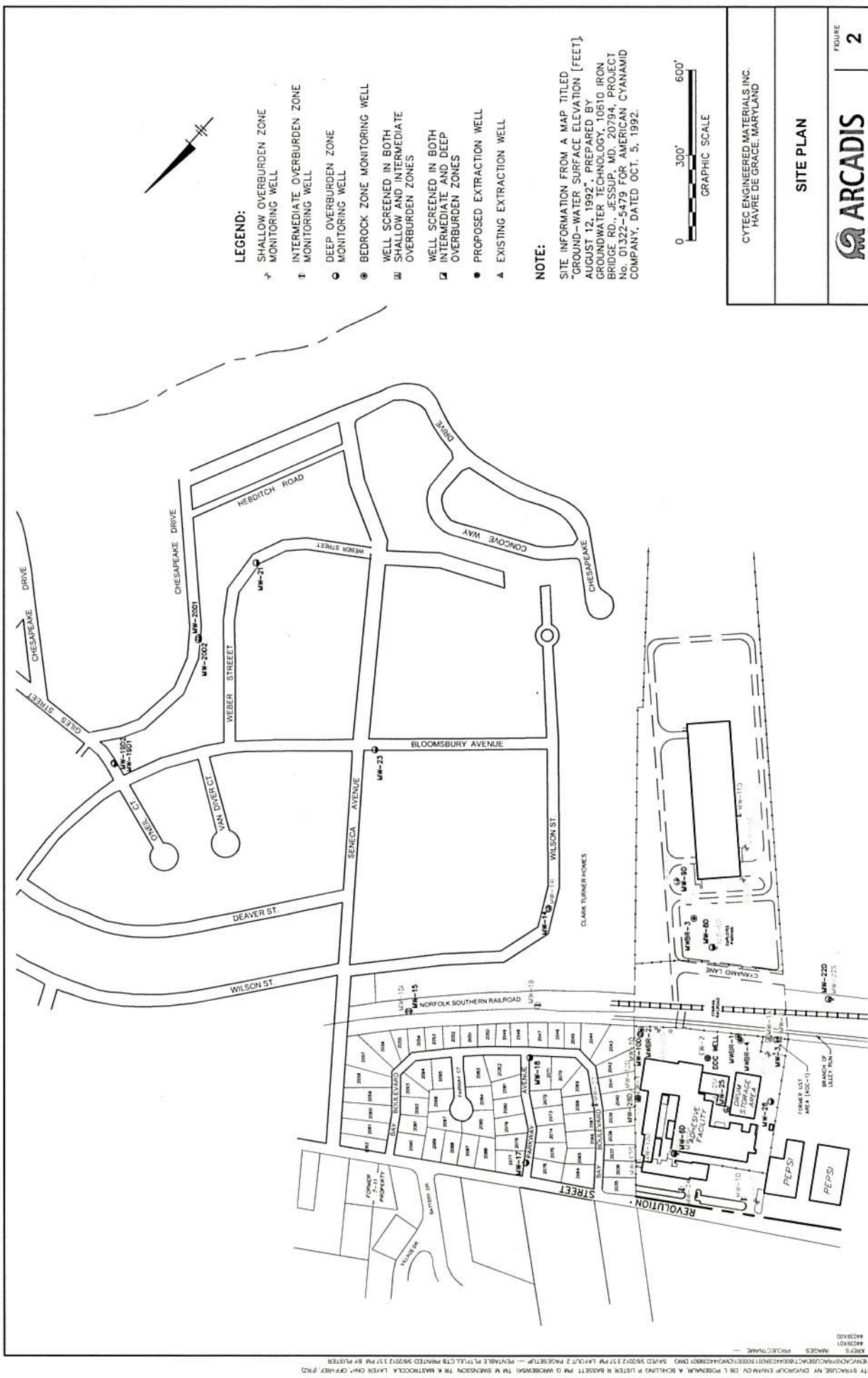
CITY: SYRACUSE, NY; DIV: GROUP ENV/MD; DB: P. LISTER; PM/DM: T. ARMSTRONG; TR: P. SHAM; LVR: ON; OFF: REF
 G:\ENVCAD\STRACUSE\ACT18004403900\310000\TOPO\H4039001.dwg; LAYOUT: 1; SAVED: 3/12/2012 1:45 PM; ACADVER: 18.15 (LMS TECH); PAGESETUP: —; PLOTSTYLETABLE: PLT\FULL.CTB; PLOTTED: 3/12/2012 1:47 PM; BY: LISTER, PAUL
 IMAGES: PROJECTNAME: MD_Havre De Grace.tiff
 XREFS:



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., HAVRE DE GRACE, MD, 1992.



CYTEC ENGINEERED MATERIALS INC. HAVRE DE GRACE, MARYLAND	
SITE LOCATION MAP	
	FIGURE 1



CYTEC ENGINEERED MATERIALS INC.
HAVRE DE GRACE, MARYLAND

SITE PLAN

ARCADIS

FIGURE 2



Appendix A

Industrial Use Wastewater Discharge
Permit, No. CYT-2015-101.

**City of Havre de Grace
Department of Public Works
Industrial Waste Pretreatment Program**

Industrial User Wastewater Discharge Permit

Permit Number: CYT-2015-101

Effective Date: September 30, 2010

Expiration Date: September 30, 2015

In accordance with the provisions of the City of Havre de Grace and all applicable State and federal regulations incorporated therein, the City of Havre de Grace, hereinafter referred to as the "City", authorizes

**Cytec Fiberite
1300 Revolution Street
Havre de Grace, Maryland 21078**

a facility engaged in manufacturing classified by SIC No. 2891 and located at

**1300 Revolution Street
Havre de Grace, Maryland 21078**

to discharge industrial wastewater from the above identified facility, through the outfall identified herein, to the

City Wastewater Treatment Plant

in accordance with the special and general conditions set forth in this permit. Compliance with this permit does not relieve the permittee of its obligation to comply with all applicable pretreatment regulations, standards or requirements under local, State and federal laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this permit.

Noncompliance with any term or condition of this permit shall also constitute a violation of City of Havre de Grace Water and Sewers Ordinance hereinafter referred to as "City Ordinance No. 766".

If the permittee wishes to continue to discharge after the expiration date of this permit, an application (See Attachment B) must be filed for a renewal permit, in accordance with Section 13.E of City Ordinance No. 766, a minimum of 180 days prior to the expiration date (no later than **March 31, 2015**).

City Officials:

Donna Geiger, Assistant Director of Public Works

Ken VanDusen, Pretreatment Coordinator

Part I. Special Conditions

A. Effluent Limitations/Monitoring Requirements

1. During the effective period of this permit, the permittee is authorized to discharge groundwater from wells located onsite into the City of Havre de Grace wastewater treatment plant front holding tank via a dedicated pipeline, hereafter called outfall 002. As specified below, such discharge shall be limited and monitored by the permittee from the discharge located at the wastewater treatment plant.

2.

<u>Parameter</u>	<u>Effluent Limitations Daily Maximum</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>
Flow	15,000 gpd ⁽¹⁾	Continuously ⁽²⁾	Measured Recorded
Priority Pollutant Scan		1/Year	Grab
Total Arsenic	4.06 mg/l	1/Year	Grab
Total Cadmium	0.09 mg/l	1/Year	Grab
Total Chromium	0.39 mg/l	1/Year	Grab
Total Copper	0.08 mg/l	1/Year	Grab
Total Cyanide	0.18 mg/l	1/Year	Grab
Total Lead	0.65 mg/l	1/Year	Grab
Total Nickel	0.78 mg/l	1/Year	Grab
Total Zinc	9.30 mg/l	1/Year	Grab
Total Silver	0.05 mg/l	1/Year	Grab
Total Mercury	0.0003 mg/l ⁽³⁾	1/Year	Grab

1. Flow shall not exceed a flow of 500 gallons in any 30 minute time period.
2. Flow shall be continuously measured and recorded with the total gallons for each day reported in the periodic compliance report.
3. A maximum detection limit of 0.0005 mg/l must be used in the analysis of mercury. Results indicating less than 0.0005 mg/l will be accepted as demonstrating compliance with this limitation.

<u>Parameter</u>	<u>Effluent Limitations Minimum</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>
pH	5.0	weekly	grab

3. Special Requirements

- a. For flow:
 - (i) A flow meter shall be used to record flow.
- b. The permittee shall record any operational problems that occur during the reporting period in their periodic compliance report.
- c. Copies of chain-of-custody forms for samples collected in accordance with this permit and analyses performed by any laboratory shall be maintained on site for a minimum of three years and shall be subject to inspection and copying at any time by the City. [Note: All information collected is to be in accordance with Special Condition C.3. of the permittee's industrial user

permit.]

B. Definitions

1. "Bypass" means the intentional diversion of wastes from any portion of a treatment facility.
2. "Composite sample" means a combination of individual samples obtained at regular intervals over a specified time period not to exceed twenty-four hours. The volume of each individual sample may be either proportional to the flow rate during the sample period (flow composite) or constant and collected at equal time intervals during composite period (time composite).
3. "Daily maximum" means the maximum allowable discharge of pollutant during any 24 hour period. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of concentration, the daily discharge is the arithmetic average measurement of the pollutants derived from all measurements taken that day.
4. "Grab sample" means an individual sample collected in less than 15 minutes, without regard for flow or time.
5. "Measured" flow means that obtained from appropriate flow measurement devices and methods consistent with approved scientific practices selected and used to ensure accuracy and reliability. Such device shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ten percent for true discharge rates throughout the range of expected discharge volumes.

C. Additional Monitoring Requirements

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the discharge. All samples shall be taken at the monitoring points specified in this permit unless otherwise specified.

2. Sampling and Analysis Methods

All analyses, including sampling techniques, submitted in support of any application, report, evidence, or as required by this permit or any order, shall be performed in accordance with 40 CFR Part 136 and amendments thereto.

3. Data Recording Requirements

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: the exact place, date(s), and time(s) of the sampling or measurement; the person(s) who performed the sampling or measurement; the type of sample obtained (grab, composite, flow proportional composite, etc.); the preservation methods used; the dates and times the analyses were performed; the analytical techniques or methods used; the results of all required analyses; and the name and address of the laboratory performing the analysis.

4. Monitoring Equipment Maintenance

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation to ensure accuracy of measurements.

5. Records Retention

The permittee shall retain and make available, upon request by an authorized representative of the City, the State or the EPA, all records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and original recordings from continuous monitoring instrumentation. These records shall be retained for a minimum of three years. This period shall be automatically extended during the course of any litigation, or when requested by the City.

D. Reporting Requirements

1. Reporting of Monitoring Results

Monitoring results obtained during each calendar month and other required monitoring information shall be submitted on an Industrial User Monitoring Report form (See Attachment A), which shall be certified as true and correct by the permittee's authorized representative. All reports shall be submitted on or before the 20th day to:

City of Havre de Grace Department of Public Works
Ken VanDusen
711 Pennington Avenue
Havre de Grace, Maryland 21078

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the locations designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of this monitoring shall be included in the self-monitoring report.

3. Notification of Violation/Automatic Resampling

If sampling performed by the permittee indicates a violation, the permittee must notify the City within 24 hours of becoming aware of the violation. The notification shall minimally include:

- a. the location of the non-compliant discharge;
- b. the type of waste, including concentration and volume; and,
- c. the corrective actions taken to date by the permittee.

Within five working days of such discharge, the permittee shall submit a written report describing the cause of the discharge and the measures that have been or will be taken to prevent similar discharges in the future.

Such notification shall not relieve the permittee of any expense, loss, damage or other liability resulting from the discharge, nor shall such notification relieve the permittee of any fines, civil penalties or other liability which may be imposed under City Ordinance No. 766 or other applicable State or federal law.

The permittee shall repeat the sampling and analysis and submit the results of the repeat analysis to the City within 30 days after becoming aware of the violation. The permittee is not required to resample if:

- (i) The City performs sampling at the permittee at least once a month;
- (ii) The City performed sampling at the permittee between the time when the permittee performed the initial sampling and the time when the permittee received the results of the sampling.

4. Reporting Accidental Discharges/Spills/Slug Loadings/Upsets

The permittee shall notify the City immediately upon the occurrence of an accidental discharge of substances prohibited by City Ordinance No. 766, or any slug load, spill or upset that may enter the public sewer. The City should be notified by telephone at **(410) 939-1220**. If no answer at this number, call **(410) 405-4596**. The notification shall include location of the discharge, date and time thereof, type of waste, including concentration and volume, and corrective actions taken.

Within five days, the permittee shall provide the City with the following information in writing:

- a. description of the noncomplying discharge, slug loading, accidental spill, or upset;
- b. cause of noncomplying discharge, slug loading, accidental spill, or upset;
- c. anticipated time the condition of noncomplying discharge, slug loading, accidental spill, or upset is expected to continue or, if such condition has been corrected, the duration of the period;
- d. steps taken by the permittee to reduce and eliminate the noncomplying discharge, slug loading, accidental spill, or upset;
- e. steps to be taken by the permittee to prevent recurrence of the condition of noncomplying discharge, slug loading, accidental spill, or upset; and
- f. a description of the accelerated or additional monitoring by the permittee to determine the nature of the noncomplying discharge, slug loading, accidental spill, or upset.

5. Notification of Changed Discharge

The permittee shall give notice to the City 90 days prior to any substantial change in the volume or character of pollutants in the discharge. Anticipated facility expansions, production increases, or process modifications which will result in new, different, or an increased discharge of pollutants shall be reported by the permittee by notice to the City. Following such notice, the permit may be modified by the City to specify and limit any pollutants not previously limited.

6. Notification of Bypass

If the permittee knows in advance of the need for a bypass, prior written notice must be submitted to the City at least ten days before the date of the expected bypass. In the event of an unanticipated bypass, the permittee shall notify the City by telephone within 24 hours of becoming aware of the bypass. A written notice shall also be submitted to the City within five days of the bypass. This written notice shall provide a description of the bypass and its cause; the duration of the bypass, including exact dates and times; whether the bypass has been corrected, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate and prevent a reoccurrence of the bypass. The City may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

7. Signatory Requirements

All applications, reports, or information submitted to the City shall contain the following certification

statement and be signed as required in Section (a), (b), (c) or (d) below:

"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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- (a) A responsible corporate officer such as a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million, if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
- (b) A general partner or proprietor if the permittee is a partnership or proprietorship, respectively;
- (c) A duly authorized representative of the individual designated in paragraph (a) or (b) above if:
 - (i) the authorization is made in writing by the individual described in paragraph (a) or (b);
 - (ii) the authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator or a well, or a position of equivalent responsibility, or having overall responsibility for environmental matter for the company; and
 - (iii) the written authorization is submitted to the Control Authority.
- (d) If authorization under item (c) is no longer accurate because a different individual or position has responsibility, a new authorization must be submitted to the City prior to or together with any reports to be signed by an authorized representative.

Part II. General Conditions

A. Duty to Comply

The permittee shall comply with all conditions of this permit. Failure to comply with the requirements of this permit may be grounds for administrative action or enforcement proceedings including civil or criminal penalties, injunctive relief and summary abatement.

B. Prohibitive Standards

1. General Prohibitions

No user shall contribute or cause to be contributed, directly or indirectly, to the Publicly Owned Treatment Works (POTW) any pollutant or wastewater which will pass through the POTW or cause interference with the operation or performance of the POTW.

2. Specific Prohibitions

A user shall not contribute wastewater with the following characteristics:

- a. Any wastewater having a temperature which will inhibit biological activity in the POTW treatment plant resulting in interference, but in no case wastewater with a temperature at the introduction into the POTW which exceeds 40 degrees Centigrade (104° F) unless the POTW treatment plant is designed to accommodate such temperature;
- b. Solid or viscous substances whether emulsified or not, or containing substances which may solidify or become viscous at temperatures between 32 degrees F (0 degrees C) and 140 degrees F (60 degrees C);
- c. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
- d. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than one hundred forty (140) degrees Fahrenheit (60 degrees Centigrade) using the test methods specified in 40 CFR 261.21, or pollutants which cause an exceedance of 10 percent of the Lower Explosive Limit (LEL) at any point in the POTW. Prohibited pollutants include, but are not limited to, gasoline, benzene, naphtha, and fuel oil;
- e. Garbage with particles greater than one-half inch (1/2") in any dimensions;
- f. Ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch, manure, or any other solids or viscous substances capable of causing obstructions or other interferences to the flow in a sewer or with the operation of the wastewater treatment facilities;
- g. Any wastewater having a pH less than 6.0 or higher than 11.0 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and/or personnel of the POTW;
- h. Any wastewater containing toxic or poisonous substances in sufficient quantity to injure or interfere with any wastewater treatment process, to constitute hazards to humans or animals, or to create any hazard in waters which receive treated effluent from the sewer system treatment plant;
- i. Any noxious or malodorous liquids, gases or solids which either singly or by interaction with other wastes are sufficient to create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for maintenance and repair;
- j. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
- k. Any wastewater containing pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving water of the POTW, or to exceed the limitation or requirement set forth in a federal, State or City pretreatment standard or requirement;
- l. Any substance which will cause the POTW to violate its NPDES and/or State discharge permit or the receiving water quality standards;
- m. Any substance which may cause the POTW's effluent or any other product of the POTW such as residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case, shall a substance be discharged to the POTW that will cause the POTW to be in noncompliance with regulations developed under section 405 of the Act; any criteria, guidelines, or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act or State criteria applicable to the sludge management being used;
- n. Any wastewater with objectionable color not removed in the treatment process;
- o. Any medical or infectious wastes in amount that could cause pass-through or interference;
- p. Any wastewater containing any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Superintendent in compliance with

- q. applicable State or federal regulations;
- r. Any slug load, release rate of pollutants, concentration of pollutants, including oxygen demanding pollutants, either singly or by interaction with other pollutants or wastestreams, which may cause interference with any wastewater treatment process, constitute a hazard to humans or animals, contaminate the sludge, pass-through the treatment plant to receiving waters, or could result in a violation of the City's NPDES/State discharge permit;
- s. Any trucked or hauled pollutants, except at discharge points designated by the POTW; and,
- t. Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, deionized water, non-contact cooling water, and unpolluted industrial wastewater, unless specifically authorized by the Director.
- l. Any wastewater which causes a hazard to human life or creates a public nuisance.

3. Prohibition of Dilution/Excessive Discharge

No user shall ever increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

C. Management Requirements

1. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

2. Maintenance and Operation of Pretreatment Facilities

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

3. Duty to Halt or Reduce Activity

Upon reduction of efficiency of operation, or loss or failure of all or part of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced.

4. Bypass of Treatment Facilities

Allowable Bypass

An industrial user may allow any bypass to occur that does not cause violations of pretreatment standards or requirements. A bypass must be for essential maintenance to assure efficient

operation. These bypasses are not subject to the notice contained in Special Condition I.D.6 of this permit and the prohibition below.

Prohibition of Bypass

Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury or severe property damage or no feasible alternatives exist. The permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is also for essential maintenance to assure efficient operation.

5. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit an application for and obtain a new permit. The permit application must be submitted at least 180 days before the expiration date of this permit. In the event that a timely and sufficient reapplication has been submitted and the City is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable.

6. Duty to Provide Information

The permittee shall furnish any information which the City may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. This information shall be submitted with 30 days of the City's request. The permittee shall furnish copies of records required to be kept by this permit to the City within 30 days of such request.

7. Proper Disposal of Solids/Sludges

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act, COMAR 26.04.06, COMAR 26.04.07, and COMAR 26.13.01.

D. Responsibilities

1. Permit Action

This permit may be modified, revoked and reissued, or terminated for good cause including, but not limited to, the following:

- a. to incorporate any new or revised federal, State, or local pretreatment standards or requirements;
- b. material or substantial alterations or additions to the discharger's operation or discharge volume or character which were not considered in drafting the permit;
- c. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge;
- d. information indicating that the permitted discharge poses a threat to the collection and treatment system, POTW personnel or the receiving waters;
- e. violation of any terms or conditions of this permit;
- f. misrepresentation or failure to disclose fully all relevant facts in the permit application or in

- any required reporting;
- g. to correct typographical or other errors in the permit;
- h. to reflect transfer of the facility ownership and/or operation to a new owner/operator; or
- i. upon request of the permittee, provided such request does not create a violation of any existing applicable requirements, standards, laws, or rules and regulations. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

2. Permit Termination

This permit may be terminated for falsifying self-monitoring reports, tampering with monitoring equipment, refusing to allow timely access to the facility premises and records, failure to meet effluent limitations, failure to pay fines, failure to pay sewer charges, failure to meet compliance schedules, failure to reapply for a permit, or failure to request a required permit modification.

3. Permit Appeals

The permittee may petition to appeal the terms of this permit within 30 days after the effective date. This petition must be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provisions objected to, the reasons for this objection, and the alter-nate condition, if any, it seeks to be placed in the permit. The effectiveness of this permit shall not be stayed pending a reconsideration by the Board of Appeals. If, after considering the petition and any arguments put forth by the permittee, the Board of Appeals determines that reconsideration is proper, the City shall reissue the permit. Those provisions reconsidered by the Board shall be stayed pending reissuance of the permit.

4. Inspection and Entry

The permittee shall allow representatives of the City, the State, the EPA, or other authorized representatives, upon the presentation of credentials, to:

- a. enter the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. inspect at reasonable times any facility, equipment, practices, or operations, regulated or required under this permit;
- d. sample or monitor, for the purpose of assuring permit compliance, any substances or parameters at any location; and
- e. inspect any production, manufacturing, fabricating, or storage area where pollutants, regulated under the permit, could originate, be stored, or be discharged to the sewer system.

5. Transfer of Ownership or Control of Facilities

This permit is issued to a specific user for a specific operation and shall not be reassigned, transferred, or sold to another owner, user, different premises or a changed or new operation without the written permission of the City. In the event of any change in ownership or control of the facility, the permittee shall give at least 30 days advance notice to the City including a written certification by the new owner stating there is no immediate intent to change the facility's operations and processes and acknowledgment of full responsibility for complying with the existing permit and

identification of the specific date on which the transfer is to occur.

6. Confidential Information/Availability of Reports

Information and data about the permittee obtained from reports, questionnaires, permit applications, permits and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the permittee specifically requests and is able to demonstrate to the satisfaction of the City that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets of the permittee.

Except for data determined to be confidential under Section 308 of the Clean Water Act, 33 U.S.C. 1318 and [local requirements], all submitted data shall be available for public inspection at the offices of the City, the Maryland Department of the Environment, and the Regional Administrator of the Environmental Protection Agency. Wastewater discharge information shall not be considered confidential.

Information accepted by the City as confidential, shall not be transmitted to the general public by the City without a ten day notification period being given to the permittee.

7. Falsifying Information

Knowingly making any false statement on any report or other document required by this permit or knowingly rendering any monitoring device or method inaccurate is a crime and may result in the imposition of criminal sanctions and/or civil penalties.

8. Severability Clause

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any violation of federal, State, or local laws or regulations.

10. Action on Violations

The issue or reissue of this permit does not constitute a decision by the City not to proceed in an administrative, civil, or criminal action for any violations of the City law or regulations occurring before the issue or reissue of this permit, nor a waiver of the City's right to do so.

11. Penalties for Violations of Permit Conditions

Violation of the terms and conditions set forth in this permit may subject the permittee to any and/or all enforcement actions established in City Ordinance No. 766, Section 15.

12. Reopener Clause

This permit may be reopened and modified, revoked, or reissued, to comply with any applicable effluent standard or limitation issued or approved under Section 301, 304, and 307 of the Clean Water Act if the effluent standard or limitation so issued or approved:

- a. contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
- b. controls any pollutant not limited in the permit. The permit, as modified or reissued under this paragraph, shall also contain any other requirements of the Act then applicable.

13. Recovery of Costs Incurred

In addition to any and/or all enforcement actions established Section 15 of City Ordinance No. 766, the permittee violating any of the provision of this permit or causing damage to or otherwise inhibiting the City wastewater disposal system shall be liable to the City for any expense, loss, or damage caused by such violation or discharge. The City shall bill the permittee for the costs incurred by the City for any cleaning, repair, or replacement work caused by the violation or discharge. Refusal to pay the assessed costs shall constitute a separate violation of City Ordinance No. 766.

of

Attachment A

**CYTEC FIBERITE INC.
PERIODIC COMPLIANCE REPORT**

REPORTING MONTH/YEAR+ _____

TOTAL VOLUME DISCHARGED _____

"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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Date

Authorized Representative

Description of any operational problems that occurred during the reporting period. Corrective actions taken (or to be taken) are also listed.

